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Russian Federation Restructuring the Coal Industry: Putting People First

(In Two Volumes) Volume I Main Report

December 12, 1994

Infrastructure, Energy & Environment Division
Country Department III
Europe and Central Asia

Document of the World Bank

CURRENCY EQUIVALENTS

Currency Unit = Ruble (Rb)

Rubles per US Dollar

Foreign Exchange Auction/Interbank Market Rate

Average for Period

December 1991	170
December 1992	420
December 1993	1,190
July 1994	1,998

BORROWER'S FISCAL YEAR

January 1 - December 31

WEIGHTS AND MEASURES

METRIC SYSTEM		US SYSTEM
1 meter (m)	=	3 2808 feet
1 kilometer (km)	=	0 6214 mile
1 square meter (m^2)	=	1 196 square yards
1 metric ton (tonne)	=	1 102 short tons
1 kilocalorie (kcal)	=	0 252 British thermal units
1 tonne of coal-equivalent (tce)	=	6 88 million kcal
1 kilogram (kg)	=	2 20462 pounds (lb)

ACRONYMS AND ABBREVIATIONS

GDP	Gross Domestic Product
Oblast	Region - a Soviet (now Russian) territorial administrative unit other administrative units include republics, okrugs and krais
NOx	Nitrogen oxides
SOx	Sulfur oxides
ugol	coal (in Russian)
USAID	United States Agency for International Development

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Russian Federation

Restructuring the Coal Industry: Putting People First

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- Russian Commentary *(full text)*

December 12, 1994
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Contributors

This report was prepared by D Craig, G Hughes and M Canning (World Bank) The report draws heavily on an earlier report (November 1993) prepared by G Hughes and J Strongman

The present report summarizes material that was originally presented in the following annexes Coal Resources, Production and Employment (J Strongman, D Craig & J Procak), Coal Market Prospects by Region & Basin (G Hughes, D Craig & J Procak), International Experience of Coal Restructuring (J Strongman), Coal Transport (J Holt & J Procak), Social Protection (M Canning & N Koliadina), Environmental Issues (G Hughes), and Costs, Subsidies and Employment in Coal Mining (G Hughes)

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Deputy-Minister A Yevtoushenko (Ministry of Fuels & Power) and Mr Y Malyshev (Managing Director of the national coal company, RosUgol) were the main coordinators of the work in Russia Numerous individuals from RosUgol, the Ministry of Fuels & Power, various coal-related Institutes and other agencies represented on the Inter-Ministerial Coal Commission contributed material for this report

Mr J Brown, Chief of Infrastructure, Energy & Environment Operations in the Russia & Central Asia Department of the World Bank, directed the work program Q Fan, L Fox and L Lovei were the peer reviewers

Structure of the Report

This document is the Main Report of a report by the World Bank on *Restructuring the Coal Industry* in the Russian Federation

The first version of the Main Report was issued on November 12, 1993, and discussed with the Ministry of Fuels & Power and the national coal company (RosUgol) in December 1993 in Moscow As a result of these discussions, the focus of the report has shifted from the coal industry as a whole to a more detailed analysis of the impact of restructuring in each of the main coal basins

The first six supporting Annexes--see Contents on page 1--were prepared between October 1993 and April 1994

Between December 1993 and April 1994, the initial analysis was supplemented by studies financed under the USAID's Cooperative Agreement with the World Bank

- a study of subsidies and employment in the coal industry
- a study of financial performance of coal mining companies

In February 1994, the Bank awarded a third contract to foreign and local consultants to estimate the social and financial costs of reducing employment in the coal industry, focusing mainly on mine closures and associated environmental requirements

- after initial work by local consultants, the study was suspended due to local constraints
- as a result, this report does not attempt to present quantified cost estimates of the costs of mine closures and employment reduction

In May 1994, a 17-person delegation from the Inter-Agency Coal Commission--representing key government economic and social agencies, RosUgol and the coal labor unions--visited Washington to discuss the more detailed findings presented in the Annexes The second version of the Main Report reflects the findings presented to the Inter-Agency Coal Commission in May 1994 and comments made by the participants

A seventh Annex--on Costs, Subsidies & Employment--was prepared in July 1994

In August 1994, the Bank presented the second version of the Main Report and Annexes 1-7 to the Government as a discussion draft The Government then convened a meeting of the Inter-Agency Coal Commission on September 23, 1994, to review the report Representatives of the World Bank participated It was agreed that the third version of the report (the current version, issued December 1994) would reflect the outcome of the review meeting

As part of the preparation for September 23 review meeting, approximately 25 agencies submitted written comments on the World Bank report

- the full text of the Russian commentary is now reproduced as the eighth annex in the companion volume of this report
- a summary of the Russian commentary appears as the second part of the Executive Summary in the Main Report

The Government has agreed that *Restructuring the Coal Industry - Putting People First* should be published to inform discussion of the future of the Russian coal industry However, the Government has stressed that publication does not imply any endorsement of the recommendations of the report

Restructuring the Coal Industry

Executive Summary

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Overview

1 This report is about people--coal miners, other workers in the coal industry, and their families--many of whom work and live in isolated communities where production of coal is the only reason to be there The coal industry is now shrinking and many of these people face the prospect of losing their jobs In some regions the chances of finding a new job are low Yet the existing social safety net is totally inadequate to cope with the large numbers of families who will be affected ***The Government has a choice Either the restructuring can continue in an adhoc and sometimes chaotic manner, driven by inevitable bankruptcies of local coal companies, and causing immense social distress and political tension Or the Government can use the existing budget subsidies to provide an adequate social safety net for those who agree to leave the coal industry*** This report suggests ways to implement the second of these options

2 Over the last 20-30 years, the coal industry world-wide has been through a long and painful period of restructuring Employment in the coal industry has fallen by more than 75% in countries such as Belgium, France, Germany and the U K , and by more than 50% in the U S In Russia, this process of restructuring has yet to begin The future "viable core" of the Russian coal industry will probably be about two-thirds its current size And total employment in this viable core could be less than half current levels Nonetheless, even after restructuring, the Russian coal industry will remain one of the largest in the world

3 The current situation in the coal industry in Russia is catastrophic Demand for coal has been falling for several years, yet employment in the coal industry has remained unchanged Coal prices have been decontrolled, yet subsidies to the coal industry still consume about 1 2% of GDP--second only to agriculture as a burden on the government budget Subsidies to the coal industry are larger than the industry's total wagebill, yet miners' wages in some basins are being paid 3-6 months in arrears In short, subsidies are protecting production rather than people And the way subsidies are used is blocking rather than assisting the process of restructuring

4 Restructuring of the coal industry in Russia will take place in an economic context that is radically different from that of other countries Virtually all industrial sectors in Russia face the prospect of major restructuring Most industrial sectors do not have access to large government subsidies to support this process The coal industry is therefore receiving special treatment The Government has already started to reduce coal subsidies in real terms The longer restructuring takes, the greater the burden on the government budget Given the many urgent demands on the budget, it would be desirable to limit the phase-out period to no more than 3-5 years The challenge facing the Government and the coal industry is to ensure that the declining subsidies are used efficiently--and in a way that minimizes hardship in coal communities affected by employment reduction

5 The goal of restructuring is to adapt to the new market environment This environment varies greatly from one coal basin to another, particularly now that rail freight costs are a significant part of the delivered cost to the coal consumer ***The Government's strategy for restructuring should be decentralized*** The key actors should be the local mining companies and the local governments in those areas The management team of each local mining company must have the freedom to set its own selling prices and to negotiate wages, benefits, implementation of severance packages and mine closures directly with their employees This will require radical labor market reforms

6 Local mining companies should work together with their local government agencies, coal labor unions and community representatives--using external assistance where necessary--to prepare their own restructuring programs and related social programs Formal *Social Assessments* may be a useful way to determine what people in mining communities really need or want The Federal Government should review the corresponding expenditure proposals, then develop regional guidelines which determine how much of the declining subsidies can be used to cofinance the proposed costs of severance, mine closures and social programs It may be necessary to create a special group within the Federal Government to administer the cofinancing program

7 ***Employment reduction, with or without mine closures, should not take place until an adequate social safety net is in place and fully funded*** Equally important, the process by which the necessary employment reductions are handled--by local mining companies and by local employment and social protection agencies--is as crucial to its success as the overall size of the adjustment Ill prepared and badly managed mass layoffs will worsen the problem of long-duration unemployment, damage the social fabric and delay economic recovery in coal producing regions

8 The impact of restructuring on employment will vary greatly across the coal basins In the Kemerovo oblast (the Kuzbass) and the Komi Republic (the Pechora basin), the likely employment reductions are very large in relation to total employment in these regions As an additional element of the social safety net, the Government should consider setting up transitional programs of employment creation in these regions These might include environmental restoration of mining areas and rehabilitation of infrastructure in mining communities However ***the Government should also take all possible steps to promote labor mobility between regions***

9 The remainder of the Executive Summary lists the key findings and recommendations relating to (a) price decontrol, (b) subsidies & wages, (c) transport costs, (d) coal industry strategy, (e) employment reduction, (f) the social safety net, (g) housing, (h) safety, health & environment, and (i) next steps and targets

Price Decontrol

1 In July 1993, the Government removed formal controls on coal prices This was a courageous and necessary first step towards restructuring the coal industry However, the anticipated benefits of price decontrol in stimulating competition, promoting better cost control and efficiency, and initiating the restructuring of the industry have been undermined by the perverse incentives created by the subsidy system These benefits will not be realized until the Government introduces a credible program to phase out coal subsidies

2 In principle, the new coal mining companies (former coal mining associations) are now free to set their own ex-mine coal prices The resulting market prices will differ greatly between basins and mining companies because of quality and transport cost differentials In practice, the national coal company (RosUgol) has a strong influence on coal prices through the allocation of subsidies This allows the coal industry to maintain a system of cross-subsidies between mining companies, ie, within basins and between basins These cross-subsidies have allowed mines that are no longer viable under the new coal market conditions--due to high production costs and/or high rail freight costs--to stay in operation

3 Mining companies which could have increased their ex-mine wholesale prices sharply relative to the average for all coal, because of locational or other advantages, have not done so Instead, the subsidy system has encouraged them to hold down their prices and rely upon government transfers rather than exposing themselves to the uncertainties of market competition

4 The coal industry's total costs of production have barely changed since 1991, despite the large fall in output In most coal basins, there was a sharp increase in real average operating costs per tonne from 1993 Q2 to 1993 Q3 following the decontrol of prices The driving force behind cost increases in 1993 was wages, especially the component linked to the Tariff (or collective bargaining) Agreements whose cost is covered by specific subsidies

Subsidies and Wages

1 As a percentage of GDP, the fiscal burden of Federal Government coal subsidies rose from 1 0% in 1991 and 1 1% in 1992 to 1 4% in 1993 These subsidy levels are clearly unsustainable The subsidies are also higher than necessary In 1993, for example, the coal industry had access to a cash surplus of about 900 billion rubles after receiving subsidies This surplus amounted to slightly over one-half of the total subsidies paid during the year

2 According to the federal budget approved in June 1994, coal subsidies will be approximately 20% lower in real terms (taking inflation into account) than in 1993 A transition towards lower subsidies therefore has already begun The main problem now is how to complete the phase-out of coal subsidies without causing unnecessary hardship

3 ***The subsidies are not achieving their purpose, which is to protect people during a difficult transition Instead, the subsidies are being used to protect production*** In 1993, the coal industry allocated 35% of subsidies to wages, 16% to social services, and 49% to operating losses and investment Subsidies actually delivered to the coal industry amounted to 227,000 rubles per worker per month This is more than enough to pay not only the costs of social services in mining communities, but also the entire wage bill of the coal industry--145,000 rubles per worker per month in 1993--including all the provisions of the Tariff Agreements Instead, wage payments have been up to 3-6 months in arrears in some basins

4 Nearly one-half of total subsidies in 1993 were allocated for price supports (to cover operating losses) and investment Allocating subsidies in this way leads to unnecessary expenditure on materials and other non-labor operating costs to produce coal that has no market These subsidies encourage mining companies to sell coal at prices which are well below the marginal costs of production, which depresses prices and profits for the low-cost, potentially profitable part of the coal industry

Recent Trends

million tce	1990	1992	1993 est	1997 proj
Steam Coal				
consumption	203	187	174	117
electric power	111	96	88	58
other	92	91	86	59
exports	16	14	12	6
imports	22	29	23	10
sales	199	172	163	112
Coking Coal				
consumption	46	45	40	29
exports	19	10	11	12
imports	7	6	4	4
sales	58	49	47	37
All Coal				
consumption	250	232	214	146
exports	35	24	23	18
imports	29	35	27	14
sales	256	221	210	150
memo				
total sales in millions of tonnes	369	320	304	217

Comments

- consumption of steam coal by its largest customer--the electric power and heat supply industry--has declined and will not recover over the medium term

- consumption of coking coal by its largest customer--the steel industry--has declined and will continue to decline over the medium term

- exports and imports play a small role in the overall coal market in Russia but will remain locally important in some areas

Transport Costs and the Coal Market

1 The development of the coal industry in Russia before 1990 took little account of the basic facts of economic geography because transport costs were heavily subsidized or ignored altogether However, the situation has completely changed as a result of large real increases in rail freight rates during 1992 and 1993 As a result, differences in transport costs are at least as important as differences in production costs in determining the competitiveness and potential profitability of production at different mines Coal basins that are close to their customers will now have the opportunity to take a much larger share--of a shrinking coal market--than basins that are further away

2 In Russia, as in many other countries, the relationship between the railways and the coal industry is a difficult one The railways have substantial monopoly power in the transport of coal, which allows them to set tariffs above long run marginal costs On the other hand, coal accounts for 25% of total rail freight, which gives the coal industry considerable bargaining power in negotiating contracts with individual railway lines Careful analysis suggests that by late 1993 freight rates for coal in Russia exceeded the economic costs (long run marginal cost) of moving coal The railways appear to have used their monopoly power to earn revenues from the transport of coal which were being used to subsidize their passenger operations This suggests that a regulatory body is required to supervise the setting of freight and other tariffs by the railways

3 Scenarios of market competition between coal basins and mining companies have been examined for a range of freight tariffs spanning the estimated economic cost of coal transport in mid-1993 The results suggest large potential differences between various coal basins For example

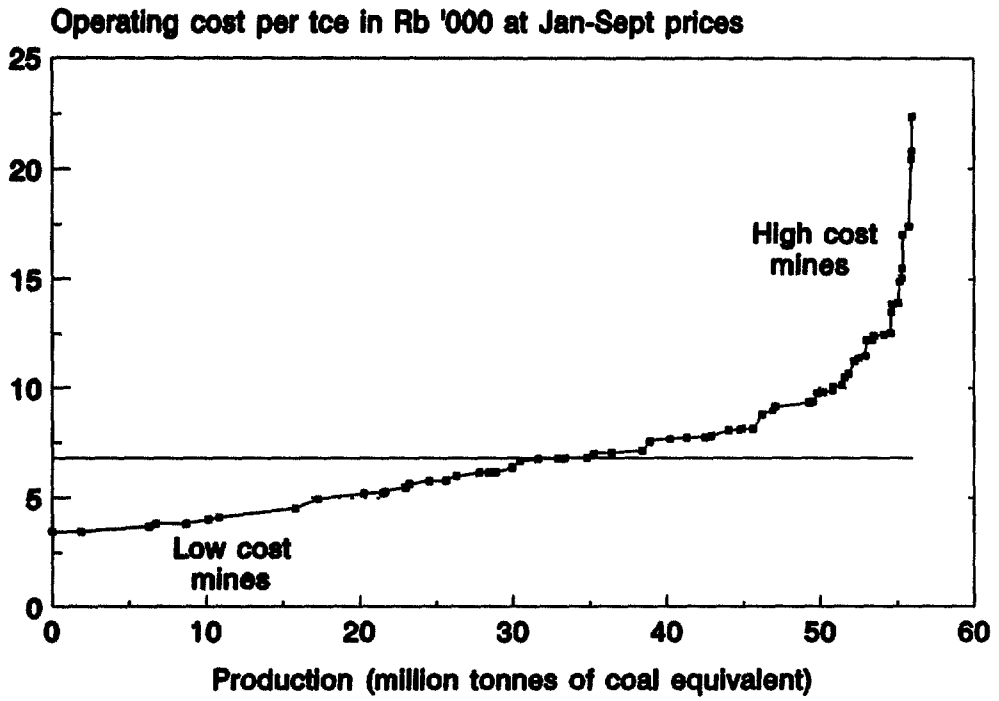
- The largest basin, the *Kuzbass*, would face a fall in output of about 50% over a wide range of freight rates because of its distance from many of its main markets

- The *Donbass* is well-located relative to most other coal basins and enjoys a high degree of "natural protection" at all but the lowest freight rates, so that its decline in output is likely to be relatively small

- The competitive position of the small *Moscow/Tula* basin is very sensitive to the level of rail freight rates because its production costs are very high and the quality of its coal is poor These factors offset the benefits of being located close to the main purchasers of its coal unless freight rates are moderately high

Coal Industry Strategy

Cost curve for thermal coal production in the Kuzbass



The horizontal line shows the projected competitive market price for the low freight tariff scenario

1 If prices are allowed to adjust to competitive market levels in each coal basin, about two-thirds of total capacity should become profitable over the medium term The remaining one-third has very little chance of ever being profitable and therefore should close These proportions will vary widely from basin to basin In most basins, the lowest cost one-third of capacity will be clearly viable, while the profitability of the mines in the middle of the cost curve will depend on how successfully these mines compete with other basins for the long-distance part of their market As an indication of the likely outcome in the most important coal basin, the figure above shows the cost curve for the Kuzbass The horizontal line shows the projected market price for coal under the low freight tariff scenario

2 Within each basin, reductions in output and capacity *should* start at the mines with the highest operating costs Mines with high operating costs usually have larger numbers of workers per ton of output So employment will fall more rapidly than output in most basins However, productivity improvements in the "competitive core" of low-cost mines will also displace large numbers of workers from the industry The Bank's analysis suggests that direct employment in coal mining in the new market environment is likely to fall by at least 50% overall

3 This adjustment will be very unevenly spread across the various coal basins For the Donbass and the Moscow basin the fall might be no more than 20-30%, whereas under some scenarios the decline in direct employment might be as high as 70-75% for the Kuzbass and the Pechora basin ***The most difficult situation will be in the Kuzbass, where total employment could fall from about 300,000 to 70-80,000 workers at the end of the restructuring period*** About half the total reduction in employment in the Russian coal industry will occur in the Kuzbass These estimates of the potential scale of the adjustment in employment are not sensitive to the exact size of the coal market in the next 5-10 years, so that there is no reason to postpone the process of adjustment

4 The coal industry needs a bold strategy that will adapt the industry to the new market conditions and the inevitable phase-out of subsidies--and deliver visible results within 1-2 years During this first phase of restructuring, ***the Government and the coal industry should focus almost all of their attention on the two extremes of the cost curves***

- the *management teams* of the newly independent mining companies should start to re-build their companies around a core of unsubsidized, low-cost, profitable mines (ie, in the bottom part of the cost curves),

- the *Government*--eg, via the Inter-Ministerial Coal Commission--should directly administer a declining amount of subsidies--assisting the mining companies to reduce capacity and employment, including mine closures where necessary (ie, mines in the top part of the cost curves)

5 In general, the slower the restructuring program, the more it will cost the Federal budget Experience in Western Europe suggests that the Government should try to concentrate most of its budget support for coal restructuring into a period of five years or less

6 The restructuring process cannot be planned entirely in advance The Government needs a strategy for the overall process and a detailed program for the first 1-2 years The initial program should test a variety of mechanisms and provide experience for implementing a decentralized program which takes account of differing needs and circumstances

Employment Reduction

1 Since employment will decline in all coal basins, the initial focus of the adjustment program should be on reducing total employment without significant geographical differentiation Once a target of a 25-30% reduction has been achieved in each basin, the emphasis should shift to regional programs with most of the resources allocated to the Kuzbass and Pechora basins These programs should include measures to promote mobility out of the hardest-hit areas to areas with better mining or other economic prospects

2 The age structure of employment in the Russian coal industry makes it a little easier to design an employment reduction scheme If all employees in the 45-and-over age group were to leave the coal industry, total employment would already fall by 30-35% This would be a major step towards the forecast employment reduction target of about 50% While the number of new recruits to the coal industry is not high--probably less than 3% each year--we would also recommend that most recruitment cease immediately

3 More than 20% of the employees of the coal industry are over the age of 50--the most common retirement age for men in the coal industry--and are therefore receiving both a pension and a wage The Government should establish the principle that no-one who receives a pension from the coal industry can also be employed in the coal industry However, pensioners could seek employment outside the coal industry And, since coal industry pensioners believe their pensions are inadequate, the Government may also decide to give them small, once-only payments to compensate for the unexpected loss of an "entitlement"

4 ***Voluntary programs are the key to minimizing hardship in the employment reduction program*** An offer of special, once-only payments would induce many workers in the 45-50 age range, who account for approximately 10% of the coal industry's labor force, to opt for early retirement In the longer term, as the focus switches to regional programs, voluntary severance programs should be extended to cover all workers The terms and conditions of such programs will have to differ between regions and companies to reflect the differences in the employment adjustment that is required and differences in general economic prospects

5 ***The new mining companies must take full responsibility for their own wage bills without relying upon wage subsidies*** This implies that each company should negotiate their employment levels and wages directly with their employees rather than following a national Tariff Agreement The level of wages in each coal basin will be determined by what each mining company can afford to pay In some of the less profitable mining companies, the wage premium in the coal industry relative to wages in other industries will fall This decline will make it more attractive for miners in these regions to accept special payments to leave the coal industry This mechanism is crucial to the success of the employment reduction program

Social Safety Net

1 Employment reduction in the coal industry cannot start until there is an adequate and fully funded social safety net in place for miners, other coal industry workers, and their families This social safety net should include the following elements

- the existing system of social security benefits and unemployment benefits available throughout Russia,
- the existing (or at least an adequate) level of social services in mining communities--with special attention to likely financing problems in areas where mines are reducing employment or closing down,
- the existing system of coal industry pensions--which are typically higher than in other industries,
- a new and temporary system of special lump-sum payments--designed to persuade coal industry employees to leave the industry, voluntarily where possible (see facing page),
- a new and temporary system of special employment programs in the mining regions hardest hit by unemployment caused by restructuring

2 *Social Services* About 5% of the total subsidy paid to the coal industry in 1993 went to social services, such as clinics, kindergartens, schools, etc As soon as possible, the Ministry of Finance should start making these payments directly to oblast or local governments At the same time, the mining companies should transfer the corresponding social assets and staff to oblast or local governments This process has already started in some localities It is particularly important to ensure that the necessary federal-regional/local fiscal transfers take place without delay in Kemerovo, the Komi Republic and Rostov

3 *Special Employment Programs* For the Komi Republic (the Pechora coal basin) and the Kemerovo oblast (the Kuzbass), the projected employment reductions in the coal industry are very large in relation to total employment in these regions In principle, many of the workers leaving the coal industry could use their special payments to move to other regions In practice, miners in all countries are less mobile than other social groups And in Russia there are many additional obstacles to moving, such as lack of housing in the regions to which they wish to move In recognition of the acute social tensions that are likely to arise, the Government could consider setting up temporary special employment programs in the worst hit coal basins These might include environmental restoration of mining areas and rehabilitation of infrastructure However, it will be important to avoid large infrastructure investments in localities with poor economic prospects

4 ***From 1996 onwards, all subsidies budgeted for the coal industry should be directed to social services, special lump-sum payments, and special employment programs***

Housing

1 In 1993, about 50% of the total Social Subsidy for the coal industry--175 billion rubles--was spent on housing maintenance This is a key element in the wages in-kind paid to those working in the coal industry The entitlement to free housing maintenance is built into the coal industry Tariff Agreements At the same time, a significant proportion of the housing owned by the coal industry is occupied by households which contain neither coal workers nor those retired from the industry The provision of subsidized housing is a distraction for the management of coal companies It also limits the willingness of households to move and to accept special payments to leave the coal industry

2 Those living in housing owned by the coal industry should take full responsibility for the cost of housing maintenance Since this will involve the loss of an entitlement under the Tariff Agreements, it will be necessary for the new coal mining companies to take any such reduction in wages in-kind into account when negotiating local wage agreements with their employees

3 The best way to organize this transfer would be to give all such housing to its current occupants, either individually or through condominium associations A second best solution would be to transfer all housing assets from the new mining companies to local governments In either case, oblast or local governments may wish to provide transitional assistance, phased out over 3-4 years, so that maintenance costs/charges or rents rise gradually to cover true costs

Safety, Health & Environment

1 Worker health and safety in the coal industry have deteriorated in recent years The main causes are shortages of funds for maintenance and investment, as well as deteriorating motivation and discipline, particularly in underground operations The only way to reverse this trend is to create a healthy, profitable coal industry that generates enough revenue to resolve these problems Closing old, worked-out mines will reduce the accident rate In newer mines, re-investing profits in improved productivity will also improve worker health and safety

2 In addition to the "occupational" impacts of coal mining on miners' health and safety, there are significant "environmental" impacts on the local populations where coal is burned as a fuel In particular, mining communities burn large amounts of coal, often in open hearths or in small boilers This form of combustion typically releases particulates from low stacks where they become a major source of respiratory problems Also, SOx and NOx releases from coal combustion cause major problems for human health and the environment in general As coal consuming communities in Russia demand progressively better enforcement of ambient air quality standards, the coal market will pay higher prices for coals with lower ash and sulfur contents The future profitability of individual mining companies will depend to a large extent on how actively they adapt the quality of their output to these environmental concerns

3 ***Better mining practices are the key to better health, safety and environmental performance in the mining industry*** In operating mines, proper mine planning and good operational practices can dramatically improve mine safety and reduce environmental damage for relatively small expenditures In addition, such measures will help to reduce mine operating costs For mines that are already closed, the Government will have to take the lead in deciding priorities for dealing with disturbed lands, spoil heaps and water contamination--and for finding suitable financing mechanisms

Lessons from Western Europe

Over the last 30 years the output of the British coal industry has fallen from about 200 million tonnes per year to 81 million tonnes in 1993, while total employment in the industry fell from 490,000 to 30,000 in September 1993 Much of this contraction occurred in the period from 1981 to 1993 which saw the closure of 189 (out of 211 in 1981) underground mines and 255,000 workers (out of 285,000 in 1981) leave the industry During this period the industry received over US $32 billion in grants and other government assistance, nearly 75% of which was allocated to cover the operating cost of British Coal while less than 12% was used to cover the cost of severance and early retirement payments to workers leaving the industry -- equivalent to an average of one year's wages per worker laid off

During this adjustment the industry engaged in an expensive and ultimately vain effort to increase productivity and competitiveness by maintaining a high level of investment Capital expenditures amounted to more than US $15 billion over 1981-93 Most of this had to be written off as mines, even quite new ones, were closed as it became clear that few underground mines, even after heavy investment, could compete with imported coal from Australia, the USA and South Africa Indeed, the level of closures and write-offs would have been even higher if it had not been for special arrangements which ensured that the power generating companies maintained their purchases of coal from British Coal It is widely expected that total output of coal will fall to less than 40 million tonnes in 1998 when the coal market is fully liberalized

The West German coal industry has experienced a similar decline in coal production over the last 30 years, but employment has fallen less dramatically than in Britain -- from 400,000 to 90,000 -- though the number of mines has been reduced from 139 to 17 Both the decline in production and in employment have been slowed by measures which ensure a minimum size of market for German coal output, despite production costs of $150 per tonne which are three times as high as the cost of imported coal The key protection is provided by legislation which ensures that (a) electricity utilities purchase 45 million tonnes per year of domestic coal at prices which cover production costs, and (b) steel plants purchase all their coal from domestic mines with a government subsidy making up the difference between domestic costs and world market prices

The cost of these measures has been borne largely by German electricity consumers They pay a special levy -- averaging 7 5% in 1993 -- added to electricity tariffs to cover a part of the additional expenses involved in burning domestic coal rather than cheaper fuels There are also hidden costs of environmental controls required because the utilities were not permitted to switch to gas for power generation As a result, electricity prices for industrial consumers in Germany are among the highest in Western Europe and are 50% or more higher than those in neighboring countries such as Denmark, France and Netherlands Electricity-intensive industries have, as a result, tended to move out of Germany to relocate where electricity prices are more favorable

As a counter-example, the French experience shows that downsizing the coal industry can be managed at a lower cost by concentrating budget support on severance pay, job creation, and mine closures West European experience therefore suggests that attempts to slow the decline of the Russian coal industry either by providing government finance for heavy investment expenditures or by guaranteeing sales of coal to power companies at above market prices would be very costly to the budget and the economy as a whole, and in the end would not prevent a fall in the number of underground mines and in employment in the industry The additional costs of power production would increase the locational (and other) problems faced by heavy industrial plants in Siberia and the Urals, accelerating their decline, and raising overall levels of unemployment in these regions

Next Steps

Launch restructuring process as soon as possible

1 progressively reduce subsidies (see Targets facing page)--and make subsidy payments directly from the Ministry of Finance to local mining companies and local governments

2 re-target remaining subsidies to special payments, the social safety net, and mine closures (below)

3 offer small special payments to workers on pensions (50-and-above age group)--to leave the coal industry

4 offer larger special payments to workers in the 45-50 age group to leave the coal industry--then extend the offer to all workers on a regional or company by company basis

5 stop recruitment to the coal industry--and, where necessary, relocate miners with special skills from high-cost to low cost mines

6 transfer social services from mining companies to oblast or local governments--and provide adequate funding

7 create transitional special programs in areas where unemployment is expected to be high--particularly Komi Republic and Kemerovo oblast

8 in low-cost mines
mining companies should re-invest profits to improve productivity, coal quality and environmental performance

9 in high cost mines
reduce production capacity to the most efficient faces or, where necessary, cease production (see Targets next page)--with adequate funding for environmental restoration

Targets: 1994-96

Set initial targets for 1994-96 and test alternative ways to proceed

1 set employment reduction targets, eg
- by end-1995 all pensioners leave coal industry payroll
- by end-1996 50% of 45-50 age group leave coal industry payroll

2 set mine closure targets, eg
- by end-1995 close at least 10 unviable mines
- 1995-2000 close 15-25 unviable mines each year

3 set subsidy reduction targets, eg
- reduce total coal-related subsidies (as % of GDP) according to an agreed schedule, eg 1 3% in 1994, 1 0% in 1995, 0 6% in 1996, 0 3% in 1997, and zero in 1998
- after 1994 abolish subsidies for operating losses and investment
- in 1995 provide transitional subsidies for
  - wages/employment in mines in oblasts where mining employment accounts for more than 5% of total employment
  - social services and housing maintenance where their transfer has not been completed
- allocate all remaining subsidies in 1995 and all subsidies from 1996 onwards solely for
  - special payments to workers leaving the industry
  - temporary special programs in mining areas with high levels of unemployment

Targets: 1994-96

Comments

- the pace of adjustment recommended in setting the subsidy targets is a compromise between two targets improving the Government's fiscal position and reducing excess employment in the mining branch, in both cases as rapidly as possible

- the current level of subsidies could be substantially reduced--by 50% or more--while still protecting the industry's workers and their dependents, so that reallocating a declining level of subsidies should provide ample funding for measures to reduce the social costs of adjustment in the industry

- after an initial period (of no more than 2 years) during which a national program is implemented, the emphasis must shift to decentralized regional programs which are designed to meet appropriate regional targets and whose details reflect local needs and circumstances

- in some countries special payments have been designed to decline over time--so that coal industry employees have a strong incentive to leave the industry quickly rather than wait

- similarly, the Government should offer to finance mine closure costs for only a limited period--say 1-3 years--after which the mining companies would have to carry these closure costs out of their own cashflow

- in cases where mining companies agree to transfer mines to a government-managed closure program--before the deadline--operations would cease immediately and government funds would be used only for costs directly related to closure, ie, not to cover operating losses

- these adjustments will release resources from inefficient, uncompetitive tail of the industry and will permit a viable and vibrant group of mining companies to emerge--enabling Russian coal to compete both with other sources of energy and in foreign markets

Basic Actions

The Coal Commission noted that the following basic actions, recommended in the draft report, are consistent with the ongoing economic reforms in Russia

- *the government needs to pay special attention to the social safety net provided for coal industry employees who lose their jobs during restructuring,*
- *where necessary, the coal industry social safety net should include special employment programs,*
- *local governments, local coal companies and local coal labor unions should play a major role in the preparation and implementation of coal industry restructuring programs,*
- *the coal industry restructuring program should include not only restructuring of the local coal companies but also programs for social and economic development of coal producing regions,*
- *the coal industry restructuring program should be financed by local coal companies with co-financing from federal and local government budgets,*
- *coal subsidies from federal and local budgets should decrease each year according to a pre-determined but flexible schedule,*
- *the mechanism by which subsidies are channeled to the coal industry should be improved so that the remaining subsidies provide incentives to move towards the goals of the proposed coal industry restructuring program*

Russian Commentary (Summary)

1 *On September 23, 1994, the Inter-Agency Coal Commission (Inter-Agency Commission on Social and Economic Problems of Coal Producing Regions) of the Russian Federation met to consider the World Bank's draft report on Restructuring the Coal Industry in Russia The minutes of the meeting noted*

- *the areas where the basic actions recommended in the report are consistent with the ongoing economic reforms in Russia,*
- *five areas where additional work will be needed as next steps towards preparation of a Russian coal industry restructuring program*

2 *As part of the preparations for the meeting of the Coal Commission, approximately 25 agencies[1] submitted written comments on the World Bank report These agencies included the ministries and specialized government agencies represented on the Coal Commission, RosUgol and many of its subsidiary companies, the two coal labor unions, and local government agencies in the coal-producing regions of Kemerovo, Komi, Rostov and Tula*

3 *The rest of this Executive Summary*

- *lists the basic actions adopted by the Coal Commission (facing page),*
- *very briefly summarizes the Russian written comments in each of the five areas identified by the Coal Commission*
  - *future coal demand*
  - *mine closures and labor redeployment*
  - *coal subsidy phase-out*
  - *coal labor agreements*
  - *legal framework for restructuring*

1/ *Ministry of Economy, Ministry of Finance, Ministry of Social Protection, Ministry of Labor, Ministry of Fuels & Power, Federal Employment Service, State Property Committee, Bankruptcy Committee, Metallurgy Committee, the two coal labor unions, RosUgol, the national coal company, TsNIEUgol coal institute, and several government agencies and coal companies from each of Kuzbass, Komi Republic, Rostov oblast and Tula oblast*

Future Coal Demand

1 *Most of the Russian agencies commented on the fact that their own coal consumption forecasts are significantly higher than those of the Bank In general, Russian agencies forecast stabilization of coal consumption in the near term, followed by increasing coal consumption as GDP recovers*

- *In some cases the differences reflect different expectations about future GDP Russian agencies generally assume a shorter and shallower recession before the economic recovery starts*

- *Russian forecasters are also more pessimistic than the Bank about the scope for reducing energy intensity--and therefore coal consumption--in the Russian economy Russian forecasters assume a relatively slow rate of change of the composition of GDP and of the sectoral composition of consumption and investment Their focus is therefore mainly on the scope for improving technological efficiency in existing industries and the likely shortage of investment funds for financing new technologies*

2 *For the same reasons, Russian electricity consumption forecasts are also higher than those of the Bank Since electricity generation is coal's largest single market, this flows through into the coal consumption forecasts, leading to higher demands for steam coals from basins such as Kansk-Achinsk*

3 *Many commentators make the case that coal prices cannot be allowed to rise to unsubsidized levels because of the likely impact on manufacturing costs, inflation in general, inter-enterprise arrears and bankruptcies A related argument is that higher coal prices will only increase the likelihood that the Government will have to subsidize other sectors, ie, there may be no net reduction in the subsidy burden These arguments in favor of below-cost coal prices are used to support some of the higher Russian coal consumption forecasts*

4 *The role of foreign trade is also important for total coal demand Several commentators expect imports of power station coal from Ekibastuz in Kazakhstan to be phased out in favor of domestic coals from Kuzbass and Donbass There is also a widespread view that the Government has a responsibility to promote coal exports, either by regulating rail freight tariffs or by subsidizing transport of coal for export On the other hand, there is some concern that the phasing out of coal subsidies will drive up domestic coal prices to the point where foreign coal suppliers may be able to displace local coals, particularly in coastal areas such as the Far East*

5 *In some cases the Russian forecasts are targets for coal production rather than forecasts of coal consumption For example, the Ministry of Finance notes that the Government's objective is to stabilize coal production and then to increase it In these cases, there is an assumption--either explicit or implicit--that the Government will intervene in the energy market to protect coal from competition from oil or natural gas The two main justifications for such an intervention are to enhance national security (ie, to achieve a more diverse fuel supply within Russia) and to increase export revenue (ie, by switching oil and gas from the domestic market to export)*

6 *In addition to the comments on total coal demand, there are also comments on the likely competitive position of individual basins There is a widespread view that Pechora will retain its market for power station steam coals and that the Kuzbass will retain a large part of its long-distance coal sales*

Mine Closures & Labor Redeployment

1 *As a result of their commitment to higher coal consumption forecasts, most Russian agencies foresee fewer mines becoming unprofitable under unsubsidized market conditions than indicated in the Bank forecasts Perhaps more importantly, Russian agencies are of the view that an unprofitable mine can only be closed if the Government can pay for the physical costs of mine closure, the costs of creating guaranteed replacement jobs for all displaced workers and, where necessary, the costs of re-locating communities and building new housing and social facilities For this reason, these commentators see the rate of mine closures as being determined by the cost of closures--which is largely unknown at present[2]--and the availability of government subsidies for this purpose*

2 *The Ministry of Economy also makes a case for maintaining a reserve production capacity of 25% above current production requirements As a related point, the Ministry of Fuels & Power notes that premature mine closures will involve a difficult choice between very costly mothballing of mines currently under construction or a permanent loss of valuable coal reserves*

3 *RosUgol's comments emphasize the fact that restructuring is already underway, albeit at a pace that is considered appropriate for the current conditions in Russia Coal industry employment was reduced by 72,300 over the last 18 months (1993 and first half 1994), the proportion of miners in the total coal industry workforce has risen from 41% to 46 5% over the same period, and local mining companies have started to divest their social facilities to local governments RosUgol has also diversified its investment activities to create 2,500 new, non-mining jobs in 1993 and has plans to create a further 5,000 in 1994*

2/ *the Ministry of Fuels & Power suggests a cost of 100-120 billion rubles in mid-1994 prices (50-60 million USD) per mine closure under Kuzbass conditions*

4 *In the short term, the Federal Employment Service (FES) is gearing up to cope with a government directive to close 34 mines in the second half of 1994, with an estimated loss of 28,000 jobs The FES believes that local government services in Rostov (Donbass), Tula and Chelyabinsk will be able to provide adequate services with their own resources However, Komi (Pechora basin) and Kemerovo (Kuzbass) will need additional resources from the Federal Government*

5 *For the longer term, RosUgol suggests that it may be possible to close 100 unprofitable mines by the year 2000, with a corresponding loss of 254,000 jobs These targets can be compared with the Bank forecast that somewhere between 135 and 155 mines will become unprofitable after subsidies have been phased out, and that employment in these mines is in the range 425-476,000*

6 *However, mine closures will not be the only cause of job losses For example, comments from Kuzbassrazrezugol, a company which operates low-cost surface mines in the Kuzbass, confirm that they plan to continue expanding their output while simultaneously reducing their labor force The company therefore will be well placed to compete profitably with other coal producers in the Kuzbass*

7 *All Russian commentators emphasize the need for redundancy programs to be well planned and adequately funded, particularly in the areas of job creation and re-location Most commentators, including the coal labor unions, insist that the Government provide guaranteed alternative employment for redundant miners A few, mainly the Ministry of Labor, accept the principle of voluntary departures with severance payments*

8 *Comments from the Tula region present a slightly different perspective, reflecting the fact that, unlike other basins, Tula already has the experience of closing a number of mines The authorities in Tula underline the need for truly local "transition programs" that are well coordinated with other local institutions, especially housing and community services The Tula authorities volunteered to participate in any pilot program of mine closures*

Coal Subsidy Phase-Out

1 *Virtually all Russian agencies agree that the transition to a market-based coal industry needs to take place over a longer period than the 3-5 years suggested by the Bank Many respondents refer to the fact that the British, French and German coal industries have taken several decades to restructure at a cost of tens of billions of dollars--and under economic conditions that were much less difficult than the current conditions in Russia*

- *The Ministry of Social Protection notes that the World Bank scenarios imply an 8-9% annual decline in coal industry employment in Russia, compared with only 2-3% annual decline in France and Germany on average during the restructuring period*

- *RosUgol notes that subsidies per ton in 1993 were $70 in Germany and $98 in France, compared with $5 in Russia in 1993, rising to $9 in 1994*

2 *The Russian commentaries indicate a broad consensus, which includes the Ministry of Finance, that the first step should be to change the structure of the subsidies rather than to reduce the level Most agencies agree that subsidies should be used primarily for costs associated with labor redeployment and mine closures However, some agencies continue to advocate investment in mine modernization*

3 *While most agencies believe it would be impossible to phase out coal subsidies completely in three or even five years, RosUgol suggests that an annual subsidy reduction of 15% in real terms might be a feasible target[3] However, they caution that even this rate of subsidy reduction will lead to very large increases in coal prices These price increases will cause great hardship, particularly in regions where coal from distant basins is the only available source of fuel RosUgol recommends a separate coal transport subsidy for these regions The Ministry of Finance notes that decisions about increasing, maintaining or reducing coal subsidies will set a precedent for other restructuring industries in Russia These decisions will therefore have a significant, long term impact on the government budget*

3/ *RosUgol prefers the annual subsidy reduction target to be expressed in "real" terms rather than as a percentage of GDP, since GDP itself may continue to decline over the next few years*

Coal Labor Agreements

1 *The coal labor unions fear that any changes to the present system of labor agreements (so-called Tariff Agreements) in the coal industry would allow the local companies to shift all the costs of restructuring onto the employees Other commentators also express concerns about the implications of changing the Tariff Agreements*

2 *The Ministry of Labor supports the general principle that local coal companies should be "self-sufficient" in terms of labor costs, ie, that they should decide what total wagebill they can afford to pay out of an unsubsidized cashflow However, their comments do not draw any conclusions about how to adapt the Tariff Agreements to reflect this principle*

Legal Framework for Restructuring

1 *The Russian comments indicate a general consensus that decentralization to the local level will be a key part of the restructuring process However, there are differing views about the role of Moscow agencies in the supervision of the process*

2 *RosUgol supports the view that "regional" coal companies should be strong and independent with full control over all functions from production through to marketing As soon as market conditions permit, these companies should secure as large a part of their sales as possible in the form of long term contracts with their largest customers The State Property Committee (GKI) also supports decentralization, provided it does not lead to a single monopoly coal company in each coal basin In GKI's view, the companies would therefore be more "local" (within a basin) than "regional" (covering a whole basin) RosUgol and GKI both recommend legal changes to support their conceptions of decentralization*

3 *Several agencies, including RosUgol, note that coal restructuring in other countries has generally been implemented under the aegis of a unified national coal company--such as British Coal, Ruhr Kohle or Charbonnages de France The US experience is the most obvious exception RosUgol believes that they (RosUgol) are well placed to play a similar role in the restructuring of the Russian coal industry*

4 *Finally, the Ministry of Social Protection notes that implementation of a coal restructuring program involves a large number of mainly social--not sectoral--agencies from several different levels of government If the program is to succeed, the Government will have to legislate key parts of the program so that these become binding on all levels of government*

Restructuring the Coal Industry

I. The New Coal Market in Russia

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Demand for Coal
Russia - total

1 See Figure 1 *Coal Demand Projections Reform Scenario* (facing page)

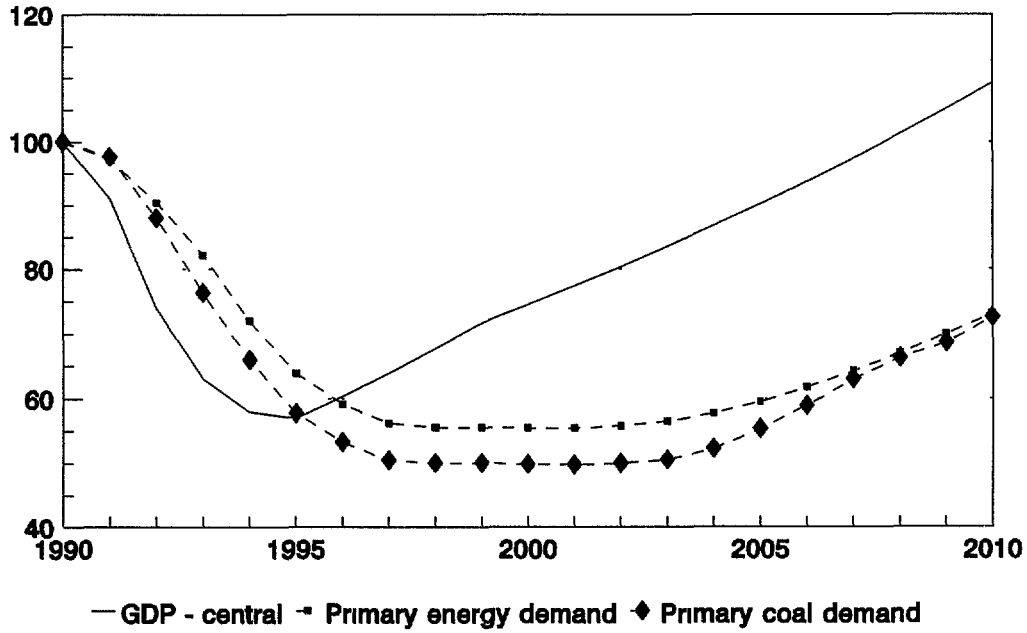
2 Decline in GDP
Russia has experienced a very sharp decline in GDP since 1990 The World Bank's central projection is that GDP will bottom out by the end of 1995 at a little less than 60% of its 1990 level After 1995, growth in per capita income could average 5 5% per year during the initial recovery phase until 2000, with a slightly slower growth rate thereafter The decline in GDP has been accompanied by a shift from investment towards consumption and this trend is expected to continue The shift away from investment will further depress industrial demand for energy The combined impact of these trends is that GDP should recover to 75% of 1990 levels by the year 2000, but with consumption and investment at 80-85% and 50-60% of 1990 levels, respectively Government projections typically are for a less deep recession with GDP recovering to about 90% of 1990 levels by the year 2000

3 Energy prices
For the period out to 2000, energy demand will be driven mainly by the level and structure of GDP Adjustment of domestic energy prices, which is assumed to occur by about 1996, will also have some impact on energy demand and on the market shares of different fuels The impact of energy price rises on overall energy demand will be very limited until broader economic reforms make industrial enterprises sensitive to prices, costs and profits If these reforms are put into effect quickly (1994-95), energy consumption could fall as low as 56% of 1990 levels by the year 2000 If reforms are delayed until 1995-2000, energy consumption in 2000 could be around 66% of 1990 levels

Demand for Coal
Russia - total

Figure 2

Coal Demand Projections : Reform Scenario
(Indices with 1990 = 100)



World Bank estimates

4 Coal's market share

Taking account of experiences in other countries and the restructuring of the Russian economy, it is expected that coal will continue to lose market share to gas and electricity Coal's share of electricity generation will also decline during the period when electricity consumption is below 1990 levels For these reasons, coal consumption will fall more rapidly than total energy consumption until 1995 and grow more slowly than total energy during the economic recovery The World Bank's projection is that coal demand will be about 60% of 1990 levels in 1995 and in the range 50-60%, ie, about 210-250 million tonnes per year by the year 2000--depending on how rapidly the Government implements the reforms needed to make enterprises sensitive to prices

Demand for Coal
Russia - total

1 See Table 1 *Coal Consumption, 1990-1997* (facing page)

2 Consumption of steam coal by its largest customer--the electric power and heat supply industry has declined and will not recover over the medium term

3 Consumption of coking coal by its largest customer--the steel industry-- has declined and will continue to decline over the medium term

4 Exports and imports play a small role in the overall coal market in Russia but will remain locally important in some areas

Demand for Coal
Russia - total

Table 1 Coal Consumption, 1990-1997
(million tce)

	1990	1992	1993 est	1997
Steam Coal				
consumption	203	187	174	117
electric power	111	96	88	58
other	92	91	86	59
exports	16	14	12	6
imports	22	29	23	10
sales	199	172	163	112
Coking Coal				
consumption	46	45	40	29
exports	19	10	11	12
imports	7	6	4	4
sales	58	49	47	37
All Coal				
consumption	250	232	214	146
exports	35	24	23	18
imports	29	35	27	14
sales	256	221	210	150
memo				
total sales in millions of tonnes	369	320	304	217

Source RosUgol and World Bank estimates

Demand for Coal
Region by Region

1 See Table 2 *Demand for Coal by Region, 1990-1997* (facing page)

2 The target year (1997) is a "typical" year in the period 1995-2000, during which coal demand will remain relatively "flat" The units are millions of tonnes of coal-equivalent (tce)

3 The regional coal demand scenarios in Table 1 start from 1990 data on consumption of steam coal and coking coal in each of the eleven economic regions

- World Bank scenarios for 1997 electricity and heat generation--the largest single component of steam coal demand--were used to estimate the regional pattern of steam coal demand in 1997, after taking into account
  - likely output of lower-cost, existing hydro and nuclear plants in these regions
  - likely shares of coal, natural gas and fuel oil (mazut) in the remaining electricity and heat generation loads

- World Bank scenarios for 1997 output of iron and steel were used to estimate the regional pattern of coking coal demand

- in the regions where coal competes with natural gas--the Urals and European Russia--the scenarios assume that coal consumers will be more sensitive to coal prices (a price elasticity of 10%) than in other regions

Demand for Coal
Region by Region

Table 2 Demand for Coal by Region 1990-1997
(million tce)

	1990	of which coking	1997	of which coking
Northwest	3 7		2 2	
North	16 8	7 3	10.0	4 6
Center	22 7	8 3	13.5	5 2
Center-Black Earth	5 4		3 4	
Volga Vyatka	5 5		3 5	
Volga	5 5		3 4	
North Caucasus	12.1		7 5	
Urals	51.6	21 5	30.2	13 6
West Siberia	56 5	8 6	32.5	5 4
East Siberia	44 0		24.3	
Far East/North East	26 6		15.3	5 1
DOMESTIC DEMAND	250.4	45 7	145.5	28 8
Exports	35 0	19 0	18 0	12 0
Imports	29 0	7 0	14.0	4 0
TOTAL DEMAND	256 4	45 7	149 5	28 8

Source RosUgol (1990) and World Bank estimates (1997)

Competition between Coal Basins
Coal Transport Costs

1 The economics of the coal industry within Russia have completely changed as a result of increases in rail freight rates for coal during 1993 According to World Bank estimates, rail freight rates for coal in Russia in late 1993 were already high enough to cover the economic costs of moving coal Nonetheless, there is a real risk that coal freight rates will continue to move upwards if the Government fails to introduce a suitable regulatory framework for the railways One of the essential features of this regulatory framework would be to eliminate the present cross-subsidization of passenger traffic by freight traffic

2 The World Bank used two scenarios for coal rail freight rates to simulate what might happen in a fully de-controlled and competitive coal market in a target year such as 1997

- the "low" tariff is below the current tariff (after adjusting for inflation) --so tariffs will only fall to this level if tariff increases fall behind the general rate of inflation

- the "high" tariff is higher (after adjusting for inflation) than the economic cost of coal rail freight in Russia (World Bank estimates)-- however, coal rail freight tariffs may reach these levels if the railways remain unregulated

3 The *"low"* and *"high"* coal rail freight scenario in rubles per tonne-kilometer (Rb/t-km) are, respectively
- 3 0 and 5 0 Rb/t-km for greater than 800 km
- 4 5 and 7 5 Rb/t-km for 400-800 km
- 6 0 and 10 0 Rb/t-km for less than 400 km

4 These costs are in Jan -Sept 1993 rubles
- this allows ruble costs to be converted to US dollars at approximately 1000 Rb/US$
- so these tariff scenarios are equivalent to about *0 3 to 0 5 US cents per tonne-kilometer for long hauls* (further than 800 km)

Competition between Coal Basins
Coal Transport Costs

Table 3 Delivered Coal Prices and Rail Freight, 1997[1]

Sample Transactions Market/Coal Basin	(Rb/tce, January-September 1993 prices)		Freight/ Delivered Cost (%)
Center Steam Coal	Minehead	Delivered	
From Moscow/Tula	16,396	19,925	18%
From Donbass	12,003	19,925	40%
From Kuzbass	6,800	19,925	66%
Center Coking Coal			
From Pechora	12,205	20,353	40%
From Kuzbass	8,000	20,353	61%

Source World Bank estimates
[1] based on "Low" rail freight rate scenario

5 See Table 3 *Delivered Prices and Rail Freight, 1997* (above)

6 Even if rail freight rates for coal remain at the "low" end of the scenario range, the share of rail freight costs in the delivered price of coal will vary greatly when the Russian coal market becomes competitive For example, for coals delivered to the Center (Moscow) region

- from 18% to 66% for steam coals
- from 40% to 61% for coking coals

Competition between Coal Basins
Coal Production Costs

1 We then use Cost Curves to summarize the costs of production in each basin--see Figures 2-10 (in Basin Profiles pages 46-63, below)

2 Production costs in these curves are
- per tonne coal-equivalent (tce)
- 1992 costs converted to Jan -Sept 1993 rubles
- total *variable operating costs* (see below for definitions)
- adjusted to reflect the fact that a tce of high quality coal is worth more to the consumer than a tce of low quality coal
  - anthracite (high efficiency, clean, long flame) premium of 10%
  - low *sulfur* coals (less than 1%) premium of 10%
  - high sulfur coals (greater than 2%) penalty of 10%
  - low *ash* coals (less than 15%) premium of 10%
  - high ash coals (greater than 30%) penalty of 10%

3 These costs *do not include*
- any capital costs or financial charges
- social and similar costs
- costs involving unpaid debts to suppliers or other third parties
- costs involving barter with other enterprises

4 These costs *do include*
- all wage payments [arrears in wage payments were not large in 1992, also the Tariff Agreements did not play a major role in wage setting until 1993]

5 It is *unclear* whether
- costs are recorded at the minemouth or when the coal leaves the coal preparation plant
- costs are recorded on a cash basis or an accrual basis
- all costs are consistently recorded without omissions

6 The best interpretation of these costs is that they include most variable costs--and therefore provide a first indication of the *short-run costs* that apply in a period of declining demand and limited investment

Competition between Coal Basins
Market Adjustment Scenario

The analysis for the Market Adjustment Scenario proceeds in the following steps

1 we estimate that demand for coal in the target year 1997 will be about a third less than in 1992--this target year could be almost any year in the period 1995-2000, since demand is projected to be fairly "flat" over the whole period

2 demand for coal in 1997 will be distributed across the economic regions of Russia approximately as in Table 2 (page 37)

3 individual coal basins will have to compete with each other to maintain or increase their share of a smaller market--the basin that can deliver coal of a particular quality at the lowest *delivered* price will win the sales contract

4 for each combination of coal basin and regional market, we estimate *future delivered prices* (ie, prices that would ensure full cost recovery for the companies that produce and deliver the coal) for steam and coking coal, based on

- 1992 coal production cost curves (translated into 1993 rubles) for each of the nine major basins

- a range of rail freight costs "low" and "high"

5 we then simulate the coal market to estimate the likely range of *coal sales for each basin* in target year 1997

6 we use the 1992 cost and employment curves to estimate a "low" and a "high" case for

- the total *employment* in each basin in 1997--and, correspondingly, the number of workers who could become unemployed over the transition period

- the *number of mines* that could stay in operation in each basin in 1997--and, correspondingly, the number of mines that may have to close over the transition period

Scenario Results, 1997
Coal Output by Basin

See Table 4 *Coal Output by Basin 1992-1997* (facing page) The scenario results below show 1997 outputs as a percentage of 1992 base year output (showing results of 'low' then high rail freight tariff scenario)

Pechora 50-62%

- will become the dominant supplier of coking coal to the Center region
  will stop all production of steam coal, regardless of rail freight tariffs

Moscow (Tula) 57-95%

  would be protected by high rail freight tariffs (for sales of low grade steam coal in the Center region) from competition from Donbass and Kuzbass
- is very sensitive to rail freight tariffs and would continue to contract if rail freight tariffs remain at the lower end of the range

Donbass/South 86-93%

  is largely protected by recent rail freight tariff increases and will contract less than most other basins if rail freight tariffs stay inside the range used for the scenarios
- will remain an important supplier of steam coals to regions west of the Urals but will continue to reduce output of coking coal

Urals 49-70%

- will cease production of coking coal and will continue to reduce output of steam coal, regardless of rail freight tariffs
- will also lose some of the local (Urals) market to Kuzbass and Donbass if rail freight tariffs remain at the lower end of the range

Kuzbass 55-49%

- will be the dominant supplier of coking coal only in the Urals and so will have to cut total coking coal output to less than 50% of 1992 levels
- will also lose some of its steam coal sales west of the Urals
- will face the largest reduction of output (about 45 million tce) of any basin
- will not be as sensitive to further changes in rail freight tariffs as other, smaller basins

Kansk-Achinsk 87-69%

- will keep its local minemouth markets at any rail freight tariff
  could remain competitive in long-distance sales--both westwards and eastwards--at the lower end of the rail freight tariffs

East Siberia 87%

  will dramatically increase its share of the local East Siberian market at the expense of coal shipments from other basins into East Siberia

Far East 53-77%

  will supply all demand in the Far East region if rail freight tariffs reach the high end of the range
  will lose some of the local market to Kansk-Achinsk coals if rail freight tariffs remain near the lower end of the range

North East 87-91%

- will slightly reduce its output of steam coals to match lower demand for steam coal in the region

Table 4 Coal Output by Basin
(million tce)

BASIN	1992 Base		1997 Low Freight Tariff Scenario		1997 High Freight Tariff Scenario	
	All Coal	of which coking	All Coal	of which coking	All Coal	of which, coking
Pechora/North	17 8	12 5	8 8	8 8	11 1	11 1
% 1992 Base	*100%*		*49%*		*62%*	
Moscow/(Tula)	3 1		1 8		3 0	
% 1992 Base	*100%*		*58%*		*97%*	
Donbass/South	17 5	1 4	15 0	0 4	16 3	0 7
% 1992 Base	*100%*		*86%*		*93%*	
Urals	9 3	0 7	4 5		6 5	
% 1992 Base	*100%*		*48%*		*70%*	
Kuzbass	96 2	40 3	52 8	19 7	47.4	17 7
% 1992 Base	*100%*		*55%*		*49%*	
Kansk Achinsk	28 7		25 0		19 8	
% 1992 Base	*100%*		*87%*		*69%*	
East Siberia	18 5		16 1		16 1	
% 1992 Base	*100%*		*87%*		*87%*	
Far East	10 7	0 2	5 7		8 2	
% 1992 Base	*100%*		*53%*		*77%*	
North East	13 3	5 1	11 6	5 1	12 1	5 1
% 1992 Base	*100%*		*87%*		*91%*	
TOTAL	*215 1*	*60 2*	*141 3*	*34 0*	*140 5*	*34 6*
% 1992 Base	*100%*		*65%*		*65%*	

Source RosUgol (1992) and World Bank estimates (1997)

Main assumptions

the new joint stock Mining Companies will set delivered prices that ensure full recovery of variable costs mine by mine and full recovery of total costs for the companies that transport and deliver the coal

coal consuming regions will purchase the coals that meet their quality specifications at the lowest delivered cost

coal rail freight tariffs will lie somewhere in the range from "low to high

the difference between total output in Table 4 and total demand in Table 2 reflects the exclusion of all trade except for exports of 5 1 mtce of coking coal from the North East and imports of 10 mtce of steam coal to the Urals (from Ekibastuz)

differences between total output for the two freight tariff scenarios reflect the impact of freight tariffs on delivered prices and thus the demand for coal in 1997

Scenario Results, 1997
Employment

See Table 5 *Number of Mines and Employment, 1992-1997* (facing page) The scenario results below show 1997 employment as a percentage of 1992 base year employment (showing results of "low" then "high" rail freight tariff scenario)

Pechora 30-45%
- would reduce the number of mines from 18 mines to 5-7 mines, depending on freight tariffs
- would reduce employment from 70,400 to 21-32,000
- would be responsible for 9-10% of total employment reduction in the coal industry

Moscow (Tula) 34-80%
- would reduce the number of mines from 22 mines to 9-19 mines, depending on freight tariffs
- would reduce employment from 41,000 to 14-33,000
- would be responsible for 2-6% of total employment reduction in the coal industry

Donbass/South 71-82%
- would reduce the number of mines from 42 mines to 28-33 mines, depending on freight tariffs
- would reduce employment from 135,400 to 97-111,000
- would be responsible for 6-8% of total employment reduction in the coal industry

Urals 20-34%
- would reduce the number of mines from 33 mines to 7-13 mines, depending on freight tariffs
- would reduce employment from 79,400 to 16-27,000
- would be responsible for 12-13% of total employment reduction in the coal industry

Kuzbass 28-24%
- would reduce the number of mines from 91 mines to 33-40 mines, depending on freight tariffs
- would reduce employment from 296,300 to 72-83,000
- would be responsible for 45-53% of total employment reduction in the coal industry

Kansk-Achinsk 50-30%
- would reduce the number of mines from 9 mines to 2-4 mines, depending on freight tariffs
- would reduce employment from 25,500 to 8-13,000
- would be responsible for 3-4% of total employment reduction in the coal industry

East Siberia 59-46%
- would reduce the number of mines from 12 mines to 7-8 mines, depending on freight tariffs
- would reduce employment from 24,400 to 11-14,000
- would be responsible for 2-3% of total employment reduction in the coal industry

Far East 26-48%
- would reduce the number of mines from 36 mines to 12-18 mines, depending on freight tariffs
- would reduce employment from 63,100 to 17-31,000
- would be responsible for 8-10% of total employment reduction in the coal industry

North East 46-52%
- would reduce the number of mines from 10 mines to 5-6 mines, depending on freight tariffs
- would reduce employment from 27,100 to 13-14,000
- would be responsible for about 3% of total employment reduction in the coal industry

Scenario Results, 1997
Employment

Table 5 Number of Mines and Employment Levels by Basin
Employment in '000s

BASIN	1992 Base		1997 Low Freight Tariff Scenario		1997 High Freight Tariff Scenario	
	Number of Mines	Direct Employment	Number of Mines	Direct Employment	Number of Mines	Direct Employment
Pechora/North	18	70	5	21	7	32
Moscow/(Tula)	22	41	9	14	19	33
Donbass/South	42	135	28	97	33	111
Urals	33	79	7	16	13	27
Kuzbass	91	296	40	83	33	72
Kansk-Achinsk	9	26	4	13	2	8
East Siberia	12	24	8	14	7	11
Far East	36	63	12	17	18	31
North East	10	27	5	13	6	14
TOTAL	*273*	*763*	*118*	*287*	*138*	*338*

Note Mines with low employment per tonne of output (ie, mines with high labor productivity) often surface mines tend to be further away from their consumers than higher cost mines As a result, total employment is much lower under the Low rail freight cost scenario than under the High rail freight cost scenario

Direct Employment

- corresponds approximately with Personnel of Industrial Enterprises in the coal industry
- *includes* Non-Industrial Personnel (of industrial enterprises), such as kindergarten, housing, agricultural and "other" personnel
- *excludes* Personnel of Non-Industrial Enterprises, such as construction and design enterprises and trade/food services

Coal Basin Profiles
Pechora/North

1 Coal resources (physically recoverable)
- 8 8 billion tonnes hard coal (thermal)
- 3 6 billion tonnes coking coal

2

Typical coal quality	calorific content (kcal/kg)	ash content (percent)	sulfur content (percent)	production in 1992 (m tonnes)
- hard coal	4000-5500	25-30	1 5-3 0	9 0
- coking coal	5700-6000	16-18	0 5-0 7	15 5

3

Key transport distances from Pechora	regions supplied	distance (km)
	North	2,000
	Center	2,200
	Northwest	2,400

4

Underground versus surface, 1992	production (million tonnes)	prod'n workers (thousand)	number of mines
- underground	24 4	35 2	18
- surface	0 0	0 0	0
- total	24 4	35 2	18

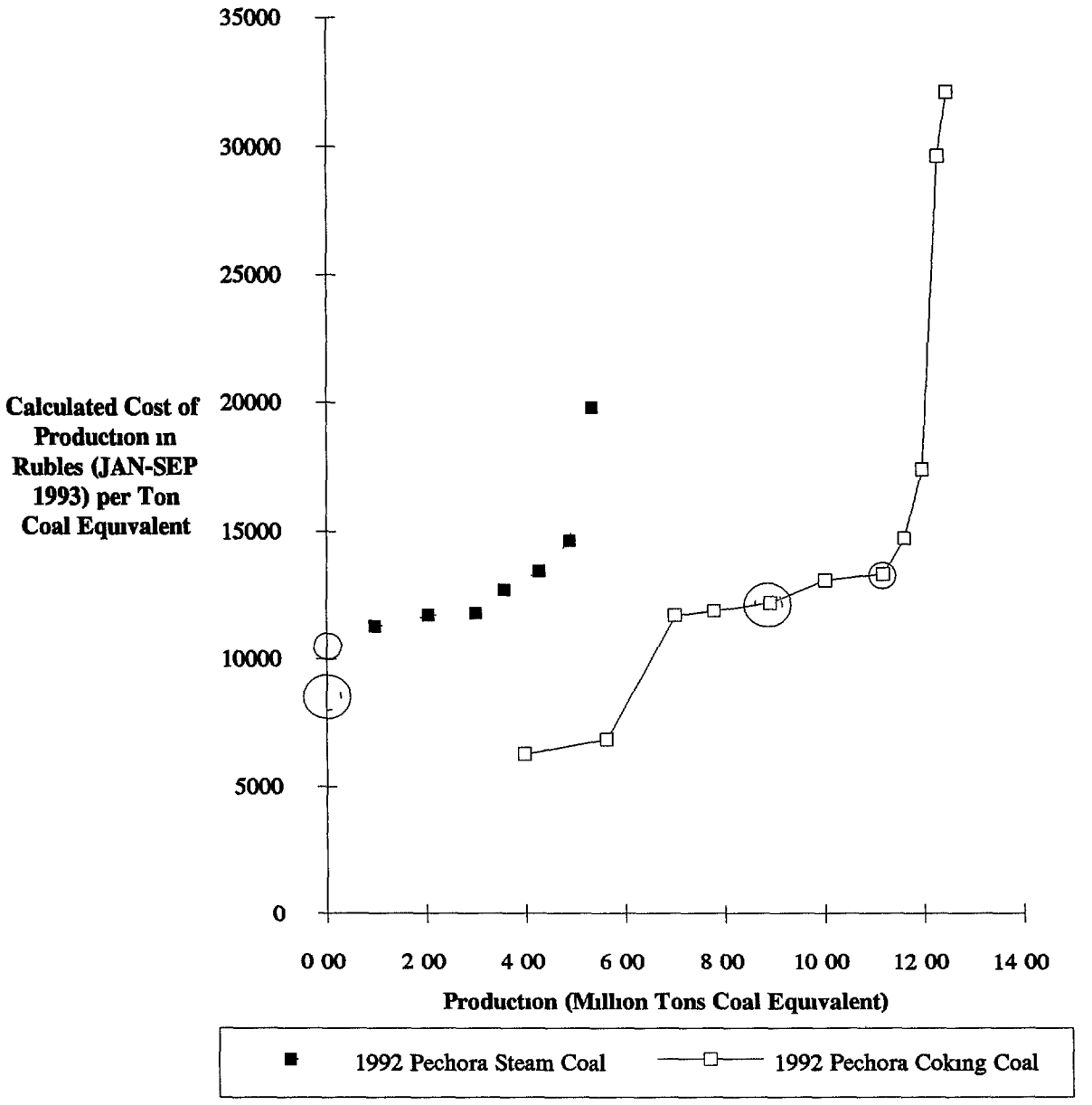
5

Forecast changes 1992 - 1997	production (million tce)	employment (thousand)	number of mines
- all coal			
1992	17 8	70 4	18
1997	8 8 - 11 1	21 4 - 32 0	5 - 7
- of which, coking			
1992	12 5	n a	n a
1997	8 8 - 11 1	n a	n a

- see Figure 2 (facing page) circles on the steam coal and coking coal Cost Curves indicate the maximum production cost at which mines can stay in business under the Low and High rail tariff scenarios

Figure 2

1992 Pechora Coal Supply Curves



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= 1997 High Rail Tariff Scenario

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Coal Basin Profiles
Moscow/Tula

1 Coal resources (physically recoverable)
- 4 4 billion tonnes brown coal

2

Typical coal quality	calorific content (kcal/kg)	ash content (percent)	sulfur content (percent)	production in 1992 (m tonnes)
- brown coal	2300-2700	30-40	3 0-4 5	9 2

3

Key transport distances from Tula	regions supplied	distance (km)
	Center	200

4

Underground versus surface, 1992	production (million tonnes)	prod'n workers (thousand)	number of mines
- underground	7 2	21 1	18
- surface	2 0	1 4	4
- total	9 2	22 5	22

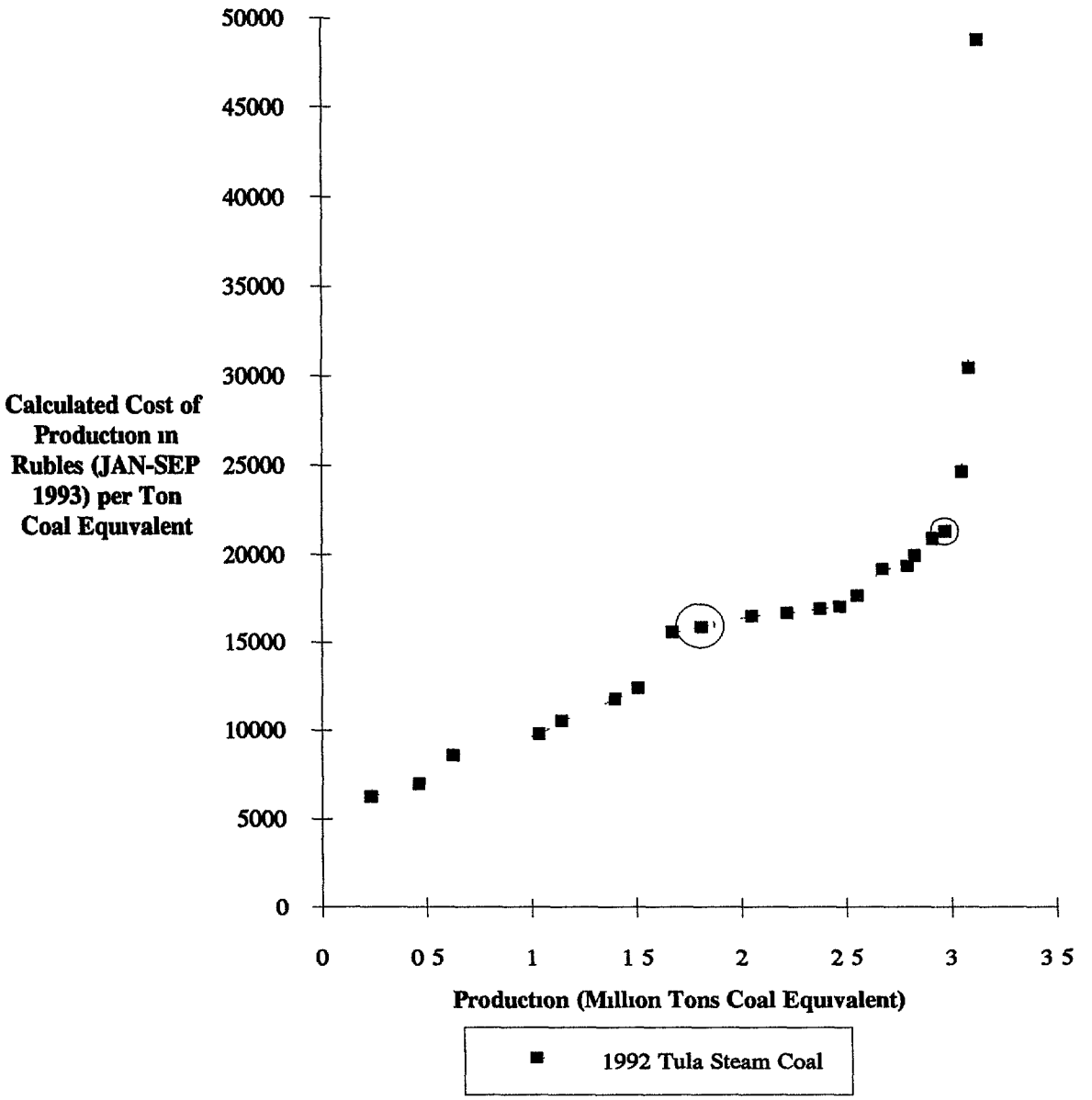
5

Forecast changes 1992 - 1997	production (million tce)	employment (thousand)	number of mines
- all coal			
1992	3 1	41 0	22
1997	1 8 - 3 0	14 0 - 33 0	9 - 19
- of which, coking			
1992	0 0	n a	n a
1997	0 0	n a	n a

- see Figure 3 (facing page) circles on the steam coal Cost Curve indicate the maximum production cost at which mines can stay in business under the Low and High rail tariff scenarios

Figure 3

1992 Moscow Basin Coal Supply Curves



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= 1997 High Rail Tariff Scenario

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Coal Basin Profiles
Donbass/South

1 Coal resources (physically recoverable)
- 9 3 billion tonnes hard coal (thermal)
- 0 3 billion tonnes coking coal
- 7 0 billion tonnes anthracite

2

Typical coal quality	calorific content (kcal/kg)	ash content (percent)	sulfur content (percent)	production in 1992 (m tonnes)
- anthracite	5500-6000	20-30	2 0-3 5	20 5
- coking coal	n a	n a	n a	1 8

3

Key transport distances from Donbass	regions supplied	distance (km)
	North Caucasus	300
	Volga	400
	Center	1,200

4

Underground versus surface, 1992	production (million tonnes)	prod'n workers (thousand)	number of mines
- underground	22 3	76 1	42
- surface	0 0	0 0	0
- total	22 3	76 1	42

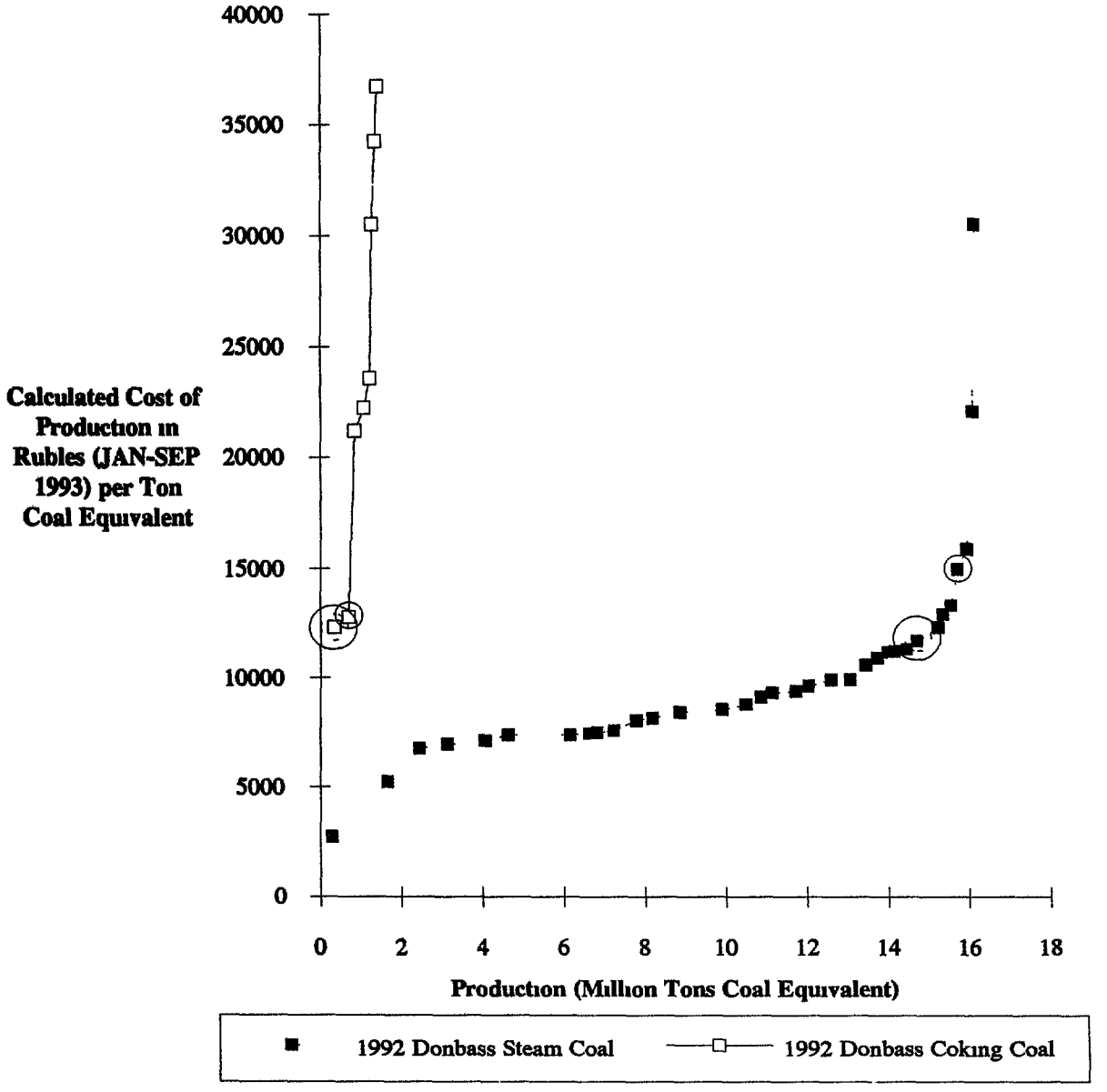
5

Forecast changes 1992 - 1997	production (million tce)	employment (thousand)	number of mines
- all coal			
1992	17 5	135 4	42
1997	15 0 - 16 3	96 7 - 110 8	28 - 33
- of which, coking			
1992	1 4	n a	n a
1997	0 4 - 0 7	n a	n a

- see Figure 4 (facing page) circles on the steam coal and coking coal Cost Curves indicate the maximum production cost at which mines can stay in business under the Low and High rail tariff scenarios

Figure 4

1992 Donbass Coal Supply Curves



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Coal Basin Profiles
Urals

1 Coal resources (physically recoverable)
- 0 5 billion tonnes hard coal (thermal)
- 0 3 billion tonnes coking coal
- 1 7 billion tonnes brown coal

2 Typical coal quality

	calorific content (kcal/kg)	ash content (percent)	sulfur content (percent)	production in 1992 (m tonnes)
- hard coal	4000-5000	25-35	3 5-5 5	2 1
- brown coal	2700-3000	35-40	0 5-1 0	19 4
- coking coal	n a	n a	n a	1 0

3 Key transport distances

regions supplied	distance (km)
Urals	200

4 Underground versus surface, 1992

	production (million tonnes)	prod'n workers (thousand)	number of mines
- underground	9 1	32 4	25
- surface	13 4	8 5	8
- total	22 5	40 9	33

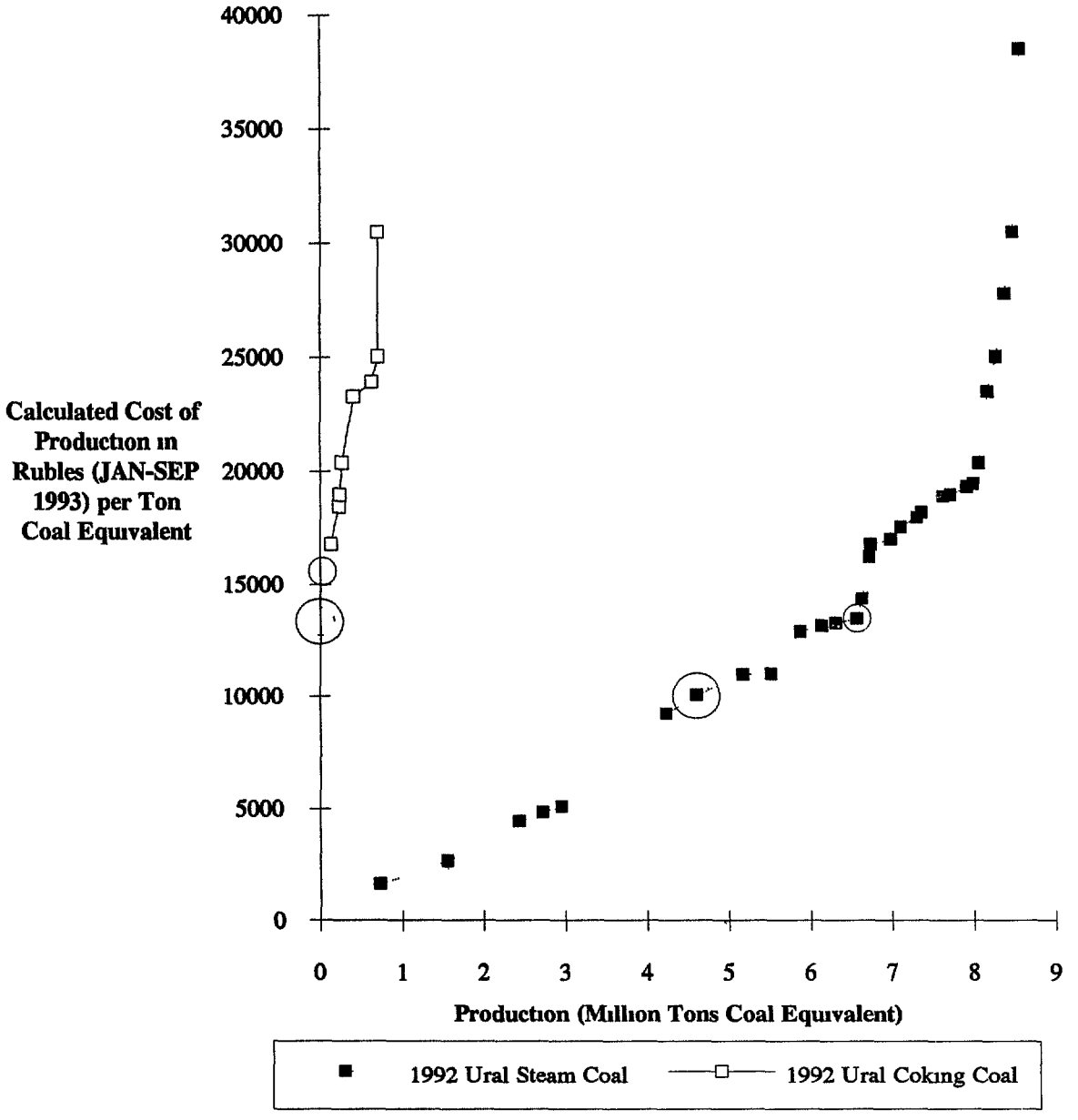
5 Forecast changes 1992 - 1997

	production (million tce)	employment (thousand)	number of mines
- all coal			
1992	9 3	79 4	33
1997	4 5 - 6 5	16 0 - 26 9	7 - 13
- of which, coking			
1992	0 7	n a	n a
1997	0 0	n a	n a

- see Figure 5 (facing page) circles on the steam coal and coking coal Cost Curves indicate the maximum production cost at which mines can stay in business under the Low and High rail tariff scenarios

Figure 5

1992 Ural Basin Coal Supply Curves



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Coal Basin Profiles
Kuzbass

1 Coal resources (physically recoverable)
- 76 8 billion tonnes hard coal (thermal)
- 38 2 billion tonnes coking coal
- 96 5 billion tonnes brown coal

2

Typical coal quality	calorific content (kcal/kg)	ash content (percent)	sulfur content (percent)	production in 1992 (m tonnes)
- hard coal	5000-6000	10-20	0 3-0 7	68 1
- coking coal	5500-6500	10-20	0 3-0 7	45 0
- anthracite	n a	n a	n a	1 5

3

Key transport distances from Kuzbass	regions supplied	distance (km)
	West Siberia	300
	Urals	1,900
	Center	3,500
	Northwest	4,500

4

Underground versus surface, 1992	production (million tonnes)	prod'n workers (thousand)	number of mines
- underground	68 0	153 3	69
- surface	46 6	36 2	22
- total	114 7	189 6	91

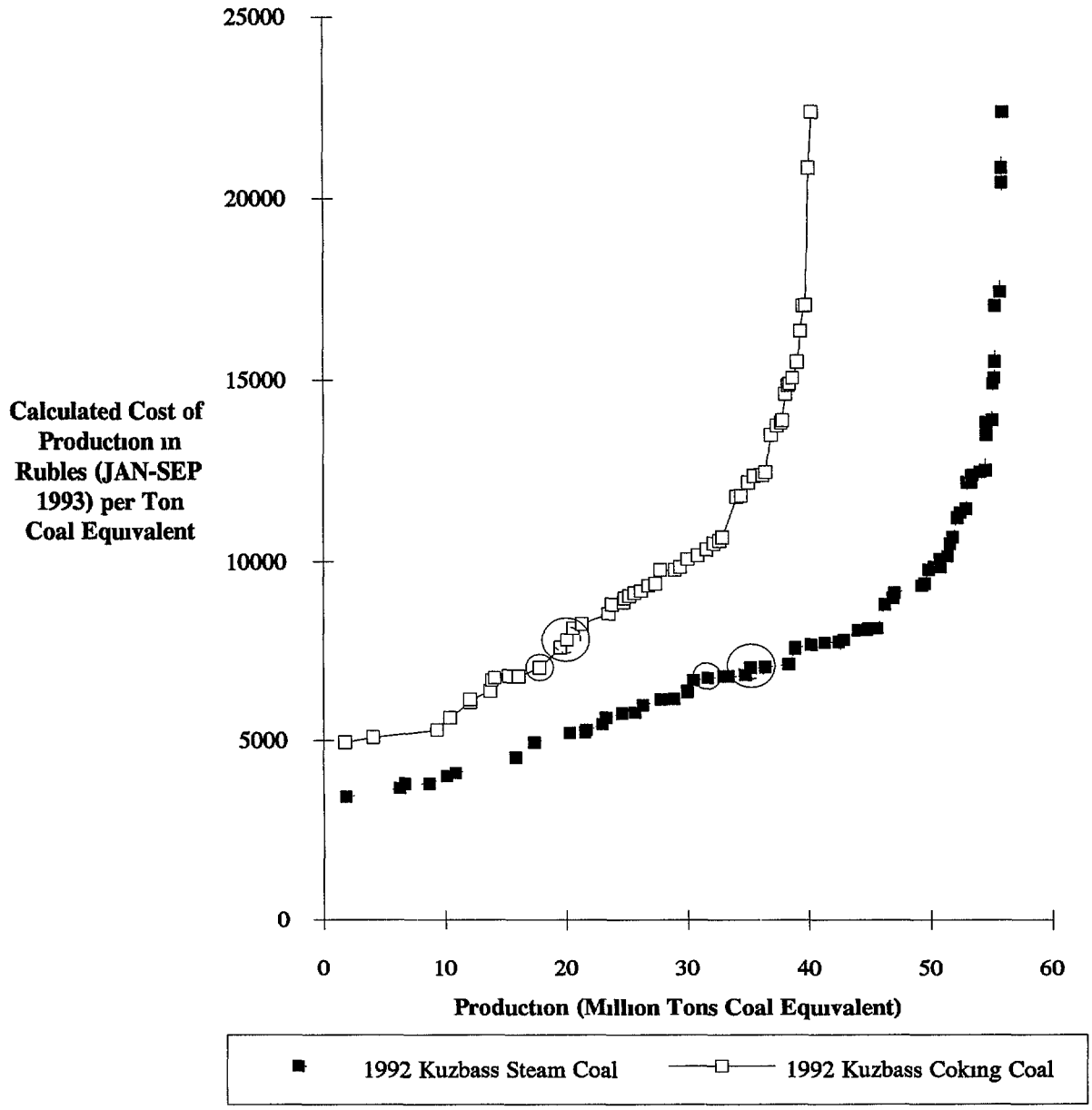
5

Forecast changes 1992 - 1997	production (million tce)	employment (thousand)	number of mines
- all coal			
1992	96 2	296 3	91
1997	47 4 - 52 8	71 8 - 82 6	33 - 40
- of which, coking			
1992	40 3	n a	n a
1997	17 7 - 19 7	n a	n a

- see Figure 6 (facing page) circles on the steam coal and coking coal Cost Curves indicate the maximum production cost at which mines can stay in business under the Low and High rail tariff scenarios

Figure 6

1992 Kuzbass Coal Supply Curves



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Coal Basin Profiles
Kansk-Achinsk

1 Coal resources (physically recoverable)
- 78 0 billion tonnes brown coal

2

Typical coal quality	calorific content (kcal/kg)	ash content (percent)	sulfur content (percent)	production in 1992 (m tonnes)
- brown coal	3400-3700	15-20	0 4-0 6	50 8
- hard coal	5000-5500	15-25	0 4-0 6	6 6

3

Key transport distances from Kansk-Achinsk	regions supplied	distance (km)
	West Siberia	400
	East Siberia	900
	Urals	2,300

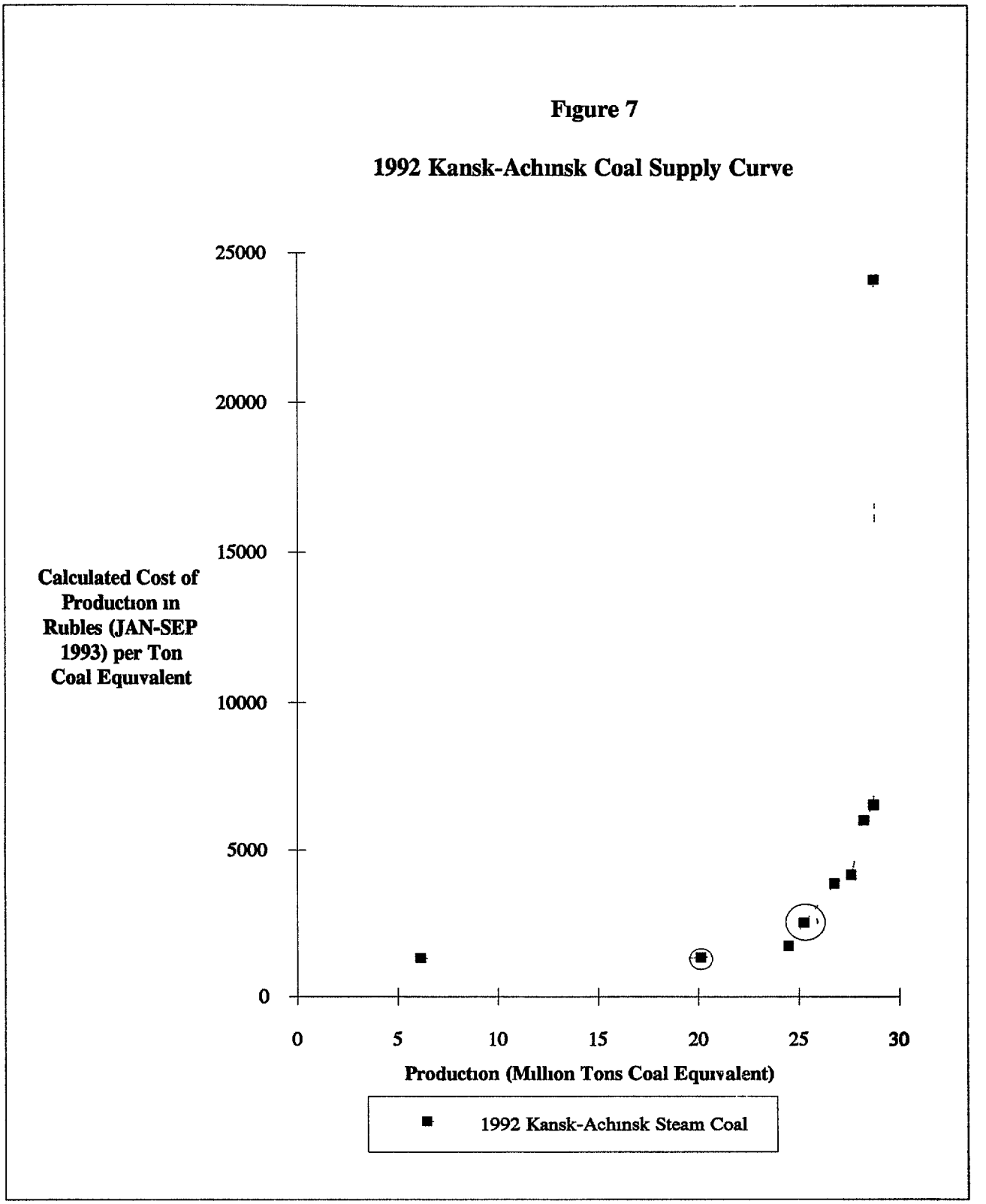
4

Underground versus surface, 1992	production (million tonnes)	prod'n workers (thousand)	number of mines
- underground	2 0	2 6	3
- surface	55 4	10 7	6
- total	57 3	13 3	9

5

Forecast changes 1992 - 1997	production (million tce)	employment (thousand)	number of mines
- all coal			
1992	28 7	25 5	9
1997	19 8 - 25 0	7 6 - 12 8	2 - 4
- of which, coking			
1992	0 0	n a	n a
1997	0 0	n a	n a

- see Figure 7 (facing page) circles on the steam coal Cost Curve indicate the maximum production cost at which mines can stay in business under the Low and High rail tariff scenarios



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Coal Basin Profiles
East Siberia

1 Coal resources (physically recoverable)
- 2 0 billion tonnes brown coal
- 11 0 billion tonnes hard coal (thermal)

2

Typical coal quality	calorific content (kcal/kg)	ash content (percent)	sulfur content (percent)	production in 1992 (m tonnes)
- brown coal	3000-4000	15-25	0 5-1 5	28 7
- hard coal	n a	n a	n a	7 6

3

Key transport distances supplied (km)	regions	distance
	East Siberia	400

4

Underground versus surface, 1992	production (million tonnes)	prod'n workers (thousand)	number of mines
- underground	24 4	2 0	18
- surface	0 0	9 7	0
- total	24 4	11 7	18

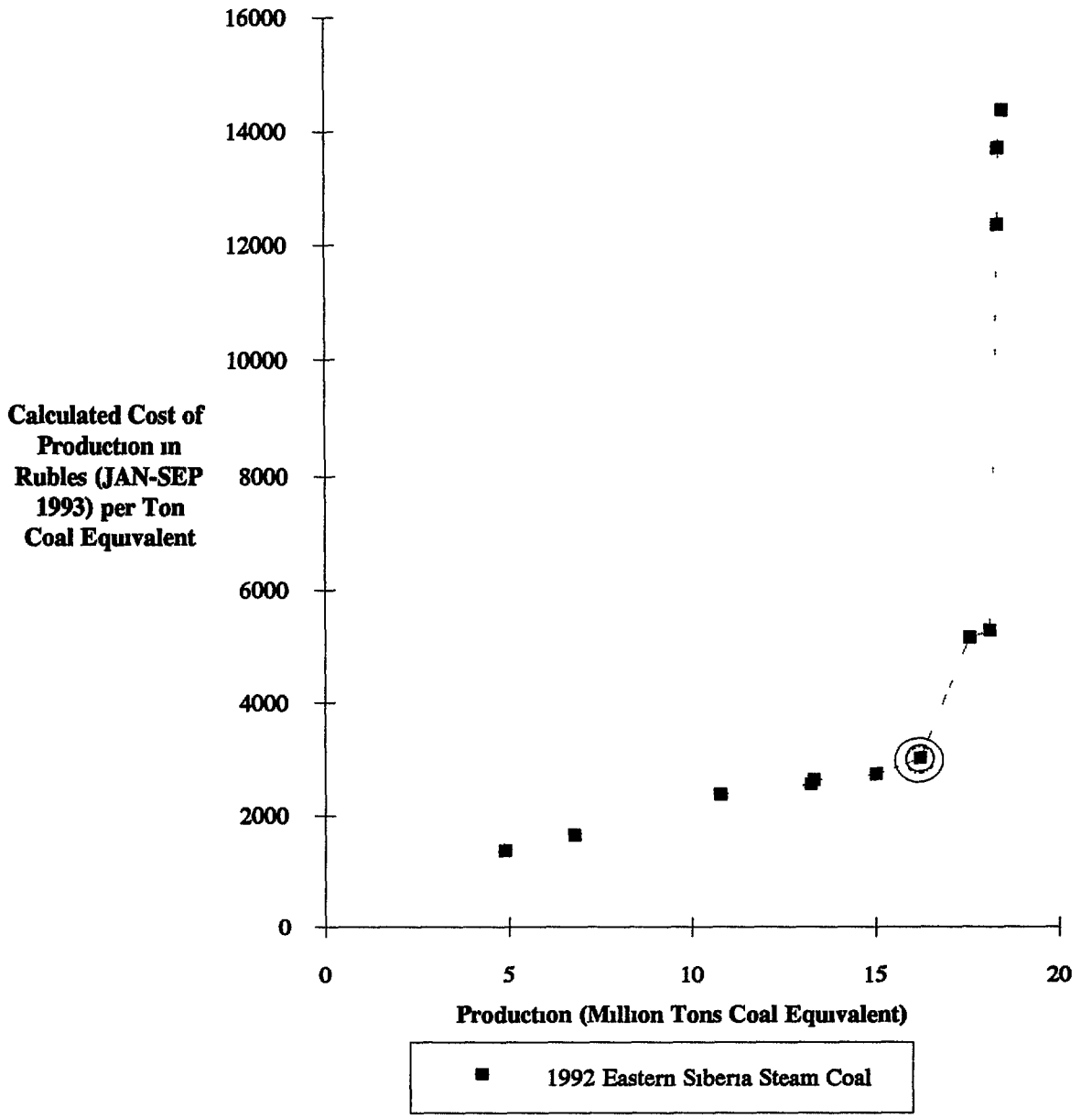
5

Forecast changes 1992 - 1997	production (million tce)	employment (thousand)	number of mines
- all coal			
1992	18 5	24 4	12
1997	16 1	11 2 - 14 4	7 - 8
- of which, coking			
1992	0 0	n a	n a
1997	0 0	n a	n a

- see Figure 8 (facing page) circles on the steam coal Cost Curve indicate the maximum production cost at which mines can stay in business under the Low and High rail tariff scenarios

Figure 8

1992 Eastern Siberia Coal Supply Curve



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= 1997 High Rail Tariff Scenario

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Coal Basin Profiles
Far East

1 Coal resources (physically recoverable)
- 10 4 billion tonnes brown coal
- 5 3 billion tonnes hard coal (thermal)

2

Typical coal quality	calorific content (kcal/kg)	ash content (percent)	sulfur content (percent)	production in 1992 (m tonnes)
- brown coal	3000-4000	20-40	0 3-0 5	24 7
- hard coal	4500-5500	15-35	0 3-0 5	0 0

3

Key transport distances	regions supplied	distance (km)
	Far East	500

4

Underground versus surface, 1992	production (million tonnes)	prod'n workers (thousand)	number of mines
- underground	8 9	28 1	24
- surface	15 8	6 7	12
- total	24 7	34 9	36

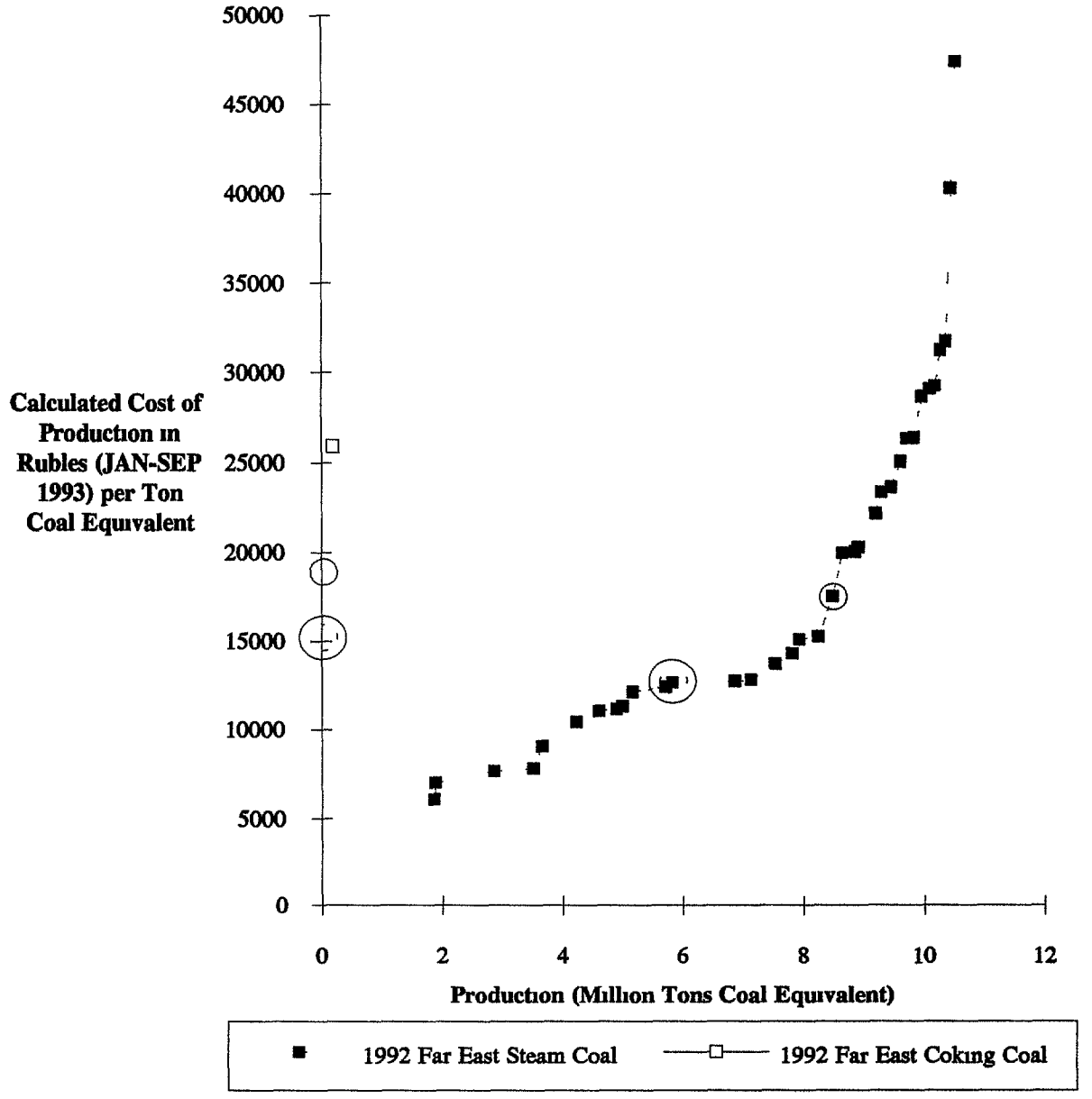
5

Forecast changes 1992 - 1997	production (million tce)	employment (thousand)	number of mines
- all coal			
1992	10 7	63 1	36
1997	5 7 - 8 2	16 5 - 30 6	12 - 18
- of which, coking			
1992	0 2	n a	n a
1997	0 0	n a	n a

- see Figure 9 (facing page) circles on the steam coal and coking coal Cost Curves indicate the maximum production cost at which mines can stay in business under the Low and High rail tariff scenarios

Figure 9

1992 Far East Coal Supply Curves



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Coal Basin Profiles
North East

1 Coal resources (physically recoverable)
- 7 1 billion tonnes hard coal (thermal)
- 4 9 billion tonnes coking coal

2 Typical coal quality

	calorific content (kcal/kg)	ash content (percent)	sulfur content (percent)	production in 1992 (m tonnes)
- hard coal	4600-5500	15-20	0 2-0 4	9 3
- coking coal	5500	15-20	0 3	5 6
- brown coal	3700-4000	15-17	0 2	1 0

3 Key transport distances

regions supplied	distance (km)
North East	500
Japan/exports	3,000

4 Underground versus surface, 1992

	production (million tonnes)	prod'n workers (thousand)	number of mines
- underground	3 3	4 7	6
- surface	12 8	4 3	4
- total	16 1	8 9	10

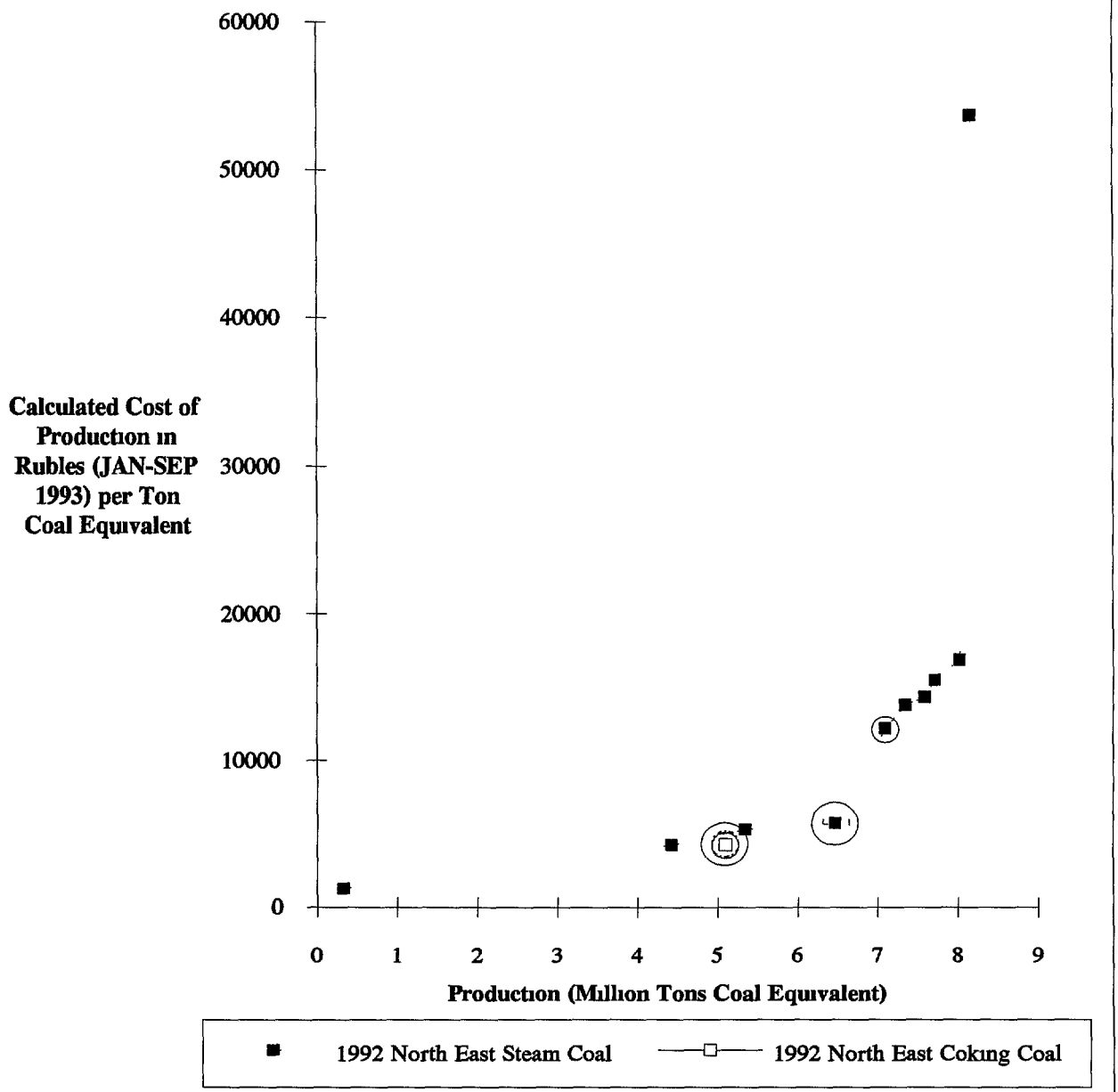
5 Forecast changes 1992 - 1997

	production (million tce)	employment (thousand)	number of mines
- all coal			
1992	13 3	27 1	10
1997	11 6 - 12 1	12 6 - 14 1	5 - 6
- of which, coking			
1992	5 1	n a	n a
- 1997	5 1	n a	n a

- see Figure 10 (facing page) circles on the steam coal Cost Curve indicate the maximum production cost at which mines can stay in business under the Low and High rail tariff scenarios

Figure 10

1992 North East Coal Supply Curves



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Restructuring the Coal Industry

II. The Coal Industry's Response

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Recent Performance
Mining Costs

1 See Table 6 *Average Real Operating Costs per Tonne of Coal Equivalent* (facing page)

2 Table 6 shows that average mine operating costs -- including wage payments under the Tariff agreement but excluding depreciation and non-productive costs -- have increased from 6326 Rb per tonne of coal equivalent in 1991 to 7395 Rb per tce in 1993 Q4, both at 1993 Q2 prices This average encompasses large differences between basins The largest real increases -- 160% and 90% respectively -- were for low cost surface mines in East Siberia and Kansk-Achinsk, whereas the real increases for the Donbass, Kuzbass and North East basins were less than 5%

3 There were substantial changes in the median composition of mining costs across all mining associations over the period 1991-93 In 1992 the share of material inputs increased sharply as price liberalization generated large increases in the cost of energy, timber and explosives While the increase in the share of electricity in total costs persisted through 1993, mines have adjusted their use of other material inputs so that the median real cost of material inputs per tonne of coal had fallen almost back to its 1991 level by the end of 1993 Q4

4 Now, it is the increase in total wage costs -- underpinned by the wage subsidies linked to the Tariff Agreement which covered about one half of total wage costs in 1993 -- which is driving up mining costs Since mines do not have to pay social security taxes on wages payments made under the Tariff Agreement, the real cost of social security taxes per tonne has fallen sharply Though not included in operating costs, the amount set aside by mines for depreciation of fixed assets has declined by over 80% in real terms

Recent Performance
Mining Costs

Table 6 - Average Real Operating Costs per Tonne of Coal-Equivalent

	Average operating costs in Rb per tce at 1993 Q2 prices					
	1991	1992	1993 Q1	1993 Q2	1993 Q3	1993 Q4
Donbass	9612	8834	11146	7923	10062	9608
East Siberia	1739	2615	2875	2519	4008	4575
Far East	10000	13177	12705	10189	12132	13911
Kansk Achinsk	989	1620	1484	1628	2766	1887
Kuzbass	6994	7858	7173	5984	7534	7327
Moscow/Center	11466	10160	16476	8360	12572	18421
North East	4700	5301	4353	4415	4696	4804
Pechora/North	9024	9607	12501	8100	11278	10702
Urals	10034	9671	10716	9425	9618	12736
All basins	6326	7017	7197	5733	7326	7395

Recent Performance
Coal Prices

1 See Table 7 *Average Real Price per Tonne of Coal Equivalent by Coal Basin* (facing page)

2 Coal prices were liberalized in July 1993 and the artificial distinction between the prices paid to the mine and those charged to customers was abolished As a result the average nominal price of coal increased from about Rb 5,700 per tce in 1993 Q2 to Rb 11,500 per tce in 1993 Q3 After this jump the real prices received by mines fell back in the final quarter, so that the average real revenue per tce for the second half of the year was slightly below that for the first half Demand was clearly a constraint on the ability of mining associations to increase their prices At the same time there is clear evidence of distortions in pricing behavior linked to the operation of the subsidy system

3 For customers the increase was much greater -- from Rb 1540 per tonne to Rb 5860 for unwashed steam coal free-on-rail at the mine and from Rb 3190 per tonne to Rb 14620 for unwashed coking coal From 1993 Q1 to 1993 Q4 ex-mine prices of coal to customers increased by 60-90% in real terms Delivered prices increased by 40-60% in real terms over the same period

4 The July price liberalization has radically changed the structure of the Russian coal market but it has not achieved its apparent objectives The average revenue per tce in 1993 Q2 was approximately equal to the average operating cost Price reform appears to have relaxed pressure on mines to hold down their costs, so that the average operating cost per tce increased sharply from Q2 to Q3 This change was not reversed in the final quarter, so that in 1993 Q4 the gap between operating costs and prices amounted to Rb 4600 per tce or 25% of the average price

5 The price reform has done little to bring the regional pattern of prices into line with the structure that might be expected under a full market system allowing for differences in production and transport costs In real terms the prices in Kansk-Achinsk and Kuzbass would have to fall, while prices in Donbass, Far East, Moscow, North East, Pechora and Urals would have to rise These adjustments will involve real increases of 2-3 times for the Donbass and Moscow basins because of their locational advantages

Table 7 - Average Real Price per Tonne of Coal-Equivalent by Coal Basin

	Average ex-mine revenues from coal sales (Rb per tce at 1993 Q2 prices)			
	1993 H1	1993 H2	Market forecast	
			Low freight tariff	High freight tariff
Donbass	5200	4500	10400	13500
East Siberia	2800	3900	3500	4500
Far East	11400	9100	11100	17500
Kansk Achinsk	1500	2100	1600	1400
Kuzbass	6900	7300	5600	5100
Moscow/Center	13000	6100	14800	20900
North East	5900	4300	11000	13500
Pechora/North	7400	8300	10400	12500
Urals	9500	7100	9400	11800
All basins	6000	5800		

Note
The estimates in this Table are based on the best available data on the average revenue per tonne of coal received by each mining association by quarter in 1993 Some of the data comes from different sources and may contain hidden inconsistencies For the first half of the year the estimates refer to the 'accounting prices' paid to mines rather than the wholesale prices paid by purchasers This distinction was abolished in the price reform of July 1993

Recent Performance
Subsidies

1 See Figures 11-12 on subsidies, cost-price differentials and wage rates by Mining Association, 1993 (facing page)

2 In real terms the total level of subsidies provided to the coal industry remained approximately constant from 1991 to 1993, though there were large fluctuations in the quarterly figures in 1993 Wage subsidies linked to the Tariff Agreement increased from 16% of the total paid in 1992 to 36% in 1993 Q4 (and to 42% of the subsidies allocated in 1993 Q4)

3 The Budget allocation for coal subsidies in 1994 is Rb 7 74 trillion which represents a real decline of 20% relative to the amount paid in 1993 Even this sum may not be forthcoming, since it is supposed to be linked to the revenue from a special VAT levy whose yield is falling short of Budget projections

4 Subsidies are notionally allocated to associations under 4 categories -- price subsidies to cover operating losses, social subsidies to cover expenditures on 'social costs', investment subsidies to cover depreciation and miscellaneous items, and wage subsidies linked to the Tariff Agreement In 1993, 5 associations received no price subsidies, apart from special circumstances all associations were allocated subsidies under the other three categories

5 Subsidies per tonne of coal produced in 1993 varied from Rb 112 per tonne for Borodinsky and Rb 718 per tonne for Mezdurechje -- two associations which operate single, large surface mines -- up to Rb 16,164 per tonne for Rostovugol and Rb 19,945 per tonne for Kizelugol As might be expected, larger subsidies per tonne went to associations which had larger gaps between operating costs and average price per tonne An increase in this cost-price differential of Rb 1,000 per tonne was associated with an increase in the subsidy received per tonne of almost exactly Rb 1,000 on average This eliminated any incentive for associations to control their costs or to raise their prices to reflect their market situation

6 Mines which receive large subsidies per worker tend to pay higher wages This may reflect the role of the Tariff Agreement in determining both wages and subsidies Equally, mines which receive larger subsidies are under less pressure to reduce their wage costs

7 The average subsidy per worker paid in 1993 was Rb 199,200 per worker per month The average wage rate was Rb 144,500 per month For all of the associations below the dashed line in Figure 12 (25 out of 31 in total) the average subsidy per worker per month exceeded the average monthly wage It is, therefore, difficult to understand why many miners were not being paid through much of the second half of 1993

Figure 11

Subsidies and cost-price differentials by association, 1993

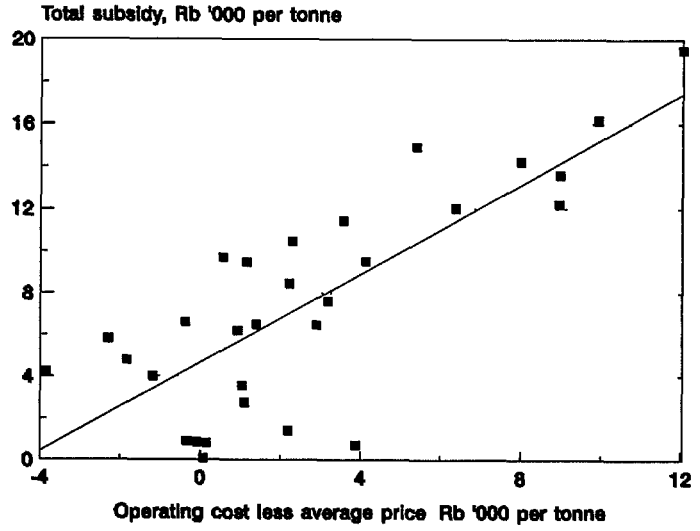
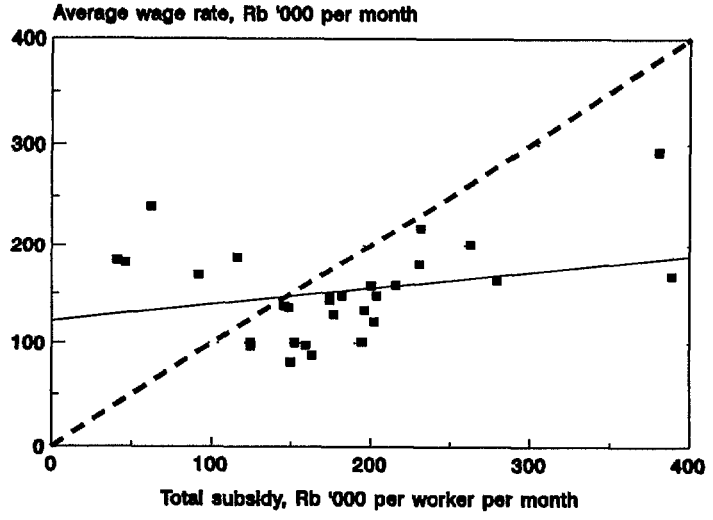


Figure 12

Subsidies and wage rates by association, 1993



Recent Performance
Mine Finances

1 See Table 8 *Financial Position of Coal Associations, 1993* (facing page) Details are available in the Annex on *Costs, Subsidies and Employment*

2 For four mining associations -- Rostovugol, Primorskugol, Tulaugol and Yakutugol -- the cost of materials and other productive inputs exceeded revenue from coal sales in 1993, thus yielding negative value-added However, these associations have substantial scope for raising prices in moving towards competitive market pricing

3 The industry made a gross loss of Rb 858 billion, but there were 8 mining associations which made gross profits Three associations -- Borodinsky, Kuzbassrazrezugol and Raspadskaya -- had gross profits in excess of Rb 20 billion each Adding the subsidies paid during 1993, the industry had a surplus over operating costs of Rb 880 billion Every mining association had a positive cash surplus and for some this was very large, for example Kuzbassrazrezugol had a cash surplus of Rb 151 billion and Kuznetskugol one of Rb 104 billion

4 A similar analysis for 1993 Q3 using different data sources confirms this general analysis In the quarter immediately following the price reform the industry had a surplus of Rb 570 billion Allowing for changes in receivables, payables and loan balances there was a positive cash flow of almost Rb 550 billion Given the level of subsidies, this was not an industry in acute financial crisis and needing greater government assistance, despite claims to the contrary

5 Much has been made of the problem of arrears, especially of overdue bills owed the mining associations An analysis of changes in the industry's balance sheet reveals a more complex story Total receivables did increase sharply in 1993 Q3 but by no more than might have been expected as a result of the large increase in ex-mine wholesale prices Over the winter of 1993-94 commercial receivables increased from 48 to 90 days' production At the same time total payables increased from 55 days' to 109 days' production, so that the net cash position improved rather than deteriorated A more relevant indicator is the net level of overdue receivables and payables In this case, too, the level of overdue payables increased by more than the level of overdue receivables, largely because mining associations were delaying their tax payments

6 Over 50% of all overdue receivables and payables relate to rail freight charges which are supposed to be paid by mining associations and recovered from their customers Incentives to pay promptly might be enhanced if customers had to contract directly with the railways for the transport of coal rather than indirectly through the mining associations

Table 8 - Financial Position of Coal Associations, 1993

Associations and independent mines	Coal revenues[a] (Rb bln)	Operating costs (Rb bln)	Value-added (Rb bln)	Profit measure (Rb bln)	Surplus measure (Rb bln)
Gukovugol	34 7	75 9	9 8	(41 2)	32 7
Obukhovskoye	16 1	18 4	11 3	(2 3)	9 6
Rostovugol	38 7	188 9	(25 1)	(150 2)	64 4
Vostsibugol	107 0	106 9	60 0	0 1	27 1
Dalnvostugol	22 1	35 0	0 3	(13 0)	3 5
Primorskugol	16 2	100 0	(18 5)	(83 8)	43 2
Sakhalinugol	32 2	80 7	2 6	(48 5)	8 1
Borodinskiy	53 1	31 9	32 3	21 2	24 0
Krasnoyarskugol	29 0	27 7	17 7	1 3	15 7
Belovougol	36 8	60 5	10 1	(23 7)	11 4
Kiselevskugol	27 1	58 2	5 7	(31 2)	23 8
Kuzbassrazrezugol	200 6	169 3	112 6	31 3	151 1
Kuznetskugol	164 7	236 0	78 8	(71 3)	104 4
Leninskugol	57 3	103 0	22 2	(45 7)	26 4
Mezhdurechje	23 3	24 6	11 0	(1 3)	1 2
Prokopyevskugol	73 2	125 0	24 3	(51 8)	38 7
Raspadskaya	70 0	39 3	49 4	30 7	38 9
SeveroKuzbassugol	44 1	122 3	6 9	(78 2)	11 9
Vakhrusheva	11 2	8 8	8 0	2 4	8 6
Tulaugol	14 3	64 1	(5 5)	(49 8)	23 8
Severovostokugol	13 1	24 7	8 6	(11 6)	13 5
Yakutugol	42 6	90 3	(7 5)	(47 7)	29 4
Intaugol	35 7	74 2	12 5	(38 4)	20 3
Vorgashorskaya	39 7	27 3	28 4	12 4	15 7
Vorkutaugol	130 1	201 0	67 6	(70 9)	60 5
BashkirUgol	4 6	13 9	0 3	(9 4)	7 6
Cheljabinskugol	41 4	89 8	7 6	(48 4)	23 5
Kizelugol	12 5	38 8	0 7	(26 3)	10 4
Shumikhinskaya	0 9	2 8	0 1	(1 9)	0 2
Vakhrushevugol	11 7	18 7	5 2	(7 1)	7 2
Yuzhniy Kuzbass	61 1	57 9	27 3	3 2	16 9
Total	1,507 8	2,362 3	583 9	(857 8)	879 6

Note (a) Revenues are estimated at ex-mine wholesale prices

Recent Performance
Employment

1 See Table 9 *Employment in the Coal Industry, 1992* (facing page)

2 Under the broadest definition of the Coal Industry, total employment is greater than 900,000 people, of whom

- 212,000 (23%) are "personnel of non-industrial enterprises" in the coal industry, including design & construction enterprises and trade & food services

- 120,000 (13%) are "non-industrial personnel of industrial enterprises", including kindergarten, housing, agricultural and other personnel

- ie, in a market economy, more than a third of total coal industry personnel would be employed either by independent contractors or by local government

3 Under a narrower definition of employment, there are 369,000 "workers for the extraction of coal", of whom

- 305,000 (83%) work in underground mining, although not necessarily underground

- 64,000 (17%) work in surface mines

4 These definitions of employment cover employees who receive wages, ie

- they include workers who may also be receiving a pension

- they do not include pensioners who are no longer receiving wages

Table 9 Employment in the Coal Industry, 1992

Russian Federation Total							914,331
Personnel of Industrial Enterprises							701 896
	Industrial Personnel						581 861
		Laborers					491 841
			For Coal Production				411 874
				Of which Workers for Extraction of Coal			388 998
					Under ground Mines		305 115
						Under ground	223 954
						Above Ground	81 161
					Surface Mines		63 881
			Other Laborers				80,167
		Office Staff					90 020
			For Coal Production				72 303
			Other Office Staff				17 717
	Non-Industrial Personnel 1/						120,035
Personnel of Non Industrial Enterprises							212 435
	Construction						105 887
	Design Organizations						2 196
	Other Organizations						91 059
	Trade/Food Service						13 303

1/ Includes kindergarten housing agricultural and other personnel

Recent Performance
Employment

1 See Table 10 *Labor productivity by coal type and basin* (facing page)

2 Table 10 illustrates the extent of variation both between mining basins on average and between mines within individual basins It reports labor productivity in tonnes of coal-equivalent per man-year rather than the more usual tonnes per man-year in order to control for differences in coal quality which are often linked with ease of mining The distinction between mines which may stay open and those which may close is made for illustrative purposes only in order to show the difference between high productivity mines which are relatively low on the cost curve and high productivity mines which are relatively high

3 The differences are extreme High productivity mines in East Siberia and Kansk-Achinsk produce over 1,000 tce per man-year by comparison with 50 tce per man-year or even less in the Donbass and Moscow basins Coking coal mines tend to have lower labor productivity than thermal coal mines with the exception of the mine producing coking coal for exports operated by Yakutugol (North East basin)

4 The importance of transport costs is illustrated in this table Mines with an average labor productivity of 90 tce per man-year in the Moscow basin or 150 tce per man-year in the Donbass have a good prospect of being competitive, whereas mines that are more distant from the main markets but have an average labor productivity of 250-300 tce per man-year in Kuzbass and East Siberia or even 580 tce per man-year in Kansk-Achinsk are likely to close

Table 10 - Labor productivity by coal type and basin

Coal basin	Labor productivity (tce per man-year)			
	Thermal coal		Coking coal	
	Open[a]	Close[a]	Open	Close
Donbass	150	53	112	51
East Siberia	1454	285		
Far East	269	77		79
Kansk-Achinsk	2633	581		
Kuzbass	738	267	572	192
Moscow/Center	90	33		
North East	718	130	1196	
Pechora/North	349	122		246
Urals	244	85		77
Total	404	224	473	166

Notes (a) 'Open' refers to mines that will remain open under the 'high freight tariff' scenario 'Close' refers to mines that will close under the same scenario The differences between the labor productivity of mines in the 'open' and 'close' categories are mostly larger for the 'low freight scenario'

Recent Performance
Labor Market Adjustment

1 See Figure 13 *Mining as a share of total employment, 1992* (facing page)

2 The most common age at which miners become eligible for a pension is 50 for men and 45 for women In some cases--eg, after 20-25 years of full-time underground employment--a miner may become eligible for a pension before the age of 50 In the absence of more detailed information, we will assume as an approximation that *all* coal industry employees become eligible for a pension at age 50 (below)

3 More than 20% of the employees of the coal industry are over the age of 50 and are therefore receiving both a pension and a wage A further 19% fall in the age group 41-50 years Less than 3% of employees are below 20 years old

4 Contraction in total employment in the mining industry would involve a number of measures
- the cessation of most new recruitment
- requiring all of those receiving a pension to leave the industry with special payments to compensate for their loss of expected earnings
- offering special payments to workers in the age group 45-50 (or, perhaps 41-50) to induce them to leave the industry

5 A recent decree *On the Reform of State Owned Enterprises* (No 1003, May 23, 1994) introduced special provisions for enterprises that are financially unsound but important for the state If this decree is applied to the coal industry, the Mining Companies will be obliged to accept job applications from former employees, including pensioners Special legal provisions may be needed to allow the Mining Companies to reduce employment of pensioners in general

6 Figure 13 shows that the regional impact of a contraction in mining employment would be very different from one coal basin to another In most oblasts the maximum plausible employment reduction is small relative to total employment in the oblast However, for Kemerovo oblast (Kuzbass) and the Komi Republic (Pechora basin) the projected employment reduction is a large proportion of total employment Special measures to mitigate the employment impact of restructuring the coal industry should be focused on these two regions

Figure 13

Mining as a share of total employment, 1992 (% of total employment)

Recent Performance
Social Costs

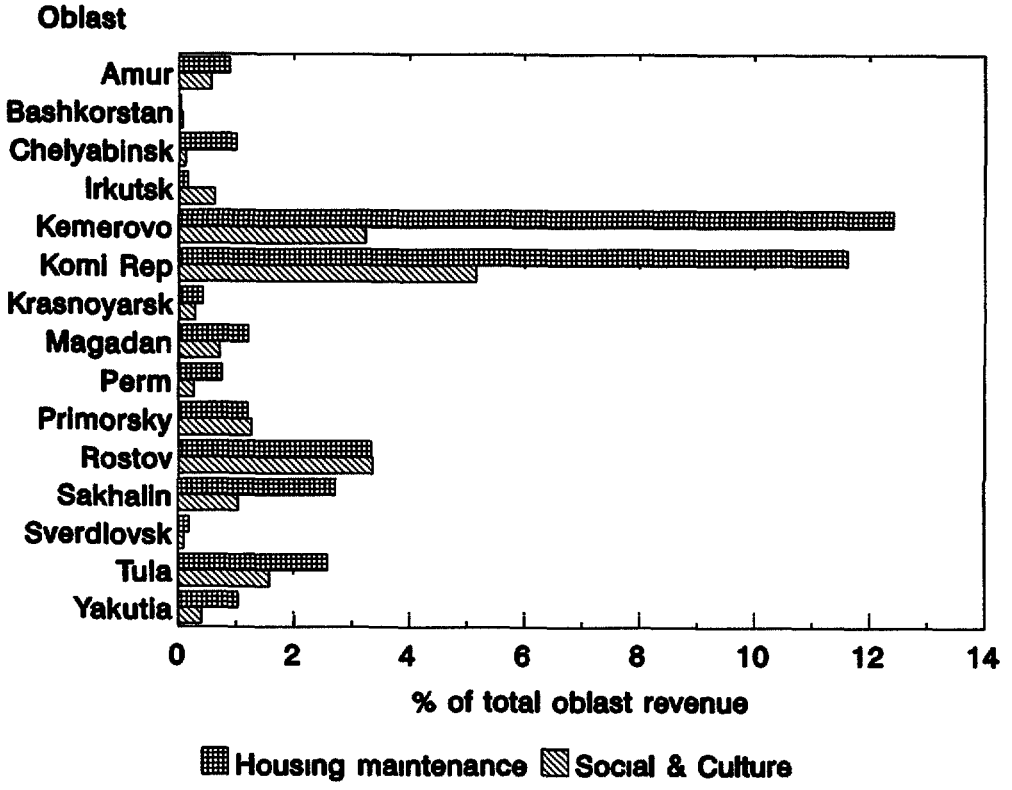
1 See Figure 14 *Mine social costs as a % of total oblast revenue, 1992* (facing page)

2 The responsibility for providing social and communal services should be transferred from mining associations to regional or local authorities About 25% of what is categorized as social expenditures by mines should actually be regarded as wages in kind -- cheap coal, vacations, etc A further 50% of social expenditures is devoted to housing maintenance It would be better if the ownership of this housing were transferred to the occupants or to cooperatives who would be responsible in future for maintenance and improvement Some adjustment in wages would be required in order to induce workers to accept this transfer, though the standard of maintenance tends to be very low

3 Figure 14 illustrates the level of mine expenditures on genuine social and cultural services and on housing maintenance relative to total oblast revenues It suggests that the transfer of these responsibilities should not cause significant fiscal problems for the oblasts concerned except in Kemerovo, the Komi Republic and, perhaps, in Rostov

Figure 14

Mine social costs as a % of total oblast revenue, 1992



"Golden Rules" of Restructuring

1 Recognize the difficulty of restructuring and the constraints Restructuring means change, which is never easy The people and local communities must be extensively and effectively consulted as to the design and implementation of the reform program

2 Be clear about the need for change This leads to a better definition of the objectives and how to get there

3 Secure high-level political commitment and involvement Restructuring has overall winners and losers The changes need to be politically feasible

4 Have a very precise vision of what the end result of restructuring should be

5 Plan the restructuring process carefully Keep to a fixed schedule The political commitment may last only for a limited period

6 Separate clearly the roles of the main actors in restructuring Policy formulation, regulation, ownership, asset management and operations are usually done by different institutions

7 Recognize that restructuring takes more time and more effort than anticipated The need for external assistance is often under-estimated

8 Exploit the best practices from other restructuring efforts Don't reinvent the wheel on restructuring

Restructuring Strategy
Objectives

1 In the Coal Basin Profiles (pp 46-63 of this report), we indicated

- current levels of output and employment (1992)

- changes needed for each basin to adapt to the realities of the new coal market in Russia, mainly
  - lower demand for coal
  - higher rail freight rates for coal
  - increasing concern for coal quality

- therefore likely future levels of output and employment (about 1997)

2 On the next two pages (pp 84-85), we present a snapshot of the main features of the Russian coal industry today--followed by a snapshot of the industry after it has adapted not only to the new coal market in Russia, but also to the new market economy in general The difference between these two snapshots defines the objective, viz

- to move as quickly as possible towards a healthy, dynamic coal industry that operates profitably, without subsidies, in the new market economy of Russia

3 The three main actors are the Government, the mining companies and the labor unions The Government has made some progress towards setting up a suitable framework within which the new Mining Companies can restructure themselves The rest of this report describes

- the options for next-steps by the Government

- ways in which the Mining Companies and labor unions could respond

Objectives, cont'd

The Russian Coal Industry Today

1. coal prices are set by RosUgol in consultation with the Mining Associations
2. coal consumers often cannot pay current coal prices because they cannot pass on increased costs to their own customers, eg, power and district heating plants that are price-controlled by local government
3. coal production costs (without subsidies) are higher than customers are willing to pay--particularly in locations where natural gas and fuel oil are available as alternative fuels
4. RosUgol sets prices and subsidies to protect weaker mining companies from competition
5. coal companies pay more attention to quantity of output than to quality and timely delivery
6. coal companies have no practically control over their labor costs and have no incentive to contract their operations or close high-cost mines
7. companies that own low-cost mines cannot expand their operations because they cannot compete with subsidized high-cost producers
8. outside investors are not entering the coal industry because the excess supply of coal is holding down prices and profits
9. worker health and safety levels are poor and there is little progress towards improved environmental compliance--because the coal industry is preoccupied with simply surviving

Restructuring Strategy
Objectives, cont'd

The Russian Coal Industry in a Market Economy

1. coal prices are set in the market place by negotiation between independent, commercial mining companies and their customers
2. other energy prices are regulated in a way that is consistent with free market prices for coal
3. coal production costs are low enough to compete with other fuels (natural gas and fuel oil) without subsidies--as a result, coal's share of the total energy market will be smaller but more enduring
4. independent coal companies compete with each other to deliver coal to the customer at the lowest possible delivered price
5. coal companies compete not only on price but also on the quality of their product and the reliability of their deliveries
6. companies that own high-cost mines contract their operations and, if necessary, close high-cost mines
7. companies that own low-cost mines retain enough profits to expand their operations and increase their share of the total coal market
8. outside investors can enter the coal business if market opportunities exist
9. profitable coal companies steadily improve their performance on worker health and safety and environmental compliance

Restructuring Strategy
Progress: 1993-94

1 The Government has taken two initial steps towards providing a framework within which the new Mining Companies can restructure themselves

- price liberalization
- enterprise commercialization & privatization

2 Price liberalization

- the Government formally decontrolled coal prices in July 1993--initially with positive results (see pp 68-69)
- however, prices are not yet "free", since RosUgol now sets coal prices as part of the subsidy allocation process
- the Government should ensure that, even before the end of the subsidy phase-out, the individual Mining Companies become fully responsible for negotiating their own selling prices

3 Enterprise commercialization & privatization

- formation of joint stock companies
  this process is underway--in general, it transforms the previous Mining Associations and independent mines into joint stock Mining Companies in which the national coal company (RosUgol) holds a controlling interest
- commercialization
  real commercialization of the new Mining Companies cannot proceed until the Government has made these companies fully responsible for their cashflow--both sales revenue and costs--see facing page
- privatization
  management and employees will initially have a minority shareholding in the new, joint stock Mining Companies--however, other private investors will remain unwilling to purchase the Government's shares while future profitability remains uncertain

Restructuring Strategy
Progress 1993-94

4 Key problem areas

- commercialization & privatization of the new Mining Companies cannot proceed any further while
  - local Mining Companies remain under the control of a national coal monopoly (RosUgol)
  - there are still channels--ie, within RosUgol--that allow cross-subsidies to flow between the different Mining Companies--thereby slowing down adjustment to the new market conditions
  - the local Mining Companies do not have full control over their operating revenue, because
    - selling prices continue to be influenced by the subsidy allocation process
    - the companies have been unwilling or unable to solve the problem of overdue payments by customers (arrears in receivables)
  - the local Mining Companies have very little control over the largest single element of their costs--labor costs--because
    - the companies cannot reduce employment until an adequate social safety net is in place--including severance payments and special employment schemes in mining regions
    - wages are controlled by national wage agreements--the so-called Tariff Agreements
- there is no consensus yet between the Government, the coal industry and the labor unions about how to solve these problems

Restructuring Strategy
Speed & Timing

Experience in other coal-producing countries has shown that the key decision for the Government is how quickly to push ahead with restructuring Most of the feasible options lie somewhere between two extremes, which we describe as business-as-usual and privatize-or-close

1 *business-as-usual ("do nothing")*
- *coal industry employment would remain unchanged while coal sales continue to fall*
- *investment in the low-cost, potentially profitable part of the coal industry would cease--causing steadily deteriorating performance on worker safety, environmental compliance and coal quality*
- *financial losses in the Mining Companies would continue to increase--causing some combination of*
  - *increasing delays in wage payments--and therefore hardship, poverty and labor unrest in mining regions*
  - *actual bankruptcy of local Mining Companies--and therefore unplanned, large scale unemployment--with no special payments and an inadequate social safety net*
  - *larger subsidies from the federal budget--at a time when these subsidies need to be phased out as part of stabilizing the national economy*

Comment
the business-as-usual option is not feasible--the Federal budget cannot afford to continue subsidies at current levels, let alone increase them each year indefinitely

2 *privatize-or-close ("big bang")*
- *non-social subsidies would cease immediately*
- *the Government would reduce its ownership share in all Mining Companies to zero--leaving ownership in the hands of management, employees and private investors*
- *each local Mining Company would control a mix of profitable and unprofitable mines and would have to decide how to use the profits*
  - *to re-invest in profitable mines, and/or*
  - *to cover operating losses in unprofitable mines, and/or*
  - *to make special payments to workers who agree to leave the company*
- *to avoid bankruptcy, most local Mining Companies would have to lay off large numbers of employees--again, with no special payments and an inadequate social safety net*

Restructuring Strategy
Speed & Timing

Comments

- In practice, most of the Russian economy is following the privatize-or-close route, since government funding is simply not available to continue business-as-usual If the coal industry is to follow any route other than privatize-or-close, the reasons for giving special treatment to the coal industry need to be clearly justified and explained
- Coal is the major source of employment in many coal regions, particularly in the Kuzbass and Pechora Miners are also relatively immobile A "phased approach" (below) is therefore the only option to avoid the prospect of entire mining regions becoming social disaster areas A phased approach will increase the burden on the Federal budget over the short to medium term, but will allow Government support to the coal industry to be reduced to zero over the longer term

3 *phased approach (3-5 years)*

- *real commercialization of the new, local, joint stock Mining Companies would be the key element of the restructuring strategy*
- *as soon as possible, the Government would transfer administration of the existing Social Subsidy from the local Mining Companies to the appropriate level of local government--this process has already started in some areas*
- *the Government would offer to finance mine closures for only a limited period--say up to 3 years--after which the local Mining Companies would have to carry these closure costs out of their own cashflow*
- *over a somewhat longer period--say up to 5 years--the Government would offer to co-finance--ie, with contributions from the local Mining Companies--the costs of employment reduction in all mines, including*
  - *special payments to workers who agree to leave the coal industry*
  - *transitional employment opportunities in regions where mining-related unemployment will be unusually high*
- *in the rest of this report we present more detailed suggestions about how to implement such a "phased approach"*

Comments

- In general, the slower the restructuring program the more it costs the Federal budget Experience in Belgium, France, Germany and the UK suggests that the Government should try to concentrate most of its budget support for coal restructuring into a period of five years or less
- The process cannot be planned entirely in advance The Government needs a strategy for the overall process and a detailed program for the first 1-2 years The initial program would test a variety of mechanisms and provide experience for designing the rest of the program The most important decision is the decision to get started

Phased Approach 1994-96
Overview

1 *The Government*
should take eight key steps to ensure that the new joint stock Mining Companies can begin to operate commercially

immediately--start consultations at regional and local levels to
- re-target social subsidies in mining communities
- launch an *Employment Reduction Program*
- launch a pilot *Mine Closure Program*
- make subsidy payments directly from the Ministry of Finance to the local Mining Companies and local governments

as soon as possible
- move towards company-to-labor wage agreements
- encourage divestiture of "non-core" functions
- ensure adequate competition between the new coal companies
- introduce a suitable regulatory framework for the railways

2 *The new Mining Companies*
should take full control of all aspects of their cashflow

immediately
- prepare a mine-by-mine pricing and marketing strategy to cope with the elimination of subsidies
- prepare targets for productivity improvement (mainly employment reduction) for all the mines in the company's portfolio
- identify the mines that will be profitable, possibly profitable and definitely unprofitable with the new prices--with and without the target levels of employment reduction

as soon as possible
- decide on the company's participation in the Government's Employment Reduction Program, ie, co-financing of special payments for workers to leave the coal industry
- decide which mines to put into the Government Mine Closure Program
- open discussions with the local coal labor unions about wages, employment levels, special payments and mine closures
- prepare a business plan for re-investing profits of low-cost mines in improved productivity and coal quality

Phased Approach 1994-96
Overview

Competitive core of low-cost mines

The management teams of the new, local Mining Companies should start to rebuild their companies around a core of unsubsidized, low-cost, profitable mines, ie, those at the bottom of their cost curves

Even in these low-cost mines, some employment reduction may be necessary--to improve profits

The management's decisions about how to *re-invest the profits* from these mines--to improve efficiency, to improve product quality or to expand output--will be the key to the survival of their company

In a competitive market, low-cost mines will expand even while total coal demand is still contracting, ie, they will put additional pressure on unprofitable mines to close The mines at the low-cost end of the coal industry could expand their output by 20-30% over the next 3-5 years with relatively modest investments

Possibly profitable medium-cost mines

Each of the local Mining Companies will own a number of mines for which future profitability is highly uncertain Each management team should prepare medium term programs to reduce costs and increase revenues in these mines In cases where the company is unable to make these mines profitable, the company will have to start its own mine closure program

Unprofitable, high-cost mines

In each of the new Mining Companies, the high-cost mines impose a very large burden on the cashflow of the company They absorb the profits from the company's low-cost mines and prevent the company from investing to generate future profits

The management teams of the companies should decide as rapidly as possible which mines they wish to transfer to the Government for closure

Phased Approach 1994-96
Social Subsidies

1 See *Recent Performance* (pp 66-81) for data on social subsidies

2 The most important component of the Social Subsidy is the 25% that goes to social services, such as health clinics, kindergartens, schools, etc At present, the Ministry of Finance makes these payments to the local Mining Companies If possible within six months

- the Ministry of Finance should start making these payments directly to the appropriate level of local government, usually the oblast

- the local Mining Companies should transfer the corresponding social assets and staff to the local government--this process is underway in some areas

3 In Kemerovo, Komi Republic and Rostov, it will be important to ensure that these federal-regional fiscal transfers take place without delay In other oblasts, these fiscal transfers will be relatively small compared with the oblast's total budget revenue

4 About 50% of the Social Subsidy goes to housing maintenance And this entitlement to free housing appears to be built into the coal industry wage agreements--the so-called Tariff Agreements The Government should transfer full responsibility for housing maintenance to the house owner-occupants If necessary, the Government should consider making small, special, lump-sum payments to house owner-occupants to compensate them for the loss of an entitlement under the Tariff Agreements

5 As soon as these special payments have been made to house owner-occupants, the Government should cut the total Social Subsidy to a level that just covers social services--see above

Phased Approach 1994-96
Labor Agreements

1 See *Recent Performance* (pp 66-81) for data on wages and the Tariff Agreements

2 In the Russian industrial sector, including the coal industry, national labor agreements (so-called Tariff Agreements) present a major obstacle to the newly commercialized companies that are struggling to adapt to free market conditions

3 Under the current labor agreements, the local Mining Companies have almost no control over the wages of their employees The inadequacy of the social safety net--notably the absence of severance payments and alternative employment opportunities in the major mining regions--makes it very difficult for the Mining Companies to reduce employment The companies therefore have no control over the total wagebill, ie, over the largest single element of their costs

4 At present, the Tariff Agreement component of the subsidy system offers a positive incentive to maintain employment We recommend that the Government shift this funding from wage subsidies to special payments to workers leaving the coal industry

5 After subsidies have been shifted away from wages, the level of wages in each coal basin will be determined by what the local Mining Companies can afford to pay In some of the less profitable mining companies, real wages will fall relative to wages in other industries This decline will make it more attractive for miners in these regions to accept special payments to leave the coal industry This mechanism is crucial to the success of the employment reduction program

6 The key step for each local Mining Company will be to take full responsibility for the wagebill in their company, ie, to negotiate the employment levels and wages directly with their employees

Phased Approach 1994-96
Employment Reduction Program

1 See *Recent Performance* (pp 66-81) for data on composition and age structure of coal industry employment

2 The Government should immediately stop recruitment to the coal industry--except in cases where special skills are needed in the lowest-cost mines and cannot be re-located there In general, the Government should specify that support for special payments will be available only to Mining Companies that have ceased recruitment

3 The Mining Companies need to reduce employment in practically all mines, ie, both in mines that are to remain in operation and in mines that are to be closed The companies should offer special payments to workers to leave the coal industry This may require the company to shift some of the remaining workers from one mine to another within the company

4 The first target group should be the pensioners (generally the 50-and-above age group) who remain on the company payroll as workers The Government should establish the principle that no-one who receives a pension from the coal industry can also be employed in the coal industry Employment reduction for coal industry pensioners may have to be involuntary However, they could seek employment outside the coal industry And, since coal industry pensioners believe their pensions are inadequate, the Government may also decide to give them small, once-only payments to compensate for the unexpected loss of an "entitlement"

5 The second target group should be the workers in the 45-50 age group who are approaching retirement The Mining Companies should offer somewhat larger special, once-only payments to this group to leave the coal industry The management of each local Mining Company should have some flexibility in defining the target group For example, some companies may wish to retain certain skills in the 45-50 age group

6 The Government should decide what level of support it will provide to Mining Companies that offer these special payments As a starting point, the Government should announce that the only subsidies to the coal industry--other than for social services--will be for special payments to workers leaving the industry

7 For the Komi Republic (the Pechora coal basin) and the Kemerovo oblast (the Kuzbass), the projected employment reductions in the coal industry are very large in relation to total employment in these regions As an additional element of the Employment Reduction Program, the Government could set up transitional special programs in these regions These might include environmental restoration of mining areas, and rehabilitation of housing and other infrastructure in mining communities

Phased Approach 1994-96
Mine Closure Program

1 See *Scenario Results* (pp 44-45) for projections of possible mine closures in each basin

2 The most effective way for local Mining Companies to become profitable is to close their highest-cost mines Closing mines eliminates not only labor costs but also unnecessary expenditure on materials and other non-labor operating costs For this reason, as part of the reorientation of subsidies towards special payments to workers leaving the coal industry, the Government would allocate a large part of the special payments to the Mine Closure Program

3 For a limited period--perhaps 1-3 years--the Government should offer to take mines that have no prospect of becoming profitable into a government-managed Mine Closure Program After that time, the Mining Companies would have to carry the costs of any additional mine closures out of their own cashflow

4 Once they are in the Mine Closure Program, mines should receive government funds only for social costs and other expenditures directly related to closure, but not for operations

- production must stop at these mines as soon as possible--to avoid the situation (observed, for example, in Poland) where excess production from these (subsidized) mines depresses prices and profits of the newly commercialized (unsubsidized) Mining Companies

- funding of the Mine Closure Program would need to cover environmental restoration of disturbed lands and spoil heaps and mitigation of water contamination

5 The Government could launch the Mine Closure Program immediately by starting with the relatively uncontroversial cases where the mine's coal reserves are practically exhausted There are at least 10 mines in this category that the Government could offer to close by end-1995 At the same time, the Government should adopt a target of closing 15-25 unviable mines each year until the year 2000

Phased Approach 1994-96
Divestiture

1 The local Mining Companies should transfer social functions to local government, where possible--see Social Subsidies (p 92)

2 From its position as the controlling shareholder in the new Mining Companies, the Government should also require the companies to divest "non-core" (ancillary and non-mining) enterprises as separate joint stock companies

Phased Approach 1994-96

Competition

1 In general, the number of new, joint stock Mining Companies (former Mining Associations) appears to be sufficient--in each coal basin and in each coal product market--to ensure adequate competition Some of the specialized coking coal producers may have some degree of market power However, these producers are also facing monopsonist buyers in the steel industry It may be necessary in future to break up some of the larger Mining Companies into more than one joint stock company--but only if monopoly power becomes a problem in their markets

2 It may also be necessary for some of the smaller Mining Companies to combine into larger joint stock companies--but only if they prove to be too small to invest and survive in a competitive coal market This process should not require any intervention from the Government Local Mining Companies should be allowed to merge or to acquire other companies, subject to the normal provisions of the Anti-Monopoly Law

Phased Approach 1994-96
Investment

1 In each of the local Mining Companies, the management's decision on how to re-invest profits from the company's low-cost mines will be crucial for the survival and recovery of the company during the transition to zero subsidies

2 As a first step in each case, the company management team should look at ways to improve productivity, coal quality, environmental performance and worker health and safety *without making any investments*, ie, simply by improving organization and management For example
- by improving work organization and spare parts management to maximize equipment utilization factors
- by selective mining, blending, stockpile control and tighter washery procedures

3 When coal market opportunities expand in future, limited investments in surface mines are likely to be the lowest cost way to increase coal output In these mines, the first priority will be to improve utilization of existing major mining equipment (shovels, trucks and draglines, bucket wheel excavator systems) by providing adequate fleets of auxiliary mining equipment (bulldozers, graders, front-end loaders)

4 In cases where investment appears profitable in underground mines, the basic strategy should be to concentrate production at the most efficient faces, ie
- close high-cost faces
- re-equip a smaller number of longwall faces with heavy duty, high output equipment
- rationalize underground transport systems using modern, high capacity equipment
- switch to modern technologies for excavating underground roadways and for roof bolting support systems

Phased Approach 1994-96
Subsidy Phase-Out

1 One of the Government's objectives is to eliminate subsidies to the coal industry as quickly as possible However, there are two types of subsidies

- *recurrent subsidies* for example, the wage subsidies that are linked with the present Tariff Agreements

- *special payments* these are an "investment" today that will pay itself off by reducing the need for recurrent subsidies over future years

2 The Government should phase out recurrent subsidies immediately, with the exception of subsidies to social services in mining communities

- after 1994 zero subsidies for operating losses and investment

- in 1995 only wage subsidies confined to oblasts where mining employment accounts for more than 5% of total employment

- after 1995 zero recurrent subsidies other than social services--a very small part of the total

3 The Government should decide on the initial funding level for special payments to be used for

- miners and pensioners who leave the coal industry

- house owner-occupants who take over responsibility for maintenance

- physical costs of mine closures, including environmental costs

- special programs in mining areas with high levels of unemployment

4 The total subsidy payment to the coal industry should decline at an agreed rate in real terms each year The total subsidy projected for 1994 appears to be about 40% lower in real terms than in 1993 The total subsidy may have to decline somewhat more slowly in the next two years if the Government is to co-finance a reasonable share of the special payments

Phased Approach 1994-96
Subsidy Phase-Out

"Investing" in Subsidy Reduction Financial analysis of an employment reduction program

To illustrate the potential costs and benefits at 1993 prices of a managed program of voluntary severance, an analysis has been carried out for a hypothetical program to reduce mining employment in the Kuzbass by 200,000 over 5 years starting in 1995 The number of job losses builds up from 20,000 in 1995 to 80,000 in 1997 and then declines to 20,000 again in 1999 The following assumptions have been made about the costs and savings associated with such a program

Costs

(a) Layoff counselling, retraining and other assistance - Rb 500,000 per job loss

(b) Special employment programs for 25% of those losing jobs initially, declining to 5% in year 5 and zero thereafter - Rb 100 000 per month per person covered

(c) Additional spending for the social safety net (pensions, unemployment benefits, etc) for 75% of those losing jobs initially, declining to 50% in year 2 and 5% in year 11 an average of Rb 60,000 per month per person covered (40% of the average wage)

(d) Severance payments which might range from 0 5 to 5 times annual wages for workers earning an average of Rb 150 000 per month according to age length of service and other circumstances

Savings -

The decline in the demand for coal implies that maintaining production in high cost mines in order to protect jobs imposes a cost on the economy (and on the government in the form of additional subsidies) equal to the average operating cost per worker in those mines which would otherwise close This assumes that surplus output produced in mines which are kept open has a zero marginal value Since profitable mines should be able to expand their output at a very low marginal cost if that were required in future, this is a plausible assumption

The analysis shows that the net cost per job loss amounts to Rb 4 64 million in the first year after which there is a net saving of Rb 1 5 million in year 2 rising to Rb 2 1 million in year 11 The cumulative net saving becomes positive in year 4 and the discounted present value at a real interest rate of 10% is Rb 5 8 million For the complete program the net cash flow is shown in the table below

Year	1995	1996	1997	1998	1999	2000
Job losses	20 000	40,000	80,000	40,000	20,000	
Net savings (Rb billion)	(93)	(156)	(279)	32	198	338
Cumulative savings (Rb billion)	(93)	(248)	(528)	(496)	(297)	41

There are positive cash savings from year 4 onwards while the discounted present value is Rb 964 billion A phased program of this kind could easily be financed by redirecting subsidies away from general support for most mining associations towards funding for employment adjustment, while achieving a gradual reduction in the overall level of subsidies At the end of the program the Kuzbass would be left with a highly competitive mining sector making profits of about Rb 100 billion per year at 1993 prices

MAP *Major Coal Producing Regions and Transport Flows*
(facing page)

IBRD 25403

UNITED STATES OF AMERICA

RUSSIAN FEDERATION

MAJOR COAL - PRODUCING REGIONS AND TRANSPORT FLOWS

MAJOR COAL FLOWS GREATER THAN 10 MILLION TONS (1992)

MAJOR COAL MINES
- BROWN COAL
- HARD COAL

COAL BASIN
- BROWN COAL
- HARD COAL

ECONOMIC REGION BOUNDARIES

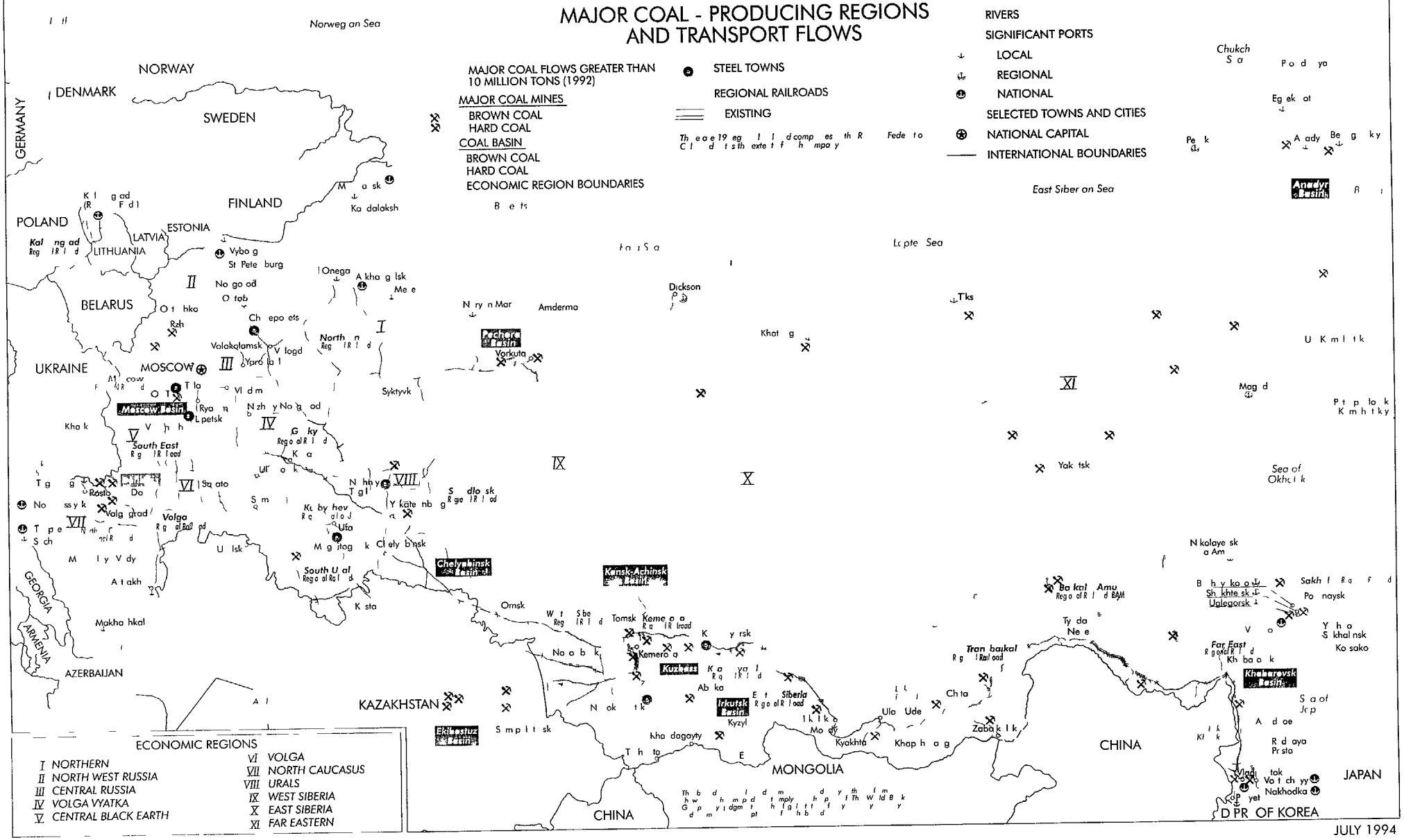
STEEL TOWNS

REGIONAL RAILROADS
- EXISTING

RIVERS

SIGNIFICANT PORTS
- LOCAL
- REGIONAL
- NATIONAL

SELECTED TOWNS AND CITIES
- NATIONAL CAPITAL
- INTERNATIONAL BOUNDARIES



ECONOMIC REGIONS

I NORTHERN	VI VOLGA
II NORTH WEST RUSSIA	VII NORTH CAUCASUS
III CENTRAL RUSSIA	VIII URALS
IV VOLGA VYATKA	IX WEST SIBERIA
V CENTRAL BLACK EARTH	X EAST SIBERIA
	XI FAR EASTERN

JULY 1994

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Report No 13187-RU

Russian Federation Restructuring the Coal Industry: Putting People First

(In Two Volumes) Volume II Annexes

December 12, 1994

Infrastructure, Energy & Environment Division
Country Department III
Europe and Central Asia

Document of the World Bank

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CURRENCY EQUIVALENTS

Currency Unit = Ruble (Rb)

Rubles per US Dollar

Foreign Exchange Auction/Interbank Market Rate

Average for Period

December 1991	170
December 1992	420
December 1993	1,190
July 1994	1,998

BORROWER'S FISCAL YEAR

January 1 - December 31

WEIGHTS AND MEASURES

METRIC SYSTEM		US SYSTEM
1 meter (m)	=	3 2808 feet
1 kilometer (km)	=	0 6214 mile
1 square meter (m^2)	=	1 196 square yards
1 metric ton (tonne)	=	1 102 short tons
1 kilocalorie (kcal)	=	0 252 British thermal units
1 tonne of coal-equivalent (tce)	=	6 88 million kcal
1 kilogram (kg)	=	2 20462 pounds (lb)

ACRONYMS AND ABBREVIATIONS

GDP	Gross Domestic Product
Oblast	Region - a Soviet (now Russian) territorial administrative unit other administrative units include republics, okrugs and krais
NOx	Nitrogen oxides
SOx	Sulfur oxides
ugol	coal (in Russian)
USAID	United States Agency for International Development

RUSSIAN FEDERATION

RESTRUCTURING THE COAL INDUSTRY

PUTTING PEOPLE FIRST

VOLUME II ANNEXES

Annex A Supply Annex 1 Coal Resources, Production, and Employment

Annex B Supply Annex 2 Coal Market Prospects by Region and Basin

Annex C Supply Annex 3 International Experience of Coal Industry Restructuring

Annex D Coal Transport in Russia

Annex E Social Protection in Coal Mining Areas

Annex F Environmental Issues in the Russian Coal Sector

Annex G Costs, Subsidies, and Employment in Coal Mining

Annex H Comments and Observations of Ministries, Agencies, and Other Interested Russian Organizations on the IBRD Report "Restructuring the Coal Industry of the Russian Federation"

Annex A

Supply Annex 1: Coal Resources, Production, and Employment

Supply Annex 1

Russian Federation

Coal Resources, Production and Employment

Contents

Structure of Report

Physical Geography of the Coal Industry
- resources
- quality
- location
- summary

Recent Trends in Coal Output
- output by major basin
- surface versus underground mining
- output by coal type

Coal Production Costs
- overview/comparators
- regional cost curves

Coal Preparation and Transport Costs
- coal preparation
- transport costs
- delivered costs

Coal Industry Employment
- employment by Mining Association
- direct and ancillary employment
- employment and productivity

Map

April 8, 1994
supply1 vn2

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Structure of the Report

Restructuring the Coal Industry

1 Supply Annex 1 is an annex of a joint report by the World Bank and the Government of Russia on *Restructuring the Coal Industry* in the Russian Federation

- the Main Report was first issued on November 12, 1993
- the Main Report is being updated and revised and will be re-issued

2 The Main Report will be supported by the following annexes

- Coal Markets
  [to be updated]
- *Coal Resources, Production and Employment*
  [Supply Annex 1 this annex]
- Coal Market Prospects by Region and Basin
  [Supply Annex 2 under preparation]
- International Experience of Coal Restructuring
  [Supply Annex 3 under preparation]
- Coal Transport
- Social Protection
- Subsidies and Finance
  [summary of recent consultant studies to be prepared]
- Environmental Issues

3 This annex on Coal Resources, Production and Employment draws on material that is presented in more detail in other annexes, particularly those covering Coal Markets, Coal Transport, and Coal Market Prospects by Region and Basin

Physical Geography of the Coal Industry

Coal Resources

1 See Table 1 *Russia Coal Resources* (facing page)

2 Russia has 300-400 billion tonnes of *physically* recoverable coal resources, ie, more than 1,000 years of output at current production rates

3 Only a small part of these resources is *economically* recoverable, ie, could be produced and delivered to consumers at a full cost recovery price that the consumers would be willing to pay

4 Three factors determine whether individual coal deposits will be economically recoverable

- coal production cost (see *Coal Production Costs* later in this Annex)
- coal quality
- distance from market

Table 1 Russia Coal Resources
(billion tonnes)

BASIN	Hard Coal (Thermal)	Coking Coal	Anthracite	Brown Coal	TOTAL
Pechora/North	8.8	3 6			12.4
Moscow (Tula)				4 4	4.4
Donbass/South	9.3	0 3	7.0		16.6
Urals	0.5	0 3		1 7	2.5
Kuzbass	76.8	38 2		96 5	211.5
Kansk-Achinsk				78 0	78.0
East Siberia	11.0			2 0	13.0
Far East	5 3			10 4	15 7
North East	7.1	4 9			12.0
TOTAL	118.8	47.3	7.0	193.0	366.1

Source Prepared by World Bank based on data provided by IEEC/Rosugol

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Coal Quality

1 See Table 2 - *Representative Coal Quality for Different Coal Basins* (facing page)

2 Customer requirements
- hard coal can be used by a wide range of customers
- coking coal is produced (mainly in Kuzbass and Pechora basins) for the steel industry
- anthracite (from Donbass only) has special combustion characteristics
- brown coal (from Moscow basin and most basins east of the Urals) is typically used in large power plants

3 Calorific value
- is important for transport costs
- can be improved by washing

4 Ash content
- is important for competition with gas (environment)
- again, can be improved by washing

5 Sulfur content
- is important for competition with gas
- but washing usually yields only small reduction in sulfur content

Table 2 Representative Coal Quality for Different Coal Basins

REGION	COAL TYPE	CALORIFIC CONTENT (kcal/kg)	ASH CONTENT %	SULFUR CONTENT %
Pechora/North	Coking	5700-6000	16-18	0 5-0 7
	Hard coal	4000-5500	25-30	1 5-3 0
Moscow	Brown	2300-2700	30-40	3 0-4 5
Donbass	Anthracite	5500-6000	20-30	2 0-3 5
Urals	Hard coal	4000-5000	25-35	3 5-5 5
	Brown	2700-3000	35-40	0 5-1 0
Kuzbass	Coking	5500-6500	10-20	0 3-0 7
	Hard	5000-6000	10-20	0 3-0 7
Kansk-Achinsk	Hard coal	5000-5500	15-25	0 4-0 6
	Brown	3400-3700	15-20	0 4-0 6
Eastern Siberia	Brown	3000-4000	15-25	0 5-1 5
Far East	Hard	4500-5500	15-35	0 3-0 5
	Brown	3000-4000	20-40	0 3-0 5
North East	Coking	5500	15-20	0 3
	Hard	4600-5500	15-20	0 2-0 4
	Brown	3700-4000	15-17	0 2

Source Prepared by World Bank based on data from Energeticheskoe Toplivo SSSR (Moscow Energoatomizdat 1991)

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Physical Geography of the Coal Industry

Location

1 See Map (last page of Annex) showing

- locations of the main coal basins in Russia
- boundaries of economic regions (used for analysis of coal markets)

2 See Table 3 *Key Coal Transport Distances* (facing page), eg

the Center (Moscow) market can be supplied by

-	Moscow (Tula) basin	200 km
-	Donbass	1,200 km
-	Pechora basin	2,200 km
-	Kuzbass	3,500 km

to be exported, coal must be transported

-	Pechora to St Petersburg	2,400 km
-	Kuzbass to St Petersburg	4,500 km
-	Far East to Japan	3,000 km

3 See *Coal Preparation and Transport Costs* (later in this Annex)

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Table 3 Key Coal Transport Distances

PRODUCING BASIN	REGIONS SUPPLIED	DISTANCE (km)
Pechora	North	2,000
	Center	2,200
	Northwest	2,400
Moscow	Center	200
Donbass	North Caucasus	300
	Volga	400
	Center	1,200
Urals	Urals	200
Kuzbass	West Siberia	300
	Urals	1,900
	Center	3,500
	Northwest	4,500
Kansk-Achinsk	East Siberia	900
	West Siberia	400
East Siberia	East Siberia	400
Far East/North East	Far East	500
	exports of coking coal to Japan	3,000

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Physical Geography of the Coal Industry

Summary

1 Coal must compete with other fuels, ie, the *delivered cost* of energy to the consumer must be lower than the delivered cost of other fuels

2 The main elements of the cost structure for delivered coal are
- production cost at minemouth
- plus coal preparation cost (and coal losses), where relevant
- plus stockpiling and transport cost, ie, mainly rail freight

3 Production cost at minemouth
- capital cost recovery
  - in the past, investment was grant-financed
  - in future, coal prices will have to cover costs of financing investment, ie
    - interest and principal repayment on loans
    - profits (dividends and retained earnings)
- plus operating costs (labor & other)

note cost structures (capital, labor, other) for *underground* mines can be very different from that of *surface* mines

4 Coal preparation cost
- capital cost recovery (same situation as for mining costs)
- plus operating costs (labor & other)

note coal preparation losses (ie, fewer tons come out of the preparation plant) are a major part of the costs of coal preparation--however, some of these costs may be recovered in the form of lower rail freight costs

5 Transport and storage cost
- stockpiling costs (usually at the mine)
- plus loading and unloading charges for rail freight
- plus distance-related charges for rail freight
- plus additional trucking costs for distribution to smaller consumers

The remainder of this Annex looks at coal supply cost structures in Russia

- *coal production costs* with an emphasis on labor productivity and employment

- *coal preparation costs* however, very little information is available more analysis is needed

- *coal transport costs* which now are the main cost element affecting competition between different coal basins

Recent Trends in Coal Output

Output by Major Basin

1 See Figure 1 *Coal Production by Basin, 1980 - 1993* (facing page)

2 Coal output peaked in the late 1980s and has been declining since then

3 In most basins, demand for coal has been contracting more rapidly than coal output

- the only regions where coal *shortages* have been reported on a recurring basis are the Far East and the North East

- in several other regions, coal *surpluses* have occurred despite the fall in output

4 In most basins coal output would have declined in any event, ie, even if demand had not declined

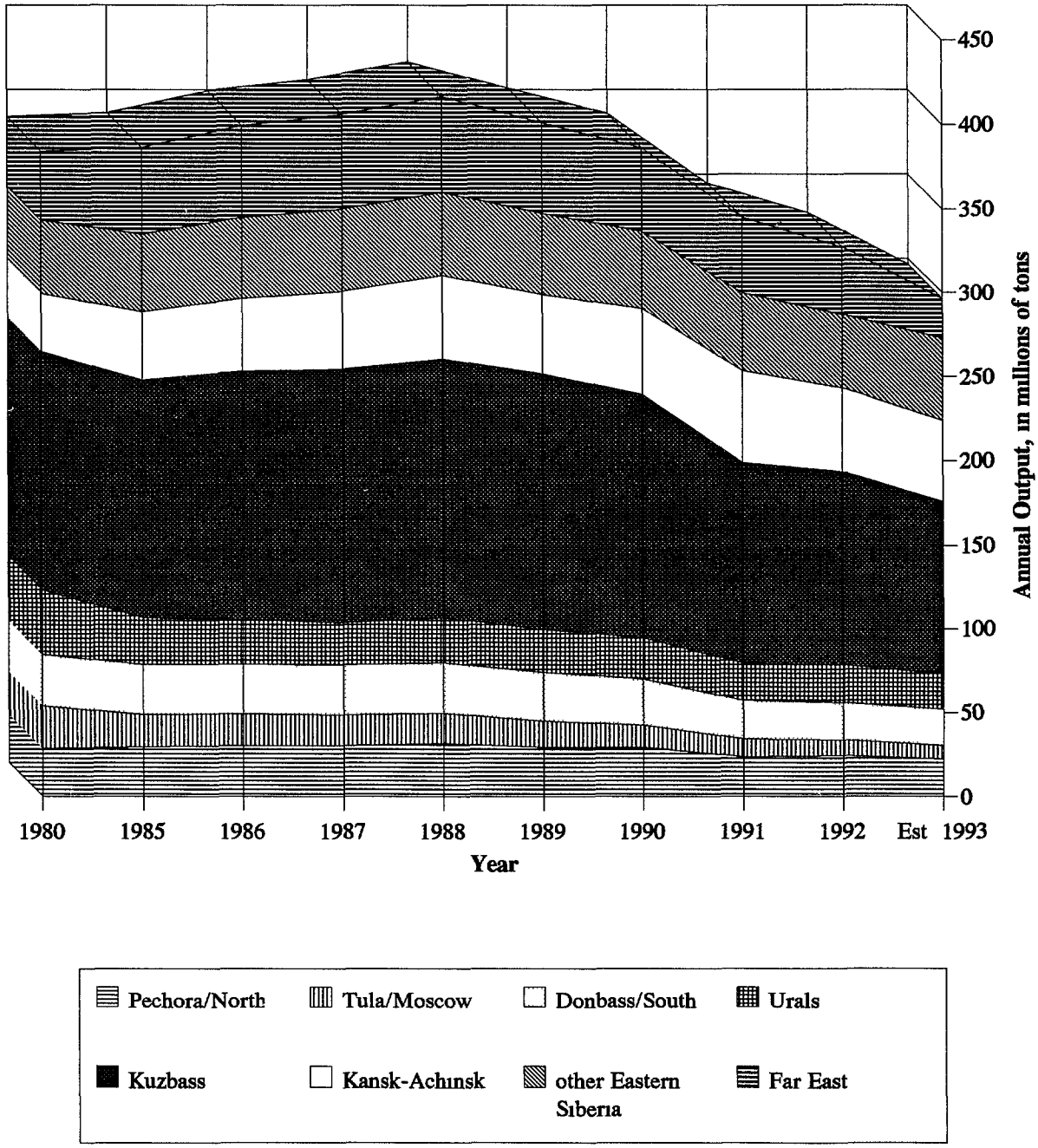
- coal prices have been too low to support operations (eg, spare parts) and development in the industry as a whole

- the spare parts problem has been made worse by the collapse of the regional trading arrangements (CMEA) under which the mines previously imported spare parts for Polish mining equipment without making payment in hard currency

- low-cost mines have been (implicitly) cross-subsidizing high-cost mines instead of retaining the profits needed for expansion of low-cost output--so coal is increasingly at a cost disadvantage in relation to natural gas and fuel oil (both of which are also in excess supply on the Russian energy market)

Figure 1

RUSSIAN COAL INDUSTRY
COAL PRODUCTION BY BASIN AND DEPOSIT
1980 - 1993 (est.)



SOURCE RosUgol data

XBASINS XLS Chart 1

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Recent Trends in Coal Output

Surface versus Underground Mining

Table 4 Russia - Coal Production in Nine Major Basins in 1992

	Number of Mines			Production (million tonnes)			
	Underground	Surface	Total	Underground	Surface	Total	Basin Share
Pechora	18	0	18	24 4	0	24 4	*7 5%*
Tula	18	4	22	7 2	2 0	9 2	*2 8%*
Donbass	42	0	42	22 3	0	22 3	*6 8%*
Urals	25	8	33	9 1	13 4	22 5	*6 9%*
Kuzbass	69	22	91	68 0	46 6	114 7	*35 0%*
Kansk Achinsk	3	6	9	2 0	55 4	57 3	*17 5%*
Eastern Siberia	2	10	12	0 5	35 9	36 3	*11 1%*
Far East	24	12	36	8 9	15 8	24 7	*7 5%*
North East	6	4	10	3 3	12 8	16 1	*4 9%*
Total	207	66	273	145 7	181 9	327 5	*100 0%*
Share of Mining Methods	*76%*	*24%*	*100%*	*44 5%*	*55 5%*	*100 0%*	

note

- surface mines account for 24% of the total number of mines, but 56% of total production, ie, surface mines are typically larger than underground mines
- Kuzbass (35%) and Kansk-Achinsk (17%) together account for more than half of total production

Output by Coal Type

Table 5 Production by Coal Type in 1992
(million tonnes)

	Coking	Anthracite	Hard (Thermal)	Brown	TOTAL
Pechora	15.5		9 0		24.5
Tula				9 2	9.2
Donbass	1.8	20 5			22.3
Urals	1.0		2.1	19 4	22.5
Kuzbass	45.0	1 5	68.1		114 6
Kansk Achinsk			6.6	50 8	57 4
Eastern Siberia			7.6	28 7	36.3
Far East				24 7	24.7
North East	5.6	0 2	9.3	1 0	16 1
TOTAL	68 9	22 2	102.7	133.8	327 6

Note Numbers may not add due to rounding

note

- *coking coal* faces declining demand from the steel industry and excess supplies are now being sold in the steam coal market, usually at a lower price
- *brown coal* sells almost exclusively to large power & heat producers that are relatively close to the mines--brown coal generally cannot compete outside this market

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Coal Production Costs

Overview

1 See Table 6 *Russia Coal Production Costs 1992* (facing page)

2 These costs *do not include*
- any capital costs or financial charges
- social and similar costs
- costs involving unpaid debts to suppliers or other third parties
- costs involving barter with other enterprises

3 These costs *do include*
- all wage payments [arrears in wage payments were not large in 1992, also the Tariff Agreements did not play a major role in wage setting until 1993]

4 We *do not know* whether
- costs are recorded at the minemouth or when the coal leaves the coal preparation plant
- costs are recorded on a cash basis or an accrual basis
- all costs are consistently recorded without omissions

5 These *average* costs are calculated by dividing total declared costs by total output for 1992 1/ --the cost of producing an additional ton of output in each basin would be higher than the average cost [1/ 1992 costs were multiplied by an inflation coefficient to convert them to Jan -Sept 1993 rubles this allows ruble costs to be converted to US dollars by dividing by approx 1000 Rbl/US$]

6 Costs in RBL/tce (rubles per ton of coal equivalent) provide a better comparison between different basins than RBL/tonne, since each tce has the same heat content--however, this comparison does not take into account the large differences in other aspects of *coal quality*, eg, moisture, ash or sulfur content

7 The best interpretation of these costs is that they include most variable costs--and therefore provide a first indication of the *short-run costs* that apply in a period of declining demand and limited investment

Table 6 Russia Coal Production Costs - 1992
(Jan -Sept 1993 rubles per ton or tce[1/])

	Underground	*Surface*	*Weighted Average*	
	Rb/ton	Rb/ton	Rb/ton	Rb/tce
Pechora	8,331	-	8,331	11,426
Moscow (Tula)	4,422	2,239	3,942	11,616
Donbass	7,524	-	7,524	9,603
Urals	7,954	2,074	4,442	10,757
Kuzbass	8,641	5,174	7,229	8,620
Kansk-Achinsk	4,131	995	1,113	2,219
Eastern Siberia	10,088	1,318	1,431	2,810
Far East	12,118	3,123	6,362	14,635
North East	9,938	4,625	5,719	6,961
TOTAL	8,348	2,667	5,195	7,909

1/ tce ton of coal-equivalent (7 million kcal)

Source Prepared by World Bank based on data provided by ROSUGOL

note

- variable costs of production vary significantly from basin to basin
  - 995 - 5,174 RBL/tonne for *surface* mining
  - 4,131 - 12,118 RBL/tonne for *underground* mining
- variable costs of surface mining on average are only 30% of variable costs of underground mining

Coal Production Costs

Comparators

Table 7 Composition of Mining Costs in Different Countries
(percent)

	Labor	Other Operating Costs	Depreciation	Total
Underground Mining				
UK 1992/93	36	57	7	100
USA 1989	48	43	10	100
Australia 1989	36	57	10	100
Russia 1991	44	51	5	100
Russia 1993	30	65	5	100
Surface Mining				
USA 1989	27	64	9	100
Australia 1989	26	59	15	100
Russia 1991	33	52	5	100
Russia 1993	22	73	5	100

Source Prepared by World Bank from data provided by ROSUGOL

note

- Russian cost data received so far does not provide any useful breakdown of costs into different categories
- estimates of depreciation costs are particularly uncertain in the Russian context
- consultants have been commissioned to provide additional data on cost structures in Russia

Coal Production Costs

Regional Cost Curves

1 On the following pages are Regional Cost Curves for

- *Western Russia, Siberia and Eastern Russia* (3 curves) to show
  - the large differences in production costs between these regions
  - the importance of rail freight costs for competition between these regions (see later section in this Annex)

- *Western Russia* (Pechora, Moscow, Donetsk and Urals basins) for steam coal and coking coal separately (2 curves)

- *Siberia* (Kuzbass and Kansk-Achinsk basins) for steam coal and coking coal separately (2 curves)

- *Eastern Russia* (Far East and North East basins) for steam coal and coking coal separately (2 curves)

2 Production costs in these curves are
- per tonne coal-equivalent (tce)
- 1992 costs converted to Jan -Sept 1993 rubles
- total *variable operating costs* (see definitions, page 16)
- adjusted to reflect the fact that a tce of high quality coal is worth more to the consumer than a tce of low quality coal
  - anthracite (high efficiency, clean, long flame) premium of 10%
  - low *sulfur* coals (less than 1%) premium of 10%
  - high sulfur coals (greater than 2%) penalty of 10%
  - low *ash* coals (less than 15%) premium of 10%
  - high ash coals (greater than 30%) penalty of 10%

3 Steam coal and coking coal compete to some extent
- Russia produced about 110 million tonnes of coking coal in 1992
- shipments to metallurgical consumers were about 70 m tonnes
- thermal consumers purchased the remaining 40 million tonnes of coking coal
- so coking coal production costs cannot exceed those of steam coal if coking coal is to survive in the steam coal market

Coal Production Costs

Regional Cost Curves

1 See Figure 2 *Russia Regional Supply Curves, 1992* (facing page)

2 All three curves include steam coal and coking coal, together

3 Large quantities of coal are produced in *Siberia* at costs that are significantly lower than production costs in Western or Eastern Russia

4 All three curves have a "tail" of *high-cost mines* at which

- production costs are up to three times as high as in most other mines
- output is low these mines do not add much to total output

5 In the following pages we will compare *employment* and the *number of mines* in 1992 with two World Bank scenarios for competitive coal markets in 1997 1/

- "low" rail freight tariffs
- "high" rail freight tariffs

1/ Supply Annex 2 gives details of the 1997 scenarios

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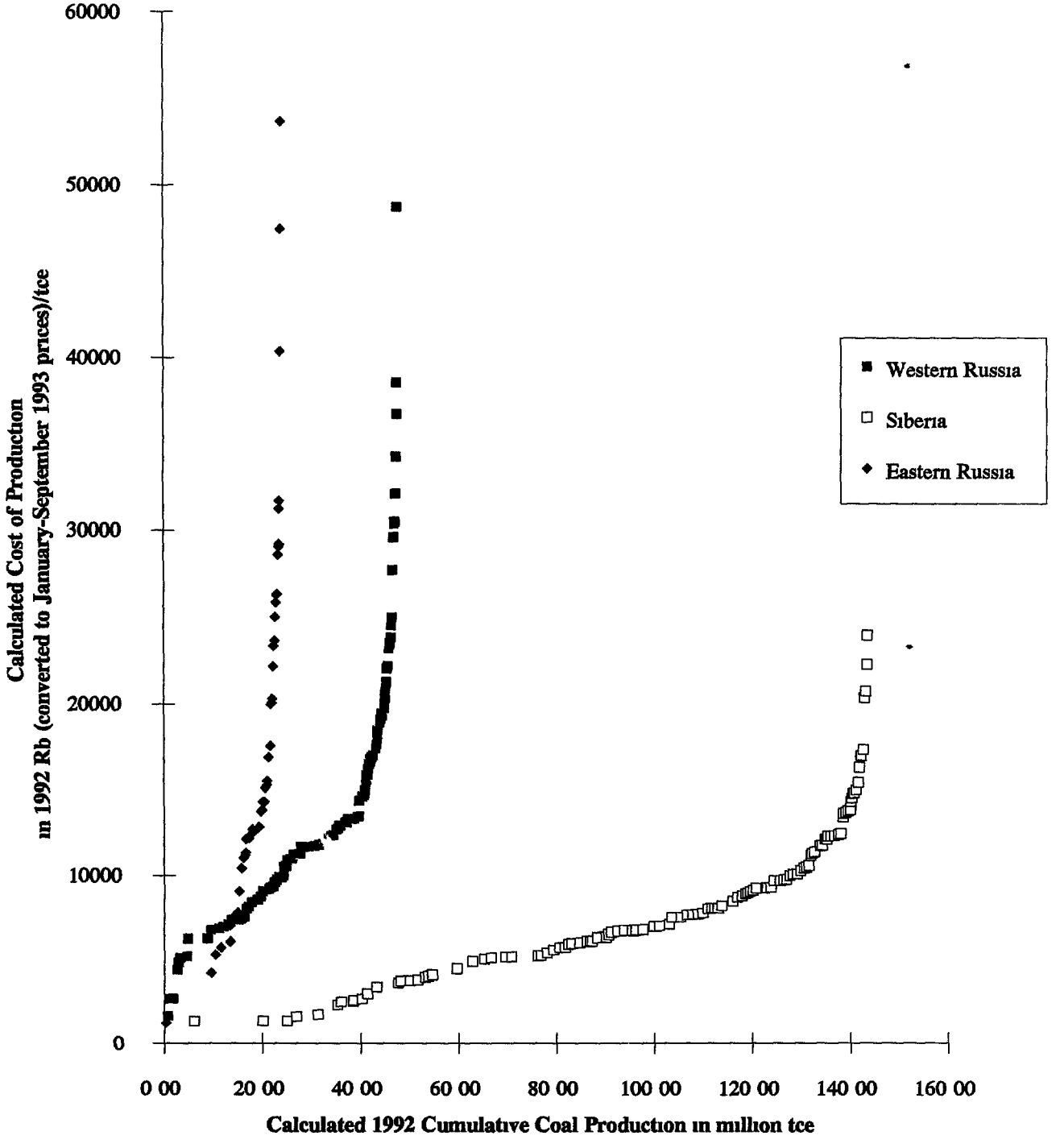
Figure 2

Russia Regional Supply Curves, 1992



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Coal Production Costs

Regional Cost Curves

1 See Figure 3 *Western Russia - Regional Supply Curves, 1992* (facing page)

2 Western Russia includes Pechora, Moscow, Donetsk and Urals basins

3 *Example* at 15,000 Rbl/tce (approx US$15/tce), Western Russia could produce
- 25-30 million tce of steam coal
- 10-15 million tce of coking coal

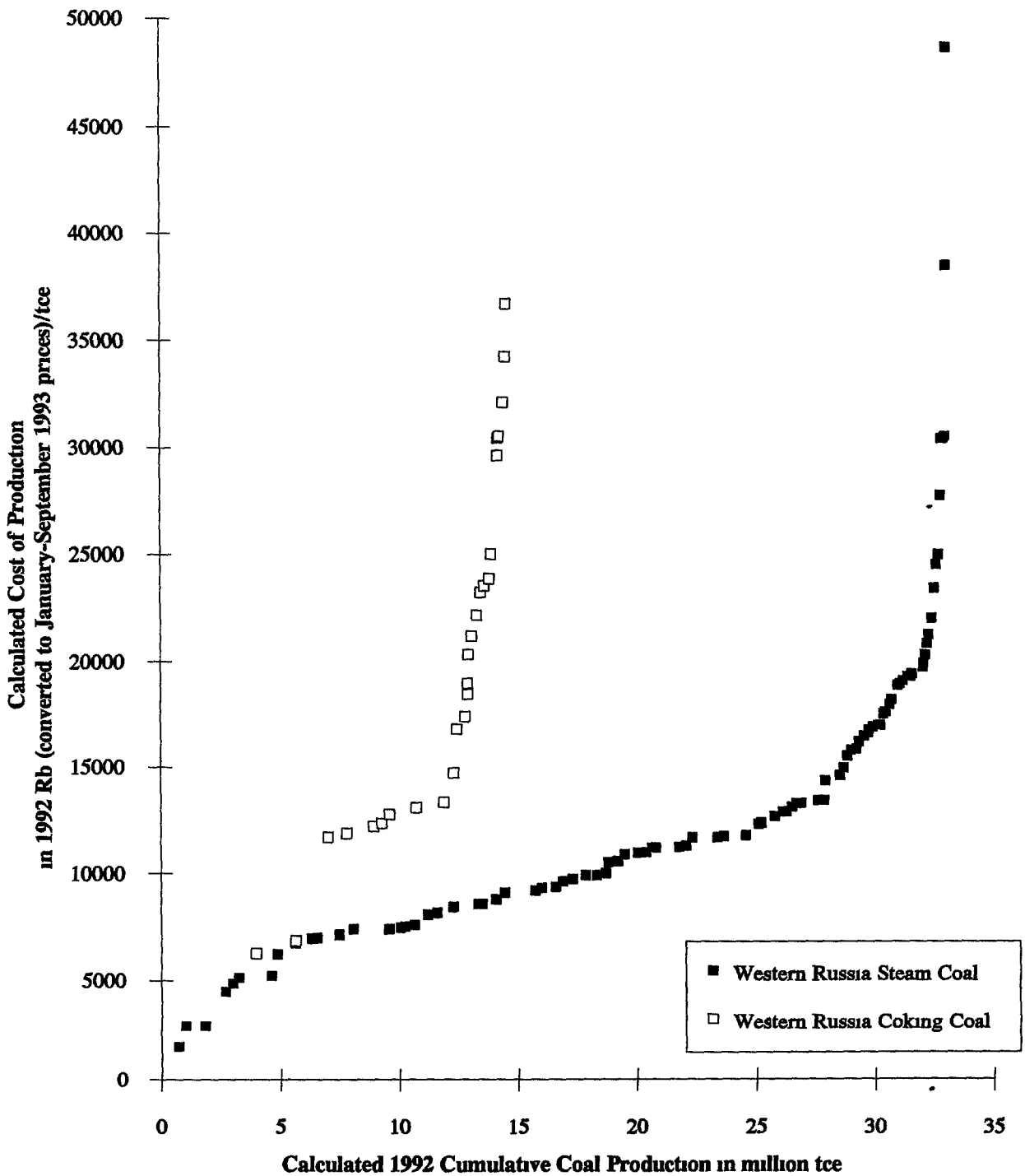
4 In 1992
- total direct employment 326 thousand
- number of mines 115 mines

5 In 1997, with *"low"* rail freight tariffs
- total direct employment 148 thousand
- number of mines 49 mines

6 In 1997, with *"high"* rail freight tariffs
- total direct employment 203 thousand
- number of mines 72 mines

Figure 3

Western Russia -- Regional Supply Curve, 1992



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Coal Production Costs

Regional Cost Curves

1 See Figure 4 *Siberia - Regional Supply Curves, 1992* (facing page)

2 Siberia includes Kuznetsk, Kansk-Achinsk and Eastern Siberian basins

3 *Example* at 8,000 Rbl/tce (approx US$8/tce), Siberia could produce
- about 90 million tce of steam coal
- about 20 million tce of coking coal

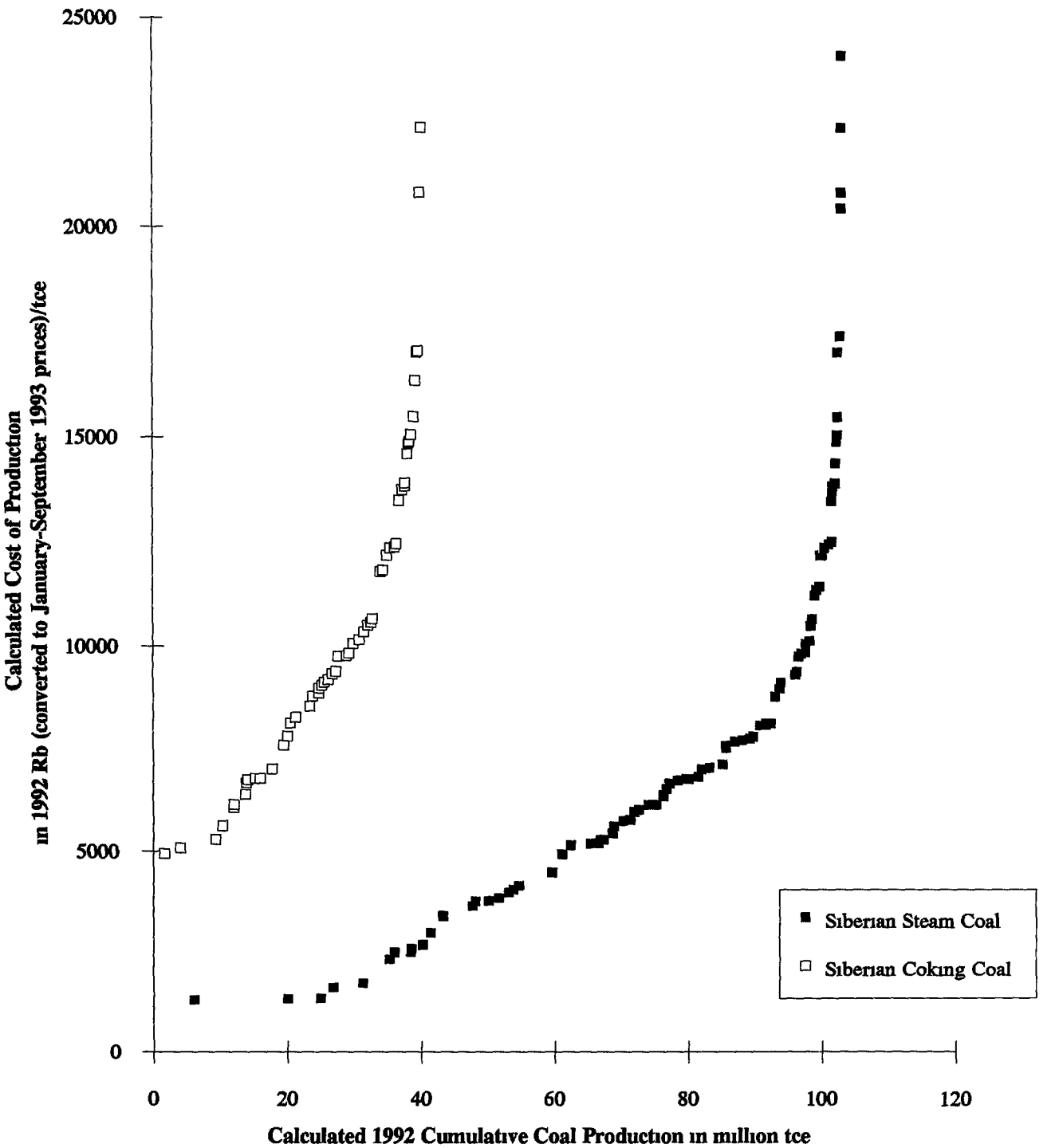
4 In 1992
- total direct employment 346 thousand
- number of mines 112 mines

5 In 1997, with *"low"* rail freight tariffs
- total direct employment 110 thousand
- number of mines 52 mines

6 In 1997, with *"high"* rail freight tariffs
- total direct employment 91 thousand
- number of mines 42 mines

Figure 4

Siberia -- Regional Supply Curve, 1992



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Coal Production Costs

Regional Cost Curves

1 See Figure 5 *Eastern Russia - Regional Supply Curves, 1992* (facing page)

2 Eastern Russia includes basins in the Far East and the North East

3 *Example* at 25,000 Rbl/tce (approx US$25/tce), Eastern Russia could produce
- about 18 million tce of steam coal
- about 5 million tce of coking coal

4 In 1992

- total direct employment	90 thousand
- number of mines	46 mines

5 In 1997, with *"low"* rail freight tariffs

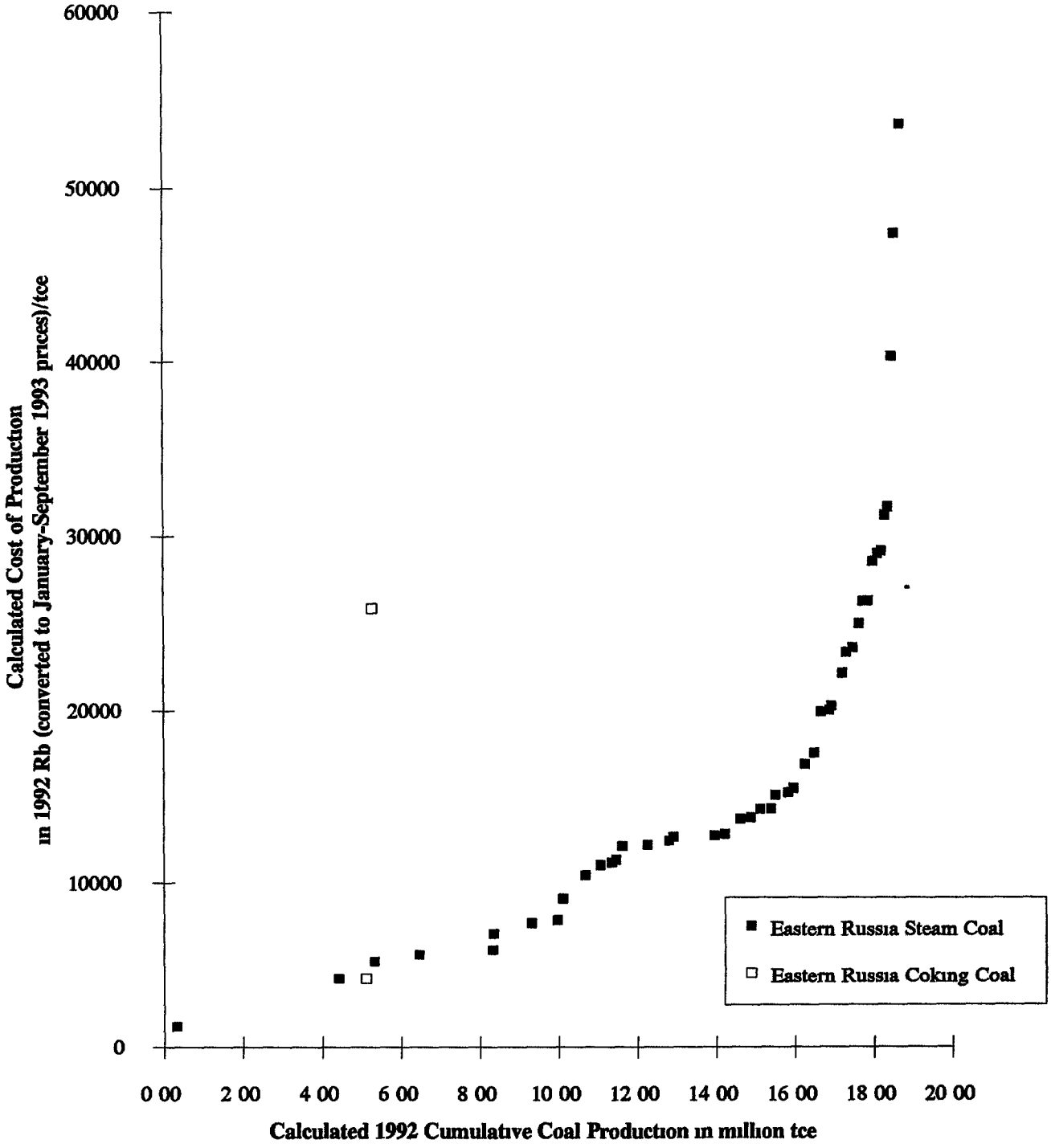
- total direct employment	29 thousand
- number of mines	17 mines

6 In 1997, with *"high"* rail freight tariffs

- total direct employment	45 thousand
- number of mines	24 mines

Figure 5

Eastern Russia -- Regional Supply Curve, 1992



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Coal Preparation

1 The World Bank has very little information about coal washing or other forms of coal preparation in Russia--this is a priority for future analysis

2 As in many other countries
- most coking coal is washed
- most steam coal is not washed
  - minemouth power plants are designed to burn unwashed (run-of-mine) coal, and
  - most brown coals cannot be washed

3 However, in Russia
- coal preparation takes place at large, central washeries that serve several mines or Mining Associations
- washery technology is mostly at least 20 years old and cannot meet the standards of a modern coal market
- most washeries are worn out and urgently need to be replaced
- quality control is poor--sampling and analysis are uncommon
- costs of coal preparation are not allocated to specific coal "products" in any detail--as a result, the "quality" dimension of the coal market functions poorly

4 Coal preparation should be part of a broader strategy to improve coal quality in response to customer needs--for example, ash content can be reduced by
- better mining practices, eg, not mining thin seams with equipment designed to mine thicker seams
- coal washing
- other forms of coal preparation
- improved management of blending and stockpiles

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Coal Preparation, cont'd

5 The main benefit of coal washing is to reduce ash content,1/ which in turn
- reduces transport costs (per heat unit delivered)
- reduces particulate emissions (environmental benefits)
- extends boiler life (reduces investment by coal consumers)
- ie, preparation plants deliver a higher quality coal for a higher price (per tce)--although some of the lower cost may be recovered in the form of lower transport costs

1/ coal washing may also reduce sulfur content to some extent

6 When looking at the opportunities to increase sales revenue and profits, the managers of the new, commercial (joint stock) mining companies need to
- form a clear understanding of the coal quality specifications demanded by their potential customers--and the prices the customers are willing to pay for each coal "product"
- design an overall strategy for improving coal quality--in mining, preparation, stockpiling/blending and distribution--and set prices that recover the costs of each "product" from sales of that product
- decide how best to allocate investment resources between mining and preparation plants--with much greater attention to preparation than in the past

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Coal Preparation and Transport Costs

Transport Costs

1 See Table 8 *Changes in Rail Freight Rates and Coal Prices in 1993* (facing page)

2 Costs are *averages* for all thermal (steam) coal and coking coal transported by rail in Russia

3 As a result of hyper-inflation, changes in rail freight's share in the delivered price of coal are very "lumpy", depending on the timing of the rate increases

- for thermal (steam) coal, freight's share varied from *22% to 60%*
- for coking coal, freight's share varied from *14% to 41%* (lower than for steam coal, because coking coal is washed)

4 Despite these large fluctuations, it is clear that rail freight's share in the delivered price of coal increased significantly in 1993 and may increase further in 1994 and beyond

Table 8 Changes in Rail Freight Rates and Coal Prices in 1993
(Rubles/tonne as of each date)

Type of Coal	1/1/93	7/1/93	9/1/93	11/1/93
Thermal Coal				
Coal Price a/	1,159	1,159	6,975	7,426
Rail Freight	330	1,462	4,090	6,137
Total Delivered Price	1,489	2,611	11,065	13,563
Coal Price	77%	44%	63%	55%
Rail Freight	22%	56%	37%	45%
Total Delivered Price	100%	100%	100%	100%
Coking Coal				
Coal Price b/	2,761	2,761	23,384	24,533
Rail Freight	431	1,898	5,347	8,022
Total Delivered Price	3,192	4,659	28,731	32,555
Coal price	86%	59%	81%	75%
Rail Freight	14%	41%	19%	25%
Total Delivered Price	100%	100%	100%	100%

a/ A mix of about 75% minehead prices and 25% ex-washery prices
b/ Ex-washery prices
Source Russian rail industry

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Transport Costs

1 See Table 9 *Rail Freight Rates between Producing Basins and Consuming Regions* (facing page)

2 *Supply Annex 2* presents a basin-by-basin analysis of
- the tradeoff between mining costs and freight costs
- the impact on inter-basin competition for the long distance coal markets

3 An example to indicate the potential for competition (all costs in Jan -Sept 1993 rubles)

- much of the coal in *Western Russia* (Figure 3) is produced at a variable cost of 10,000 to 15,000 rubles/tce
- the cost of transporting these coals to the Moscow market varies enormously--from 3,000 to 17,000 rubles/tce
- the delivered cost in Moscow of coal from Western Russia in some cases will be in excess of 30,000 rubles/tce

- much of the coal in *Siberia* (Figure 4) is produced at a variable cost of 5,000 to 10,000 rubles/tce
- the cost of transporting these coals to the Moscow market is very high, starting at about 22,000 rubles/tce
- nonetheless, the delivered cost in Moscow of coal from Siberia in some cases will be less than 30,000 rubles/tce

- *conclusion* at the freight rates prevailing in late 1993, there was still some scope for competition between basins in Western Russia and Siberia for a market as distant as Moscow (see Supply Annex 2 for details)

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Table 9 Linkages and Rail Freight Rates Between Producing Basins and Consuming Regions

Producing basin	Regions supplied	Distance (km)	Transport Cost (Rbl/tce* in Jan -Sept 1993 terms)
Pechora	North	2,000	12,000 (coke), 15,600 (hard)
	Center	2,200	13,200 (coke), 17,100 (hard)
	Northwest	2,400	14,400 (coke), 18,700 (hard)
Moscow	Center	200	2,900
Donbass	North Caucasus	300	1,900
	Volga	400	2,500
	Volga Vyatka	1,000	6,400
	Center	1,200	7,600
Urals	Urals	200	1,600 (hard), 2,500 (brown)
Kuzbass	West Siberia	300	1,900
	Urals	1,900	12,000
	Center-Black Earth	3,000	19,100
	Center	3,500	22,300
	North	4,000	25,500
	Northwest	4,500	28,600
Kansk-Achinsk	East Siberia	900	5,900 (hard), 8,700 (brown)
	West Siberia	400	2,600 (hard), 3,900 (brown)
East Siberia	East Siberia	400	4,000
Far East/North East	Far East	500	5,000
	exports of coking coal to Japan	3,000	17,800

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Coal Industry Employment

Employment by Mining Association

1 See Table 10 *Production and Employment by Mining Association, 1992* (facing page)

2 Source RosUgol

3 *Employment totals* in 1992 in this table are slightly different from those in Table 11 (source Goskomstat) Differences are less than 10 percent and are probably partly due to differences in definitions of personnel categories

- Total Employment (RosUgol 765,000) corresponds approximately with total Personnel of Industrial Enterprises in the Coal Industry (Goskomstat 702,000)

- Number of Production Workers (RosUgol 433,000) corresponds approximately with Laborers for Coal Production (Goskomstat 412,000)

4 *Productivity* (output production per worker) varies enormously from one Mining Association to another

- productivity is a more important indicator for underground mines than for surface mines--since underground mining is generally much more labor-intensive than surface mining

- productivity in underground mines will vary greatly according to factors such as
  - depth of current operations
  - type of transport underground shaft or incline
  - distance from the working faces to the shaft/surface

- nonetheless, low labor productivity is a useful indication that labor costs may be too high for a mine to remain commercially viable

Table 10 - Russian Coal Production and Employment by Mining Association, 1992

Mining association	Region	No of mines	Total output	Under-ground output	Coking coal output	Total Employ ment	No of production workers	Output production worker
			MT	MT	MT	'000s	'000s	MT/year
Intaugol	North	5	7 5	7 5	0 0	18 7	9 4	774
Vorgashorskaya	North	1	5 0	5 0	5 0	4 4	3 8	1276
Vorkutaugol	North	12	12 0	12 0	10 5	47 3	21 6	554
Tulaugol	Moscow	22	9 2	7 2	0 0	41 0	22 5	409
Gukovugol	South	15	6 5	6 5	0 9	38 7	21 4	294
Obukhovskoye	South	1	1 9	1 9	0 0	6 7	4 8	397
Rostovugol	South	26	13 9	13 9	0 9	90 0	49 2	283
Bashkirugol	Urals	2	4 5	0 0	0 0	8 7	2 1	2157
Cheljabinskugol	Urals	14	11 2	6 0	0 0	36 0	18 9	594
Kizelugol	Urals	13	2 4	2 4	1 0	23 8	13 2	162
Shumikhinskaya	Urals	1	0 2	0 2	0 0	1 4	1 1	141
Vakhrushevugol	Urals	3	4 2	0 5	0 0	9 5	4 0	1033
Belovougol	Kuzbass	6	5 5	5 5	2 8	16 8	10 6	517
Kiselevskugol	Kuzbass	8	4 5	4 5	1 0	22 7	13 2	338
Kuzbasrazrezugol	Kuzbass	18	40 3	0 0	16 3	51 4	28 3	1422
Kuznetskugol	Kuzbass	18	20 0	20 0	16 6	67 9	45 7	436
Leninskugol	Kuzbass	9	14 0	14 0	3 3	33 0	22 5	619
Mezhdurechje	Kuzbass	1	4 1	0 0	3 1	4 6	4 1	983
NPK "Ugol"	Kuzbass	4	2 3	0 9	0 3	5 7	3 1	739
Prokopyovskugol	Kuzbass	11	7 4	7 4	4 5	42 6	25 8	287
Raspadskaya	Kuzbass	1	6 3	6 3	6 1	5 9	5 2	1236
Severokuzbassugol	Kuzbass	14	8 8	8 0	5 9	43 1	26 4	336
Vakhrusheva	Kuzbass	1	1 5	1 5	0 3	2 6	2 4	640
Borodinskiy	Kansk	1	28 4	0 0	0 0	6 2	2 3	12278
Krasnojarskugol	Kansk	8	29 0	2 2	0 0	19 3	10 9	2644
Vostsibugol	East Sib	12	36 3	0 5	0 0	24 4	11 7	3111
Dalvostugol	Far East	5	5 4	0 0	0 0	7 1	2 3	2379
Primorskugol	Far East	17	14 8	5 7	0 0	35 6	18 9	780
Sakhalinugol	Far East	14	4 4	3 1	0 0	20 4	13 6	326
Jakutugol	N East	5	12 4	1 3	5 6	21 6	5 6	2240
Severovostokugol	N East	5	3 7	2 0	0 0	5 5	3 4	1093
TOTAL		273	327 6	145 7	68 8	764 7	432 9	757

Note Numbers may not add due to rounding

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Coal Industry Employment

Direct and Ancillary Employment

1 See Table 11 *Employment in the Coal Industry, 1992* (facing page)

2 Under the broadest definition of the Coal Industry, total employment is greater than 900,000 people, of whom

- 212,000 (23%) are "personnel of non-industrial enterprises" in the coal industry, including design & construction enterprises and trade & food services

- 120,000 (13%) are "non-industrial personnel of industrial enterprises", including kindergarten, housing, agricultural and other personnel

- ie, in a market economy, more than a third of total coal industry personnel would be employed either by independent contractors or by local government

3 Under a narrower defintion of employment, there are 369,000 "workers for the extraction of coal", of whom

- 305,000 (83%) work in underground mining, although not necessarily underground

- 64,000 (17%) work in surface mines

Table 11 Employment in the Coal Industry, 1992

Russian Federation Total	914 331
Personnel of Industrial Enterprises	701 896
Industrial Personnel	581 881
Laborers	491 841
For Coal Production	411,674
Of which Workers for Extraction of Coal	368 996
Under ground Mines	305 115
Under ground	223 954
Above Ground	81 161
Surface Mines	63 881
Other Laborers	80 167
Office Staff	90,020
For Coal Production	72 303
Other Office Staff	17 717
Non Industrial Personnel 1/	120,035
Personnel of Non Industrial Enterprises	212 435
Construction	105,887
Design Organizations	2,196
Other Organizations	91,059
Trade/Food Service	13 303

1/ Includes kindergarten housing agricultural and other personnel

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Employment and Productivity

Table 12 Russia Employment and Productivity of Underground and Surface Mine Workers in 1992

	Production Workers			Output per Worker (tonnes per man year)		
	Underground	Surface	Total	Underground	Surface	Total
Pechora/north	35,151	0	35 151	694		694
Moscow (Tula)	21,147	1 362	22 509	340	1,486	409
Donbass/South	76,076	0	76 076	293	-	293
Urals	32,441	8,461	40 902	279	1 586	550
Kuzbass	153,347	36,227	189,574	444	1 287	605
Kansk-Achinsk	2,576	10,685	13,261	771	5 180	4 322
East Siberia	1 960	9 718	11 678	242	3 690	3 111
Far East	28 137	6 725	34,862	316	2 347	708
North east	4,688	4 253	8 941	710	3 012	1 806
Total	355,523	77,431	432 954	410	2 349	757

Source ROSUGOL

1 Kuzbass and Russian Donbass account for more than 60% of total coal industry employment of "production workers"

basin	*production workers*	*percent of total*
Kuzbass	189,574	44%
Donbass/south	76,076	18%

2 For comparison, labor productivity in new underground mines in the US may exceed 11,000 tonnes per worker per year

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Employment and Productivity

Table 13 Coal Mine Productivity 1992 1/
(tons per manshift)

Country	Underground Mines	Surface Mines
U S A	23 7	49 4
Australia	18 1	36 3
South Africa 2/	7 70	N A
U K	6 34	9 06
Germany	5 22	-
Russia 3/	1 95	11 13
Poland	1 95	-
China 4/	1 33	5 0
India	0 54	3 34

1/ note
- coal labor force statistics in countries such as India and China include many workers with social functions that are not found in other countries
- the proportion of washed coal varies between countries and is much lower in China and India than in other countries

2/ 1991

3/ based on production workers only, assuming 210 shifts/year

4/ raw coal

1 differences in definitions and technical conditions make it difficult to compare mining productivity statistics from different countries

2 however, it is clear that in Russia
- in the worst mines, labor productivity is very low by world standards
- even in the better mines, there is considerable room for improvement

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Annex B

Supply Annex 2: Coal Market Prospects by Region and Basin

Supply Annex 2

Russian Federation

Coal Market Prospects by Region and Basin

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April 17, 1994
supply2 anx

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Structure of the Report

Restructuring the Coal Industry

1 Supply Annex 2 is an annex of a joint report by the World Bank and the Government of Russia on *Restructuring the Coal Industry* in the Russian Federation

- the Main Report was first issued on November 12, 1993
- the Main Report is being updated and revised and will be re-issued

2 The Main Report will be supported by the following annexes

- Coal Markets
  [to be updated]
- Coal Resources, Production and Employment
  [ie, Supply Annex 1]
- *Coal Market Prospects by Region and Basin*
  [Supply Annex 2 this annex]
- International Experience of Coal Restructuring
  [Supply Annex 3 under preparation]
- Coal Transport
- Social Protection
- Subsidies and Finance
  [summary of recent consultant studies to be prepared]
- Environmental Issues

3 This annex on Coal Market Prospects by Region and Basin draws on material that is presented in more detail in other annexes, particularly those covering Coal Markets, Coal Transport, and Coal Resources, Production and Employment

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Structure of the Report

Market Adjustment Scenario

1 The purpose of this Annex on *Coal Market Prospects by Region and Basin* is to present the methodology and results of the World Bank's medium term projections for coal demand and supply in Russia

- these projections--described as the *Market Adjustment Scenario*--should be compared with other medium term projections prepared by Russian agencies

- each of the new, joint stock mining companies (former Mining Associations) should take this methodology--or a similar one--as a starting point to develop their own medium term strategies for marketing (including pricing), operations and development

2 The analysis for the Market Adjustment Scenario proceeds in the following steps

- taking 1992 as a base year, the World Bank estimates that total national coal sales will contract by about a third, then level off some time in the period 1995-2000
  [see Annex on Coal Markets]

- individual coal basins will have to compete with each other to maintain or increase their share of a smaller market--the basin that can deliver coal of a particular quality at the lowest *delivered* price will win the sales contract

- most coal basins in Russia depend on medium to long distance sales for a substantial part of their total sales revenue--so *rail freight costs* will be crucial to their ability to compete
  [see Coal Transport Annex and Supply Annex 1]

Market Adjustment Scenario, cont'd

- for each combination of coal basin and regional market, we estimate *future delivered prices* (ie, prices that would ensure full cost recovery for the companies that produce and deliver the coal) for steam and coking coal, based on
  - 1992 coal production cost curves (translated into 1993 rubles) for each of the nine major basins
  - a range of rail freight costs "low" and "high"
- we then simulate the coal market to estimate the likely range of *coal sales for each basin* in a target year (1997)--however, this target year could be almost any year in the period 1995-2000, since demand is projected to be fairly "flat" over the whole period
- we then use the 1992 cost and employment curves to estimate a "low" and a "high" case for
  - the *number of mines* that would stay in operation in each basin in 1997--and, correspondingly, the number of mines that would have to close over the transition period
  - the total *employment* in each basin in 1997--and, correspondingly, the number of workers who could become unemployed over the transition period
- these estimates of possible mine closures and unemployment--basin by basin--are the starting point for our analysis of severance costs, pensions and other *social costs* related to the restructuring of the coal industry
- finally, we look at the scope for the new, joint stock mining companies to *improve production efficiency*, ie, to cut production costs and improve product quality in order to increase their share of the total coal market

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Regional Demand for Coal

1 See Table 1 *Demand for Coal by Region, 1990-1997* (facing page)

2 The target year (1997) is a "typical" year in the period 1995-2000, during which coal demand will remain relatively "flat"

3 Demand for coal in Russia is changing [details in Annex on Coal Markets] in response to
- changes in the level of GDP
- a shift from investment towards consumption expenditure
- a decline in the output of heavy industries
- continuing penetration of some regional markets by natural gas
- in the medium term changes in the price of coal relative to prices of other fuels and commodities

4 The regional coal demand scenarios in Table 1 start from 1990 data on consumption of steam coal and coking coal in each of the eleven economic regions

- World Bank scenarios for 1997 electricity and heat generation--the largest single component of steam coal demand--were used to estimate the regional pattern of steam coal demand in 1997, after taking into account
  - likely output of lower-cost, existing hydro and nuclear plants in these regions
  - likely shares of coal, natural gas and fuel oil (mazut) in the remaining electricity and heat generation loads

- World Bank scenarios for 1997 output of iron and steel were used to estimate the regional pattern of coking coal demand

- in the regions where coal competes with natural gas--the Urals and European Russia--the scenarios assume that coal consumers will be more sensitive to coal prices (a price elasticity of ¹0%) than in other regions

Table 1 Demand for Coal by Region 1990-1997 a/
(million tce)

	1990	of which coking	1997	of which coking
Northwest	3 7		2.2	
North	16.8	7 3	10 0	4 6
Center	22.7	8 3	13 5	5 2
Center-Black Earth	5.4		3 4	
Volga Vyatka	5 5		3.5	
Volga	5 5		3 5	
North Caucasus	12 1		7.5	
Urals b/	51.6	21 5	20 4	13 6
West Siberia	56 5	8 6	32 5	5 4
East Siberia	44 0		24 0	
Far East/North East	26 6		20 4	5 1
TOTAL	250 4	45 7	144 9	28 8

a/ Excludes coal exports
b/ Includes demand for coal from Ekibastuz (Kazakhstan)
Source RosUgol (1990) and World Bank estimates (1997)

Note Russian experts have prepared an alternative scenario for total coal sales in 1995 of 267 million tonnes (approx 193 million tons of coal equivalent, tce)

- this Annex does not examine the Russian scenario because the total is not broken down into different consumption regions

- while the Russian scenario is much higher than that of the World Bank (Table 1) and is for a slightly different year (1995 instead of 1997), it also implies a continuing decline in coal output--from about 214 million tce in 1992 to 193 million tce in 1995

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Coal Production Costs

1 As in Supply Annex 1, we use Cost Curves to summarize the costs of production in each basin--Figures 1-9 (pages 12-21, below)

2 Production costs in these curves are
- per tonne coal-equivalent (tce)
- 1992 costs converted to Jan -Sept 1993 rubles
- total *variable operating costs* (see below for definitions)
- adjusted to reflect the fact that a tce of high quality coal is worth more to the consumer than a tce of low quality coal
  - anthracite (high efficiency, clean, long flame) premium of 10%
  - low *sulfur* coals (less than 1%) premium of 10%
  - high sulfur coals (greater than 2%) penalty of 10%
  - low *ash* coals (less than 15%) premium of 10%
  - high ash coals (greater than 30%) penalty of 10%

3 These costs *do not include*
- any capital costs or financial charges
- social and similar costs
- costs involving unpaid debts to suppliers or other third parties
- costs involving barter with other enterprises

4 These costs *do include*
- all wage payments [arrears in wage payments were not large in 1992, also the Tariff Agreements did not play a major role in wage setting until 1993]

5 We *do not know* whether
- costs are recorded at the minemouth or when the coal leaves the coal preparation plant
- costs are recorded on a cash basis or an accrual basis
- all costs are consistently recorded without omissions

6 The best interpretation of these costs is that they include most variable costs--and therefore provide a first indication of the *short-run costs* that apply in a period of declining demand and limited investment

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Competition between Coal Basins
Coal Rail Freight Costs

1 For analysis of coal rail freight costs, see
- Coal Transport Annex
- also Tables 8 and 9 in Supply Annex 1

2 In order to simulate the operation of the coal market under the *1997 Market Adjustment Scenario* (summarized pages 4-5 in this Annex), we used two scenarios for coal rail freight tariffs

- the "low" tariff is below the current tariff (after adjusting for inflation)--so tariffs will only fall to this level if tariff increases fall behind the general rate of inflation

- the "high" tariff is higher (after adjusting for inflation) than the economic cost of coal rail freight in Russia (World Bank estimates)--however, coal rail freight tariffs may reach these levels if the railways remain unregulated

3 The *"low"* coal rail freight scenario in rubles per tonne-kilometer (RBL/t-km) is
- 3 0 RBL/t-km for greater than 800 km
- 4 5 RBL/t-km for 400-800 km
- 6 0 RBL/t-km for less than 400 km

4 The *"high"* coal rail freight scenario in RBL/t-km is
- 5 0 RBL/t-km for greater than 800 km
- 7 5 RBL/t-km for 400-800 km
- 10 0 RBL/t-km for less than 400 km

5 These costs are in Jan -Sept 1993 rubles
- this allows ruble costs to be converted to US dollars at approximately 1000 RBL/US$
- so these tariff scenarios are equivalent to about *0 3 to 0 5 US cents per tonne-kilometer for long hauls* (further than 800 km)

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Scenario Results, 1997
Coal Output by Basin

See Table 2 *Coal Output by Basin, 1992-1997* (facing page) The scenario results below show 1997 outputs as a percentage of 1992 base year output (showing results of low then 'high" rail freight tariff scenario)

Pechora 50-62%
- will become the dominant supplier of coking coal to the Center region
- will stop all production of steam coal, regardless of rail freight tariffs

Moscow (Tula) 57-95%
- would be protected by high rail freight tariffs (for sales of low grade steam coal in the Center region) from competition from Donbass and Kuzbass
- is very sensitive to rail freight tariffs and would continue to contract if rail freight tariffs remain at the lower end of the range

Donbass/South 86-93%
- is largely protected by recent rail freight tariff increases and will contract less than most other basins if rail freight tariffs stay inside the range used for the scenarios
- will remain an important supplier of steam coals to regions west of the Urals but will continue to reduce output of coking coal

Urals 49-70%
- will cease production of coking coal and will continue to reduce output of steam coal, regardless of rail freight tariffs
- will also lose some of the local (Urals) market to Kuzbass and Donbass if rail freight tariffs remain at the lower end of the range

Kuzbass 55-49%
- will be the dominant supplier of coking coal only in the Urals and so will have to cut total coking coal output to less than 50% of 1992 levels
- will also lose some of its steam coal sales west of the Urals
- will face the largest reduction of output (about 45 million tce) of any basin
- will not be as sensitive to further changes in rail freight tariffs as other, smaller basins

Kansk-Achinsk 87-69%
- will keep its local minemouth markets at any rail freight tariff
- could remain competitive in long-distance sales--both westwards and eastwards--at the lower end of the rail freight tariffs

East Siberia 87%
- will dramatically increase its share of the local East Siberian market at the expense of coal shipments from other basins into East Siberia

Far East 53-77%
- will supply all demand in the Far East region if rail freight tariffs reach the high end of the range
- will lose some of the local market to Kansk-Achinsk coals if rail freight tariffs remain near the lower end of the range

North East 87-91%
- will slightly reduce its output of steam coals to match lower demand for steam coal in the region

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Table 2 Coal Output by Basin
(million tce)

BASIN	1992 Base		1997 Low Freight Tariff Scenario		1997 High Freight Tariff Scenario	
	All Coal	of which, coking	All Coal	of which, coking	All Coal	of which, coking
Pechora/North	17 8	12 5	8 8	8 8	11.1	11 1
% 1992 Base	*100%*		*49 4%*		*62 4%*	
Moscow/(Tula)	3.1		1 8		3.0	
% 1992 Base	*100%*		*58.1%*		*96 8%*	
Donbass/South	17 5	1 4	15.0	0 4	16.3	0 7
% 1992 Base	*100%*		*85 7%*		*93 1%*	
Urals	9 3	0 7	4 5		6.5	
% 1992 Base	*100%*		*48 4%*		*69.9%*	
Kuzbass	96 2	40 3	52.8	19 7	47.4	17 7
% 1992 Base	*100%*		*54.9%*		*49 3%*	
Kansk Achinsk	28 7		25.0		19 8	
% 1992 Base	*100%*		*87 1%*		*69 0%*	
East Siberia	18 5		16 1		16 1	
% 1992 Base	*100%*		*87 0%*		*87 0%*	
Far East	10 7	0 2	5.7		8.2	
% 1992 Base	*100%*		*53 3%*		*76 6%*	
North East	13 3	5 1	11 6	5 1	12 1	5 1
% 1992 Base	*100%*		*87 2%*		*91 0%*	
TOTAL	*215 1*	*60 2*	*141 3*	*34 0*	*140.6*	*34 6*
% 1992 Base	*100%*		*65 7%*		*65 3%*	

Source RosUgol (1992) and World Bank estimates (1997)

The World Bank prepared two scenarios of coal output by basin in 1997 based on the following assumptions (for details see *Market Adjustment Scenario*, pages 4-5 of this Annex)

- the new joint stock mining companies will set delivered prices that ensure full recovery of variable costs, mine by mine, and full recovery of total costs for the companies that transport and deliver the coal
- coal consuming regions will purchase the coals that meet their quality specifications at the lowest delivered cost
- coal rail freight tariffs will lie somewhere in the range from "low" to "high" (see *Coal Rail Freight Costs*, page 9 of this Annex)

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Scenario Results, 1997

Coal Output by Basin

1 The charts (Figures 1-9) on the following pages

- present the *Cost Curves* for each of the nine major basins, ie, coal production cost versus coal output

- summarize the results of the *1997 Market Adjustment Scenario*

  - output and minemouth price (ie, production cost) in 1997

  - for two scenarios of coal rail freight tariffs--low & high

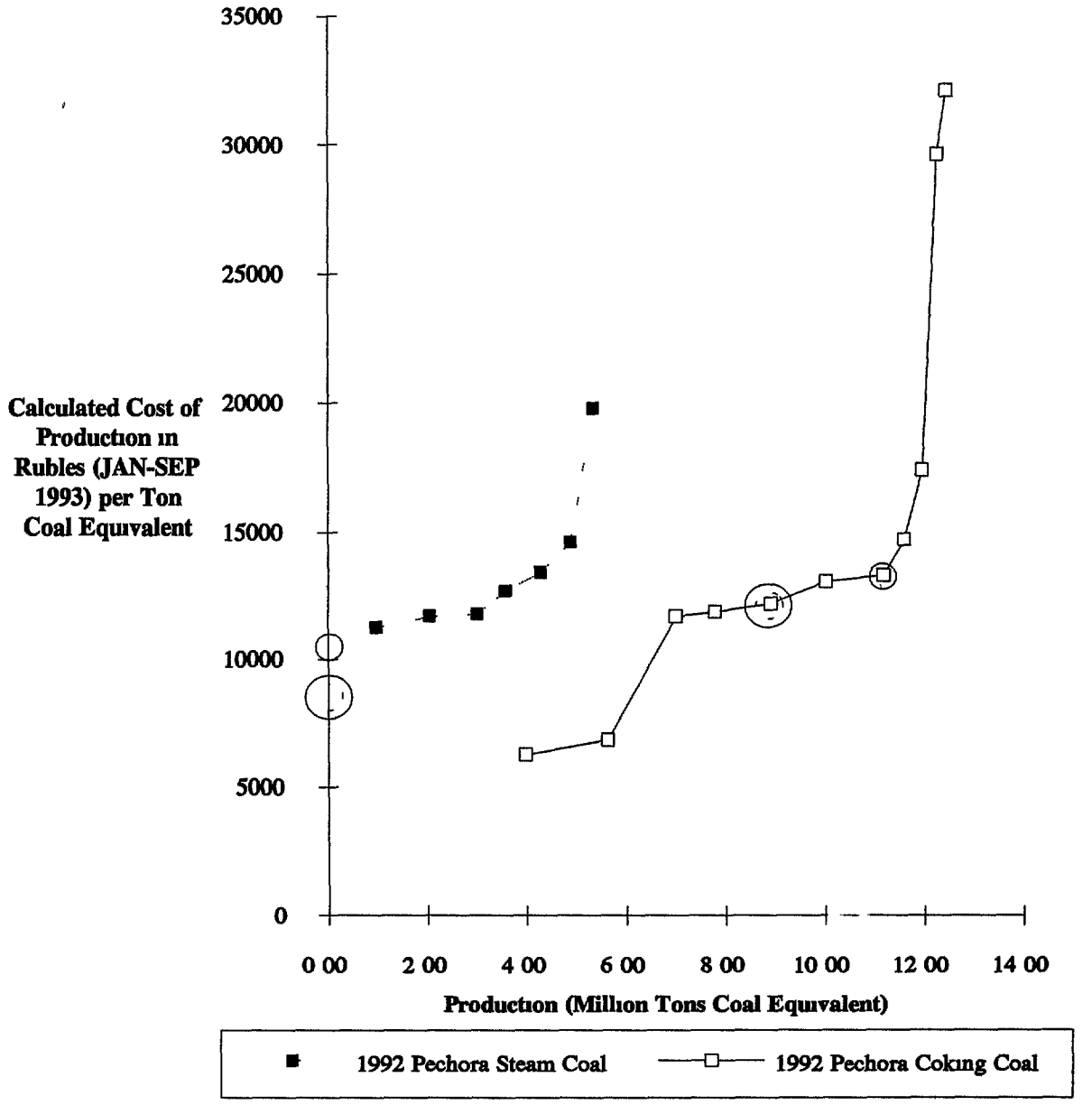
2 Where relevant, separate Cost Curves are shown (on the same chart) for steam coal and coking coal

3 The charts are for the following coal basins

-	Pechora	steam & coking
-	Moscow (Tula)	steam
-	Russian Donbass	steam & coking
-	Urals	steam & coking
-	Kuzbass	steam & coking
-	Kansk-Achinsk	steam
-	East Siberia	steam
-	Far East	steam & coking
-	North East	steam & coking

Figure 1

1992 Pechora Coal Supply Curves

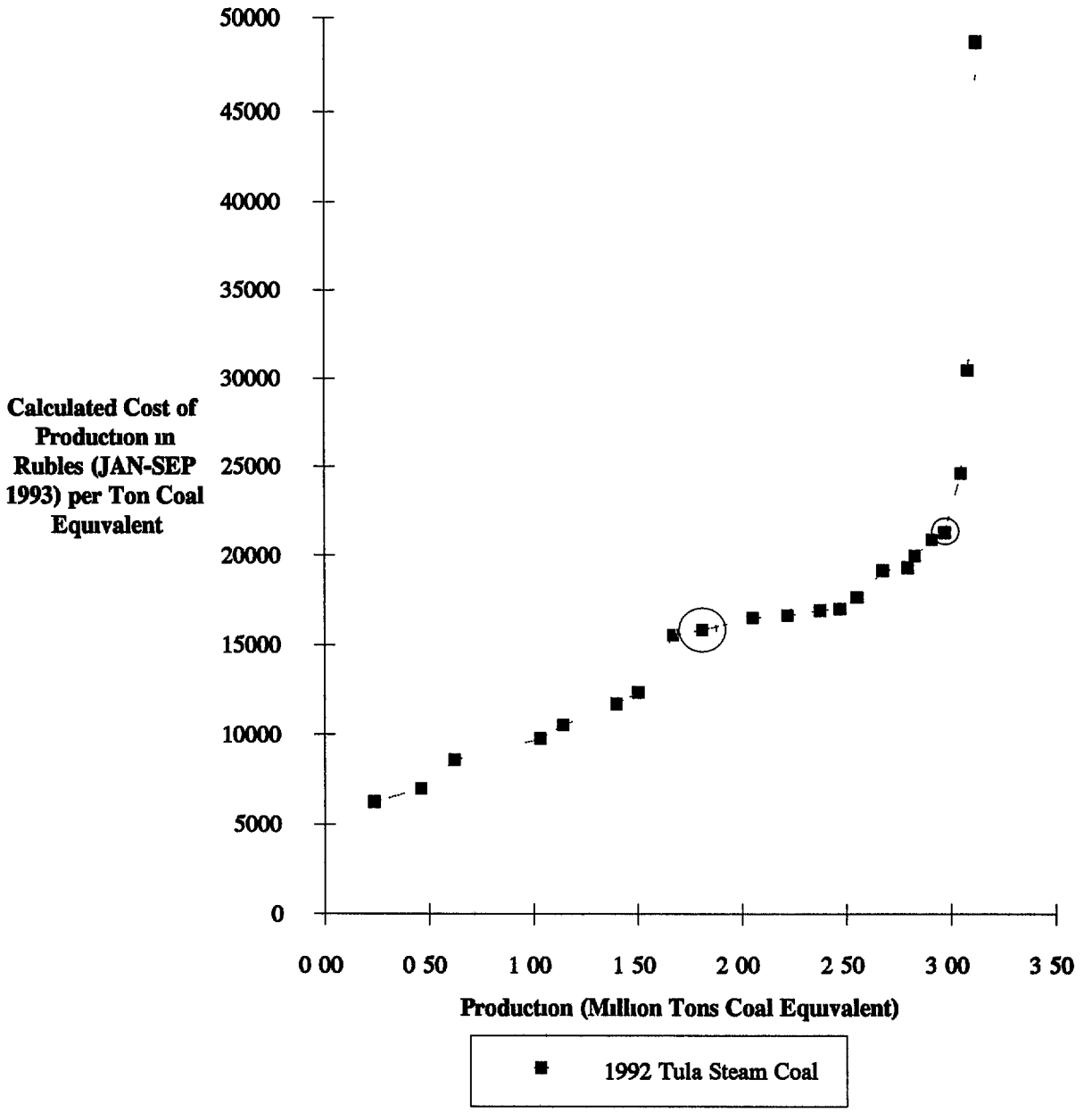


= 1997 Low Rail Tariff Scenario

= 1997 High Rail Tariff Scenario

Figure 2

1992 Moscow Basin Coal Supply Curves

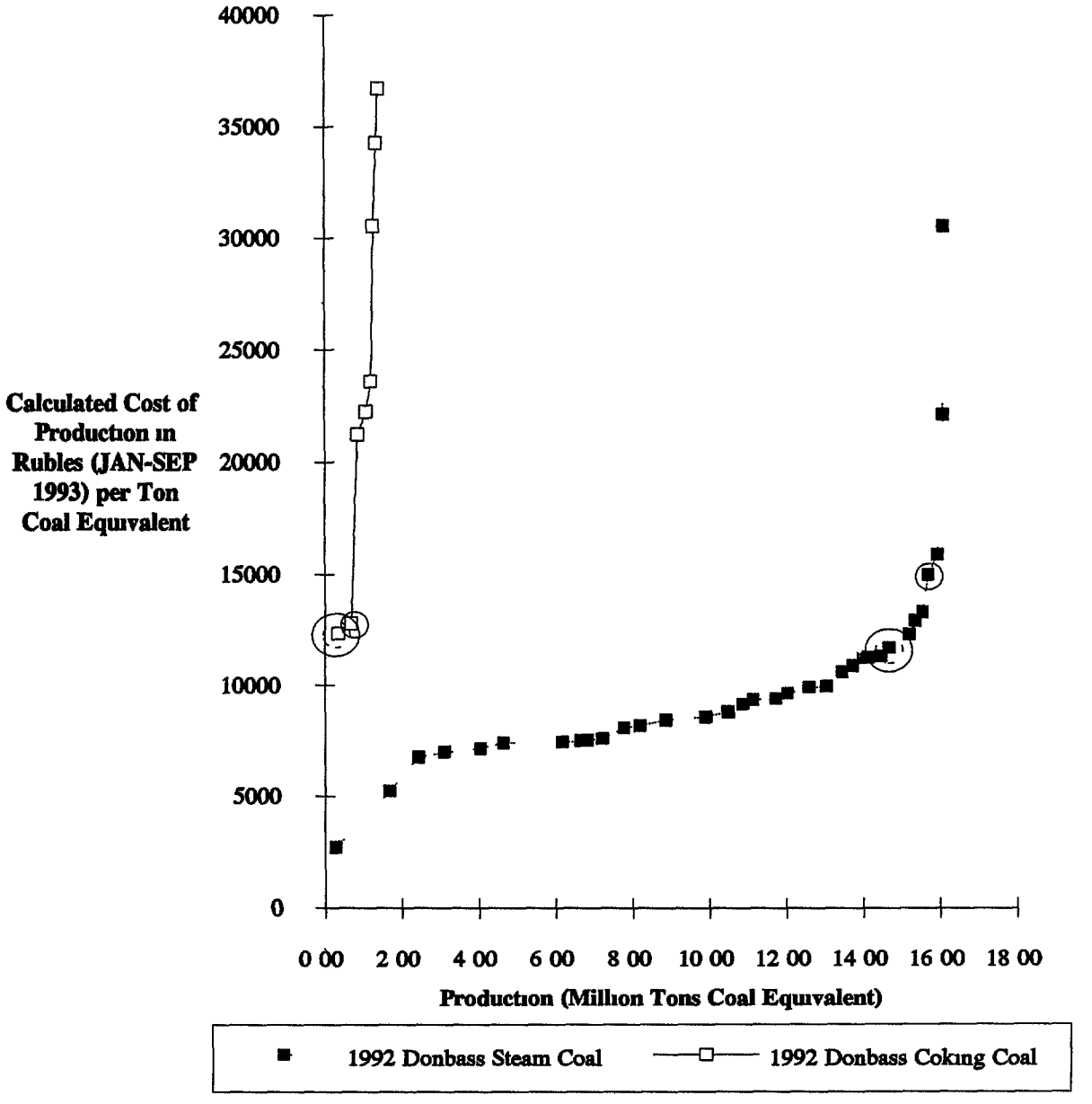


= 1997 Low Rail Tariff Scenario

= 1997 High Rail Tariff Scenario

Figure 3

1992 Donbass Coal Supply Curves

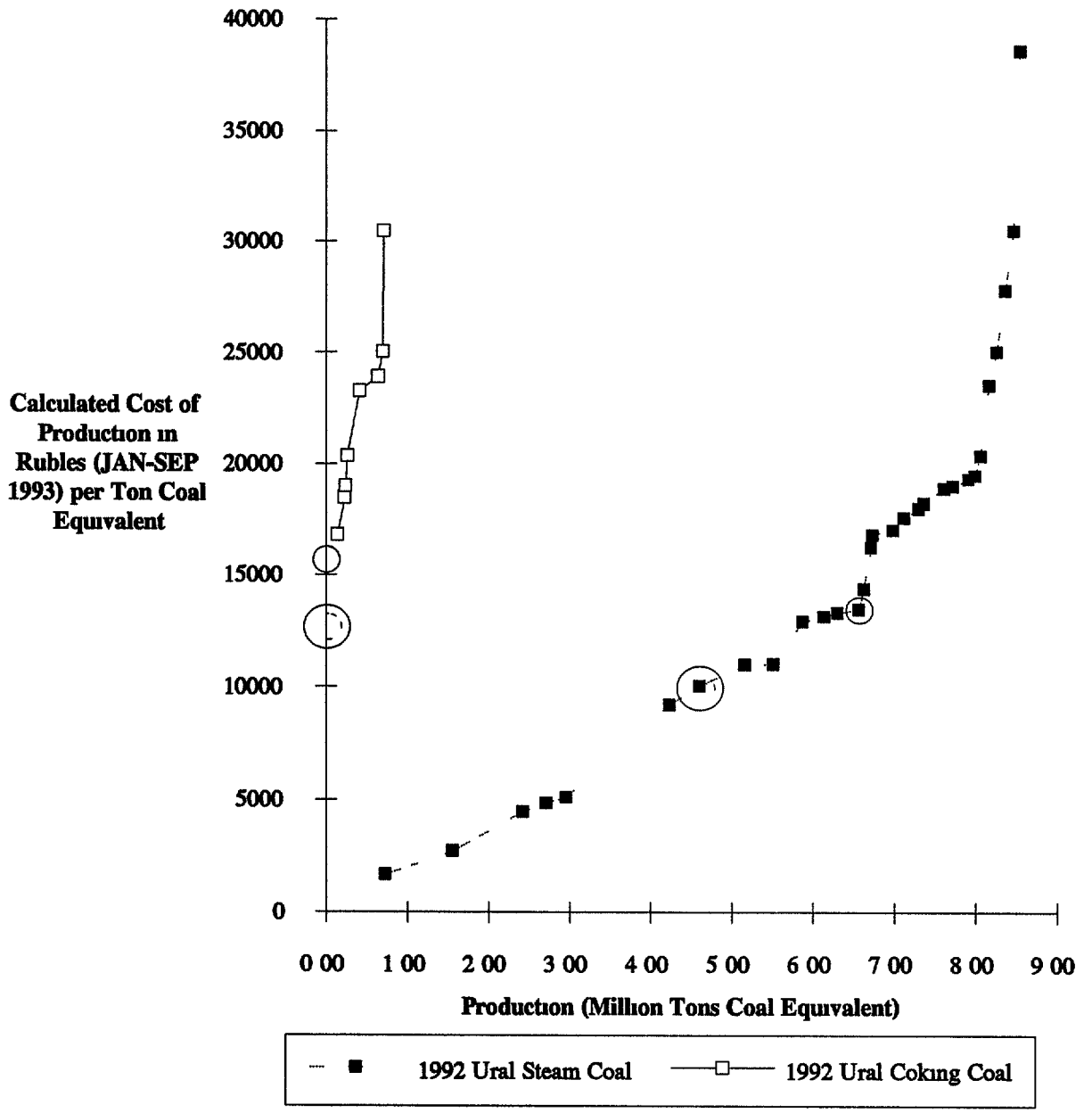


= 1997 Low Rail Tariff Scenario

= 1997 High Rail Tariff Scenario

Figure 4

1992 Ural Basin Coal Supply Curves

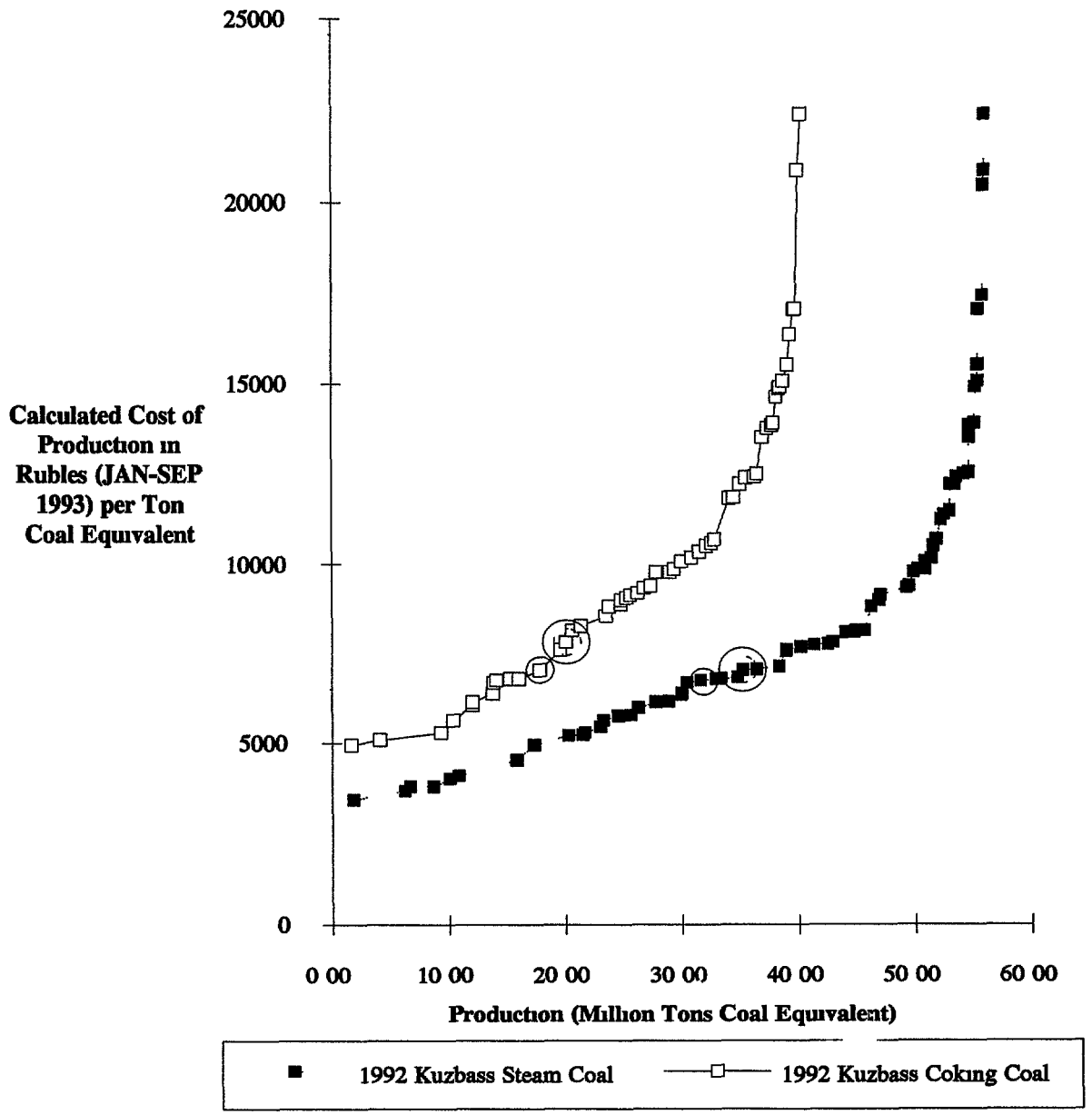


= 1997 Low Rail Tariff Scenario

= 1997 High Rail Tariff Scenario

Figure 5

1992 Kuzbass Coal Supply Curves

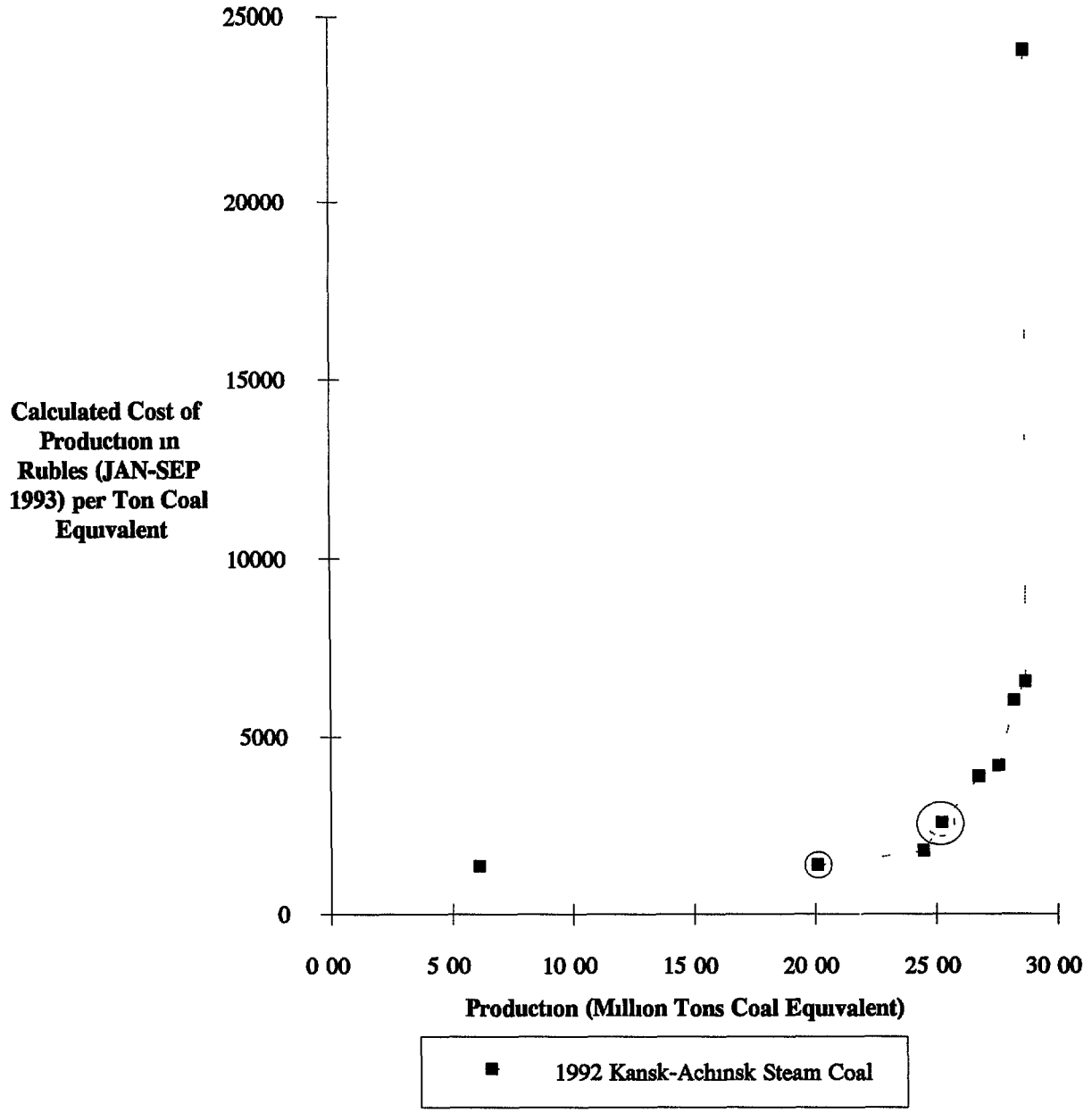


= 1997 Low Rail Tariff Scenario

= 1997 High Rail Tariff Scenario

Figure 6

1992 Kansk-Achinsk Coal Supply Curve

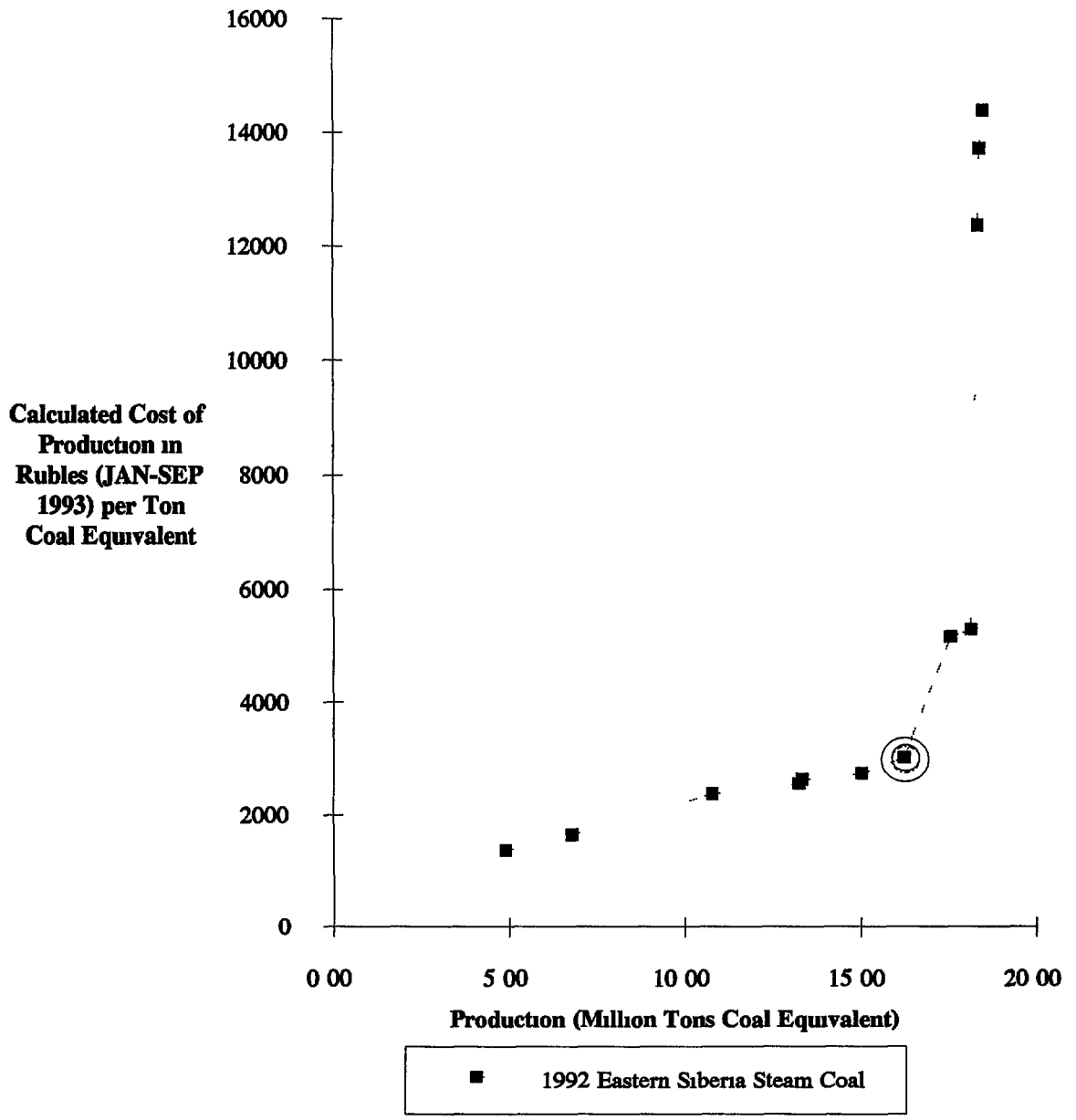


= 1997 Low Rail Tariff Scenario

= 1997 High Rail Tariff Scenario

Figure 7

1992 Eastern Siberia Coal Supply Curve

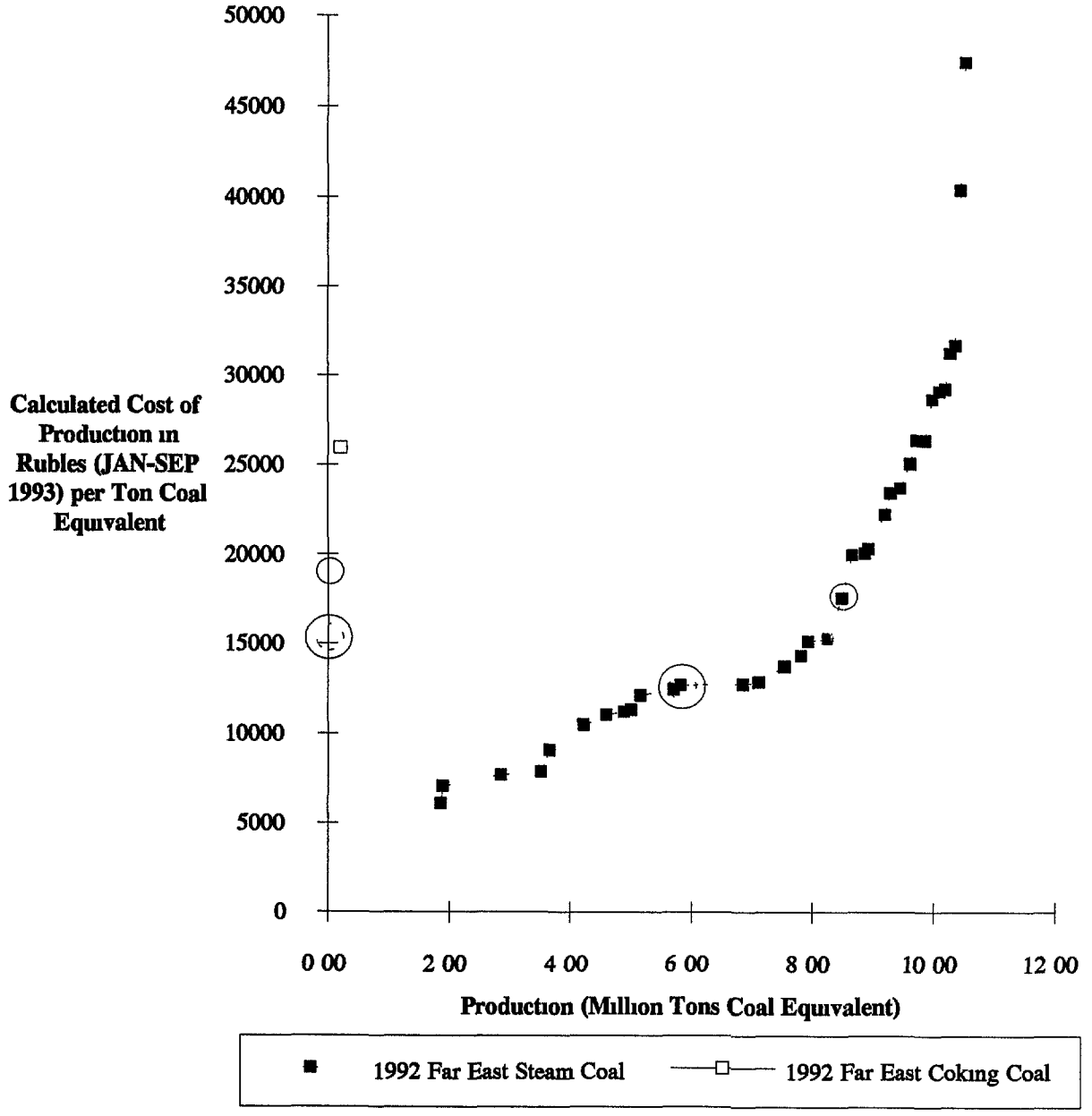


= 1997 Low Rail Tariff Scenario

= 1997 High Rail Tariff Scenario

Figure 8

1992 Far East Coal Supply Curves

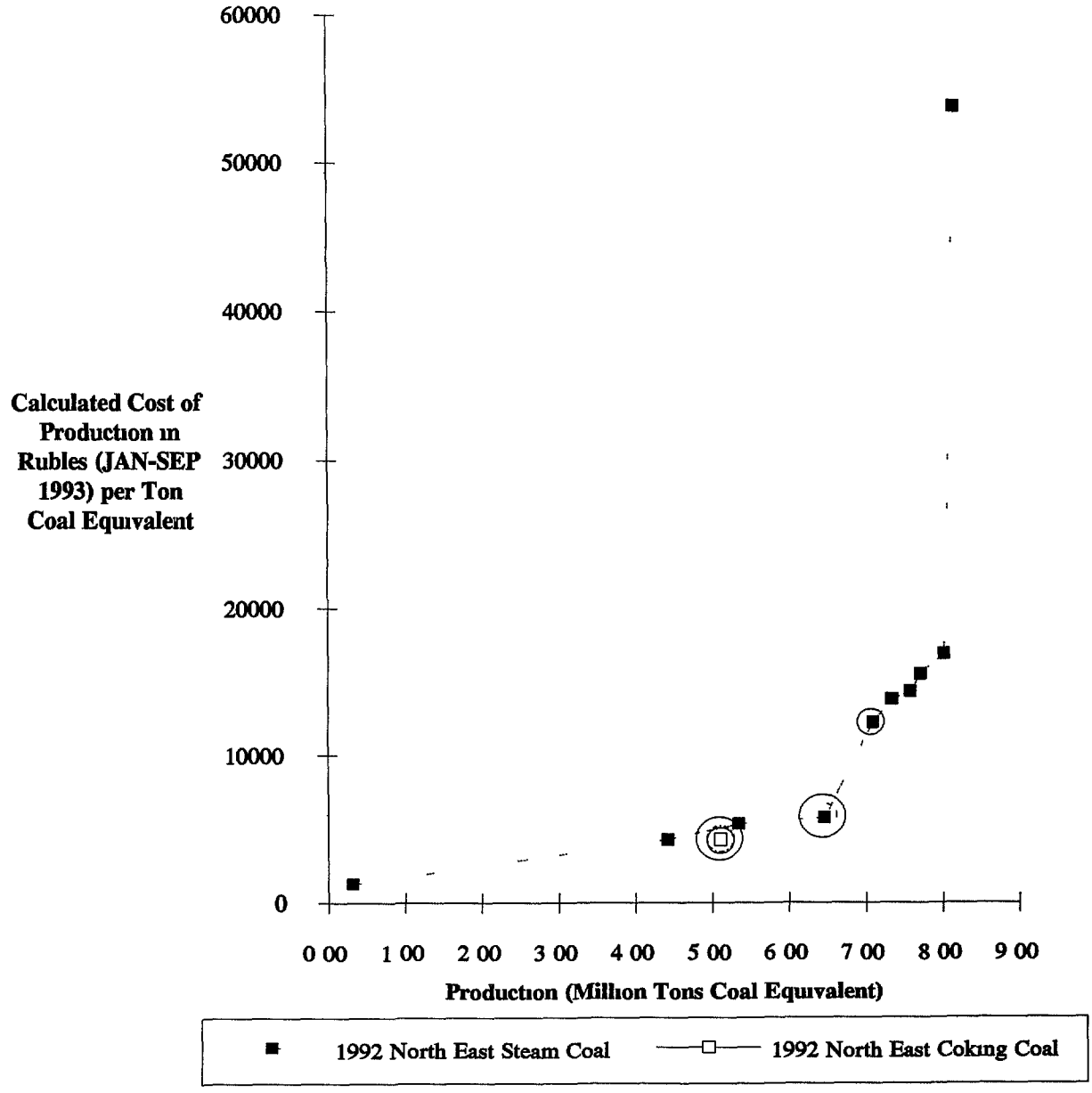


= 1997 Low Rail Tariff Scenario

= 1997 High Rail Tariff Scenario

Figure 9

1992 North East Coal Supply Curves



= 1997 Low Rail Tariff Scenario

= 1997 High Rail Tariff Scenario

Scenario Results, 1997

Delivered Prices and Minemouth Prices

1 See Table 3 *Delivered Coal Prices by Region, 1997* (facing page)

2 Under *competitive market conditions*, delivered coal prices will vary greatly between regions that are "close" to their coal suppliers (eg, West and East Siberia) and those that are "far" from their coal suppliers (eg, the Center, North and Northwest)

- under the "low" rail tariff scenario, delivered prices may be up to *2 5 times* as high in the "far" regions as in the "close" regions

- under the "high" rail tariff scenario, delivered prices may be up to *3 5 times* as high in the "far" regions as in the "close" regions

3 Also, delivered prices of both steam and coking coals will be more sensitive to *future changes in rail freight tariffs* in regions that are further away from the most distant basin supplying their region, eg

- the North Caucasus region will purchase most of its coals from the nearby Donbass--as a result, delivered prices of coal will rise by only *20-30%* if rail freight tariffs move from "low" to "high"

- the Center (Moscow) region will purchase coals from as far away as the Kuzbass--as a result, delivered prices of coal will rise by *36-43%* if rail freight tariffs move from "low" to "high"

4 Supply of coking coals will be much greater than demand for coking coal in the period 1995-2000

- some producers of coking coals will have to sell their output as steam coals in order to avoid reducing production to match the collapse in coking coal demand from the iron and steel industry

- this explains why, in every region, delivered prices (per tonne of coal equivalent) of coking coals will be very similar to delivered prices of steam coals

Delivered Prices and Minemouth Prices

Table 3 Delivered Coal Prices by Region, 1997
(Rb/tce, January-September 1993 prices)

Economic Region	Thermal		Coking	
	Low Rail Tariff Scenario	High Rail Tariff Scenario	Low Rail Tariff Scenario	High Rail Tariff Scenario
Northwest	20,925	30,142	21,094	28,923
North	18,925	26,808	19,612	26,454
Center	19,925	28,475	20,353	27,688
Central Black Earth	18,050	25,350	18,588	24,747
Volga Vyatka	15,800	21,600	16,471	21,218
Volga	13,522	17,803	14,102	17,270
North Caucasus	13,142	17,170	13,707	16,612
Urals	13,925	18,475	14,706	18,276
West Siberia	7,925	8,475	9,059	8,865
East Siberia	8,600	10,406	9,047	8,844
Far East	16,264	23,430	17,501	22,935

Source World Bank estimates

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Scenario Results, 1997

Delivered Prices and Minemouth Prices

1 See Table 4 *Minemouth Prices by Basin, 1997* (facing page)

2 Under *competitive market conditions*, differences between minemouth coal prices in competing basins will be even greater than regional differences in delivered prices, eg

- under the "low" rail tariff scenario, minemouth prices (per tonne of coal equivalent) in the Moscow (Tula) basin could be up to *5 times* as high as minemouth prices in Kansk-Achinsk

- under the "high" rail tariff scenario, minemouth prices (per tonne of coal equivalent) in the Moscow (Tula) basin could be as much as *16 times* as high as minemouth prices in Kansk-Achinsk

3 Also, minemouth prices of steam coals will be more sensitive to *future changes in rail freight tariffs* in some--but not all--of the basins that are are more dependent on long distance sales, eg

- in most basins--Kuzbass, Kansk-Achinsk and East Siberia are the main exceptions--minemouth prices would actually increase if rail freight tariffs moved from "low" to "high", since high-cost local basins would take a larger share of their local market

- as a result of the location of the Kuzbass in relation to its markets, minemouth prices of *Kuzbass coals* would be relatively insensitive to future changes in rail freight tariffs within the range from "low" to "high"

- however, minemouth prices of *Kansk-Achinsk coals* would fall by more than 50% if rail freight tariffs moved from "low" to "high"

Scenario Results, 1997

Delivered Prices and Minemouth Prices

Table 4 Minemouth Coal Prices by Basin, 1997
(Rb/tce, January-September 1993 prices)

	Thermal		Coking	
	Low Rail Tariff Scenario	High Rail Tariff Scenario	Low Rail Tariff Scenario	High Rail Tariff Scenario
Pechora/North	8,925	10,142	12,205	14,108
Moscow/(Tula)	16,396	22,593	-	-
Donbass/South	12,003	15,271	12,523	14,639
Urals	10,925	13,475	-	-
Kuzbass	6,800	6,600	8,000	7,100
Kansk-Achinsk	3,200	1,407	-	-
East Siberia	5,146	4,524	-	-
Far East	12,693	17,478	-	-
North East	12,078	12,703	13,540	16,333

Scenario Results, 1997

Delivered Prices and Minemouth Prices

1 See Table 5 *Delivered Coal Prices and Rail Freight, 1997* (facing page)

2. Source data in Table 5 come from Table 3 (Delivered Prices) and Table 4 (Minemouth Prices)

3 The share of rail freight costs in the final delivered price of coal will vary greatly, even if rail freight rates remain at the "low" end of the scenario range, eg, for coals delivered to the Center (Moscow) region

- from 18% to 66% for steam coals
- from 40% to 61% for coking coals

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Scenario Results, 1997

Delivered Prices and Minemouth Prices

Table 5 Delivered Coal Prices and Rail Freight, 1997[1]

Sample Transactions Market/Coal Basin	(Rb/tce, January-September 1993 prices)		Share of Rail Freight (%)
Center Steam Coal	Minehead	Delivered	
From Moscow/Tula	16,396	19,925	18%
From Donbass	12,003	19,925	40%
From Kuzbass	6,800	19,925	66%
Center: Coking Coal			
From Pechora	12,205	20,353	40%
From Kuzbass	8,000	20,353	61%

Source World Bank estimates

[1] Based on Low Rail Tariff Scenario

Scenario Results, 1997
Employment

See Table 6 *Number of Mines and Employment, 1992-1997* (facing page) The scenario results below show 1997 employment as a percentage of 1992 base year employment (showing results of "low" then "high" rail freight tariff scenario)

Pechora 30-45%
- would reduce the number of mines from 18 mines to 5-7 mines, depending on freight tariffs
- would reduce employment from 70,400 to 21-32,000
- would be responsible for 9-10% of total employment reduction in the coal industry

Moscow (Tula) 34-80%
- would reduce the number of mines from 22 mines to 9-19 mines, depending on freight tariffs
- would reduce employment from 41,000 to 14-33,000
- would be responsible for 2-6% of total employment reduction in the coal industry

Donbass/South 71-82%
- would reduce the number of mines from 42 mines to 28-33 mines, depending on freight tariffs
- would reduce employment from 135,400 to 97-111,000
- would be responsible for 6-8% of total employment reduction in the coal industry

Urals 20-34%
- would reduce the number of mines from 33 mines to 7-13 mines, depending on freight tariffs
- would reduce employment from 79,400 to 16-27,000
- would be responsible for 12-13% of total employment reduction in the coal industry

Kuzbass 28-24%
- would reduce the number of mines from 91 mines to 33-40 mines, depending on freight tariffs
- would reduce employment from 296,300 to 72-83,000
- would be responsible for 45-53% of total employment reduction in the coal industry

Kansk-Achinsk 50-30%
- would reduce the number of mines from 9 mines to 2-4 mines, depending on freight tariffs
- would reduce employment from 25,500 to 8-13,000
- would be responsible for 3-4% of total employment reduction in the coal industry

East Siberia 59-46%
- would reduce the number of mines from 12 mines to 7-8 mines, depending on freight tariffs
- would reduce employment from 24,400 to 11-14,000
- would be responsible for 2-3% of total employment reduction in the coal industry

Far East 26-43%
- would reduce the number of mines from 36 mines to 12-18 mines, depending on freight tariffs
- would reduce employment from 63,100 to 17-31,000
- would be responsible for 8-10% of total employment reduction in the coal industry

North East 46-52%
- would reduce the number of mines from 10 mines to 5-6 mines, depending on freight tariffs
- would reduce employment from 27,100 to 13-14,000
- would be responsible for about 3% of total employment reduction in the coal industry

Scenario Results, 1997

Employment

Table 6 Number of Mines and Employment Levels by Basin
Employment in '000s

BASIN	1992 Base		1997 Low Freight Tariff Scenario		1997 High Freight Tariff Scenario	
	Number of Mines	Direct Employment	Number of Mines	Direct Employment	Number of Mines	Direct Employment
Pechora/North	18	70 4	5	21 4	7	32 0
Moscow/(Tula)	22	41 0	9	14 0	19	33 0
Donbass/South	42	135 4	28	96 7	33	110 8
Urals	33	79 4	7	16 0	13	26 9
Kuzbass	91	296 3	40	82 6	33	71 8
Kansk-Achinsk	9	25 5	4	12 8	2	7 6
East Siberia	12	24 4	8	14 4	7	11 2
Far East	36	63 1	12	16 5	18	30 6
North East	10	27 1	5	12 6	6	14 1
TOTAL	*273*	*762 6*	*118*	*287 0*	*138*	*338 0*

Direct Employment

- corresponds approximately with Personnel of Industrial Enterprises in the coal industry
- *includes* Non-Industrial Personnel (of industrial enterprises), such as kindergarten, housing, agricultural and "other" personnel
- *excludes* Personnel of Non-Industrial Enterprises, such as construction and design enterprises and trade/food services

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Scenario Results, 1997

Employment

1 The charts (Figures 10-21) on the following pages

- show the relationship between employment and coal output for each of the nine major basins
- summarize the results of the *1997 Market Adjustment Scenario*
  - employment, number of mines and basin output in 1997
  - for two scenarios of coal rail freight tariffs--low & high

2 Where relevant, separate curves are shown for steam coal and coking coal in the same basin--either on the same chart or on a separate chart (see below)

3 The charts are for the following coal basins

- Pechora	coking
	steam
- Moscow (Tula)	steam
- Russian Donbass	steam
	coking
- Urals	steam & coking
- Kuzbass	steam
	coking
- Kansk-Achinsk	steam
- East Siberia	steam
- Far East	steam & coking
- North East	steam & coking

Figure 10

PECHORA BASIN
Production vs. Labor Requirements:
1992 Base vs. 1997 Scenarios

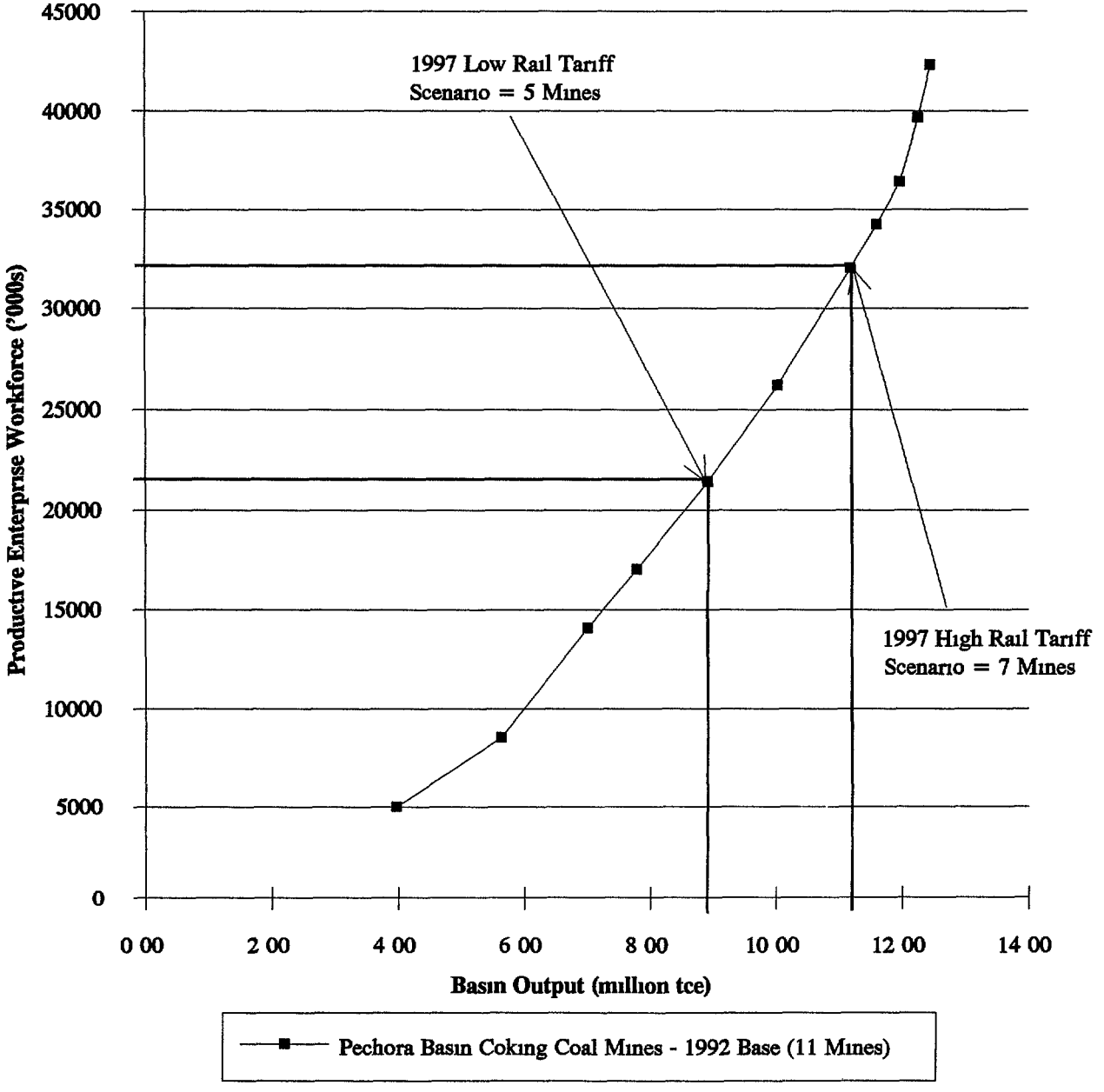
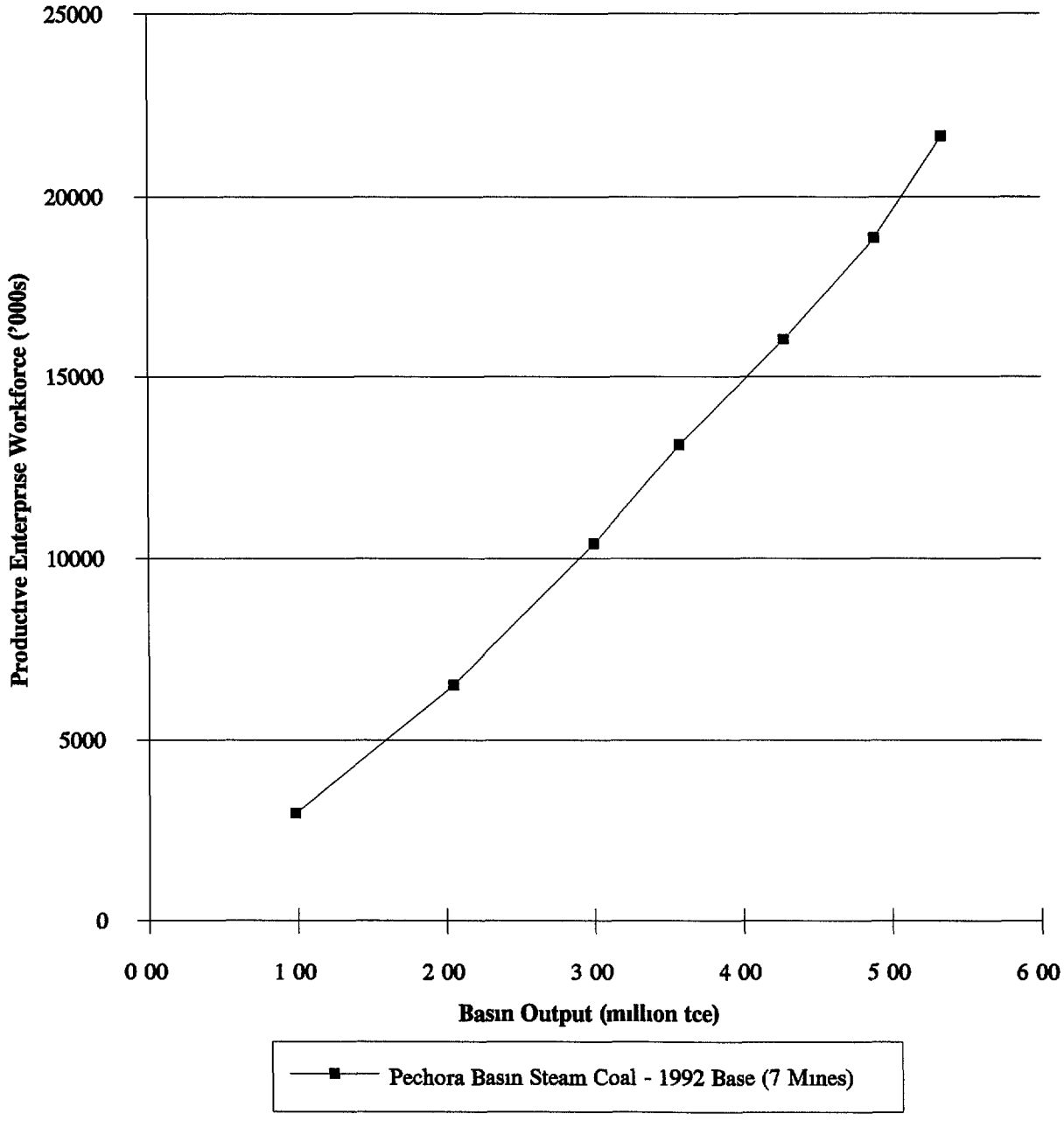


Figure 11

PECHORA BASIN
Production vs. Labor Requirements:
1992 Base vs. 1997 Scenarios



PPECH2 XLC

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Figure 12

MOSCOW BASIN (Tula)
Production vs. Labor Requirements:
1992 Base vs. 1997 Scenarios

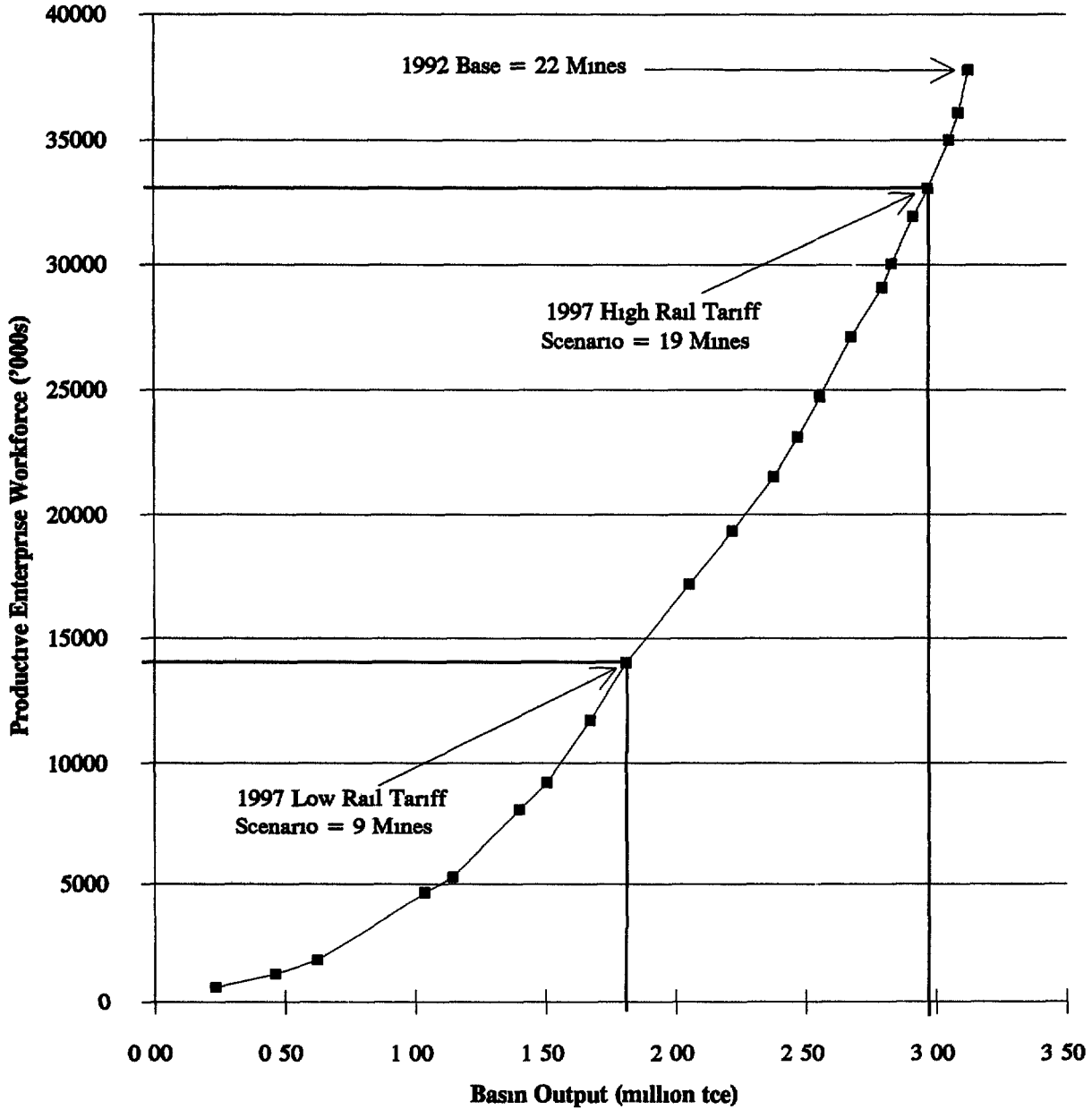
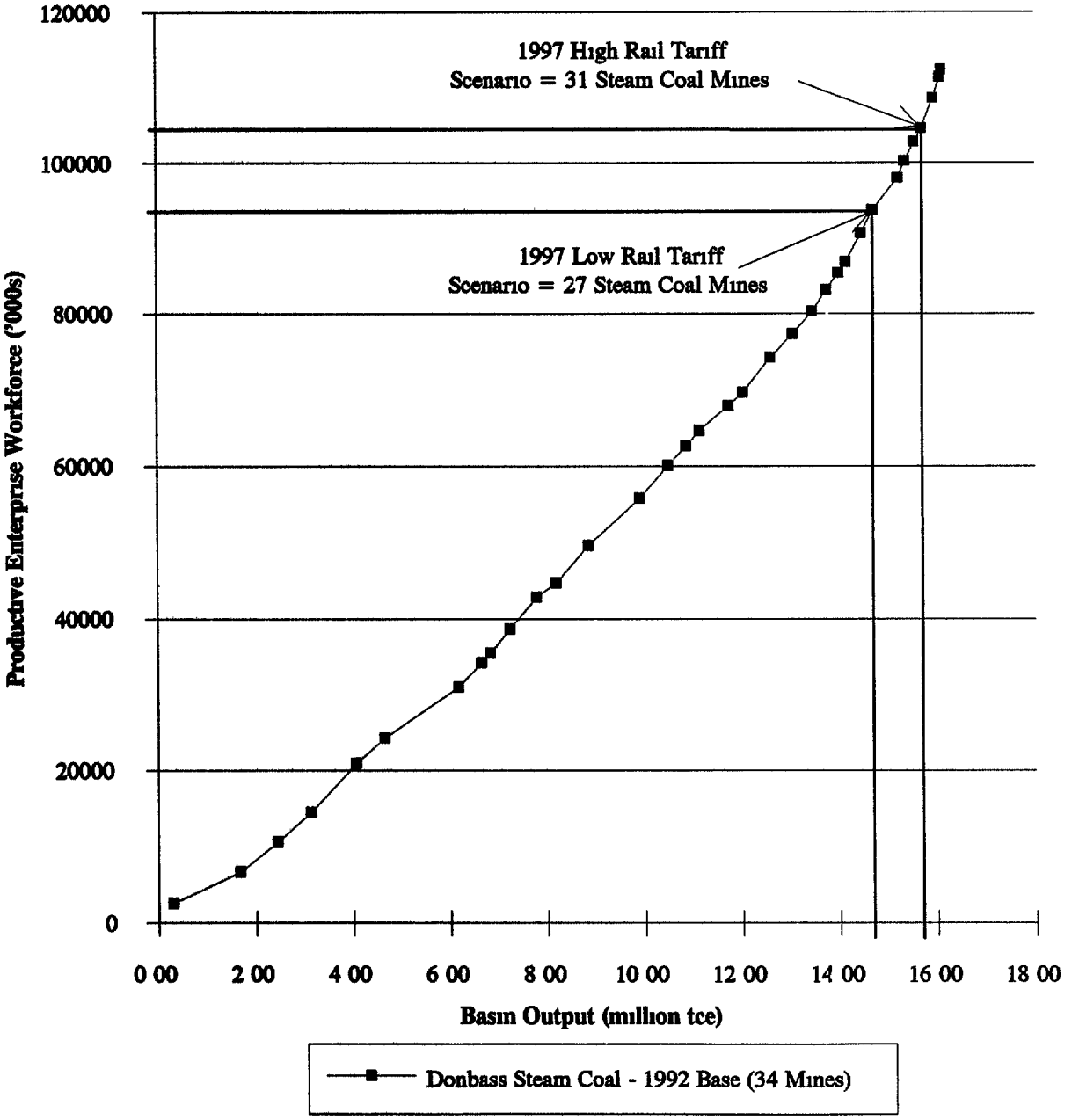


Figure 13

RUSSIAN DONBASS
Production vs. Labor Requirements:
1992 Base vs. 1997 Scenarios



PDONBAS1 XLC

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Figure 14

RUSSIAN DONBASS
Production vs. Labor Requirements:
1992 Base vs. 1997 Scenarios

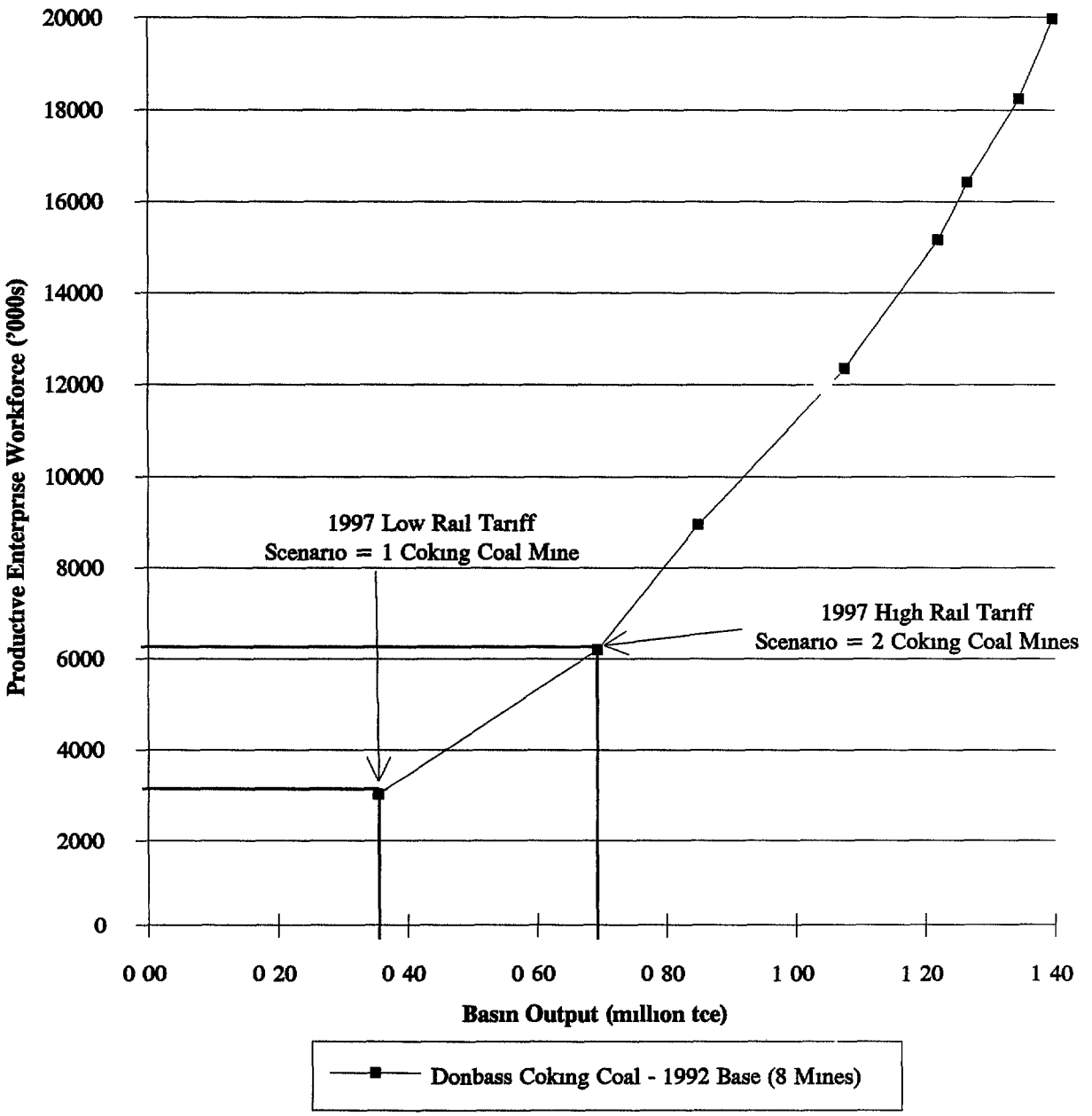
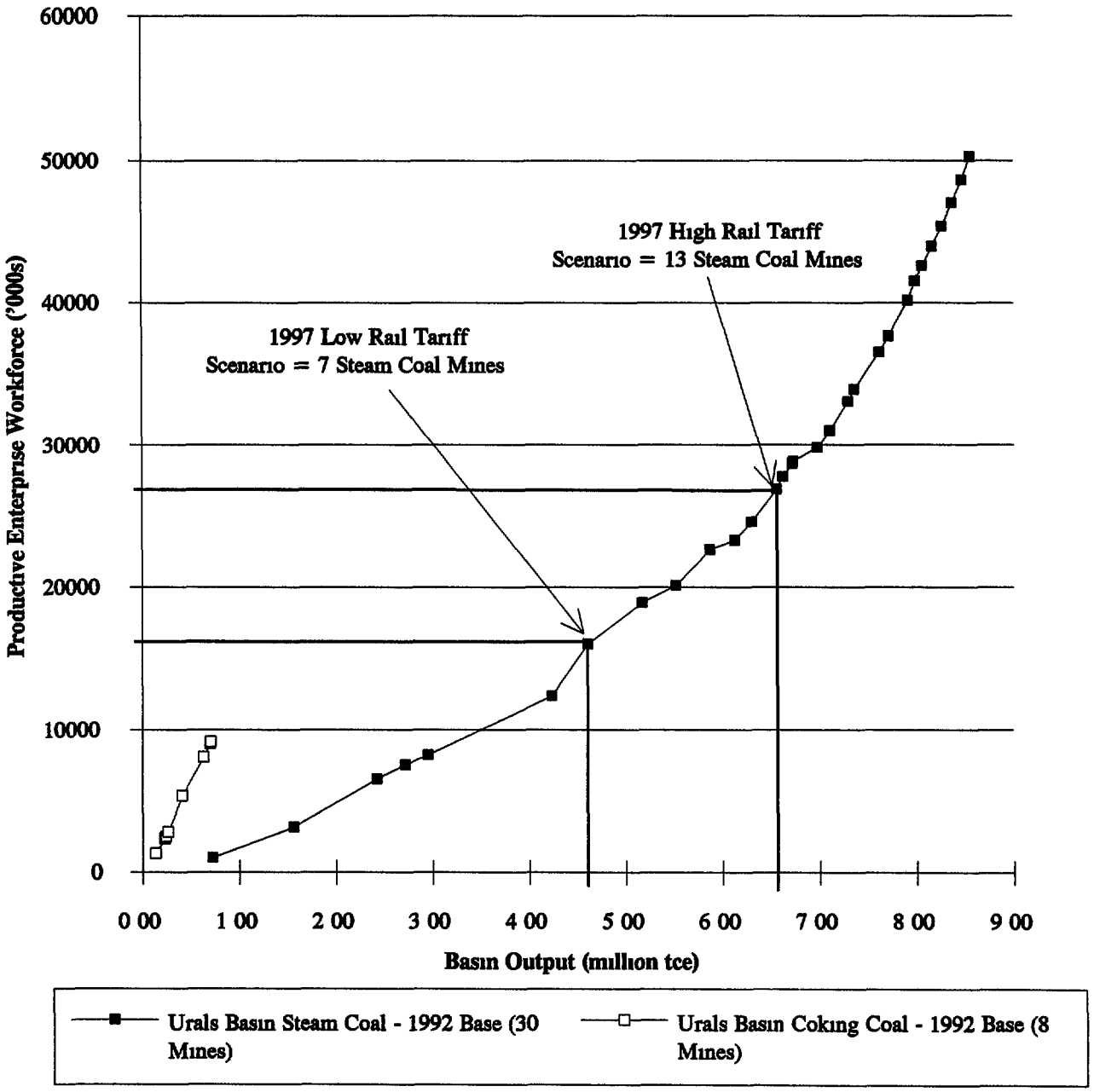


Figure 15

URALS BASIN
Production vs. Labor Requirements:
1992 Base vs. 1997 Scenarios



PURALS1 XLC

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Figure 16

KUZBASS
Production vs. Labor Requirements:
1992 Base vs. 1997 Scenarios

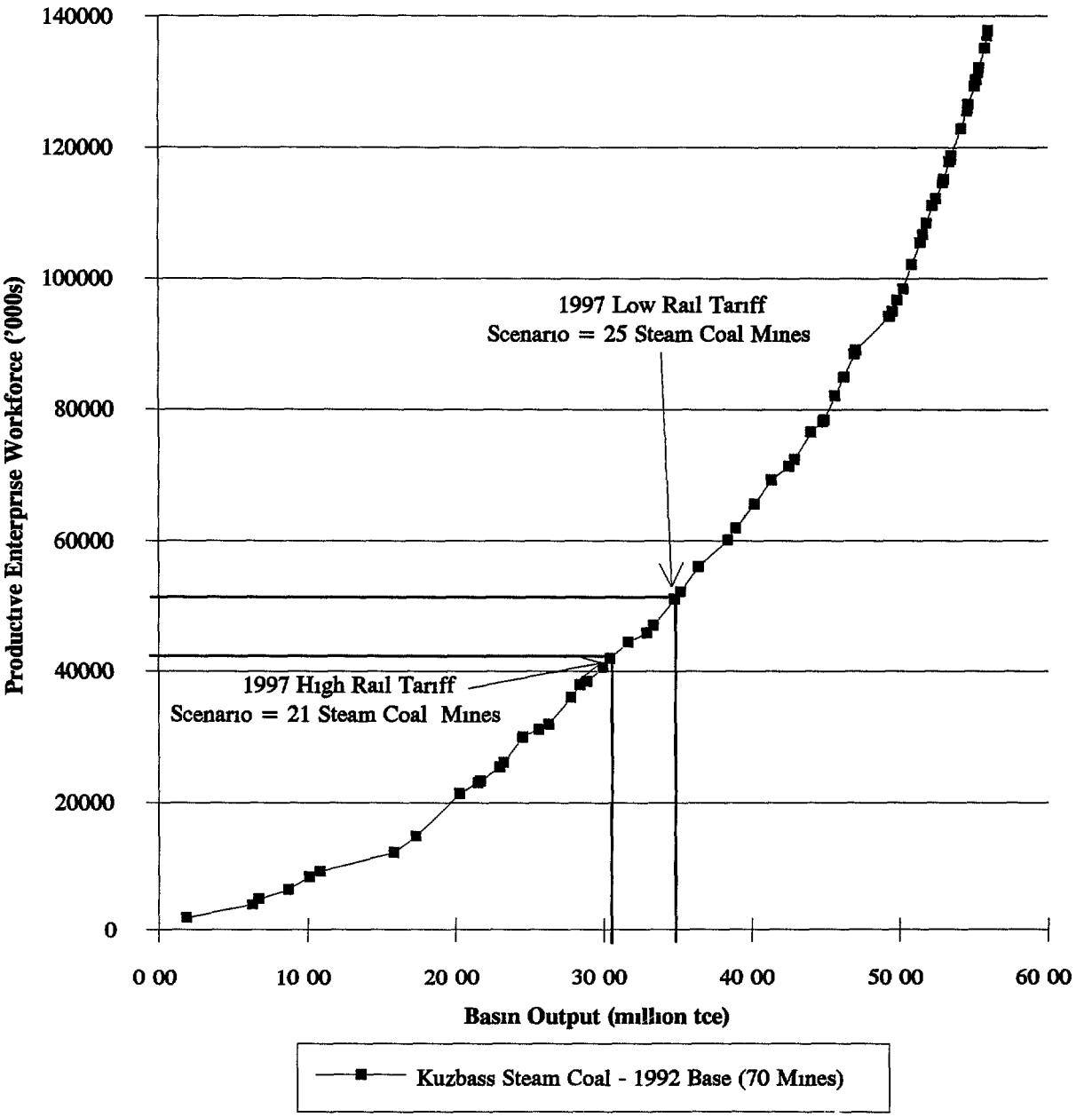
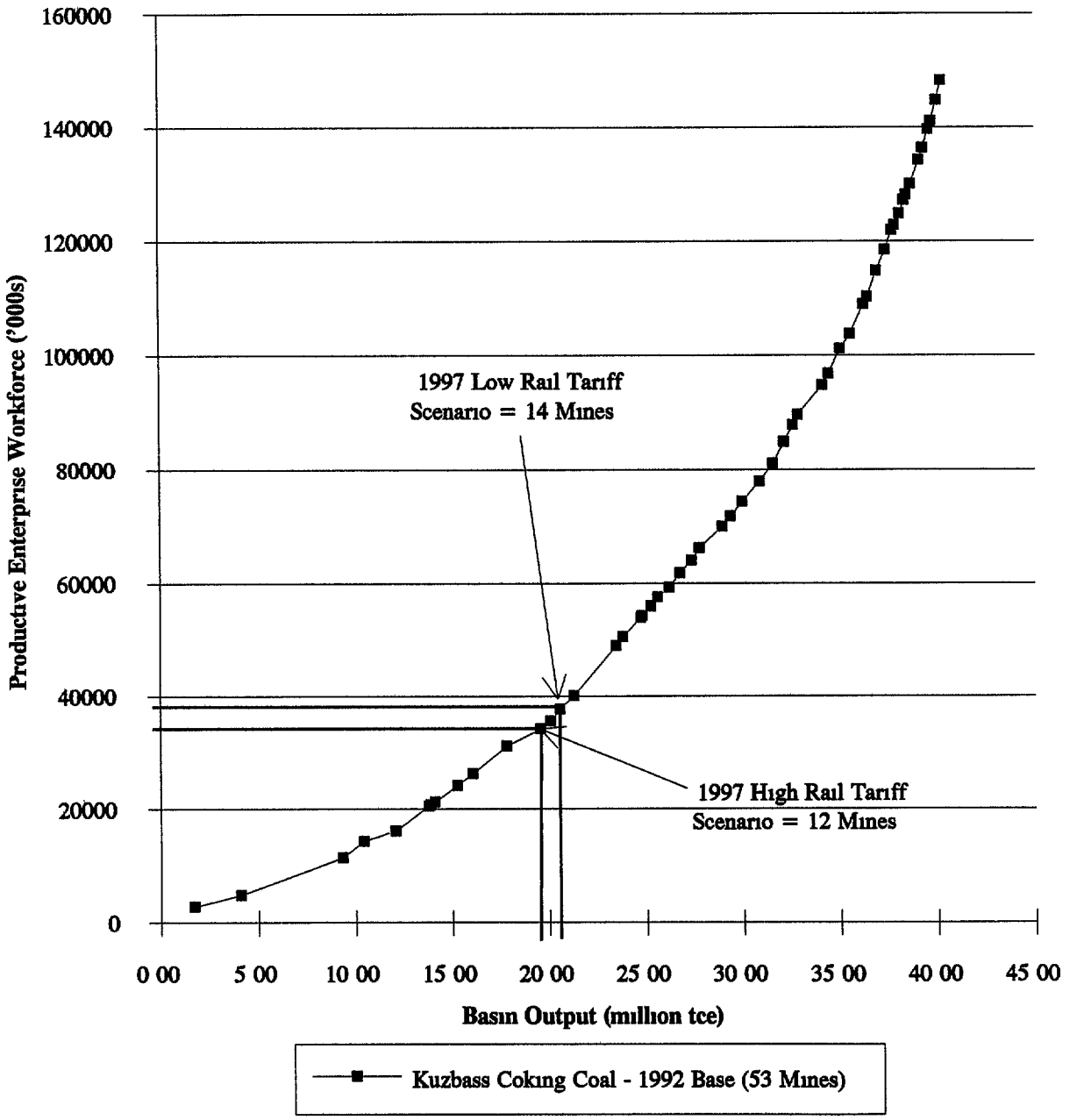


Figure 17

KUZBASS
Production vs. Labor Requirements:
1992 Base vs. 1997 Scenarios



PKUZBAS2 XLC

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Figure 18

KANSK-ACHINSK BASIN
Production vs. Labor Requirements:
1992 Base vs. 1997 Scenarios

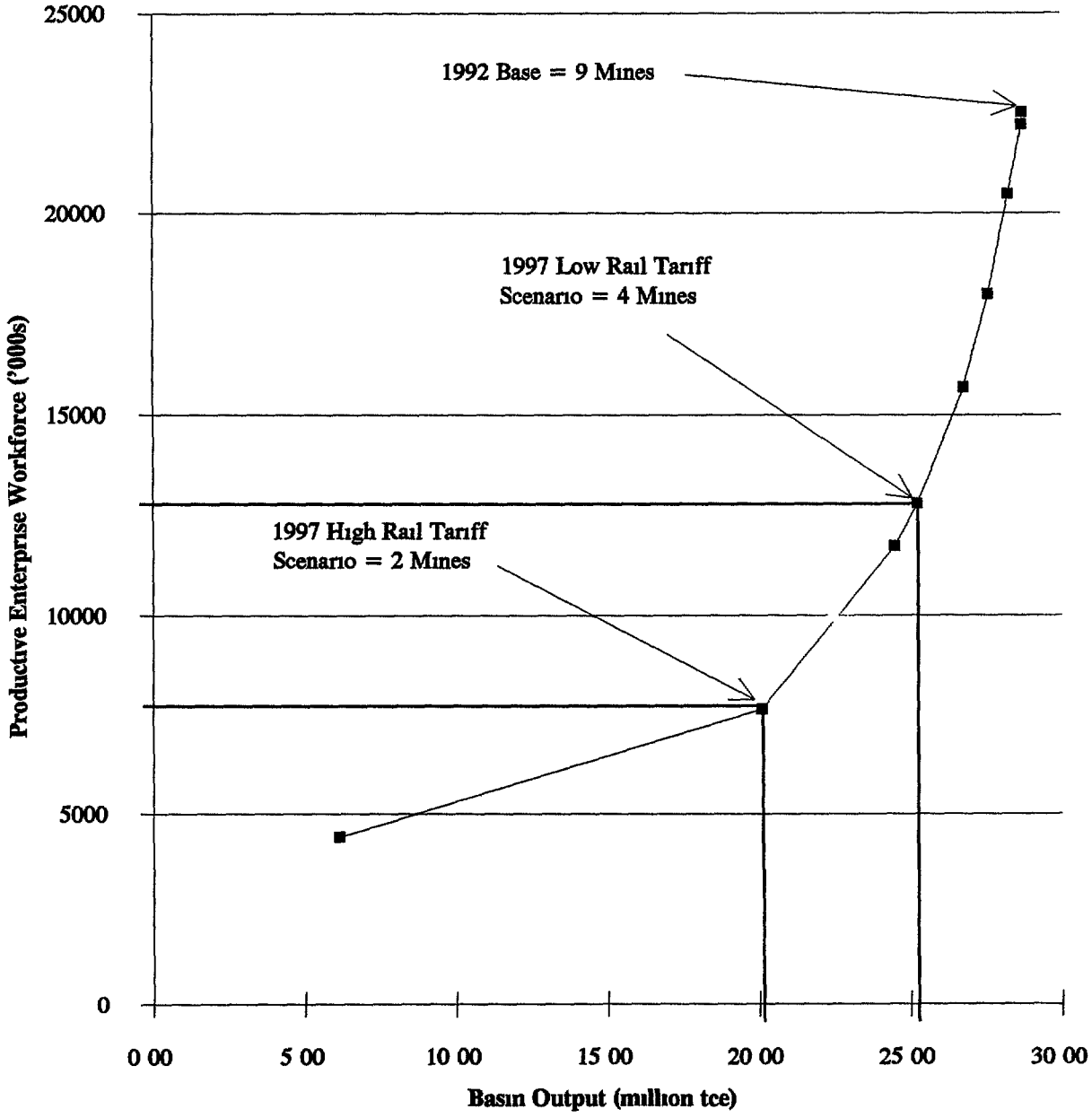

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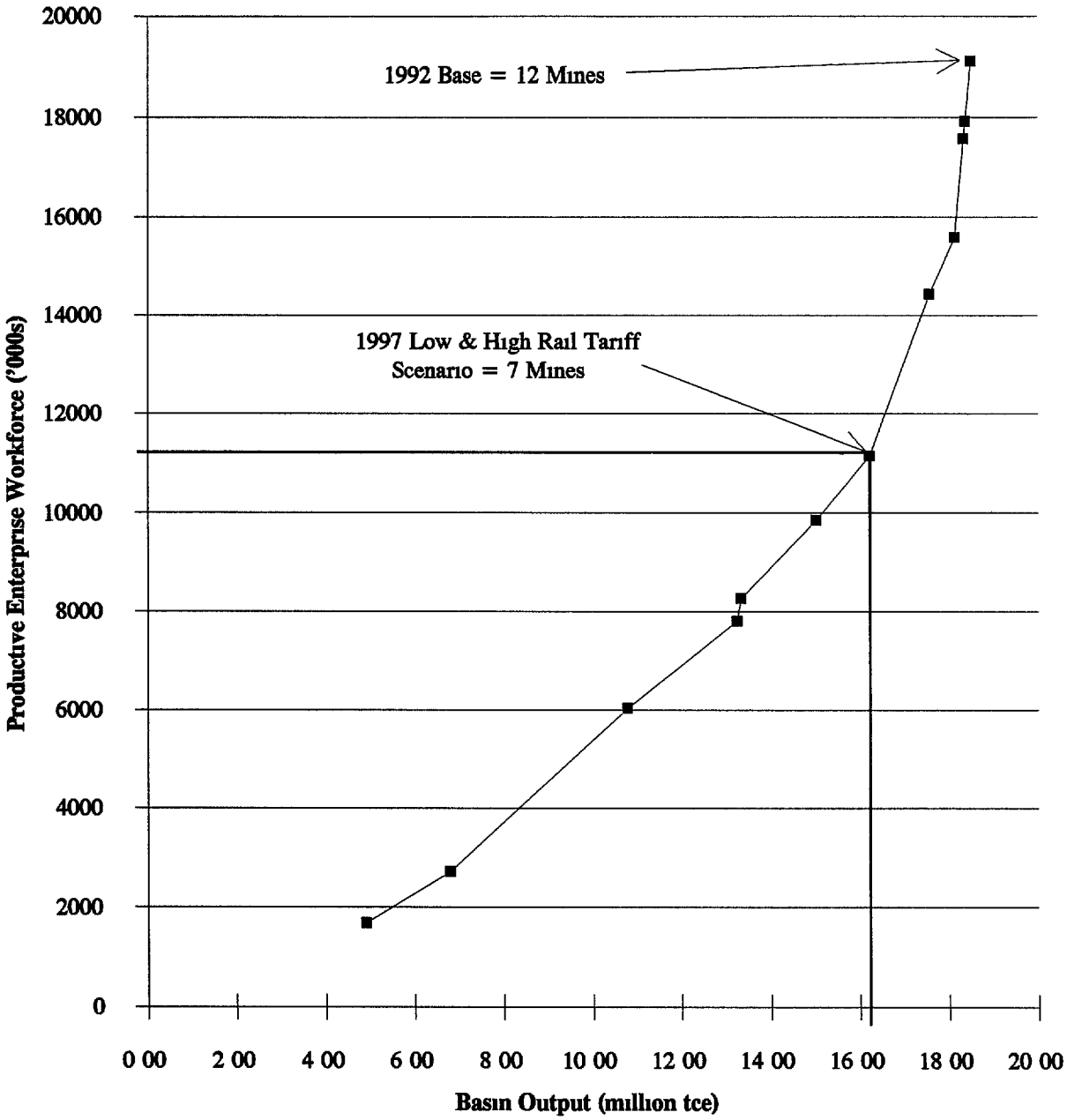
Figure 19

EAST SIBERIA
Production vs. Labor Requirements:
1992 Base vs. 1997 Scenarios



PESIB1 XLC

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Figure 20

FAR EAST
Production vs. Labor Requirements:
1992 Base vs. 1997 Scenarios

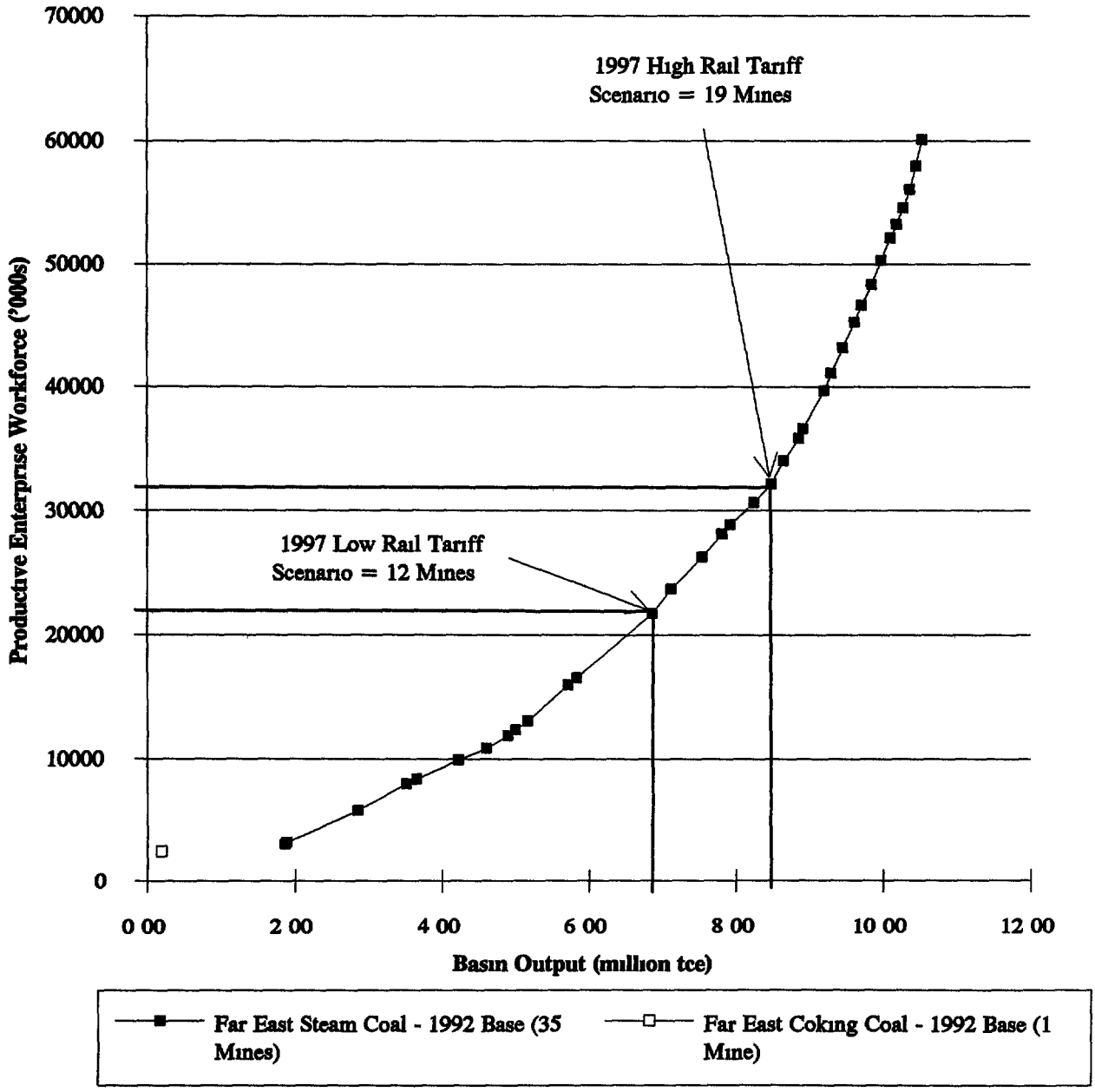
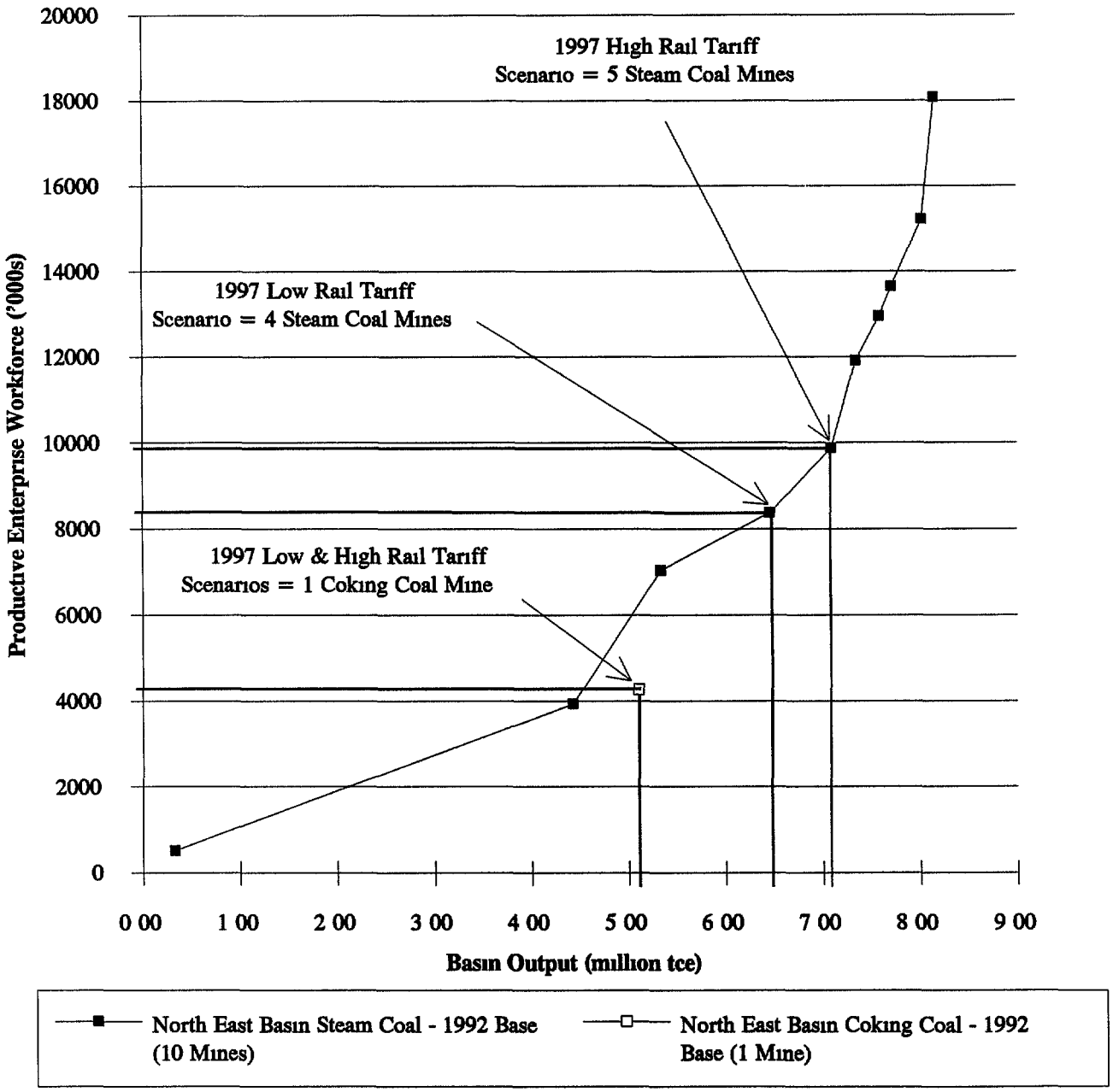


Figure 21

NORTH EAST BASIN
Production vs. Labor Requirements:
1992 Base vs. 1997 Scenarios



PNEAST1 XLC

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Strengthening the Coal Market

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Strengthening the Coal Market

Institutional Reforms

0 The remaining sections of this Annex look at the scope for the new, joint stock mining companies to improve production efficiency, ie, to cut production costs and improve product quality in order to increase their share of the total coal market However, the new mining companies will only improve their efficiency if there are real incentives to do so We assume that the following institutional reforms will provide these incentives (see also the Main Report)

- liberalization/decontrol
- enterprise commercialization & privatization
- coal industry restructuring
  - phase 1 by government
  - phase 2 by companies

1 Liberalization/decontrol

- price liberalization
  - the Government formally decontrolled coal prices in July 1993--initially with positive results (see Main Report)
  - however, prices are not yet "free", since RosUgol now sets coal prices as part of the subsidy allocation process
  - the Government should ensure that, even before the end of the subsidy phase-out, the new joint stock mining companies become fully responsible for negotiating their own selling prices

- abolition of recovery requirements
  the current requirement to extract all seams of thickness greater than 0 8 meters should be abolished to give mine managers greater control over their own production costs and coal quality

Strengthening the Coal Market

Institutional Reforms, cont'd

2 Enterprise commercialization & privatization

- formation of joint stock companies
  this process is underway--in general, it maintains the existing structure of Mining Associations and independent mines

- privatization
  management and employees will initially have minority shareholding in new joint stock companies

- phasing out subsidies
  the new joint stock mining companies (former Mining Associations) will not operate commercially until the Government has eliminated
  - as soon as possible the existing channels for *cross-subsidy* flows between Mining Associations
  - within an agreed period the *total subsidy* flow to the coal industry

- strengthening enterprise authority
  commercialization also means that full responsibility for operational and financial decisions--including *pricing and marketing*--should be transferred from RosUgol to the managers of the new joint stock companies

- reducing excess employment
  as subsidies are phased out, the new joint stock companies must have the authority to reduce excess employment in order to improve profitability--*however, employment reduction cannot start until an adequate social safety net is in place*

- investment
  none of the new joint stock mining companies will become firmly profitable without investment of some kind--however, these investments need to be fully *justified by market conditions* (see below)

Institutional Reforms, cont'd

3 Coal industry restructuring *(phase 1)*

- summary
  the Government should take four key steps to ensure that the new joint stock mining companies can begin to operate commercially
  - put in place a *social safety net* for redundant miners
  - launch a *Mine Closure Program*
  - encourage *divestiture* of "non-core" functions
  - ensure adequate *competition* between the new coal companies

- social safety net
  - see Annex on Social Protection
  - the social safety net for redundant miners must make it feasible for the new, joint stock mining companies *both* to close mines *and* to reduce employment in mines that remain in operation

- the Mine Closure Program
  mines that have no prospect of becoming profitable should be transferred into a government-managed mine closure program
  - *production must stop at these mines as soon as possible*--to avoid the situation (observed, for example, in Poland) where excess production from these (subsidized) mines depresses prices and profits of the newly commercialized (unsubsidized) joint stock mining companies
  - once they are in the closure program, mines should receive government funds *only for social costs and other expenditures directly related to closure*--but not for operations

- divestiture
  from its position as the controlling shareholder in the new joint stock mining companies, the Government should require the companies to
  - divest "non-core" (ancillary and non-mining) enterprises as separate joint stock companies
  - transfer social functions to local government, where possible

Institutional Reforms, cont'd

- competition
  in certain key coal markets, it may be necessary in future to
  - break up some of the larger Mining Associations into more than one joint stock company--but only if monopoly power becomes a problem in their markets
  - combine some of the smaller Mining Associations into larger joint stock companies--but only if they prove to be too small to invest and survive in a competitive coal market

4 Coal industry restructuring *(phase 2)*

- summary
  after the Government has taken the initial steps to restructure the coal industry (phase 1 see previous page) the process will continue--but with restructuring driven by the commercial goals (profits) of the new joint stock mining companies

- further mine closures
  each of the new joint stock mining companies will own some marginal mines, ie, it is not clear whether these mines can become profitable or not--if the new management is unable to reduce costs enough to make these mines profitable, the company will have to start its own (phase 2) mine closure program

- expansion of the "competitive core"
  the mines at the low-cost end of the coal industry could expand their output by 20-30 percent over the next 3-5 years with relatively modest investments

> in a competitive market, low-cost mines will expand even while total coal demand is still contracting, ie, they will put additional pressure on unprofitable mines to close

Institutional Reforms, cont'd

The Russian Coal Industry Today

1. coal prices are set by RosUgol in consultation with the Mining Associations
2. coal consumers often cannot pay current coal prices because they cannot pass on increased costs to their own customers, eg, power and district heating plants that are price-controlled by local government
3. coal production costs (without subsidies) are higher than customers are willing to pay--particularly in locations where natural gas and fuel oil are available as alternative fuels
4. RosUgol sets prices and subsidies to protect weaker mining companies from competition
5. coal companies pay more attention to quantity of output than to quality and timely delivery
6. companies that own high-cost mines cannot contract their operations or close mines because the social safety net is not in place to take care of miners who become unemployed
7. companies that own low-cost mines cannot expand their operations because they cannot compete with subsidized high-cost producers
8. outside investors are not entering the coal industry because the excess supply of coal is holding down prices and profits
9. worker health and safety levels are poor and there is little progress towards improved environmental compliance--because the coal industry is preoccupied with simply surviving

Institutional Reforms, cont'd

The Russian Coal Industry in a Market Economy

1. coal prices are set in the market place by negotiation between independent, commercial mining companies and their customers
2. other energy prices are regulated in a way that is consistent with free market prices for coal
3. coal production costs are low enough to compete with other fuels (natural gas and fuel oil) without subsidies
4. independent coal companies compete with each other to deliver coal to the customer at the lowest possible delivered price
5. coal companies compete not only on price but also on the quality of their product and the reliability of their deliveries
6. companies that own high-cost mines contract their operations and, if necessary, close high-cost mines
7. companies that own low-cost mines retain enough profits to expand their operations and increase their share of the total coal market
8. outside investors can enter the coal business if market opportunities exist
9. profitable coal companies steadily improve their performance on worker health and safety and environmental compliance

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Overview of Present Conditions

Organization & Management

1 Centralized command-&-control management structures are still in place, ie, managers of Mining Associations and individual mines have very little control over

- labor particularly wages and conditions of employment
- pricing and marketing of output
- investment since this is controlled by subsidies

2 As a result

- labor relations and workforce discipline are poor, particularly in underground mines
- Mining Associations and individual mines lack the marketing skills needed in an independent, commercial mining company
- managers in the coal industry in general have little experience in evaluating the profitability of proposed investments under market conditions, ie, where grant-financing of investment is no longer available

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Overview of Present Conditions

Geological & Mining Conditions

Wide range of conditions

1 *from*
thin, low quality and distorted coal seams, heavily faulted and discontinuous, and at depths not suitable for surface mining

- mines in these areas have generally been developed to meet arbitrary "reserve recovery" requirements

- production in these areas should be phased out

2 *to*
thick, high quality, continuous coal seams, often at shallow depths suitable for surface mining

- conditions in these areas are comparable to the best mining conditions in North America, Australia, South Africa and Europe

- areas of new reserves are available for expansion of existing low-cost mines in cases where market conditions are suitable

Overview of Present Conditions

Mining Technology

1 Surface mining

- technology is close to international state-of-the-art, eg
  - rope shovels (4-20 cubic meters) loading up to 180 tonne trucks
  - draglines and bucket wheel excavators loading in-pit conveying schemes

- however, equipment availability and utilization factors
  - are low by international standards, where 85-90% is regarded as a minimum
  - are limited by shortages of auxiliary open-pit equipment, eg, bulldozers, graders, front-end loaders

2 Underground mining

- thicker seams are extracted by Russian and Polish mechanized longwall mining equipment which is of lower technological standards than in other major coal producing countries, ie
  - under-powered face shearers
  - low-yield, 2-leg powered supports
  - low capacity face conveyors

- typical output per longwall face is in the range 0 3-0 8 million tonnes/year (with productivity typically below 100 tonnes/worker-month), compared with
  - 1 0 mt/y at 170 t/worker-month in the UK
  - 1 0 mt/y at 450-600 t/worker-month in the US and Australia

- insufficient attention to maintenance--including spare parts availability --contributes to poor performance and productivity, particularly where spares are imported, eg, from Poland

Overview of Present Conditions

Mine and Preparation Plant Design

1 Mines have been designed to maximize extraction rather than to maximize the difference between sales revenue and production costs

- mines continue to extract thin seams when it is no longer economic to do so

- mines continue to extract coals that no longer suit customer requirements, eg, high-sulfur coals

2 Coal output has been given higher priority than coal quality--coal preparation plants have been under-funded in relation to coal mines

- many preparation (beneficiation) plants were designed as large, multi-mine facilities and are now at the end of their useful life

- in many cases, investing in new single-mine coal preparation plants will be the best way to improve profitability

Options for Improving Production Efficiency

Improved Organization & Management

1 Improved organization and management
- could significantly reduce production costs and improve coal quality
- is an essential first step *before making any investment decisions*

2 The highest priority is to improve labor-management relations, workforce motivation and discipline in the coal industry as a whole

- starting with the problem of *wage payment arrears* [see separate Annex on Subsidies and Finance]

- with greater emphasis on *worker health and safety*, particularly in underground operations

3 Management objectives should focus on

- *productivity* by improving work organization and spare parts management to maximize equipment utilization factors

- *coal quality* by selective mining, blending, stockpile control and tighter washery procedures

4 Commercial business plans are needed, including

- targets developed from the "bottom up" through to the management

- balanced treatment of operations, marketing and investment

- emphasis on *cost control*, for example
  - competitive contracting-out of major tasks, eg, overburden removal in surface mines could be undertaken by mine construction groups that are currently under-employed
  - systematic recovery of coalbed methane, either for use in mining operations (eg, pre-heating ventilation air) or for sale to local communities

Options for Improving Production Efficiency

Investments in Surface Mines

1 After the new mining companies have taken steps to improve organization and management, they will be in a position to respond to future market opportunities, eg, after the Mine Closure Program has reduced excess mining capacity

- when this happens, limited investments in surface mines are likely to be the lowest cost way to increase coal output

- such investments could be financed out of improved cashflow, ie, from improved organization and management in present surface mining operations (but only if the mine retains control over its own profits)

2 The first priority is to improve utilization of existing major mining equipment (shovels, trucks and draglines, bucket wheel excavator systems) by providing adequate fleets of auxiliary mine equipment (bulldozers, graders, front-end loaders)

3 In-pit housekeeping needs to pay more attention to maintenance and development of haul roads so that trucks will be used more efficiently

4 And, over the medium term

- the proportion of overburden that is hauled outside the pit should be significantly reduced, while

- trucks should replace locomotives in all hauling of overburden

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Options for Improving Production Efficiency

Investments in Underground Mines

1 In some special situations--eg, where an underground mine is located very close to it customers--the mine may be able to compete successfully with surface mines for an increased share of a particular coal market

- if investment in an underground mine is justified by market conditions, it is likely to be larger than the corresponding investment at a surface mine (ie, per additional annual ton of output)

- such investments probably could not be financed solely out of the mining company's cashflow--the investments would have to be financed by a mix of retained earnings and loans
  [see Financing of Investment, next page]

2 The basic strategy for underground mines should be to concentrate production at the most efficient faces, ie

- close high-cost faces

- re-equip smaller number of longwall faces with heavy duty, high output equipment

- rationalize underground transport systems using modern, high capacity equipment

- switch to modern technologies for excavating underground roadways and for roof bolting support systems

Strengthening the Coal Market

Financing of Investment

1 Mining companies may wish to invest for one of two reasons

- to improve efficiency
  the resulting reduction in operating costs must be large enough to pay for the investment costs and generate a profit, without raising coal prices to levels that coal customers are not prepared to pay

- to expand output or improve product quality
  the selling price of the new output must be low enough to attract customers but high enough to pay for the investment costs and generate a profit

2 In either case--given that the Government can no longer provide grant-financing from the central budget--investment will have to be financed from some combination of

- retained earnings
  so potentialy profitable mines must be allowed to retain their profits instead of cross-subsidizing unprofitable mines

- borrowing from commercial banks
  so potentially profitable mines must develop medium term contractual relationships with their major customers (power plants, steel mills, etc) so that commercial banks will be prepared to lend to them

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Annex C

Supply Annex 3: International Experience of Coal Industry Restructuring

SUPPLY ANNEX 3

INTERNATIONAL EXPERIENCE OF COAL INDUSTRY RESTRUCTURING

DRAFT OF APRIL 12, 1994

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Overview

1 This Annex examines the experience of five major coal producing countries over the past thirty years to see what insights can be gained for the restructuring of the Russian Federation Coal Industry The five countries consist of the three largest Western European hard coal producers (the United Kingdom, Germany and France), Poland and the United States of America The five countries have faced very different market conditions With the major exception of the United States, there has been a declining market share for coal in most industrialized countries including the three Western European producers over the past thirty to forty years What Russia is going through now is in part due to a shift away from coal towards alternative fuels that has already taken place in many other counties Russia's experience also reflects the macro-economic consequences of the transition from a planned to a market economy In this regard Russia is following a similar path to Poland

2 Coal industry restructuring has taken place in each of these countries, but under widely different circumstances and with very different country strategies The three West European hard coal industries (UK, Germany and France) have undergone major restructuring as a reaction to changing conditions in the international energy markets and the non-competitive nature of underground coal mining from difficult geological deposits Restructuring has been prompted by a declining demand for coal The restructuring process started with competition from low-cost imported oil in the early 1960s, but was later also influenced by nuclear power and natural gas developments In addition, low-cost coal imports have increased the pressure for restructuring Restructuring has resulted in significant reduction of uneconomic coal production capacity, dramatic reduction of employment in the coal industry, environmental improvements and regional economic diversification and growth outside the coal industry

3 Coal restructuring in Western Europe did not always proceed smoothly, different restructuring plans have been debated in each country between industry's management, trade unions, government and the public However, in all cases the development of the coal industry has still been consistently in the direction of downsizing the industry, improving labor productivity and concentrating mining activities in the best mines Despite these efforts production costs are still significantly above import parity Thus, further contraction is to be expected

4 The three West European hard coal producers have adopted different strategies to restructuring the UK is now embarking firmly on a privatization program for a small number of remaining mines which will need to be competitive with gas and with imported coal if they are to survive and prosper, Germany is likely to maintain a yet to be agreed minimum protected production capacity for energy security reasons (whether economically justified or not), and France is phasing out coal production in a politically and socially responsive manner

5 The restructuring of the Polish coal industry has been driven by the transformation of the overall Polish economy from a planned to a market-based economic system In Poland, coal demand has declined sharply not so much because of competition from other energy sources, but because of a significant decline in overall energy consumption The government set up a State Hard Coal Agency in 1990 to guide the restructuring of the industry Prices have been liberalized, direct subsidies have been reduced and the mines have been reorganized to form seven autonomous coal production enterprises

6 A competitive market-place for coal is starting to emerge in Poland with coal prices beginning to reflect the overall coal supply-demand balance While no mines have closed so far, the labor force has been reduced especially at the underground mines, as the different coal producing enterprises seek to improve their efficiency and competitiveness Several mine closures are planned and preliminary estimates indicate that competitive pressures will lead to further large declines in coal industry jobs in the next several years

Table 1 Energy Market Trends in Five Countries, 1973-1991

	Coal as a % of Energy Consumption		Coal as a % of Electricity Generation		% Growth in Electricity Growth	Share of Incremental Electricity Generation Taken by Coal
	1973	1991	1973	1991	1973-1991	1973 1991
France	17	9	19	9	147%	3%
Germany	42	33	69	59	43%	37%
UK	35	29	69	65	14%	40%
Poland	n a	78	96	96	n a	n a
USA	18	23	46	53	63%	63%

7 Contrary to the situation in the West European countries and Poland, the United States has not had to face the problem of a non-competitive coal industry, in fact, coal production has expanded significantly in the US in the past thirty years From 1973-1991, the share of coal in total energy usage has increased from 18-23% in the USA, compared to a decrease for the West European producers (Table 1) In Poland it has remained constant at 96%

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8 This difference between the USA and the three Western European countries in terms of coals changing share of the energy market reflects two important factors relating to electricity generation which is the dominant market for coal First, electricity generation and consumption has increased much more strongly in the USA and France than in the UK and Germany in the past twenty years Second, coal has taken a much larger share of the incremental electricity generation in the USA as compared with the other countries In the USA, coal was competitively priced and was more readily available than natural gas or nuclear power in the 1970s and 1980s But natural gas has become the preferred fuel for new power plants in the 1990s as a result of (a) the deregulation of natural gas prices and transmission, and (b) improvements in combined cycle technology In the three Western European countries, nuclear power was the largest source of incremental power generation in the 1970s and 1980s

9 Although the coal market has been steadily growing in the US, there has been and continues to be an on-going restructuring of the coal industry Over the past two decades, most production growth has taken place in new, large-scale surface mines in the western USA In the eastern coal mines the trend has been to close high cost mines and to consolidate small mines into larger units Over the past twenty years, over half the mines in the US have closed or merged with other mines to become larger operations At the same time, labor productivity has doubled

10 The development since 1960 in production, employment and productivity in four of the five countries is summarized in Table 2 Further details for each country are given in the Attachment

11 The experience of the five countries offers some important insights for the restructuring of the Russian Coal Industry **First, each of the four European countries has experienced a significant decline in coal production and consumption**

- In the case of the three West European countries, the decline has taken place progressively over the past thirty years primarily as a result of competition from other fuels

- In the case of Poland, the decline has taken place over the past five years largely as a result of energy consumption contracting due to macro-economic adjustments

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Table 2 Coal Industry Trends in Selected European Countries and USA Production (million tons) and Employment ('000), 1960-1993

	United Kingdom		Germany		France		United States (3)	
	Pdn.	Emp.	Pdn	Emp	Pdn.	Emp.	Pdn	Emp
1960 (1)	200	490	142	400	52	320	370	230
1970	145	254	111	176	37	98	543	160
1980	130	231	95	118	20	43	741	260
1990	95	63	77	105	11	9	854	131
1993 (2)	81	33	65	90	9	6	838	110

Productivity (tons per man year)

	United Kingdom	Germany	France	United States (3)
	Production	Production	Production	Production
1960 (1)	410	360	160	1,630
1970	570	633	380	3,390
1980	560	803	470	2,850
1990	1,410	727	1,220	6,170
1993 (2)	2,330	780	1,330	8,180

(1) Extrapolated from annual data starting 1962
(2) Estimated
(3) Employment no includes estimated 15% addition for overhead staff and small unrecorded mines
Source Coal Statistics for Europe, United Nations, and National Coal Association, U S

12 **Second, attempts to protect coal production levels in the UK and Germany by protecting coal markets from competition and by subsidizing coal use have been unsuccessful and have only served to delay the decline in production**

- The UK coal industry has received US$32 billion in government assistance since 1980 Even so, production has declined by 38% from 1980-1993 and further declines

are considered inevitable since all protection and subsidies will be eliminated by 1998

- Coal production has been steadily declining in Germany despite a high degree of protection for both thermal and metallurgical coal production

13 **Third, there has also been significant restructuring of the coal industry in the United States - even though coal consumption and production have been steadily increasing**

- The number of coal mines has been reduced from 6,550 in 1976 to 2,750 in 1992 Over 3,000 small mines with production capacity of less than 0 1 million tons per year have closed or merged (mostly in the Appalachian Region)

- Most production growth has come from the development of new low cost surface mines in the Western USA (ranging from 2-10 million tons per year production capacity)

14 **Fourth, labor productivity has increased significantly in the Western European countries and the USA**

- From 1960-1993 labor productivity increased by a factor of more than five in the UK and USA and ten in France

- Coal industry employment has declined by over 50% in the USA and by over 90% in both the UK and France

15 **Fifth, in order to reduce social and political opposition to the downsizing of the UK and French coal industries, special programs of assistance were introduced to help miners losing their jobs and to create alternative employment in areas with mine closures**

- In the UK, redundant miners were offered severance payments and British Coal Enterprises was set up as a subsidiary of British Coal to assist in creating new employment in areas with mine closures

- In France, miners were offered substantial retraining assistance and SOFIREM was set up as a subsidiary of Charbonnages de France to provide investments to re-industrialize coal mining areas

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United Kingdom

16 **Energy Supplies** In 1991 primary energy supply was dominated by oil (38%) followed by coal (30%), natural gas (23%) and nuclear power (9%) (Figure 1) Reduction in coal and oil use in the past twenty years has been offset by increased use of nuclear power and natural gas Although coal consumption has fallen slightly since the 1970s (from 109 million tons coal equivalent in 1973 to 92 million tons coal equivalent in 1991), coal has continued to play a major role in the energy balance of the UK economy, particularly at power plants In recent years, coal production has fallen, and imports have played a growing role in coal consumption Imports accounted for 20% of UK coal consumption in 1991

17 **Coal Demand** The major market for coal in the UK is for electricity and heat generation, which account for 75% of coal sales (Figure 2) At present, almost 65% of electricity production occurs at coal-fired facilities As electricity generation from nuclear power plants increased (to about 22% of electricity generation), the relative share of coal in electricity generation fell slightly Coal faces its greatest competition in the UK from natural gas The competition between gas and coal is particularly strong in the power plant sector, although gas-fired power generation provided only 1% of electricity in 1991 natural gas is now the preferred fuel for major new power generation projects in the UK

18 **Coal Development** The UK traditionally has been the largest West European hard coal producer Output dropped from about 200 million tons per year in the early 1960s to 81 million tons per year in 1993 Over the same time period, employment in the coal mining industry dropped from about 490,000 to about 30,000 in September 1993 Manpower productivity increased from 410 to over 2,000 tons per man year While up to 1985 the changes were relatively modest (employment decreased on average about 5% per year), there was a dramatic acceleration of the downsizing in the late 1980s when the privatization of the UK electricity generation and transmission industry resulted in a sharp decline in the demand for domestically-produced coal The number of underground mines decreased from about 211 in 1981 to 22 in December 1993 Average production costs have declined from US$93 per ton in 1987/88 to US$64 per ton in 1992/93 but are still about 30% above import parity

19 **Government Strategy** The British coal industry was nationalized in 1947 (creation of the National Coal Board) with the objective to secure and increase coal production for the expanding post-war economy This objective had to be revised in the early 1960s, when low-cost oil became available and contraction of the industry began Increasing non-competitiveness and labor disputes led to a government decision of changing the management culture

Figure 1

Primary Energy Supply in the United Kingdom

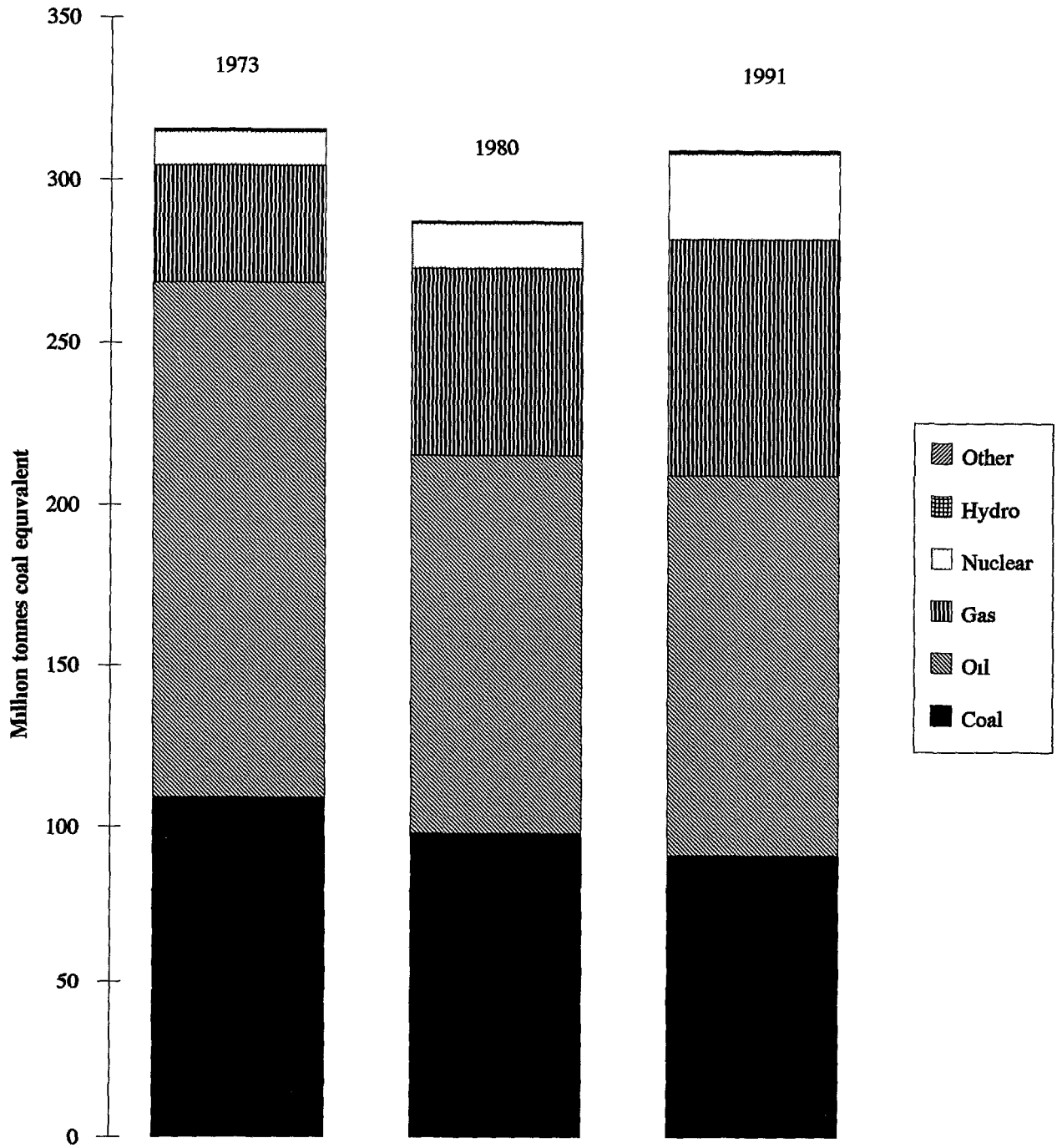

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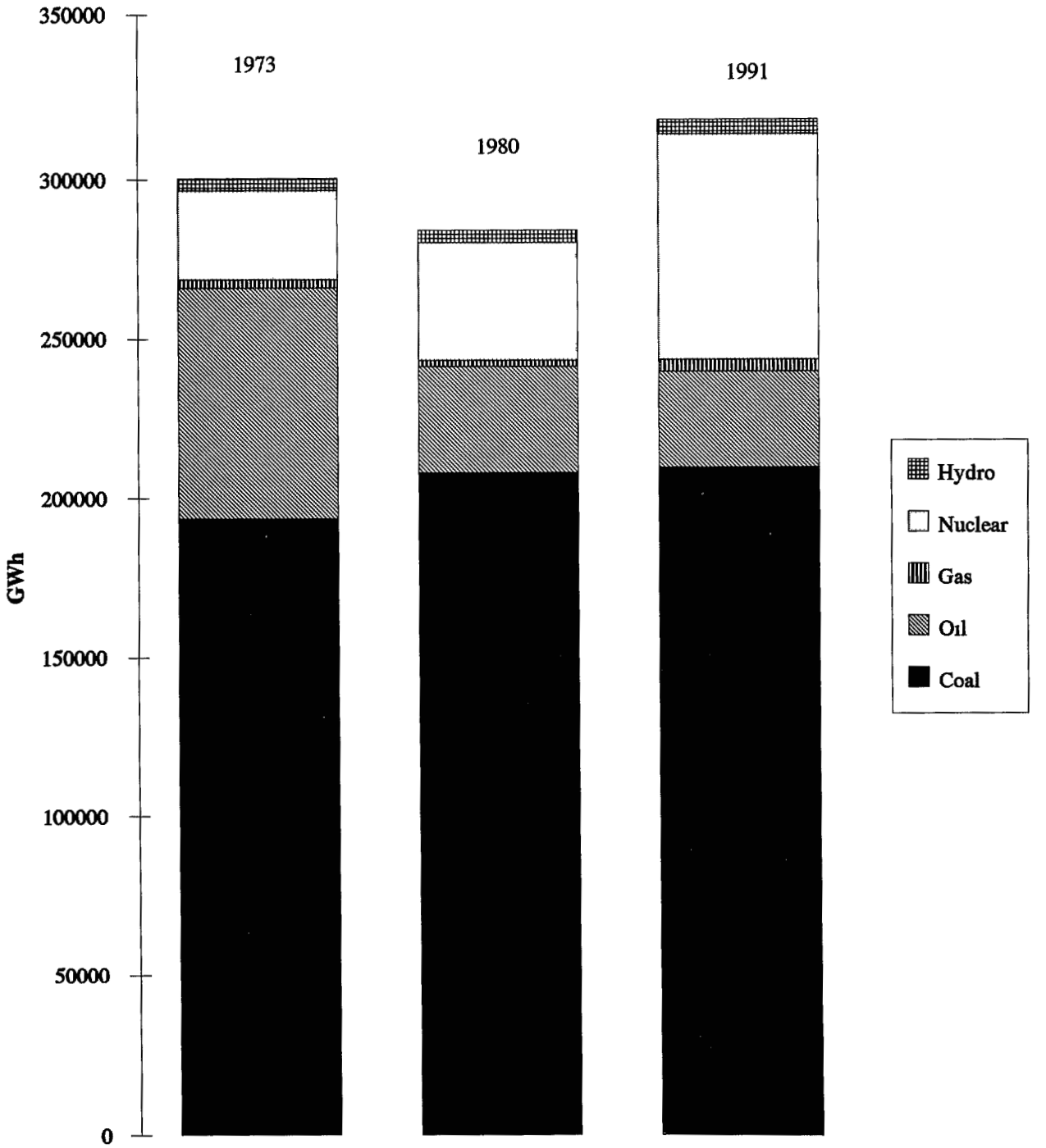
Figure 2

Electricty Generation by Type in the United Kingdom



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towards commercial orientation, which in 1986 was finalized with a change of name (to British Coal) Since then, closing of uneconomic mines accelerated sharply and initiatives to privatize a small core of remaining potentially competitive mines increased The Bill to privatize British Coal was passed in December 1993 Details of the privatization procedure are still being elaborated, but likely there will be an option for bidders to acquire either all remaining mines or one or more smaller groups of mines

20 **Government Assistance** The British coal industry has been supported by over US$32 billion in grants and government assistance since 1980/81 The most important forms of government assistance to the coal industry have been (a) the assured sale of domestic coal to the previously state-owned electricity industry through long-term supply agreements promoted by the government, and (b) direct subsidies for British Coal to cover operating losses These totalled US$23 5 billion from 1980/81 - 1991/92 equivalent to US$19 4 per ton There have also been labor-related grants, mainly for redundant mineworkers' payment schemes which totalled US$3 7 billion from 1980/81 - 1991/92 equivalent to about US$20,000 per employee laid off In addition, from 1985/86 to 1991/92, British Coal received US$5 3 billion in social restructuring grants from the British Government and the European Coal and Steel Community

21 **Personnel Reduction** One of the key aspects of UK coal restructuring has been the repeated offering of voluntary departure opportunities Incentive payments have been increasing over time, as eligibility was extended progressively towards younger staff Typically, the incentive payment consists of a sum which increases with the years of service, supplemented by a fixed closure payment On average, the offered payments were equivalent to about one year's salary Alternatively, miners were offered transfer to another mine A large majority of miners accepted the redundancy payment

22 **Job Creation** In 1985, British Coal Enterprise was established as a wholly owned subsidiary of British Coal, with the mandate to assist in the creation of alternative employment in areas affected by mine closings British Coal Enterprise has four areas of activity (i) to provide loans at reduced interest rates for eligible new and existing businesses which create jobs, (ii) to rent small business units (usually with electricity, heat, phone and other office services) to small scale start-up businesses, (iii) to provide job counselling and placement services, and (iv) to provide partial funding for local non-profit organizations to help small businesses develop These activities helped create and find about 90,000 jobs (equivalent to about 70% of job losses in coal mining, including retirement), at an average cost to British Coal Enterprise of less than a miner's monthly salary The impact of the program has helped

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reduce unemployment rates in coal mining areas from about 60% above the national average previously to about 20% today

Germany

23 **Energy Supplies** The role of coal in the energy balance of Germany has been falling, both in absolute and relative terms In 1973, coal accounted for 41% of the energy balance But in 1991, oil provided the largest share of primary energy supplies (38%) followed by coal (33%), natural gas (17%), and nuclear (11%) (Figure 3) The decline in coal consumption accelerated in the early 1990s, as industrial production in the former East Germany lagged Germany is a net importer of coal coal imports accounted for 6% of coal consumption in 1991 Imported coal is much cheaper than domestic coal, but import volumes are modest because domestic producers are protected through a variety of mechanisms

24 **Coal Demand** The major market for coal in Germany is the electric power and heating sector, which accounts for 70% of domestic coal consumption (Figure 4) Coal-fired power plants account for the bulk of electricity production (almost 60%) followed by nuclear (28%) Generation from coal-fired power plants has been relatively stable for the last ten years Increases in electricity generation have come primarily from nuclear power, and to a lesser extent natural gas

25 **Coal Development** Germany traditionally has been the second largest West European hard coal producer Output dropped from about 140 million tons per year in the early 1960s to about 65 million tons per year in 1993 Over the same time period, employment in the coal mining industry dropped from about 400,000 to about 90,000 Manpower productivity increased from 360 to 780 tons per man year The average annual decrease in employment has been at a relatively constant rate of about 4% throughout the whole period The number of operating mines has been reduced from 139 to 17 However, production costs remain at a level of about US$150 per ton, about three times as high as the cost of imported coal

26 **Government Strategy** The German coal industry has always been organized into private share holding companies In 1968, the major shareholders, mainly steel and energy enterprises, united their mines in the important Ruhr district under the Ruhrkohle AG (RAG), which was created with government support to facilitate the rationalization and adjustment of production capacity The government strategy towards coal mining was built on three major cornerstones (i) an energy policy aiming at market-driven diversification of energy supplies, but maintaining a minimum share of domestic hard coal for security reasons, (ii) private ownership and operation of the coal mines, and (iii) a formalized unique consensus-building process ("Kohlerunde",

Figure 3

Primary Energy Supply in Germany

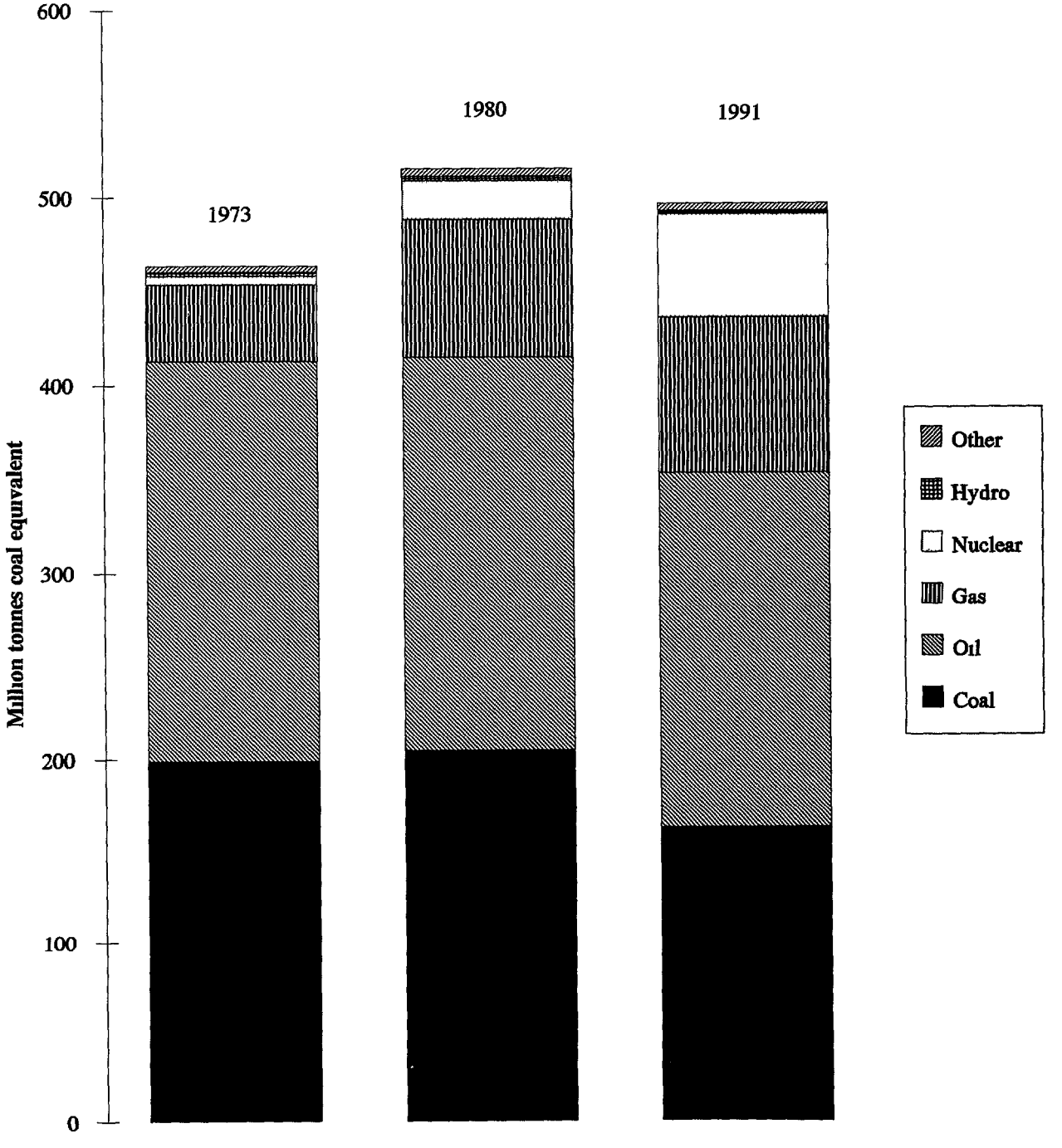

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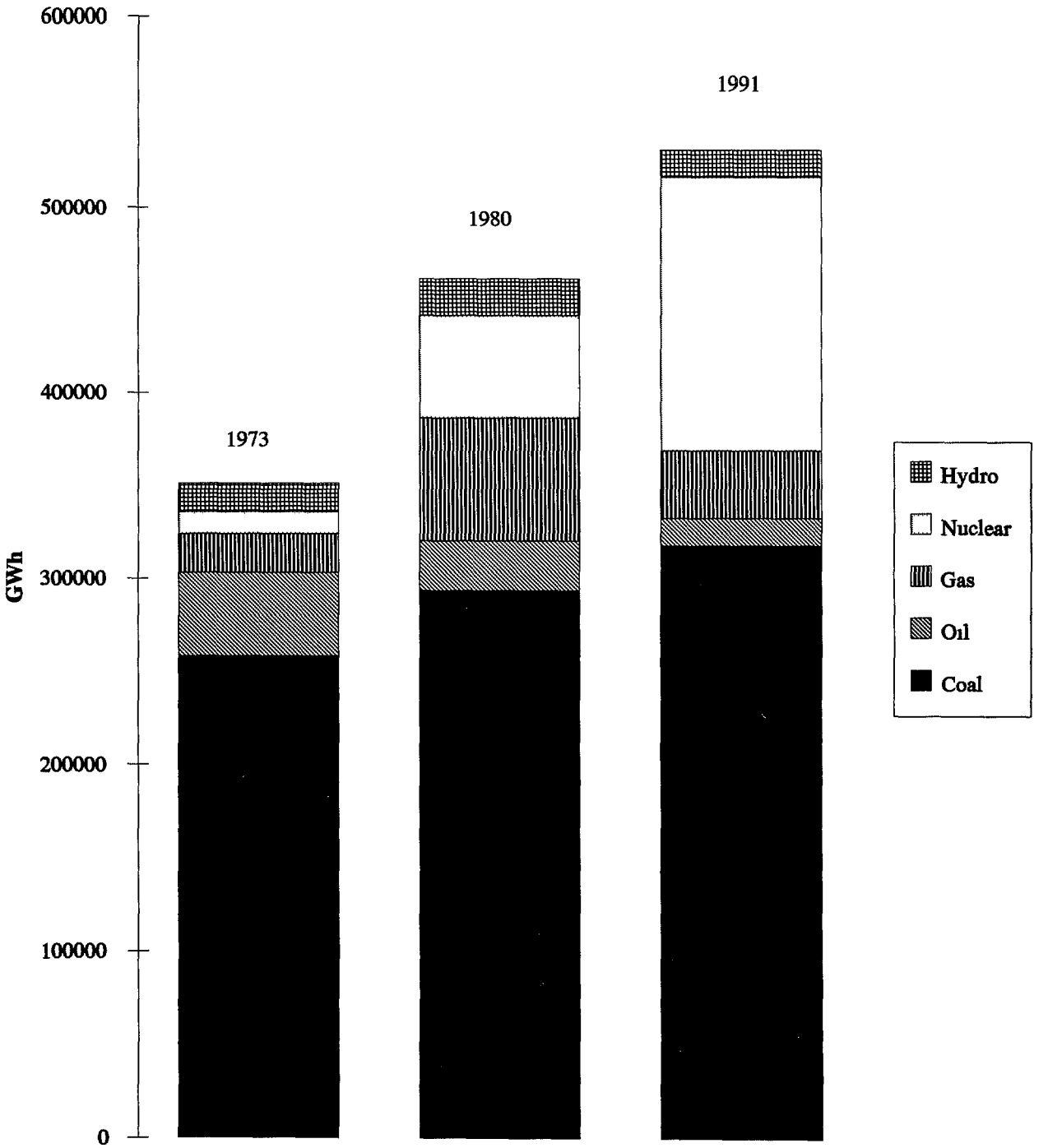
Figure 4

Electricty Generation by Type in Germany



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or coal talks) between government, industry and trade unions, regarding periodic revisions of the industry's major development and adjustment plans As this strategy proved to be a very costly one, it is now being increasingly criticized by the public While a fundamental change of the strategy is unlikely, a reduction of the subsidies and an acceleration of the adjustment process appears unavoidable

27 **Government Assistance** RAG, together with less important non-Ruhr hard coal mining companies, are protected by legislation securing coal market shares and subsidies if the mines cannot deliver at competitive prices Two important long-term agreements were signed with government sponsorship (a) an agreement between coal producers and electric utilities for the supply of 45 million tons per year of domestic coal at prices sufficient to cover costs, whereby in principle the price difference between domestic and import coal is compensated through a special fund which is financed by levies on electricity sales (presently amounting to about 10% of the average electricity tariff), and (b) an agreement between coal producers and steelmakers requiring all steel mills to purchase all of their coking coal from domestic sources, whereby the government pays directly the difference between domestic costs and world market prices

28 These two agreements, further supported by significant special guarantees for rationalization investments, provided over 90% of all government assistance to the coal industry The remaining aid consisted mainly of labor-related assistance (in particular to finance early retirement and mineworkers' bonuses), tax advantages and a 3% investment aid In line with the government's strategy, and greatly facilitated by the two major assistance agreements, German coal mining companies, in contrast to UK and French producers, always maintained significant investment programs to improve long-term production (typically investments were equivalent to about one half of all assistance received) However, despite impressive technical progress, modernizations and concentration on a small number of large mines, production costs have never been lowered significantly, and the German coal mining model has proved to be very costly

29 **Personnel Reduction** The German hard coal mining industry has been adjusting its personnel level basically through normal and early retirement and, in case of mine closures, reassignment of younger staff within the parent enterprise While slow and expensive, the process did improve productivity significantly without social or political disturbances

30 **Job Creation** Unlike the UK and France, Germany does not have a special organization within the coal industry for promoting regional development However, transformation of mining regions has been quite successful, in particular in the Ruhr district, which today is industrially

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diversified and advanced, with significant improvements in environment and new recreational and cultural facilities This can be partly contributed to a variety of initiatives sponsored by the Federal Economy Ministry, regional government, as well as by private associations Advertising and image improvement are important aspects of these initiatives RAG, the dominating coal producer, has been increasingly diversifying its own business activities into energy, chemistry, technology, services and environment Today, about 40% of RAG's revenues are from non-mining activities, which employ about 20% of the total staff

France

31 **Energy Supplies** Coal plays a relatively small share in the energy balance of France In 1991, oil accounted for 40% of primary energy supply, followed by nuclear (37%), natural gas (12%), coal (9%), and hydro (2%) (Figure 5) Coal consumption has been declining, both as a share in the energy balance and in absolute terms Imports account for two-thirds of coal consumption in France

32 **Coal Demand** Electricity generation in France is dominated by nuclear power, which provides about 75% of electricity production (Figure 6) Increased generation from nuclear facilities first acted to displace oil consumption (in the late 1970s and early 1980s) and then coal (in the mid- to late-1980s) Coal now accounts for only 8 to 9% of electricity generation, as compared to almost 30% in the late 1970s

33 **Coal Development** Among the three countries, France is the smallest coal producer with poorer coal resources and lower labor productivity than the UK or Germany Output dropped from about 50 million tons per year in the early 1960s to less than 10 million tons per year at present Over the same time period, employment in the coal mining industry dropped from about 320,000 to about 6,000 Manpower productivity increased from 160 to 1,300 tons per man year The average annual decrease in employment has been at a relatively constant level of about 10% through most of the period (only during the last 5 years the rate increased to more than 15%) As in UK and Germany, the number of operating mines has been greatly reduced Some previously important coal mining areas, including Pas de Calais, stopped coal production altogether Average production costs in recent years have been about US$100 per ton, about twice the cost of imported coal

34 **Government Strategy** Like the British coal industry, and with similar objectives, the French coal industry was nationalized in 1946, when Charbonnages de France (CdF) was created However, in the early 1960s, the French government embarked on an energy strategy which heavily depended on the development of nuclear power and the gradual closing of the coal

Figure 5

Primary Energy Supply in France

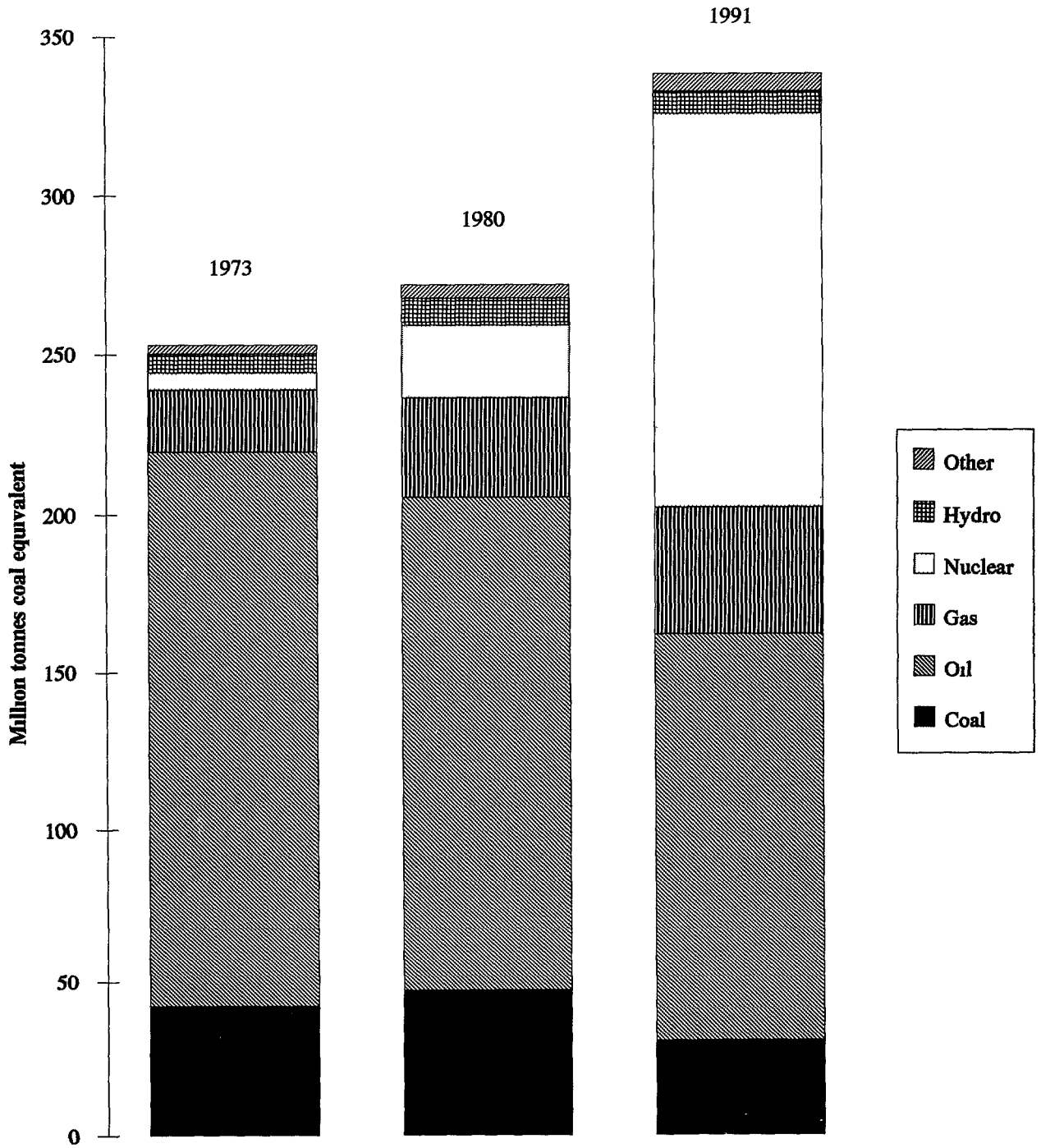

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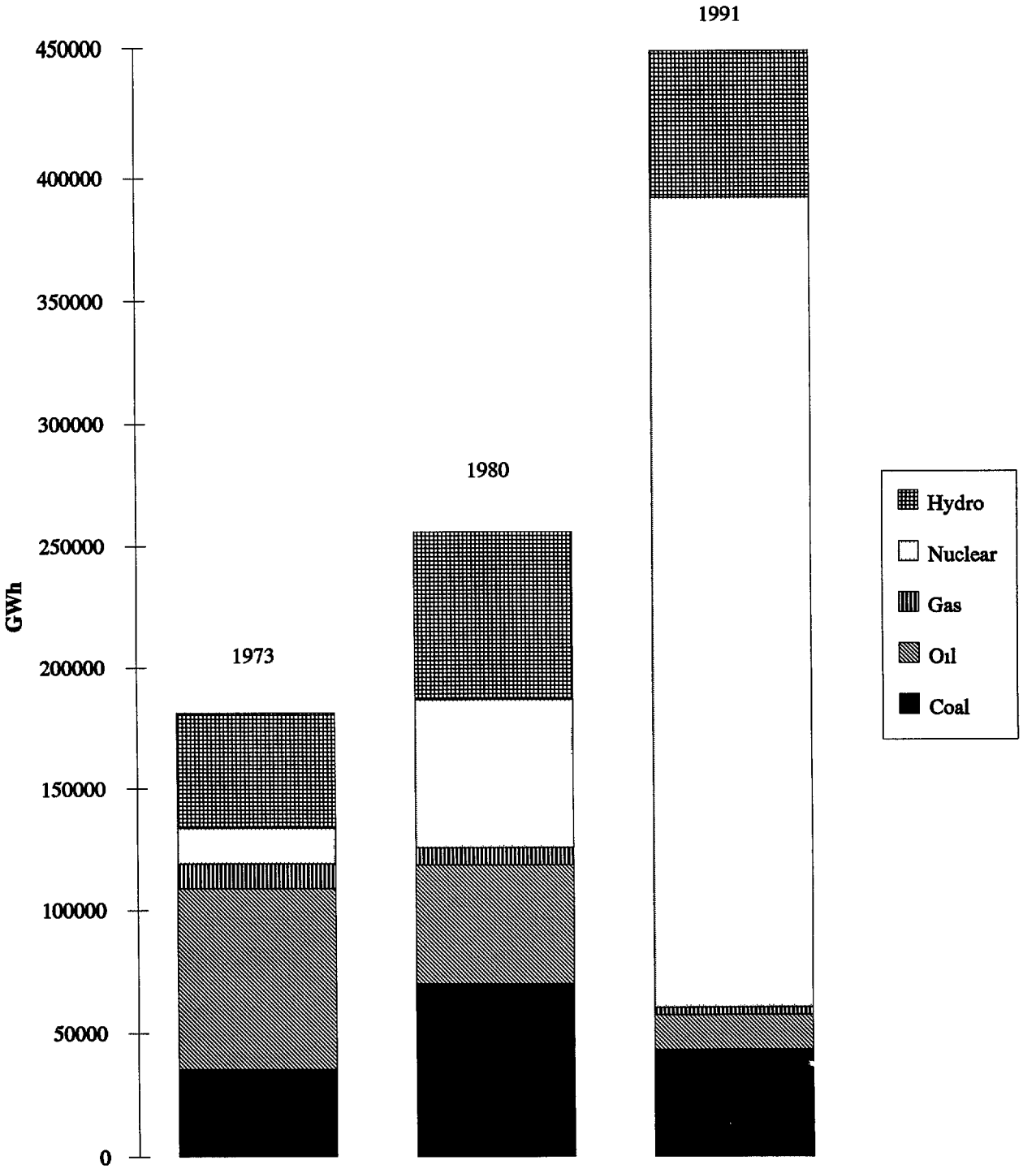
Figure 6

Electricty Generation by Type in France



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industry As in the UK, the adjustment process accelerated in the mid-1980s Since then, CdF's goal is to stop coal mining as soon as socially and politically feasible The focus is fully on reconversion of the labor force and job creation There are no more rationalization investments (they always have been much lower than in the UK and Germany)

35 **Government Assistance** The most important forms of government assistance have been the government-backed sale of domestic coal to Electricite de France (EdF), direct grants to cover operating losses of CdF, and significant labor-related assistance The long-term supply agreement with EdF is based on a guaranteed tonnage, valued at prices which are based on the average price of imported coal plus a minor adjustment Operating grants have been provided with the understanding that they are not to delay the closing of the most uneconomic mines, but would allow some rationalization of the most promising mines so that the adjustment could be executed at a socially and politically acceptable pace

36 In the recent past, direct operating grants have been principally approved on the basis that they would cover 50% of anticipated operating losses, while the other half would be applied to financing closure of unprofitable mines Today, by far the greatest part of the government's financial aid is being applied to finance the social costs of mine closures, in particular early retirement and retraining (labor-related aid surpassed $50 per ton of domestic coal produced, or the cost of imported coal)

37 **Personnel Reduction** CdF has good experience of steady and significant employment reduction without major social and political disturbances More than in other countries, focus has been put on retraining and reinsertion of coal miners These programs are elaborate, time consuming (starting two years before a mine closure) and expensive (costs per person are equivalent to two years of salary) Since the mid-1980s, also several thousand miners have been transferred to EdF (this arrangement was part of the government-backed coal supply agreements)

38 **Job Creation** France has the longest experience of systematic industrial promotion for coal mining areas In 1967, SOFIREM, a government-supported financing instrument for re-industrialization of coal mining areas, was created as a subsidiary of CdF Despite some expensive investments with modest returns, overall SOFIREM appears to have been quite successful in contributing to regional development In recent years, annually about 6,000 jobs were created with an annual SOFIREM financing volume of about $50 million

Poland

39 **Energy Supplies** The primary energy balance in Poland is dominated by coal In 1991, coal accounted for 78% of the primary energy supply, followed by oil (14%) and natural gas (8%) Unlike other countries of Eastern Europe, Poland did not import large amounts of natural gas from the former Soviet Union, and consumption of gas has remained rather stable Poland is a net exporter of coal While exports have fallen in recent years, this decline paralleled production activities, and exports account for about 15% of Polish coal production (in terms of energy equivalents)

40 **Coal Demand** Since 1987, when coal consumption peaked at 151 tons coal equivalent, coal consumption has declined by almost one-third before stabilizing in 1993 In terms of energy equivalents, power plants (including co-generation facilities accounted for 55% of coal consumption in 1991, and district heating systems accounted for another 13% Almost all electricity production is based on coal In 1991, hard coal accounted for 51% of electricity generation, and brown coal 40% Oil-fired generation provides only a tiny share of electricity production, as does hydro, natural gas has not been used in power plants

41 **Coal Development** Coal has been the backbone of the Polish energy sector The bulk (approximately two thirds) of Polish coal production consists of hard coal Production of hard coal was slightly more than 190 million tons annually through most of the 1980s However, production started to decline in 1989 By 1993, production of hard coal was 130 million tons Hard coal is produced at 70 underground mines in 3 basins Brown coal output, in contrast to hard coal, has fallen only slightly in recent years, and remains at about 70 million tons All brown coal is surface mined Productivity in underground mines increased steadily between 1960 and 1977 (from 328 tons to 541 tons per employee), due to increased use of mechanization and long-wall technology However, in the late 1970s, productivity started to decline as more employees joined the work force In recent years, production has fallen faster than employment, resulting in a continued decline in labor productivity (to a level of 400 tons per miner in 1993) In 1993, coal production costs averaged US$32 5 per ton, well below import parity of US$50 per ton Lower cost producers are competitive in the export market and in 1992 Poland exported nearly 20 million tons

42 **Government Strategy** The Polish coal industry used to be highly subsidized, but direct subsidies are being progressively phased out Price liberalization began in July 1990 (at that time, prices averaged about $6/ton), and throughout 1990 and 1991 prices continued to increase (averaging $26/ton by the end of 1991) Coal prices were fully liberalized in 1992 (and explicit subsidies curtailed) However, even with increased coal prices,

operating losses are still incurred by the coal industry While in 1991, subsidies averaged about $3 per ton, by mid-1993, losses were averaging over $7 per ton The mines deteriorating financial position resulted from lower prices (caused by excess supplies driving prices down) and rising costs due to inflation Complicating matters is the inability of consumers to pay the higher prices, resulting in sizeable arrears A State Hard Coal Agency (PAWK) was established in September 1990 by the Ministry of Industry in order to assist in the restructuring of the coal sector While decisions on the first round of mine closures (consisting of 7 mines) were reached in December 1990, they have not implemented Since this time, 2 additional mines have been included for closure In 1993, the Ministry of Industry and Trade (MOIT) and PAWK collaborated on a Hard Coal Restructuring Program and the Government created 7 mining concerns out of 63 mines in Upper Silesia

Government Assistance

43 **Personnel Reduction** Employment in hard coal mines peaked in 1987 at 450,000, 353,000 in 1991, and 336,000 in 1992, and 319,000 in 1993 Between 1989 and 1993 alone, almost 100,000 employees were shed by underground mines Surface mines account for a much smaller labor force, although this too has been falling (from approximately 18,000 in 1989 to 14,000 in 1991) Explicit plans for addressing social dislocations were not originally part of the Polish restructuring program The concerns of the workers and communities, however, have caused them to be included as critical issues in recent years Preliminary estimates indicate that another 100,000 positions will need to be eliminated in the next few years

United States

44 **Energy Supplies** The United States has abundant coal reserves which can be extracted at low costs and is a net exporter of coal approximately 13% of US coal production is exported In 1991, oil accounted for the largest share of primary energy supply in the United States (38%) followed by natural gas (24%), coal (23%), and nuclear power (9%) (Figure 7) Between 1973 and 1991, coal consumption increased by almost 50% This increase was driven entirely by the power sector During the 1970s and 1980s, coal was the dominant fuel for power generation since oil reserves were modest and natural gas exploration and development was constrained by price and transmission regulation But the deregulation of natural gas prices and the introduction of common carrier transmission arrangements has brought forth new gas supplies With the improved availability of gas and with improvements in combined cycle gas generation, natural gas is now a more economic as well as cleaner fuel for power generation than coal Thus, natural gas is now expected to be the dominant fuel for future power generation plants in the United States

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Figure 7

Primary Energy Supply in the United States

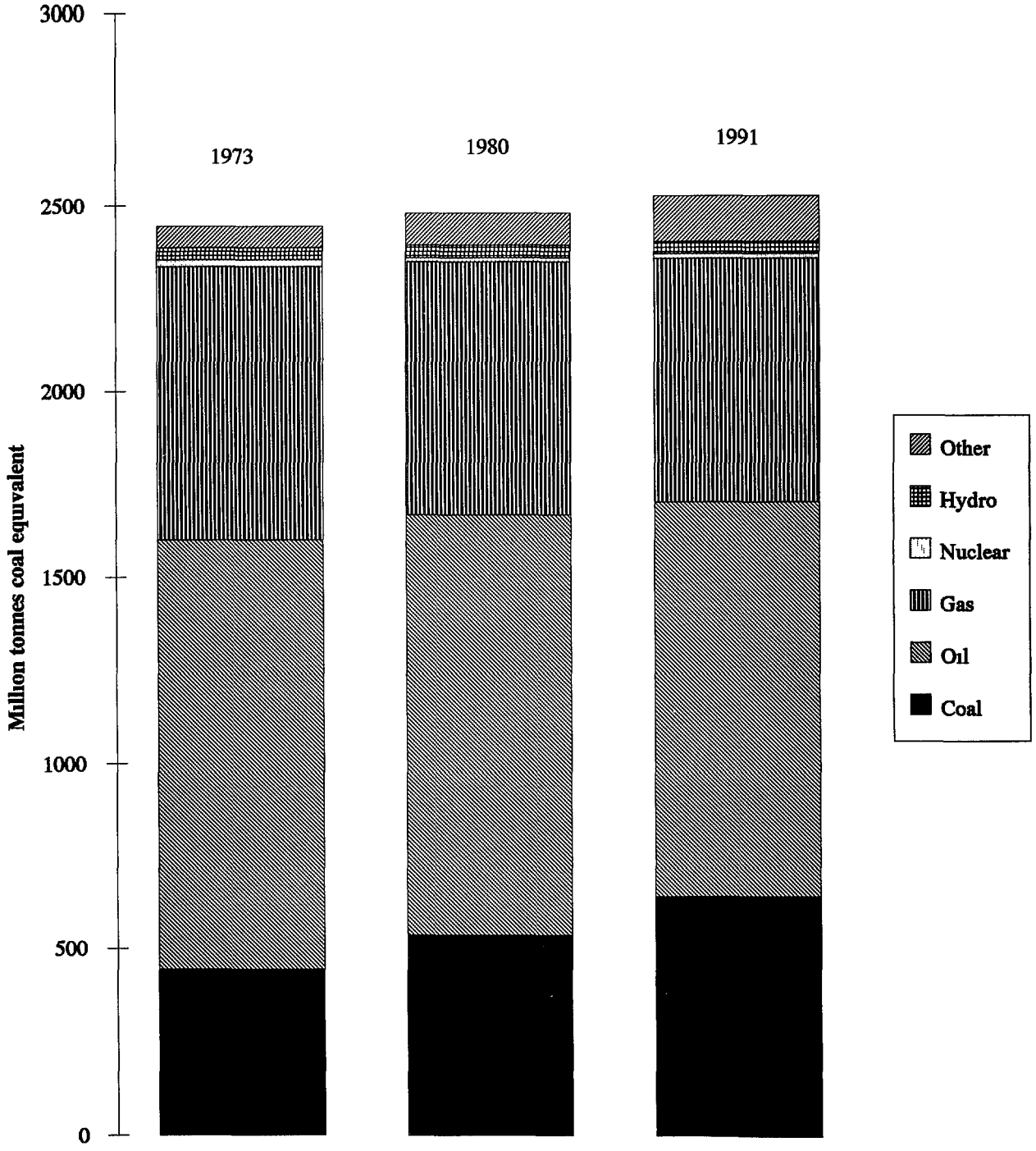

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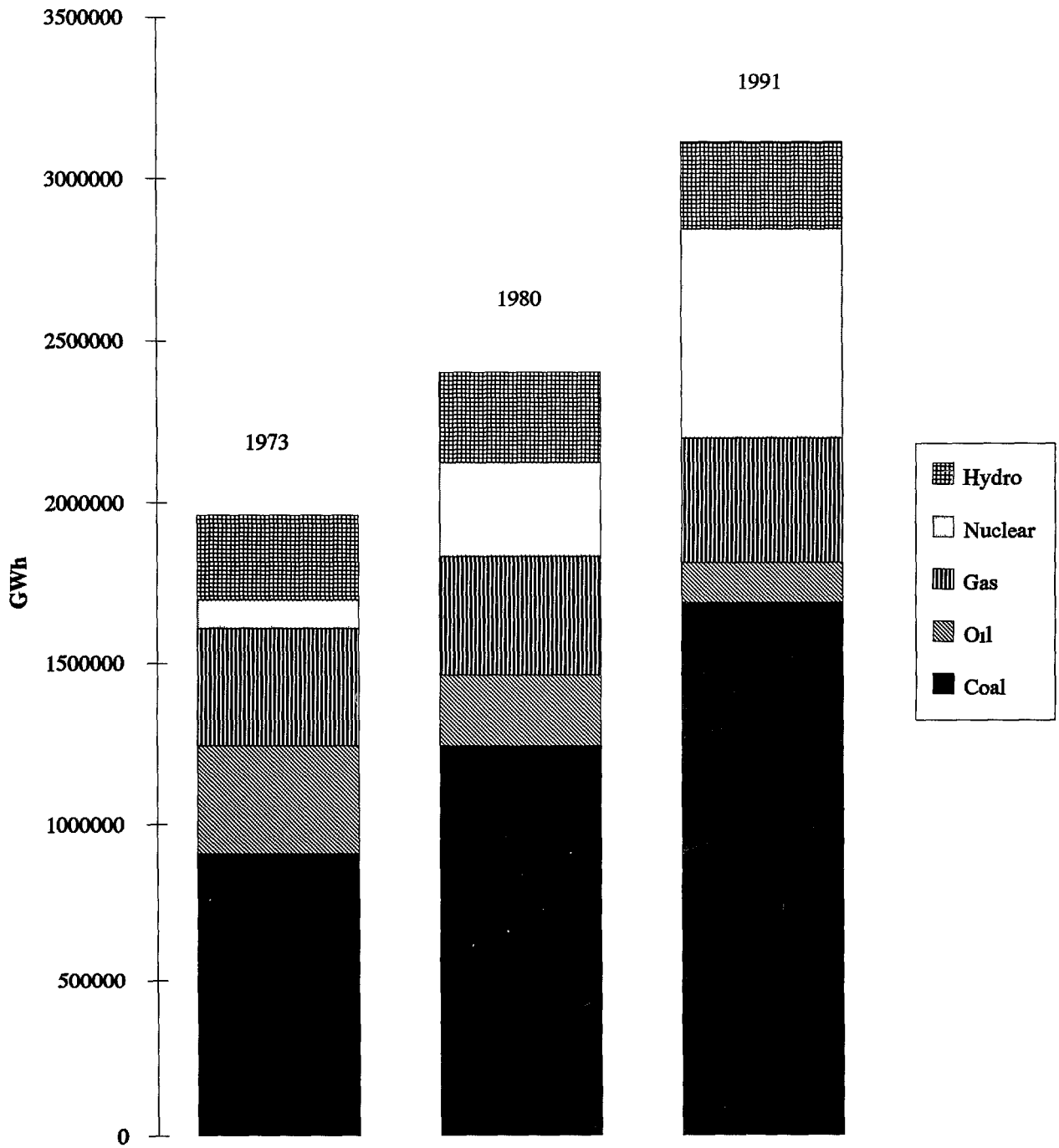
Figure 8

Electricty Generation by Type in the United States



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45 **Coal Demand** The electric utility sector is the largest consumer of coal in the US, accounting for 85% of domestic coal consumption (Figure 8) In 1991, coal-fired power plants provided about 55% of electricity generation, nuclear 20%, natural gas 12%, and hydro 8% Oil consumption by electric utilities declined dramatically after the oil price shocks of the 1970s now provides only 4% of electricity generation (as compared to 17% in 1973) In the 1980s, many oil-fired plants were converted from oil to coal

46 **Coal Development** Compared with the European countries, the US is a much larger coal producer Output increased from 370 million tons in 1960 to 838 million tons in 1993 Employment dropped from 230,000 to 110,000 There has been a clear shift to large surface mines from 1970 to 1990 the share in total production of surface mines increased from 44% to 59% Today, about 70% of US coal is produced by 7% of the mines (those with an annual output of more than 1 million tons each per year) Average production costs have been brought down to about US$20 per ton (they used to be US$30-35 per ton in the 1980s)

47 **Changing Industry Structure** US coal statistics are aggregated for three coal producing regions Appalachia (including Pennsylvania and Ohio), Interior, and West Historically, the Appalachian Region has been the principal source of coal in the United States Although this region is still the dominant supplier of US coal, its share has been falling (from 70% of U S coal production in 1970 to 45% in 1992) as thousands of small and relatively inefficient Appalachian mines were closed, particularly as coal prices fell in the 1980s Underground mines account for 65% of coal production in this region In the Interior Region, production has increased slightly, but as a share in total U S production it has fallen from 24% in 1970 to 20% in 1992 Surface mines dominate production in the Interior Region, accounting for 62% of coal production

48 Most of the growth of US coal production has been in the Western Region with the development of large, low cost mines producing low sulfur coal The Western Region accounted for 35% of US production in 1992, compared to just 5% in 1970 Surface mining accounts for 90% of production The Clean Air Act Amendments of 1990 increased the demand for the low-sulfur coal mined in the West to meet the restrictions on sulfur dioxide emissions from power plants With the advent of unit train service, coal from the Western Region could be shipped economically over to consumers in the mid-West and Southern States including Indiana, Illinois, Arkansas and Louisiana

49 As a result of these changes, the number of mines declined from 6,550 in 1976 to 2,750 in 1992 of which 1,390 were surface mines and 1,360 underground mines Average mine size increased to 260,000 tons per

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year capacity in 1992 compared with 83,000 tons per year capacity in 1976 Today, the Appalachian Region has 89% of U S coal mines, with 8% in the Interior Region and 3% in the Western Region

50 Labor productivity increased steadily in the 1960s but declined in the 1970s primarily due to the introduction of new health, safety and environmental regulations which increased employment requirements for non-mining personnel Subsequently, labor productivity has increased steadily from 2,850 tons per man year in 1980 to 6,170 tons per man year in 1990 Much of the productivity gains reflect the increasing share of surface mining which has much higher labor productivity than underground mining But, underground mining productivity also increased largely due to the introduction of highly mechanized mining methods using longwall and continuous mining equipment

51 **Government Strategy** There is no special government strategy for the coal industry All coal mining is private business and energy supplies are subjected to market forces Tight regulations regarding electric utilities, as well as anti-monopoly and environmental legislation (in particular the Clean Air Act) have had an indirect impact on the development of the coal industry by increasing the incentives for users to shift to low-sulfur coal from high sulfur coal

52 **Government Assistance** There is no direct government assistance for the coal industry, except research funding which may or may not affect the industry (e g , the recent funding for clean coal technology)

53 **Personnel Reduction** Personnel programs for reductions and mine closures are the full responsibility of the mining companies The government does not take part beyond provision of normal unemployment benefits

54 **Job Creation** Any special job creation efforts are the full responsibility of companies, local communities, municipalities and individuals The government maintains no special program for miners or any other population group beyond the normal employment services for job location and retraining New job assignments are greatly facilitated by the mobility of American workers

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	1973	1980	1991		1973	1980	1991
					%	%	%
U K							
Total Energy Supply mtce	316	287	312				
Coal	109	98	92		35	34	29
Oil	159	117	118		51	41	38
Gas	36	58	73		11	20	23
Nuclear	10	14	26		3	5	8
Hydro	0	0	1		0	0	0
Other	0	0	1		0	0	0
UK							
Coal Balance	109	98	92				
Electricity and heat	65	74	68		60	75	75
Industry	22	10	10		20	10	11
Other	19	12	7		17	12	8
Residual	3	3	5		3	3	6
UK							
Production (GWh)	281352	284071	320636				
Coal	194133	207372	209375		69	73	65
Oil	72307	33151	30140		26	12	9
Gas	2729	2131	3784		1	1	1
Nuclear	27995	36929	70540		10	13	22
Hydro	3855	3892	4489		1	1	1

	1973	1980	1991		1973	1980	1991
					%	%	%
Germany							
Total Energy Supply mtce	473	513	496				
Coal	199	205	164		42	40	33
Oil	214	210	190		45	41	38
Gas	41	73	83		9	14	17
Nuclear	5	21	55		1	4	11
Hydro	2	2	2		0	0	0
Other	4	4	4		1	1	1
Germany							
Coal Balance	199	202	164				
Electricity and heat	104	116	117		52	57	72
Industry	50	48	29		25	24	17
Other	35	30	15		18	15	9
Residual	10	9	3		5	4	2
Germany							
Production (GWh)	374352	466340	535583				
Coal	258303	293328	317601		69	63	59
Oil	44847	26721	14729		12	6	3
Gas	20702	65987	36259		6	14	7
Nuclear	12092	55588	147446		3	12	28
Hydro	15236	19866	14675		4	4	3

	1973	1980	1991		1973	1980	1991
France					%	%	%
Total Energy Supply mtce	253	272	332				
Coal	42	47	31		17	17	9
Oil	178	158	132		70	58	40
Gas	19	31	40		8	11	12
Nuclear	5	23	123		2	8	37
Hydro	6	9	7		2	3	2
Other	3	4	6		1	2	2
France							
Coal Balance	42	47	31				
Electricity and heat	15	24	15		35	52	48
Industry	17	13	12		41	29	38
Other	8	5	3		20	10	8
Residual	1	5	2		3	10	6
France							
Production (GWh)	182508	256896	450125				
Coal	35352	69927	43212		19	27	10
Oil	73313	48451	14269		40	19	3
Gas	10093	7013	2836		6	3	1
Nuclear	14747	61244	331337		8	24	74
Hydro	47689	69105	56716		26	27	13

	1973	1980	1991		1973	1980	1991
					%	%	%
USA							
Total Energy Supply mtce	2462	2573	2762				
Coal	444	537	642		18	21	23
Oil	1157	1131	1061		47	44	38
Gas	735	681	657		30	26	24
Nuclear	33	99	242		1	4	9
Hydro	33	34	33		1	1	1
Other	58	87	125		2	3	5
Electricity imports	1	4	3				
USA							
Coal Balance	444	538	642				
Electricity and heat	310	417	548		70	78	85
Industry	112	85	74		25	16	12
Other	19	11	12		4	2	2
Residual	3	24	8		1	4	1
Production (GWh)	1965509	2427320	3197530				
Coal	907279	1242788	1688296		46	51	53
Oil	335905	219915	124704		17	9	4
Gas	364798	370409	381785		19	15	12
Nuclear	89234	288851	649099		5	12	20
Hydro	265344	279142	268912		14	12	8

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Annex D

COAL TRANSPORT IN RUSSIA

Coal Transport in Russia

Overview

The coal industry in Russia depends primarily upon the railway for transport, and, in turn, coal transport is the backbone of the railways' business On a ton-kilometer basis, over 97% of the coal tkm's are accounted for by rail For the railways, on a tkm basis, coal is the single greatest commodity carried In 1992 coal represented 20 2%, in terms of tonnage, of all commodities hauled on the Russian railway system, second only to construction materials Coal is hauled longer distances in Russia than it would be elsewhere in the world, in part because rail transport has been so comparatively inexpensive The average length of haul of coal transport was 1237 km in 1992

The coal industry's dependence upon the railway system reflects the critical role that the railways has played in the entire economy Excluding pipelines, the railway system carried 98% of land tkm in 1988, the peak level before the breakup of the FSU The extensive reliance on transport reflects Russia's vast distances but also the fact that industrial production was often concentrated in a few number of huge complexes whose location was sometimes based more on political than cost considerations

Under the command economy where traffic demand and operational planning could be organized at a central level well in advance, the integrated former all union railway system was highly efficient The former All-Union or Soviet Railways (SZD) carried half of all the world's railway freight traffic, about one-fourth of all the world's passenger traffic and had the highest traffic density of any railway in the world (By comparison, the United States and Canada combined carry about 23 percent of the world's railway freight traffic) If its services were priced at rates charged by US railways in 1990, the total revenue would have been about US$100 billion The system operated as a series of separate regional railways (19 of which now remain in Russia), each of which is a "geographic" monopoly, contiguous to another, with no competition among themselves for freight traffic The network itself is concentrated on highly used main lines, with ownership of the feeder routes, industrial sidings and branch lines belonging to the railway industrial customers

The resulting high density (some lines carried 250 million gross tons annually and ran 300 trains daily) is a major reason why railway tariffs in Russia were, and indeed, remain, low by world standards Another key factor is that rates were both explicitly and implicitly subsidized by Government Rail rates were not set at levels needed to cover construction costs of the network or

capital costs of rolling stock since these were included in Government budgets, nor did rates cover the full cost of energy used to operate trains

Indeed the railways have benefitted enormously from Government's implicit subsidy of energy, which in 1992 was by far the largest subsidy in Russia, exceeding GDP in terms of opportunity cost measured at the market exchange rate In terms of rail transport, analysis showed that transport's share of the implicit subsidy of electricity consumption, which relates primarily to rail transport, is equivalent to 6% of GDP

Government can no longer afford to maintain these direct or indirect subsidies In fact, reducing subsidies and rationalizing the energy sector are essential to stabilizing and restructuring of Russia's entire economy and, if implemented, will help reduce the fiscal burden of the transport sector At the same time, removing the subsidies will force a restructuring of tariffs and a passing on of real increases to the transport users

As fuel and other input/output prices reach world levels and transport tariffs reflect true economic costs, the competitiveness of coal, as well as that of Russia's other industries, will be eroded In terms of formulating a plan for the restructuring of the coal industry, therefore, the key question is the extent to which rail service can be maintained and rates kept low enough so that the total price of coal to the end user is lower than the price of alternative fuels within Russia and, in the case of exports, lower than the delivered prices of competing coal exporters Making rail transport more efficient to offset cost increases in basic inputs will be necessary before long to prevent the complete erosion in the competitiveness of coal and other natural resources located far from their points of end use

Unfortunately the railway system is hardly in a position to recognize that its long term health, and that of the Russian economy, rests upon its ability to minimize costs, maintain service levels and keep rates low in real terms The dissolution of the FSU, and Russia's current economic difficulties have had an extremely deleterious effect on the system and undermined its ability to operate The financial performance of the railways is declining as the result of declining demand, rising fuel prices, inflationary pressure on wages, and reluctance to increase passenger tariffs And, the people who run the railways are not prepared for the massive transformations necessary to meet the need of a market economy Thus despite its monopoly position, Russia's railways are now facing serious problems

Rail freight traffic has declined by about 26% and passenger traffic by about 17% since 1988 and the Bank projects that railway traffic will not recover to 1989 levels until well into the next century Rather, as reforms take hold, market forces will make the economy less transport intensive and will dramatically affect the nature and mix of commodities carried as well A shift from rail traffic to road is also inevitable, particularly for time-sensitive shipments and for short-haul traffic Railway officials do not seem to understand that the economic framework they will inevitably change and necessitate fundamental reforms in their industry Instead, MPS has hired additional workers and its capital plans still focus on constructing employee housing, expanding the network, continuing electrification and even to promoting a high speed rail line with no chance of financial viability

These trends suggest Russia's competitiveness in coal and other industries dependent upon the railway will be reduced by the railways' continued production focus and lack of commercial orientation and sense of accountability to press for the service quality required by a market economy

Moreover, the railways' present structure impedes their ability to change Inappropriate centralization at the Ministry of Railways (MPS) level, together with inappropriate decentralization at the regional railway level, has resulted in a giant railway monopoly that is difficult to control politically and completely unresponsive to shipper quality and service needs At the same time, regional railways operate as a fragmented set of individual, geographic fiefdoms, each focusing on its "own" traffic and each wielding an inordinate degree of power over local customers

These generic operational problems have been magnified by those stemming from the breakup which have led to controversy in such critical managerial areas such as rate setting, revenue divisions and wagon management In addition, traffic patterns and levels have been interrupted, new borders are delaying transit times, and inter-railway interchanges have increased Other operational difficulties relate to the disruption in equipment supplies that has accompanied the breakup of the FSU These problems are affecting, and will continue to affect, both the price and the service levels of all freight transport customers

Financially, many of the railways' problems relate directly to the process of reform and subsequent adjustments already taking place Fuel and electricity costs are beginning to increase at rates faster than inflation and the result is pressuring the railways to raise tariffs An analysis of MPS expenditures for 1991 and 1992 indicates that fuel and electricity costs have been increasing more rapidly than labor and other input prices In fact as a percentage of total costs for the railways, electric energy has increased from 8 1% in 1991 to 11 8%, diesel fuel from 3 7% to 7 5% while labor actually decreased as a percent of costs from 33 8% to 27 8% The increasing costs are being passed on by the railways to its customers in the form of higher rates

Nevertheless, the rising costs of wages are also sources of financial pressure although the railways seem reluctant to tackle problems of overstaffing Instead, officials seems convinced that traffic levels will rebound and that there is little need to downsize Despite a decline of 13% in network-wide labor productivity and a planned cost cutting program to reduce personnel by 50,000, staffing levels actually increased in 1992 This is unfortunate as studies show that railway productivity was about 2 5 times less than that of the United States even before the decline in traffic The financial burden of overstaffing has been made worse by the fact that rail wages are now indexed to the consumer price index which in turn has led to an agreement to increase rail rates on a monthly basis

Another large source of financial difficulty stems from the fact that recovery of passenger costs through revenues was only 22% for 1992 In its planning, MPS estimated that passenger losses for 1993 would be Rb451 billion Passenger costs as a percentage of total operating costs increased from 3 9% in 1991 to 5 4% in 1992 despite a 1% decrease in passenger km (although freight kms dropped 15%) These skyrocketing passenger losses are a serious problem for the all freight customers, including the coal industry Government has apparently put no pressure on the railways to increase the percentage of costs recovered through passenger revenues To the contrary, it appears government's present tariff policy explicitly endorses the cross-subsidization of passenger losses by freight customers

The passenger losses (of Rb82 6 billion) of 1992 were largely covered by freight revenues although for the first time ever, the Federal budget for 1992 did include some subsidies for rail passenger transport Yet the ability of freight customers to finance passenger losses in future is eroding Profit margins on freight revenues have decreased significantly in the last several years Revenue per tkm in constant 1990 rubles dropped from 10 01 in 1991 to 6 52 in 1992 The freight operating ratio in 1992 was 79%, with the overall operating ratio of 97%, a far cry from the 33% operating ratio earning in 1989

Worse, freight rates are being driven up at a rate faster than inflation and the increases are beginning to affect the viability of the major industries moving goods by rail From 1989-1992 rail rates increased 81 1 times compared to the GDP inflator of 35 28 times Subsequent to the 81 1 increase, which was in effect at the end of December 1992, rail rates have been increased an additional 12 39 times or 1239% This compares with inflation of consumer prices in 1993 as of the 3rd quarter of 1155 times (consumer price indexed to 1992)

Rapidly rising rates are not, in and of themselves, evidence that the competitiveness of the coal industry will be hurt relative to other fuels, or to other countries The real questions to ask in terms

of assessing coal competitiveness for the future is whether rates are sufficient to cover the real costs of transport, how they compare with rates elsewhere, and what the future is likely to bring

According to MPS analysis, the cost of coal transport is about 13%-14% less than network-wide average operational costs since most coal moves in unit trains, the bulk of coal moves along electrified route with an average cost of 163 5 Kopeks per 10 tariff ton-kilometers (equivalent to US 0 12 cents per tkm at an exchange rate of Rb1200 = US$1), 16% lower than the network-wide operational cost of 187 1 kopeks (equivalent to 0 156 US cents per tkm at an exchange rate of Rb1200 = US$1), and since coal loading and unloading operations are predominantly on the industrial lines One reason this is so is that coal trains move largely in unit trains, thus by-passing much of the railway's costs of operating marshalling yards Accordingly, the railway cost of transporting coal in 1992 was 16 kopecks per tkm Since the average tariff paid by coal customers in 1992 was 16 9 kopeks per tkm, it would appear that the railways made a "profit" of only 5% on coal transport in 1992

As this analysis is based on average transport costs, it does not really help in assessing the degree to which the rates or costs reflect the costs of hauling coal in the long term At best the analysis demonstrates that the railway's profit margin is rather slim, on the other hand, it did not need much profit in the past as many capital investments were funded from the budget To address these questions, as described in more detail in the attached coal transport, the mission undertook to assess the underlying economic costs of coal transport in Russia

Exhibit A World Bank Estimates of Coal Transport Economic Costs and Current Tariff Levels

	Economic Costs		MPS Tariff Levels (September 1993)				
Segment Distance	Cost per tkm in US$	Cost per ton in US$	Cost per tkm in Rb	Cost per ton in Rb	Cost per tkm in US$*	Cost per ton in US$*	% above Economic Costs
50-100 km (70 km average)	0 013	0 90	16 78	1,175	0 014	0 97	7%
250 km	0 006	1 40	5 92	1 479	0 0049	1 23	12%
500 km	0 004	1 98	5 30	2 654	0 0044	2 21	12%
1000km	0 003	3 21	4 36	4 368	0 0036	3 64	13%
1600 km	0 003	5 33	4 19	6 709	0 0035	5 60	5%
2500 km	0 003	7 94	3 94	9 859	0 0033	8 22	3%
3500 km	0 003	10 93	3 81	13 359	0 0032	11 13	2%
5960 km	0 003	21 03	3 74	22 288	0 0031	18 57	0 1%
1127 km average	0 003	4 28	5 64	5 684	0 042	4 74	

The Bank's resulting estimate of economic costs in US$ per tkm (at an exchange rate of Rb1200 = 1US$) average US 0 3 cents This estimate assumes that input costs approximate world price levels except for rolling stock, which are assumed to remain for some time at 60% of world price levels according to an EBRD-financed study of the Russian railway system At full world price levels, the economic cost rises to 0 4 US cents per ton-kilometer This estimate also assumes that 64% of coal flows move on unit trains and 36% on mixed trains and that all coal trains outside of terminals move on electrified tracks The estimate includes capital costs for track, rolling stock, information systems, and maintenance equipment **By comparison, the average rate of current MPS tariffs is equivalent to US 0 4 cents Exhibit A compares economic costs with September**

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1993 tariff levels by major coal transport distances Thus, according to this analysis, existing MPS coal tariffs exceed the economic costs of coal transport, although only by about 10%

These transport costs reflect only the costs of moving wagons from their originating point to their destination on the MPS main railway network Loading and unloading and transport from the mines to the loading point and from the network unloading point to the destination on the siding of the ultimate coal customer are not handled by MPS These costs are therefore not reflected in the base transport rate The loading of coal into rail wagons and the transport of these wagons from the mines to MPS is handled by individual coal transport enterprises (PTUs) At the unloading end, industrial sidings and unloading equipment are owned by the customer Altogether, the industrial coal lines owned by these PTUs total 6271 km, over which 6 5 billion tkm are expected to be carried in 1993 at Rb22/tkm, for a total of Rb143 billion This total represents a cost of about Rb444 per ton, or US$0 37 at an exchange rate of Rb1200 = US$1 It should be noted, however, that the PTU ton-km figure includes moving coal from mines to preparation plants as well as to MPS lines for shipment Perhaps, therefore, the total can serve as a proxy for total loading and unloading costs

To assess the reasonableness of the Bank's estimate, the result was compared to coal transport costs by rail in the United States since the US railway system is most comparable to Russia's in terms of traffic levels and geographic size According to a major US railway, the average financial cost (to the railway) of moving coal over one of its major coal routes is US 8 cents To translate this cost into economic costs, one should exclude payroll taxes (about 7%), corporate income taxes, and higher rates of depreciation for existing rail assets

According to the AAR, average US railway costs are profiled as follows labor -- 38 8%, payroll taxes -- 7 6%, depreciation -- 9%, fuel --- 7%, loss and damage -- 6 7% and other -- 39% To be comparable, therefore, one should deduct the payroll taxes, much of the depreciation for buildings and structures, and a large portion of the loss and damage since MPS does not assume much liability for losses As these alone total 33 3%, it would seem reasonable to assume that US economic costs of coal transport would be at least 30% less than the financial costs and perhaps as much as 35% If so, a reasonable estimate of economic rail costs for coal transport in the US would be about US 0 5 cents per tkm To be comparable to the Bank's assessment of the economic cost of transporting coal in Russia, the US figure must be further reduced to reflect the facts that (1) coal is transported by diesel-powered locomotives in the US rather than by electric traction and (2) the Russian estimate does not incorporate loading or unloading costs

According to MPS, the network average cost of electric-powered freight was Rb1 635 per 10 tkm while the network average cost of diesel-powered freight was Rb2 516 per 10 tkm, a differential of 54% If the same differential were applied to US fuel costs, 54% of the 7% (or 3 8%) fuel costs should be subtracted from the US cost estimate This adjustment would reduce the estimate of economic costs in the US to about US 0 48 cents per tkm

To adjust for loading and unloading perhaps the best way would be to add back these costs to the Russian estimate If we take total PTU costs as a proxy for both loading and unloading costs it would be necessary to increase the total costs of coal transport by about 7% before any adjustments are made to convert this cost to economic prices The difference between current costs and the Bank estimate of economic costs of coal transport in Russia is about 2 33 times (0 4 cents compared to 0 16 cents per tkm) If this factor is applied to the storage costs, it could be inferred that one should increase the economic costs of coal transport in Russia by about 16 3% This would make the Bank's estimate of the economic cost of coal transport, assuming full adjustment to world price levels, about 0 47 cents per tkm, and estimate very close to the 0 48 cents estimate of US economic costs, as adjusted above Another comparison should perhaps be made to China's railway system A World Bank analysis (1988) found that the national average economic cost for freight was 0 6 - 0 7 cents/tkm, but this figure includes loading and unloading costs and a high percentage of diesel-operated trains

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What implications does this finding have for railway rates in general and for the coal industry in particular? First, given the increasing costs of coal production and the vulnerability of coal to substitution for other fuels, Government may wish to take all measures to try to help keep the price of coal as competitive as possible to avoid even greater declines in production If so, one measure to this end would be

To avoid permitting coal freight rates to increase faster in future than inflation as they already exceed economic costs Fortunately, the most recent tariff agreement for the railways allows automatic increases tied to the wholesale and consumer price indices, but reduced somewhat by a special formula In theory, therefore, this policy is already in place (provided the coal seller can overcome the problem of working capital erosion associated with having to pay transport costs "upfront" when freight is taken "on-board," and getting reimbursed sometime later after accounts have cleared from the buyer)

Since the Bank's calculations of costs includes capital costs for locomotives, wagons, track rehabilitation of 12,000 km/year and a capital program (including interest) for acquiring more modern MIS systems, upgrading telecommunications, purchasing track maintenance equipment necessary to tackle deferred maintenance, as well as normal operating expenses, the present level of tariffs should be sufficient to sustain the railways over the longer term, provided the freight revenues from coal and other commodities are actually used to this end Unfortunately, MPS is not currently in a position to do so as it instead is diverting cash flow to cover passenger losses

To ensure the integrity of the rail freight network, Government should ensure that cross-subsidization of passenger losses by freight traffic cease In addition, Government should ensure that the right railway investments are made This means that proposed railway investments should be reassessed and prioritized to meet the most urgent needs of the freight railway system

Moreover, it must be remembered that railway input costs have not yet reached world levels, yet its current tariffs are about equal to the Bank's estimate of economic costs This means that railway tariffs are likely to rise in future beyond economic costs unless the railway makes every effort to cut costs to match demand and become more productive to counter future increases in energy and other inputs as Russia's economy undergoes further adjustments to world price levels

Government should thus ensure that MPS' costs are cut to match demand and to at least maintain productivity levels achieved in the past

Russia's current rail tariffs for coal are close to its economic costs In the US, however, coal tariffs are almost double the financial costs In Europe, Australia, and Canada, rail rates for coal are even higher In terms of the competitiveness of Russia's, industry, however, one must recognize that the average transport distances coal is moved in Russia are far greater than in these countries

Thus, although still below railway costs elsewhere in the world, the current trends regarding rate increases, together with the failure to date of MPS to recognize the need to restructure and rationalize the railway system suggests that the competitive advantage once afforded Russia as a result of having the world's most intensively operated rail way system is in jeopardy

Based on experience elsewhere, it is unlikely the railways will be able to solve their problems themselves Government will have to assist in a restructuring effort or otherwise risk

- further erosion in rail transport service with its attendant cost,
- possible predatory behavior on the part of the railway as it attempts to defend its market position,
- continued large and unsustainable deficits which pose a serious macroeconomic challenge for the overall economy

Restructuring an industry as complex as the railways, however, can take years In the meantime, there are some actions Government could take to protect the competitive positions of all MPS's freight customers

- Reverse the policy of cross-subsidization of passenger losses by freight revenues and instead provide for passenger losses from the federal budget,
- Make subsidies for these losses conditional on increasing passenger service cost recovery to 25% by December 1994 and 50% by December 1995
- Cease further investments in (a) rail passenger service, (b) electrification of new and existing lines, (c) new industrial lines, and (d) the Baikal-Amur railway until in depth economic and financial analyses are undertaken for each project
- Cease giving any preferential treatment to railways for provision of foreign currency, particularly for passenger investments which have low cost recovery and earn little foreign currency
- Ensure no high speed rail project is undertaken unless all capital and operating costs are funded by a private investor so that neither Government nor freight customers bear the burden of what is likely to be a costly, uneconomic investment
- In order to separate the policy, planning and regulatory functions of the railways from its operational activities, consider turning the MPS into an operating company under the aegis of another Government body, such as the Ministry of Transport
- Improve cost accounting and develop network flow models in order to determine profitability by line of economic activity
- Initiate a study to determine the degree to which regional railways could be reorganized to permit intra-rail competition

The Industrial Railway Lines

Besides the MPS rail system, some 151,000 km of industrial railways exist throughout the CIS Many of the industrial lines are internal to the industries they serve, industrial coal lines form one of the largest networks of these The coal-related industrial lines from an integral link between the coal enterprises and MPS As of January 1, 1993, their total track length was 6,271 km, on these they expect to carry 6 5 billion net ton/kms in 1993

The mission assessed the system of industrial coal lines and founds several issues that could affect the restructuring efforts of the coal industry

Previously, the former Ministry of Coal Industry used to include the Directorate of Industrial Transport which controlled the operations of coal transport units of coal enterprises, known as PTU's The Directorate was responsible for fulfilling coal transport plane industry-wide and had broad authority to control the work of individual PTUs Under the abolishment of Minugleprom, its functions were taken over by a transport directorate within RosUgol The reformed directorate, however, is no longer responsible for fulfilling the coal transport plans, this responsibility is now decentralized among individual coal enterprises

The PTU s have become autonomous joint-stock companies with the majority share of their stocks usually belonging to the Board of Directors of a local coal enterprise The PTU's own the coal loading complexes (CLC's) and the coal warehouses (CWH's) from which all coal is sent onward to customers About 50% of total freight flow within the industrial lines is unprocessed coal between the mouth of a mine and a coal-concentrating factory (CCF) Another 11 5% of total coal tons moved along the PTU lines do not leave the industrial network Major mines and pits have their own CCF's

This development would appear to have created a situation where control over the movement of coal from the mine, critical loading and unloading facilities and stockpiles of the coal itself are in the

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hands of new, monopolistic companies owned by individuals Although these individuals undoubtedly have the interests of the mines at heart, it would probably be far safer if these companies were owned by the coal producing associations The should not be owned by MPS because that would divorce responsibility for the prompt loading of coal Moreover, MPS has no business governing the transfer of coal between mines and washeries

One other important issue arose in assessing the relationship between PTU and MPS coal transport system in Russia Most coal trains in Russia move in lower cost, more efficient unit trains The PTU's are responsible for assembling these unit trains and in the past, received incentives (bonuses) to do so Currently the rate of inflation has eroded the entire incentive and MPS has made no move to reinstate it

Another problem associated with the erosion of the ruble's value is the increasing meaningless of fines created to ensure efficient delivery of coal and high utilization of wagons Currently MPS can fail to comply with its contract to deliver wagons and the fine is so trivial that it is meaningless In the past, concentration of the entire coal transport network as a department in the coal ministry meant that if something like this happened, pressure from the coal industry at the center might change MPS behavior Now, the PTU is somewhat at the mercy of the local railway chief whom some have referred to as a "petty tyrant " It may be that in future Government will have to augment its regulatory oversight of MPS in order to counter the counterweight of centralized railway customers

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This coal transport annex is divided into three parts Part I describes coal freight transport on the MPS system, and assesses the relationship of coal rates to current MPS tariffs and to estimated economic costs of moving coal Part II describes the system of coal transport from the mines to the railway system over a series of industrial lines that are operated independently of the MPS system Part III describes the railway system in Russia and assesses the recent financial and operating performance of the Russian railway system

PART I COAL TRANSPORT ON MPS

Coal transport in Russia moves almost entirely by rail, on a tkm basis more than 97% of coal transport is by rail The remainder moves by water (about 2%) and by truck (about 6%) for relatively short hauls (exhibit 1) Coal hauled in on Russian railways totalled 382 7 million tons in 1990, 340 3 million tons in 1991 and 219 million in 1992, since 1990, therefore coal tonnage hauled has dropped by 16%, less than the decline of other freight carried by the railway Coal remains the single greatest

Exhibit 1 Percentages of Common Carrier Shipments by Type of Transportation (tons)

Freight Category	Rail	Shipping	Inland Water	Trucking	Pipeline	Total
Coal	90 1	1 3	2 3	6 3		100
Coke	95 8	1 9	0 3	2 0		100
Petroleum products	32 8	7 7	2 9	4 7	51 9	100
Iron & manganese ore	93 2	3 6	2 4	0 8		100
Nonferrous ore & sulphur raw materials	76 0	6 4	3 0	14 6		100
Ferrous metals	75 9	3 6	1 4	19 1		100
Chemical & mineral fertilizers	88 0	4 1	3 0	4 9		100
Cement	85 6	1 7	1 1	11 6		100
Forest products	60 0	4 4	24 4	11 2		100
Perishable food products[a]	95 0	4 9	0 1			100
Grain & milling products	51 4	7 2	2 1	39 3		100
Combined feed	70 5	5 4	1 5	22 6		100

a Including meat, poultry and animal oil

Source Goskomstat USSR, *Transport i Sviaz, Statisticheski Sbornik*, Moscow 1990, p 36

commodity carried by the railways in terms of tkm Total coal tkm in 1992 was 394 6 billion, or 20 1% of the total

The dissolution of the USSR caused the disruption of economic links between the former Union Republics and changed the overall pattern of inter-railway coal transportation But the major suppliers and consumers of coal have preserved their technological and economic links Thus the most important directions of coal flows remain relatively stable

Exhibits 2, 3, and 4 show data on the inter-railway traffic of coal within Russia and with other CIS member-states (the Moldavian Railway is not included in the table, because it carries only internal coal traffic) Coal flows over Russia's railway network are depicted in Exhibit 5 (map) which charts major directions of flows with annual tonnages of more than 2 million tons per year Segment names and distances are shown in the tables accompanying the map

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Exhibit 2 1990 Russian Coal Transport Data by Regional Railway

	Avg Daily Loading, # of wagons	Statistical Loading (tons)	Shipment of coal, 1990 (tons)	Receipt of coal, 1990 (tons)
October	21 0	71 65	1,026,000	11,616,000
Moscow	487 1	72 46	13,432,000	22,244,000
Gorkiy (Nizhniy Novgorod)	1 1	68 35	28,000	10,067,000
Northern	1250 4	71 42	32,637,000	23,253,000
Northern Caucuses	1066 9	73 10	28,493,000	19,055,000
South-Eastern	1 3	67 03	33,000	11,185,000
Volga	1 0	68 59	24,000	2,045,000
Kuibyshev (Samara)	236 2	63 63	5,487,000	7,802,000
Sverdlov (Yekaterinburg)	266 5	72 71	7,073,000	34,767,000
Southern Ural	373 7	71 79	9,792,000	41,208,000
Western Siberia	24 0	73 20	642,000	38,153,000
Kemerovo	6239 0	71 39	162,599,000	57,450,000
Krasnoyarsk	1941 1	68 93	48,843,000	26,211,000
Eastern Siberia	1154 9	70 88	30,299,000	35,046,000
Trans-Baikal	749 1	65 42	17,979,000	19,176,000
Far Eastern	365 7	67 03	8,993,000	30,290,000
BAM	594 2	70 53	15,297,000	5,090,000
Sakhalin				
Kaliningrad				

Exhibit 3 Russian and CIS Coal Traffic by Rail Origin/Destination Matrix, 1991

Recipient / Shipper	October	Kaliningrad	Moscow	Gorkiy	Northern	North Caucuses	South East	Volga	Kuibyshev	Sverdlovsk	Southern Urals
October	734										
Kaliningrad											
Moscow	268		8284	49	33	1	53		4		
Gorkiy	4		57	91	3				1		
Northern	4560		665	52	15291	12	1374		2		
North Caucuses	362		1472	76	65	13429	1097	689	7	3	2
South East				6			74				
Volga						1		42			
Kuibyshev	11		306	305	7	14	148	67	4031	4	27
Sverdlovsk	881		1	1829	5		6			3817	17
Southern Urals	1		1	916		1			187	142	6675
West Siberia	14		69	1	1		19			103	32
Kemerovo	3455		6322	4689	2973	849	5332	541	2559	6548	9698
Krasnoyarsk	30		36	93	6	170		36	102	17	147
East Siberia						1				2	2
Trans Baikal											
Far East										1	
Sakhalin											
BAM	2		1	1		39			1	73	413
Total Received (by railway)	10322	0	17214	8108	18384	14517	8103	1375	6894	10710	17013
TOTAL COAL RECEIVED											

Recipient / Shipper	West Siberia	Kemerovo	Krasnoyarsk	East Siberia	Trans-Baikal	Far East	Sakhalin	BAM	Total Shipped (by railway)	TOTAL COAL SHIPPED
October		7							741	
Kaliningrad									0	
Moscow									8692	
Gorkiy									156	
Northern	6								21962	
North Caucuses	3	1	1			1			17208	
South East									80	
Volga									43	
Kuibyshev									4920	
Sverdlovsk				3		6			6565	
Southern Urals	3					394			8320	
West Siberia	316	164				96			815	
Kemerovo	18527	49672	746	58	2	2164			114135	
Krasnoyarsk	8394	1521	24558	8955	1072	2922		518	48577	
East Siberia	10		5	23960	1899	1583		185	27647	
Trans Baikal				29	15213	3196		101	18539	
Far East		7			24	10704		3	10739	
Sakhalin									0	
BAM	293			160	560	8631		2769	12943	
Total Received (by railway)	27552	51372	25310	33165	18770	29697	0	3576		302082
TOTAL COAL RECEIVED									302082	

Exporter \ Importer	October	Kaliningrad	Moscow	Gorkiy	Northern	North Caucuses	South East	Volga	Kuibyshev	Sverdlovsk	Southern Urals	West Siberia	Kemerovo	Krasnoyarsk	East Siberia
October															
Kaliningrad															
Moscow															
Gorkiy															
Northern															
North Caucuses															
South East															
Volga															
Kuibyshev															
Sverdlovsk															
Southern Urals															
West Siberia															
Kemerovo															
Krasnoyarsk															
East Siberia															
Trans Baikal															
Far East															
Sakhalin															
BAM															
BELARUS	37		6	0	0	2	7	0	0	0	0	0	0	0	0
UKRAINE	631		312	21	14	440	607	9	2	18	4	0	6	18	15
KAZAKHSTAN	132		2111	9	21	188	541	262	4	19754	17774	6620	0	0	0
CENTRAL ASIA	0		1	0	0	0	0	0	0	0	0	1	0	2	0
TURKMENISTAN	0		0	0	0	0	0	0	0	0	0	0	0	0	0
BALTIC RAIL	0		0	0	0	0	0	0	0	0	0	0	0	0	0
Total Received (by railway)	700	0	2430	30	35	630	1155	271	6	19772	17778	6621	6	20	15
TOTAL COAL RECEIVED															
TOTAL RUSSIAN CIS IMPORTS															

Importer / Exporter	Trans Baikal	Far East	Sakhalin	BAM	BELARUS	UKRAINE	KAZAKHSTAN	CENTRAL ASIA	TURKMENISTAN	BALTIC RAIL		Total Shipped (by railway)	TOTAL COAL SHIPPED	TOTAL RUSSIAN CIS EXPORTS
October					1	3	1			8		5		
Kaliningrad												0		
Moscow					7	1467	1			79		1475		
Gorkiy							2					2		
Northern					142	2815	3			1322		2960		
North Caucuses					292	6493	5	2		199		6792		
South East							4			15		4		
Volga					3	1						4		
Kuibyshev					208	13	2	185		285		408		
Sverdlovsk						1	4	1		1		6		
Southern Urals						6	53			7		59		
West Siberia					2	33	64	1		16		100		
Kemerovo					129	5640	8351	290		4089		14410		
Krasnoyarsk					191	868	12	1575		180		2646		
East Siberia						30	1	4		6		35		
Trans Baikal												0		
Far East						11	2					13		
Sakhalin												0		
BAM					1	49	1			27		51		
												0		
BELARUS	0	0	0	0	172	1430				15		1654		
UKRAINE	0	0	0	0	1430	168737	23	2		808		172189		
KAZAKHSTAN	0	0	0	0	39	1860	73708	2203		810		125226		
CENTRAL ASIA	0	0	0	0	0	0	1676	7209				8889		
TURKMENISTAN	0	0	0	0	0	0						0		
BALTIC RAIL	0	0	0	0	0	21	1			554				
Total Received (by railway)	0	0	0	0	2617	189457	83913	11472	0	7867			336928	28970
TOTAL COAL RECEIVED											336928			
TOTAL RUSSIAN CIS IMPORTS											49469			

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Exhibit 4 Russian and CIS Coal Traffic by Rail Origin/Destination Matrix 1992

Shipper \ Recipient	October	Kaliningrad	Moscow	Gorkiy	Northern	North Caucuses	South East	Volga	Kuibyshev	Sverdlovsk	Southern Urals
October	728										
Kaliningrad		2372									
Moscow	250		7728	191							
Gorkiy				121							
Northern	5628		491	165	13791		1516				391
North Caucuses	330		1075	104		14593	1403	718			
South East											
Volga											
Kuibyshev			575	470			234		4228		
Sverdlovsk	477			1738						3447	
Southern Urals				923					196	150	7448
West Siberia			121							105	
Kemerovo	4175		4781	4293	3751	1574	6028	446	2207	5887	9931
Krasnoyarsk	159		420	191		103	218		131		364
East Siberia											
Trans Baikal											
Far East											
Sakhalin											
BAM			107								876
Total Received (by railway)	11747	2372	15298	8196	17542	16270	9399	1164	6762	9589	19010
TOTAL COAL RECEIVED											

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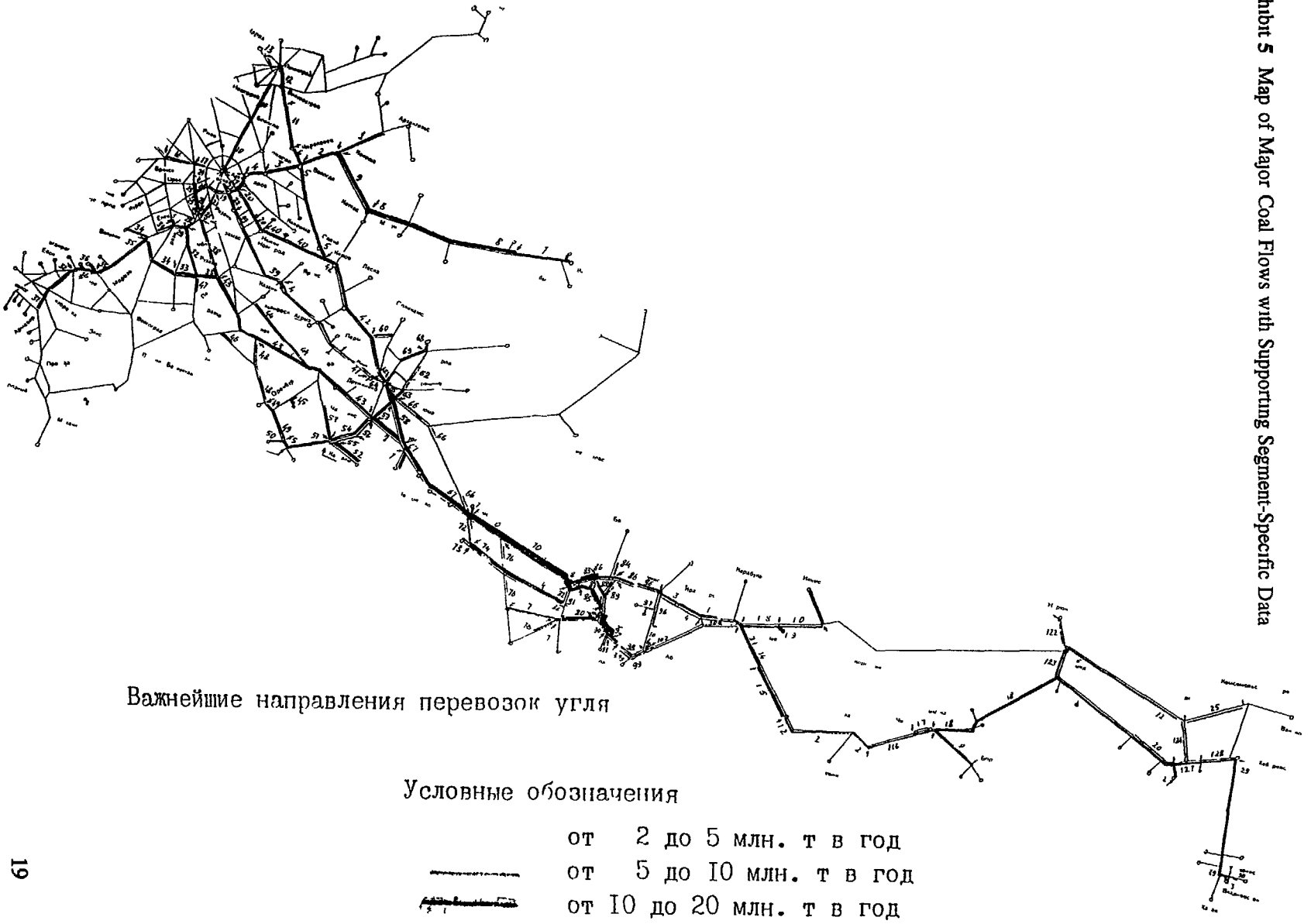
Shipper \ Recipient	West Siberia	Kemerovo	Krasnoyarsk	East Siberia	Trans Baikal	Far East	Sakhalin	BAM		Total Shipped (by railway)	TOTAL COAL SHIPPED
October										728	
Kaliningrad										2372	
Moscow										8169	
Gorkiy										121	
Northern										21982	
North Caucuses										18223	
South East										0	
Volga										0	
Kuibyshev										5507	
Sverdlovsk						574				6236	
Southern Urals										8717	
West Siberia	281	101								608	
Kemerovo	18757	45620	649	165		1767	149			110180	
Krasnoyarsk	7948	869	21192	7959	1056	1968	223	683		43484	
East Siberia				22337	1581	2014		117		26049	
Trans Baikal					15383	3223				18606	
Far East					100	7309				7409	
Sakhalin							2289			2289	
BAM	288				367	6653	433	2497		11221	
Total Received (by railway)	27274	46590	21841	30461	18487	23508	3094	3297			291901
TOTAL COAL RECEIVED									291901		

Importer / Exporter	October	Kaliningrad	Moscow	Gorkiy	Northern	North Caucuses	South East	Volga	Kuibyshev	Sverdlovsk	Southern Urals	West Siberia	Kemerovo	Krasnoyarsk	East Siberia
October															
Kaliningrad															
Moscow															
Gorkiy															
Northern															
North Caucuses															
South East															
Volga															
Kuibyshev															
Sverdlovsk															
Southern Urals															
West Siberia															
Kemerovo															
Krasnoyarsk															
East Siberia															
Trans Baikal															
Far East															
Sakhalin															
BAM															
BELARUS															
UKRAINE	432				113	123	444								
KAZAKHSTAN	471		1770				224	165		16872	16072	6875			
CENTRAL ASIA															
TURKMENISTAN															
Total Received (by railway)	903	0	1770	0	113	123	668	165	0	16872	16072	6875	0	0	0
TOTAL COAL RECEIVED															
TOTAL RUSSIAN CIS IMPORTS															

Exporter \ Importer	Trans Baikal	Far East	Sakhalin	BAM	BELARUS	UKRAINE	KAZAKHSTAN	CENTRAL ASIA	TURKMENISTAN		Total Shipped (by railway)	TOTAL COAL SHIPPED	TOTAL RUSSIAN CIS EXPORTS
October											0		
Kaliningrad											0		
Moscow											0		
Gorkiy											0		
Northern					1155	2728					3883		
North Caucuses					197	4233					4430		
South East											0		
Volga											0		
Kulbyshev											0		
Sverdlovsk											0		
Southern Urals											0		
West Siberia						103					103		
Kemerovo					2094	6797	4375				13266		
Kra noyarsk					445	2534	316	1353			4647		
East Siberia											0		
Trans Baikal											0		
Far East											0		
Sakhalin											0		
BAM											0		
BELARUS					277						277		
UKRAINE					1304	166086					168502		
KAZAKHSTAN					673	2393	72496	461			118472		
CENTRAL ASIA							1125	5036	212		6373		
TURKMENISTAN											0		
Total Received (by railway)	0	0	0	0	6145	184874	78311	6850	212			319953	26329
TOTAL COAL RECEIVED										319953			
TOTAL RUSSIAN CIS IMPORTS										43561			

Exhibit 5 Map of Major Coal Flows with Supporting Segment-Specific Data



Важнейшие направления перевозок угля

Условные обозначения

от 2 до 5 млн. т в год

от 5 до 10 млн. т в год

от 10 до 20 млн. т в год

от 20 млн. т в год и более

250

СПИСОК УЧАСТКОВ (к схеме ж.д.)

	Ограничивающие станции	Грузооборот млн ткм	Длина км	Средняя интенсивность млн.ткм/км
I	Обозерская-Коноша I	I024,3	294	3,48
2	Коноша I-Вологда	3346,5	2II	I5,86
3	Вологда - Филин	II45,5	203	5,64
4	Филино - Алек[illegible]	I009,3	I8I	5,58
5	Котельнич - Пап	38II,4	53I	7,I8
6	Вологда - Кошта	2I94,0	I34	I6,37
7	Воркута - Кожим	4369,6	335	I3,04
8	Кожим - Котлас Узл.	I773I,2	874	20,29
9	Котлас - Коноша I	6986,2	363	I9,25
I0	Москва-тов.Окт -Чудово	I293,6	530	2,45
II	Кошта - Волховстрой	I948,4	344	5,66
I2	Волховстрой-Обухово	435,I	II0	3,96
I3	Гатчина Тов.-Чарва	263,I	II2	2,35
I4	Ростокино-Пресня	38,5	I7	2,26
I5	Ростокино-Ханатчиково	84,9	27	3,I4
I6	Брянск Льг.-Сухиничи	48I,7	I22	3,95
I7	Сухиничи-Бекасово	405,3	I95	2,03
I8	Брянск Льг.-Заходытье	675,2	234	2,89
I9	Александров-Филево	775,2	209	3,57
20	Н Новгород-Орехово-Зуево	I383,5	352	3,93
2I	Рязань-Воскресенск	548,9	224	2,45
22	Черусти-Москва-пасс.Казанск.	803,0	I56	5,I5
23	Рязань-Плеханово	769,8	208	3,70
24	Тула I-Сухиничи	750,8	I74	4,3I
25	Узловая-Рязань I	50I,I	I50	3,34
26	Филево - Узловая	320,6	I32	2,43
27	Орехово-Зуево - Москва Кур.	267,7	87	3,0I
28	Пост 3I5км - Мичуринск	248,I	93	2,67
29	Мичуринск - Грязи	422,4	60	7,04
30	Грязи - Новолипецк	II9,9	23	5,2I
3I	Грязи - Отрожка	23I,6	I08	2,I4
32	Благодатка - Кочетовка	I3I7,5	274	4,80
33	Пенза - Балашов	29I9,6	I6I	I8,I3
34	Балашов - Валуйки	3789,6	469	8,08
35	Лиская - Лиски	743,I	383	I,94
36	Район Лиская-Ростов Гл.	I044,9	278	3,76

	Ограничивающие станции	Грузооборот млн. ткм	Длина км	Средняя интенсивно млн. ткм/к
37	Ростов Гл. – Армавир	769,0	307	2,50
38	Пенза – Ряжск	I369,7	394	3,4[illegible]
39	Юдино – Черусти	4478,I	623	7,I9
40	Котельнич–Н.Новгород	I66I,5	369	3,I5
4I	Дружинино–Юдино	7697,2	793	9,70
42	Свердловск–Сорт.–Котельнич	I3882,I	927	I4,9I
43	Челябинск Гл.–Пенза I	2II24,5	I393	I5,I6
44	Чишмы – Ульяновск	I3II,I	583	2,24
45	Тюльган – Кумертау	243,5	73	3,34
46	Новоперелюбская–Пугачевск	280,7	92	3,05
47	Абдулино – Бугуруслан	I90[illegible]3	9I	2,[illegible]0
48	Оренбург – Кинель	2I22,4	377	5,63
49	Никель – Оренбург	2537,7	32I	7,90
50	Никель – Никель–Тау	238,5	I04	2,29
5I	Карталы I – Никель	3493,6	279	I2,52
52	Карталы I – Тобол	259,3	I42	22,95
53	Карталы I – Магнитогорск	I2I9,9	I4I	8,65
54	Карталы I – Челябинск	I693,8	26I	6,49
55	Карталы I – Золотая Сопка	I023,0	I30	7,8[illegible]
56	Золотая Сопка – Челябинск	329,3	I3I	2,5I
57	Курган – Челябинск	6098,I	258	23,64
58	Курган – Путевка	I2583,4	353	35,65
59	Челябинск – Каменск Уральск.	349,5	I52	2,30
60	Чусовская – Пермь Сорт.	330,2	I36	2,43
6I	Свердловск Тов. – Смычка	722,I	I5I	4,78
62	Алапаевск – Егоршино	206,6	59	3,50
63	Каменск–Ур. – Егоршино	I565,8	II2	I4,00
64	Аппаратная – Дружинино	770,8	90	8,56
65	Богданович – Свердловск Сорт.	I2I0,7	I09	II,II
66	Карбышево – Богданович	7396,4	794	9,32
67	Карбышево – Курган	I95I9,4	535	36,48
68	Красн. Челезняк–Серов Сорт.	47,6	23	2,07
69	Серов Сорт.–Гороблагодатская	400,4	I98	2,27
70	Обь – Карбышево	245I5,4	6I8	39,67
7I	Пресногорьковская – Утяк	3I66,2	II6	27,3
72	Иртышское – Карбышево	I449,2	I65	8,7[illegible]

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Ограничивающие станции	Грузооборот млн. ткм	Длина км	Средняя интенсивн млн.ткм/к
73 Иртышское-Кзыл-Ту	I264,2	I72	7,35
74 Среднесибирская-Иртышское	9969,2	592	I6,84
75 Московка - Комбинатская	99,2	20	4,96
76 Кулунда - Татарская	2345,0	366	6,40
77 Барнаул - Кулунда	3449,6	343	I0,06
78 Алтайская - Локоть	II0,5	32I	9,69
79 Алтайская - Бийск	352,8	I47	2,40
80 Артышта 2 - Алтайская	209,4	200	56,05
8I Алтайская - Перуново	355	68	5,23
82 Новосибирск - Алтайская	I945,0	2I3	9,I2
83 Болотная - Обь	2877,3	I43	20,I2
84 Тайга - Томск	246,0	87	2,83
85 Артышта I - Обь	III03,8	36I	30,76
86 Ачинск - Болотная	6409,9	46I	I3,90
87 Топки - Пост I49 км	789,I	I02	7,74
88 Анжерская - Артышта	I478,4	3I4	4,7I
89 Топки - Анжерская	877,3	I47	5,97
90 Новокузнецк - Артышта	I362,4	95	I4,34
9I Мундыбаш-Новокузнецк	223,0	9I	2,45
92 Томусинская - Артышта	3776,0	I29	29,27
93 Карай-Артышта-Томусинская	407,0	"	3,I6
Новок-Новокузнецк	803,3	64	I2,55
94 Гурье-Карай	I46,8	"	2,29
вск - Белово	60,5	28	2,I6
95 Полосухино-Новокузнецк	69,2	I6	4,32
96 Копьево - Ачинск	I443,0	I95	7,40
97 Базыр - Красная Сопка	470,2	87	5,4I
98 Тигей - Карай	7I0,8	298	2,39
99 Карай - Тигей	643,2	"	2,I6
I00 Черногорские Копи-Ташеба	6I,2	I6	3,83
I0I Ташеба - Тайшет	I628,8	657	2,48
I02 Абакан - Ташеба	26,2	I0	2,62
I03 Красноярск - Ачинск	560,6	I84	3,05
I04 Ачинск - Уяр	II6I,4	3I5	3,69
I05 Уяр - Красноярск	I46I,4	I3I	II,I2
I06 Уяр - Юрты	3435,7	26I	I3,I5
I07 Канск-Енисейский - Уяр	554,9	II6	4,78
I08 Тайшет - Моргудон	2326,2	284	8,I9
I09 Моргудон - Братск	50,0	I7	2,88
II0 Моргудон - Хребтовая	I266,2	292	4,33

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	Ограничивающие станции	Грузооборот млн. ткм	Длина км	Средняя интенсивнос млн.ткм/км
III	Хребтовая-Усть-Илимск	429,2	2I4	2,06
II2	Иркутск - Петровский завод	5829,3	597	9,76
II3	Юрты - Уда 2	I839,4	I98	9,29
II4	Уда 2 - Зима	379I,9	247	I5,35
II5	Зима - Иркутск	5359,3	250	2I,44
II6	Петровск.завод-Карымская	460I,6	5I0	9,03
II7	Карымская - Чита	433,7	99	4,38
[illegible]	Карымская - Архара	2I399,I	I788	II,97
	Борзя - Карымская	I903,I	240	7,93
I20	Бурея - Белогорск	358,2	I64	2,18
[illegible]	[illegible] - Бурея	I26,4	4I	3,08
I22	Нерюнгри - Тында	2096,7	229	9,16
I23	Тында - Бамовская	553,5	I8I	3,06
I24	Чегдомын - Известковая	I927,0	356	5,4I
I25	Ургал - Силина	I0I7,5	487	2,09
I26	Бестужево-Новый Ургал	6944,5	I029	6,75
I27	Архара - Известковая	I833,4	I54	I2,23
I28	Известковая-Хабаровск I	4956,8	289	I7,I5
I29	Хабаровск I-Угольная	830I,8	733	II,33
I30	Угольная - Мыс Астафьева	II76,2	I93	6,09
I3I	Угольная - Мыс Чуркин	I34,3	42	3,20

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Major routes carrying more than 20 million tons include

Kemerovo (Kuzbass area) to Chelyabinsk
Kemerovo (Kuzbass area) to Ekaterinberg
Vorkuta to Kotlas
Kazakhstan to Kartal to Magnitogorsk

Major flows between 10-20 million tons annually include

Vorkuta to Cherepovets
Kuzbass to Lipetsk
Karymskaya (Kansk-Achinsk region) to Vladivostok

Presently, there still exists a formal system of *annual* planning of coal traffic - by destination railway with breakdown by quarters, but the main form of operational planning is a *quarterly* plan of originating freight with breakdown by months All traffic outside of the monthly plan, as well as traffic with additional requirements (especially local) can be carried by regional railways for a negotiated tariff

Coal transport is carried out on MPS' technically better equipped mainlines, mainly electrified double track, with up-to-date signals and communications systems that can handle the high level of traffic and heavy loads associated with the movement of coal The use of these lines for massive flows ensures minimization of operational costs, which is an important consideration for coal flows With the overall decline of freight levels on the MPS network, capacity of these main lines is sufficient to handle even the most robust of coal projections Even if normal railway operations are ensured, MPS experts estimate that the existing capacities or main lines would be sufficient to support an additional 20% - 30% growth in coal transport

While the network-wide average share of electric traction in freight traffic was 73 0% in 1992 (official statistics), the corresponding share in coal traffic (that is mostly carried on double-track electrified mainlines) was estimated to be much higher

electric traction - 90% of coal traffic (ton-kilometers)

double-track routed - 75% of coal traffic (ton-kilometers)

Rolling Stock Used in Coal Transport

The coal industry rail fleet can be divided into two major categories (i) mainline wagons (general-purpose box cars, hoppers, tank-cars), and (ii) special-purpose equipment (industrial electric shunters, mine traction units, 105-ton dump-cars, etc) Industrial locomotives and special fleet never leave the PTU network (except for capital repair)

The most dominant type of wagons used for carrying coal is general-purpose box car Coal is transported only in "topless" box cars, sometimes termed "half-wagons " This results in a considerable increase of the turnaround time of coal wagons that have to be unloaded "manually" (especially, in case of a solid frozen coal mass in winter) The strong central efforts for the inter-agency unification of wagon fleet, biased by a big influence of metallurgy industrial transport needs, have resulted in the large-scale production of hatchless modifications of box cars that do not perfectly suit the coal transport requirements (especially for decentralized and minor customers who cannot afford buying specialized unloading equipment, like wagon-tipplers)

Clients may also transport coal in rented or owned wagons that are allowed to go out to the MPS mainlines (which is determined by their technical and commercial status Mainline wagons owned by

PTU's and coal enterprises are also mostly (though not entirely) for internal use Only 3 5% of total freight carried in industrial wagons has actual destination outside of the PTU network Similarly, less than 3% of coal leaving the PTU network is carried in industrial wagons (100% of exported coal is carried in the MPS wagons) That means that the 25% tariff discount for the transport of coal loaded in non-MPS wagons cannot play any significant role in the economic relations between railways and coal enterprises

Minor repair of wagons (like fixing holes in box cars, replacement of wheel brakes, etc) is routinely arranged "as needed" on a contractual basis between the railway (MPS) and the PTU (mine) That means that both the PTU can repair the MPS wagons and the MPS can repair the industrial wagons - billing each other for every individually repaired wagon at a negotiated price of service PTU's also have some limited facilities for routine repair of their track, locomotives and specialized fleet But the bulk of the repair of mainline-type wagons (hoppers, box cars) and locomotives - even those owned by the PTU - is mostly contracted out to the MPS repair facilities

Wagon Capacity The present day inventory of box cars is more than adequate to serve coal traffic although the percentage of box cars that require repair is extremely high In 1990 Russian railways, broad gauge fleet of box cars was reported to total 197,000 Since most coal is transported over electrified and double-track routes, the average freight speeds are higher for coal than for all freight According to the World Bank's analysis (see attachment at the end of this part detailing methodology used to assess the economic costs of coal transport in Russia), it is estimated that only 64,000 cars are needed to handle coal flows within Russia This assumes 350 days of operations, 65 tons per wagon, an availability factor of 85%, an average transit speed of 35 7 kph, 29 hours for loading and unloading, and 2 13 hours' delay for every yard encountered en route for unit trains and 10 19 hours for mixed trains

Average wagon turnaround time is not reported separately for box cars of the MPS general-purpose fleet, but it can be calculated for different scenarios of coal transport demand level Operational statistics of the Russian (and FSU) rail sector reflect the average wagon turnaround times for the whole network and by regional railways, without breakdown by directions (the 1992 network-wide average freight wagon turnaround time was 6 81 days) Since coal in Russia is mostly transported in the MPS fleet of general-purpose box-cars, data on the average coal transit time can be used to estimate the loaded haul component of the box-car turnaround time

While network-wide (former USSR) average freight transit times for 1 ton of freight (not only coal) in 1991 and 1992, the average speed of freight movement are shown in Exhibit 6 (February and September are accounting months) These data are not broken down by specific corridors and segments in the railway performance statistics

Exhibit 6 - ***Coal transit times in the FSU rail network***

Commodity	Year	February		September	
		Average transit time, days	Average speed, km/day	Average transit time, days	Average speed, km/day
All freight	1991	4 9	215	4 8	226
	1992	3 9	256	4 2	260
Coal	1991	4 3	239	4 6	242
	1992	3 5	268	3 7	279

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Coal Trains Coal moves primarily in unit trains In 1991-1992 the network-wide share of freight tonnage carried by unit trains was 34 7-34 9% for all freight and 67 0-64 8% - for coal If the problem of providing better economic incentives for the coal senders to form unit trains by themselves could be resolved, this would have yielded a sizable economic effect to the railway transport In 1992 the network-wide average length of non-stop haul of a coal unit train (without stopping at marshaling yards) was 837 kilometers

The industry-wide average number of wagons formed in unit trains is estimated by RosUgol experts as 65% out of all PTU-loaded wagons, while for specific coal flows, like Vorkuta -Cherepovets, Vorkuta - Novolipetsk, etc , it exceeds 80% (It used to reach 98% for coal originating from the Ekibastuz Coal Basin in Kazakhstan, where experiments with super-heavy trains of 36,000 tons of coal were being held in late 1980's)

Currently the MPS normative weight of a coal unit train varies between 2,300 and 4,500 tons, depending on the local conditions A regular box car should normally carry 67 tons of coal, but the continuous shortage of coal wagons makes the PTU's overload by 10-15% those that are available, thus causing additional losses of coal in transit and coal-dust pollution of atmosphere and soil along the major coal transport routes

The average number of wagons in a unit coal train is determined according to the normative gross weight of train for the given railway segment or direction, wagon gross weight (up to 92-93 tons for a coal-loaded metal box car), as well as operational length of arrival/departure tracks at the stations of the given segment (direction) Thus, with the normative train weight of 4,600 tons (without locomotive) such train can consist of 50 box cars weighing 92 tons each These trains can be handled if the station's operational track length is 850 meters and more Freight train locomotives do not stay with the unit train as they are operated along specified traction segments Independent of the number of locomotive units (2 or 3) all locomotive crews consist of two people - engineer and assistant-engineer

In 1992 the network-wide average static load for a box car was 59 4 tons (on standard-gauge tracks) The same number for coal-loaded wagons was 67 0 tons, the difference being explained by the existence of a certain number of 8-axle box cars capable of carrying 125 tons of freight

Train weight varies for different directions of coal flows and depends on the normative gross weight of train for a given direction, as well as on the normative length of train that determines the maximum number of wagons in a unit train (as shown in Exhibit 7)

Exhibit 7

Number of box cars in a coal train	50	55	60	65
Average amount of coal in a train, tons	3,130	3,440	3,760	4,070

Marshalling, transfer and train operations at the MPS stations and routes are carried out for coal trains in the same regular way as for any other freight If a unit coal train consists of wagons traveling to one destination station (or one destination area), i e if it is a freight-owner's or technical unit train, it passes through marshalling yards without reclassification The network-wide average time spent by such trains at technical stations is 2 13 hours If a coal train must be reclassified at a technical station, it stays there 10 19 hours (network-wide average for 1992)

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The number of marshalling yards along specific coal transport directions is shown in Exhibit 8

Exhibit 8

Kuzbass - Urals	3
Vorkuta - Cherepovets	3
Kuzbass - Urals - Penza	6-7
Neryungri - Far East	4

Depending on the organizational form of wagon flows (freight-owner's unit trains, technical unit trains, throughway trains, etc), trains can pass through these yards either with or without reclassification

Coal loading and unloading and ownership of terminals

Coal is loaded almost entirely, and unloaded predominantly, by freight-owners and are thus not charged by the railway (For an idea of the volumes and shares involved in coal loading/unloading operations, see Exhibit 9 and data provided in the statistical appendix attached) In case these operations are done by mechanized loading/unloading railway units that are cost-accounting enterprises within the railway divisions, this work can be charged at negotiated prices These prices (fees) can be differentiated depending on the volume of work done In principle, rates for these fees may also depend on other factors that affect the cost of operations, etc

There are major specialized coal terminals with high-capacity loading/unloading equipment and appropriate track development within the industrial rail networks of coal, energy, metallurgical and other sectors, as well as at a number of sea and river ports These terminals belong to corresponding agencies, associations, enterprises

At present MPS-owned coal-unloading equipment is located at open-access premises of freight-handling stations There are 4,177 such stations within the rail network of Russia, having 616 elevated tracks (with average operational length of track being 155 meters) These devices can be used for unloading box cars with hatches in the floor that carry coal or other cargo In the past, the rail sector used to be a major consumer of coal up till 1960's, through the period of steam traction dominance At that time coal unloading equipment could be found at every technical station, at major passenger stations and a number of freight stations This equipment was also an important component

Exhibit 9 Volumes of Coal Loaded by RosUgol Associations and Preparation Plants in the First Half of 1993 (%)

ROSUGOL Grand Total	*100 0*
RostovUgol	5 28
GukovUgol	2 11
Obukhovskaya Mine	0 46
DONETSK BASIN Total	*7 85*
TULAUGOL	2 61
Novosibanthracite	0 20
SeverokuzbassUgol	1 77
BelovoUgol	0 98
Sibkon	2 51
Raspadskaya Mine	1 71
LeninskUgol	4 07
ProkopyevskUgol	2 51
KiselevskUgol	1 60
KuznetskUgol	5 10
Joint Stock Company Mezhdurechye	1 35
Kuzbassugleobogashchenye	4 31
KuzbassrazrezUgol	9 03
Joint Venture Russia Coal"	0 71
Yuzhniy Kuzbass	3 46
KUZNETSK BASIN Total	*39 31*
Vorgashorskaya Mine	1 20
VorkutaUgol	3 42
IntaUgol	3 68
PECHORA BASIN Total	*8 29*
Borodinsky Mine	8 72
KrasnoyarskUgol	3 27
KANSK ACHINSK BASIN Total	*11 99*
KizelUgol	0 49
Shumikhinskaya Mine	0 05
VakhrushevUgol	1 36
ChelyabinskUgol	3 34
BashkirUgol	1 94
URALS REGION Total	*7 18*
KhakasUgol	2 23
VostsibUgol	11 69
Dal vostUgol	2 69
PrimorskUgol	2 82
YakutUgol	3 32
FAR EAST REGION Total	*22 75*

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of steam locomotive depots, fuel storage bases and warehouses, railway power supply units Now this equipment is being used only partly - for meeting the railway enterprises' and organizations' demand for coal

Coal Tariffs

Transportation of coal in the main type of wagons (box-cars) is charged according to Tariff Schemes N°1 and N°2 with adjustment coefficients set by the Committee for Price Policy of the Russian Federation As for other freight, current tariffs for coal transport are based on the average costs of transportation by wagon weight at various distances Differentiation by weight of wagons are calculated according to Part 2 of Tariff Instruction No 1 Tariffs listed therein vary by wagon load and by ton-km, and, as decreed, must then be multiplied by the official inflation adjustment coefficients In addition, these rates must be multiplied by a VAT of 20%

The mission reviewed the official tariff book and examined the variation of rates over distances for wagon loads of between 64 and 66 tons To approximate the changes therein, rates should be calculated according to the methodology outlined in Exhibit 10

For all domestic shipments, coal is priced in Russia on the terms of FOB (Free on Board) at the origin MPS station That means that the seller is only providing coal transport to the MPS junction station, and all further freight and insurance costs are included by the MPS in its transport tariff that has to be paid by the buyer, as well as any further claims for mishandled cargo have to be addressed to the MPS In practice, however, the buyer pays the MPS tariff only upon delivery So, the seller (either a coal mine, or a PTU, or a coal sales company) who is at the same time executing the coal forwarding functions, has to pay the advance on the MPS tariff at the origin station Now that most industrial enterprises are dramatically short of funds and rail tariffs are constantly growing, these advanced payments become a heavy burden on the coal enterprise's meager circulating assets and decrease his financial viability The burden is particularly heavy with respect to coal exports According the marketing arm of a coal association in Kemerovo, the coal sales company does not get reimbursed by the buyer or the coal mine when selling coal for export

Except for advancing the transport tariff payments, practically all other financial relations between a PTU and a railway are concentrated around wagon handling The 5-year contract on transport services signed between the coal enterprise and the railway (see para 1 6) regulates the basic form of assessing the wagon handling performance and mutual charges and sanctions The two parties decide on whether to use fines against the violations of normative wagon turnaround time or wagon demurrage charges (the latter being a fairly recent innovation) In case the PTU wagons are damaged, misplaced, withheld or even lost on the MPS routes (which is not infrequent with ever-lacking tank-cars), the wagon owner claims fine sanctions on the MPS And the most recent practice is to ship out valuable cargo escorted

Before the contract is signed, the status of industrial lines and loading facilities is jointly examined by the two parties and registered in a special act The purpose of examination is to determine the normative wagon turnaround time for the particular industrial siding (calculation is based on maximum technological capacities of a coal-loading facility and on the nominal length of haul along the industrial line -- a wagon-tippler at a large coal-concentrating factory can operate for up to 20 hours a day at a rate of 20 minutes per wagon) This technical normative is included in the annex to the contract - "Joint Technological Process", and becomes one of the two most important criteria in mutual economic sanctions for wagon mishandling (see the table below for the current economic sanctions for failing to meet these normatives)

On the other hand, the railway is always interested in decreasing the normative wagon turnaround time for the PTU Formally, PTU's may claim for increasing this time if their length of haul has grown during the 5-year period because of the mine development and extension of tracks But

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Exhibit **10** Russian Railway Freight Rates for Coal

Rates listed below are taken from the railway tariff book as of 1989 To get current rates, one must multiply the base tariff times the inflation factors provided below

- To obtain rates as of December, 1991, multiply by 1 88
- To obtain rates as of December, 1992, multiply by 81 1
- To obtain rates as of September, 1993, multiply by 1,005 64

THE FINAL RATES MUST THEN BE MULTIPLIED BY A VAT OF 20%

BASE TARIFF RATES FOR COAL BY WAGON

The following rates apply to one wagon load of coal, containing an average load of between 64 through 69 tons

For Distances of	Tariff is
0 - 50 km	61 Rubles
51 - 100 km	61 + 18 (total distance minus 50)
101 - 300 km	72 + 18 (total distance minus 100)
301 - 600 km	107 + 19 (total distance minus 300)
601 - 1000 km	170 + 17 (total distance minus 600)
1001 - 1500 km	247 + 17 (total distance minus 1000)
1501 - 5500 km	348 + 19 (total distance minus 1500)
5501 - 11,190 km	1122 + 21 (total distance minus 5501)

BASE TARIFF RATES FOR COAL BY TON

Assuming an average load of 66 tons per wagon, the following rates apply to 1 ton of coal·

For Distances of	**Tariff is**
0 - 50 km	92 Rubles
51 - 100 km	92 + 0027 (total distance minus 50)
101 - 300 km	1 091 + 0027 (total distance minus 100)
301 - 600 km	1 62 + 0029 (total distance minus 300)
601 - 1000 km	2 58 + 0026 (total distance minus 600)
1001 - 1500 km	3 74 + 0026 (total distance minus 1000)
1501 - 5500 km	5 27 + 0029 (total distance minus 1500)
5501 - 11,190 km	17 00 + 0032 (total distance minus 5501)

Examples

1 ton carried 1000 km = (3 62*1,005 64*1 20) = 4,368 5 Rb or 4 3685 Rb/ton km At exchange rate of 1200 Rb/US$ = $3 64 per ton for 1000 km

1 ton carried 2000 km = (6 72*1,005 64*1 2) = 8,109 48 Rb or 4 05 Rb/ton km At exchange rate of 1200 Rb/US$ = $6 76 per ton for 2000 km

multiple disputes between railways and PTU's about the revision of this normative are rarely resolved in favor of the PTU, because according to Article 75 of the still active Charter of Soviet Rail Roads (federal legal code enacted in 1964) the highest instance for resolving conflicts that involve a railway unit is the Minister of Railways According to RosUgol, the new draft Rail Road Charter (submitted by the MPS) is also based on this old "monopoly-power" approach

The use of wagon demurrage payments instead of fines could probably be considered more financially lucrative to PTU's, since these payments are accounted for as rented fixed assets that can be included in the cost of production (unlike fines) But in practice, this would only make sense if the appropriate adjustments are made to the MPS transport tariffs, that now, according to RosUgol, include the charge for the use of wagons by the PTU during the normative turnaround time Otherwise, the PTU's would be paying twice for the first hours of wagon use - as demurrage and as tariff

Exhibit 11 ***Penalty Charges Used for the Violation of Wagon Handling Schedule by MPS and RosUgol (effective since May 1993)***

A Non-compliance with the plan of coal shipment

(1) for traffic planned both in tons and in wagons	162 Rbl /ton
(2) for traffic planned in wagons only	811 Rbl /wagon

B Delay of wagons handling (against normative time - for freight owner, and against schedule - for carrier)

1-6 hours	48 66 Rbl /hour
7-12 hours	97 32 Rbl /hour
13-18 hours	145 98 Rbl /hour
over 18 hours	243 30 Rbl /hour

C Delay leading to failure to form a scheduled unit train

6,882 5 Rbl /train

The second normative included in the 5-year contract and the Joint Technological Process agreement is the scheduled supply of empty wagons by the railway Naturally, since the overall revenues of a coal enterprise are entirely determined by the number of coal wagons shipped to customers, PTU's are interested in the adequate and timely supply of empty wagons, because the lack and/or irregularity of wagons makes the mine accumulate the extra coal in storage pits (which doubles the unproductive loading/unloading operations, increases operating costs by 25% (Before the liberalization of prices, coal storage at mine added Rb1 5 to the Rb6-7 per ton cost of produced coal (this included additional energy consumption for coal unloading, crushing, ventilation, storage equipment and maintenance) Currently coal storage at mine adds Rb1,000 to its ex-mine cost), deteriorates the quality of coal and increases its losses caused by spontaneous burning)

Fines that the railway has to pay for the violation of the agreed wagon supply schedule have also been raised But, again, according to the current Rail Road Charter, railways assume only LIMITED LIABILITY for the losses caused by the violation of schedule Since May 1993 these fines are only

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162 Rubles per ton, or 811 Rubles per wagon, or per 6,882 5 Rubles per unit train And the still existing monopoly power of carrier allows the MPS railways to impose 10-fold direct and indirect charges on their customers in the form of various penalties, wagon-cleaning costs, etc

Unit trains are another hidden burden on PTU's Officially, it has never been PTU's duty to deliver wagons with coal to the MPS junction station formed in unit trains 5-year contracts and JTP agreements between PTU's and railways have been and still are compiled and monitored in terms of tons and wagons, not trains Moreover, RAIL TARIFFS FOR TRANSPORTING COAL DID NOT AND STILL DO NOT DEPEND ON THE FORM OF HANDLING (BY WAGON OR BY UNIT TRAIN) Nevertheless, under the previous system of relationships between PTU's and railways, the latter used to have a wide range of "carrots" and "sticks" to encourage the PTU to form unit trains of coal by themselves (e g the railway paid bonuses to PTU traffic controllers for their additional train-forming work, also, most cooperative PTU's would more likely get longer wagon-loading time norms when revising the JTP specifications with the railway) Currently PTU's have virtually no incentives to keep forming unit trains for the railway Under the current inflation rates, the MPS quarterly bonuses do not even cover the costs of this extra-work done by the PTU's But still the percentage of coal wagons arranged by PTU's in unit trains is rather high

Assessment of Coal Transport Costs and Rates

MPS' cost accounting system does not stratify costs by commodity groups so estimates of the cost of carrying coal must be derived from network wide operational costs on the basis of coal's share of overall traffic on the system

Since the network-wide operational costs for freight traffic in 1992 (all types of traction) totaled in Rb368 billion and the traffic share of coal was at the level of 20%, the operational costs for coal traffic were not higher than Rb73 6 billion (in 1992 the network-wide traffic was 1,967 1 billion tariff ton-kilometers, and the cost of 10 tariff ton-kilometers was Rb1 871) But this estimate has to be adjusted for the following specific peculiarities related to coal traffic

(i) high static wagon loads and above-average gross weight of coal unit trains,

(ii) the bulk of coal traffic is carried along the electrified routes with the average traffic cost of 163 5 Kopecks per 10 tariff ton-kilometers, which is 16% lower than the network-wide average (187 1 Kopecks),

(iii) coal loading and unloading operations are predominantly done on the industrial lines

These peculiarities decrease the railway cost of transporting coal by 13-14%, thus totaling in 1992 in about Rb63-64 billion instead of the maximum estimated level of Rb73 6 billion Hence, the railway cost of transporting coal in 1992 was 16 Kopecks per ton-kilometer

Consequently, with the total 1992 volume of loaded coal being 322 1 million tons (of which 319 0 million tons on standard gauge) the railway cost of transporting coal was Rb197-200 per ton

In 1992 the network-wide average income rate for coal traffic was 168 86 Kopecks per 10 ton-kilometers So, with the average length of coal haul being 1,237 kilometers, the total income of railways for transporting coal was Rb66 6 billion

Thus, in 1992 railway clients paid about Rb208-210 per ton of coal carried and 16 9 Kopecks per ton-kilometer of coal traffic

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World Bank Assessment of The Economic Costs of Coal Transport

From MPS's own calculations, it is clear that the cost of moving coal is at least 13% - 14% cheaper than other types of freight At the same time, although coal rates in Russia today are used to subsidize passenger losses, as is all freight, MPS' coal rates result in a "profit of only 5%, according to MPS' calculations of coal transport These calculations, however, are based on average transport costs of the entire MPS system, including the operation of BAM and other less intensively used lines in the MPS system

To assess the current "fairness" of coal rates in Russia, the mission has attempted to estimate the economic costs of moving coal In doing so, the analysis first attempted to estimate the wagons and locomotives needed to transport coal traffic at 1992 levels, taking into account coal transit times, locomotive speeds, loading and unloading times, average tons per wagon, availability and utilization levels of rolling stock "dedicated" to coal transport and provided a basis for assessing the amount of capital cost, depreciation, and operating costs (including crew costs, maintenance and energy costs) associated with these assets that should be charged to coal transport To these costs, portions of the railway other costs must be added including track maintenance, signalling and telecommunications, transport costs, administrative/commercial costs and capital improvements necessary to the preservation of freight operations in the long term Specific assumptions are detailed in an attachment to this part of the Annex The results of this analysis are summarized in Exhibit 12 and detailed in Exhibits 13 and 14 at the end of this part

According to MPS analysis, the cost of coal transport is about 13%-14% less than network-wide average operational costs since most coal moves in unit trains, the bulk of coal moves along electrified route with an average cost of 163 5 Kopeks per 10 tariff ton-kilometers, 16% lower than the network-wide operational cost of 187 1 kopeks, and since coal loading and unloading operations are predominantly done on the industrial lines Accordingly, the railway cost of transporting coal in 1992 was 16 kopecks per tkm Since the average tariff paid by coal customers in 1992 was 16 9 kopeks per tkm, it would appear that the railways made a "profits" of only 5% on coal transport in 1992

As this analysis is based on average transport costs, it does not really help in assessing the degree to which the rates or costs reflect the costs of hauling coal in the long term At best the analysis demonstrates that the railway's profit margin is rather slim, on the other hand, it did not need much profit in the past as many capital investments were funded from the budget To address these questions, as described in more detail in the coal transport annex to this report, the mission undertook to assess the underlying economic costs of coal transport in Russia

The Bank's resulting estimate of economic costs in US$ per tkm (at an exchange rate of Rb1200 = 1US$) average US 0 3 cents This estimate assumes that input costs approximate world price levels except for rolling stock, which are assumed to remain for some time at 60% of world price levels according to an EBRD-financed study of the Russian railway system At full world price levels, the economic cost rises to 0 4 US cents per ton-kilometer This estimate also assumes that 64% of coal flows move on unit trains and 36% on mixed trains and that all coal trains outside of terminals move on electrified tracks The estimate includes capital costs for track, rolling stock, information systems, and maintenance equipment **By comparison, the average rate of current MPS tariffs is equivalent to US 0 4 cents. Thus, according to this analysis, existing MPS coal tariffs exceed the economic costs of coal transport, although only by about 10%**

These transport costs reflect only the costs of moving wagons from their originating point to their destination on the MPS main railway network Loading and unloading and transport from the mines to the loading point and from the network unloading point to the destination on the siding of the ultimate coal customer are not handled by MPS These costs are therefore not reflected in the base transport rate The loading of coal into rail wagons and the transport of these wagons from the mines

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Exhibit 12 Economic Cost of Coal Transport by Distance Shipped

	Economic Costs		MPS Tariff Levels (September 1993)				
Segment Distance	Cost per tkm in US$	Cost per ton in US$	Cost per tkm in Rb	Cost per ton in Rb	Cost per tkm in US$*	Cost per ton in US$*	% above Economic Costs
50-100 km (70 km average)	0 013	0 90	16 78	1 175	0 014	0 97	7%
250 km	0 006	1 40	5 92	1 479	0 0049	1 23	12%
500 km	0 004	1 98	5 30	2 654	0 0044	2 21	12%
1000km	0 003	3 21	4 36	4 368	0 0036	3 64	13%
1600 km	0 003	5 33	4 19	6 709	0 0035	5 60	5%
2500 km	0 003	7 94	3 94	9 859	0 0033	8 22	3%
3500 km	0 003	10 93	3 81	13 359	0 0032	11 13	2%
5960 km	0 003	21 03	3 74	22 288	0 0031	18 57	0 1%
1127 km average	0 003	4 28	5 64	5 684	0 042	4 74	

to MPS is handled by individual coal transport enterprises (PTUs) At the unloading end, industrial sidings and unloading equipment are owned by the customer Altogether, the industrial coal lines owned by these PTUs total 6271 km, over which 6 5 billion tkm are expected to be carried in 1993 at Rb22/tkm, for a total of Rb143 billion This total represents a cost of about Rb444 per ton, or US$0 37 at an exchange rate of Rb1200 = US$1 It should be noted, however, that the PTU ton-km figure includes moving coal from mines to preparation plants as well as to MPS lines for shipment Perhaps, therefore, the total can serve as a proxy for total loading and unloading costs

To assess the reasonableness of the Bank's estimate, the result was compared to coal transport costs by rail in the United States since the US railway system is most comparable to Russia's in terms of traffic levels and geographic size According to a major US railway, the average financial cost (to the railway) of moving coal over one of its major coal routes is US 8 cents To translate this cost into economic costs, one should exclude payroll taxes (about 7%), corporate income taxes, and higher rates of depreciation for existing rail assets

According to the AAR, average US railway costs are profiled as follows labor -- 38 8%, payroll taxes -- 7 6%, depreciation -- 9%, fuel -- 7%, loss and damage -- 6 7% and other -- 39% To be comparable, therefore, one should deduct the payroll taxes, much of the depreciation for buildings and structures, and a large portion of the loss and damage since MPS does not assume much liability for losses As these alone total 33 3%, it would seem reasonable to assume that US economic costs of coal transport would be at least 30% less than the financial costs and perhaps as much as 35% If so, a reasonable estimate of economic rail costs for coal transport in the US would be about US 0 5 cents per tkm To be comparable to the Bank's assessment of the economic cost of transporting coal in Russia, the US figure must be further reduced to reflect the facts that (1) coal is transported by diesel-powered locomotives in the US rather than by electric traction, and, (2) the Russian estimate does not incorporate loading or unloading costs

According to MPS, the network average cost of electric-powered freight was Rb1 635 per 10 tkm while the network average cost of diesel-powered freight was Rb2 516 per 10 tkm, a differential of 54% If the same differential were applied to US fuel costs, 54% of the 7% (or 3 8%) fuel costs

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should be subtracted from the US cost estimate This adjustment would reduce the estimate of economic costs in the US to about US 0 48 cents per tkm

To adjust for loading and unloading, perhaps the best way would be to add back these costs to the Russian estimate If we take total PTU costs as a proxy for both loading and unloading costs, it would be necessary to increase the total costs of coal transport by about 7% before any adjustments are made to convert this cost to economic prices The difference between current costs and the Bank estimate of economic costs of coal transport in Russia is about 2 33 times (0 4 cents compared to 0 16 cents per tkm) If this factor is applied to the storage costs, it could be inferred that one should increase the economic costs of coal transport in Russia by about 16 3% This would make the Bank's estimate of the economic cost of coal transport, assuming full adjustment to world price levels, about 0 47 cents per tkm, and estimate very close to the 0 48 cents estimate of US economic costs, as adjusted above Another comparison should perhaps be made to China's railway system A World Bank analysis (1988) found that the national average economic cost for freight was 0 6 - 0 7 cents/tkm, but this figure includes loading and unloading costs and a high percentage of diesel-operated trains

What implications does this finding have for railway rates in general and for the coal industry in particular? First, given the increasing costs of coal production and the vulnerability of coal to substitution for other fuels, Government may wish to take all measures to try to help keep the price of coal as competitive as possible to avoid even greater declines in production If so, one measure to this end would be

To avoid permitting coal freight rates to increase faster in future than inflation as they already exceed economic costs Fortunately, the most recent tariff agreement for the railways allows automatic increases tied to the wholesale and consumer price indices, but reduced somewhat by a special formula In theory, therefore, this policy is already in place (provided the coal seller can overcome the problem of working capital erosion associated with having to pay transport costs "upfront" when freight is taken "on-board," and getting reimbursed sometime later after accounts have cleared from the buyer)

Since the Bank's calculations of costs includes capital costs for locomotives, wagons, track rehabilitation of 12,000 km/year and a capital program (including interest) for acquiring more modern MIS systems, upgrading telecommunications, purchasing track maintenance equipment necessary to tackle deferred maintenance, as well as normal operating expenses, the present level of tariffs should be sufficient to sustain the railways over the longer term, provided the freight revenues from coal and other commodities are actually used to this end Unfortunately, MPS is not currently in a position to do so as it instead is diverting cash flow to cover passenger losses

To ensure the integrity of the rail freight network, Government should ensure that cross-subsidization of passenger losses by freight traffic cease In addition, Government should ensure that the right railway investments are made This means that proposed railway investments should be reassessed and prioritized to meet the most urgent needs of the freight railway system

Moreover, it must be remembered that railway input costs have not yet reached world levels, yet its current tariffs are about equal to the Bank's estimate of economic costs This means that railway tariffs are likely to rise in future beyond economic costs unless the railway makes every effort to cut costs to match demand and become more productive to counter future increases in energy and other inputs as Russia's economy undergoes further adjustments to world price levels

Government should thus ensure that MPS' costs are cut to match demand and to at least maintain productivity levels achieved in the past

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Russia's current rail tariffs for coal are close to its economic costs In the US, however, coal tariffs are almost double the financial costs In Europe, Australia, and Canada, rail rates for coal are even higher In terms of the competitiveness of Russia's, industry, however, one must recognize that the average transport distances coal is moved in Russia are far greater than in these countries

Thus, although still below railway costs elsewhere in the world, the current trends regarding rate increases, together with the failure to date of MPS to recognize the need to restructure and rationalize the railway system suggests that the competitive advantage once afforded Russia as a result of having the world's most intensively operated railway system is in jeopardy

Based on experience elsewhere, it is unlikely the railways will be able to solve their problems themselves Government will have to assist in a restructuring effort or otherwise risk

- further erosion in rail transport service with its attendant cost,
- possible predatory behavior on the part of the railway as it attempts to defend its market position,
- continued large and unsustainable deficits which pose a serious macroeconomic challenge for the overall economy

Restructuring an industry as complex as the railways, however, can take years In the meantime, there are some actions Government could take to protect the competitive positions of all MPS's freight customers

- Reverse the policy of cross-subsidization of passenger losses by freight revenues and instead provide for passenger losses from the federal budget,
- Make subsidies for these losses conditional on increasing passenger service cost recovery to 25% by December 1994 and 50% by December 1995
- Cease further investments in (a)rail passenger service, (b) electrification of new and existing lines, (c)new industrial lines, and (d) the Baikal-Amur railway until in depth economic and financial analyses are undertaken for each project
- Cease giving any preferential treatment to railways for provision of foreign currency, particularly for passenger investments which have low cost recovery and earn little foreign currency
- Ensure no high speed rail project is undertaken unless all capital and operating costs are funded by a private investor so that neither Government nor freight customers bear the burden of what is likely to be a costly, uneconomic investment
- In order to separate the policy, planning and regulatory functions of the railways from its operational activities, consider turning the MPS into an operating company under the aegis of another Government body, such as the Ministry of Transport
- Improve cost accounting and develop network flow models in order to determine profitability by line of economic activity
- Initiate a study to determine the degree to which regional railways could be reorganized to permit intra-rail competition

Exhibit 13 World Bank Analysis of Economic Costs of Coal Transport by Russian Railways in US$ (assuming Cost of Rolling Stock = 60% of World Price Levels)

Segment	Capital Coal Wagons US$	Capital Shunting Locos US$	Capital Main Locos US$	Track Rehabilitation Costs US$	Capital Improvement Program US$	Main Loco Electricity Costs US$
50-100	14 002 350	550 967	1 052 607	524 306	73 432	4 088
250 Km	16 351 643	550 967	3 759 309	1 872 522	367 161	52 140
500 km	23 997 274	734 623	10 024 825	4 993 393	979 097	278 080
1000 km	21,290 581	550 967	15 037 237	7 490 090	1 468 645	834 240
1600 km	27 569 627	550 967	34 370 828	11 984 144	2 349 832	3 050 934
2500 km	23 106 867	372 209	35 802 946	12 483 483	2 447 742	4 965 713
3500 km	20 334 275	257 118	35 086 887	12 233 813	2 398 787	6 812 958
5960 km	11 954 633	110 193	25 606 267	8 928 187	1 750 625	8 466 723
Total	158 607 250	3 678 011	160 740 905	60 509 938	11 835 321	24 464 876

Segment	Main Loco Crew Costs US$	Shunter Crew Cost US$	Shunter Fuel Cost US$	Loco Main Costs US$	Wagon Main Costs US$	Track Maintenance Costs US$	Transport (incl terminals) Costs US$
50-100	447	301	2 714	2 129 877	23 144 059	2 428 398	774 774
250 Km	5 698	327	2 947	6 189 931	27 027 133	8 672 848	2 767 052
500 km	30 387	436	3 930	15 771 860	39 664 364	23 127 596	7 378 804
1000 km	91 161	327	6 128	23 106 823	35 190 553	34 691 393	11 068 206
1600 km	333 388	379	3 414	52 107 209	45 568 997	55 506 229	17 709 130
2500 km	542 623	270	2,432	54 076 627	38 192 637	57 818 989	18 447 011
3500 km	744 479	213	1 920	52 887 448	33 609 904	56 662 609	18 078 071
5960 km	925,192	91	823	38 519 593	19 759 448	41 352 141	41 352 141
Total	2 673 373	2 344	24 308	244 789 368	262 157 096	280 260 203	117 575 189

Segment	Signalling telecoms Costs US$	Adminstrative Commercial Costs US$	Total Costs US$	Costs/ Ton Km US$	Costs/ Ton US$
50-100	462 552	277 531	45 428 403	0 013	0 90
250 Km	1 651 971	991 183	70 262 833	0 006	1 40
500 km	3 303 942	2 643 154	132 931 764	0 004	1 98
1000 km	6 607 884	3 964 731	161 398 966	0 003	3 21
1600 km	10 572 615	6 343 569	268 021 261	0 003	5 33
2500 km	11 013 141	6 607 884	265 880 572	0 003	7 94
3500 km	10 792 878	6 475 727	256 377 086	0 003	10 93
5960 km	7 876 598	4 725 959	211 328 615	0 004	21 03
Total	52 281 582	32 029 738	1 379 599 762	0 003	4 28

Exhibit 14 World Bank Analysis of Economic Costs of Coal Transport by Russian Railways in US$ (assuming Cost of Rolling Stock = World Price Levels)

Segment	Capital Coal Wagons US$	Capital Shunting Locos US$	Capital Main Locos US$	Track Rehabilitation Costs US$	Capital Improvement Program US$	Main Loco Electricity Costs US$
50 100	19 768 024	777 836	1 754 344	524 306	73 432	4 088
250 Km	23 084 673	777 836	6 265 515	1 872 522	367 161	52 140
500 km	33 878 505	1 037 114	16 708 041	4 993 393	979 097	278 080
1000 km	30 057 291	777 836	25,062 062	7 490 090	1 468 645	834 240
1600 km	38 921 826	777 836	57 284 713	11 984 144	2 349 832	3 050 934
2500 km	32 621 459	518 557	59 671 576	12 483 483	2 447 742	4 965 713
3500 km	28 707 212	362 990	58 478 145	12 233 813	2 398 787	6 812 958
5960 km	16 877 128	155 567	42 677 111	8 928 187	1 750 625	8 466 723
Total	223 916 117	5 185 572	267 901 508	60 509 938	11 835 321	24 464 876

Segment	Main Loco Crew Costs US$	Shunter Crew Cost US$	Shunter Fuel Cost US$	Loco Main Costs US$	Wagon Main Costs US$	Track Maintenance Costs US$	Transport (incl terminals) Costs US$
50-100	1 173	790	2 714	3 409 352	23 144 059	2 428 398	774 774
250 Km	14 956	858	2,947	10 176 109	27 027 133	8 672 848	2 767 052
500 km	79 766	1,145	3 930	26 099 176	39 664 364	23 127 596	7 378 804
1000 km	239 297	858	6 128	38 370 929	35 190 553	34 691 393	11 068 206
1600 km	875 142	994	3 414	86 704 905	45 568 997	55 506 229	17 709 130
2500 km	1 424 385	708	2 432	90 025 921	38 192 637	57 818 989	18 447 011
3500 km	1 954 257	559	1 920	88 080 207	33 609 904	56 662 609	18 078 071
5960 km	2 428 630	91	823	64 171 234	19 759 448	41 352 141	41 352,141
Total	7 017 605	6 005	24 308	407 037 833	262 157 096	280 260 203	117 575 189

Segment	Signalling telecoms Costs US$	Adminstrative Commercial Costs US$	Total Costs US$	Costs/ Ton Km US$	Costs/ Ton US$
50-100	462 552	277 531	53 403 373	0 015	1 06
250 Km	1 651 971	991 183	83 724 905	0 007	1 67
500 km	3 303 942	2 643 154	160 176 107	0 005	2 39
1000 km	6 607 884	3 964 731	195 830 143	0 004	3 90
1600 km	10 572 615	6 343 569	337 654 281	0 004	6 72
2500 km	11 013 141	6 607 884	336 241 638	0 004	10 04
3500 km	10 792 878	6 475 727	324 650 035	0 004	13 85
5960 km	7 876 598	4 725 959	260 522 407	0 004	25 93
Total	52 281 582	32 029 738	1 720 173 152	0 004	5 34

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Assumptions Used in The Calculation of Economic Costs for Coal Freight Rates in Russia

Traffic Levels:

Based on data submitted by Kemerovo railways regarding coal traffic flows in September 1993, interregional coal flows via railway for 1992 from MPS data, from analysis of coal flows over two million tons via line segment, and data from Rosuglesbyt, it is estimated, for purposes of analysis, that 1992's annual coal transport flows (319 million tons on broad gauge tracks) are distributed in Russia as shown in the table below, a distribution that approximates the average length of haul for coal in Russia for 1992 of 1,237 km The main purpose of this exercise was to try to determine the major distances of coal movements so as to estimate the number of yards the traffic might traverse, the transit times and total turnaround times of wagons and locomotives In terms of actual tonnage carried, it was assumed that rail wagons and locomotives would be needed to compensate for coal lost in transport It was reported that as much as 5 - 6 tons per wagon are lost, which is somewhere between 7 - 9 percent As an average, however, it was assumed 5 percent would be lost in transit.

Total tonnage moved

Distance	% of all coal	Tons	Tkm	#yards
50 - 100 km	15	48 million	2,400 million	0
250 km	15	48 million	12,000 million	1
500 km	20	64 million	32,000 million	1
1000 km	15	48 million	48,000 million	1
1600 km	15	48 million	76,800 million	3
2500 km	10	32 million	80,000 million	3
3500 km	7	22 million	77,000 million	4
5960 km	3	10 million	59,600 million	6

Transit and total turnaround times were derived by assuming an average transit time of 35.7 kms per hour times the distance to be travelled. To this, 29 hours were added for each loading and unloading operation and, depending upon the number of yards assumed to be encountered on route, 2.13 hours for unit trains/yard and 10 19 hours for mixed trains It was assumed 35% of coal was sent in mixed trains and 64% in unit trains As the average distance travelled by a unit train without stopping was reported to be 837 km, the number of yards encountered for each route was estimated by dividing this number into the total distance travelled For greater accuracy, this number was cross-referenced with the railway map and description of routes, and in a few cases, increased to take into account the specific number of marshalling yards along specific coal routes as described in the main report

Wagon Requirements

Assuming 350 days of operations (there are downtimes throughout the system as a result of snow) and 65 tons per wagon (a conservative assumption since the average coal wagon contains 66 7 tons of coal according to the Kemerovo railway), the required number of wagons loaded per day to service each year's demands for each segment group was calculated Dividing this number by an assumed 60 wagons per train (the actual average is 70 for the Kemerovo railway), yielded the number of trains loaded per day The number of wagons needed to meet this demand was then derived by assuming the turnaround times shown above for each sector, and by allowing for a wagon availability factor of 85%

The capital cost of the calculated wagons required was derived by using EBRD consultants' estimates of the economic cost of wagons for Russia Essentially, their estimate assumes the cost of Russian made equipment is 60% of world price levels. This estimate was Rb25,000 in 1990 rubles when the exchange rate was Rb1 = US$1 70. This yields a price of US$42,500 per wagon. Current estimates of world prices per wagon are in the US$50,000 - 60,000 range, so the use of a US$42,000 figure is actually between 70% - 80% of world prices. These costs were apportioned to coal traffic by assuming an economic life per wagon of 22 years (which is the normative operational life of box cars according to MPS), a cost of capital of 15% and an availability factor of 90%

Main Line Locomotive Requirements

Based on the above determined number of loaded trains required per day, the number of locomotive kilometers required to meet this demand was calculated It was assumed that the number of locomotive kilometers for each train would be double the distance travelled for each train on the assumption that there were no backhauls for coal wagons, i e 100% empty returns Annual requirements assuming daily operations for 350 days per year, and an inefficiency factor of 10%. Then, assuming 153,000 km/locomotive per year (MPS average) and an availability factor of 85%, the number of locomotives needed per year was calculated MPS data also recorded that each locomotive's annual haulage averaged 1 1 million gross tkm per day and travelled an average of 420 km per day.

The capital cost of the calculated locomotives required was derived by using 60% of the world price levels for a double unit electric locomotive of US$3 0 million It was assumed that all locomotives would be electric (90% of coal transported moves on electric lines) These costs were apportioned to coal traffic by assuming an economic life per locomotive of 30 years (which is the normative operational life according to MPS), a cost of capital of 15% and an availability factor of 85%

Shunter Locomotives

The number of shunter wagons needed was derived from the number of days spent by coal trains in terminals and in yards To calculate yard time, it was assumed that 65% of the trains were unit trains and thus would stay in yards an average of 2 13 hours, while 35% of the trains were mixed and would stay in yards an average of 10 17 hours It was also assumed that the average number of train kilometers moved per hour in yards was 6 km, the average number of annual kilometers per shunter was 46,000 km, availability was 85%, there would be 350 days of operations, an inefficiency factor of 10% and a cost of capital of 15% Capital costs were allocated as for main locomotives, assuming an economic price per shunter by EBRD consultants This means that each shunter is US$765,000 It was also assumed that each shunter would have an economic life of 20 years, which is the operative life of diesel locomotives according to MPS, and of shunters with hydraulic gear (15 - 20 years), depending on the engine power rating (eg 20 years for locomotives with electric gear is 25 years, so the 20 year assumption in the analysis seems reasonable

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Operating Costs

Electricity Costs The costs of electricity needed to run coal trains was calculated by multiplying the total train kilometers required for each segment by the average kwh per train kilometer on MPS of 31.928 by EBRD consultants estimate of the world price of electricity of US$0 06 per kwh. For the record, MPS' analysts reported an average kwh/train hour to be 1,162 18 and 1,004 189 kwh per locomotive train hour

Diesel Fuel Costs The costs of diesel fuel needed to run the shunters (all yard trains are diesel powered) was calculated by multiplying total shunter train kilometers by the average diesel consumption per train kilometer of 9 9 liters at the world price of US$0 21 per liter which translated into costs of US$6 27/km (29 85 liters @ US$0 21 per liter) This takes into consideration the fact that 59 4 kg of diesel fuel are consumed per 10,000 gross tkm, with the average calculated gross weight of one coal train being 4372 tons, and the resultant consumption of diesel fuel per one gross train kilometer being 29 85 liters based on converting kilograms to liters

Crew Costs Costs were calculated assuming annual crew costs of US$16,000 per person, which is about 8 times present rates in order to approximate world price levels The multiplication factor came from a comparison of manpower productivity of MPS to US railways that showed US railways were at least 2 5 times more productive (in terms of tkm per employee) Assuming an after tax income of US crews of US$40,000 per crew member (average salary in the US is about US$60,000 for crews) and dividing by 2 5 yielded a level of US$16,000 per person.

Locomotive Maintenance. Costs were assumed to be .05% of capital costs per locomotive.

Wagon Maintenance. Costs were calculated using EBRD consultants' estimate of the economic cost of wagon maintenance of Rb2160 in 1990 ruble prices Using and exchange rate of Rb1 = US$1 7, these costs were brought to dollar values

Track Rehabilitation Track rehabilitation expenditures for the entire network were assumed to be as estimated by EBRD consultants as 12,000 km of rail replacement per year at the rate of Rb100,000 per km in 1990 prices These were translated into dollars at the rate of Rb1 = US$1 7 which was used in the EBRD rail sector survey report The expenditures necessary were apportioned over the coal traffic on a ratio of coal tkm to total tkm in 1992, assuming an economic life of the rail replacements of 8 years

Capital Investment Based on an assessment of MPS capital needs for freight traffic by EBRD consultants, it was estimated that MPS should spend about US$500 million per year for five years on expenditures related to track maintenance machinery, MIS systems, including wagon tracking, telecommunications, etc. The figure was assumed to bear a cost of capital of 15% and to be depreciated over a ten year life It was also assumed that these expenditures would be apportioned over the coal traffic on a ratio of coal tkm to total tkm in 1992

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Transport Costs, Signalling and Telecommunication Costs, Administrative Costs and Track Maintenance Costs

These costs were all handled in the same manner The costs were taken as a percentage of total railway operating expenses (meaning that it was assumed that none of these costs would be borne by the passenger services) according to MPS's own analysis of their percentage costs by category of expense These costs were then adjusted upward to increase their labor component to a more reasonable level in terms of economic prices It was assumed that the labor portion of each was equal to 29% (on the grounds that labor represented 29% of all expenditures) and that these labor costs should be increased by 8 times to bring them to world price levels The resulting costs were apportioned over the coal traffic on a ratio of coal tkm to total tkm in 1992

Sensitivity Analysis

The model was also run using all of the assumptions above but increasing the prices of rolling stock fully to world price levels rather than using the EBRD consultants' estimates This meant that main line locomotives were assumed to cost US$3 0 million, shunter locomotives US$1 08 million and wagons US$60,000

OPERATIONAL STATISTICS SUPPORTING ABOVE ASSUMPTIONS

Indicator	Kemerovo RR		MPS Russia	
	1991	1992	1991	1992
Average wagon turnaround time in days	1 78	1 89	6 54	6 82
Wagon downtime under one freight operation hours	28 57	29 72	28 68	29 57
Downtime of a wagon at one technical station hours	4 03	4 16	4 87	4 79
Average daily wagon productivity, ntkm	5729	5447	8287	8424
Proportion of time a wagon in transit is empty	27 1%	29 1%	34 0%	36 6%
Average daily distance traveled by a loco in km	379 7	399 8	419 7	419 2
Average daily locomotive productivity gtkm (000 s)	978	1004	1098	1074
Freight train sector traffic speed all traction, km/h	31 3	31	34 3	35 7
Freight train technical traffic speed, all traction, km/h	41 3	40 8	44 1	44 3
Average freight train gross traffic weight all traction t	3295	3300	3093	3089
Average daily distance traveled by a wagon, in km			258 5	266 8
% unit/block trains			34 7%	34 9%
% of task performed by electric traction			72 6%	73 2%

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PART II COAL TRANSPORT ON THE INDUSTRIAL LINES

MPS moves coal along Russia's railway network but, for the most part, is not responsible for loading coal at the mine sites or unloading it at power plants, district heating plants, steel mills or other sites belonging to the end users of coal Nor does MPS transport coal from mines to washeries or coal-concentrating factories (CCF's) These activities are carried out by transport enterprises that operate on Russia's extensive network of industrial lines

The almost sole source of revenues for the PTU's is coal transport A minor addition for PTU's is providing transport services to other, non-coal, enterprises within the network (see para 2 7), these services are provided by contract, using negotiated tariffs (such tariffs are usually much higher than those for coal, since they include the maintenance and partly capital costs of the non-coal, i e underused, track siding lines)

Organization of Industrial (Coal) Lines The former Ministry of Coal Industry (Minugleprom) used to include the Directorate of Industrial Transport which controlled the operations of coal transport units of coal enterprises, the PTU's The Directorate was responsible for fulfilling coal transport plans industry-wide and had broad authority to control the work of individual PTUs, ranging from setting up normative technical standards (which often differ significantly from those of MPS) and operating regulations for new equipment and monitoring occupational safety to stopping the coal traffic and firing transport unit managers

Upon the abolishment of Minugleprom and most of the other sectoral ministries in late 1991, its functions were taken over by the newly established state enterprise "Coal of Russia", which was again reorganized in April 1993 into the state enterprise "Russian Coal Company" (RosUgol) The reformed Transport Directorate of RosUgol has retained its predecessor's functions of technical and operational safety standards, industrial statistics, and (optionally) new equipment procurement and coal marketing/sales It is not, however, any longer responsible for fulfilling the coal transport plans -- this responsibility is now decentralized among individual coal enterprises

PTUs have become autonomous joint-stock companies with the majority share of their stocks usually belonging to the Board of Directors of a local coal enterprise Relationships between the Transport Directorate of RosUgol and individual PTUs are now based on contracts that coal enterprises voluntarily opt to sign with RosUgol for the provision of specific services The size of the contract is determined individually, most commonly depending on a certain percentage of the coal amalgamation's revenues from coal sales (e g Production Amalgamation *KrasnoyarskUgol* pays 0 27% of its annual revenues as a contract to RosUgol) Actually, only one coal transport unit (PTU Usinskoye in Kuzbass) has chosen not to sign any contract with RosUgol and to become a totally independent coal transport company (though, according to RosUgol specialists, its performance has dropped significantly ever since, because it could not afford repairing and replacing its fleet at free-market prices, which are much higher than the industry-wide prices negotiated between suppliers and RosUgol)

Another responsibility of RosUgol's Transport Directorate is to develop industry-wide specifications for the purchases and capital repair of specialized rolling stock (locomotives, track maintenance equipment, etc) In general, they differ from those of the MPS mainline fleet For instance, due to lower traffic speeds, maximum allowable vertical profile of track for coal industry is up to 60% gradient (like at Korkino coal mine near Chelyabinsk), as opposed to 25% gradient for MPS lines Similarly, in coal industrial transport maximum axle loads are 32 tons per axle (22 tons in MPS), and minimal track curvature radius is 80 m (350 m in MPS)

PTU/MPS Interactions and Planning Interactions between individual coal enterprises and MPS junction stations are governed by a *contract for transportation services* signed every 5 years between the PTU and the adjoining MPS railway administration In the vast majority of cases any individual

PTU is geographically confined to deal with only one regional railway, such a monopoly being the cause of many serious problems for PTU's Several coal production amalgamations seem to be happy exceptions from this rule (see *TulaUgol* of the Moscow Basin (Moscow and October Railways), *GukovUgol* of the Rostov Oblast (North Caucasus and Donetsk Railways), *ChelyabinskUgol* (South Urals and Tselinnaya Railways), *VostsibUgol* (East Siberia and Trans-Baikal Railways), *Dal'vostUgol* (Trans-Baikal and Far East Railways) and *PrimorskUgol* (Far East and Baikal-Amur Railways) Though it might be worth taking a closer look at these examples to compare their experience of operational and financial interaction at the Railway Administration - Amalgamation Direction level, even in these amalgamations each individual coal enterprise and each transport unit deals with only one railway (railway division)

Wagon planning starts as a upward process Every year individual coal enterprises assess their existing/projected coal production capacities AND contracts with customers to determine their daily demand for wagons, which is then summed up by the PTU that submits its total daily request (with breakdown by month and by 10-day period, as well as by destination) to its MPS counterpart The railway revises the PTU request, theoretically it must accept it "as is", since coal is a top-priority centralized freight, but in practice railways almost always cut down the PTU requests justifying this by "underdevelopment of station capacities" Then these revised requests are included into the railway's draft annual operating plan to be approved by the federal Ministry of Railways After the MPS approval this railway operating plan becomes the basis for signing 5-year Joint Technological Process agreements with PTU's These MPS plans refer only to the "centralized freight traffic plans," as opposed to the "local freight traffic" plans that regional railways have the right to develop independently

RosUgol is also collecting the PTU wagon requests on a monthly basis and submits them directly to the MPS for operative adjustments of railways' monthly plans, if needed In case of force majeure conditions (such as major technological failures, forbidding weather, etc) the parties have to provide a 3-day advance notice to alter the wagon supply schedule Routine monitoring of loaded coal (by coal amalgamation and by railway) is done by RosUgol in the form of the daily statistics report Form 4-OP that specifies the scheduled and actual amount of coal loaded in tons and in wagons and how much coal was behind schedule because of the carrier (railway) and because of the shipper (PTU)

Operational Aspects

Technologically, coal is loaded by PTU's for shipment in rail wagons in two different ways

(1) during the extraction process directly from the mouth of mine/pit through the use of specialized transporter equipment arranged in *coal-loading complexes* (CLC's),

(2) from *"coal warehouses"* (CWH's) - special coal storage pits near major coal enterprises through the use of coal-crushers, conveyor systems, etc

Both CLC's and CWH's are owned by PTU's These should not be confused with the system of municipal and/or district coal warehouses, which are local commercial entities that distribute coal for decentralized heating and through operate under the supervision of the Coal Marketing and Sales Directorate of RosUgol Also, the term "coal terminal" is not usually applied to coal-loading complexes (CLC's) of coal enterprises, but rather to specialized coal unloading and transfer facilities at sea ports and other freight transfer locations (equipped with wagon-tipplers)

Traffic Flows on the PTU's

On average, 11 5% of total coal tons moved along the PTU lines does not leave the industrial network and ends up in nearby power plants The heaviest internal coal flows are in the Khabarovsk Kray in the Far East (where the Luchegorsky Mine sends annually 4-6 million tons of its coal directly

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to the nearby Primorskaya GRES Power Plant without using the MPS routes) and in *VorkutaUgol* that feeds its coal directly to the Vorkutinskaya TES Power Plant Other important internal flows are in the Kansk-Achinsk coal field (KATEK) in Eastern Siberia

Exhibit 15 ***Components of Freight Traffic on the RosUgol Industrial Lines in 1993***

Total traffic, % of which			100 0
in MPS wagons - all freight			39 9
in own wagons	total		60 1
	internal traffic	all freight	58 0
		coal only	5 4
	outbound traffic	all freight	2 1
		coal only	1 6

Total Estimated Volume ca 400-450 million tons

A very substantial internal flow within the industrial lines is unprocessed coal (together with rock) between the mouth of a mine and a coal-concentrating factory (CCF) According to RosUgol experts, this category of traffic accounts for about 50% of total freight traffic along the PTU lines It is all carried by the PTU fleet of locomotives and wagons Exhibit 14 gives a breakdown of freight traffic on RosUgol industrial lines by type of traffic

Most typically, CCF's are located near coal mines, so that a wagon of coal rock does not leave the PTU rail network Major mines and pits have their own CCF's, a cluster of smaller mines is usually served by a central CCF of the coal amalgamation, also located within the PTU network Still, there are a few distant coal enterprises that have to use the MPS routes to deliver coal from the mouth of a mine to the nearest CCF In such cases, these flows of coal rock have to be included in the MPS daily operating reports, even though the wagons are owned by the PTU and no loading/unloading of coal takes place on the MPS lines

Apart from this technological necessity to use the MPS routes to carry coal to a CCF, there used to be rather substantial mainline flows of unconcentrated coal from Kuzbass and Vorkuta to Donbass - to utilize the frequently underused capacities of the Production Amalgamation "Yuzh-Koks" - huge coal-concentrating and coke-chemical factories in the Ukraine It was an economically affordable practice under the negligible rail transport tariffs and central planning system of the former Soviet Union But with today's growing transport (and export) tariffs these flows have become virtually negligible

Coal is not the only commodity carried by the industrial transport In many areas (especially, in such one-industry towns as Vorkuta in the Pechora Basin, Sharypovo, Prokopyevsk, Kiselevsk and Mezhdurechensk in the Kuzbass) the PTU infrastructure provides the overall transport services for the whole range of vitally important bulk and general cargoes, such as food, construction materials, timber and metals These additional freight flows account for up to 10% of total industrial rail traffic Some of these non-coal clients located within the PTU network also hire PTU wagons for their own purposes

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Roughly 5-10% of the PTU's shunting locomotives fleet is entirely devoted to forming unit trains (this proportion being lower for major open pits, such as in the KATEK, and much higher for small and dispersed mines, such as in *TulaUgol* of the Moscow Coal Basin)

Rail transport operations can be constrained by climatic conditions in a number of coal-mining areas For example, there have been 5-6-day halts in PTU operations in Vorkuta because of heavy snowstorms (occasional 6-meter snowpack is not unusual there) Tracks can be frozen out in the Kharanor Mines (Chita Oblast) or in Neryungri (South Yakutian Basin), or flooded by a monsoon rainstorm in the Primorskiy and Khabarovsk Krays

Track Characteristics

All industrial rail network (except for the Sakhalin Island) has standard-gauge track - 1524 mm About 15% of track-kilometers are electrified Double-track lines are built only for large-capacity mines and pits (14% of total route-kilometers) The choice of type of track is done at the very beginning of the mine development, based on the expected coal production rates and required transport capacities, so that no upgrading from single-track to double-track be needed any further

Operating and track maintenance costs for industrial rail transport are covered in 2 different ways depending on the organization of the coal enterprise

(1) for the transport units that are structural parts of the coal enterprise (which is often the case with large open coal pits), their operating and maintenance costs are included in the total ex-mine cost of coal,

(2) for the PTU's (which in most cases are autonomous companies within coal amalgamations and concerns) their operational and maintenance costs are covered from the coal enterprise's revenues per ton-km of freight (coal, inert cargo and dump rock) carried

Investment Aspects

The RosUgol Company serves as a "united customer" for all individual coal enterprises in terms of equipment purchases (being able to negotiate lower prices with manufacturers for wholesale orders) But capital costs in industrial transport have always been covered according to the "leftover" principle - coal production *per se* was and still is top priority With the current lack of funding purchases of new specialized fleet have become virtually unaffordable

With the dissolution of the CMEA and the Soviet Union equipment from many traditional manufacturers have become unavailable Huge investments were made in the Ukraine in past to start the production of specially-designed rail switches for industrial lines (shorter modifications) Specific types of equipment (like 105-ton dump-cars 2BC105, formerly produced only in Poland) have not been purchased for already 3 years Now that similar equipment has started to be manufactured in Kaliningrad (dump-cars) and in Chelyabinsk (switches), no one can afford buying it

Similarly, the most developed industrial locomotive repair capacities were located in Makeyevka (Ukraine) and Karaganda (Kazakhstan) A major supplier of industrial electric locomotives in Russia is located in Lyudinovo (Kaluga Oblast)

New construction of tracks is virtually stopped (with one noticeable exception of a new coal field in Kuzbass) The present decline in coal traffic, associated with the low paying capacity of customers, would temporarily allow for providing coal transport services on the existing assets without major investments But in general the technical performance of industrial rail transport is degrading, so if it were not for the present severe financial constraints, the demand for specific types of new equipment would have been extremely high

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In RosUgol's view, it would be strategically more profitable to invest into a significant expansion of the coal wagon fleet and into the development of specialized coal-accumulating railways stations at transfer points (to keep coal in loaded wagons), rather than to have enormous operating losses through the need to store coal at mines because of the lack of wagons

PART III The Railway System

Russia's railway system makes up the bulk of the world's largest and most intensively operated system Operated as a unified system among all the Republics, traffic density of the whole CIS system is the highest in the world, in 1990 average density was 51 million gross tons and the heaviest sections carried over 250 million gross tons annually and operated 300 trains daily The Russian trunk-line railway system consists of 85,869 km of railway line operated as an intergrated system by 19 autonomous regional railway administrations under the direction of the Ministry of Railways (MPS) MPS was established by Presidential decree in February 1992 as the legal successor to the former All-Union or Soviet Railways (SZD) Its responsibilities are limited to the ownership and operation of railways within the Russian Federation, two of which were created since the break-up, in Sakhalin and Kaliningrad The 19 railways within Russia represent roughly 60 percent of the former SZD Each of the 19 Russian regional railways is a "geographic monopoly," contiguous to another, thus there is no competition for traffic among Russia's regional railways In addition to the principal system, there are some 151,000 km of "industrial" railway lines in the former Soviet Union belonging to individual enterprises Exhibit 16 lists the former Russian railways by name and shows their relative importance in terms of percentage of the total system's traffic levels Exhibit 17 contains the main indicators of operating performance for the Russian railways as a group

Rail Traffic Levels

Freight Traffic MPS' freight traffic, which amounted to 1 63 billion tons on the broad gauge network in 1992, makes up the for-hire, or common carrier, portion of rail freight traffic Industrial railways that haul their own freight carried 5 789 billion tons, or almost three times the common carrier tonnage, in 1991 (though typically over very short distances)

Exhibit 16 Coverage and Performance of Russia's Regional Railways, 1990 - 1992

RUSSIA			1990		1991		1992		1992	
Regional Railway Name	Line Km	Percent of Russia Total	Ton-Km (million)	Percent of Russia Total	Ton-Km (million)	Percent of Russia Total	Ton-Km (million)	Percent of Russia Total	Pass-Km (million)	Percent of Russia Total
October	10 186	11 64	160 982	6 38	147 793	6 35	119 003	6 05	32 256	12 74
Kaliningrad	759	0 87			2 213	0 10	2 125	0 11	1 154	0 46
Moscow	9 360	10 69	178 303	7 07	159 508	6 86	130 143	6 62	67 955	26 84
Gorky	5 672	6 48	191 926	7 61	176 309	7 58	152 797	7 77	19 167	7 57
Northern	6 027	6 88	170 977	6 78	152 943	6 58	136 594	6 95	11 994	4 74
North Caucasus	6 486	7 41	142 884	5 66	123 207	5 30	86 500	4 40	16,347	6 46
South East	4 444	5 08	144 906	5 74	142 117	6 11	113 065	5 75	13 343	5 27
Volga	4 098	4 68	74 292	2 94	70 051	3 01	61 375	3 12	6 664	2 63
Kuibishev	4 835	5 52	178 457	7 07	166 116	7 14	140 570	7 15	13 965	5 52
Sverdlovsk	7 070	8 08	186 610	7 28	170 227	7 32	152 465	7 75	15 988	6 31
South Urals	4 937	5 64	258 374	10 24	237,288	10 20	200 930	10 22	10 934	4 32
West Siberia	4 181	4 78	232 994	9 24	206 601	8 88	180 769	9 19	12 361	4 88
Kemerovo	1 916	2 19	68 065	2 70	62 425	2 68	55 442	2 82	3 789	1 50
Krasnoyarsk	3 167	3 62	112 317	4 45	105 318	4 53	89 385	4 55	5 662	2 24
East Siberia	2 665	3 04	132 389	5 25	124 385	5 35	106 200	5 40	6,518	2 57
Trans Baikal	3 436	3 92	163 171	6 47	156 496	6 73	135 928	6 91	5 587	2 21
Far East	3 379	3 86	93 037	3 69	84 851	3 65	71 604	3 64	6,252	2 47
Baikal Amur (BAM)	3 853	4 40	36 231	1 44	35 970	1 55	30 005	1.53	1 576	0 62
Sakhalin	1 072	1 22			2 063	0 09	1 489	0 08	587	0 23
TOTAL	87,543	100 00	2,522 915	100 00	2 325 881	100 00	1 966 399	100 00	253 200	100 00

Source

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Exhibit 17 Main Indicators of Operating Performance of the Railway Network of Russia in 1991-1992

Indicators	1991	1992
Operational route length 000 km	87 6	87 5
Electrified routes 000 km	38 1	38 4
Diesel traction routes 000 km	49 5	49 1
Freight traffic billion t-km	2325 9	1967 1
Freight originated (broad gauge) million t	1946 8	1632 2
Avg freight traffic density million t km/km	26 2	22 5
Passenger traffic billion passenger km	255 0	253 2
Passengers originated millions	2676 6	2372 3
Average passenger traffic density million pass km/km	2 9	2 9
Electric traction share of freight traffic %	72 6	73 0
Diesel traction share of freight traffic %	27 4	27 0
Avg wagon stay at one loading/unloading operation hours	28 68	29 32
Avg wagon stay at one technical station hours	4 87	4 79
Same with reclassification	10 71	10 19
Same without reclassification	2 05	2 13
Avg freight wagon turnaround time days	6 58	6 81
Segment speed of freight train km/h	34 3	35 7
Same for electric traction	36 7	38 0
Same for diesel traction	29 8	31 2
Technical speed of freight train, km/h	44 1	44 3
Same for electric traction	45 7	46 0
Same, for diesel traction	40 7	40 9
Avg gross weight of freight train, tons	3093	3090
Same for electric traction	3204	3210
Same for diesel traction	2833	2803
Segment speed of passenger trains (all types of traction) km/h		
All traffic	47 1	46 4
Inter-city traffic	50 1	49 5
Suburban traffic	40 0	39 2
Electric energy consumption kW-hours per 10 000 gross t-km	127 9	131 2
Diesel fuel consumption kg (coal equivalent) per 10 000 gross t km	57 0	59 4
Unit train share of originated freight, %	34 7	34 9
Labor productivity '000 adjusted t km per employee	2295 9	1994 9
Unit traffic cost, Kopecks per 10 adjusted t-km	10 38	213 45

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With some exceptions, rail carries at least 60 percent, and often more than 80 percent, of all commodity tonnage transported in the country (Exhibit 18) Petroleum travels primarily by pipeline agricultural grain and milling products account for much of the trucking tonnage, since trucks provide the first journey from farm to collecting point On a percent of tkm basis, rail's dominance is even greater because the average length of haul for rail is almost 1,000 km, whereas the average length of haul for trucking is barely 30 km Only for oil products is rail's tkm share less than its tonnage share

Coal is the railway's single greatest commodity in terms of tkm but second to construction materials in terms of tonnage (Exhibit 19) Russia's railways carried 319 million tons of coal in 1991, a decline of 7% over 1991 In percentage terms, coal represented 20 2% of all freight carried compared to 21 8% for construction materials

Exhibit 18 Rail Traffic Composition

Commodities	Freight Tonnage %	
	1991	1992
All Freight	100 0	100 0
Black Coal and Coke	17 9	20 2
Oil	12 0	13 0
Iron and Manganese Ores	4 9	5 5
Ferrous Metals	4 5	4 5
Timber	5 7	5 9
Construction Materials	22 6	21 8
Cement	3 2	3 0
Grain and Flour	3 6	3 9
Chemical and Mineral Fertilizers	3 5	3 2
Other Freight	22 1	19 0

Passenger Traffic

MPS is also the world's largest passenger carrier, with over 15 percent of the world's rail pass-km in three separate markets

- *Intercity passenger services*, for which MPS had one of the longest average trip lengths in the world and was the largest carrier in passenger volume
- *Suburbanpassenger services*
- *Commuter services*, which in the past included operation of metro subways, now operated by their respective municipalities

Exhibit 19 Freight Traffic on Russia's Railways By Commodity

Indicator	1991	1992	1992 as % of 1991
Total Freight Dispatched (broad gauge), mln tons	1946 8	1632 2	83 8
Of Which			
Coal	340 3	319 0	93 7
Coke	10 0	10 9	109 0
Oil Products	234 5	211 8	90 3
Iron and Manganese Ores	96 2	89 8	93 3
Ferrous Metals	89 5	74 1	82 8
Timber	115 5	96 4	83 5
Construction Materials	465 5	355 4	76 3
Cement	62 3	49 7	79 8
Grain and Flour	69 6	63 3	90 9
Chemical and Mineral Fertilizers	68 8	51 6	75 0
Moved in Containers	26 5	17 5	66 0
Same As % of Total Freight	1 4	1 1	-0 3p
Moved in Unit Trains %	34 7	34 9	+0 2p
Freight Traffic Bln tkm	2324 1	1965 5	84 6
Avg Static Wagon Load tons	54 18	54 34	100 3

The Industrial Railway Network

Besides the MPS rail system, some 151,000 km of industrial railways exist throughout the CIS, making the entire CIS track length about 300,000 km, more than the paved highway network in Russia Many industrial lines are internal to the industries they serve, the two largest networks serving the metallurgical and coal industries Others are shuttle lines between raw materials, plants, or main railway lines The industrial railways throughout the CIS hauled some 11 4 billion tons in 1990, but the average length of haul was only 7 km

Within Russia, industrial railway transport enterprises moved 393 6 million tons of freight in 1992 and loaded/unloaded 191 6 million tons of freight Annual revenues from freight traffic operations were Rb6,712 million, from loading/unloading operations - Rb2,083 milllion, and Rb3,153 milllion - from other activities Freight traffic costs were Rb5,399 million, loading/unloading costs - Rb1,690 million, and other costs - Rb955 million Unit traffic cost was Rb29 53/10 tkm, and freight handling cost was Rb3 82/ton According to MPS figures, the overall 1992 profits of industrial railway enterprises were Rb2,357 million, out of which Rb1,313 million - from freight operations

The coal-related industrial lines form an integral link between the coal enterprises and MPS They expect to carry about 6 5 billion net tonne/kms in 1993 (19% less than the record 8 billion tkm in 1989) As of January 1, 1993, the total length of track was 6,271 km In addition to transporting coal and dump rock, this network carries sizable amounts of other goods such as construction materials, timber, metals and food

Rail Traffic in Decline

Rail traffic in Russia and throughout the CIS has fallen precipitously from its 1988 peak Between 1988 and 1991, freight volumes are about 26 percent lower, and passenger traffic has declined by 17 percent From 1991 to 1992 for Russia alone, freight tkm fell an additional 15 4% Tonnage levels by commodity are shown in Exhibit 4 The overall economic decline has resulted in the decrease of freight traffic, including that of coal But the levels of decline vary for different railways, directions and segments For example, while at a number of segments of the North Caucasus Railway it dropped by 30-40%, a similar decrease was about 10%-20% for the railways of the Central and Northern parts of Euorpean Russia and only 5-15% for the railways of Siberia and the Far East These declines reflect the drop in overall economic activity in Russia, but also presage a changing economic role

In broad terms, the shift to a market econonmy in Russia is expected to have a significant negative impact on the relative amount and composition of rail traffic The expected decline in the rail freight share is attributable both to the general economic conditions and to long-term changes in the amounts and types of traffic carried This is the clear lesson of the Western economies, and is the strongly emerging trend in the restructuring CEE economies

Changes in rail traffic will first come from the rationalization of spatial distribution of industry in accordance with economic principles Major regions of the coal industry, for example, may become uneconomic once market prices are applied for inputs (especially energy and labor) It is also expected that more oil and petroleum products are likely to be transported by pipeline as the industry becomes profit-oriented and greater technological investments are made In 1991 about 35% of petroleum tonnage travelled by rail whereas the comparable figure in the U S is only 2%

Another part of the change will be an inevitable shift from rail to road transport for shorter haul traffic, far more rail traffic is carried over relatively short distance in Russia (nearly 18% of tonnage moves less than 100 km) than elsewhere, including China or the United States Finally, recent Bank reports have suggested that Russian agriculture, if restructured along the lines of market-based

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agricultural systems, would greatly shift the location and amounts of grain production, and of resulting grain transport

Other forces will eventually have even more impact on rail demand that these shifts The growth of competition from an increasingly private and efficient trucking sector, combined with increased shipper choice based on the quality as well as quantity of service offered, will further erode rail transport

Thus, the transition to a market economy will lead to drastic changes in the role of the railway and will require changes in policy, organization and labor force A total change in management culture will be needed as MPS and the regional railways as currently constituted simply will not function adequately in a market context because they will not have the proper incentives to repond to either customer or government pressure The consequences of this malfunctioning could be severe, resulting in

(i) poor transport service with its attendant economic cost,
(ii) predatory behavior on the part of the railway as it attempts to defend its shrinking market position, and
(iii) as was the case in the U S and Japan (and is currently the case in nearly all western European economies), huge and unsustainable deficits which pose a serious macroeconomic challenge for the overall economy

Financial and Operating Performance

Declines in traffic levels and increasing costs have rapidly cut into MPS' once steady profits Despite its virtual monopoly on internal surface traffic, MPS has been caught in an inflationary spiral well known to railways elsewhere costs go up rapidly, but government pressures, regulatory interventions, or market forces constrain price increases As a result, financial performance deteriorates On a consolidated FSU basis, rail freight services, which had always earned a steady profit of about 6 billion rubles (constant 1991 prices) fell to zero in 1991 and were only Rb0 73 billion in 1992 (constant 1991 prices)

Passenger earnings, which used to average about Rb1 billion, collapsed in 1990, fell to a loss of Rb2 6 billion in 1991, and are continuing to deteriorate steeply The 1993 federal budget estimated MPS' 1992 passenger losses at Rb53 billion and forecast losses of Rb451 billion for 1993 The suburban commuter rail business lose money, but are operated for social or other reasons In 1992 the federal budget was amended to provide subsidies to cover the operating losses of commuter services, but generally it is expected that profits generated by the rail freight business will be diverted to keeping the suburban services operational According to data obtained by the mission (Exhibits 20 and 21), actual passenger losses in 1992 totalled Rb82 6 billion while freight operations earned Rb97 5 billion

Exhibit 20 Transport Cost Analysis of Russian Railways 1992 Data

	Ton Km in billions	% Total Railway	Transport Costs in 000 Rbs	% Total Railway Costs	Cost in Kopeks/10 Ton Km
Freight Transport					
Electric	1 440 776	65%	235 600 449	50%	163 523
Diesel	526 305	24%	132 443 116	28%	251 647
All Types	1 967 081	89%	368 043 565	77%	187 101
Passenger Transport					
Electric	128 392	6%	52 187 578	11%	406 471
Diesel	507 904	23%	31 351 669	7%	617 840
Total IntercityPassenger	636 296	29%	83 539 247	18%	
Suburban	713 036	32%	22 326 218	5%	
Electric	709 904	32%	20 205 593	4%	284 971
Diesel	3 132	0%	2 120 625	0%	677 013
All Types	253 172	11%	105 865 465	22%	418 156
Total Railway	2 220 253	100%	474 917 665	100%	214 085

Average cost per 10 ton km = 214Rb
Average tariff per 10 ton km = 300 Rb

TOTAL FREIGHT REVENUES = Rb465 5 billion
TOTAL FREIGHT EXPENSES = Rb368 0 billion
FREIGHT OPERATING PROFIT = Rb97 5 billion

FREIGHT OPERATING RATIO = 79%

TOTAL RAILWAY REVENUES = Rb488 8 billion
TOTAL RAILWAY EXPENSES = Rb474 9 billion
PROFIT = Rb97 5 billion
OPERATING RATIO = 97%

TOTAL PASSENGER REVENUES = Rb23 3 billion
TOTAL PASSENGER EXPENSES = Rb105 9 billion
PASSENGER LOSSES = Rb82 6 billion

COST RECOVERY OF PASSENGER SERVICE

Revenues/Expenses = 22%

Structure of Operational Expenditures by Element of Expenditure MPS and Kemerovo RR

Element of Expenditure	MPS 1991 in %	MPS 1992 in %	MPS 1992 000 Rubles	Kemerovo RR 1992 in %	Kemerovo RR 1992 000 Rubles
Labor Wage Fund	33 8%	27 8%	132 164 266	30 1%	4 896 837
Electric Energy	8 1%	11 7%	55 743 172	12 8%	2 073 641
Fuel (Diesel)	3 7%	7 5%	35 714 073	1 6%	251 809
Materials	3 4%	2 7%	12 561 889	2 2%	355 891
Depreciation (amortization)	7 9%	8 1%	38 651 795	6 7%	1 087 763
Other expenditures	43 1%	42 1%	200 082 470	46 8%	7 625 346
including					
Repair Fund	18 9%	15 1%	71 763 535	19 6%	2 392 301
Social Insurance	12 7%	10 3%	48 718 818	11 0%	1 783 980
TOTAL	100%	100%	474 917 665	100%	16 291 287

Exhibit 21 Russian Railways Financial Results by Type of Traction

1992 Railway	Electric Cost of Transport Rb/10 tkm	Diesel Cost of Transport Rb/10 tkm	Overall Cost of Transport Rb/10 tkm	Rank	Revenues Pax & Freight million rubles	Expenses Pax & Freight million rubles	Profit/Loss Pax & Freight million rubles
October	1 998	2 535	2 69467	14	40100	41166	-1066
Kaliningrad		5 393	5 97669	18	2227	2043	184
Moscow	1 86	2 397	2 2158	11	45468	42824	2644
Gorkiy	1 327	2 345	1 65204	3	28371	28774	-403
Northern	1 176	2 066	1 98195	6	30813	29157	1656
North Caucuses	2 364	2 33	2 6115	13	28868	27319	1549
South East	1 605	2 008	2 00642	7	27622	23839	3783
Volga	1 918	2 043	2 44313	12	16764	16409	355
Kuibyshev	1 488	2 479	1 87632	5	31575	29191	2384
Sverdlovsk	1 607	2 889	2 11685	9	35296	35477	-181
Southern Urals	1 292	1 954	1 54301	2	32334	32803	-469
West Siberia	1 258	1 686	1 53197	1	29312	29699	-387
Kemerovo	2 25	5 583	2 74856	15	17352	16201	1151
Krasnoyarsk	1 516	2 935	1 85692	14	17673	17509	164
East Siberia	1 801	5 887	2 13933	10	24350	23887	463
Trans-Baikal	1 758	2 255	2 07103	8	29630	29459	171
Far East	3 186	3 426	3 58421	16	28312	28468	-156
Sakhalin		16 757	17 56078	19	3894	3608	286
BAM	4 823	4 283	4 90855	17	16751	16042	709
					486712	473875	12837
Network Average	1 635	2 516					

of which, freight revenues
464192
of this, additional revenues
generated by negotiated tariffs
8036

Source Novosibirsk Railway Engineering Institute and TsNIITEI MPS

Exhibit 22 FSU/Russian Rail Revenues, constant 1988 Rubles

Year	GDP Deflator	Freight Revenues	Revenue per tkm	Passenger Revenues	Revenue per passenger km
1990 (FSU)	1 087	20 198	5 43	3 574	8 57
1991 (FSU)	2 069	33 703	10 01	5 157	13 46
1992	36 305	12 822	6 52	641	2 53

The operating ratio for freight operations was 0 79% while the ratio of revenues to expenses (cost recovery) for passenger services was only 22% The operating ratio for the railway as a whole was 97%, slightly better than the 99% ratio in 1991 but well off the 32% ratio earned in 1988 Overall, therefore, the railway made a profit of Rb12 8 billion, or about US$47 million, hardly sufficient to finance capital investments or even the cost of borrowing capital at levels needed by the railway system or to improve track maintenance The decline in income after adjusting for inflation makes the situation worse, as shown in Exhibit 22

But while MPS' financial results from railway operations are deteriorating, profits are still being earned from other MPS enterprises Total profits from the railways and other MPS enterprises were RB60 0 billion, as railway profits were Rb12 8 billion, profits from other enterprises apparently amounted to Rb47 9 billion Adjusted for inflation of 17 55 times, the profit of other enterprises was equivalent to Rb2 7 billion in 1991 rubles, compared to freight earnings in 1991 of about Rb1 0 billion This means earnings from ancillary activities in 1991 were 2 7 times railway earnings, while in 1992 they were 4 4 times railway earnings An indication of problems to come can be seen in the railway's assessment of asset utilization in 1992 as compared to 1991 Although re-evaluation of the railway's fixed assets may be largely responsible for much of the decline, comparison with the GDP deflator from 1991-1992 of 17 55 times seems to indicate a real decline in asset productivity In terms of tkm, 1992's level of 2tkm per 1 ruble of fixed assets for freight traffic represented a decrease of 17 times over 1991, slightly less than the GDP deflator

The financial problems are already leading to the well-known railway practice of deferring track and equipment maintenance, calling into question the validity of the financial performance of even the last few years, and creating a deepening problem for the future In 1992, despite a 15 4% decline in traffic, delayed freight deliveries have increased, and non-productive expenses of railways were 13 2 times more than in 1991 Losses from spoiled or missing cargo were 10 times greater than in 1991 After years of stability and a comfortable existence, MPS has reasons for concern as it looks at the future

Cost of Labor and Declining Productivity Aside from loss of traffic, the outstanding cause of the fall in performance throughout the system was the rapid increase in expenses compared with the lack of increases in rates The 1992 operational costs of railways were Rb473 9 billion, Rb447 5 billion higher than the 1991 level According to MPS analysis, the main reason for this sharp increase was the growth of material prices and labor salaries As shown in Exhibit 21, however, it would appear that the largest source of increase in the rising cost of fuel and electric energy The percentage of railway costs related to electric energy increased from 8 1% in 1991 to 11 8% in 1992

Notwithstanding the increase in prices for fuel, rolling stock, spare parts, rails, and sleepers, the cost of labor is proving to be an additional burden On the basis of the 1992 Tariff Agreement between the Russian government, MPS, and the Central Committee of the rail sector's trade union, transport workers' incomes came under a quarterly indexing scheme beginning April 1992 The fiscal impact of this agreement will be felt in 1993, when wages are expected to be two and one half times those paid in December 1992 This development compounds the effect of significant levels of redundant labor on the MPS payroll (besides non-transport employees), perhaps as much as 30-50 percent Equitable schemes must be developed and implemented if unnecessary employees are to be shifted to more productive activities Wage indexing makes the task of improving the railways' financial position that much more difficult and restricts management's options

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According to MPS data, network-wide labor productivity of traffic-related personnel was 1,994 9 thousand tkm in 1992, this represents a 13 1% decline compared to a decline in volume of 12 8% However, productivity in 1991 was already well below 1989 levels since employment levels have not been reduced despite declines in traffic of 25% from 1988 to 1991 MPS had envisoned the cutting of 50,000 personnel during 1992 as part of a program of cost reduction but in fact the operational staff grew by some 4,600 employees (a 0 4% increase) Labor productivity declined from 22 96 million tkm per employee in 1991 to 19 95 million tkm per employee in 1992, a decline of 13%

Overstaffing and Improved Productivity The railway system employs some of 2 22 million people, 1 64 million in transport, the remainder in ancillary activities such as clinics, schools, manufacturing and so forth World Bank analysis shows railway labor productivity to be less than half that of U S railways, the most comparable in size and traffic levels to the Russian system While it would probably be uneconomical for Russia to attain equivalent productivity, it should be possible for MPS to operate its freight service with at least 20 percent (roughly 200,000) fewer employees Since transport employment levels fell by more than 10 percent from 1990 to 1992, this may not prove so difficult

These problems are compounded by the attitude of the work force operating discipline for train movements has deteriorated, with four times the number of violations in 1992 as opposed to 1991 Absenteeism increased in 1992 by 12 percent over 1991, and in some divisions of the railway reached 30 percent Intoxication on the job has also apparently been a significant problem, but little administrative action has been taken to curtail its incidence

MPS' Investment Plans The financial difficulties of the railways are becoming so serious that increased assistance is being requested from the government The budget includes support to operations as well as outlays for investments MPS FY93 budget request included outlays to fulfill the terms of the wage Tariff Agreement as well as an allocation of Rb204 4 billion to cover losses incurred on passenger transport A request was also made to have the Rb140 4 billion debt amassed by MPS for the purchase of rolling stock imports may be forgiven and absorbed by the budget An additional Rb100 billion was requested to be made available at preferential rates to replenish current assets of enterprises in the industry There has been a substantial decline in the production and delivery of railway equipment MPS requested capital investment budget totalling US$490 million for the purchase of 30 reefer cars, some diesel locomotives, 600 passenger cars, and other equipment from Germany, US$79 million for the purchase of electric locomotives from the Czech republic, and US$200 million for the purchase of a computerized passenger reservations and ticketing system Many of these funds will be made available through centralized bank credits An additional US$400 million purchase of French-designed two storey passenger cars is planned to be financed by allocation of raw materials and materials for export It is expected these will generate US$250 million more foreign exchange for the production of two-story passenger cars for suburban commuter services

According to MOF, however, the approved federal investment budget for 1993 includes only Rb109 billion investment support to MPS Of this, Rb59 billion was allocated to rolling stock and Rb50 billion for construction In addition to budgeted support for equipment and rolling stock purchases, the MPS investment plan includes major capital construction projects aimed at network capacity expansion and further electrification of existing lines Completion of the AYaM spur linking Yakutia to BAM is being contemplated Construction of an extremely costly high-speed rail link between St Petersburg and Moscow is underway

While the total construction cost of BAM will probably never be fully known, it was huge, one estimate is US$30 billion Operation of BAM is so uneconomical that it has caused MPS' entire rate and tariff structure to be distorted About 8 percent of each railway's revenues is said to support BAM This means that all freight customers, including coal, are carrying theburden of this uneconomic investment As financial resources worsen, regional railways will increasingly resist the requirement to cross-subsidize MPS' losing operations In the future, BAM should be set up as an

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independent carrier, receiving support from whichever level of government (defense or otherwise) believes BAM's services justify their cost

Cost of Freight Transport

Exhibits 23, 24, and 25 show the details of MPS's operating costs Fuel and electricity costs are beginning to increase at rates faster than inflation and the result is pressuring the railways to raise tariffs An analysis of MPS expenditures for 1991 and 1992 indicates that fuel and electricity costs have been increasing at a more rapid increases than labor and other input prices In fact as a percentage of total costs for the railways, electric energy has increased from 8 1% in 1991 to 1 1 8 %, diesel fuel from 3 7% to 7 5% while labor actually decreased as a percent of costs from 33 8% to 27 8% The increasing costs are being passed on by the railways to its customers in the form of higher rates

Exhibit 23 *Structure of operational costs, by subsector (%)*

SUBSECTOR	1991	1992
Locomotives	32 0	36 4
Tracks	25 2	21 0
Wagons	14 1	12 4
Traffic operations	6 6	6 7
Passenger traffic	3 9	5 4
Signals communications and computers	4 8	4 0
Freight and commercial	2 9	2 4
Electrification and electric power supply	2 6	2 1
TOTAL COST	100 0	100 0

Exhibit 24 *Structure of operational costs, by component (%)*

COMPONENTS OF COST	1991	1992
Labor	33 8	27 8
Electric energy	8 1	11 8
Fuel	3 7	7 5
Materials	3 4	2 6
Depreciation	7 9	7 3
Other expenses of which	43 1	43 0
- repair fund	18 9	15 0
- social insurance	12 7	10 6
TOTAL COST	100 0	100 0

The rising costs of wages are also sources of financial pressure, although the railways seem reluctant to tackle problems of overstaffing Instead, officials seems convinced that traffic levels will rebound and that there is little need to downsize Despite a decline of 13% in network-wide labor productivity and a planned cost cutting program to reduce personnel by 50,000 in 1992, in fact personnel have been added This is unfortunate as studies show that railway productivity was about 2 5 times less than that of the United States even before the decline in traffic The financial burden of overstaffing has been made worse by the fact that rail wages are now indexed to the consumer price index which in turn has led to an agreement to increase rail rates on a monthly basis

According to MPS analysis, the cost of coal transport is about 13%-14% less than network-wide average operational costs since most coal moves in unit trains, the bulk of coal moves along electrified route with an average cost of 163 5 Kopeks per 10 tariff ton-kilometers, 16% lower than the network-wide operational cost of 187 1 kopeks, and since coal loading and unloading operations are predominantly done on the industrial lines Accordingly, the railway cost of transporting coal in

Exhibit 25 *Traffic costs, by type of traction (Kopecks)*

Type of traction	Type of traffic	
	Freight (per 10 ton km)	Passenger (per 10 pass -km)
Electric locomotives	163 523	406 471
Diesel locomotives	251 647	617 840
Electric trains		284 971
Diesel trains	-	677 083
ALL TYPES	187 101	418 156

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1992 was 16 kopecks per tkm Since the average tariff paid by coal customers in 1992 was 16 9 kopeks per tkm, it would appear that the railways made a "profits" of only 5% on coal transport in 1992

As this analysis is based on average transport costs, it does not really help in assessing the degree to which the rates or costs reflect the costs of hauling coal in the long term At best the analysis demonstrates that the railway's profit margin is rather slim, on the other hand, it did not need much profit in the past as many capital investments were funded from the budget To address these questions, as described in more detail in Part II

Freight Tariffs

Freight tariffs are set on the basis of the network-wide cost of traffic The current tariffs are calculated by the same formulas for the entire MPS network, as well as for virtually all other national railways over the territory of the former USSR There is no variation by type of commodity except to the extent that different types of commodities use different wagon types and weigh different amounts Transportation of coal in the MPS general-purpose wagons is priced by Tariff Scheme N°1, and in the freight-owner's or rented wagons - by Tariff Scheme N°2 The rates vary by distance Russian railways do not use separate tariffs for transporting cargo in unit trains Current tariffs are based on the average cost of transportation by wagons, wagon groups and unit trains Loading and unloading operations provided by freight-owners are not charged by the railway and their costs are not included in the tariff

The unit of transportation "product" (10 net ton-kilometers) is the basis for calculating tariffs Usually, unit transportation cost decreases with longer hauls To this end, since 1974 the tariff is composed of two components (origin/destination operations and traffic operations) so that the total tariff is lower for longer hauls Proper freight traffic costs (without ancillary operational costs) are subdivided through calculations into traffic and O/D components The O/D component consists of all costs of traffic-related wagon and cargo hanling operations are origin and destination stations These O/D operations can include O/D operatons can include acceptance and transmittal of carog, assembling and disassembling trains, acceptance and dispatch of loaded trains, examination and routine repair of MPS wagons and containers before loading, capital repair and depreciation costs of MPS wagons and containers for their time spent under O/D operations All other costs are related with the traffic component

In order to determine tariffs and fees, the total cost is divided into proper freight traffic costs (that are recovered through the collection of carrier fees according to Part 2 of Tariff Instruction No 1 and ancillary operational costs (that are recovered through the collection of fees for cargo storage, weighting, shunting of wagons by a railway locomotive on an industrial line, rolling wagons on/off the ferry, provision of cargo slings and tighteners, advance notive of the client about arriving cargo) Bargaining on tariffs that are set by the State Committee for Price Policy is not allowed

Currently railways may negotiate with freight-owners about fees and duties for all ancillary operations and services, except for the freight carrier tariffs, cargo protection fees and mandatory railway loading/unloading operations that are controlled by the Russian Committee for Price Policy and revised as a rule together with tariffs

Among services charged by negotiated tariffs (fees, duties) are transportation of freight in "closed loop" (round-trip) unit trains with fixed arrival/departure times, transportation with speeded-up delivery, organization of cargo handling at stations not equipped for freight operations, transportation of express cargoes and other freight not included in the monthly plan, freight forwarding, and freight transportation in owned/rented wagons with express return of wagons to the loading/unloading station, etc More recently, negotiated fees are being introduced for premium services, such as providing

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wagons or containers on demand, feeding wagons (containers) for loading/unloading at the time specified by freight-owner, i e by day of the week, time of day or night, etc

Tariff variations include

- Tariffs for transporting cargo in owned or rented wagons and containers are lower than for MPS wagons, since they do not include their maintenance, repair and depreciation costs Transporting coal in the owned box-car would on average be 13% cheaper, and for short hauls (under 200 km) - up to 20% cheaper At the same time, empty back hauls of the owned wagons are charged by a separate fee, since these wagons (unlike the MPS working fleet of box-cars) are not subject to centralized dispatching Empty hauls of owned wagons are normally equal to loaded hauls and are approximately 2 5-3 times higher than those of the MPS wagon fleet For this reason, for haul distances over 200 km the total round-trip (loaded + empty) tariffs for owned wagons become higher than for MPS wagons - by 20% for average haul distances and by 27% for a 6,000-km haul At the same time, transportation in owned wagons can be much more attractive than in MPS wagons, if arrangements are made to load them in the back haul direction

- Feeding wagons along the industrial line by an MPS locomotive is charged at the rates that are considerably lower than fees for the similar work on the MPS-owned line (28 5% cheaper - according to Tariff Instruction N°1, Part 1, Section 36, Tables 8 and 9) The reason is that the fees for industrial lines do not include their maintenance, repair and depreciation costs

Adjustment of Tariffs for Inflation The base tariff books were established in 1989 SInce then , there has been significant inflation and Government has approved the application of infaltion-adjustment coefficients for rail freight transport The effective dates and level of coefficient to freight tariffs is shown in Exhibit 26

Exhibit **26** ***Inflation-adjustment coefficients for rail freight transport tariffs***

Destination	Coefficient Effective Date				
	10/8/92	1/1/93	4/21/93 4/10/93	8/1/93 8/5/93	9/1/93
Russia	81 1	162 2	356 8	785	1,005
CIS	132 6	265 2	583 4	1,283	1,642

For CIS destinations

The coefficents above were implemented to enable the railway to recover through revenues, the rapid increases in costs experienced by the railway Given MPS' enormous passenger losses, however, it is possible that MPS is trying to recover more cost increases than justified through freight rate increase To assess this possibility, the mission compared freight rates to World Bank figures for GDP deflators

GDP Deflator	Year to Year
1984 = 1 0	
1988 = 1 003	
1989 = 1 029	
1990 = 1 087	1989 - 1990 = 1 0564
1991 = 2 069	1990 - 1991 = 2 069
1992 = 36 305	1991 - 1992= 17 5471

For the period 1989 - 1992, the GDP inflator for 1992 over 1989 was 35 28 times By comparison, during this same period, rail rates increased 81 1 times

Since the increase of 81 1 times, which was in effect at the end of December1992, rail rates have been increased an additional 12 39 times, or 1239% The mission has no comparable GDP deflator so instead, comparison was made to the consumer price index According to World Bank figures, the consumer price index for 1993, is as follows

1992 = 100
1st Quarter 1993 = 357
2nd Quarter 1993 = 635
3rd Quarter 1993 = 1155
4th Quarter 1993 = 1705

Average for 1993 = 963

Given these rates, it would seem that rail rates are increasing faster than inflation in 1993 as well.

Starting from August 1993, Government has decided to replace direct revisions of freight tariffs with a system of automatic inflation From hereon, rail rates will be increased on the first date of each month by a system of indexation that ties the increase to the official index of wholesale and consumer prices for the part period, reduced by a special formula **If so, this would mean that increases in future will not exceed official inflation rates and will gradually fall behind the growth of prices in this country**

Organization, Institutional and Managerial Issues

MPS is an *independent* ministry, reporting directly to the Council of Ministers MPS has its own budget and policies and is responsible for coordinating all railway operations as well as for determining rail policy, the legal framework governing railway operations, and the planning and allocation of investments including construction of new railways MPS itself is a coordinating body with a staff of about 2,300 About 2 24 million railway employees, of whom aboutt 1 6 million are actually engaged in railway operations, work for the regional railways, which typically enjoy great independence from the center

As a coordinating agency, MPS (a) defines general system policies and technical standards, (b) sets tariffs, (c) collects and apportions revenues among the regional railways, (d) schedules trains system-wide (up to one year in advance!) (e) coordinates investment planning among the regional railways (f) allocates centrally controlled investment funds, and (g) generally serves as the interface between central government and the railway system MPS is also the single buyer of rolling stock, track machinery, and other equipment for the individual railways, on a contractual basis with the railways financing their own purchases

At the time of its creation there was considerable discussion of having MPS become an operating entity reporting to the Ministry of Transport (MOT) On the grounds that the railway system was too important to the country to be made subservient to another ministry, or put on a level with other transport modes, MPS argued that its ministry status should be continued Although MPS' view ultimately prevailed and it does not report to or through MOT, the responsibility of coordinating rail policies within the overall government transport policy context rests with MOT MOT's ability to carry out this coordination is severely limited because MPS has no incentive to share information openly about its operations or problems

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Organization for a Market Economy MPS' organization was geared to carry out a centralized plan in a disciplined, quasi-military manner The general quality of SZD's technical management was entirely adequate to this task On a technical basis, MPS has earned the respect of railways worldwide, but current organizational structure is not suited to providing the flexible, efficient, and reliable service required in a market economy Because traffic was assigned to it, MPS needed no marketing organization and only limited concern with customer service to maximize its business This will not suffice in a market economy

Each MPS enterprise has control over its local resources and is designated a profit center with its own revenue and income statement Each regional railway (a) owns and controls its own locomotives and (to a lesser extent) passenger coaches, (b) controls a major portion of its capital planning and spending, and (c) controls loading of wagons while on its property While MPS is charged with assigning traffic and developing system-wide schedules, each railway controls its own operation and is less subject to control from the center than is the case in most other railway networks

The system actually operates as a fragmented set of individual, geographic fiefdoms, each focusing on its own interests and none fully aware or concerned about the interests of the system It is also fair to ask whether MPS actually represents the interests of the national transport network, the regional railways, or its own interests as a control bureaucracy Despite the best efforts of central planners and organizers, the MPS system actually does a rather questionable job of delivering reliable and effective service to the customer MPS has only limited ability to control train operations within a given railway, to track wagons, containers, or unit trains throughout the system, or to offer effective and reliable service to higher paying customers The fact that the entire system was centralized into a single monopoly has also made MPS difficult to control politically

The designation of each regional railway in MPS as a profit center is a form of decentralized railway organization that has vanished from the world's market-based railways Besides an unusual degree of operating autonomy, this system of regional profit centers has fostered a system of behavioral incentives that cause regional railways to act against the interests of the railway system as a whole Examples of these questionable incentives include

- *Locomotive Utilization* Since locomotives are owned by regional depots, no locomotive can travel farther than its depot boundary The practice of changing locomotives reduces locomotive utilization, adds unnecessary switching costs, and extends travel times

- *Traffic Handling* Revenues are divided among regional railways on the basis of an MPS formula tied to relative work performed By manipulating this formula, each railway can maximize its profitability at the expense of the system as a whole Regional railways try to influence the calculation of work on which the revenue is divided The solicitation and handling of individual types of traffic is also distorted, because the revenues received are not necessarily related to the costs incurred from handling such traffic

- *Parochial Focus* Regional railways inevitably focus on their own traffic, and have limited incentive to provide adequate service to traffic which originates or terminates off line Because they cannot control the service provided by others, they may not profit at all from their efforts

- *Capital Expenditures* Each regional railway shapes capital planning according to its own interest, and not that of the system or shippers originating or terminating out of the region Although MPS tries hard to coordinate investment plans, the system leads to poor asset utilization and higher-than-necessary capital expenditures Moreover, as financial problems worsen, keeping each railway responsible for its own capital expenditures could lead to the same reluctance to operate a pooled wagon fleet as now being experienced among the republics

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Effect of the Break-Up of the USSR Because of its highly integrated operations, few institutions were more heavily affected by the break-up of the USSR and the subsequent troubled relations among CIS states than was Russia's railway system The breakup has had a number of adverse effects on rail operations, as well as on managerial areas such as rate setting, revenue divisions, and wagon management Given so many uncertainties over the future of the CIS and the form of railway management structures, there are no immediate prospects for resolution

- *Traffic Levels and Patterns Disrupted* Existing traffic patterns, based on traditional sources of supply and consumption, have been greatly disrupted Much traffic that used to flow as a result of the larger planned economy no longer flows, and traffic will never return to the patterns of the past

- *New Borders Delaying Transit Times* Although trains are still scheduled centrally, border formalities have increased and trains continue to be stopped to change crews and locomotives These disruptions to schedule are costly, both to the railways involved and to the service needs of the shipper

- *Inter-Railway Interchanges* An enormous amount of what once was single-line traffic must now transit two or more systems, each with its inevitable delay and processing time Although only about 17 percent of Russia's traffic originates or terminates outside Russia, over 40 percent of Kazakhstan's originated traffic, and about half of Belarus' originated traffic, terminates elsewhere About 60 percent of the traffic terminating in the Baltics, and 75 percent of the traffic terminating in Moldova actually originates in another state The weakest points of all railway networks are always at the borders, and the CIS has created a large number of interchange points where none previously existed

- *Freight Wagon Management* The division of rolling stock among republics has put an end to centralized wagon control and maintenance as well as to the former free flow of wagons throughout the system This breakdown will have a major effect on asset utilization and maintenance costs The difficulties of coming to grips with this issue were demonstrated at the February 1993 meeting of the CIS Railway Transport Council in Almaty, where reportedly the most heated debate centered on charges for using freight cars and a system for settling those charges between railway administrations The railways at the council meeting could not even reach agreement on the system for distributing expenses for development of such a system

Even without these problems, Russia's wagon control system is a barrier to efficient operations Compared with North American and European practice where wagons and locomotives can be located and dispatched continuously and in real time, Russian wagon and locomotive management is well behind Creating an up-to-date management system requires new computers and software which, while complex to specify for use in the Russian environment, would not be particularly difficult to implement Such a system, however, is also likely to require several generations of advanced communications facilities and a different approach to wagon ownership and maintenance than now exists

- *Disruption in Equipment Supplies* Sources of equipment and spares critical for MPS, which used to be available within the ruble zone, are now only available for hard currencies Freight diesel locomotives came primarily from Ukraine, passenger coaches from the former GDR, electric suburban passenger coaches from Latvia, and electric passenger locomotives from the former Czechoslovakia Although declines in traffic currently enable railways to cannibalize surplus equipment in the near term to cover shortages, the disruptions are highly threatening for the longer term Out of necessity the situation is prompting development of local sources of supply within each republic

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Other Problems

Physical Infrastructure There is considerable evidence that the physical state of the MPS infrastructure is deteriorating as financial and operating problems increase In a study done for EBRD, consultants rated the need to address deferred track maintenance as the most serious problem facing MPS World Bank missions have noted the deterioration in track quality The number of kilometers of track subject to slow orders where the normal speed has been reduced because of poor track conditions has increased since 1986, reflecting inadequate replacement of rails and sleepers and inadequate cleaning of ballast Decreasing funds and the fall in purchasing power are causing serious deferral of maintenance and investment The rate of locomotive replacement fell between 1989 to 1990, and all evidence points to further declines in 1991 and early 1992 The average age of diesel locomotives has been increasing a clear sign of an impending problem

Environmental Problems Serious environmental concerns within the Russian railway system are evident, including asbestos in ballast and fuel spillages On roughly 5,000 km of line, ballast contains between 0 5 and 1 percent asbestos Studies indicate that this does not, in most cases, pose a serious health hazard, but the issue warrants independent examination and assessment

Because fuel has always been cheap, a problem that will presumably be corrected through price reforms, careless spillage and overfilling has been rampant at locomotive fuelling facilities These facilities now have serious groundwater pollution problems A similar problem may also exist at locomotive maintenance facilities through dumping and spillage of lubricating and insulating oils Another environmental problem is that Russian passenger trains do not have retention toilets Although this practice is acceptable in rural areas where train density is not high, it is an increasing problem in more populated areas, and where passenger train density is high

Obsolescent Technology Russian railway equipment is justifiably known for being robust it works, under some of the most severe conditions in the world, although much of it is relatively inefficient to operate and expensive to maintain Given the trying circumstances MPS will face in the coming years, improvements in railroad technology could make a significant contribution to reducing costs, providing better services, and dealing effectively with growing truck competition Moreover, much Russian railway equipment is obsolete

- Russian diesel locomotives use about 30 percent more fuel than their counterparts in the United States, even though the typical locomotive service cycle in Russia should permit maximum fuel efficiency If locomotives were brought up to world class levels, Russia could save up to 1 billion gallons in diesel fuel, or US$1 billion equivalent in annual savings, at US$1 per gallon

- The MPS telecommunication system is inadequate even for normal voice communication Data transmission for a Russia or CIS-wide wagon location and control system like that used in the United States and Europe does not exist

- MPS' management information system (MIS) is not adequate for a railway operation in a market economy, even if the set of data appropriate to such purposes is available and collected The MIS currently employed by MPS is designed for public accountability and, most important in the FSU, for reporting progress against an annually approved centralized plan Computer equipment available to MPS is several generations out of date by western standards, and lacks the capacity and speed necessary to handle important problems such as real-time wagon tracking or system-wide passenger reservations Most important for the immediate future, existing MIS capabilities do not enable the railways to determine revenue and costs by line of business, consequently inhibiting assessment of real profitability for types of traffic or the value of cost-cutting operating proposals MPS is in no position to undertake the strategic planning necessary to manage its transition to the structure of rail system needed in a market-based economy

- Equipment available for track maintenance, especially cleaning track ballast, uses excessive track time, does not perform to modern standards, and is not sufficiently mobile

In sum, although quite well managed in an operational sense, MPS is not well organized to respond to customers demands or market-delivery competition Moreover, MPS has been weakened by changes in the level and structure of economic activity in Russia and the CIS If the natural resistance to change can be confronted and overcome, technical and managerial improvement is possible

COAL TRANSPORT ANNEX

STATISTICAL APPENDIX

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Key to Sample Daily Report of Volumes of Coal Loaded by RosUgol on September 21, 1993 (with Cumulative Monthly Total)

Columns

A Day Total

1 - Scheduled
  1a Tons
  1b - Wagons
2 - Actually Loaded
  2a - Tons
  2b Loaded Minus Scheduled Tons
3 - Underloaded through Railway s Fault
4 - Underloaded through Shipper s Fault

B - Cumulative Monthly Total

5 - Loaded
  5a - Tons
  5b - Loaded Minus Scheduled Tons
6 Underloaded through Railway s Fault
7 - Underloaded through Shipper s Fault

Rows

1 *ROSUGOL*

2 RostovUgol to North Caucasus Railway (RW)
3 GukovUgol total
4 GukovUgol to North Caucasus RW
5 GukovUgol to Donetsk RW
6 Obukhovskaya
7 Total to North Caucasus RW
8 TulaUgol total
9 TulaUgol to Moscow RW
10 TulaUgol to October RW
11 Novosibanthracite to West Siberia RW
12 SeverokuzbassUgol to Kemerovo RW
13 LeninskUgol
14 BelovoUgol
15 KiselevskUgol
16 ProkopyevskUgol
17 KuzbassrazrezUgol
18 Kuzbassugleobogashchenye
19 KuznetskUgol
20 Raspadskaya Mine
21 Sibkon
22 Yuzhnyi Kuzbass
23 Mezhdurechye
24 Russia Coal
25 Total to Kemerovo RW
26 VorkutaUgol
27 Vorgashorskaya Mine
28 IntaUgol
29 Total to Northern RW
30 KizelUgol
31 Shumikhinskaya Mine
32 VakhrushevUgol
33 Total to Sverdlovsk RW
34 ChelyabinskUgol Total
35 ChelyabinskUgol to South Urals RW
36 ChelyabinskUgol to Tselinnaya RW
37 BashkirUgol to Kuybyshev RW
38 KrasnoyarskUgol Total
39 of which Nazarovsky Mine
40 Berezovsky Mine
41 Borodinsky Mine
42 - KhakasUgol
43 Total to Krasnoyarsk RW
44 VostsibUgol Total
45 of which CheremkhovoUgol
46 Azeysky Mine
47 Gusinoozerskoye Mine
48 Tunguysky Mine
49 VostsibUgol to East Siberia RW
50 ZabaikalUgol to Trans-Baikal RW
51 - Dal vostUgol Total
52 - Dal vostUgol to Trans-Baikal RW
53 Dal vostUgol to Far East RW
54 Total to Trans-Baikal RW
55 PrimorskUgol Total
56 PrimorskUgol to Far East RW
57 PrimorskUgol to Baikal-Amur RW
58 - Total to Far East RW
59 - YakutUgol to Baikal Amur RW
60 - Total to Baikal Amur RW
61 Kuznetsk Basin Total
62 Donetsk Basin Total
63 Pechora Basin Total
64 Kansk Achinsk Basin Total
65 - LeningradSlanets

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4-ОП	ЗА СУТКИ (А)						С НАЧАЛА МЕСЯЦА (В)			
	ПО ГРАФИКУ (1)		ПОГРУЖЕНО (2)		НЕДОГРУЖЕНО К ГРАФИКУ ПО ВИНЕ ЖЕЛЕЗНОЙ ДОРОГИ (3)	НЕДОГРУЖЕНО К ГРАФИКУ ПО ВИНЕ ОТПРАВИТЕЛЯ (4)	ПОГРУЖЕНО (5)		НЕДОГРУЖЕНО К ГРАФИКУ ПО ВИНЕ ЖЕЛЕЗНОЙ ДОРОГИ (6)	НЕДОГРУЖЕНО К ГРАФИКУ ПО ВИНЕ ОТПРАВИТЕЛЯ (7)
	ТОНН (1а)	ВАГОНОВ (1b)	ТОНН (2а)	+/- К ГРАФИКУ (ТОНН) (2b)			ТОНН (5а)	+/- К ГРАФИКУ (ТОНН) (5b)		
Р О С У Г О Л Ь	734696	11154	771999	37303	244	409	3800293	126813	1004	2420
РОСТОВУГ С-КАВКАЗ ЖД	39680	601	31603	-8077	0	141	157488	-40912	61	633
ГУКОВУГОЛЬ	15805	235	9857	-5948	89	0	56729	-22296	288	45
СЕВЕРО-КАВКАЗ.Ж.Д.	13805	205	9124	-4681	70	0	47926	-21099	269	45
ДОНЕЦКАЯ Ж Д	2000	30	733	-1267	19	0	8803	-1197	19	0
ОБУХОВСКАЯ	5160	77	3155	-2005	26	0	18969	-6831	74	26
СЕВЕРО-КАВКАЗ.Ж.Д.	58645	883	43882	-14763	96	141	224383	-68842	404	704
ТУЛАУГОЛЬ	17002	255	18712	1710	1	2	96156	11146	26	33
МОСКОВСКАЯ Ж Д.	16667	250	18309	1642	1	2	94073	10738	26	33
ОКТЯБРЬСКАЯ Ж.Д.	335	5	403	68	0	0	2083	408	0	0
СИБАНТРАЦИТ -З-СИБ.	974	14	2100	1126	0	0	5700	830	0	28
СЕВЕРОКУЗБАССУГОЛЬ	11987	181	13029	1042	0	0	63466	3531	0	8
ЛЕНИНСКУГОЛЬ	23729	356	28875	5146	0	0	133038	14393	0	83
БЕЛОВОУГОЛЬ	5293	79	8441	3148	0	0	36364	9899	0	0
КИСЕЛЕВСКУГОЛЬ	11420	171	6079	-5341	0	0	51044	-6056	0	2
ПРОКОПЬЕВСКУГОЛЬ	15540	233	15719	179	0	5	84143	6443	0	74
КУЗБАССРАЗРЕЗУГОЛЬ	68218	1028	81971	13753	0	0	391577	50487	54	0
КУЗБАССУГЛЕОБОГАЩ.	32939	496	37831	4892	0	12	187805	23110	0	58
КУЗНЕЦКУГОЛЬ	31146	471	32968	1822	63	0	185648	29918	125	31
Ш РАСПАДСКАЯ	14170	212	13746	-424	0	0	62372	-8478	0	0
СИБКОК	13807	212	19187	5380	0	0	73525	4490	0	0
ЮЖНЫЙ КУЗБАСС	23116	361	25700	2584	0	0	141508	25928	0	0
МЕЖДУРЕЧЬЕ	6452	97	13030	6578	0	0	42842	10582	0	0
РАША КОУЛ	7100	109	7087	-13	0	0	36551	1051	0	0
КЕМЕРОВСКАЯ-ВСЕГО	264917	4006	303663	38746	63	17	1489883	165298	179	256
ВОРКУТАУГОЛЬ	28025	419	28725	700	0	0	139888	-237	0	64
Ш.ВОРГАШОРСКАЯ	12870	194	16250	3380	0	0	64099	-251	0	74
ИНТАУГОЛЬ	28675	434	29218	543	0	0	151705	8330	19	0
СЕВЕРНАЯ Ж.Д.	69570	1047	74193	4623	0	0	355692	7842	19	138
КИЗЕЛУГОЛЬ	3806	59	4257	451	0	0	21003	1973	0	0
Ш. ШУМИХИНСКАЯ	580	9	69	-511	0	0	276	-2624	0	0
ВАХРУШЕВУГОЛЬ	9033	140	8958	-75	0	0	53828	8663	0	0
СВЕРДЛОВ.Ж.Д.-ВСЕГО	13419	208	13284	-135	0	0	75107	8012	0	0

4-ОП

	ЗА СУТКИ						С НАЧАЛА МЕСЯЦА			
	ПО ГРАФИКУ		ПОГРУЖЕНО		НЕДОГРУЖЕНО К ГРАФИКУ ПО ВИНЕ ЖЕЛЕЗНОЙ ДОРОГИ	НЕДОГРУЖЕНО К ГРАФИКУ ПО ВИНЕ ОТПРАВИТЕЛЯ	ПОГРУЖЕНО		НЕДОГРУЖЕНО К ГРАФИКУ ПО ВИНЕ ЖЕЛЕЗНОЙ ДОРОГИ	НЕДОГРУЖЕНО К ГРАФИКУ ПО ВИНЕ ОТПРАВИТЕЛЯ
	ТОНН	ВАГОНОВ	ТОНН	+/- К ГРАФИКУ (ТОНН)			ТОНН	+/- К ГРАФИКУ (ТОНН)		
ЧЕЛЯБИНСКУГОЛЬ	21940	329	25408	3468	0	11	128345	18645	0	31
ЮЖНО-УРАЛЬСКАЯ Ж.Д.	20325	304	24466	4141	0	0	120784	19159	0	0
ЦЕЛИННАЯ Ж Д.	1615	25	942	-673	0	11	7561	-514	0	31
БАШКИРУГ.ПО-КУЙБЫШ.	14161	231	9882	-4279	0	71	63593	-7212	0	144
КРАСНОЯРСКУГОЛЬ	28188	432	30098	1910	0	0	150633	9693	0	0
НАЗАРОВСКИЙ РАЗРЕЗ	14940	225	15596	656	0	0	78762	4062	0	0
БЕРЕЗОВСКИЙ РАЗРЕЗ	13248	207	14502	1254	0	0	71871	5631	0	0
БОРОДИНСКИЙ РАЗРЕЗ	78760	1178	83500	4740	0	0	413595	19795	0	0
ХАКАСУГОЛЬ	14463	223	9143	-5320	17	0	55201	-17114	96	0
КРАСНОЯРС Ж Д -ВСЕГО	121411	1833	122741	1330	17	0	619429	12374	96	0
ВОСТСИБУГОЛЬ	90057	1385	100295	10238	48	38	429935	-20350	154	709
ЧЕРЕМХОВОУГОЛЬ	19070	290	23891	4821	0	0	91648	-3702	0	124
АЗЕЙСКИЙ РАЗРЕЗ	33087	499	32847	-240	0	38	138275	-27160	6	585
ГУСИНООЗЕРСКОЕ Ш/У	4625	69	2444	-2181	33	0	21119	-2006	55	0
ТУГНУЙСКИЙ РАЗРЕЗ	6160	92	5438	-722	15	0	25166	-5634	93	0
ВОСТОЧНО-СИБ.Ж.Д	62942	950	64620	1678	48	38	276208	-38502	154	709
ЗАБАЙКАЛУГ ЗАБ Ж.Д.	27115	435	35675	8560	0	0	153727	18152	0	0
ДАЛЬВОСТУГОЛЬ	17420	267	14983	-2437	0	76	81550	-5550	0	176
ЗАБАЙКАЛЬСКАЯ Ж Д.	16000	246	14772	-1228	0	58	77016	-2984	0	137
ДАЛЬНЕВОСТ Ж Д	1420	21	211	-1209	0	18	4534	-2566	0	39
ЗАБАЙКАЛЬСКАЯ-ВСЕГО	43115	681	50447	7332	0	58	230743	15168	0	137
ПРИМОРСКУГОЛЬ	18255	283	15038	-3217	0	53	90549	-726	9	96
ДАЛЬНЕВОСТ Ж Д.	15760	246	12264	-3496	0	53	76996	-1804	9	96
БАЧ Ж Д.	2495	37	2774	279	0	0	13553	1078	0	0
ДАЛЬНЕВОСТ -ВСЕГО	17180	267	12475	-4705	0	71	81530	-4370	9	135
ЯКУТУГОЛЬ-БАМ Ж Д.	24925	383	27085	2160	0	0	131168	6543	98	105
БАМ Ж Д -ВСЕГО	27420	420	29859	2439	0	0	144721	7621	98	105
КУЗНЕЦК. БАССЕЙН	264917	4006	303663	38746	63	17	1489883	165298	179	256
ДОНЕЦКИЙ БАССЕЙН	60645	913	44615	-16030	115	141	233186	-70039	423	704
ПЕЧОРСКИЙ БАССЕЙН	69570	1047	74193	4623	0	0	355692	7842	19	138
КАНСКО-АЧИНСК БАССЕЙН	106948	1610	113598	6650	0	0	564228	29488	0	0
ЛЕНИНГРАДСЛАНЕЦ	0	0	5127	5127	85	0	33828	33828	85	8

Annex E

Social Protection in Coal Mining Areas

ANNEX

SOCIAL PROTECTION IN COAL MINING AREAS

SOCIAL PROTECTION IN COAL MINING AREAS[1]

I

Employment Implications of Restructuring the Russian Coal Industry

1 This report focuses on the increasingly difficult economic and social situation of Coal industry employees and their families in Russia All studies of Russia's coal sector indicate very high levels of overmanning and labor hoarding Radical changes in mining practices and the organization of above ground colliery activities are necessary to raise productivity levels towards those found in market economies This is a process that, however soon it is begun, will continue over a number of years More immediately, the legacy of central planning and the current high dependence on subsidies (an important source of cash to cover the material costs of the mines) mean that coal production by individual collieries currently fluctuates much more over the year than in market economies This results in large-scale labor hoarding to meet peak production levels Commercialization of the mining companies and a running down of subsidies should help reduce this labor hoarding

2 The implication is that virtually all mines can expect to shed sizeable amounts of labor in the years ahead It is not just a question of uneconomic mines being forced to close For the Russian coal industry to have an economically viable long run future, many mines with the high labor productivity levels will need to reduce their employment levels,in many cases substantially

3 Findings from the field missions demonstrate that, while there is no overt unemployment in the coal industry, there are significant levels of labor under-utilization in all the regions visited In spite of falling production, the coal industry is not shedding labor Indeed, in Vorkuta, the overall level of employment in the mines has actually risen over the past two years, despite adverse economic trends This paradoxical situation can be traced to the employment maximizing objectives of the Association, and, of course to continuing government subsidies

[1] This Annex has been prepared by Mary Canning and forms part of a joint Rosugol/ World Bank report It draws on the work of two World Bank missions which visited Vorkuta, Chelyabinsk,Kemerovo and Moscow in September, 1993 (Jeni Klugman, Tanya Proskuryakova of the World Bank, Paul Hare, Andrew Newell and Jon Stern, consultants) In Washington, Natalia Koliadina supplied the fiscal and employment data in Section III We are grateful for the assistance of Rosugol, and of the Coal Associations of Vorkuta, Chelyabinsk, and Kemerovo PIER, through Michael Bernstam and his team of Russian researchers provided much valuable data on Kemerovo Oblast

Table 1. 1992 Employment Figures for the Russian Coal Industry

Russian Federation Total							914 331
Personnel of Industrial Enterprises							701 896
	Industrial Personnel						581 861
		Laborers					491 841
			For Coal Production				411 674
				Of which Workers for Extraction of Coal			368,996
					Under-ground Mines		305 115
						Under ground	223 954
						Above Ground	81 161
					Surface Mines		63 881
			Other Laborers				80 167
		Office Staff					90 020
			For Coal Production				72 303
			Other Office Staff				17 717
	Non Industrial Personnel 1/						120 035
Personnel of Non Industrial Enterprises							212 435
	Construction						105 887
	Design Organizations						2 196
	Other Organizations						91 059
	Trade/Food Service						13 303

1/Includes kindergarten housing agricultural and other personnel

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4 There is a built-in incentive for the mines and their workers to go on unpaid leave instead of being laid off Mine Directors hoard labor in this manner and workers keep their employment record book on which pensions are based Unpaid leave is reflected in the workbook as income earning and the worker is still entitled to unemployment benefits at the minimum wage level as well as other benefits The mission was unable to get accurate figures of those on unpaid leave but in the Kuzbass the numbers were said to be substantial The local branch of NPG (Independent Mine Workers' Union) are quoting the example of Belovo Mine with a workforce of 2,100 which was operating for most of the summer of 1993 with 400 actually working

5 A particular problem is the low level of labor productivity above ground in the collieries and the mining support services Around 70% of coal industry employees are overground workers in the Russian coal industry as against the 30%-40% that would be expected in a market economy given the observed share of deep and open cast mining

6 In the long run, high levels of output and employment in the Russian coal industry will only exist if over the coming years productivity (and labor productivity) in the mines is greatly increased Unless productivity greatly increases, the cost of coal production will likely lead to coal losing its market in the long run to gas and other fuels on a large scale The only way to prevent this contraction would be high and rising levels of subsidy to coal prices

7 It is generally expected that by the year 2000,the demand for coal could fall by 50% compared with 1990 This could imply employment reductions of the order of 400,000 The key issue is that there will need to be major reductions in mining employment over the next 10-15 years under any realistic projection of the demand for coal The scale of adjustment required to obtain an economically viable industry operating without large scale subsidy cannot feasibly be made by changes in productivity and wages alone

8 This general picture is confirmed by the studies that have been done by the Study Missions to Chelyabinsk, Kemerovo and Vorkuta as well as the IEEC project currently being carried out in Rostov-on-Don For example, in Rostov there are now more mine workers producing less coal than in 1980 Surface workers at the mines have increased by 38% and underground workers by 9% between 1989 and mid 1993 Non-mine workers have increased their numbers by 19% and labor productivity has fallen nearly 20% between 1980 and 1992 These in-depth local area studies confirm the general picture of labor hoarding, overmanning, low productivity and high costs which results in an acute dependence on continuing high levels of subsidy to maintain employment at anything like current levels

9 One of the most worrying issues is the lack of preparedness by almost all local Coal Association management to deal with the consequences of any restructuring of the coal industry Our studies have shown a lack of awareness among regional managers or local coal association managers of the extremely fragile economic outlook for coal in the medium to long term let alone any appreciation of the requirement to reduce employment over the next few years if the industry is to provide stable levels of employment in the future In all of the areas studied, the mines are still recruiting and local vocational schools controlled by the mines are still preparing young people for a job in mine related activities and not much else

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10 In all the regions visited, Management's solution to the industry's transition dilemmas is to find new reserves and move miners to work in new mines For instance in Kemerovo, Rosugol has stated that 6 out of 13 mines in Kemerovo Oblast should be closed in the near future The team could find little planning or preparation among the local Coal Association management teams to meet the consequences of such extensive mine closure In Vorkuta,the Coal Association believes that workers displaced by a couple of mine closures will be reabsorbed in other mines This belief can be traced to the almost total ignorance of the destination of output and of likely trends in demand for its output - explicable in the context of continuing subsidization and the structure of incentives facing the Association The management of ChelyabinskUgol believe that demand for their output will remain roughly at current levels in the medium term, up to the turn of the century and some way beyond No major changes in employment levels are foreseen for the next ten to twelve years and they are quite clear that there is no need to put special measures in place as the mines will be safe from mass redundancies

11 There are also differences between the attitude of Rosugol and of the local coal associations towards potential unemployment This is well illustrated by the situation in Rostov where RostovUgol's general director has given the assurance that no miner need change his profession and stated that no mines would be closing This scenario is at variance with Rosugol's estimate of a closure of 3-4 mines in Rostov with a loss of approximately 5,400 colliery jobs and the IEEC (British) estimate that 10 mines might close with a loss of 14,000 Furthermore,if average productivity was raised in Rostov, the British estimate that with the scenario of 10 mine closures, 18,000 jobs might be lost

12 There are two Miners' Unions the Official Union and the Independent Union Of Miners (NPG) NPG have been quite proactive in their approach to the threat of mine closures and have organized surveys of personnel at several mines slated for closure [2] The Fund for Social Guarantees for the Miners has also played a role in raising awareness among coal Association employees and their families of the socioeconomic effects of industry restructuring and has been involved in the various mine surveys

13 There are differing perceptions in Oblast and Raion administrations about the likelihood of labor shedding in the coal industry In Rostov and Chelyabinsk it appears that the municipalities have recognized that there is a potential emerging unemployment problem The Employment Services in Chelyabinsk and Korkino are well aware of the consequences of the proposed mine closures and do not share the optimistic view of ChelyabinskUgol Management In fact they are anticipating the introduction of unpaid leave and short-time work among miners in Chelyabinsk in the near future In Vorkuta even the municipal authorities appear to share the Association's optimistic view of the future and believe that the main task is to open new mines

14 The results of the Study Missions show clearly that the problems for social protection are very different in different mining areas For instance, the problems in Vorkuta which depends for its economic life on the coal mines would be very different from Chelyabinsk where it could be expected that eventually there will be economic diversity In areas where alternative employment prospects realistically exist in the locality or in neighboring areas, the employment effects from mine closures and workforce

[2] Identification and Assessment of the Principal issues involved in Social Protection at Dimitrova Mine (1993), Questionnaire at Yagunovskaya Mine (Dec 1993), Anzherskaya Mine Personnel Structure Survey, Kemerovo, 1994 In all of these surveys/questionnaires the issues of impending lay offs, unemployment and retraining are explored with the employees of the mines

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reductions should be able to be handled without imposing impossible burdens on the Employment Service and local government - provided that they have the time, the financial resources and the management capability to organize their response

15 Rapid employment reductions in the mines would have a dramatic effect on unemployment levels in mining areas For instance, the immediate direct impact effect of a 20% reduction in Association employment in Korkino (Chelyabinsk Oblast) would be to raise unemployment by 8 percentage points To this should be added multiplier effects, although, because of the integrated nature of the Association's activities and the range of other industries in the area, these were thought likely to be smaller than for a comparable West European coal mining area In Vorkuta, realistic projections of the demand for coal suggest direct employment reductions in the mines of at least 25% and possibly 50% Because of the remote location and high dependence on mining in Vorkuta, the multiplier effects would be rather larger than in Korkino, resulting in potential unemployment rates for the area of the order of 30%

16 Reductions in the output and employment levels on the potential Vorkuta scale would present massive problems for the economic viability and social fabric of mining areas, particularly if they were to take place at all quickly The Study Mission postulated that the Vorkuta reductions be phased in over 5 years for the central projection Even so, there would still remain serious questions over the long run economic viability of the area Large scale and long term assistance would be required if the area is to survive and, even with such assistance, the burden on social protection agencies will be enormous (See Section VI for a discussion of the factors affecting the appropriate speed of adjustment)

17 Fortunately, the potential scale of the problems in Vorkuta is not typical of mining areas In Rostov-on-Don and in Chelyabinsk, the role of coal in the local economy was much smaller This not only reduces the impact on the local unemployment rate of mining employment reductions, it also - and more importantly- means that the prospects for economic regeneration in the area are much better In particular, the greater levels of industrial and employment diversification in these areas mean that unemployed ex-mine workers are more likely to find new employment In addition, there is more scope for new industry to move into the area and for ex-mining employees and others to build up economically viable small businesses The evidence from Rostov-on-Don and, to a lesser extent Chelyabinsk is encouraging in this respect

18 Of course, the more that it is possible for people to absorb and adjust to the economic shock arising from major reductions in coal mining employment in their areas, the lower is the burden on social provision There is less danger that oblast, rayon and local Employment Service facilities will be overwhelmed by the challenge Further, not only is the scale of required assistance lower, the type of assistance required is different In Rostov-on-Don, much more of the Employment Service activities can usefully be given as help in finding and/or training for existing job vacancies in other industries The scope for useful counselling and training in setting up and running small businesses is also considerable The possibilities exist for current mining workers to try alternative employments, for instance by working in a nearby town or by taking on a second part-time job The potential for this type of response is much smaller in areas like Vorkuta

19 This brings out an important general conclusion The degree to which mining areas will require large scale and long term assistance from social protection agencies to cope with the shock of mining employment reductions on the potential scale expected varies considerably by area The key feature is

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the nature of the local labor market and the dependence of the area on coal For areas where this dependence is moderate rather than overwhelming, the problems should be manageable The fieldwork for this study indicates that there are many mining areas where the potential alternative employment opportunities are sufficient to allow the social protection agencies to design and implement an appropriate response provided the changes are properly anticipated and the mining employment reductions are phased in over a period of a few years rather than a period of a few months However, it is necessary for the Federal Government, Ugol, oblast and rayon officials to begin as soon as possible to make detailed appraisals of the appropriate scale and type of assistance in each mining area The World Bank and other international agencies should be able to provide useful assistance to the Russian authorities in the design and implementation of these detailed studies of local need if that were required

20 The most important argument for maintaining subsidies to coal mines on employment grounds is the heavy dependence on mining and the physical isolation of areas like Vorkuta Another less important case (but one frequently argued and mentioned to the Study Missions) is the possibility that the economic viability of other local industries and the maintenance of their employment may depend on the continuation, at least in the short term on the maintenance of local supplies of coal Claims are frequently made for such production interdependencies and the claims can often be shown to be incorrect Further, in the long term, there are virtually always alternative fuel supplies or methods of reducing the transport costs of fuels to the area Nevertheless, there can be circumstances where early closure of the coal mine could lead to dramatic increases in the production costs of other local industry and consequent employment losses The social protection issues as well as the economic costs of these must be carefully considered where areas make claims for such interdependencies If the claims are correct, they can provide an important argument, in the short to medium term, for keeping open uneconomic mines with appropriate subsidy arrangements until alternative and economic sources of coal energy can be made available to the area

21 The Study Missions have come across two instances of claims for such production interdependencies The first was the dependence of the local power stations in Chelyabinsk on the type of coal mined locally The second was the dependence of efficient Northern steel mills on coking coal from Vorkuta It is not clear that these claims are correct and the alternative supply possibilities should be examined For instance, it may not be costly to convert the Chelyabinsk power stations to natural gas given the proximity of the gas pipeline Similarly, the northern steel mills may be sufficiently profitable to be able to pay the full economic cost of the specific Vorkuta coking coals Nevertheless, the key point remains that it is essential to examine the total employment effect in mining areas to estimate the economic and social impact of mine closures and not just the effect on mining employment alone

22 It is the view of the World Bank that no mines should be closed until a social safety net is in place to deal with the effects of closure on mine employees, their families and on the local labor market The process by which the necessary employment reductions are handled by the Associations, mine managers and the various social protection agencies (including the pace of adjustment) is as important as the overall scale of adjustment This statement is true for the mines where ill-prepared and badly managed labor reduction programs can easily lead to a low productivity labor force either because of a bad age/skill mix and/or because of demoralization The same statement applies to the Federal, regional and local government agencies responsible for social programs in the mining areas In this latter case, ill-prepared and badly managed programs will impede and delay economic regeneration, threaten unnecessary problems of long duration unemployment in the area and jeopardize the social fabric

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II

The Level of Social Provision provided by Coal Associations

23 Although not unknown, it is unusual for firms in market economies to be the major source of provision of housing and health services or child care They may provide some of the funding (for instance, paying a share of the costs of health insurance) but they do not provide the services, for the most part,that is left to hospitals and private sector or local authority specialist providers [3]

24 In Russia, however a job has meant much more than work for wages The job is the means to a house, pension, clubs, sports, paid vacations,pre-school education, day care, loans These benefits are extensive and enough to support families for some time without payment of money wages which, in current circumstances, are frequently paid at least 2 months late

25 A World Bank Survey of Newly-Privatized Russian Enterprises, conducted in Moscow Oblast and Vladimir Oblast in October 1993 showed that 89% of enterprises offered social services to their employees These social services represented the typical mix of housing and associated utilities, health and child care facilities, vacation, transportation and farming With privatization, the ownership of some facilities had shifted to municipal governments, while in many cases, provision of the services themselves remained the responsibility of the enterprise [4] The same type of provision of social services by Coal Associations was found by the Study Missions to the mining areas In Chelyabinsk, housing accounted for 37% of the Association's social expenditure, up from 19% in 1992 In Vorkuta, housing represented 73% of the Association's social expenditure and around 60% of the population lived in Association accommodation

26 Table 2, shows the component costs of expenditures of a typical mine in the Kuzbass Note that in-kind benefit as a percentage of wages increased from 38% in 1991 and 1992 to 42% in 1993

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[3] In Western Europe these social benefits are very largely provided by local authorities (frequently with a user fee which meets most or all of the cost) or purchased in the market However, in virtually all Western economies firms provide a small proportion of these benefits often at either a subsidized price or free Typically these in kind benefits are received only by a small proportion of the labor force Housing is often provided at low cost or free to special groups such as the police or agricultural laborers A particular example of such benefits is the provision of free coal to coal miners, their families and to retired coal miners in the United Kingdom

[4] Newly-Privatized Russian Enterprises A Survey Leila Webster et al World Bank,December, 1993 This Survey produced the following information re the provision of social services by enterprises in two oblasts 89% of firms sampled offer social services to their employees, 87% provide housing, 60% provide health child care and education assistance nearly half provide vacation facilities about 33% provide utilities, transport, and farming plots

Table 2 Distribution of Expenditures of Volkhov Mine (Kuzbass) 1991-1993

	1991	1992	1993
Money Wage	38 5%	45%	35%
Social in kind	14 5%	17%	15%
Investment	17 2%	13 9%	9%
Inputs	29 8%	24 1%	41%

Source Michael Bernstam Research

27 Details of the composition of the Chelyabinsk Association's social expenditures are given in Table 3 below One particularly noteworthy point is the very high percentage (34% in 1993) spent on a variety of miscellaneous services, such as subsidies to canteens and kindergartens, allowances for holidays and meals

Table 3· ChelyabinskUgol Social Sector Expenditures

	1992	1993 (1st half)
Expenditure Shares (%)		
Pre-Schools	5 4	4 5
Social and Cultural Facilities	3 1	5 3
Housing and Public Utilities	19 4	37 3
Fuel for Pensioners	4 2	2 5
Personnel Training	0 1	1 0
Construction	16 6	4 8
Other Expenditures (*)	49 8	34 1
Agricultural Subsidies	2 2	4 3
Total expenditure in Rb mln	858 2	1390 6
Spending as a percentage of Association Revenues	7 3	9 3

* Other expenditures include meal allowances, canteen subsidies, vacation grants and kindergarten subsidies

Source ChelyabinskUgol

28 The dependence of mining areas on enterprise provision of social services is shown for Kemerovo in Table 4 below Besides the financial dependence on the enterprises, they also accounted for 59% of construction activity in the area

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Table 4 Funding Sources for Social Provision in Kemerovo **1992 (%)**

Type of Provision	Federal Budget	Oblast Budget	Raion Budget	Enterprises	Non-Budget Funds
Housing*			17%	83%	
Education		25%	75%		
Kindergartens			29%	71%	
Health Care	2%	19%	77%		2%
Road Building	22%	78%			

*Percentage of people living in housing facilities financed by each institution

Source Kemerovo Oblast Administration

29 Provision of a high volume and a wide range of social benefits by the Associations has a number of adverse consequences It is an important distraction from the business of running a commercial company and uses up scarce managerial resources It imposes sizeable costs on financially hard-pressed enterprises In Vorkuta, non-productive outlays represented around 5% of total costs Perhaps most importantly, the firm ends up by paying for benefits to its ex-employees and others who are now working for other firms Thus, in a 1992 sample of Moscow firms, nearly 40% of tenants in the houses owned and rented out by the firms were not current employees of the firms

30 Although there are these obvious disadvantages,the provision of these social benefits by the firms also provides certain advantages to both the firm and its employees For the firm, it provides a way of attracting new recruits and rewarding workers who are particularly valuable to it This is particularly important when unemployment is virtually non-existent and firms are keen to recruit, as was generally the case up to 1990 Even in September 1993, in all the mining areas visited by the Study Missions the number of job vacancies exceeded the number of unemployed and the structure of money wages was compressed For employees, employer provision provides a predictable way of obtaining access to these scarce and valued benefits

31 It is not sensible for the Mining Associations to carry the management responsibilities and costs of this social provision beyond some essential minimum necessary for their commercial purposes However, there are no policies governing the transfer of social provisions to local government and there remain the complex matters of the transfer of social subsidies from the coal associations and the provision of funds to municipalities to maintain services So, in many cases, (Vorkuta for example) municipalities have refused to assume responsibility for social services because they lack the funds to run them

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32 The difficult problem of miners' housing encompasses[5] all the financial and institutional problems of divesting the other social benefits, only on a much greater scale Rapid rates of inflation mean that the rents have fallen considerably in real terms over the last few years Previous World Bank research suggests that rents in mid-1992 covered, on average, only 3-5% of housing maintenance expenditure Conversely, they constituted only around 0 5% of the expenditures of urban working households This is leading to acute problems of maintenance in a housing stock which is generally not of good quality to begin with Expenditure on housing maintenance by enterprises appears, not surprisingly, to be falling sharply both in Russia as a whole and in mining areas

33 The October 1993 Survey of Newly-Privatized Enterprises has some very interesting findings in relation to the provision of housing by Enterprises The survey finds that this issue is the "most critical and knotty problem in the area of social services" 87% of sample firms provided housing for their employees, 57% still owned housing, 28% transferred to municipal governments and 14% transferred directly to employees "But, regardless of ownership, the financial burden of maintaining housing facilities and providing utilities remained with the enterprises"[6]

34 The ownership by miners of their houses is not a legal issue There are several new laws in the Russian Federation which will provide the necessary legal framework for a housing market (i e the Law of the Russian Federation on the Basic principles of Federal Housing Policy, passed in December 1992, and the recently drafted Condominium Law) The maintenance of the housing stock which has become increasingly run down in recent years and the continued provision of the utilities infrastructure will however be major problems in the process of coal enterprise divestitures of social services

Table 5 Expenditures on Housing Stock Maintenance
The Kuzbass 1992-1993

	1992	1993
Federal	0	24 2%
Enterprise	62 7%	38 5%
Municipal	11 1%	11 1%
Private	24 2%	24 2%
Condo	2%	2%

Source (Michael Bernstam Research)

[5]Rosugol estimates national housing costs and the total number of apartments that they own based on the following calculations 35 million s meters of housing owned by Rosugol, divided by the standard 55 s meters per person, give 800,000 apartments/houses housing approximately 2 million people

[6] A footnote in the Newly Privatized Enterprises Survey reads Where housing stock had been privatized employees apparently purchased their flats at a set rate per meter of floor space and the enterprise continued to pay for all maintenance and replacement costs for the buildings and utilities Several managers reported that efforts to get employees to pay a higher share of housing costs had failed with employees considering access to subsidized or free housing a basic social right

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35 Therefore, what appears to be happening at the moment in Russia in general and, in the context of this report, in the Coal Associations in particular, is that an impasse has developed Tenants may own their houses and apartments, but these resources are in poor condition and neither the municipality nor the enterprise can afford to pay for even the most essential repairs Reports from various Bank coal missions together with information from the Coal Associations reinforce the view that maintenance of enterprise housing is now almost non-existent The general problems associated with the low quality of the housing stock are particularly evident in mining areas In Korkino, mining induced subsidence has caused considerable damage to a number of apartment blocks In Kemerovo, where 83% of the population live in enterprise housing, of whom 37% lived in Mine Association housing, families live over long-wall tunnels and methane gas fields Not surprisingly, in these areas the municipalities were refusing to take over responsibility for the housing stock unless and until the enterprises had carried out much of the necessary maintenance work

KEMEROVO OBLAST MINE HOUSING SETTLEMENTS

Most miners live in mining settlements, created when the mines were first developed between 50 and 90 years ago There has been little if any maintenance or upgrading of the facilities or infrastructure since

These Siberian Settlements are isolated and are self contained The homes are single family, wood-frame dwellings with outdoor sanitation facilities Many do not have running water There is limited if any infrastructure, the roads are muddy, heat is by coal stoves, and electrical wires hang off trees and dip to the ground Some of the housing is situated on the methane gas fields and there are accounts of cellars filled with the gas Other homes are built over long-wall tunnels where the risk of subsidence is considerable

Located in settlements are all the food-stores, medical facilities, schools, sports clubs, and there are also some farms which grow food especially for the miners

In some settlements new housing units have been built These are traditional apartment buildings There is a housing shortage and this newer type of housing is fairly rare and in high demand since they feature indoor plumbing

Generations of miners have grown up in these settlements Their extended families and spouses' families live with or near them Leaving the settlement would be difficult for most miners, as miners traditionally have a strong sense of tradition and community

36 Seen in this perspective, it is clear that unravelling the current impasse on housing in Russia must involve divestiture to current tenants, to municipalities and to others (condominium and tenants' associations) with a policy for diverting subsidies for maintenance It will be more difficult to privatize the apartment blocks which make up the bulk of the accommodation (and is probably impossible for the barracks accommodation) because of the acute co-ordination problems associated with the provision of common services in general and maintenance in particular One possibility worth further examination would be to split management responsibilities from ownership responsibilities In this way, for some of the housing, ownership might be retained by the municipality or enterprise, but the management responsibilities might be assigned to a private company or a non-profit making association The role of non-governmental housing agencies should also be considered They may have particular attractions in mining areas with their traditionally high levels of social solidarity Finally, to address the urgent maintenance problems, serious consideration

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should be given to the formation of tenants' and owners associations where responsibility for public area and exterior maintenance programs could be developed using resources from the Employment Fund earmarked for public works programs and community development programs

37 It is clear that adjustment to mining redundancies will be easier the greater the mobility of labor This means that the development of a market in rented housing is a priority Similarly, for municipal housing, it will be important to encourage the maximum development of exchange arrangements for people living in different municipalities The attractiveness of owner occupation in this perspective increases as housing markets expand and mortgage institutions develop That raises questions of financial sector reform that will need to be considered in other studies

38 Rapid and large-scale progress in this area will be difficult It will depend on the resolution of a number of issues that are outside the control of the mining areas These include the fiscal problems of municipalities, subsidy arrangements, financial sector reforms, social security reform and others The existence of these major structural difficulties does not, however, mean that no progress can be made It points to promoting a wide range of small-scale and local options for divestment and contracting out of social services particularly in housing, but also for the other employer provided social benefits

39 *Tariff Agreements* There are two Tariff Agreements for the 2 mining unions in the Coal Industry The purpose of these agreements is to establish a minimum wage for the miners and to fix hours, conditions, holiday entitlements, sick pay, compensation etc The Tariff Agreements also specify the particular conditions and benefits for the Communities of the Far North and the separate and differing conditions for a list of Oblasts and Krais which broadly include Siberia and Primorsk and Khabarovsk As far as we can establish the only difference between these two Tariff Agreements is that the NPG (the Independent Miners' Union) negotiated an Agreement in March 1993 which extends for three years, while the Official Miners' Union Agreement lasts for one year only [7]

[7] The Tariff Agreement sets minimum wage levels for the lowest paid worker A number of indexes are used to calculate final wages Wages are determined by type of work and by qualifications as well as by shift, as of January 1994, the minimum was 65,000 r/month based on a 30 hour work week Detailed conditions related to signing on/off at the workplace, transport, rest periods of 10 minutes in each hour are factored in as are indices relating to work plan performances and norms Wages in 1993 were also indexed to minimum wage levels in general and to the growth of the consumer price index Finally, there is indexation relating to location with Vorkuta and the Northern Communities given a climate indexation of 2 4

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SEVERANCE PAY IN RUSSIA

Article 40 3 of the Russian Labor Code of September 25,1992, stipulates the following conditions and parameters of severance pay

Compensation for layoff from existing enterprises

(a) Severance pay = one average monthly wage

(b) Additional severance pay = average monthly wage for a period no longer than two months after layoff

(c) Additional severance pay for a third month may apply For this the authorization of the Employment Officer is necessary and the unemployed person must have applied for a job at the Employment Office within two weeks of layoff

(d) The individual must have had an uninterrupted period of employment of three months prior to layoff

Compensation for layoff due to bankruptcy or enterprise restructuring

(a) Severance pay = one average monthly wage

(b) Three month compensation (three months average wages) while registered with the Employment Office and actively looking for work

(c) An uninterrupted employment record of at least three months

(d) Other compensation can be provided according to specific laws and regulations

40 The NPG have effectively negotiated special treatment for their members by stipulating that funds be allocated from the Federal Budget to facilitate mine closure and provide for infrastructure maintenance, and for job creation Special measures which will be the joint responsibility of the Federal Employment Services and the Ministry of Fuel and Energy include a one year notification of layoffs by Management to the Employment Services, the reduction or outright termination of recruitment of new employees, short-time working hours for employees, procedures for transferring workers to other mines, special training and employment programs, a retirement policy of 2 years prior to the pension age, with the retirement pension to be paid from the funds of the mine during the pre-pension period, special retraining allowances paid by the Coal Association to bring miners up to the level of the average mining wage, continued right to housing and to maintenance of housing, right of miners's children to use pre school facilities until they reach school age

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41 *Health and Safety Issues* There are serious problems related to health and safety throughout the Russian coal industry An analysis of the injury rate for the entire industry in 1992 makes grim reading deaths and injuries were widespread and attributable to a range of causes rock falls, malfunctioning equipment, unsafe mine transport systems, methane gas, fires, suffocation and poisoning The report for 1992 blames inadequate technological upgrading together with poor maintenance of mine shafts and of aging equipment as the main causes of accidents Allied to the accident reports are those detailing rising levels of disease - an increase of approximately 50% being reported in 1992, over the 1990 incidence of pneumonia, bronchitis and "vibration disease "

Table 6 Incidence of Injuries at Vorkutaugol[8]

	Jan June 1991	Jan June 1992	variance	%
# of injuries	666	719	+53	7 9%
non-fatal injuries	660	716	+56	8 5%
fatalities	6	3	3	-200%
accidents at underground mines	517	610	+93	10%
at open pit mines	119	107	-12	10%

[8] This information was supplied by the Independent Mine Workers' Union (NPG) With regard to the decrease in fatalities, the overall figures are somewhat different at Vorkutaugol the fatality rate for the four years, 1989 1992 is as follows in 1989 there were 13 deaths in mine related accidents, in 1990 there were 22, in 1991 there were 17 and the figure for 1992 overall was 11

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III

Adequacy of Policies and Institutions at Oblast and Raion Level

42 A discussion of the social services provided by enterprises should not overlook the fact that most of these services are in fact financed indirectly by subsidies from the federal budget Another factor to be considered is that enterprises enjoy a tax exemption, determined by the government, for part of their profits If social assets were to be divested from enterprises to local government a problem would exist as such a divestiture would have to be accompanied by the simultaneous reallocation of financial resources from enterprises to the budgets of local administrations Furthermore, the Ministry of Finance has no clear idea of the share of subsidies spent by enterprises on social provision

43 There is a Presidential Decree "On the System of Minimal Social Guarantees", December 1993 which covers the provision of (a) the minimum wage, (b) minimum old-age pension, (c) the provision of social insurance benefits, to include unemployment benefit, sick pay, maternity leave, childrens' allowance, welfare benefit, and (d) a minimum package of free health care, and access to education and culture The financing of these benefits will come from both federal and regional budgetary funds the Pension Fund, the Social Insurance Fund, the Fund for Medical Insurance, the Employment Fund and other funds which are designed for the social protection of the population

44 The financing of these benefits is to be a joint responsibility of the federal government and regional governments It was intended that the 1994 budget should address the financing of this law on minimum social guarantees However a mechanism for financing social provision has yet to be established and there is no clarity about responsibility sharing between federal government, local governments and enterprises for the divestiture of social services [9] During 1993, the Ministry of Finance shifted the responsibility for financing social provisions to the regional level Meanwhile, extra-budgetary funds are experiencing problems with the redistribution of resources between the regions This issue could create problems for the coal regions when closures of the coal mines might result in both regional budget and Extra-Budgetary shortfalls

45 There are now legal provisions which allow the transfer of kindergartens, some other educational facilities and urban services to the municipalities Local Governments are becoming the passive recipients of social services divested from enterprises without the provision of funds to maintain and deliver these services An added problem is the decreasing taxation base which follows from enterprise restructuring Even to cope with the provision of the most basic of services is in many case beyond the resources of many municipalities and is posing major problems The central issue appears to be a lack of funds at the raion level, the lesser ability of municipalities to obtain subsidies from Federal and oblast governments than enterprises, the lower earnings levels of social provision staff in municipalities relative to people doing the same job in the enterprises, and last (but by no means least), resistance to paying higher prices for the services

[9] According to the new Constitution, the decisions of the Federal Government are not mandatory for Regional Government, if such decisions are not also supported by appropriate financing

46 In spite of the lack of funds, kindergartens in many places visited by the Coal Missions had already become (or were in the process of becoming) the responsibility of the municipality (Vorkuta, Chelyabinsk) and in places some housing had too, most notably in Rostov In Chelyabinsk Oblast, the municipalities, in addition to kindergartens, had taken over responsibility for most of the water supply, garbage disposal and partial responsibility for the vocational schools

47 The Study missions examined the capacity of Oblast and Raion Social Protection and Employment Services (programs, staff, offices, and equipment) to cope with rising numbers of unemployed This analysis would reflect the situation were any large industry to restructure in these areas, although some observations are particularly relevant to the requirements of those laid off from the mines The general conclusions from the four regions visited are that the existing resources would be unable to cope with any substantial increase in unemployment

48 The groups who would be most at risk in the event of any coal restructuring would be mine pensioners, young people who might have found jobs in the mines and women who continue to make up the largest proportion of the unemployed and who are being laid off first from surface and ancillary jobs in Coal Associations It is expected that this list will also be expanded to include the long term unemployed who have exhausted Unemployment Benefit (of whom there are very few at the moment)[10] There is, as yet, no fiscal framework to address the needs of these groups generally in the Russian Federation, practical programs are not yet well developed and the financial resources to execute them will be inadequate given the present arrangements for the extrabudgetary funds

49 Social Assistance Benefits Cash benefit packages consist in the main of pension benefits, family allowances and unemployment benefits Sick pay, maternity benefits and family allowance to "working" mothers with children under 18 months are paid from the Social Insurance Fund [11] These benefits are administered by the enterprises All these benefits, except the birth grant are related to actual wages (100%) The Birth Grant is equal to five minimum monthly wages As most social benefits are financed on the regional level, the profitability of the enterprises and the size of the wagebill are important for the financing of social assistance benefits For the coal regions both of these factors might have a negative impact on the financing of social benefits Given that 23 5% [12] of the Coal Industry enterprises are unprofitable, both the amount of the profit tax and payroll contributions are questionable

50 In the Coal Regions visited by the World Bank Missions, the concept of a publicly provided social safety net is a novel and as yet largely undeveloped service Only over the past 18 months have local authorities begun to finance and deliver in-kind and cash assistance to the needy The staff

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[10] Those unemployed who have exhausted benefits after 12 months are eligible for "Material Assistance This is a scheme whereby the minimum wage can be paid, together with a lump sum of two minimum wages in case of hardship This assistance is entirely at the discretion of the Employment Service Officer and applies only to those who have registered as unemployed and have signed on regularly at the Employment Office The assistance lasts for six months Because unemployment is such a new phenomenon in Russia it is difficult to find out how this scheme is working at local levels

[11] For a description of Social Assistance Benefits and a discussion of policy issues and options see Russia Social Protection during Transition and Beyond World Bank February, 1994

[12] State Tax Service Report for the first quarter of 1993

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involved appeared to have done a commendable job with limited resources for organizing and financing programs However, the Missions found that at local level the Social Protection administration is uncomfortable with their lack of finance to cope with at risk persons other than those who are targeted inside the existing system (and at current levels) while the Employment Services are concerned that budget to pay benefits may run out at oblast level thus requiring fiscal transfers

51 *Pensions* Underground miners are eligible for old-age pension benefits at the age of 50 years for men and 45 years for women, if they have had at least 10 (7 5) years of underground service after 20 (15) years of total service These pensions are paid by the Pension Fund Non underground miners are eligible for pensions at age 55 (men) and 50 (women), if their service period at the mine was at least 12 5 (10) years, and if they have total service period of 25 (20) years Pension benefit is defined as 55% of wage and it is raised by 1% for every full year of service beyond the required service period For those who work in the Northern Regions, pensions are subject to the northern coefficient increase

52 The share of the working old-age pensioners in coal regions is higher than the average in Russia

Russian Federation	23 0%
Komi AR	26 1%
Rostov Oblast	23 5%
Kemerovo oblast	24 9%
Chelyabinsk Oblast	27 2%

53 Inflation and the increasing costs of all the normal benefits that are continued for pensioners mean that many miners choose to continue working and draw their pension and their salary Rosugol estimates that approximately 27% of all coal employees are of pensionable age Only Kemerovo oblast has a share of pensioners receiving maximum pensions at a higher than average Russian level - 53% compared to 22 8% Other regions are far behind this threshold Thus, only 9% of Komi Republic pensioners get maximum pensions, for Rostov oblast the figure is 10 9% and for Chelyabinsk only 2 8% The reason for this could be that pensioners who are more financially secure are moving to more hospitable climatic regions

54 Unemployment Benefits are paid to those who are registered with the Employment Service, recipients are eligible for benefits for a period 12 months Individuals working in the Northern Territories are entitled to special provisions if they become redundant which include a payment of average wage for six months after layoff and one month's extra severance pay High inflation has meant that in 1993 the replacement rate for unemployment benefit was 11 3% During the three month period between being laid off and receiving benefits it is calculated that the real value of benefits to an unemployed individual can decrease from 75% to 30% of average wage This unsatisfactory situation may improve somewhat in 1994 as a new decree on the mechanism for calculating the average wage which promotes retrospective indexation of average wages takes effect

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Table 7 Employment Fund Budget
(R billion)

	Year 1992	Q 1 1993	Six m ,93	Nine m ,93
Payroll contributions	35 00	45 80	141 49	309 18
Local budgets	0 12	0 03	0 87	0 23
Federal budget	0 05	0 14	0 44	0 95
Other revenues	0 64	1 27	3 97	14 02
Voluntary contributions	0 20	0 00	0 05	0 14
TOTAL REVENUES	36 01	47 24	146 82	324 52
Training/retraining	0 28	0 47	1 45	2 68
Public works	0 03	0 02	0 25	0 59
Unemployment benefits	1 86	3 35	10 05	20 74
Early pensions	0 00	0 28	0 88	2 69
R&R	0 00	0 03	0 11	0 40
Transfers to the FES	n a	n a	n a	n a
Job creation	1 94	4 55	10 21	41 69
Others	1 31	3 35	11 92	28 87
Operational costs	5 11	6 05	18 88	39 82
TOTAL EXPENDITURES	10 53	18 10	53 75	157 00
SURPLUS(+),DEFICIT(-)	25 48	29 13	93 07	167 51

55 *Employment Fund* The Employment Fund is financed by payroll contributions from all enterprises In January 1993 contributions increased from 1% to 2% Contributions are collected at the raion level Of each Rb 100 collected, the raion keep Rb 45 and transfers Rb 55 upwards The Oblast keeps Rb 45 and transfers Rb 10 to the Federal Employment Services According to the latest unemployment data, as registered unemployment is so low (i e 0 3% in Rostov Oblast to 1 25% in Komi) the provision of benefits together with active programs such as training and public works amount of approximately 25% of the Regional Employment Fund In fact, in two cases out of the four regions under discussion, the provision of benefits and programs amount to less than the cost of operating the Regional Employment Service Hence the surpluses of the regional Employment Funds are substantial 31 6% in Rostov , 53 2% in Komi, 73 9% Chelyabinsk, and 87 0% in Kemerovo The corresponding figure for the Federal Employment Fund is 51 6%

Table 8 Structure of the Revenues & Expenditures of the Employment Fund
(Percent)

% in Total	Year 1992	Q1, 1993	Six m 93	Nine M 93
REVENUES				
Payroll contributions	97 20	96 96	96 37	95 27
Local budgets	0 34	0 06	0 59	0 07
Federal budget	0 15	0 29	0 30	0 29
Other revenues	1 77	2 68	2 70	4 32
Voluntary contributions	0 55	0 01	0 03	0 04
TOTAL REVENUES	100 00	100 00	100 00	100 00
EXPENDITURES				
Training/retraining	2 63	2 59	2 70	1 71
Public works	0 28	0 13	0 46	0 38
Unemployment benefits	17 67	18 51	18 70	13 21
Early pensions	0 00	1 55	1 63	1 71
R&D	0 00	0 17	0 21	0 25
Transfers to the FES	0 00	0 00	0 00	12 44
Job creation	18 43	25 13	19 00	26 55
Others	12 44	18 51	22 18	18 39
Operational costs	48 54	33 42	35 13	25 36
TOTAL EXPENDITURES	100 00	100 00	100 00	100 00

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56 However, even without any growth in unemployment if all those currently out of work were registered and if benefits were upgraded to the subsistence minimum, calculations show that in Chelyabinsk Oblast payment of these benefits would increase expenditure to R 0 72 billion and reduce the surplus in the Employment Fund by 20% on average At present, unemployment benefits in mining regions are about 41-47% of the average Russian subsistence minimum Overall, an increase in the unemployment rate of between 3 and 5% would result in the wiping out of the regional Employment Funds

Table 9 Employment Funds of the Main Coal Regions
(R billions)

REVENUES	Total	Payroll contribution	Others	Payroll contribution %	Others	Surplus (+) def ( )
Russian Federation	324 50	309 18	14 02	95 28	4 32	167 50
Komi AR	5 85	5 71	0 13	97 61	2 22	3 11
Rostov oblast	8 67	7 88	0 78	90 89	9 00	2 74
Chelyabinsk oblast	9 20	9 16	0 04	99 57	0 43	6 80
Kemerovo oblast	9 70	9 50	0 23	97 94	2 37	8 44

57 As has already been discussed there have been no lay offs in the mines In Kemerovo, the Employment Services have calculated that the Fund would move into deficit in one month if there is one mine closure although data were not available to support this claim However,it is possible easily to calculate the rate of unemployment in each area at which the Employment Fund would move into deficit For example,in Vorkuta the Employment Fund was in surplus as of August 1993 The Mission calculated that 1,100 unemployed miners (equivalent to the closure of the smallest mine) would totally deplete the Fund's monthly revenue Calculations in Chelyabinsk showed that the Employment Fund would move into deficit if the unemployment rate exceeds 3 84%

Table 10 Expenditure of the Employment Funds of the Main Coal Regions

EXPENDITURES	Total	Tr /retrain	Public works	Unempl benef	Early ret	Transf to fed budg	Job creat	Oper costs
R billions								
Russian Federation	157 00	2 68	0 59	20 7	2 69	19 53	41 9	39 8
Komi AR	2 74	0 06	0 02	0 38	0 01	0 57	0 80	0 45
Rostov oblast	5 93	0 07	0 01	0 24	0 04	0 52	3 83	1 19
Chelyabinsk oblast	2 40	0 07	0 03	0 52	0 05	0 11	0 35	1 23
Kemerovo oblast	1 26	0 02	0 00	0 29	0 05	0 19	0 01	0 68
EXPENDITURE STRUCTURE	**Total %**	**Tr /retrain %**	**Public works %**	**Unempl benef %**	**Early ret %**	**Transf to fed budg %**	**Job creat %**	**Oper costs %**
Russian Federation	100	1 71	0 38	13 18	1 71	12 44	26 69	25 35
Komi AR	100	2 19	0 88	13 87	0 29	20 84	29 20	16 42
Rostov oblast	100	1 15	0 19	3 96	0 66	8 79	64 59	20 07
Chelyabinsk oblast	100	3 08	1 21	21 58	1 92	4 38	14 75	51 25
Kemerovo oblast	100	1 51	0 00	23 17	4 13	14 76	0 71	53 73

58 These calculations ignore administrative[13] costs and also assume that all the revenues of the Fund are devoted to the payment of benefits and that no other programs (Training or Public Works) are being financed by the Fund It is of concern that the financing of Unemployment Benefit will eventually squeeze out pro-active employment policies and programs

59 *Employment Services* In Russia, the payment of unemployment benefits and the delivery of placement services, counselling and other proactive employment programs is the responsibility of the Federal Employment Service which has a core staff of about 150 persons with approximately 21,500 staff in local employment offices throughout the Federation At the current official rate of about 1% unemployment,[14] this gives a client staff ratio in the Employment Services of 1 3 If however, there were to be any significant increase in unemployment, it is reasonable to assume that the Employment Services would be seriously stretched

Table 11 Ratio of Staff to Unemployed in Employment Services in Selected Countries, 1988 Ratio

Austria	1 33
Germany	1 37
Poland	1 225
Portugal	1 120
Sweden	1 9
Russia (Dec 1992)	1 3
(Dec 1994)	1 232
United Kingdom	1 98

Note Staff estimates for Russia were based on 518 000 registered unemployed and 21 500 field staff as of December 1992 December 1994 estimates are based on a projection of 5 million unemployed

Source Fretwell (1992)

60 The office of the Employment Service in Vorkuta may well be overwhelmed by any significant increase in the number of jobless applying for income support At present low levels of unemployment, the staff-unemployed ratio is approximately 1 40 and would quickly fall to at least 1 200 under future scenarios Much the same comments can be made about Chelyabinsk Oblast where the staff-unemployed ratio is 1 37 at the moment and where office space is cramped Chelyabinsk is developing a computer network of its own at the moment which will aid with the registration and payment of benefits There is some staff discomfort with the complicated system of registration and of computing benefits, which the Employment Service feels does not always best serve the needs of the unemployed The other concern of the Chelyabinsk Employment Service is that there are many workers in the coal industry who

[13] If administrative expenses are ignored, the unemployment rate which uses up the current revenue of the Fund is equal to $t/(t+r)$ where t is the proportional rate of the payroll tax used to create the fund and r is the ratio of the average unemployment benefit to the average wage Thus, if t equals 2 % and r equals 50%, then the fund is in deficit if the unemployment rate exceeds 3 84%

[14] There is growing evidence that the official rate of unemployment based on approximately 800,000 registered unemployed (December 1993) is a serious underestimation of the actual situation In January 1994 around 3 million persons were estimated to be out of work but not registered with the Employment Services, and an additional 4 million persons were estimated to be on mandatory leave without pay

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are over pension age, and these workers are likely to be among the early casualties of the expected layoff program Although those on pension will not qualify for unemployment benefit, the Employment Service anticipates that retired coal workers will come to them looking for employment and requiring counselling, thus eating into meager staff resources and space

61 In Kemerovo there appears to be adequate staffing for the current situation, but, when unemployment increases or staff become more skilled in providing in-depth services, the current staffing patterns will need to be adjusted Most of the offices are staffed below the ratio allowed per population (1 200) One office has a ratio of 16 clients per staff per day All expressed problems in hiring qualified staff given the extremely low salaries The office staff are predominately women

62 In addition to the payment of benefits, the Employment Services should be in a position to offer a range of counselling, job search, training and special employment schemes (public works programs) in addition to specially targeted mass lay off programs for the mining communities In all cases, the Study Missions found inadequate capacity to fund, administer and implement such measures at local level

63 *Public Works* Generally, there is a low take-up of public works programs which are confined to urban clean-ups and to some seasonal agricultural jobs There are two major reasons for this, one being the very low allowance which is paid to individuals on these programs and the other, the type of work which is repetitive and lacking social esteem The financing of public works programs in the main coal regions varies from 0 - 1 25% of the total expenditures of the Regional Employment Funds

64 Training facilities which are available to mine workers through either the Coal Associations or the local authorities are generally obsolete and inadequate for today's skill requirements The facilities and courses are focused on the manual skills needed in the mines of the 1930s The training centers are built next to the specific industry Individual enterprises select and pay for the students to be trained, then hire directly from these training centers

65 *Training Programs* The Study Missions found that a common concern is that people are trained and educated in narrow specialties which do not meet the needs of the developing labor market Newer, modern technologies and theories are unavailable or are not taught There are no occupational data to drive training decisions All training selections for the unemployed are based on either personal wishes or employment staff/personal intuitions of the employment opportunities (e g In Kemerovo only 7% of the current unemployed are selecting to be trained, the rest elect to receive benefits and continue to be unemployed)

66 Job Creation schemes and Training for Small Business development are mixed together and are either non-existent or in a primitive state of development There are possibilities for the unemployed to receive support for starting small businesses through the capitalization of the 12 months of unemployment benefits However, the take-up on these schemes seems very small in the Regions visited and there is a need to link this opportunity with a structured program for Entrepreneurs organized by the private sector The Job Creation Schemes are in many cases not creating new jobs, but are instead providing another form of enterprise support

67 To illustrate the issue of the effects of enterprise divestiture on local finances, the Mission analyzed the Municipal Budget in Korkino, a coal mining town of 72,000 inhabitants, situated

approximately 30 kilometers from Chelyabinsk About 70% of the employment in Korkino is mining related Korkino Municipality is responsible for 18 schools, 28 kindergartens, 3 hospitals, 2 orphanages, as well as public utilities, parks, gardens and some housing The Municipality has moved into deficit over the last year, due to the twin effects of inflation and recession

Table 12 Municipal Budget for Korkino

	1992	1993 (1st Half)
	%	%
Revenues		
Profit Tax	35 7	48 5
Personal Income Tax	32 6	27 0
Natural Resource Charge	18 4	
Land Tax	6 0	
Other Revenues	3 1	8 7
Subsidies (balancing item)	4 2	15 8
TOTAL	100%	100%
Expenditures		
Subsidies to Enterprises	37 3	27 2
Education	22 2	26 6
Culture	1 1	1 2
Health Care	26 4	33 4
Social Protection	0 4	0 4
Chernobyl Benefits	0 1	
Children's Benefits	5 9	3 6
Other Expenditures	6 6	7 6
TOTAL	100%	100%
Total (Millions of Rubles)	692 0	1900 0

Source Korkino Local Authority

68 The housing issue in Korkino remains complex 20% of housing belongs to the Municipality and they barely have the financial capacity to maintain this stock at present The remaining 80% is Coal Enterprise Housing and the Municipality cannot assume responsibility for the fiscal burden of maintaining it The average age of housing is 50 years and most of the enterprise housing is around this age, having been built for the workers of the Korkinskii mine There are faults in many of the blocks because of shifts in the foundations due to mining operations Consequently, the Municipality has refused to assume responsibility for this housing

IV

Policy Issues Coal Associations

69 There are many Coal Association policy issues related to restructuring and its implications which are being considered elsewhere The following items relate solely to social protection aspects

70 In order to remain commercially viable and observe a hard budget constraint, all mines (whether slated for closure or not) should plan to divest themselves of the provision of social services and should concentrate instead on their core business activities As part of this process, Rosugol and the individual Coal Associations should now recognize that they are not the appropriate organization(s) to administer the social subsidies Coal Associations should now proceed to plan for the divestment of all social services which they currently provide This divestment should be phased in consultation with Oblast and Local Authorities Ancillary services should also be phased out It may be necessary to treat isolated one company towns such as Vorkuta differently, in that the provision of social services is so inextricably tied up with the Coal Association and with the entire fabric of the town, that special provision should be made for these cases until such time as resources and possible relocation provisions can be provided by the Russian Government

71 The plans to retrench the workforce, divest social and welfare facilities and restructure the economic operations of mining and ancillary operations should be tackled comprehensively if there is to be a coherent corporate approach which will enable government to reduce subsidies In this context it may not be necessary to transfer all of the social services which are currently provided by the Coal Associations to the municipalities, some could be privatized (i e recreation facilities and cafeterias) while others could be phased out entirely However, there are key services without which the social safety net could not be said to function adequately and it is these which should be identified and transferred to municipal provision (health and child care facilities as well as urban services)

72 The development of realistic business plans for each coal association will mean that strategies for recruiting new workers to the industry will also have to be developed *The present policy of hiring new workers is not consistent with overall demand projections for coal and with the Ministry of Fuel and Energy plans for restructuring the industry It will be necessary to cease recruitment completely at those mines which are slated for closure and to review hiring practices in all other mines*

73 Management should design suitable labor shedding programs to take into account the future needs of the Coal Enterprises in relation to skill mix and correct profiles for the firm In particular, management should identify the key underground skills related to production and reduce as many of the surface jobs as possible

74 Workers who have reached pensionable age, 50 years, should be required to retire if the skill mix needed to run the mine can be retained without them In addition to the retirement of workers of 50 or older, the industry may wish to introduce an early retirement scheme for specific categories of workers satisfying certain age and length of service qualifications For example, all workers aged 40 or more with at least 20 years of service in the industry might be eligible for early retirement under the scheme

Early retirement should not be regarded as a right but should only be granted when it is in the interests of the mining industry

75 From meetings with Management and Unions in all the areas visited,it is clear to the Mission members, that, unless a Union-Management debate begins in an atmosphere of trust and cooperation before difficult decisions have to be taken and their consequences felt, a serious industrial relations problem could arise Consequently, a very strong recommendation emerges to install a program of Management/Union Training at the earliest possible opportunity which would address topics such as collective bargaining, negotiating etc Unions in particular require help as they must be made to understand the hard budget constraint and the burden on the government budget of coal sector subsidies The Unions should be developed as partners in the debate about the future of the Coal industry in Russia

V

Policy Issues Federal and Oblast

76 In the event of a restructuring of the Coal industry,Federal and Local Government will need to design and finance measures and programs to deal quickly with the social and political consequences of labor shedding The Government should establish a Fund to finance lump sum retirement for displaced coal miners and should finance special labor market adjustment programs to meet the needs of the coal mining areas as soon as possible

77 If the Government implements the program for coal restructuring and its consequent mine closures, it will be necessary to shed large numbers of workers It is possible that as many as 400,000 to 600,000 are surplus to the needs of the mines over time The timing and size of redundancies would depend on the Government's decision regarding the pace of mine closures A program of rapid mine closures, say 30 to 40 per year, would result in layoffs of 50,000 to 100,000 per year Since most of the redundancies in the first two or three years are likely to come from mine closures, rather than scaling back production at operating mines, a precondition for such a program will be establishing the necessary capabilities for assisting redundant workers in a large number of communities

78 Not all of the workers affected by mine closures will become redundant, as many of them are and will be employed in ancillary industries and social services Others may elect to take early retirement Usually, early retirement costs would be borne by the Employment Fund, at a normally higher cost than unemployment compensation, and consequently this policy does not save resources If the cost is the same as the equivalent in regular unemployment compensation, then the only effect is cosmetic - i e individuals will not show up as unemployed However, from the Tariff Agreement between the NPG and the Ministry of Fuel and Energy and Rosugol, it would appear that Union has negotiated a special package which would mean that the Coal Associations would pay early retirement benefits to NPG members for two years before the normal pension benefits kick in [15]

79 On efficiency and equity grounds, any social safety net measures associated with restructuring should not be confined to miners per se but should extend to all the ancillary workers, inside and outside the association, whose continuing employment depends upon the existence of the mine, as well as to people who become unemployed from the "knock on" effects of cuts in the coal industry The latter may certainly be as adversely affected by restructuring as the miners, and probably have far more limited means to protect themselves against income shocks because they earn much less than mineworkers

80 *Social Assistance* Institution support could take several forms - including guidelines to assist in the development of targeting mechanisms and the use of the concept of the subsistence minimum, staff training and the recruitment of sufficient staff and appropriate skills to deal with the increased pressures

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[15] This issue of early retirement goes against the policy of raising normal retirement ages which one would normally wish to encourage However it can be defended as recognizing the probable there are unlikely to be new opportunities in the same occupation, the social return on retraining is likely to be low, since regular retirement is not far off, and active labor market policies can focus on more urgent issues From the coal industry point of view, the main difficulty is that some of the more experienced and essential workers will leave the workforce on the basis of their age Meanwhile some of those who stay may be capable of being retrained and/or starting small businesses The need for careful manpower planning in the individual mines has already been stressed

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associated with structural adjustment In the short term, consideration should be given to developing community family service programs in the mining towns as it is accepted that the family and community costs of mine closures are very high in social terms

81 *Financing Social Assistance Programs* Assistance to the poor has no assured source of financing Fiscal support from municipal or federal sources will be required to provide a stable source of funding for programs of social assistance The Bank has proposed that municipalities receive transfers on conditional grant basis (ex ante), cost reimbursement (ex post) or some form of matching grants to create incentives for cost containment at the local level [16]

82 *Employment Services* The continued development of a network of flexible staff resources and the strengthening of delivery systems is part of the ongoing work of the Federal and Oblast Employment Services In addition, these services should now concentrate on the introduction of a range of policies and programs to deal with the specific problems of the mining towns Examples of appropriate policies and programs are suggested in the following paragraphs

83 *Mass Layoff Programs* A policy will be needed to respond to mass layoffs in mining towns In consultation with the Unions, a program should be put in place, following the pattern of advance notice and rapid response mechanisms which have been developed in other countries

(i) *Advance Notice* Effective advance notice procedures are intended to ensure that the coal association employees to be laid off, the coal association itself, the community affected, and the local authorities receive useful information sufficiently in advance of the actual lay-off to allow for early intervention The assumption is that job-threatened individuals will be assisted earlier through selected interventions which range from the establishment of an employer-employee committee through an industrial adjustment approach to the set-up of an in-plant employment service linked to the local employment office Experience in other countries clearly shows that adequate advance notice procedures in the case of mass layoffs provides a useful first step in facilitating the smooth adjustment of affected workers to their changed circumstances Countries which have had no experience of dealing with a mass layoff situation until very recently (e g Hungary) are now developing legislation which stipulates that employer-employee adjustment committees must be formed to deal with the problem of large scale unemployment in a community

(ii) *Rapid Response Mechanism* Advance notice alone, as described in the previous paragraph,does not guarantee that adjustment planning will take place Indeed, advance notice in the absence of a rapid response mechanism may do nothing more than give workers more time to become anxious about their future A well developed industrial adjustment program is predicated on a rapid response mechanism using a joint consultative approach Trained advisors are sent on request to firms as soon as notice of layoff is received to facilitate an agreement between the enterprise, the workers and the Employment Service and in crisis areas, the local community Group registration of workers for benefits, information on measures available, and crisis counselling is

[16] For a full discussion of these and related issues, see Russia Social Protection During Transition and Beyond (Feb 1994)

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arranged if necessary Each affected worker's qualifications, special skills, experience, interest in retraining or relocation is obtained Job development activities, both through the formal and informal job network are vigorously undertaken and linkages are established with local authorities to stimulate economic development activities Workers not immediately placed are counselled before the application of more costly measures and if appropriate, urged to consider training, retraining or small business initiatives Thus much of the adjustment planning is be done while workers still have a firm attachment to their work place

84 *Temporary Work Programs* Retraining, wages, experience and rebuilding the infrastructure are potential positive results from a well planned program of public works These programs would begin the phase to a market economy by providing short term security and work to unskilled workers As currently organized in the Russian Federation, so-called public works programs suffer from very low allowances and from equally low public esteem One policy requirement therefore will be to increase the allowances payable to individuals on these programs and improve the training content for individuals and the social value of these programs to the community It is strongly suggested also that the name public works be dropped and replaced by a title which is less negative e g " Special Employment Programs "

85 *Specific Applications of Special Employment Programs to Mining Areas* It is suggested that these programs try to solve some of the housing and environmental problems which will arise in the mining towns and environs Hence the recommendation is that people who have been laid off should be deployed on environment clean up programs and on housing and urban renewal programs and that these programs be funded by special subsidies which would be diverted to raion Employment Services There are Rehabilitation Funds which have been earmarked for Environmental cleanup and which are available to the Association and to the Raion Local Authority which could be used for Special Employment Schemes too [17]

86 *Training Policy* Vocational Training is a very widely used measure which has several obvious attractions as an immediate option in dealing with the potentially large numbers who might be shed from the Coal Associations However it is a very expensive option unless programs are properly targeted to those workers who are most likely to benefit One of the major economic arguments against extensive training in periods of high unemployment, is the risk in training individuals for a market where they will find it difficult or impossible to get a job even with their newly acquired skills However,in the Russian Federation, it will be necessary to reorient the labor force in the specific skills which are needed in the transition to a market economy All levels of the labor force will require attitudinal and motivational type training to deal with the requirements of the changing workplace Unless this becomes a policy for ex coal association employees, the workforce will have difficulties coping with the demands of transition In fact to neglect well-targeted, selective training in the process of restructuring the Russian Coal Industry would probably be the more costly option in the longer term

[17] Suggestions from the World Bank Mission that examined the environment impact of coal restructuring are that initial public works type projects would provide meaningful employment for miners displaced during mine closures Small business opportunities could come from (i) reclamation work on the abandoned operations and (ii) development of separate reclamation companies to contract with the coal concerns to remove and store the topsoil grade spoil pile slopes replace topsoil and revegetate the area

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87 There is a need to address the skill mismatch in the labor market through a series of flexible, well designed training and retraining programs Two groups need to be targeted especially in formulating training policy women and young people

88 The position of young people in mining towns may soon become even more acute as the industry which was a traditional source of employment downsizes In this respect there are some actions which raion and oblast authorities could take which might begin to address this problem *The first is to stop (or least drastically reduce) the education and training of people for work in the mines* This will take time, as it is very difficult speedily to adjust educational and training programs Staff and facilities require time and money in order to cope with change However, it is important to sensitize local communities to the idea that jobs in mining will not be there in the future and that young people especially must begin to think of other means of employment The present system of narrow and overspecialized Vocational Education and Training should be restructured to allow young people a broader preparation for entry to a changing labor market

89 The high proportion of women who are unemployed is already a source of worry to the Federal and Oblast Employment Services There is a need for a policy and a coherent strategy which would take into account the particular requirements of women who have become unemployed in mining communities

90 Experience in other countries shows that miners often manage to get other jobs but that the skills and attitude of the ancillary overground workers may not be so robust A policy will be required for retraining older workers who have been displaced from the Coal Associations These workers may have limited general education complemented by narrow skill training They will be faced with job changes, changing management practices and increasing technology and ultimately perhaps with structural unemployment Consideration should therefore be given to retraining policies which can include expenditure on job counselling and assessment as well as remedial general education, management training and traditional vocational training The focus here also should be on effective screening and job counselling Initial results in Hungary for instance show that high drop out rates experienced on retraining courses were cut through improved counselling Improved screening and delivery of training is now resulting in up to 60% placement in communities with unemployment in the range of 15%

91 In the very short term, as there are vacancies in the labor market for people with construction trade training, training courses should address the issue not just of the transition to the market economy by providing attitudinal and motivational type training, but should also continue to plug one major gap which exists in the labor market and offer construction trades training The development of a pool of well-trained construction workers would also enhance labor mobility

92 *Entrepreneurship Development* Small Business Advice and Training for entrepreneurs should be organized and run by Chambers of Commerce or Municipalities Ex coal association workers should be supported in these activities through the Employment Services (i e by allowing would-be entrepreneurs to capitalize their unemployment benefits and avail themselves of free training schemes and financial advice) In relation to the so -called Job Creation Schemes,it seemed to the Missions that significant amounts of the Employment Fund are being expended on activities which are difficult to define as actually creating new jobs Further data collection needs to be undertaken to establish exactly how much new job creation is achieved by these programs, together with durations and sustainability

93 *Financing these Policies* The question of how Oblast authorities and the other agencies would finance expenditures that would allow the structured handling of the social consequences of mining industry redundancies has to be considered within the context of the fiscal arrangements between the various levels of government in the Russian Federation

94 In the context of mine area closures, the key issues that need to be addressed are

(i) the proper assignment between Federal, oblast and raion authorities of different categories of expenditure This is the essential pre-condition for assigning responsibilities on its financing

(ii) the provision of an adequate revenue base that corresponds to the potential expenditure commitments over time of the Oblasts and raions as well as the Employment Fund and the Federal Employment Services

(iii) rules on whether or not deficit financing is permitted and, if so, how it is to be properly controlled

95 When handling the social consequences of mine closures, the critical issues created by the current fiscal framework in the Russian Federation are therefore

- the potential deficits of raions within oblasts and oblasts within the Federation for coal mining intensive areas arising from the need for extra social protection expenditure and the contraction of tax revenues generated by mine closures,
- the potential exhaustion of the Employment Fund at the oblast level,
- the financing of proactive policies in general and Federal Employment Services in particular

In addition, there is also the important structural question of the necessary changes in oblast and raion finances if they are to take on an increased responsibility for the provision of housing, kindergartens and other social expenditures that are currently provided by enterprises Ensuring adequate alternative grant and/or subsidy arrangements is an essential pre-condition for successful divestment of these services by the enterprises

96 *Employment Fund* The capacity and uses of the Employment Fund have already been discussed in Section III The key policy issues which need to be decided by the Federal Government are (i) the level of benefits payable, and (ii) separating the funding of active employment programs from the Employment Fund

(i) Calculations show that when unemployment rises, the capacity of the Fund to pay Benefits will be quickly exhausted, (paras 54-57) One option which would delay depleting the Fund would be to put all recipients on flat rate benefits linked to the subsistence minimum, rather than the present complicated process of benefit payment related to previous earnings This would have the advantage of being easier to administer and would free Employment Service staff for more valuable activities However, given the present minimum subsistence levels (the national average in August 1993 was R 20,000) miners who are used to much higher salaries would not accept such a drop in their income

(ii) Another option is to top up the Employment Fund with special Federal transfers which would either (a) increase the Benefit level or (b) extend special concessions to individuals

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in mining areas which have suffered from mine closures This option raises the question of equity if other sectors begin to restructure, will other powerful groupings get special transfers too and if so, how much? Or, to put the question the other way are the miners only to be a special case?

(iii) The last possibility of ensuring that the Fund has the capacity to pay benefits at existing levels is to increase the payroll tax

(iv) The other issue is that the Employment Fund life could be extended by financing of proactive policies from central budget funds The World Bank has been recommending for some time that the Employment Fund should be restricted to the payment of unemployment compensation only

97 The initial observations of Russian Government Officials to these suggestions are (i) they have tried to introduce flat rate benefits but have run up against political pressure from powerful interest groups, especially the miners, (ii) introducing a special rate or package through the Employment Fund for areas affected by mine closures is not equitable, and (iii) in a country where official unemployment rates are still around 1%, there is no possibility of increasing the payroll Employment Fund tax (In fact, recently there was pressure to reduce this tax) This argument is also used against financing active employment policies from central budget funds as the Employment Fund is perceived to have large surpluses at the moment

VI

An Employment Strategy for Coal Mining Areas

98 For a large number of reasons, in all developed market economies, national governments provide assistance of various kinds to areas suffering major redundancies because market responses on their own are insufficient This is true even for the USA, where labor market responses are more powerful than in Western Europe The assistance given can be policies delivered by central governments, but tends to be primarily services provided by specialist labor assistance and training agencies and by regional and local authorities Where they are provided by the specialist agencies or local government, the costs are usually met in large part or fully by central government out of its general tax revenues The costs of this assistance are typically not met out of unemployment insurance funds

99 The degree to which unaided market based responses would eliminate unemployment caused by major redundancies in Russian coal mining areas without incurring unacceptable social costs is very limited All the available evidence, from the Study Missions and a variety of other sources, makes it clear that labor flexibility in Russia is considerably less than in West European economies Neither labor markets nor housing markets are well-developed or have strong information networks Financial markets do not yet provide ready access to medium or long term credits for new businesses or purchasers of housing

100 That is not to suggest that Russian labor markets are non-existent in the economic sense There is substantial labor turnover, at least within local labor markets Previous research indicates that, within Russian industry as a whole around 15% of employees change their job each year, although very largely within the same local labor market Very similar turnover rates were found for the mining workforce in Chelyabinsk There is even evidence of relative wage differentials emerging over the last 1-2 years between different regions of Russia even after taking account of differences in regional price trends But, the labor market flexibility observed is nowhere near enough to enable even the best placed mining areas to cope with major redundancies without considerable government assistance

101 There is evidence from the Study Missions that Oblast, raion and union representatives see the need for Government assistance to mining areas in the event of mining employment reductions and colliery closures They see this as providing an essential social guarantee The Bank would agree with this view Indeed, a major concern resulting from our work is the need for these oblast and raion organizations, working together with the Federal Employment Services, to develop strategies for coping with major reductions in mining employment This will require substantial increases in the financial and human resources devoted to policy design, implementation and delivery of social programs focussed on creating and maintaining an adequate social safety net

102 The key factor affecting the required scale of assistance in any area is whether or not it is reasonable to expect a relatively strong demand for labor of various types in the local area and in neighboring areas following the redundancies in the coal sector There is already a substantial demand for assistance to economically hard-pressed areas, mining and non-mining areas, and it will become even larger should they suffer major increases in unemployment Conversely, there is an acute shortage of

resources to meet these demands Oblasts and rayons have serious financial problems, as shown by the fact that the fiscal deficit in Chelyabinsk for 1993 is running at over twice its projected level There are similar shortages in managerial and administrative resources Given an increasing demand and a limited supply of resources, it is vital to use the available supply of resources as effectively as possible That means minimizing unnecessary expenditure and concentrating resources where they are most needed

103 The mining areas visited by the Study Missions present diverse social and economic conditions At one end of the spectrum is Shakhty Municipality in the Rostov coalfield IEEC found that, in Shakhty, only 21% of workers are employed in the coal industry A further 21% are employed in other industries, 26% in market oriented services (e g transport, construction and distribution) and 25% in other services (e g education, health, insurance etc) There also appears to be a reasonable amount of job mobility in the area Most interestingly, IEEC report that 6,000 people registered as one-person businesses in Shakhty during the first 6 months of 1993 This represents almost 5% of current employment

104 At the other end of the spectrum is Vorkuta where 73% of industrial employment is in coal mining, representing 44% of total employment The results of the Study Mission bring out clearly the very limited range of alternative employment opportunities not just in Vorkuta, but also in neighboring areas However, the labor market is not stagnant even in Vorkuta There is some labor turnover and about 30 - 50 small businesses and co-operatives are being registered each month Nevertheless, it is very clear that mine closures in Vorkuta would result in very few people finding new jobs without assistance following any sizeable employment reduction in the mines This is in contrast to the position in Shakhty where it seems likely that many people might well be able to do so provided they were given ord nary job-finding assistance

105 The position in Korkino was found to be between that of Shakhty and Vorkuta 39% of employment was in the coal industry and there were limited alternative employment opportunities in the town itself However, the Study Mission found that the Chelyabinsk Oblast was quite diversified in its industrial structure so that many mining communities had alternative employment prospects within reasonable daily travel distance

106 Considering the scale of appropriate assistance to the different areas studied, Shakhty with a diversified industrial structure as well as an actively functioning labor market seems to be the area where quite a high proportion of people becoming unemployed over a reasonable period could find new employment without considerable and expensive assistance Conversely, the much more limited alternative employment opportunities in Vorkuta mean that a larger and more comprehensive program of employment assistance and local development would be justified there Chelyabinsk is in an intermediate position

107 With the information currently available, it is not possible at this stage to make clear recommendations on the appropriate scale of government assistance even in the areas visited by the Study missions, and it is certainly not possible for other areas Attention needs to be focussed for each mining area on the key relevant factors

- employment possibilities in local and neighboring areas,

3.12

- geographical location and transport links,
- opportunities for new businesses,
- housing markets

The range of anti-unemployment programs that should be considered in any social assistance package to mining areas includes a variety of options

108 It is possible that for Shakhty, provided mining redundancies are phased in over a reasonable period of time, no more is needed than to provide slightly augmented job finding and counselling assistance at relatively low budgetary cost It is more likely, even for Shakhty, that more would be needed The other measures that would be most relevant for Shakhty are training and small enterprise programs, plus perhaps some local development programs In Shakhty, it would be most appropriate to target these development programs on the early expansion of existing industries in the area and the attraction of new firms On the basis of the information currently available from the IEEC Study, it is possible that there would not be a need in Shakhty for major public works programs to absorb unemployment, nor for assistance in migrating away from the area, let alone for employment-related subsidies to the mines

109 Korkino is in a similar but less favorable position than Shakhty (Other parts of the Rostov coalfield are also in a less favorable position than Shakhty) In Korkino, the Study Mission found that there were probably good employment opportunities in neighboring towns, including the city of Chelyabinsk But, it was suggested that improvements to transport facilities (for instance, additional bus services) or assistance with travel costs might be necessary to enable unemployed people in Korkino to take up these employment opportunities This would be an important potential additional element in Korkino besides job counselling, training for new jobs and so on The evidence from the Chelyabinsk study was that alternative employment prospects were more limited in Korkino than in Shakhty That would suggest a greater potential need for public works programs, although probably not the need for employment-related subsidies to the mines

110 The position in Vorkuta is very different The potential for useful job finding assistance is very limited as is the scope for training for other jobs in the area It would, of course, be possible to train people "for stock" (i e for job opportunities that might emerge at some unknown point in the future) but this is not an attractive policy To absorb mining redundancies and the associated "knock-on" unemployment in Vorkuta, the most relevant policies are public works policies, assistance with migration to other areas and possibly some subsidies to the mines to maintain employment above the level that could be commercially justified

111 The Study Mission to Vorkuta found that there were already proposals being discussed to promote migration out of the area, but they contained sufficiently extravagant re-housing promises as to be unaffordable Conversely, more recent data show net inward migration to Vorkuta Retirement pensioners were moving to the area in spite of its harsh climate so that they could receive additions to their pensions because of the special cost of living additions This is a good example of how interactions between social programs can produce unintended and undesirable effects

112 Methods used to finance small businesses and new enterprises will require close study The IEEC Study found that, in Shakhty, new enterprises were being supported by tax breaks, subsidized rents and loan guarantees These are inefficient ways of supporting small enterprises In addition, they reduce local revenue receipts and the tax base at a time when local authorities have serious financial problems

Loan guarantees in particular hide the real cost of support, which can be high Both for small business and other programs, policy effectiveness requires that assistance is provided by explicit grants or loans rather than by tax breaks or indirect subsidies and certainly not by loan guarantees

113 Proper costing of assistance would need to estimate carefully the costs of providing these services in the various different mining areas Considering just training, it is clear that specific programs have very different costs attached depending on their length, their sophistication, the numbers being trained, the numbers in each training group etc Programs may be designed on a more generous or less generous basis Given any overall budget for these programs, the unit cost will determine how many people can be given assistance within an Oblast

114 Accordingly, with the assistance of USAID, the World Bank is organizing further studies in a limited number of coal mining regions These studies will, inter alia, clarify some of the complex issues which might arise in reallocating and/or reducing mine subsidies for social services The studies will also include work on costing a range of proactive employment programs and include an analysis of the likely impact of various scales of intervention both at the regional and at the local level

Annex F

Environmental Issues in the Russian Coal Sector

Annex to the Russia Coal Sector Study

Environmental Issues in the Russian Coal Sector

Summary and Recommendations

1 This annex is based on the findings of the Coal Sector mission to Russia in September-October 1993 and draws upon work carried out by previous Bank missions and by International Mining Consultants Ltd (IMC) under a contract with the UK Know-How Fund Members of the mission visited surface and underground mining operations in the Donbass, Kansk-Achinsk, Kuzbass, and Urals mining basins while previous missions and IMC have also visited the Moscow and Vorkuta basins The annex covers the environmental impact of mining operations but not occupational health and safety issues which are a major area of concern and are dealt with elsewhere in the report

2 Poor mining practices, bad management and past neglect mean that the coal industry has left a substantial residue of environmental damage in all mining regions With respect to current mining operations, there is a large variation between the best environmental practices in Kansk-Achinsk, which are not far behind current international practices, and the worse aspects of environmental neglect in some of the older mining basins

3 **Environmental priorities** *Spoil heaps, abandoned mine workings and rivers polluted by mine water discharges with high levels of suspended solids are unsightly and highly visible symbols of the impact of coal mining on the environment However, in terms of human health or other measures of the cost of environmental damage they rank well below other, less obvious, environmental problems in Russia* Even in mining areas it is the burning of coal in open fires or boilers without adequate controls on emissions of smoke and dust which give rise to the most urgent concerns Elsewhere, pollution from heavy industry -- especially iron and steel, non-ferrous metallurgy, chemicals and petroleum refining -- dominate the environmental agenda

4 There are localized problems in a few mining areas which pose specific threats to human health or to important ecosystems but which could be dealt with at a relatively small cost The main ones are

* **acid mine drainage and related water pollution in Kisel (Urals) and Inta (Vorkuta),**
* **spoil heap fires in Rostov, and**
* **fugitive dust from waste dumps located near to towns**

These issues should be given high priority in addressing the industry's environmental performance A summary of the range of environmental problems identified by the mission is given in Table 1 (at the end of this Summary)

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5 **Incentivesand structural change** Many of the industry's environmental problems are closely linked to the management philosophy which shaped its operations for more than 50 years Mines are required to extract all 'recoverable' coal with little regard for the economic efficiency or environmental impact of this regulation As a consequence, environmental measures focus on remedying the damage caused by mining operations -- the equivalent of 'end-of-pipe' controls in industry -- rather than on reorganizing production to avoid or minimize damage in the first place *There are strong links between improved economic efficiency and better environmental performance, so that most of the changes in mining practices recommended elsewhere in this report will contribute to lessening the environmental damage caused by mining operations*

6 The introduction of fees and fines for emissions of the main pollutants in 1991 has been an important step because it forces mines to take account of the costs that they impose on their communities as a result of their operations There are a number of weaknesses in the implementation of these environmental charges -- notably, the level of fees and fines is much too low while the offsets that are allowed for "environmental expenditures" tend to direct resources to low priority measures Nonetheless, the system provides the basis for achieving an appropriate balance between economic and environmental concerns in the future

7 **Recent progress** Even within the former system, substantial progress was made over the last decade in addressing the environmental problems associated with current mining activities under pressure from regional and local environmental authorities The pace of land reclamation has accelerated so that it is becoming standard practice in Kansk-Achinsk and in parts of the Kuzbass for surface mines to restore land on a hectare-for-hectare basis when extending their mining operations The average level of suspended solids in water discharges from underground mines in the Kuzbass has declined from 60 mg/l in 1985 to 20 mg/l in 1991 Subsidence is generally being managed in a reasonable manner Thus, *the key issues addressed in this annex are (a) how to sustain this recent progress as the industry is privatized and comes under great economic pressure, and (b) how to address the legacy of damage left from past mining operations*

8 **Regulation** The institutional framework for environmental regulation of the industry is seriously deficient For understandable reasons, the Ministry of Environmental Protection and Natural Resources (MEPNR) does not regard mining as a pressing environmental issue and has little capacity to oversee the industry Oblast and local environmental committees in mining areas devote more attention to the industry Their approach is media-based -- land use, air, water, and solid waste -- so that they are rarely able to formulate a coherent strategy to deal with the industry's environmental problems as a whole There is also a serious confusion between the environmental problems associated with ancillary facilities operated by mines -- heating plants, wastewater treatment and solid waste disposal -- on behalf of their communities and those specifically linked to mining itself

9 To resolve these problems, it will be necessary to create a specialized Inspectorate dealing with mining issues under the supervision of MEPNR This body would be responsible for formulating and

enforcing an appropriate regulatory framework for the mining sector It could also supervise the activities of the Trust that is proposed to deal with the reclamation of disturbed lands left from past mining operations

10 **Better mining practices** Much of the environmental damage caused by the industry is the outcome of inappropriate incentives reinforced by poor management These characteristics are not unique to the mining industry, so that, as elsewhere in the industrial sector, the transition to a market economy should be accompanied by significant environmental as well as economic improvements Operations at many mines, especially older ones which date back to the chaotic days of early industrialization and World War II, appear to be simply a rote continuation of past practices with no concept of strategic planning Nobody has ever stepped back to question what such mines are producing by way of coal or environmental degradation and at what cost Problems such as increasing energy inputs and decreasing volumes of saleable coal per ton of waste generated are treated as discrete issues, which leads to familiar calls for more investment, more technology, and other means of tinkering

11 *A different approach is required The focus should be on better mine management and pollution prevention in order to make best use of the physical and human resources available Proper mine planning, "good housekeeping" and other operational improvements can dramatically reduce costs and environmental damage for small or negligible expenditures Investment should be the last element in upgrading performance, not the first Some new equipment and improved technology may be necessary, but they should only be introduced after basic management and operational improvements have been made*

12 **The legacy of past damage** Mines which continue to operate can be obliged to address the environmental impact of their current mining activities by a combination of regulation and economic incentives This will, however, leave the problems of past damage in the form of disturbed lands and their side effects such as seepage of contaminated water from old mines or from spoil heaps The burden of dealing with this legacy will fall on the government and will require a long term program over a period of 15-20 years The immediate need is to assess the extent and nature of damage in each mining basin in order to establish priorities for rectifying the most urgent problems and to set up a framework for dealing with other problems in a systematic manner

13 It is proposed that a Trust should be established to take over the ownership of disturbed lands in closed mining operations The Trust would be responsible for preventing further environmental damage, for restoration, and, eventually, for selling the land for other uses The main reclamation activities would include (a) compacting or reconstructing spoil heaps, (b) regrading surface mine workings, (c) provision of adequate drainage to protect rivers and groundwater, and (d) revegetation Experience in Russia suggests that the costs of such reclamation would be of the order of $1,000-2,000 per hectare although this does depend on the extent of major earthmoving that is required

14 **Financing environmental improvement** It will not be possible to finance the reclamation of disturbed lands from the regular resources available to the environmental authorities These consist primarily of the Environment Funds which receive revenues from all fees and fines However, total revenues are and will probably remain small relative to the scale of the general environmental problems that need to be tackled, while mining-related problems should be ranked below other more urgent environmental concerns The costs of dealing with disturbed lands must, therefore, be met from funds generated within the coal industry

15 A levy on coal production is proposed as a mechanism for funding the maintenance and restoration expenditures that will be undertaken by the Trust The levy should be set at a level that would allow the Trust to complete a program of reclamation over a period of up to 20 years After that period the levy could be reduced but it is likely that some kind of levy will still be necessary to fund long term care and maintenance for those sites which cannot be safely transferred to other uses

TABLE 1 SUMMARY OF PRINCIPAL ENVIRONMENTAL IMPACTS IDENTIFIED

	DONBASS	KANSK ACHINSK	KUZBAS	URALS	VORKUTA
WATER POLLUTION					
Ongoing Mining		(Water management and recycling being introduced Problems are minor and localised)	(Discharges not meeting standards but impacts small compared with other industry discharges)	Acid drainage from Kisel may be reaching Perm water supply Saline discharges at Chelabinsk but surface waters not significantly affected	Acid drainage from Inta goes to tributary of Pechora River
Closed mines	Runoff from spoil heaps should be controlled	(Restoration in progress and detailed plans being developed)	Flooding of underground workings may impact local groundwater supplies	Gravity drainage from Kisel could continue after closure	Runoff from spoil heaps will be a problem
Ancillary activities			(Some investment going onto upgrading wastewater treatment for industry and housing)		
AIR POLLUTION					
Mining Operations		Dust from roads inside and outside the mine is a problem which is being investigated		Dust problems from haul roads and spoil heaps especially in summer	
Ancillary activities		(Minemouth power station is the biggest local air pollution source)	Use of low grade coal for domestic and industrial use creates significant particulate problems	High particulate emissions from industrial boilers and domestic use	
Spoil heaps	Spontaneous ignition of spoil heaps is causing problems				Dust from spoil is a localised problem

LAND DISTURBANCE					
Reclamation and restoration	Spoil heaps need to be regraded and controlled	Older mines need further restoration Current mines are restored as mining progresses	There are large areas of land disturbed by coal and other mining operations A major task exists Problems of storage of spoil are increasing	Reclamation is slow and there are disputes over acceptance Huge Korkinsky pit poses a particular problem	Little reclamation has been done and a major task remains
Subsidence				(Affected and prone areas being mapped and development controlled)	

The Environmental Impact of Coal Mining in Russia

16 **Water quality** The Urals basin is the focus of the main water quality problems associated with mining operations In the Chelyabinsk region the issue is one of excess salinity, while further north Kiselugol (in Perm oblast) is discharging large volumes of highly acid (pH < 3) drainage water with high levels of heavy metals and natural petroleum products into a river basin upstream of the main drinking water intakes for Perm In the case of Chelyabinsk, the damage caused by saline water discharges seems to be minimal, largely because groundwater inflows are low and the surface waters to which the mines discharge are naturally quite saline Since it is very expensive to treat large volumes of water to reduce salinity, the Chelyabinsk Environment Committee gives much higher priority to addressing problems of water pollution caused by the large concentration of out-dated heavy industrial plants in the region

17 The mission was unable to establish the extent of the damage caused by acid drainage from Kiselugol's mining activities The coal is high sulfur (1 5-3%) and the mines produce relatively high volumes of drainage water However, were mining operations to cease it is likely that natural discharges from the mines, which are located in Urals above the adjacent populated plains, would still result in large flows of acid groundwater into neighbouring rivers The discharges flow into Kamskoe Lake which lies upstream of Perm on the Kama river (a tributary of the Volga) The dilution factor appears to be high and there are major paper and pulp plants upstream of Kamskoe Lake at Solikamsk and Berezniki, so that the practical impact of mine drainage from Kisel on drinking water supplies for Perm and on water quality in the region is probably quite minor Nonetheless, this is an issue which would merit more detailed examination under the World Bank funded Environmental Management Project, which includes components dealing with policy and regulation and with water quality in the Urals region

18 Acid mine drainage is also a problem at Intaugol which produces coal with 2 5% sulfur content in the form of iron pyrites The nearby Kozhim river (a tributary of the Pechora river which drains into the Arctic) is heavily polluted, primarily with suspended solids in the effluents discharged by the mine, the coal washery and a power plant It was not possible to assess the impact of this pollution on fragile Arctic ecosystems -- the Pechora River is an important Atlantic salmon fishery -- but it is unlikely that it has any significant impact on human health beccausethe downstream basin is so thinly populated

19 In other mining basins where acid drainage is not a significant problem, water quality concerns focus on levels of suspended solids in water discharges, especially those from coal washeries and other ancillary activities This concern is partly a consequence of unrealistic effluent standards on mine water discharges In the Kuzbass, the discharge standards vary from 4 to 10 mg/l of suspended solids By comparison, the European Union directives on the quality of surface waters intended for the abstraction of drinking water and on the quality of fresh waters supporting fish life both specify guide values (which are not mandatory) of 25 mg/l of suspended solids In many East European countries a level of 50 mg/l is sufficient for surface waters classed as suitable for recreational use and fishing Actual data on average levels of suspended solids in the main rivers into which mines discharge were not available, but values of 20 mg/l or higher are common throughout the country

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20 The average level of suspended solids in discharges from surface and underground mines in the Kuzbass has been gradually declining since the mid-1980s as a result of improved treatment and changes in working practices About one-half of the discharges meet the current effluent standards without treatment, while the remainder requires (but may not receive) some degree of treatment The average level of suspended solids was reported to be 46 mg/l for discharges from surface mines (60% of the total) and 20 mg/l for underground mines Typical treatment facilities rely upon simple filter ponds with the addition of chemicals flocculants in a few cases Both Borodinsky mine in Kansk-Achinsk and Rostovugol are treating their discharges to reduce suspended solids in their discharges to 15 mg/l In the former case this is somewhat higher than the level in the receiving river Nonetheless, the level of suspended solids below the discharge averages only 5 3 mg/l The Lower Don basin, which receives discharges from Rostovugol's mines, is heavily polluted by agricultural run-off and industrial discharges, so that mining plays a minor role in the water quality problems of the region

21 **Air quality** The main urban centres in all of the mining basins typically have high levels of air pollution However, this is associated with the use of coal rather than with emissions linked to mining activities Chelyabinsk, Kemerovo, and Novokuznetsk are among the most polluted cities in Russia because of a combination of emissions from households which burn coal, heating and power plants and various major industrial sources such as metallurgical plants Rostov oblast is less heavily polluted by large industrial sources, but even there the two mining associations account for less than 5% of total emissions from stationary sources and almost a third of their emissions come from communal facilities (heating and power plants) operated by the mining associations

22 As part of the general effort to improve air quality in regions that are heavily dependent upon coal, mining associations will need to reduce emissions of particulates from the boilers which provide heat and power to their mines and nearby mining communities Apart from this, the main form of air pollution generated by mining activities is dust associated with (a) the use of heavy trucks on unmade roads, (b) the handling of coal and of wastes, and (c) the effects of wind on spoil heaps during dry periods of the year In all cases the key issue is one of management It is relatively easy to suppress much of the dust by spraying roads and spoil heaps with water, by better construction and maintenance of roads and spoil heaps, and by simple improvements in handling operations Research is underway in the Mining Institutes on dust management techniques

23 Air pollution from fires in spoil heaps are a localized problem, especially in the Rostov area where 30 out of 160 spoil heaps associated with Rostovugol's mines were burning at different levels of intensity in September 1993 These fires are a particular hazard to those living close to the spoil heaps because of the danger of collapses or extensive spontaneous outbursts The problem is strongly associated with the past practice of constructing conical spoil heaps combined with the relatively high proportion (up to 25%) of coal in the material sent to spoil heaps Putting out the fires is difficult and may cause temporary but serious water pollution because measures were not taken to control run-off or infiltration when the spoil heaps were constructed The longer term solution will involve much more effort at land reclamation to reconstruct, compact and revegetate the spoil heaps

24 **Land disturbance and solid wastes** There are widely differing perceptions of the extent of land disturbance caused by mining operations and the disposal of mining wastes Russia is a vast country and most of the mining takes place in areas which are or would be very sparsely populated in absence of mining operations -- East Siberia, the Far East, Kansk-Achinsk, Kuzbass, the North East and Pechora As a result, the mining associations have tended to act as if land has a negligible value in alternative uses, so that they have devoted little effort or resources to land reclamation However, continued mining operations are seen by local residents as a major threat to their environmental quality as more and more land in and around the towns or villages where they live is taken for surface mining or is used to dispose of mining wastes

25 There is a considerable range of estimates of the total area of land disturbed by mining but a recent review concludes that 1 5-2 0 million hectares is a reasonable figure for all mining in the former Soviet Union [1] About 100,000 hectares were disturbed annually in the late 1980s and about one-third of this can be ascribed to coal mining, primarily at surface pits in Russia and Kazakhstan Little effort was devoted to land reclamation prior to 1976, but since that time it is claimed that annual reclamation rates have risen from 100,000 ha per year to more than 150,000 ha in 1988 -- this is for lands disturbed by all forms of mining It appears that much of this reclamation activity has focused on lands disturbed long ago rather than those affected by current mining activities Many reports, including those received by the mission from oblast environmental officials, indicate that reclamation lags well behind new land disturbance in the Kuzbass and probably in East Siberia On the other hand, best practice in the large surface mines in Kansk-Achinsk has begun to approach standards achieved in the US, partly because the Environment Committee of Krasnoyarsk Krai has insisted on proper restoration as a condition for granting permission to extend the land covered by mining permits The same philosophy of 'hectare for hectare' restoration is now being adopted by the Kemorovo Environment Committee

26 This will leave a large area of land disturbed by past surface mining or by spoil heaps from underground mines Current rates of reclamation will make little inroad on this backlog, so that a long term program will be needed to address this problem The costs of restoring land disturbed by surface mining are not high -- typical estimates were 0 6-0 8 million roubles per ha for technical restoration and a further 0 4 million roubles per ha for biological revegetation at mid-1993 prices or a total of US $1,000-1,200 per ha On this basis, the total cost of restoration might amount to $100-150 million in the Kuzbass, and less than $10 million in each of the other basins with surface mines The cost per hectare of dealing with spoil heaps from underground mines would be higher, but the total cost would be modest since the amounts of land involved are much smaller

27 Subsidence is a potential problem in all underground mining areas, but it seems that it is being managed in a manner that is broadly accepted The theoretical maximum subsidence is 25m directly over the main coal seams, but actual movements are generally much less In some cases mining associations

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[1] A Bond & K Piepenburg - 'Land reclamation after surface mining in the USSR economic, political and legal issues', **Soviet Geography**, May 1990, pp 332-365

have purchased properties in affected areas There are no general land use planning regulations which would prevent development in areas liable to subsidence As a result, buildings have been constructed directly above long-wall mining operations in a number of basins -- cf the Social Annex paras 35 & 68 However, the municipal authorities are aware of the problem and will not allow any further major construction in such areas Mapping of actual and predicted ground movements is presently under way

Institutional Issues

28 There is no coherent regulatory system to supervise the environmental performance of the mining industry In the Soviet era a plethora of technical agencies had overlapping responsibilities for various aspects of coal mining Many of these agencies continue to function, but they remain narrowly focused and unwilling to cooperate

29 The **Ministry of Environmental Protection and Natural Resources** (MEPNR) has overall responsibility for setting national environmental policy MEPNR is very constrained by its limited resources -- both human and material -- and by a fragmented, media-based structure which is ill-suited to dealing with the problems of industries that require an integrated, cross-media approach It has no established policy on mining and little institutional capacity to regulate mining activities -- only one staff member works on mining issues In part, this situation has arisen because MEPNR has no explicit legislative mandate to regulate mining activities and has, therefore, allocated its resources to other issues which fall clearly within its jurisdiction However, it is responsible for setting fees and fines for discharges of air and water pollutants which are or could be an important influence on the environmental performance of coal mines

30 **Regional/Local Environment Committees** are the branches of MEPNR at oblast and district levels which are charged with the detailed implementation and oversight of federal environmental policies They are responsible for granting permits, monitoring and enforcing regulations, and levying fees and fines Typically, their inspectors are overstretched -- Kemerovo oblast has 64 inspectors for 1200 enterprises -- and they suffer from a lack of monitoring equipment and technical skills, especially in dealing with accidental emissions and spills They have little expertise in environmental policymaking and planning Historically, their efforts have focused on air and water pollution or on soil, forest and wildlife management They lack the technical skills in geology, hydrology, mine engineering, and land use planning that would be required to develop an integrated approach to improving the environmental performance of the mining industry

31 The **State Manufacturing and Mining Inspectorate** (Gostekhnadzor) does hhavesuch expertise and is, by default, the main organization responsible for overseeing the mining industry It has separate divisions for underground and surface mining -- which used to form the separate State Mining Technical Inspectorate (Gosgortekhnadzor) -- and is organized at federal, regional and local level in a manner similar to MEPNR Its work focuses on technical issues such as ensuring that mines comply with engineering, construction and operating standards These include the implementation of regulations

designed to maximize the extraction of coal reserves and to minimize the waste of coal in preparation Such technical regulations discourage the emergence of mine development and operation plans based on economic and environmental criteria They tend to reinforce attitudes which give priority to the volume of output at the expense of other considerations In principle, Gostekhnadzor requires that mines have adequate support infrastructure and services, such as wastewater treatment capacity However, this requirement is often circumvented by the grant of a temporary permit, so that the enterprise may be able to operate for many years without completing the necessary work to obtain a full permit

32 Gostekhnadzor inspectors confirmed that the current regulations governing the construction and maintenance of underground mines are much stricter than those in force when many existing mines were opened 40-60 years ago Little, however, has been done to require these mines to upgrade their operations to meet the current standards Despite the fact that Gostekhnadzor's activities have important implications for the environmental performance of mines, both its representatives and other officials emphasized that the Inspectorate has little or no interest in environmental matters It has a narrow engineering focus and there is little prospect that it could or would be willing to assume responsibility for the environmental oversight of coal mining operations

33 The **Russian Federation Committee for Geology and Management of Subsurface Resources** (Roskomnedra) -- the successor body to the former State Committee on Geology (Geolkom) -- is responsible for setting overall policy on subsurface resource management Its regional branches carry out basic geological surveys, maintain maps and databases, and manage the process of (re)licensing existing and new mines The submission of license applications should be accompanied by an approved environmental impact assessment which justifies the proposed land use and provides a technical appraisal of the project Licenses should then incorporate environmental guidelines, specify fees for the use of mineral resources, and define other conditions to be satisfied by the mine Before the license comes into force it must be approved by the regional/local environment committees as well as regional/local administrations

34 From an environmental perspective, the licensing process has a number of important weaknesses Many mines operate under temporary licenses before the requisite environmental, technical and economic analyses are completed Those responsible for enforcement of the license conditions appear to have few options short of curtailing or revoking the license for violations of its terms, a step few officials would be likely to take on environmental grounds The licensing process does not provide for public notification or participation, nor does it provide the possibility of an appeal once a license is granted Since Geolkom has traditionally been a strongly pro-development organization and its revenues are derived in part from severance payments, it is seen as being biased in favour of natural resource extraction even if this might lead to substantial environmental damage

35 **Regional and local administrations** have officials responsible for environmental protection, natural resource management and land use planning They are the primary agencies in dealing with land use issues, unless mining affects protected zones such as nature reserves or special forests which fall

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under federal supervision Their powers encompass decisions about the allocation of land for surface mines, buffer zones for underground mines and ventilation outlets, prospecting, and spoil banks as well as restoration requirements Thus, they must play a crucial role in addressing concerns about land disturbance and in rectifying the legacy of damage caused by past mining operations Already some regional and local administrations are using this lever to press mines to increase their expenditure on restoring land which has been used for surface mining

36 Overall, there are too many bodies with overlapping legal and institutional responsibilities for environmental protection in the mining industry Within the present system, regional and local environment committees working together with regional and local administrations have been most effective in tackling specific environmental problems -- particularly those associated with water discharges and land disturbance The procedures for granting operating licenses and discharge permits give the authorities considerable powers to enforce high standards of environmental performance on mines, but in practice the range of sanctions was too limited and the economic pressures too large for these powers to be exercised As result, the practice of relying upon temporary licenses and permits grew up as a way of circumventing the legal requirements

Paying for Environmental Protection

37 Historically, spending for the environment in the coal sector has taken only a small portion of overall spending The Rostovugol association allocated only two percent of its outlays in 1992 to environmental protection efforts Moreover, much of this spending has not been spent on mitigating the environmental impact of coal mining per se, but on providing wastewater treatment for local communities Some coal companies have attempted to cut back on this low level of spending on the environment Kuznetskugol, for example, has reduced its environmental staff to just one person in the central office, and plans to reduce its voluntary annual environmental reporting activities At Rostovugol, the deteriorating performance of pollution control devices on boilers stacks and the poor state of repair of one mine water treatment plant illustrated cutbacks in maintenance

38 In general, the provision of massive government subsidies to underwrite coal company operations have allowed most firms to continue environmental programs at roughly their earlier levels For those coal companies that survive the transition to a more market-oriented economy, the pressures to reduce spending on the environment even more will become fierce as coal companies attempt to cut their costs

39 While various problems have been discussed in this annex, the coal mining industry in Russia over the past quarter century has made significant investments in pollution control efforts The industry has made significant achievements many mines have gone to great lengths, including importing sophisticated technology, to treat water discharges from current mining operations and associated facilities to levels significantly cleaner than the receiving waters into which they flow All efforts should be made to preserve these achievements

40 According to the Soviet system of central planning, large industrial enterprises often provided basic communal services such as drinking water supply, wastewater treatment, steam, and electricity Coal companies generally perceive these services as a burden (they are a large liability in terms of air and water pollution permit fees and fines), and believe that they should not have to continue providing them With meagre resources of their own, municipalities often are unable to assume the cost of managing these facilities During a transition period, a combination of international technical assistance and financial support from the federal budget should be provided to municipalities in order to assist them in putting these operations on a sustainable, self-supporting basis

41 In the course of discussions, many comments were heard of the need to maintain some means of centralized financing for traditional environmental investments (wastewater treatment, smokestack scrubbers) as well as for innovative and promising concepts (technology to recover coal from spoil banks, fluidized-bed power generation to burn coal refuse, methane gas recovery) While such projects may be worthy in principle, the coal sector, with few exceptions, does not present the highest environmental priority in coal-mining regions, in the short term, scarce government resources should be allocated to ameliorate more pressing environmental problems generated by other sectors, such as metallurgy and chemicals

42 Ultimately, the environmental costs of coal production must be internalized and reflected in the overall cost of coal production Accordingly, the coal producing companies must be held liable for the damage they cause to the environment This means that they should not rely on external funding to reduce or rectify environmental damage caused by current mining operations These costs must be treated as part of their regular, self-financed, operating or investment expenditures That will ensure that mines have a real incentive to improve their operating practices both to reduce their costs and to minimize the amount of environmental damage that they cause

43 Liability for past damage is a different issue In one way or another, the costs of remedying such damage will fall on the government, either directly or in the form of a lower stream of income from the mining industry Thus, issues of fiscal and administrative convenience may playyan important role in determining how to finance and manage the necessary expenditures

44 **Regional/Local Environment Funds** In 1991, the Russian government instituted a federation wide polluter-pays system to support a special non-budgetary fund to be spent primarily at the regional and local levels exclusively for environmental purposes Contributions to the regional/local Environment Funds come from several sources permit fees for air and water emissions, waste disposal, and use of natural resources, and fines and court settlements for violation of environmental regulations Of these revenues, the local Fund retains 60 percent, 30 percent is sent to the regional Fund, and 10 percent is sent to the National Environment Fund Environment officials may elect to rebate a portion of firm's environmental payment if they are targeted at a specific environmental protection investment

45 After two years of operation, the revenues of environment funds remain small fees and fines are small and rapidly depreciated by inflation and companies often delay and refuse payment or negotiate smaller remittances According to government and industry representatives, most expect environmental fees to increase in real terms in the near future which should increase the revenues of the funds

46 Because local governments in the Soviet Union traditionally were deprived of an independent source of income, many local governments were the first to seize the initiative and turn to local businesses for funds to support local environmental protection programs In the coal sector, the environmental funds have the potential to fund labour-intensive environmental restoration projects, such as reshaping and revegetation of mined-out lands This could be of significance in coal mining regions hard hit by unemployment as a result of restructuring and a contraction of the industry

47 Even so, it is unlikely that the volume of finance coming into the environmental funds will be sufficient to support programs on the scale needed to absorb a significant share of unemployed miners or to effect a significant improvement in environmental conditions In the case of Rostov oblast, for example, the regional plan for high priority environmental projects in the period 1994-96 envisages that less than 10 percent of all outlays will be financed For soil conservation measures specifically this figure is less than 5 percent

Improvements in Mining Practices

48 Many of the environmental problems that have been identified are the consequence of poor mining practices Present mining methods are inefficient and wasteful, improvements would result both in improved productivity and in a reduction of environmental damage Mine managements tend to highlight a lack of investment as the reason for poor productivity, but it is clear from the relatively good performance of the newer and better operated mines that large gains can be achieved through better management and operating practices

49 The difficulties of individual mines are compounded by the lack of a framework for disseminating good practice with respect to the planning and operation of mines Various bodies offer technical advice or set standards, but no effort is made to coordinate and balance the concerns dealt with by separate agencies Possible reforms to the regulatory framework at federal or regional levels are discussed later, but, irrespective of the details of any new system, there is a clear need for a better and more coherent approach to mine planning

50 **Existing mines** The crucial issue for existing mines is to change their mining operations so as to reduce the amount of waste that is generated Poor mining practices result in (a) excessively high ash levels that cause problems for coal users and should reduce the value of the coal at the mine if the pricing structure incorporated appropriate quality differentials, (b) expenditures on coal preparation that may be very inefficient or even ineffective, and (c) discarding good quality coal along with other waste because of the lack of incentive to separate it out Other improvements can reduce the volume of and

costs of treating water discharges by reducing water inflows, separating clean water inflows, and implementing simple in-situ treatment systems More attention to the design and operation of gas removal could reduce surface hazards and allow methane to be used for gas boilers within mines Finally, coal storage and handling arrangements should be improved to reduce the number of times that coal is handled, and to minimize problems associated with fugitive dust and water run-off

51 In most cases the costs of reducing environmental damage by adopting such 'good housekeeping' measures are trivial in relation to the overall costs incurred by mines All that is required is careful planning which takes account of environmental considerations, attention to detail, and proper training of miners and their supervisors The same comments apply to managing problems caused by subsidence as underground workings are closed The general approach should be to induce collapse and subsidence at a controlled rate wherever it is important to avoid the possibility of unpredictable future movements -- for example, when certain forms of development are to be permitted in areas that might be subject to subsidence

52 To deal with longer term environmental problems, each mine (and preparation plant) which remains in operation after a transitional period of up to 5 years should be required to produce and then begin to implement a plan to address any environmental problems and to ensure satisfactory reclamation of land disturbed by mining operations Such a plan should be negotiated with the regional and local environment committees who would be responsible for monitoring its implementation The purpose of the plan should be to enable the mine to meet agreed environmental targets which would minimize continuing environmental degradation In setting the environmental targets, regional and local environmental officials should take account of both costs and environmental conditions in the absence of mining rather than insisting on uniform standards without regard to circumstances Among the issues that should be addressed by these environmental plans are topsoil recovery and storage, management of water balance, contemporaneous reclamation, final restoration and closure, and management of overall wastes

53 **New mines** Recent developments in the Kansk-Achinsk basin demonstrate that planning and project institutes serving the industry have the knowledge and capacity to elaborate life-of-mine plans which minimize the environmental impact of mining and ensure the progressive reinstatement of disturbed lands As these institutes and mining enterprises have gained experience, they have begun to approach the standards achieved by best practice in the West at a comparable relative cost -- 3-4 percent of total mining costs Admittedly, the geological conditions are much easier in Kansk-Achinsk (horizontal seams with limited overburden) than in many of the surface mines in the Kuzbass, but there are many lessons which should be codified and adopted as requirements for new mines

54 At a minimum, whenever mines apply to regional and local authorities for the permits for mining operations required under land use regulations, they should be required to produce a plan for environmental rehabilitation which will proceed in parallel with mining operations These applications should include real environmental impact statements -- not just the general reviews supplied at present -

- and should provide the basis for subsequent enforcement action if mines fail to fulfil their obligations The key document is the life-of-mine plan which should describe the coal resource to be mined, type and extent of operations, schedule of development, equipment to be used, and plan for closure and reclamation of the final workings and all disturbed areas In return for this increase in the burden of submitting mining applications, the permits should cover sufficient land to allow mining operations to proceed for a period of 5-10 years without further submissions

Mine Closures

55 **Procedures for mine closure** This refers to the complete cessation of mining activities with the return of the land to other users and uses Mine transfers, that is when mining activities are shifted to new faces, will typically involve the maintenance of disused workings by the same enterprise and are subject to standard environmental regulations Technical and environmental proposals for closure, complying with guidelines approved by the proposed Mining Inspectorate, should be prepared These should cover measures to ensure safety and the isolation of mine workings -- for example backfilling shafts -- as well as long term monitoring and restoration requirements

56 Closure will have to be carried out in accordance with the relevant technical and environmental standards The detailed content of such standards is not addressed here but it should be noted that there are various relevant documents A draft Manual of Restoration Practice has been prepared (1992) by the Mining Research Institute at Perm and is circulating for comment at present There are clearly technical problems on the biological and agricultural side of revegetation and ongoing research on this issue will need to be coordinated and collated The Appendix to this Annex outlines typical closure conditions

57 A Mine Closure Design Xshoulto be prepared and approved This will relate to the measures to be taken for the safe closure and isolation of mine workings It should probably also set out the long term restoration requirements and final land uses, but it is not clear whether this is normally included at present

58 The basic environmental objectives in mine closure and site reclamation must be to protect the public health and safety, eliminate any continuing environmental degradation, minimize necessity for post-mining maintenance, and return the area to pre-mining or other uses acceptable to local authorities It appears that closure plans are presently required, although none was available for inspection by the mission These are prepared by mine staff with assistance from the mining association and local research institutes They are reviewed by regional/local Environment Committee and other officials Closure plans include design, stipulations, implementation procedures and serve as basis for allocation from special budget for closure costs Typically, plans for underground mines provide for continued surface and drainage management by the mining association or another mine (typically closure of one mine is phased with opening of new mine nearby) Kuzbassrazrezurol expects approval soon of plans to close one of their underground operations

59 **Responsibility for mine closure and closed mines** Once a mine or group of mines are designated for closure, a Closure Design will have to be prepared and it will be the responsibility of the relevant mining association or other mining enterprise to ensure that the short-term provisions of the Closure Design are implemented This would cover, for example, matters relating to access, public safety, and so on The Closure Design should probably also address the structures related to the mine, in terms of conversion to other use or their securing/demolition

60 At the completion of the initial shut down procedures, there will remain two major issues to be addressed completion of restoration and handover of restored land, and long term (perhaps indefinite) care and maintenance for the protection of public health and the environment Legal responsibility for the land before it is handed over, or where it is maintained indefinitely, will presumably lie with the mining association or its legal successors However, this issue of "ownership" may need clarification in order to define responsibility or culpability for action or lack of it and also to attribute losses (or profits) in relation to changes in the valuation of land when it is transferred to non-mining purposes

61 One alternative would be to create some form of Trust -- funded out of the production levy discussed below -- which would have the financial and administrative resources to ensure proper restoration and environmental rehabilitation This Trust would accept the mine land, with its assets and liabilities, upon completion of the short term closure requirements The Trust would manage the land holdings and would rely on outside funding for its restoration and maintenance activities and on contractors for the necessary works It would be established as a federal body but would operate through local representatives If such a Trust were to be established, a number of related mechanisms would be required One is an audit and oversight function to ensure that funds are being disbursed in a proper and effective manner The organisational location of this function is not important as long as it is outside the coal industry

62 It would also be necessary to establish a mechanism for settling disputes over the conditions and standards for handing back restored land At present, there are special committees at oblast level to determine whether required restoration standards are being These committees include representatives of both the mining associations and the relevant land holders, as well as Environmental Committee and municipal officials It is not clear whether such a system would be capable of making satisfactory rulings on disputed cases An independent mechanism is required which can reach judgements based on defined standards and on pragmatic considerations, so as to achieve the overall objectives of returning land to previous owners as efficiently as possible

63 There is a considerable body of expertise in some of the mining associations relating to restoration, at least on the "technical" (i e land forming) side Indeed, separate specialist Revegetation Companies have been set up within some of these associations Such Revegetation Companies, or new ones formed using existing expertise, would be very well placed to undertake contract work on behalf of the new Trust This would also be a way to provide a level of continuing employment, over a period of several years It would be necessary to split the work into contract packages and to introduce proper

tendering procedures so as to develop an understanding of competitive bidding and to encourage the development of independent companies, drawing on local experience and available construction equipment

Regulatory and Policy Reforms

64 **Institutional reform** The primary environmental problems associated with all kinds of mining are sufficiently different from those of industry and other forms of urban pollution to justify the creation of a specialized Inspectorate -- similar to the Office of Surface Mining in the US Its staff should work in cooperation with media-based specialists in air, water and solid waste management in the Federal Environmental Service, but they must have the resources and expertise required to formulate and enforce an appropriate code of environmental regulation for the mining sector The Inspectorate should be established as an agency under the supervision of MEPNR Most of its staff should be based in oblast administrations and should work closely with the officials of regional and local environmental committees The mission considered and rejected the suggestion that the core of such an Inspectorate might be formed from the Mining Department of Gostekhnadzor

65 The first responsibility of the new Inspectorate should be to draft and introduce a new set of regulations concerning the environmental obligations of mines, thereby rationalizing a mass of sometimes contradictory and out-dated provisions as well as filling gaps in federal environmental laws Natural resources are the focus of conflict between the Federal government and oblast/republic governments It may be difficult to reach agreement on issues concerning the management of natural resources, including coal and other minerals, but this should not inhibit the formulation of provisional regulations covering more technical issues

66 While the Inspectorate's staff should work closely with regional and local environmental officials, it is important that there should be strong federal oversight to maintain an even playing field for coal producers in different regions The transition from a highly bureaucratic and centralized system of control to one with significant regional autonomy in a market economy may lead to fierce inter-regional competition, particularly while coal markets decline or stagnate Officials will come under great pressure to improve their region's competitive advantage by relaxing environmental regulations This is illustrated by the serious problems which have arisen in trying to regulate the forestry sector Failure to ensure that federal regulations are enforced could impose substantial environmental costs on communities and would, in any case, probably achieve little in the way of stimulating mining employment or output

67 The Russian legal and regulatory system does not provide adequate opportunity for public involvement in land use and natural resource planning and decision making While the right of public involvement was recently enshrined in the 1992 federal framework law on environmental protection, existing regulations and guidelines often do not provide for public notification, hearings, and consultation with community groups Observers have noted that companies often have tried to circumvent community

involvement, only to have angry citizens mobilize to use the detailed regulations to stymie development Regional government officials have complained that Moscow (meaning Rosugol) has also tried to force development projects on communities without the required due process and appropriate consultation Many local governments have tried to block mine expansion by resorting to provisions of the land-use code, for instance by imposing strict demands for reclamation on land returned to community use before the allocation of new tracts to the coal company Often such conflicts can be avoided with early demonstrations of sensitivity and responsiveness to local interests

68 **Policy reforms** Coal companies are expected to comply with government regulations setting the maximum allowable emissions (abbreviated PDV) for water discharges and smokestack emissions Given that the established PDVs are strict and many if not most enterprises are unable at present to comply with them, the government has allowed the establishment of Temporary Agreed Emissions (abbreviated VSV) which are negotiated with the local environmental committee and then endorsed by the regional authority These temporary standards are expected to take into consideration the type of processes and technology involved -- i e they may be set more leniently for older equipment VSVs are granted with the expectation that the enterprise is taking steps to come into compliance with the PDV According to the system presently in place a firm pays a set fee for emissions up to PDV If emissions are above PDV but within VSV, fees are multiplied by a factor of five Should an enterprise fail to meet the VSV the fee coefficient jumps to 25

69 The intention of using producer fees and fines to facilitate environmental protection efforts is compelling and sound, but there are complications The first problem is calculating the levels for the emission fees and fines If they are too low -- as is the case in Russia today -- they will have no impact on polluters, as firms opt to pay the fines instead of taking costly measures to clean up their operations In the current era of financial difficulty the combination of rising charges for inputs and pollution fees would push many coal companies into bankruptcy Governments, therefore, will remain under strong pressure to minimize environmental fees and continue producers in order to soften the shocks of structural adjustment

70 Second, the system's ambitious goals and elaborate structure make it complicated to implement In Rostov oblast, 258 applications for PDV and VSV permits were considered in 1991, this figure suggests that the amount of time local and regional agency staff (which numbered 307) can devote to adequately assessing and processing applications is severely limited

71 Third, coal enterprises have run up massive debts as a result of dislocation and uncertainty due to deepening economic troubles According to the system of payment priorities, however, these debts have to be met before those incurred for environment-related reasons Firms have many options for avoiding meeting their financial obligations Many attempt to put off paying their environmental debts as long as possible, some have delayed indefinitely As a result, environmental agencies received only a fraction of the fees and fines they had charged In the first half of 1992, the Chelyabinsk regional

environmental protection agency assessed local firms 50 million rubles in fines and fees, but it had received only one-tenth that sum

72 Fourth, the option for fee offsets against environmental investment minimizes the potential market incentive provided by the fee system If offsets become a common practice, they lose their ability to affect decision making, as enterprises can simply budget them into their regular operations, especially since almost any investment can be classified as environmentally oriented While rebating keeps resources "closer to home," it favours projects based on their institutional affiliation rather than their environmental merit

73 Negotiations for reduction or offset of environmental liabilities raise questions about the potential for regulatory capture the ability of economically and politically important coal producers to dictate terms to small, underfunded and politically weak environmental protection agencies When questioned on this subject, parties on both sides of the table denied the existence or possibility of capture Nevertheless, firm guidance from the centre should minimize latitude for bargaining in order to ensure a level playing field

74 In summary, these market-based approaches can provide an important incentive to reduce environmental damage in future, but their success hinges on the successful transition to stable, market-driven economics -- a process that, at best, will take many years

Dealing with the Legacy of Past Damage

75 A long term strategy to restore disturbed lands affected by past mining operations will be required The amount of finance allocated to this activity will depend upon social as much as environmental considerations The first step will be to carry out a survey of all coal mining regions to identify sites and potential problems The register should, in particular, include details of (a) abandoned mine lands, where the responsible operator either cannot be identified or is no longer in business, and (b) areas within an existing mine but which were worked out before the start of the operator's current permit Thereafter, priorities should be set by oblast administrations which should be responsible for managing local reclamation programmes Sites which present specific safety hazards or which are the source of significant polluted water run-off would be the prime candidates for initial projects

76 Priorities for identification and selection of abandoned lands to be reclaimed should be based on the extent to which conditions at the site may present a risk to public health and safety or may result in significant, continuing environmental degradation The program for reclaiming the abandoned lands should be implemented over a reasonable time period, perhaps 20 years, with interim goals established A funding mmechanismmust be established to assure the necessary resources and it has been suggested above that an independent Trust be established to manage the program and to account for the funds The operation of the program must be subject to public input and scrutiny, especially in priorities and selections of sites to be reclaimed Prioritizing both the problems and the sites for remediation is critical

since there will not be enough money to address all of the problem sites, the objectives should be to deal with the most serious problems first, thus obtaining the most health, safety and environmental benefits for the money available

77 Reclamation activities would include some or all of the following depending on the nature of the problem and the site

- compacting or remaking spoil heaps to prevent spontaneous combustion,
- regrading and contouring mine workings and spoil heaps,
- provision of adequate water drainage and protection for groundwater,
- covering with topsoil, sowing grass and/or planting trees, application of fertilizers and soil bacteria,
- special treatments to deal with toxic soils and other problems

Experience suggests that the costs of reclamation may average $1,000-2,000 per hectare depending upon the nature of the initial problems and the degree of restoration sought

78 **Funding reclamation costs** The general principle is that each mine should be responsible for the costs of meeting reasonable environmental standards Mines which are unable to operate profitably on this basis should be treated in the same way, no matter whether the cause is environmental expenditures or any other component of costs This leaves the problem of financing remedial actions to deal with the damage caused by past operations which will be the responsibility of the Trust whose role was discussed above

79 According to standard fiscal principles, there is no reason to tie expenditures to correct past mistakes to current activity in the industry However, many countries have found it convenient to allocate a proportion of the rents earned within the industry to this purpose The options for funding expenditures on the reclamation of abandoned mining lands include

- a fee on coal production,
- a fee on coal use,
- discharge fees,
- general government revenues

80 *Of these options, that of imposing a fee on coal production is likely to be the most appropriate on both budgetary and environmental grounds* There would be relatively little practical difference between imposing a fee on production and one on consumption, but the former would be easier to collect In most regions, there are other, higher priority, claims on the revenues generated from discharge fees or on general budgetary resources, so that it is unlikely that sufficient resources would be forthcoming The federal government might provide initial funding for reclamation projects as part of a program to

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stimulate economic activity and business development in areas affected by mine closures, but this could only be a temporary measure

81 In the U S there is a $0 15/t fee on underground coal production and $0 35/t on surface coal For surface coal, this fee amounts to a few percent of the coal value at the mine, for underground coal, it is a fraction of one percent of the coal value at the mine Overall, the annual U S funding for Abandoned Mine Lands (AML) is about $270 million based on 1 billion tons production This is allocated to cover (a) administrative costs, (b) grants to coal-producing states based on production, and (c) grants dispensed at the Secretary of Interior's discretion Funds may be used for non-coal mining problems to address imminent risks to public health or safety, or if a state has addressed all serious AML coal sites

82 At September 1993 prices, assuming mine mouth values for coal of Rb 4,000 per tonne for surface mines and Rb 8,000 per tonne for underground mines, and production of 250 million tonnes per year, a flat fee of Rb 200 per tonne would amount to about 3 5 percent of coal revenues and would yield Rb 50 billion ($50 million) per year This should be sufficient to restore up to 30,000 ha per year and should enable the estimated backlog of reclamation to be dealt with in a period of 15-20 years Obviously, a flat-rate fee would be a larger proportion of the cost for cheaper coals and would favour production of higher quality coal Regional or local governments might be permitted to increase the fee to meet their particular coal-land reclamation needs

83 A fee levied on the output of each mine has the advantages that (a) is derived from coal production and is thus related to problem being addressed, (b) it is easy to calculate, and (c) receipts can be fairly accurately predicted for budgetary purposes Its disadvantages are that it is assessed on current production which presumably will be in environmental compliance, and it may be difficult to assess and collect from smaller operators

APPENDIX OUTLINE OF REQUIREMENTS FOR MINE CLOSURE

The following notes outline typical requirements for development of detailed closure plans The references are to US practice ("CFR" section numbers refer to US Federal Regulations) but there are a number of other codes that could be followed

Closure Plans

Any closure plans should include the following minimum requirements

1 Provide maps of final workings to appropriate authorities for permanent record These are necessary for future land use planning

2 Fill and seal surface openings - shafts, vents, drill holes, and subsidence cracks Fill and seal must be stable, not susceptible to erosion or permitting air flow

3 Elimination or acceptable control of post-closure mine drainage Any continuing discharges should meet water quality standards and not contribute to environmental degradation

4 Removal of all equipment, materials, and surface structures The area should be left free and clear of debris

5 Stabilize and grade all waste or spoil piles to blend with local topography and reinstate functional drainage pattern, all disturbed areas should be revegetated

6 Provide for post-closure groundwater monitoring

7 Any remaining surface impoundments should meet standards for permanent impoundments

8 For underground mines, provide for continued monitoring of any remaining active subsidence areas and include provisions for repair/maintenance of these areas where necessary to protect public safety and prevent erosion

9 For underground mines identify any areas requiring special post-mining land use restrictions to ensure public safety

(see 30CFR 817 15, 41, 42, 43, 102, 106, 121, and 132)

10 For surface mines, to the extent possible, final pit(s) should be backfilled, any remaining pit walls reduced, and slopes revegetated

11 If final pit design allows for ponded water, pre-closure studies should be made to ensure that this water will meet appropriate water quality standards

12 No coal seams should be left exposed

(see CFR30 816 106, 107, and 111)

Surface Impoundments

1 All large surface impoundments should be designed using current, prudent engineering practices following established criteria and safety factors Design should provide ample static safety factor, take into account seismic history of the area, and any possible risks failure would present to life and property

2 Design should provide for stable foundations and abutments, freeboard under all planned operating conditions, and adequate spillway(s) for design precipitation events

3 Construction should include removal of all vegetative and organic material, proper preparation of foundation base and cutoff trenches where appropriate, and erosion protection for slopes with either riprap or vegetation as appropriate

4 There should be provision for monitoring and inspections

5 Emergency procedures should be established with local authorities for any impoundments where failure would present risks to life or property

6 Permanent impoundments should meet the following additional requirements

- size and configuration adequate for intended purposes,
- quality of impounded water suitable for intended uses and meet applicable quality standards,
- any discharges should meet effluent limitations,
- water level stable,
- final grading provide adequate safety and access for proposed users,
- not diminish water quality or quantity for other users, and
- suitable for approved post-mining land use

Coal Mine Wastes (see 30CFR 816 81, 83, and 84)

1 Coal mine waste (including waste rock from processing plants) shall be either disposed of in the mine workings, excavation or other approved site

2 Coal waste piles shall be sited and constructed to

- minimize adverse effects of leachate and surface water run-off on surface and groundwater quality and quantity,
- ensure mass stability and prevent mass movement during and after construction,
- facilitate reclamation and revegetation,
- not create a public hazard,
- prevent combustion

3 Disposal facility shall be designed using current, prudent engineering practices following established criteria and safety factors Design should provide ample static safety factor, take into account seismic history of the area, and any possible risks failure would present to life and property

4 Design include provisions for any drainage control necessary such as diversions, underdrains, and stormwater control

5 Construction should include removal of all vegetative and organic material, proper preparation of foundation base and diversion channels where appropriate, and erosion protection for disturbed areas with either riprap or vegetation as appropriate

6 Emplacement of wastes shall include compaction of each left and sloping sides to both ensure stability and facilitate revegetation

7 At end of operations, the waste pile shall be covered with a compacted layer of tight silt or clay, a layer of soil or topsoil added and the site revegetated

8 Emergency procedures should be established with local authorities for any waste piles where failure would present risks to life or property

Annex G

Costs, Subsidies, and Employment in Coal Mining

Annex

Russian Federation

Costs, Subsidies and Employment in Coal Mining

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Introduction

1 Like many industries in Russia, the coal industry has been experiencing a radical change in its economic foundations Prior to 1990 it was one of the core industries of the former Soviet Union with privileged access to investment and other resources Now it is obliged to operate in a completely new environment where demand for its output is falling and it is no longer protected from competitive pressures The difficulties of making this transition have been exacerbated by high and variable levels of inflation and by the inevitable rigidities of its capital stock and labor force The political sensitivity of both coal prices and mining employment have also led to the coal industry lagging behind other industries in its response to market incentives

2 This annex examines the economic and financial performance of the coal industry since 1991 with a particular focus on 1993 It provides the basis for key elements of the Main Report's recommendations concerning measures that should be taken over the next 2-3 years in order to restructure the industry

3 The crucial issues concern the level and allocation of subsidies to the coal industry The fiscal burden imposed by coal subsidies is increasingly onerous in a period when government revenue is declining rapidly as a share of (falling) GDP At the same time it appears that subsidies were much larger in 1993 than would have been necessary to protect the welfare of those working in the industry The allocation of subsidies has created perverse incentives for loss-making mining associations to hold down their prices It has also undermined any pressure to improve efficiency and reduce costs Reductions in the overall level of subsidies are a macroeconomic necessity, while changes in the way in which they are distributed are essential element in restructuring the industry and improving its performance

4 There are many, often conflicting, sources of data on economic aspects of Russia's coal industry The analysis in this annex is based upon the best data available Some inconsistencies or misinterpretations may remain, but the general findings are robust The annex draws, in particular, on a report on Coal Subsidies prepared by a team working under the direction of Michael Bernstam and Tom MacCurdy for Partners in Economic Reform (PIER) with funding from US-AID

Operating Costs

1 See Table 1 *Average real operating costs per tonne of coal equivalent by coal basin* (facing page)

2 Mine operating costs cover (a) material inputs such as electricity, fuel, timbbeand explosives, (b) wages paid either by the mine or out of the wage subsidy linked to the Tariff Agreement, (c) social security taxes, and (d) other productive costs

3 Table 1 shows that average mine operating costs have increased from 6326 Rb per tonne of coal equivalent (tce) in 1993 Q2 to 7395 Rb per tce in 1993 Q4, both at 1993 Q2 prices There was an apparent dip in 1993 Q2 which may simply reflect a problem with the data but could alternatively be linked to the financial squeeze on mining associations in the period before the July 1993 changes in the arrangements for setting coal prices

4 The average masks large differences between coal basins The largest real increases -- 160% and 90% respectively -- were for low cost surface mines in East Siberia and Kansk-Achinsk, whereas the real increases for the Donbass, Kuzbass and North East basins were less than 5% This narrowing of the relative cost differentials reflects the different impacts of market and financial circumstances on mining associations in the various basins For example, the North East is a relatively low cost mining area but its situation was unusual in that the largest producer -- Yakutugol -- has a large fixed price contract for the export of coking coal to Japan and has experienced substantial financial pressure due to the appreciation in the real value of the rouble since 1992

5 The overall increase of 17% in average operating costs per tce is very close to the 18% decline in total output from 1991 to 1993, so that the industry's total costs have barely fallen despite the large fall in production

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Table 1 - Average real operating costs per tonne of coal-equivalent by coal basin

	Average operating costs in Rb per tce at 1993 Q2 prices					
	1991	1992	1993 Q1	1993 Q2	1993	1993 Q4
Donbass	9612	8834	11146	7923	10062	9608
East Siberia	1739	2615	2875	2519	4008	4575
Far East	10000	13177	12705	10189	12132	13911
Kansk Achinsk	989	1620	1484	1628	2766	1887
Kuzbass	6994	7858	7173	5984	7534	7327
Moscow/Center	11466	10160	16476	8360	12572	18421
North East	4700	5301	4353	4415	4696	4804
Pechora/North	9024	9607	12501	8100	11278	10702
Urals	10034	9671	10716	9425	9618	12736
All basins	6326	7017	7197	5733	7326	7395

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Composition of operating costs

1 See Table 2 *Real changes in mine operating costs since 1991* (facing page) This details the median value across mining associations of the real changes in the various components of mine operating costs Median values have been used because they are not affected by extreme or erratic variations in the values reported by individual mining associations which may be the result of reporting errors or other random factors

2 Non-energy material costs increased sharply in 1992 following the general liberalization at the beginning of the year However, mining associations have clearly cut back upon their inputs of materials, so that the majority of mines had a lower real cost per tonne for materials in the final quarter of 1993 than in 1991 On the other hand, energy -- especially electricity -- costs increased substantially in 1992 and that was maintained through 1993 In part, this reflects increases in the real prices of electricity and other fuels relative to other industrial goods The cost increase is larger than can be explained by relative price changes alone, so it seems that many mines have treated electricity costs as fixed, overhead costs independent of the level of output Overall, material costs were an important element driving up the real cost of mining during 1992, but that was reversed in 1993

3 Wage costs -- including the value of wage subsidies linked to the Tariff Agreement -- were primarily responsible for the real increase in operating costs in 1993 For the industry as a whole the average real wage cost per tonne at 1993 Q2 price increased from 1760 Rb in 1991 to 2540 Rb in the second half of 1993 However, the wages paid directly by the mining associations themselves fell from 1760 Rb to 1100 Rb per tonne, so that it is the Tariff Agreement and the associated wage subsidies which are responsible for this increase in real costs

4 In the first half of 1993 financial stringency appears to have prompted mining associations to attempt to control their direct operating costs (excluding wage subsidies) since these fell from 4470 Rb per tonne on average in 1992 to 3290 Rb in 1993 Q1 and 2765 Rb in 1993 Q2 However, price liberalization in July 1993 combined with an increase in total subsidies in the second half of the year appears to have undermined this effort, since direct operating costs rose to 3470 Rb per tonne in the second half of 1993

Table 2 - Real changes in mine operating costs since 1991

Cost component	Median increase since 1991 in cost per tonne of coal deflated by the consumer price index (%)				
	1992[a]	1993 Q1	1993 Q2	1993 Q3	1993 Q4
Materials	34	4	0	11	- 7
Electricity	126	73	74	121	117
All material costs	45	15	3	13	6
Wages and bonuses (incl wage subsidies paid under the Tariff Agreement)	-15 (11)	28	6	31	61
Social security payments	-11	-47	-57	-48	-38
Total operating costs	8 (20)	16	- 7	16	28
Depreciation	-29	-49	-70	-81	-88
Total costs	7 (15)	12	- 2	12	23

Note (a) The estimates for 1992 may understate the rise in wage costs and, thus, in total costs because of the treatment of wage subsidies In 1993 wage payments under the Tariff Agreement financed by wage subsidies are not included in wages recorded as having been paid by mines However, in 1992 the subsidy received by each mining association was linked to the difference between its average wholesale price and its average 'accounting price plus a margin for the formation of profits which covered investment, social services and some wages It has been assumed that under this previous system of subsidies, reported wage costs per tonne for 1992 include payments under the Tariff Agreement The figures in brackets are the estimates based on the assumption that payments under the Tariff Agreement were, in fact, excluded from reported wages in 1992

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Coal Prices and Mine Revenues

1 See Table 3 *Average coal prices received by mining associations by coal basin* and Table 4 *Average real coal prices by coal basin* (following pages)[1]

2 The mechanism for setting coal prices was radically changed in July 1993 This involved a degree of price liberalization combined with the abolition of the distinction between 'wholesale prices' (charged to coal buyers) and 'accounting prices' (paid to mining associations) As a result the average coal price received by mining associations increased from about Rb 5,700 per tce in 1993 Q2 to Rb 11,500 per tce in 1993 Q3 The real price fell by a little over 10% from 1993 Q1 to Q2 The price reform increased the average real price received by mining associations in the third quarter as a result of the shift from 'accounting prices' to 'market prices', but this gain was eroded in the final quarter of the year As a result, the average real price received by mining associations fell slightly from the first half of the year to the second half

3 The July price reform has radically changed the structure of the Russian coal market The average price for unwashed steam coal[2] at the mine paid by coal consumers increased from about Rb 1540 per tonne in 1993 Q2 to Rb 8300 per tonne in 1993 Q4, an increase of 70% in real terms The equivalent figures for unwashed coking coal were Rb 3190 per tonne in 1993 Q2 and Rb 20220 in 1993 Q4 for a real increase of 100%

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1 Coal prices have been computed from the average revenue from coal sales per tonne of output reported in the financial statements of mining associations after adjusting for apparent double counting linked to the operation of coal washeries Prior to July 1993 there was a sharp distinction between the 'wholesale' price of coal (paid by the purchaser free-on-rail at the mine) and the 'accounting' price credited to the mining association This distinction disappeared with price liberalization since mining associations now establish and receive a 'market' price for their sales Thus, the tables are based on 'accounting' prices for the first half of the year and on 'market' prices for the second half Data on association revenues in the final quarter of 1993 were incomplete, so that it was assumed that the market price per tonne increased in line with inflation where data on revenue per tonne could not be obtained The resulting average price for all basins is broadly consistent with Rosugol's reported average market price for the same period

2 Steam coal is defined as all hard coal except coking coal This excludes the brown coals which make up the major part of production in several coal basins -- e g East Siberia, Kansk-Achinsk, Tula and Urals The data is taken from the energy price database maintained by the International Energy Agency

4 Changes in the delivered cost of coal were less dramatic because the large real increases in rail freight rates occurred from mid-1992 to mid-1993 The average price of unwashed steam coal delivered to power stations increased from Rb 4250 per tonne in 1993 Q2 to Rb 18120 per tonne in 1993 Q4 implying a real increase of 35% For washed coking coal the prices were Rb 7680 per tonne in 1993 Q2, Rb 36850 in 1993 Q4, giving a real increase of 50% There must be some doubt as to whether mining associations will be able to sustain the widening of the margin between steam and coking coal, since demand for coking coal is likely to remain much weaker than that for steam coal

5 In real terms the gap between average operating costs and the average price paid to mines rose from just under Rb 500 per tce in the first half of the year to over Rb 1500 in the second half It seems that price adjustments combined with the continuation of large subsidies relaxed the pressure on mines to hold down their costs, so that the average operating cost per tce increased sharply from Q2 to Q3 This impression is reinforced by examining the basin-by-basin figures which show that the gap between operating costs and revenues per tce widened strongly in all of the high cost basins -- Donbass, Far East, Moscow and Urals There was also a marked deterioration in the North East but this was probably linked to the sharp appreciation of the rouble relative to the dollar which penalized exports of coking coal from Yakutugol to Japan

6 Table 4 shows that the price reform has done little to bring the regional pattern of prices into line with the structure that might be expected under a full market system allowing for differences in production and transport costs In real terms the prices in Kansk-Achinsk and Kuzbass would have to fall, while prices in Donbass, Far East, Moscow, North East, Pechora and Urals would have to rise These adjustments will involve real increases of 2-3 times for the Donbass and Moscow basins because of their locational advantages Again, the case of the North East basin is special because of the separation between the local market for steam coal and the export market for coking coal

Table 3 - Average coal prices received by mining associations by coal basin

	Average ex-mine revenues from coal sales (Rb per tce)					
	1993 Q1	1993 Q2	1993 Q3	1993 Q4	1993 H1	1993 H2
Donbass	3300	4700	9100	13400	4000	11400
East Siberia	1700	2600	7500	12300	2200	10000
Far East	6900	10800	17200	28100	8700	23200
Kansk Achinsk	1000	1300	4100	6700	1100	5700
Kuzbass	3900	6900	13800	22800	5300	18800
Moscow/Center	9200	10000	11600	19100	9600	15300
North East	3400	5900	8100	13400	4600	11000
Pechora/North	5400	5400	17000	23900	5400	20700
Urals	6000	8600	13400	22100	7300	17800
All basins	3700	5700	11500	18500	4600	15300

Table 4 - Average real coal prices by coal basin

	Average ex-mine revenues from coal sales (Rb per tce at 1993 Q2 prices)			
	1993 H1	1993 H2	Market forecast	
			Low freight tariff	High freight tariff
Donbass	5200	4500	10400	13500
East Siberia	2800	3900	3500	4500
Far East	11400	9100	11100	17500
Kansk Achinsk	1500	2100	1600	1400
Kuzbass	6900	7300	5600	5100
Moscow/Center	13000	6100	14800	20900
North East	5900	4300	11000	13500
Pechora/North	7400	8300	10400	12500
Urals	9500	7100	9400	11800
All basins	6000	5800		

Price adjustments by mining association

1 See Figure 1 *Price adjustments after liberalization, 1993* (facing page)[3]

2 The basis on which mining associations set their output prices following the price reform seems to have been confused and inconsistent If they had followed a 'cost-plus' pricing rule, one wouldexpect to find that mining associations with the highest ratio of operating costs to output price would have increased their prices most It is clear from Figure 1 that this was not the case, since there is no correlation between the ratio of operating costs to output price in the first half of 1993 to the real increase in output prices between the first and second halves of the year

3 This suggests strongly that mining associations felt that the allocation of subsidies would protect inefficient, high cost, mines from the financial penalties that they might expect to suffer under a real market system Instead, the high cost mines were able to hold their prices down in order to maintain the level of demand and, thus, of output This is supported by the evidence discussed below which shows the very close correlation between the average subsidy per tonne and the difference between average price and operating costs per tonne

4 The potential benefits of price reform have been largely dissipated by the manner in which subsidies have been allocated because this undermines any incentive for mining associations to increase their relative prices when this is possible or to control their costs In particular, mining associations in high cost basins which should be protected by their locational advantages -- notably Rostovugol and Tulaugol -- have been encouraged, or at least permitted, to maintain low prices for their coal rather than raising them to reflect the much lower transport costs from the mine to the consumer

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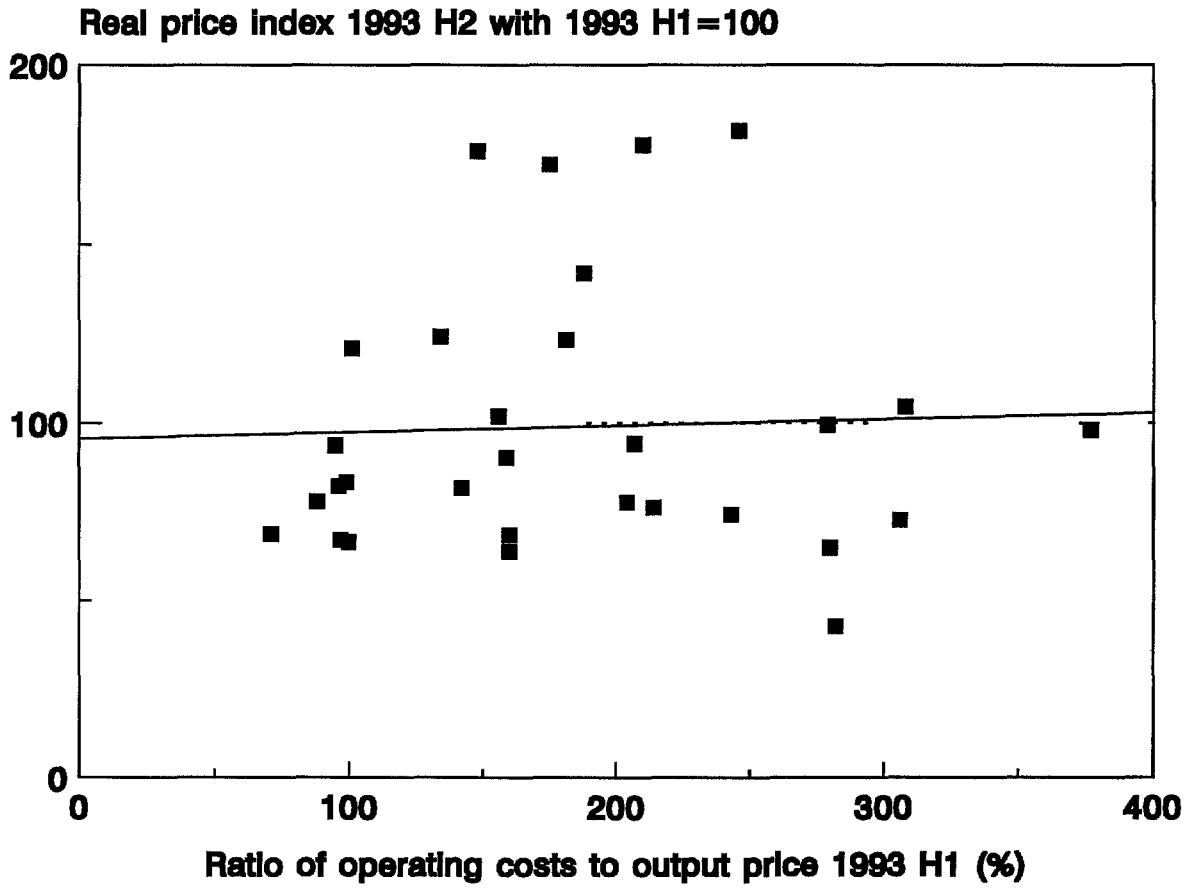
[3] As in the previous section, the adjustment of coal prices refers to the prices received by mining associations, not those paid by their customers

Figure 1

Price adjustments after liberalization, 1993



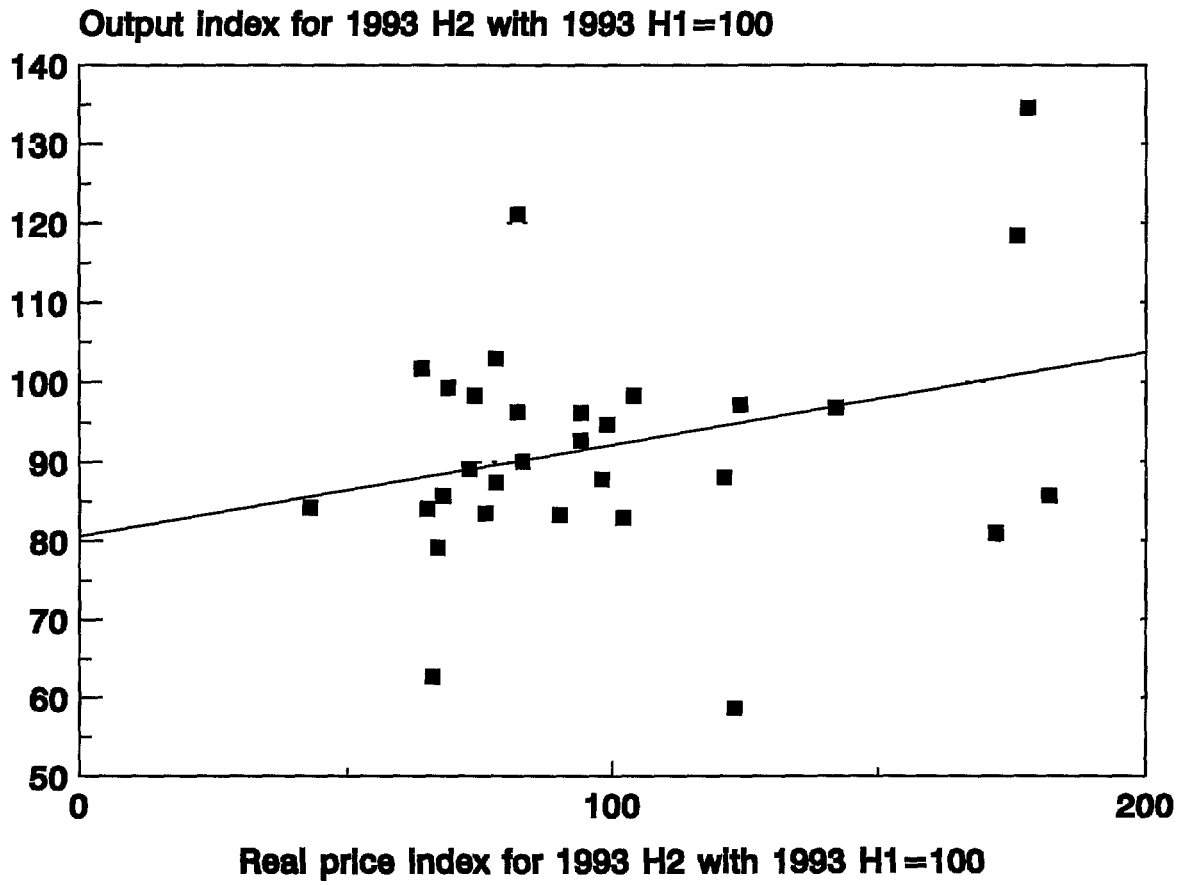
Price and output changes

1 See Figure 2 *Price and output changes by association, 1993* (facing page)

2 Again, in a real market environment one would expect to observe that enterprises that increase their prices by more than the average for their industry would experience a relative decline in demand and in output Figure 2 shows that this was not the case for the coal industry after price reform Indeed, there was a mild tendency for associations with larger price increases to have smaller falls in output from the first to the second halves of the year This reinforces the conclusion that mining associations were primarily concerned with distributing any reduction in output uniformly across associations On this basis, they set their prices at levels necessary to generate demand for their output rather than by reference to the profitability of production either on average or at the margin

Figure 2

Price and output changes by association, 1993



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Coal Subsidies

1 See Table 5 *Operating subsidies for the coal industry, 1991-94* and Figure 3 *Composition of real coal subsidies, 1992-94* (following pages)

2 The price reform of July 1993 can be seen as the consequence of a major shift in the operation of the system of coal subsidies Up to then (cross-)subsidies were primarily distributed through the 'accounting' prices for coal that were set individually for each mining association The data show that this system was clearly beginning to break down during the first half of 1993 under the pressure of the differential impact of inflation on associations with widely varying cost structures Nonetheless, the decline in the real value of subsidies in the second quarter of 1993 appears to have had a significant impact in constraining costs

3 Under the new system subsidies are notionally allocated to mining associations under specific headings

(a) A price subsidy which is designed to cover the difference between the sales price charged by the association and its 'necessary' operating costs In practice, this subsidy undermines the incentive of associations to raise their prices, even where this would be appropriate, or to control their costs

(b) A subsidy for the cost of providing 'social services' This is discussed below

(c) A subsidy for wages which is linked to specific provisions concerning wage indexation and special wage premiums in various collective bargaining agreements covering different workers in the coal industry These agreements are generally referred to as the 'Tariff Agreement' though they are not identical Both mining associations and workers regard payments under the Tariff Agreeement as quite separate from the base wages paid by the mines These payments have been frequently delayed on the grounds that the relevant wage subsidy has not been distributed by the Government In practice, the separation of base wages and 'Tariff' wages, the latter financed from wage subsidies, has had a very detrimental effect on the control of labor costs by mining associations

(d) A subsidy for investment which covers a bizarre miscellany of costs A part of this is an accounting transfer to cover the interest on credits used to finance past investments, housing construction and working capital Funds for training and for agricultural operations attached to mines are also included under this heading

However, most of the money appears to be spent on routine maintenance or replacement of equipment, buildings and similar items which ought to be regarded as part of the regular operating costs of each mine This category should probably be added to the price subsidy in categorizing the ways in which coal subsidies are used, since the real investment subsidy is the provision of budgetary support for 'centralized investment' in larger projects

4 The level of operating subsidies remained roughly constant Rb 2 0-2 2 trillion in 1993 prices over the period 1991-93 The amount included in the 1994 Budget is 79% of the sum paid in 1993 (on the assumption that the average price level for 1994 is 4 45 times that for 1993) In dollar terms the amount of subsidies has increased from US$ 900 million in 1992 to US$ 3 9 billion for 1994 because of the real appreciation of the rouble Between 1991 and 1993 the share of GDP allocated to coal subsidies increased from 1% to nearly 1 4% It should decline to about 1 3% in 1994 on current projections of GDP for the full year

5 Coal subsidies are imposing an increasingly heavy burden on the Government's finances because central government revenue has been falling sharply as a share of GDP In 1992 these subsidies accounted for 5% of central government revenue, but this has risen to 15% for 1994 Since the pressures which are eroding central government revenues are not likely to ease, **the Government has no choice other than to make a reduction of coal subsidies a key element in any program to improve its fiscal position Macroeconomic considerations mean the real level of coal subsidies must fall sharply in 1995 and following years** Indeed, the fiscal situation for 1994 is so precarious that the Government may well find itself unable to provide the budgeted level of subsidies during 1994 if it is to meet its target for a budget deficit of less than 10% of GDP In this context, Rosugol's request for operating subsidies for the first quarter of 1994, which implied a substantial rise in the real level of coal subsidies, was quite unrealistic

6 The composition of operating subsidies has changed substantially over the last three years The proportion allocated to wages has increased from 16% in 1992 to 34% in 1993 and 54% in the 1994 Budget The share of social services has fallen from 19% in 1992 to 7% in 1994, in part because it is expected that social assets of mining associations and the responsibility for financing them will be transferred to oblast and local authorities gradually in 1994 and 1995

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Table 5 - Operating subsidies for the coal industry, 1991-1994

Period	Coal subsidies to Rosugol by category in Rb billion					Total coal subsidies			
	Prices	Social services	Wages	Investment[a]	Total	1993 Rb billion	US $ million	as % of GDP	as % of Central govt revenue
1991					12 7	2224		0 98	
1992	47 6	37 5	32 2	78 8	196 1	1999	900	1 09	5 2
1993 Q1	157 8	24 0	110 0	50 2	342 0	982	597	2 16	13 4
1993 Q2	92 0	34 0	77 0	24 0	227 0	374	245	0 76	5 9
1993 Q3									
Alloc	197 7	113 2	217 8	210 4	739 1	643	722	1 67	9 5
Paid	138 0	84 0	195 0	190 5	605 5	527	592	1 37	7 8
1993 Q4									
Alloc	135 0	183 0	339 0	163 8	800 8	422	663	1 10	25 2
Paid	99 4	125 7	206 0	142 6	573 7	302	475	0 79	18 1
1994									
Request for Q1	734 1	284 2	496 6	418 0	2033 1[b]	726	1289	2 10	25 2
Budget for year	1380 1	524 0	4171 4	1183 0	7740 0[c]	1740	3870	1 29	15 2

Notes
(a) Excludes resources provided for centrally funded investment in large scale projects
(b) Includes Rb 100 billion requested as a subsidy for mine closures
(c) Includes Rb 305 billion for mine closures, Rb 21 billion for a special subsidy for coal production in Primorsk and Rb 155 billion of arrears from 1993 paid in 1994

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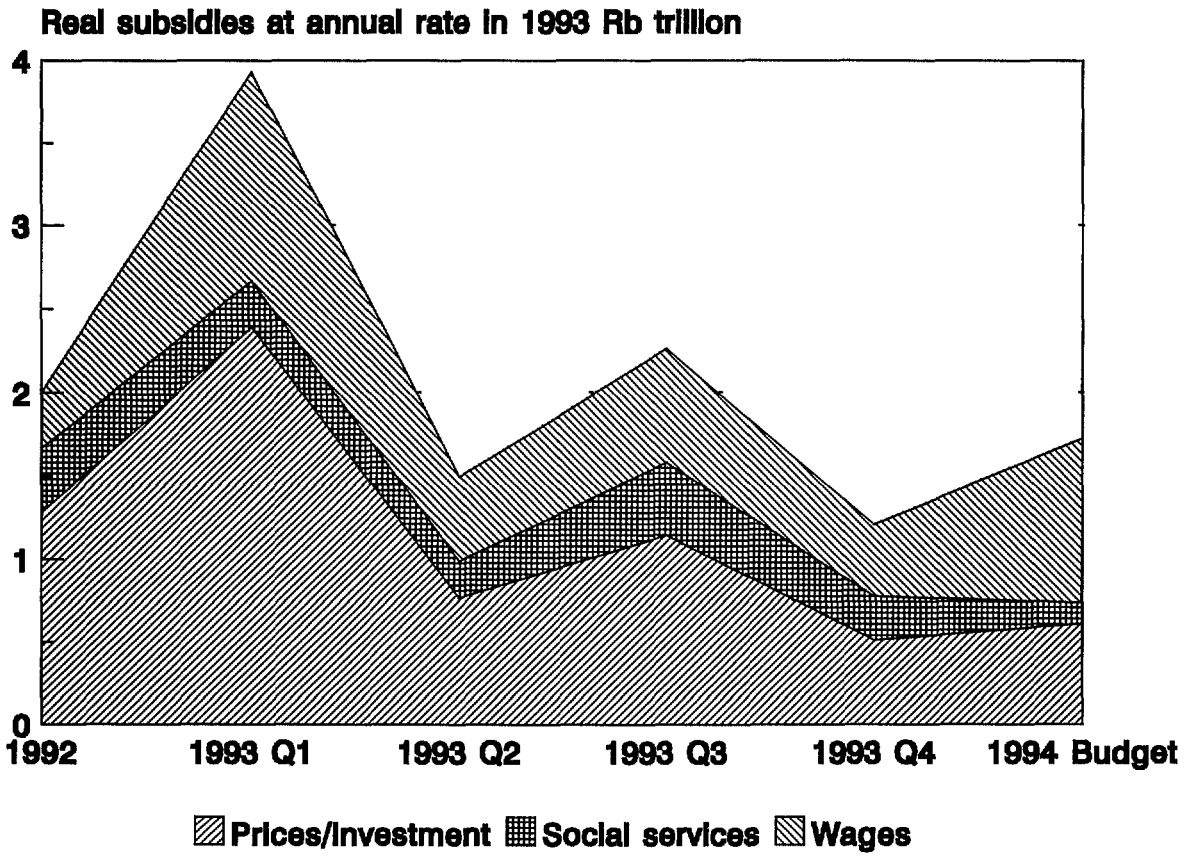
Figure 3

Composition of real coal subsidies, 1992-94



Operating subsidies by mining association

1 See Table 6 *Allocation of coal operating subsidies by association, 1993* (facing page)

2 As Table 6 shows, there is a huge variation between mining associations in the operating subsidies that they receive per tonne of output The range is from Rb 112 for Borodinsky -- a massive surface mine producing nearly 28 million tonnes of brown coal a year -- to Rb 19495 for Kizelugol -- a small association operating mines in the Urals above Perm which are a major source of pollution due to acid mine drainage The average subsidy amounted to almost Rb 5900 per tonne, of which Rb 2090 was for wages, Rb 1120 for social costs and the remainder for losses under the prices and investment categories The relative variation of wage subsidies across associations is larger than for the other components of subsidies, which reflects the extent of regional differences in wage levels and in labor productivity

3 Of 7 mining associations which received less than Rb 1500 per tonne in total subsidies in 1993, 5 of them (Vostsibugol, Borodinsky, Krasnoyarsk, Mezhdurechje and Yuzhny Kuzbass) rely entirely or over 90% on surface mines for their production The remaining two -- Raspadskaya, Vorgashorskaya -- are large underground mines each producing over 4 million tonnes of coking coal a year

Table 6 - Allocation of coal operating subsidies by association, 1993

Associations and independent mines	Subsidies in 1993 Rb per tonne				
	Total	Prices	Investment	Social	Wages
Gukovugol	11434	3476	1963	1790	4205
Obukhovskoye	6584	510	1405	1340	3330
Rostovugol	16164	6066	2669	2462	4967
Vostsibugol	806	393	91	182	140
Dalnvostugol	2751	927	487	567	771
Primorskugol	9473	4967	1221	1055	2231
Sakhalinugol	13602	4040	1631	2077	5853
Borodinskiy	112	0	34	32	46
Krasnoyarskugol	893	228	247	141	278
Belovougol	6485	1211	1844	817	2613
Kiselevskugol	14931	2969	3421	3681	4859
Kuzbassrazrezugol	4783	1133	1444	1068	1138
Kuznetskugol	10450	2181	2456	2137	3676
Leninskugol	5816	979	1553	1111	2172
Mezhdurechje	718	210	192	114	202
Prokopyevskugol	9693	2282	1546	1921	3944
Raspadskaya	1400	72	908	94	326
SeveroKuzbassugol	14240	1615	3022	4047	5555
Vakhrusheva	4244	794	1982	229	1239
Tulaugol	9487	2817	1504	1646	3521
Severovostokugol	8440	2252	2045	1489	2654
Yakutugol	6190	1186	1446	1386	2172
Intaugol	7592	903	925	2403	3361
Vorgashorskaya	851	0	383	139	329
Vorkutaugol	12035	1692	943	2867	6532
BashkirUgol	4005	1722	861	336	1086
Cheljabinskugol	6466	2023	1367	849	2226
Kizelugol	19495	5194	2664	3147	8491
Shumikhinskaya	12231	1733	3503	790	6205
Vakhrushevugol	3563	432	885	612	1633
Yuzhniy Kuzbass	1401	0	220	645	536
Total	5881	1529	1142	1121	2089

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Subsidies, prices and costs

1 See Figure 4 *Subsidies and coal prices by association, 1993*, Figure 5 *Subsidies and production costs by association, 1993*, and Figure 6 *Subsidies and cost-price differentials by association, 1993* (following pages)

2 The figures examine the relationship between subsidies, coal prices and operating costs across mining associations Figure 4 shows that there was no relationship across associations between the level of the total subsidy per tce and the wholesale price per tce following the price reform If prices were determined by purely market factors, one would expect to observe a negative relationship Instead, the pattern supports the view that subsidies and prices were jointly set so as to protect the high cost, low productivity mines from the impact of real market liberalization on output and employment

3 Figures 5 and 6 show that, as one would expect, associations with higher production costs and with larger gaps between average production cost and average selling price received large subsidies The striking point that emerges from Figure 6 is that subsidies more than compensate for operating losses Associations whose wholesale price exceeds their operating cost still receive a positive subsidy, while increases in the gap between operating cost and wholesale price are compensated on a slightly greater than a one-for-one basis by increases in the subsidy received Distribution of subsidies in such a manner totally removes any incentive either to control operating costs or to obtain the highest possible price for output that is sold

4 The implication of these results is that the price reform did not amount to true price liberalization A move to full market pricing will imply the emergence of large differentials between the ex-mine prices charged by mines which are located close to their main markets and those which are less well located The way in which subsidies were allocated in 1993 strongly discouraged this adjustment because the mining associations which should have raised their prices most -- especially those in the Donbass and the Far East -- were also among the largest recipients of subsidies For the future, it is crucial any continuing subsidies should reward rather than penalize the changes required by full market liberalization

Figure 4

Subsidies and coal prices by association, 1993

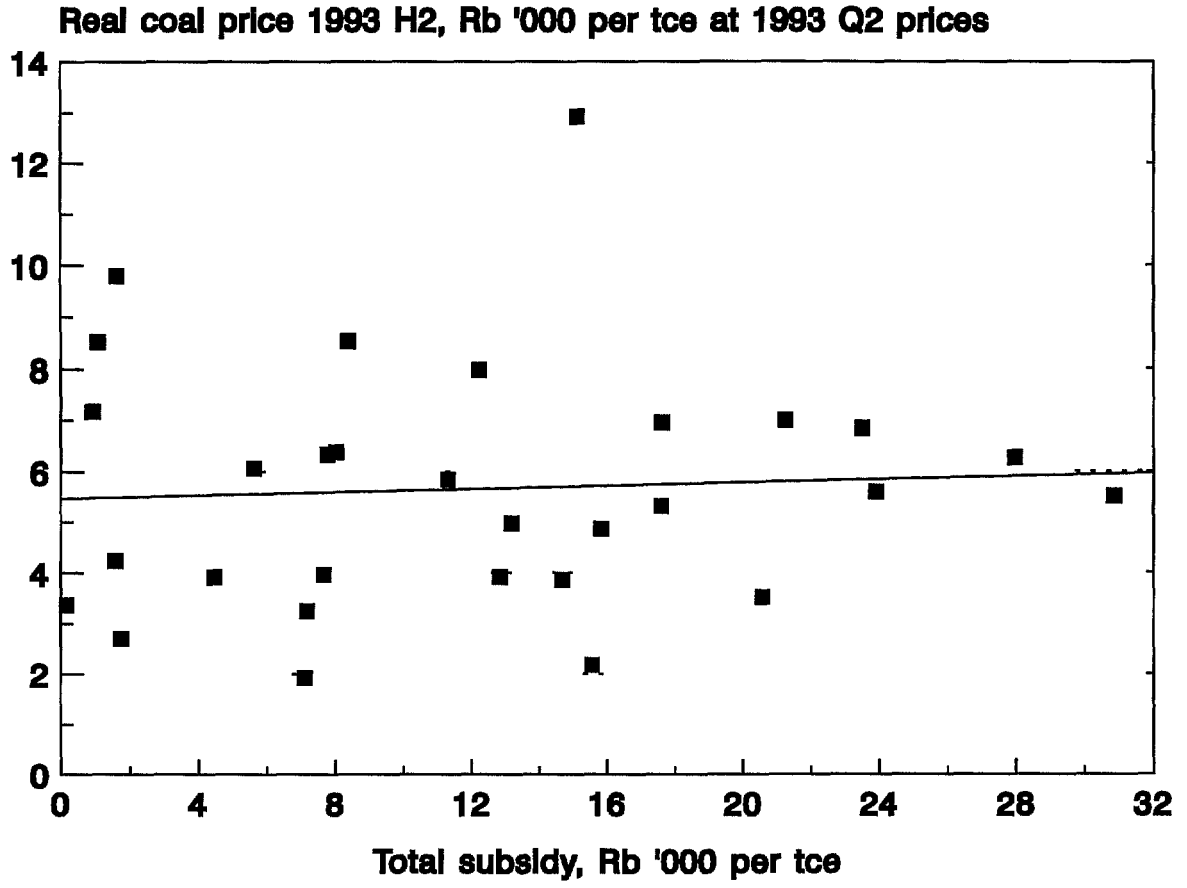

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Figure 5

Subsidies and production costs by association, 1993

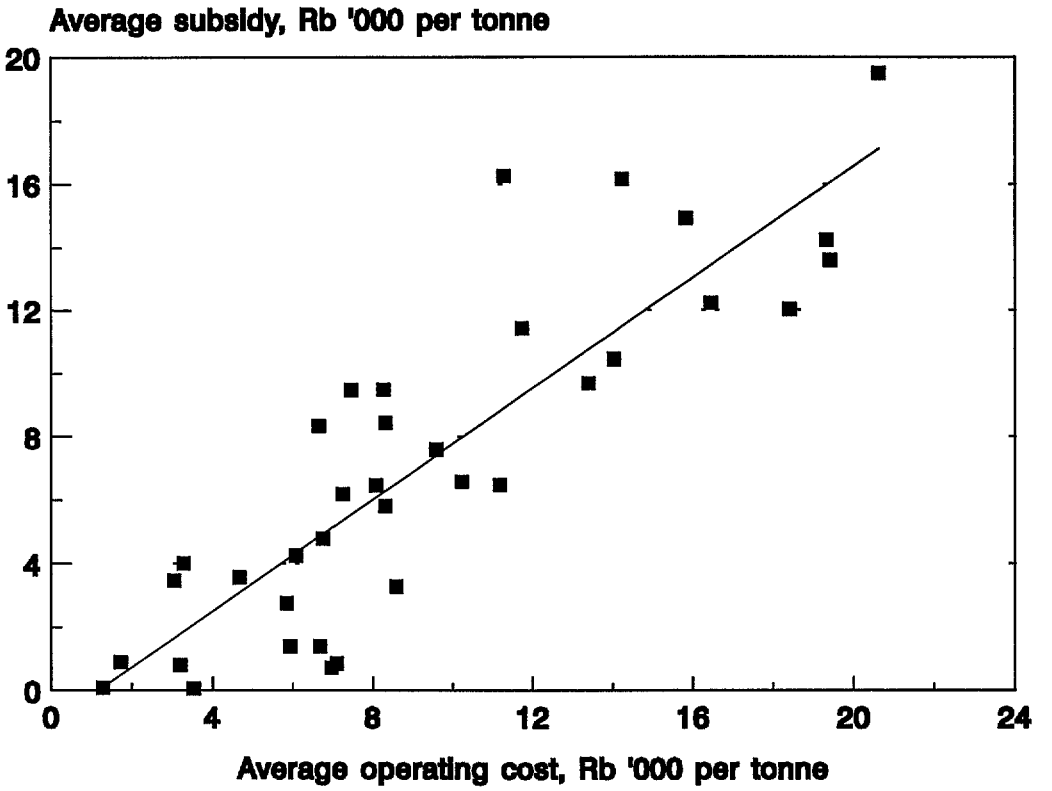

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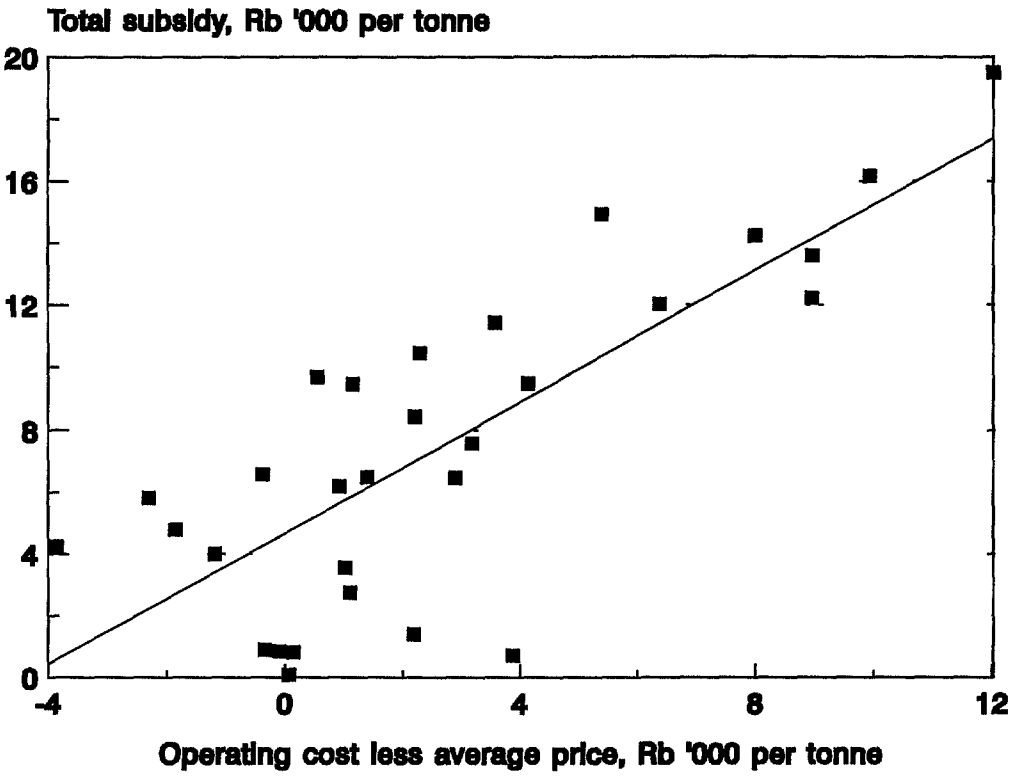
Figure 6

Subsidies and cost-price differentials by association, 1993



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Subsidies and wage payments

1 See Table 7 *Subsidies and average wages by association, 1993* (facing page)

2 Throughout the second half of 1993 there were persistent problems of miners' wages not being paid The impression was given that the reason for the non-payment of wages was either the insufficiency of total government subsidies for the industry or delays in the payment of those subsidies that were provided, especially of the wage subsidies linked to the Tariff Agreement

3 Table 7 indicates that neither explanation stands up to examination For all but 6 mining associations -- 6 out of the 7 that were identified above as receiving subsidies of less than Rb 1500 per tonne -- the amount of subsidies actually paid in 1993 exceeded the total wage bill including all payments under the Tariff Agreement Over the industry as a whole, government subsidies amounted to 1 38 times the industry's wage bill If the payment of wages had been the first priority, there should have been no difficulty in ensuring that all miners were paid -- and on time too

4 Of course, mining associations had to pay for the other inputs required to continue mining operations -- fuel, explosives, timber, etc This prompts the observation that it would have been less expensive for the Government to have halted production at most or all mines -- paying all wages but avoiding the expense of using materials and other items which were also financed out of subsidies In this way the total level of subsidies could have been reduced by over Rb 600 billion for 1993 as a whole

5 The 6 associations for which total subsidies were less than their wage bill employed about 56,000 workers (out of an estimated industry total of 740,000) to produce over 81 million tonnes of coal (out of 300 million tonnes for the industry) While some of them faced financial difficulties because of the failure of their customers to pay their bills on time (or at all), they were not central to the overall problem of the non-payment of miner's wages This was concentrated in mines and association whose subsidies were greater than their wage bills, usually by a large margin

6 Thus, the question remains why were large numbers of miners not being paid during the autumn and winter of 1993-94 ?

Table 7 - Subsidies and average wages by association, 1993

Associations and independent mines	Wage rate per month	Subsidy per worker per month	Total subsidy as % of total wages
Gukovugol	97,689	159,216	163
Obukhovskoye	135,461	148,312	109
Rostovugol	101,326	194,288	192
Vostsibugol	169,553	92,001	54
Dalnvostugol	147,771	203,816	138
Primorskugol	168,217	388,853	231
Sakhalinugol	181,007	230,619	127
Borodinskiy	184,214	40,978	22
Krasnoyarskugol	137,123	145,627	106
Belovougol	146,038	174,377	119
Kiselevskugol	121,300	201,963	166
Kuzbassrazrezugol	164,327	279,336	170
Kuznetskugol	158,398	215,726	136
Leninskugol	147,971	182,060	123
Mezhdurechje	182,102	46,127	25
Prokopyovskugol	129,001	176,885	137
Raspadskaya	187,417	116,034	62
SeveroKuzbassugol	143,284	174,116	122
Vakhrusheva	158,212	200,322	127
Tulaugol	81,235	149,705	184
Severovostokugol	293,720	380,846	130
Yakutugol	222,991	590 245	265
Intaugol	201,031	262,253	130
Vorgashorskaya	239,934	61,905	26
Vorkutaugol	218,409	231,548	106
BashkirUgol	88,000	163,153	185
Cheljabinskugol	133,089	196,195	147
Kizelugol	100,446	151,849	151
Shumikhinskaya	100,966	124,348	123
Vakhrushevugol	97,140	124,744	128
Yuzhniy Kuzbass	148,657	93,314	63
Total	144,506	199,203	138

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Financial State of Mining Associations

1 See Table 8 *Financial position of mining associations, 1993* and Table 9 *Financial position of mining associations, 1993 Q3* (following pages)

2 In view of the payment problems experienced from mid-1993 onwards an analysis of the financial state of the coal industry has been carried out for the whole of 1993 and for the quarter immediately following the price reform In the tables

Coal revenues = the value of sales at wholesale prices (**not** accounting prices for the first half of the year),

Value-added = coal revenues **less** the cost of material and other productive inputs,

Profit measure = coal revenues **less** operating costs,

Surplus measure = profit measure **plus** total subsidies, and

Cash flow = surplus **plus** increase in accounts payable **minus** increase in accounts receivable **plus** credits received **less** loan repayments,

The data required to construct the cash flow measure was obtained from Roskomstat data but was only available up to the end of the third quarter of the year[4]

3 Over the whole year four associations had negative value-added Three of them operate high cost mines -- Rostovugol, Primorskugol, and Tulaugol The fourth was Yakutugol whose position was affected by the terms of its export contract to supply coking coal to Japan After the price reform no mining association had negative value-added in the third quarter

4 Few mining associations were able to operate profitably over the year as a whole Borodinsky, Kuzbassrazrezugol, Raspadskaya and Vorgashorskaya each made

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[4] The 1993 Q3 figures are based on a different source of data for average wholesale prices from that used for the whole of 1993 so that there may be some inconsistencies between the two Where there were doubts, the lower figure is reported so that the profit, surplus and cash flow estimates should be less than or equal to the 'true' figures

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profits of over Rb 10 billion for the year, but the industry as a whole had a loss in excess of Rb 850 billion with Rostovugol accounting for over Rb 150 billion of that on its own The overall position was much better in the third quarter on its own The total loss was less than Rb 90 billion with Rostovugol's loss representing a third of that[5] Even so, the majority of associations still made losses, though these losses would have been eliminated for all but 8 associations if costs had been kept at their 1993 Q2 level in real terms

5 Despite these losses the industry had a large surplus once the payment of subsidies is taken in account The total surplus amounted to nearly Rb 880 billion for the year Even chronic loss-makers such as Rostovugol, Primorskugol, Kuznetskugol and Vorkutaugol all had annual surpluses from Rb 40 billion to Rb 104 billion No association had an overall deficit Thus, the overall level of subsidies was about double the amount required to safeguard the financial position of the industry

6 In the third quarter the industry's net surplus amounted to Rb 570 billion The cash flow estimates adjust this for changes in the cash position of associations due to net changes in receivables and payables as well as in bank and other credits Loan repayments or an increase in net receivables meant that a few associations experienced a significant outflow on a cash basis, but the industry as a whole had a positive cash amounting to almost Rb 550 billion in the quarter

7 Nearly Rb 63 billion was also paid to the coal industry to finance centralized investment There seems to be little justification in providing such resources when there is ample cash flow to finance any investments that make economic sense

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[5] Note that Borodinsky Raspadskaya and Vorgashorskaya all made losses in the third quarter Their prices for the quarter were well below the average for the year which may indicate that they were initially constrained in adjusting their prices after the reform or that the price data is incorrect

Table 8 - Financial position of mining associations, 1993

Associations and independent mines	Coal revenues (Rb bln)	Operating costs (Rb bln)	Value-added (Rb bln)	Profit measure (Rb bln)	Surplus measure (Rb bln)
Gukovugol	34 7	75 9	9 8	(41 2)	32 7
Obukhovskoye	16 1	18 4	11 3	(2 3)	9 6
Rostovugol	38 7	188 9	(25 1)	(150 2)	64 4
Vostsibugol	107 0	106 9	60 0	0 1	27 1
Dalnvostugol	22 1	35 0	0 3	(13 0)	3 5
Primorskugol	16 2	100 0	(18 5)	(83 8)	43 2
Sakhalinugol	32 2	80 7	2 6	(48 5)	8 1
Borodinskiy	53 1	31 9	32 3	21 2	24 0
Krasnoyarskugol	29 0	27 7	17 7	1 3	15 7
Belovougol	36 8	60 5	10 1	(23 7)	11 4
Kiselevskugol	27 1	58 2	5 7	(31 2)	23 8
Kuzbassrazrezugol	200 6	169 3	112 6	31 3	151 1
Kuznetskugol	164 7	236 0	78 8	(71 3)	104 4
Leninskugol	57 3	103 0	22 2	(45 7)	26 4
Mezhdurechje	23 3	24 6	11 0	(1 3)	1 2
Prokopyevskugol	73 2	125 0	24 3	(51 8)	38 7
Raspadskaya	70 0	39 3	49 4	30 7	38 9
SeveroKuzbassugol	44 1	122 3	6 9	(78 2)	11 9
Vakhrusheva	11 2	8 8	8 0	2 4	8 6
Tulaugol	14 3	64 1	(5 5)	(49 8)	23 8
Severovostokugol	13 1	24 7	8 6	(11 6)	13 5
Yakutugol	42 6	90 3	(7 5)	(47 7)	29 4
Intaugol	35 7	74 2	12 5	(38 4)	20 3
Vorgashorskaya	39 7	27 3	28 4	12 4	15 7
Vorkutaugol	130 1	201 0	67 6	(70 9)	60 5
BashkirUgol	4 6	13 9	0 3	(9 4)	7 6
Cheljabinskugol	41 4	89 8	7 6	(48 4)	23 5
Kizelugol	12 5	38 8	0 7	(26 3)	10 4
Shumikhinskaya	0 9	2 8	0 1	(1 9)	0 2
Vakhrushevugol	11 7	18 7	5 2	(7 1)	7 2
Yuzhniy Kuzbass	61 1	57 9	27 3	3 2	16 9
Total	1,507 8	2,362 3	583 9	(857 8)	879 6

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Table 9 - Financial position of mining associations, 1993 Q3

Associations and independent mines	Coal revenues (Rb bln)	Operating costs (Rb bln)	Value added (Rb bln)	Profit measure (Rb bln)	Surplus measure (Rb bln)	Cash flow (Rb bln)	Central investment (Rb bln)
Gukovugol	13 2	21 3	8 3	(8 1)	16 1	16 7	4 4
Obukhovskoye	4 3	3 3	3 4	1 0	6 1	5 5	1 2
Rostovugol	17 4	48 0	7 1	(30 6)	73 3	81 7	10 1
Vostsibugol	30 7	31 2	21 1	(0 5)	11 6	48 0	2 6
Dalnvostugol	9 2	8 0	5 2	1 2	5 6	5 2	0 3
Primorskugol	18 2	22 2	11 9	(4 0)	23 0	20 0	5 6
Sakhalinugol	10 4	19 2	5 5	(8 8)	6 2	6 5	0 0
Borodinskiy	7 7	9 7	4 2	(2 1)	0 8	(14 4)	1 7
Krasnoyarskugol	10 5	13 7	5 9	(3 1)	0 9	(7 4)	1 4
Belovougol	14 0	14 2	10 6	(0 2)	18 1	18 4	0 0
Kiselevskugol	9 7	12 3	6 4	(2 6)	18 5	21 3	0 0
Kuzbassrazrezugol	74 6	64 1	45 8	10 4	42 3	44 9	1 8
Kuznetskugol	49 6	56 7	37 3	(7 1)	46 1	55 4	0 0
Leninskugol	31 3	23 8	25 8	7 5	38 8	39 7	0 4
Mezhdurechje	2 8	6 3	0 6	(3 5)	(0 8)	(20 5)	0 0
Prokopyevskugol	32 3	30 1	24 1	2 2	45 1	36 8	0 6
Raspadskaya	6 3	10 6	4 4	(4 2)	(0 8)	(17 4)	7 8
SeveroKuzbassugol	15 9	23 4	11 5	(7 5)	32 6	22 0	0 3
Vakhrusheva	3 5	2 0	3 1	1 5	7 1	9 5	0 0
Tulaugol	7 0	14 5	4 5	(7 4)	21 5	22 6	15 7
Severovostokugol	3 4	1 9	3 1	1 6	14 3	15 4	0 0
Yakutugol	19 3	24 5	8 5	(5 2)	18 0	8 8	0 1
Intaugol	14 2	19 5	9 9	(5 3)	15 8	17 5	3 1
Vorgashorskaya	9 3	11 0	6 6	(1 7)	5 8	7 7	0 0
Vorkutaugol	37 3	46 2	26 6	(8 9)	41 5	41 7	3 5
BashkirUgol	4 5	2 8	3 8	1 7	6 2	10 9	0 1
Cheljabinskugol	15 7	19 9	9 2	(4 2)	18 2	13 5	0 0
Kizelugol	3 8	9 2	1 6	(5 4)	8 1	X8 7	0 0
Shumikhinskaya	0 3	0 7	0 2	(0 3)	0 4	0 4	0 0
Vakhrushevugol	4 2	4 8	2 9	(0 7)	5 2	4 2	0 0
Yuzhniy Kuzbass	15 4	9 3	10 3	6 0	14 3	16 0	1 8
Total	505 7	593 9	335 4	(88 2)	570 0	549 3	62 8

How serious is the build-up of arrears ?

1 See Table 10 *Coal industry arrears, 1993* and Table 11 *Composition of coal industry arrears, 1993-94* (facing page)

2 The severity of the 'arrears problem' in the coal and other industries is a matter of considerable controversy Even the basic data is in dispute For example, Rosugol has published figures which assert that the net receivables of mining associations increased by Rb 132 billion from the end of 1993 Q2 to the end of 1993 Q3 On the other hand, Roskomstat's figures for the same period show a much smaller detrioration of Rb 34 billion

3 The large increase in net receivables owing to the industry in the third quarter of 1993 shown in Table 10 was an inevitable consequence of the large price increases which accompanied the price reform If bills for coal at the mine had been left outstanding by coal consumers for exactly one month, this would have led to an increase in total receivables of Rb 120-140 billion which is fully consistent with the Roskomstat estimate

4 The estimates in Table 11 suggest that there was a substantial worsening in the level of receivables over the winter of 1993-94 since the amount owed by customers increased from 1 5 months' production to 3 month's production However, mining associations seem to have passed all their liquidity problems on to their suppliers and the government since the gap between total payables and commercial receivables widened from 6 days' production to 18 days

5 Since arrears of receivables and payables are a normal feature of business finances (especially under high inflation when it is difficult to maintain working capital), changes in the amount of overdue arrears are of primary concern Table 1 1 shows that overdue commercial receivables increased from 28 days' production to 46 days', while overdue payables increased from 27 days' production to 56 days' In net terms, the commercial balance deteriorated slightly -- from 4 to 6 days' production -- while overdue taxes increased sharply from 3 to 15 days' production This suggests that mining associations have been pre-empting the allocation and payment of subsidies by withholding their tax payments

Table 10 - Coal industry arrears, 1993

Date	Rosugol estimates (Rb billion)		estimates (Rb billion)	
	Receivables	Payables	Receivables	Payables
1 April 1993[a]	165 7	158 8	113 2	138 7
1 July 1993	275 6	320 9	161 7	218 8
1 October 1993	808 5	721 5	386 4	409 1
1 January 1993	1142 3	1047 0		

Notes (a) 1 May 1993 for Rosugol data

Table 11 - Composition of coal industry arrears, 1993-94

Date	Arrears as a % of the value of monthly production			Overdue arrears as % of total		
	Commercial receivables	Payables		Commercial receivables	Payables	
		Commercial	Tax		Commercial	Tax
1 October 1993	162	152	31	57	52	37
1 January 1994	213	209	54	55	51	52
1 March 1994	301	277	85	51	48	61

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Wages, Employment and Social Adjustment

1 See Table 12 *Real wage costs by coal basin*, Figure 7 *Wages and labor productivity by association, 1993*, and Figure 8 *Wages and value-added per worker by association, 1993* (following pages)

2 Table 12 suggests that real average wage costs per worker increased sharply from 1991 to 1993 in all coal basins, especially in the second half of 1993 On average, wage subsidies accounted for 57% of total wage costs in 1993 The level and allocation of wage subsidies linked to the national Tariff Agreements have had a critical impact on real wages and employment in the industry A decentralized system of wage bargaining and the phasing out of wage subsidies should be essential elements of a restructuring program whose success will require that mining companies should be able to control their own wage costs

3 In a market setting there would be strong relationships between the average wage paid by a mining company and either labor productivity or value-added per worker Figure 7 shows that there is the correlation between labor productivity even though average wages in 1993 varied from Rb 81,000 per month for Tulaugol up to Rb 294,000 per month for Severovostokugol Since the cost of living in the Far East is about twice that in central Russia, real average wages vary by a factor of 2-2 5 times but still in manner that is largely independent of labor productivity There should be a stronger link between average wages and value-added per worker Figure 8 shows that this correlation is higher than that between wages and labor productivity, but there are still many outliers

4 The results suggest that the structure of both average wages and employment by association will have to adjust substantially in the medium and longer term Mines with high productivity and value-added per worker -- especially the large surface mines -- will be able to pay much higher real wages in order to recruit and retain the best workers On the other hand, mines with low productivity or value-added per worker will have to choose some combination of (a) reducing employment in order to concentrate on the most productive faces and operations, and (b) lowering real wages to reflect actual productivity and value-added per worker The choice between lower wages and lower employment will be a very difficult one both for the labor unions and the workforce Miners may resist an erosion in their wages relative to other groups but such a decline has been a feature of the coal industries in most European countries

Table 12 - Real wage costs by coal basin

Coal basin	Wage costs per worker (Rb '000s per year at 1993 Q2 prices)					
	Total wage costs (incl subsidy)				Wage subsidy	
	1991	1992	1993 H1	1993 H2	1993 H1	1993 H2
	631	404	621	714	413	476
Donbass	489	522	658	1442	173	715
East Siberia	749	772	1049	1229	625	651
Far East	504	683	652	973	194	255
Kansk Achinsk	864	807	891	973	479	479
Moscow/Center	426	287	487	638	323	471
North East	565	752	1141	1594	619	1125
Pechora/North	1068	1006	1404	1479	889	934
Urals	569	468	664	766	433	485
All basins	745	674	848	983	489	552

Note Data on average wages by mining association or basin were not available on a consistent basis for 1991-93 Thus, the figures in the table have been estimated from data on mining costs by multiplying wage costs per tonne of output by total output and then dividing by employment The calculations assumes that sums allocated to wage subsidies were actually used for that purpose This explains why large changes in wage subsidies between the first and second halves of 1993 are associated with large changes in average wage costs The estimates must be treated cautious as indicated by the large, and possibly erratic, changes from one period to the next for some coal basins However, the consistency of the general trend from 1991 to 1993 suggests that the conclusions in the main text are reliable

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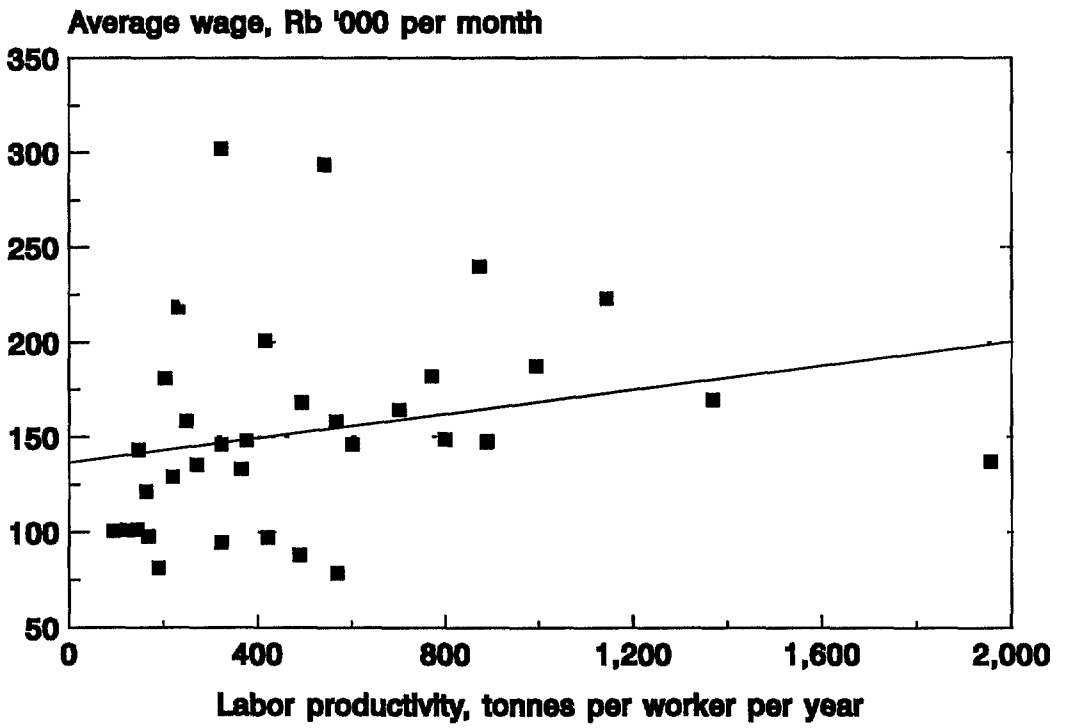
Figure 7

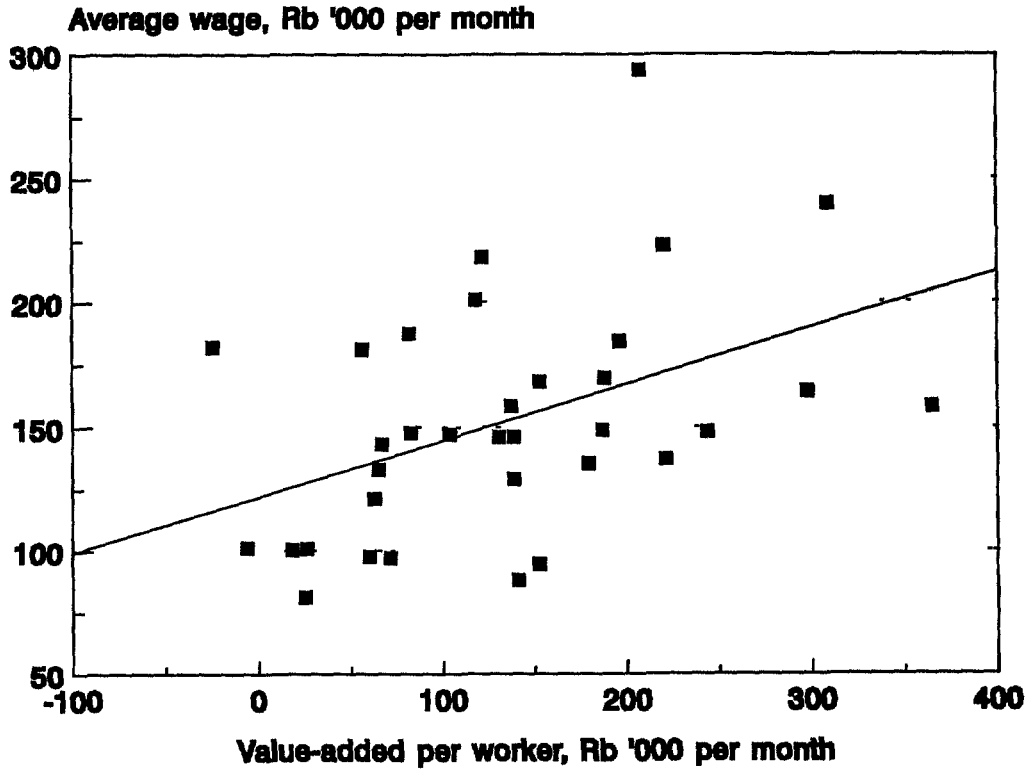
Wages and labor productivity by association, 1993



Note Borodinsky has been excluded as an extreme outlier with a labor productivity of 6186 tonnes per worker per year and an average wage of Rb 184,000 per month

Figure 8

Wages and value-added per worker by association, 1993



The regional impact of falling employment in mining

1 See Figure 9 *Mining as a share of total employment, 1992* (facing page)

2 Mining represents a very small proportion of total employment in all but a few oblasts[6] Figure 9 shows that this share is less than 5% for all but Kemerovo, Komi Republic, Rostov and Sakhalin The figure for Komi Republic is somewhat deceptive because the population of the republic is so dispersed and the share of mining in total is much higher in the mining areas of Inta and Vorkuta

3 It is clear that special programs to cushion the impact of a contraction in mining employment must concentrate on Kemerovo and Inta/Vorkuta The magnitude of the employment shock is likely to be greatest in Kemerovo where the potential fall in mining employment shown in Table 4 of the main report (from 296,000 direct mining workers to 82,000 for the Kuzbass) is equivalent to 13 5% of total employment in the oblast The contraction in mining employment is likely to be somewhat less dramatic in the Pechora basin (from 70,000 to 32,000) but this still amounts to 6% of total employment in the Komi Republic and at least double that share in the northern part of the republic

4 While mine closures and employment reductions may have a significant impact on local labor markets in some basins, no other oblast should lose more than 3% of total employment as a result of the contraction in mining employment Many other changes during the transition might have a similar impact on employment in particular oblasts, so that there is no reason to implement special measures beyond the two heavily-affected areas

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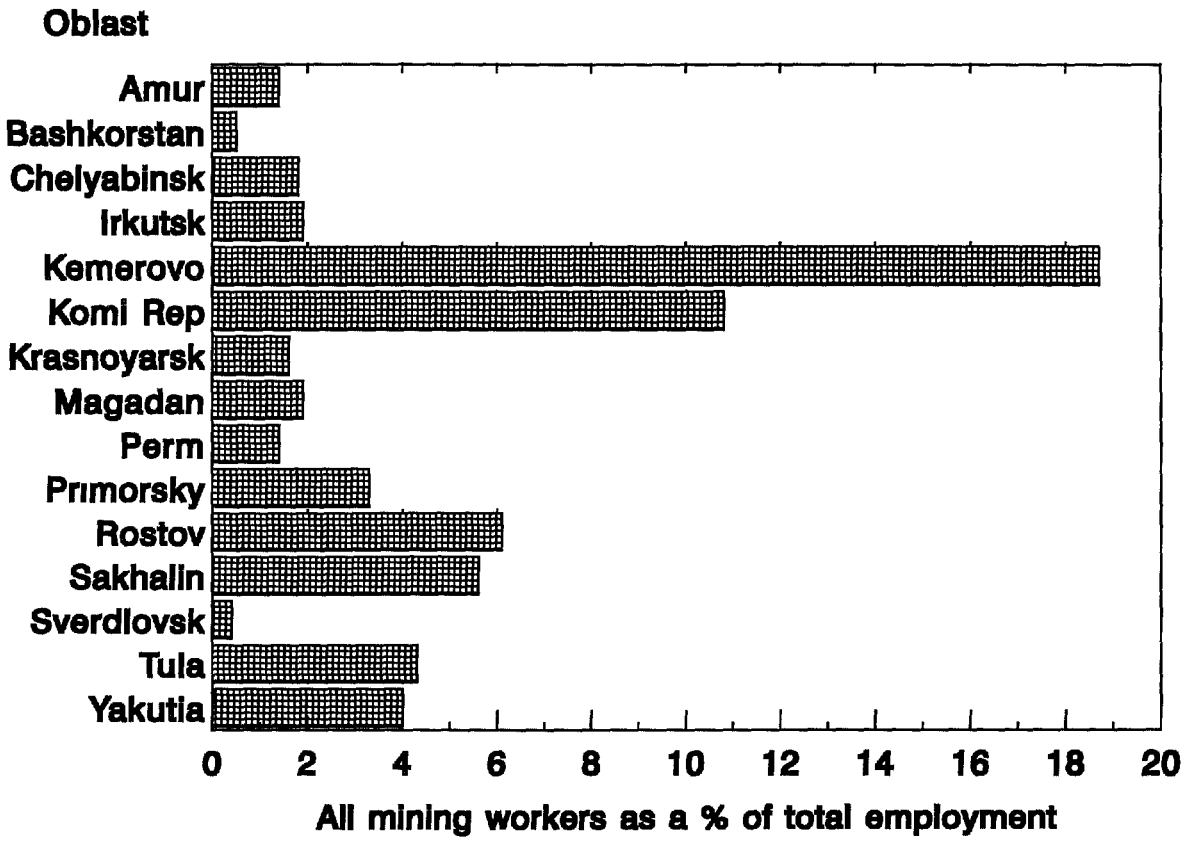
[6] The term 'oblast' is used generically here to refer to all subjects of federation, including republics, oblast, krais and okrugs

Figure 9

Mining as a share of total employment, 1992 (% of total employment)



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Composition of mining employment

1 See Table 13 *Age composition of mine workers* (facing page)

2 Almost one quarter of all mine workers have passed the age of 50 at which they begin to receive a pension, so that they are receiving income from two sources linked to the coal industry Both of these represent a drain on state finances -- their pension (paid out of the State Pension Fund) and their wages (subsidised under the Tariff Agreement)

3 One immediate measure would be to require that such workers either leave their jobs or that they forego their pension while they continue to receive a wage from the coal industry A more radical step, but a necessary one if targets for employment reduction are to be met, would be to require that all workers who have passed the age of 50 should retire from the industry by a specific date Provisions to retain workers with special skills would be needed to cover exceptional cases Since those forced to retire involuntarily would suffer an unanticipated decline in their income, it may appropriate to make special payments to them to compensate partially for their loss of earnings

4 Further employment reductions could be achieved by targeting voluntary severance packages at workers aged 45 or over and by the recruitment of new workers in order to take advantage of natural wastage Such a combination of measures could reduce total employment by as much as 35% over a period of 2-3 years This would go a long way to meet the need to reduce employment by 50% over the next 4-5 years Of course, special provisions would be required to ensure that the industry does not lose workers with crucial skills and experience

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Table 13 - Age composition of mine workers

Age group	% of mine workers in age group[a]
20 or less	2 8
21 - 25	11 7
26 - 30	14 0
31 - 40	29 8
41 - 50	19 3
above 50	22 5

Note (a) The age structure was calculated for a sample of 14 mines in the Urals, Kuzbass and Rostov basins

Social Costs

1 See Table 14 *Mine social costs by association, 1993*, Figure 10 *Mine social costs as a % of total oblast revenues, 1992*, and Figure 11 *Social and culture costs as % of oblast expenditures on social and culture, 1992* (following pages)

2 One half of all social costs go to finance housing maintenance and another 10% for wages in kind such as cheap coal and vacations True social expenditures on health, children and cultural account for less than one quarter of social costs The category of other social costs includes a wide variety of items including fuel subsidies for power and heat produced in plants operated by mining associations

3 Responsibility for providing social services ought to be transferred as rapidly as possible from mining associations to oblast or local authorities This would certainly cover health clinics, kindergartens and cultural activities The disposition of housing is a more complex issue The best solution would be to transfer ownership to the current occupants -- either directly or via condominium associations -- who would henceforth be responsible for maintenance The alternative would be to transfer the housing to local governments

4 Wages in kind and most other social costs are an element of worker compensation that mines might choose to continue (without government subsidies) or simply consolidate into money wage payments Note that consolidation -- even including sum in place of the value of housing maintenance services -- should not increase wages by more than 20% This adjustment might be part of the more general realignment of wage structures discussed earlier

5 The implications of transferring some components of mine social costs to local authorities are illustrated in Figures 10 and 11 Social and cultural costs accounted for less than 4% of total oblast revenues in 1992 for all oblasts other than the Komi Republic Even in Komi the addition spending would only represent 12% of previous expenditure on social and cultural items

6 If responsibility for housing maintenance were transferred to local authorities, it would have to be accompanied by additional fiscal transfers to Kemerovo and Komi Republic

Table 14 - Mine social costs by association, 1993

Associations and independent mines	Wage bill (Rb bln)	Social costs (Rb billion)[a]				
		Wages in kind	Housing	Health, children, culture	Other	Total
Gukovugol	45 4	0 1	5 7	2 5	1 4	9 8
Obukhovskoye	11 7	0 1	1 0	0 5	0 8	2 4
Rostovugol	111 9	3 0	9 4	9 6	11 0	32 9
Vostsibugol	49 7	0 9	0 8	1 2	2 9	5 8
Dalnvostugol	12 0	0 6	1 4	0 6	1 2	3 8
Primorskugol	55 6	1 1	3 9	2 5	6 1	13 5
Sakhalinugol	44 4	0 2	5 1	1 7	0 7	7 7
Borodinskiy	9 0	0 2	0 4	0 4	0 6	1 5
Krasnoyarskugol	13 6	0 3	0 6	0 9	0 5	2 4
Belovougol	29 4	1 2	1 7	0 4	1 3	4 6
Kiselevskugol	33 0	0 7	12 3	0 6	0 6	14 1
Kuzbassrazrezugol	70 5	2 2	12 4	4 8	6 0	25 3
Kuznetskugol	129 0	5 8	17 1	9 1	3 3	35 3
Leninskugol	58 6	2 9	5 7	2 9	3 1	14 7
Mezhdurechje	10 0	0 0	0 1	0 1	0 2	0 5
Prokopyevskugol	66 0	4 6	12 2	3 2	1 0	21 0
Raspadskaya	14 3	0 3	0 3	0 4	0 2	1 2
SeveroKuzbassugol	74 2	2 0	18 3	2 1	3 8	26 1
Vakhrusheva	4 9	0 2	0 0	0 1	0 0	0 3
Tulaugol	40 0	0 9	6 0	2 3	3 5	12 6
Severovostokugol	19 4	0 2	1 8	0 9	0 8	3 8
Yakutugol	38 0	1 9	9 5	3 4	1 6	16 4
Intaugol	45 0	1 5	9 0	3 1	5 6	19 1
Vorgashorskaya	12 7	0 4	0 0	0 3	0 0	0 8
Vorkutaugol	123 9	0 7	23 5	4 8	2 9	31 9
BashkirUgol	9 2	0 0	0 4	0 3	1 0	1 8
Cheljabinskugol	48 8	0 4	6 1	0 5	1 1	8 1
Kizelugol	24 2	0 3	3 5	0 7	1 7	6 2
Shumikhinskaya	1 7	0 0	0 1	0 0	0 0	0 1
Vakhrushevugol	11 1	0 1	1 5	0 6	0 4	2 5
Yuzhniy Kuzbass	21 8	0 7	6 3	0 5	0 1	7 6
Total	1272 5	34 6	177 7	61 4	64 2	337 9

Note (a) Expenditures for 1993 Q4 converted to an annual basis at 1993 prices

Figure 10

Mine social costs as a % of total oblast revenue, 1992

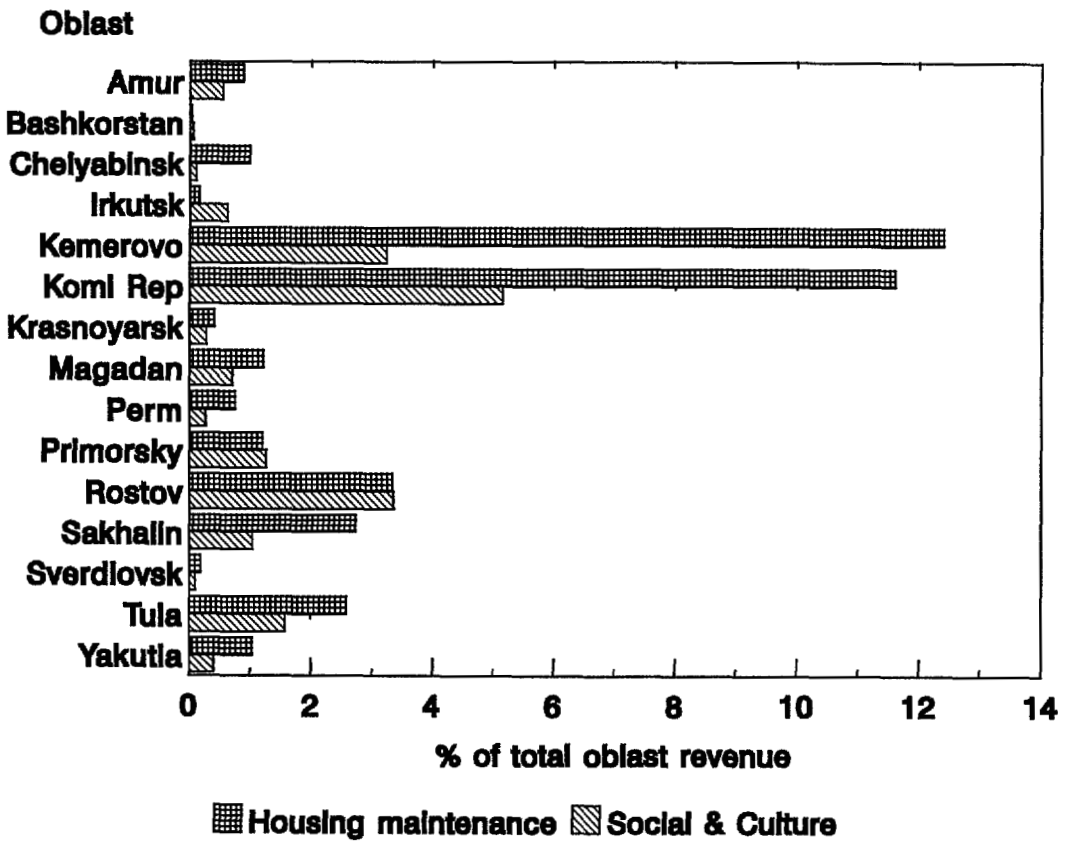

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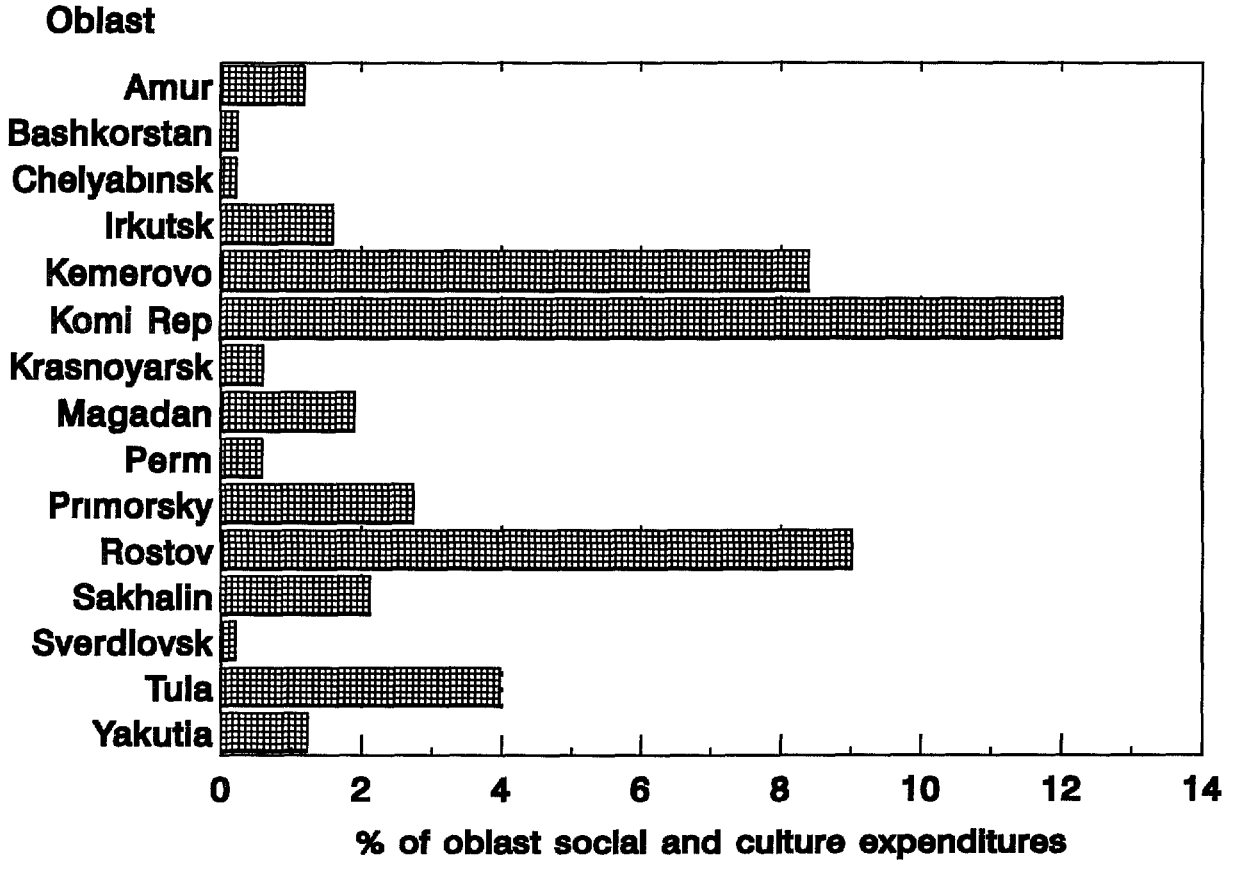
Figure 11

Social and culture costs as % of oblast expenditures on social and culture, 1992



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Annex H

Comments and Observations of Ministries, Agencies, and Other Interested Russian Organizations on the IBRD Report "Restructuring the Coal Industry of the Russian Federation"

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LIST OF ORGANIZATIONS
WHICH SUBMITTED THEIR COMMENTS TO IBRD REPORT

(August 8, 1994 edition)

No	Name of organization	Number of pages
1	"RosUgol" state-owned enterprise	13
2	Analysis of "RosUgol" comments to IBRD report	10
3	Federal Bankruptcy Committee	2
4	"Kuzbassinvestugol"	10
5	Ministry of Finance of the Russian Federation	2
6	Administration of Rostov oblast	4
7	Ministry of Social Protection of Russia	5
8	Department of Coal Industry	6
9	Main Department of Fuel Industry of the Ministry of Economy	4
10	NPG Rossii (Mr Sergeev)	2
11	Russian Committee of Independent Coal Industry Trade Union	2
12	GKI of the Russian Federation	2
13	"RostovUgol" joint stock company	4
14	"GukovUgol" joint stock company	1
15	Administration of Tulskaya oblast	3
16	Administration of the Komi Republic	1
17	Ministry of Labor of the Russian Federation	3
18	Research institute TSNIEIUgol	2
19	Ministry of Industry, Transportation and Communications of the Komi Republic	5
20	Federal Employment Service	5
21	The Russian Federation Metallurgy Committee	2
22	"Severokuzbassugol" joint stock company	1
23	"Kuzbassrazrezugol" concern	2
24	"Rossugleprofsoyuz" Trade Union	7
25	"Kuzbass Coal" Round Table	4

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14 September 1994
No 2-7-34/801

A N Shokhin
Chairman
Inter-Agency Commission
on Socio-Economic Issues
in Coal Producing Regions

On the Report of the International Bank for Reconstruction and Development (IBRD) "Restructuring the Coal Industry in the Russian Federation"

Below please find comments on the IBRD Report

The International Bank for Reconstruction and Development has made a great effort to study the situation in the Russian coal industry and prospects for the sectoral development, especially issues related to the domestic coal market, coal transportation and production, systems of pricing and subsidies, employment and social protection, issues of safety techniques and labor protection, environment protection An attempt has been made to reveal regional peculiarities in the coal sector

The Report determines the **objectives of restructuring correctly adjustment to new market conditions and establishment of competitive enterprises**

These objectives raise no doubts However, projected assessments, individual statements have not been substantiated in a number of cases

The proposed pace and individual approaches to implement restructuring in the sector that do not take account of the present economic situation in Russia give way to significant doubts

First, the IBRD-proposed pace to restructure such a huge, heterogeneous and geographically scattered sector as the coal industry of Russia is, has no precedents in the world practice

Moreover, the world experience related to coal industry enterprises of the European countries that are most close to us in terms of their mining and geological conditions (Germany, Great Britain, France, etc) witnesses for the fact that the restructuring processes last dozens of years rather than years, with the massive state support Thus, calculated per 1 ton of black coal, subsidies in 1992-1993 equaled in England - $ 12 7, Germany - $ 70, France - $ 98, Spain - $ 20 (in Russia in 1993, they were about $ 5 00 and are expected to be about $ 9 00 in 1994)

The process of restructuring does not radically cut on subsidies but rather provides for a gradual change in their structure and orientation For instance, in England the state subsidies to the coal industry under compensatory contracts with power plants dropped from 1 billion pounds in 1990 down to 0 5 billion in 1993 over the last three years, which, to a certain

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extent, reflects the slump in coal production and closure of most heavy loss-making mines At the same time, in 1992-1993, 640 million pounds were annually allocated for social needs

The restructuring processes are still going on in these countries In December, 1993, the European Union (EU) approved national programs for subsidizing the coal industry for the existing period of the budget of the European Coal and Steel Committee (ECSC) by extending them to 2002

In addition, one can't but take into consideration the fact that restructuring of the coal industry in these countries was and is being implemented in conditions of relatively stable market economies (with inflation rate of 2-4 % per annum, the level of actual unemployment of 5-7 %, and GDP growth at least 1 5-4 % a year), not in the economy under crisis now embracing **all economic sectors** of Russia (the 1994 rate of inflation is expected to be about 140 % per annum, the level of actual unemployment - 11 % and to be monthly increased, less hidden unemployment, GDP decreased by 17 % during 7 months of 1994)

Thus, it is with a high degree of truth that one may state that the pace of restructuring suggested is neither substantiated, nor realistic and the attempt to implement it may lead to unpredictable socio-economic consequences

The Company "RosUgol" is of the opinion that the process of restructuring has not only started already but is gaining the momentum

The period of 1993-1994 proved to be a turning point in operating conditions of the coal sector and in its transition to market relations

A new economic mechanism started to be formed up in the sector based on free prices for coal, on a selective approach to measures of state support to underground and surface mines and changes in ownership, and establishment of new organizational and economic structures

The selective approach to allocation of state support funds entailed positive changes in the structure of subsidies A share of funds allocated for technological re-tooling and development of promising enterprises and also for closure of heavy loss making mines augmented from 20 % in 1992 to 30 % (the first half of 1994), a percentage of budget funds designed to be credited to compensate losses of the industry has decreased from 48 % to 19 %, for the same period

The establishment and approval of "Basic Principles for Clearing-Up Books and Closure of Heavy Loss Making Underground and Surface Mines", allocation of funds for clearing up books and closure of mines in the first half of 1994 have allowed to get down to practical restructuring of mines All coal producing enterprises have been reviewed and 37 underground mines and 1 surface mine have been proved to have no prospects, they make heavy losses and thus, have to be closed as a matter of first priority The work is being carried out to close the mine "Khalmer-Yu" in Vorkuta, the Krupskaya mine in JSC "Kizelugol", the mine "Anzherskaya" in JSC "Severokuzbassugol", preparatory and design works are nearing the completion to close another 4 mines including the mines "Zapadnaya" and "Tayozhnaya" in JSC "Kizelugol", the mine "Khassan" in JSC "Primorskugol" and the mine "Podozernaya" in

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JSC "Chelyabinskugol"

A specific work has been initiated to concentrate the production, ensure the growth of workload per mine, per coal-face In the first half of 1994, the number of low productivity coal-faces (with load under 200 t/day) decreased by 21 % (50 coal-faces), and the number of high productivity faces (500 thousand and more tons of coal per annum) has gone up by 16, of which 4 coal-faces are producing about 1 mln tons annually From 1990, we had no coal-faces of this nature Their share with daily production of 500-1000 t increased from 19 % to 22 %, only from the beginning of the current year

For the first time over the last 4 years, quality performance indicators of underground and surface mines showed tendency towards improvement On average, during 8 months of 1994, the load per coal face increased by 3 9 %, ash content of the coal produced decreased by 0 2 %, a share of the most economical method of open cast coal mining is growing up (+0 5%)

A planned discharge of labor in the sector is being implemented For the last one and half years (1993 and the first half of 1994), an average employment was reduced by 72 3 thousand workers including 46 8 thousand employees belonging to the production staff The employment structure is being changed During the same period, a share of workers involved in coal mining has gone up from 41 % to 46 5 % of the total employment

With a view to arranging jobs for those discharged as a result of closures of heavy loss making mines, a comprehensive work aimed to provide new jobs on lead time basis is being undertaken 29 facilities for manufacturing consumer goods and provision of services were constructed and commissioned in 1993, including enterprises for building materials, electric home appliances, furniture, plastic items, agricultural commodity processing This ensured 2 5 thousand jobs in 1993 Another almost 5 thousand jobs are planned to be created in 1994

The housing construction was expanded to re-settle veteran miners from Northern regions In 1994, authorizations have been given to move to more than one thousand apartments in Kovrov, Bryansk, Kaluga, Stariy Oskol and other cities of the Central Russia

Social facilities started to pass into municipal ownership In 1993 and the first half of 1994, 2 5 million m2 of housing (6 1 % of the total number available in the sector) and 237 social facilities (12 %) have been divested to local authorities Improvements in sectoral management structure are being made aiming to strengthen regional joint stock companies, create and develop market infrastructures

According to "RosUgol" the restructuring process in the sector started by the Company must advance as quick as possible with due regard for socio-economic situation which is actually being created in Russia

Secondly, approaches to restructuring proposed by IBRD are based on conclusions which are quite loose in interpreting economic, financial and institutional systems established in the Russian coal industry

Remarks regarding individual conclusions in the Report are given in the Attachment

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Remarks of principal nature are as follows

IBRD recommends **to discontinue, beginning from 1995, to subsidize losses caused by industrial operations and investments** paying no heed to conditions the mine stock is in (over 2/3 of mines have been operating for a long period of time without reconstruction), significant differences in mining and geological conditions and specific features of coal basins, which determine sharp fluctuations in production costs for the same types of coals

To discontinue subsidies for losses, already from 1995, would require at least 3-fold price increases at the time when the average level of prices for coal products (Rb24,000 in July 1994 and Rb29,000 in Quarter IV, 1994) including a transportation component (with the average transportation distance of 1270 km - Rb23,700 and from October 1 - Rb31,400) is already reaching the world level Any further increase is impossible since, given the ongoing steady level of arrears in Quarters II and III (30 % of the monthly volume of sales), operations of the coal enterprises would be paralyzed due to non-availability of working funds, the enterprises would be forced to stop their operations that would result in the loss of 70 mln tons of coal already in Quarters I-II, 1995 (i e in winter time)

To discontinue investments, already from 1995, implies self-financing by enterprises in this period in order to renew their fixed assets which, due to impossibility for further growth of prices for coal products and non-payments on the part of customers, would make it impossible for promising enterprises to undertake any technological re-tooling and reconstruction And in 1995 itself, this would lead to the reduction of sectoral capacity by 23 mln tons and loss of at least 18 mln tons of production at highly efficient enterprises

IBRD is also proposing to **discontinue state subsidies for payments under the Tariff Agreement** disregarding the fact that payments under this Agreement are of compensatory nature determined by the rate of inflation Should the latter be decreased, it is but obvious that the provision of the above funds would be also reduced The payments under the Tariff agreement may be shown as enterprise expenditures, however, this would lead to a single, at least 1 5 time increase in prices for coal and, given the arrears, the enterprises would be in no position to pay wages that may result in social tension and labor disputes

Thus, **in the course of the next few years, it will be necessary to change the structure of state subsidies gradually aiming towards reduction of subsidies which offset enterprise losses, rise in funds designed for mine closures and for investments in highly efficient enterprises**

The actual implementation of restructuring measures developed by RosUgol would allow to annually reduce the total budget allocations for the coal sector by approximately 15 % of the basic period amounts in existing prices and establish appropriate ceilings To link reduction in subsidies with GDP as proposed by the Bank would disregard a declining tendency of GDP and this may lead to increasingly declining subsidies

IBRD proposals for the Ministry of Finance of Russia to pay subsidies directly to coal companies and local authorities are being already implemented through the Treasury Department of the Ministry of Finance of Russia

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The sharp cut on **coal consumption in Russia** during 1995-1997, as projected by IBRD, should be questioned The Section "Demand for Coal" (p 23) suggests that the coal consumption would drop faster than the general consumption of energy resources due to the expansion of gas, power and heat energy niches in the market It is projected that the coal consumption in 1995 would be about 60 % of the 1990 level or 218-220 mln tons (in 1990 the consumption of coal produced by RosUgol enterprises comprised 364 mln tons) and in 1997 - 217 mln tons

However, for the last three years, consumption of coal products decreased by 24 % or 8 % per annum on average, in 1994, deliveries are expected to be at the level of 250-255 mln tons, i e lower than in 1993 (deliveries - 267 mln tons) also by 8-9% It should be noted that due to such deliveries and shortage of coal resources in the Far Eastern and some other regions, restrictions on consumption of heat and power have been introduced

Therefore, volumes of sales in 1995-1997 indicated in the IBRD Report do not agree with the real demand for coal which, according to calculations, is expected to be at the level of 257-258 mln tons in 1995 which corresponds to the production of 274 mln tons

In estimating the demand, no full account is taken of the geography of coal basins (55 administrative entities have no coal deposits and consume 100 % of the coal transported to their regions), opportunities to replace coal with other types of fuel and the fact that over 50 % of coal resources are consumed for heating purposes since the heating season in Russia lasts 7 months a year, on average In view of this, the coal transportation for distances 1000 km - 3000 km to eliminate the shortage of fuel is inevitable in the nearest future (till 2000) Now, transportation for distances in excess of 1000 km account for about 30 % of the total coal deliveries, and in excess of 2000 km - for 12 % - 13 % To discontinue these deliveries only because of high transportation costs may result in the coal shortage in some regions of Russia

Therefore, to create normal conditions for provision of short-supplied regions with long-distance coals would require introduction of different tariffs for coal transportation, with its share in the coal price not to exceed 35-50 % at the place of consumption

One cannot agree with IBRD assessments of demand and production of coal by individual basins, Kuzbass and Pechora basins, in the first place

In the most promising **Kuznetsk basin** which features high quality coal deposits favorable for the development, IBRD forecasts the production (p 43) of 56 5 mln tons under "low" scenario and 53 mln tons under "high" tariff scenario in 1997 against the actual production of 101 8 mln tons in 1993

At present of 95 mln tons of Kuznetsk resources 28 mln tons account for coking coals Of these, 30 mln tons are regularly used in the Kemerovo oblast including only 8 mln tons of coking coals Up to 65 mln tons of coal including 16 mln tons of coking coals are transported to other regions as far as the Kaliningrad oblast, the Republic of Karelia and abroad

The slump in Kuznetsk coal production by 40-45 mln tons would inevitably lead to the

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irreplaceable loss of especially valuable caking types of the coking coal for the domestic coking chemistry, decrease in hard currency receipts, and also narrowing opportunities for possible manoeuvre in compensating the depletion of coal resources with other deposits which is especially impermissible at the time of reviving the Russian industrial production

In view of the fact that the coal production has reduced in all the basins including the European part of Russia and the Urals and given the prospects for improving economic relations with the Ukraine, Belarus and Transcaucasian republics where Russian coal deliveries would be increased and also in the absence of gas resources till 2000, volumes of production proposed by IBRD, 56 5-63 mln tons, will not meet the fuel demand in the European part of Russia

According to RosUgol, demand for Kuzbass coals in 1997 will be 98-100 mln tons

IBRD projects also the decrease in coal production in the **Pechora basin** (p 26) from 24 5 in 1993 to 12 1 mln tons under the "low" tariff scenario and 15 2 mln tons under "high" tariff scenario in 1997 In addition, it stipulated that **the production of power station coals would be discontinued in the basin**

The Pechora basin is the major supplier of coking and power station coals to the Northern region, North-Western and Central regions The consumption of power station coals in the Northern region is 11-12 mln tons, with over 1 mln tons of these coals brought from other regions including about 0 4 mln tons of Arctic coal Any termination of power station coal production in the basin would result in curtailing the production of Intinsk and Vorgashorskaya coals and concurrent delivery of 10 mln tons of coal to the Northern region from Kuzbass It is more so, since any incremental gas consumption in the Northern region may happen only after 2000

Therefore, to meet the requirements in fuel in 1997, the Pechora basin would have to produce 22-23 mln tons

The IBRD Report lacks actual **proposals for improvement of the system of management in the coal industry** Yet, this problem is closely associated with the recommended restructuring methods and the choice of the latter would determine areas for management system improvements In our opinion, in the transition period it is necessary, first of all, to strengthen the middle rank management - regional joint stock companies

A basic subject of business activities should be joint stock coal companies (societies) created by transforming producing associations and consolidating blocks of shares of the enterprises which were part of voluntary associations in the past The coal companies should embrace production, preparation and sales of coal In conjunction with the enterprises of market infrastructure (investment, insurance companies, commercial banks, etc), they should accumulate financial resources, staff, technical and material support required for investment and operate on the basis of long-term contracts with customers Operations of the joint stock companies which are part of these entities (underground and surface mines, etc) should be primarily focussed on issues of production and operation The coal companies set up by consolidating the blocks of shares of independent stock companies should be transformed so that they have a controlling interest in the enterprises which become their part

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Operating under the Ministry of Fuel and Energy, the Company "RosUgol" ensures resolution of practical tasks related to sectoral restructuring, clearing up enterprise books and closure of inefficient facilities, maintaining the required level of industrial safety measures and social conditions for miners by strictly combining functions of running these processes and allocating funds aimed at restructuring That this approach is correct has been proved by the experience across the world Great Britain ("British Coal"), Germany (Ruhr Kohle), France (Charbonnage de France) and others

In the transition period, market structures in the center and regions should be established according to a functional principle (investment and insurance companies, pension funds, consulting and engineering firms, transportation, trading and service companies), they should be also developed and strengthened by gradual acquiring certain responsibilities and specialists from RosUgol and the staff of regional joint stock companies In the time of their strengthening, the activities of these companies would be coordinated by RosUgol under the general sectoral development strategy

The IBRD Report stipulates **sharp reduction in the number of enterprises and employment in the coal industry** during 1992-1997 - by 155 coal enterprises and 475 6 thousand employees (Option I) and under Option II, the reduction of enterprises by 135 (2-fold) and employment by 424 6 thousand workers (2 3 times) The world practice does not know any of this type of reductions in the coal sector, both in terms of scope, and time of implementation

In particular, the Kuzbass basin is expected to reduce the number of enterprises from 91 to 33-40, i e 2 3-2 8 times and employment in the basin from 296 3 thousand people down to 72-83 thousand or 3 6-4 1 times In the Pechora basin, it is expected that the number of coal producing enterprises would be reduced from 18 to 5-7 or 2 6-3 6 times and the employment from 70 4 thousand people down to 21-32 thousand, i,e, 2 2-3 4 times (p 34)

The Report does not take account of economic consequences that may happen not only from the closure of mines and subsequent necessity to find jobs for this mass of people which neither the U S A , nor Europe had ever faced and where the labor force are relatively mobile, but even from the complete termination of state budget subsidies, bankruptcies occurring everywhere and natural inflation of prices for coal products and in the national economy, as a whole

The massive social payments (allowances, etc) to released sectoral workers proposed by IBRD disregard the mentality of the Russian miner created over dozens of years, on the one hand, he is proud of his work, on the other - he does not want to change his way of living this sharply

One can't agree that "the primary focus in the program for employment reduction should be the decrease in general volumes of employment with no significant geographical discrimination (p 14), where only after the discharge of 25-30 % of staff in this or that basin, specific features of a region should be considered Our basins are of local nature and to move to another basin, in conditions of the acute shortage of housing or employment problems in other sectors at the time when people are being sacked all around, is just a pure theory

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playing incompatible with the reality of our life

The IBRD Report suggests that all employees of pension age should be discharged from the coal industry (p 14) RosUgol believes that any massive outflow of workers aged 45-50 from the production sphere would lead to irreplaceable distortion in the personnel structure of enterprises, "promising" enterprises in the first place, which is impermissible Workers should be released depending on prospects of an enterprise

According to RosUgol, if one takes into consideration the coal demand, reconstruction and modernization of promising underground and surface mines and resolution of social issues, it is possible to close up to 100 coal enterprises by 2000 and reduce the total employment down to 254 thousand people

The counter data shown in the IBRD Report (p 19) may, after their range and meanings have been adjusted, serve as reference points in drawing up a long-term agreement between the Government of Russia and the Company "RosUgol" where financial and legal obligations of the Government with respect to resolution of basic tasks faced by the coal industry on the one part, and RosUgol obligations to provide the national economy with coal products and rationalize the consumption of state support funds set out in the agreement, on the other part, would be reflected In our opinion, this agreement will become the basis for restructuring the coal industry in Russia

Encl on 6 pages

V Ye Zaidenvarg
First Deputy General Director
Company "RosUgol"

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Attachment

Comments
by Sections of the Report of
the International Bank for Reconstruction and Development
(IBRD) "On Restructuring the Coal Industry
in the Russian Federation"

1 Price Liberalization, Subsidies and Wages

1 1 The Report does not take account of peculiarities of the coal basins, of the stock of mines that determine sharp fluctuations in production costs of coals belonging to the same type, therefore, a number of basic conclusions and proposals on pricing policies and subsidies are wrong

Thus, on p 9, para 4, an unsubstantiated conclusion is made that as if arbitrary, half of the subsidies in 1993 were used to support price levels and investments and such allocation leads to unjustified physical costs and operating expenses to produce the unmarketable coal

A conclusion on p 12, para 1 is rather questionable if prices for products could correspond to competing market elements, about 2/3 of the total sectoral capacity would become profitable already in medium term The practice shows that with introduction of free prices, 4 out of 9 profitable enterprises had excise duties imposed At present, profits of these enterprises are sufficient only to cover their own needs and these profits keep on declining due to inflationary processes

The statement in the Report that subsidy amounts allocated to the sector could be decreased by 50 % and more (p 20, para 2) has no connection with the rise in coal price, sharp increase in the rate of inflation, slump in coal production and adverse consequences for the national economy as a whole The same page, last para, gives an ungrounded conclusion that such measures (it is unclear which measures) would release funds allocated for an unprofitable portion of the coal producing industry and allow for the most active group of coal producing companies to survive And this is when all the funds have been already reduced by 50% or what ?

Absolutely wrong is the conclusion that the enterprises lack incentives to increase prices for products according to their situation in the market (Section "Subsidies", para 4) because they would be provided with corresponding subsidies It should be noted that in Quarter III, 1994, subsidies to cover losses decreased almost three times as compared with Quarter 1, 1994, and the coal enterprises were forced to raise prices, however, the level of raising proved to be insufficient and the enterprises were short of receiving over Rb 450 billion from their customers Also wrong is the argument linking subsidies with the timely payment of wages, since subsidies are strictly earmarked (a portion of wage funds is to be received from the customer, the remainder - through the state support to offset the increase in consumer prices)

It is stated on pages 74, 76, that the coal prices are set by RosUgol It should be

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pointed out that RosUgol sets only the size of subsidies while the level of selling prices is set by the associations independently, with subsidies set not to protect the most feeble, but to offset uncovered production costs emerging due to worse mining and geological conditions, high depreciation of fixed assets, while selling prices for the same types of coal in all groups of coal producing enterprises remain equal

The proposal for complete elimination of subsidies (p 88) after 1994 aimed to offset operating losses and investment would lead, without restructuring of the sector, to the sharp inflation of prices for coal, growth of arrears and forced shut-down of underground and surface mines as well as to the loss of 150 mln tons of coal

The wage subsidies are allocated only to set off consumer price increases and may not depend on the share of employment in the total labor strength as envisaged in the Report

1 2 Recommendations to concentrate powers to manage the subsidy fund within the Inter-Agency Coal Commission in one case and within the Ministry of Finance in another is the example of superficial knowledge of specifics in the coal industry of Russia, an attempt to destroy the vertical structure of management in the sector including RosUgol However, for this purpose, any body would require a sufficiently large group of highly qualified coal specialists, if the definition of required subsidy amounts is to be approached from the State perspective, of course

1 3 The Report ignores the world experience in respect of the fact that many countries subsidize their coal industries on continuous basis Yet, we are offered to discontinue the state support to the sector within two years This idea can be traced in many sections of the Report They would persistently talk about the foreign experience in radical cutting on the coal production and keep continued silence about the experience in state support

Should we implement these recommendations, we will have the following as the outcome

- mass unemployment with all the ensuing consequences,
- a loss of production and staff capacities which would be difficult to restore and which would obviously be required at the time of reviving the national economy,
- economic dependency on foreign countries, planned by ourselves, in the area of coal products due to the necessity to export them,
- continued irregular deliveries of coal products to the population

1 4 The proposed decentralized conclusion of tariff agreements would slow the competition between individual companies rather than enhance it For instance, having lower production costs, JSC "Kuzbassrazrezugol" would raise its level of wages without changing the price (since the latter is dictated by mines) and this would be detrimental for the development and maintenance of its facilities

Besides, the establishment of different remuneration bases would entail still higher social tension among the staff, especially if they belong to coal enterprises located close to each other

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1 5 Budget subsidies to implement the sectoral tariff agreement of miners are not wages but only sources to cover expenditures of the enterprises Under conditions of arrears which emerge everywhere after the production has been shipped, the subsidies under the tariff agreement serve only as the guarantee to receive a partial wage since these funds are to be disbursed on earmarked basis

Actually, this type of subsidy may be replaced with guarantees to reserve a portion of received funds for the products sold, up to 40%-50%, to pay wages

A size of subsidies for these purposes is allocated in proportion to the coal production, i e it is strictly tied up to the enterprise performance

1 6 The World Bank states (p 9) that subsidies under the tariff agreement do not reach their objectives which are to protect people from hardships of the transition period and that they are used to protect production And this is supported by the example that subsidies per person are Rb 227 thousand while the wage is Rb 145 thousand and wage arrears comprise 3-6 months

This example evidences to which extent the financial subsidies of the Russian Government are target oriented

1 7 The Tariff Agreement exists not only in the coal industry of Russia but also in other coal producing countries In Germany, for instance, it is more capacious and comprehensive, France features the status of a miner, etc

One should not state that the increase in miners' wages is basically linked to the Tariff Agreement since it primarily contains indexation of wages caused by the rise in consumer prices (p 8, p 56) The Tariff Agreement is not a system of subsidies ("for workers' wages", p 83) but only the source to cover expenditures incurred to implement the Tariff Agreement

Wages are paid from funds received from the sales of products and a portion of wages is paid under the Tariff Agreement, with the size of these funds tied up in direct proportion to the coal output

1 8 Actually, page 7 contains ungrounded statement that "tariff agreements are quite efficient in opposing the attempts of local coal producing companies to implement key management functions" The establishment of own selling prices, wage levels to own workers, the system of additional benefits, the right to transform individual enterprises into independent operating units or close mines are implied here Apart from obvious juggling with substance of the matter, an attempt can be traced to remove the trade unions from the "game"

2 Transport Tariffs and Coal Market

2 2 In reviewing individual basins, one cannot agree with the conclusions made in the World Bank Report with respect to production and, consequently, demand for coal

The Pechora Basin (p 36 Section "Parameters of Coal Basins")

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The Report concludes that under the "low" tariff scenario, the coal production in the basin would decrease from 24 5 mln tons in 1993 to 12 1 mln tons in 1997 and under the "high" tariff scenario the production would go down to 15 2 mln tons It is also projected that the basin would terminate production of power station coals

One cannot agree with this approach Being a major supplier of coking and power station coals for the Northern regions, the Pechora basin supplies about 2 mln tons of coking coals and 5 mln tons of power station coals to the North-Western, Central regions and abroad

The consumption of power station coals in the Northern region totals 11-12 mln tons with over 1 mln tons of these coals brought from other regions including about 0 4 mln tons from the Arctic

Therefore, one cannot agree with the conclusions that the production of power station coals in the basin would be discontinued, this would require to terminate the production of Intinsk coal and cut on the production in the Vorgashorskaya mine, bringing concurrently to the Northern region up to 10 mln tons of coal from Kuzbass This is even more so since the gas consumption can be increased in the Northern region only after 2000

Therefore, most realistic is the production of 22-23 mln tons in the Pechora basin in 1997

The Moscow Basin (p 38, the same Section)

The Bank's calculations stipulate to maintain production in the amount of 5 3 mln tons in the basin under the "low" tariff scenario and raise the production up to 8 9 mln tons under the "high" scenario against the actual production in 1993 comprising 7 5 mln tons

Moscow basin coal is consumed only in the Central region where about 9-10 mln tons of coal from other regions are delivered The production of this coal is associated with high costs, the coal is "dirty" in environmental terms

Given this, it is possible that the Moscow basin coal production would be lowered to 4 5 mln tons in 1997 with its resources to be replaced with gas or, in the extreme case, with other coals

The Donetsk Basin (p 40 Same Section)

The Bank's Report stipulates production of 19 mln tons of coal under the "low" scenario and 20 8 mln tons under the "high" tariff scenario in 1997 while in 1993, the production was 24 4 mln tons One could agree with these levels of production since the Donetsk coal features stable sales which could be increased if economic relations with the Ukraine and former Transcaucasian republics have been restored, however, due to high costs, in all likelihood the production in 1997 would be 16-18 mln tons

The Ural coals (p 42)

The Bank's paper forecasts that the 1997 production would be in the order of 10 9 mln tons under the "low" scenario and 15 7 mln tons under the "high" scenario, with the production of 20 mln tons in 1993

In our opinion, it is impossible to reduce the production of the Ural coals below 17 mln tons since the Urals are expected to reduce the consumption of Ekibastuz coals

The Kuznetsk Basin (p 43)

The most promising basin of high quality coals The World Bank forecasts the production of 56 5 mln tons of Kuznetsk coals in 1997 under the "low" tariff scenario and 63 mln tons under the "high" tariff scenario against the actual production of 101 8 mln tons in 1993

Presently, of 95 mln tons of Kuznetsk coal resources, 30 mln tons are steadily consumed in the Kemerovo oblast and over 30 mln tons are consumed in other regions of the West-Siberian region, about 35 mln tons are delivered to other regions as far as the Kaliningrad oblast and the Republic of Kareliya and abroad

In view of the reduction in coal production in all the basins of the European part of Russia and in the Urals and prospects for improving economic relations with the Ukraine, Belarus and the Transcaucasian republics where deliveries of the Russian coal would be raised, the levels of production proposed by the World Bank, 56-5-63 mln tons, would not be sufficient for the deliveries to the European part of Russia and beyond

The most optimum production of coal in the Kuzbass in 1997 is 98-100 mln tons

The Kansk-Achinsk Basin (p 46)

The World Bank experts included Khakassiya, Tuva coals and the mine "Kotuj" in the Kansk-Achinsk basin, in addition to Kansk-Achinsk coals

According to Bank's calculations, it is planned to decrease the production of these coals down to 39 6-50 mln tons in 1997 as opposed to 57 8 mln tons in 1993

The significance of these coals would grow up after the new unit at the Kharanorsk Power Plant is commissioned in Quarter I of 1995 to consume about 0 5 mln tons of Kharanorsk coal The deliveries of this coal to the Far East would be lowered by the same amount which may be partially offset by coals from the Krasnoyarsk krai

In addition, if the economic relations with former Central Asia republics of FSU which annually received from 2 to 4 mln tons of the Kansk-Achinsk coals are revived some of these coals would be supplied outside Russia

The Kansk-Achinsk coals may be also used in the future to partially replace the Ekibastuz coals

Given the above factors, the production of Kansk-Achinsk Khakassiya and Tuva coals should be at the level of at least 50 mln tons in 1997

The East Siberian Basin (p 48)

This basin needs clarifications as regards the structure of producing enterprises and the level of production The East-Siberian deposits include Tugnuisskoye and Gussinoozerskoye deposits in the Chita oblast (composed of 1 underground mine and 2

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surface mines), Cheremkhovskoje, Azejsskoje and Mougounskoje deposits in the Irkutsk oblast (composed of 5 surface mines), Chitinskoye deposit composed of 4 enterprises (1 underground mine and 4 surface mines), i e totally - 2 underground mines and 11 surface mines with the annual production of 32 5 mln tons in 1993

The World Bank materials include 18 mines in this basin, with their annual production of 24 4 mln tons in 1993

Clarifications are required both in terms of production and composition of enterprises

The Far East Basin (p 50)
The Far East basin includes deposits which are parts of the JSC "Primorskugol", "Dalvostugol" and "Sakhalinugol" whose enterprises produced totally 23 1 mln tons of coal in 1993

The World Bank calculations predict that in 1997 the Far East Basin would produce 13 2 mln tons under the "low" tariff scenario and 19 mln tons under the "high" tariff scenario

The Far East region which includes the Primorsk and Khabarovsk krais, the Amursk and Sakhalin oblasts where the deposits of the Far East basin are located, is the most short-supplied region of Russia, in terms of coal

To lower the fuel shortage in 1997, the deposits of the Far East basin should be developed and ensure production of at least 26-27 mln tons

The North-Eastern Basin (p 52)
This basin, according to the materials of the World Bank, includes enterprises, of "Arktikugol", "Severovostokugol" and "Yakutskugol" which produced totally 15 9 mln tons of coal in 1993

The World Bank calculations suggest that the North-Eastern coals would be reduced in production down to 14-14 6 mln tons in 1997

The coal from Arktikugol enterprises (production was 0 5 mln tons in 1993) is transported from the ports of Murmansk and Arkhangelsk (up to 0 4 mln tons) for the distance which does not exceed 200 km, i e only for customers of the Northern regions of the European Russia Therefore, it would be more appropriate, from the viewpoint of coal markets, to review this deposit in conjunction with the Pechora basin

Of the Yakutsk coals (production of 12 5 mln tons in 1993), only the Nerungri coal in the amount of 4 2 mln tons is transported by railway to supply oblasts and krais of the Far East region and 3 2-3 4 mln tons are exported via ports of the Primorsk krai

Coals from "Severovostokugol" (in 1993 - 3 mln tons) are transported only by water to supply Northern regions of the Far East

Hence, of 15 9 mln tons produced in this basin in 1993, only 7 5 mln tons are

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transported by railway (50%) and the remainder is either transported by water or consumed locally

Due to economic considerations, the production of these coals should be maintained at least at the level of 15 mln tons in 1997, since should it be lower, this would require additional and costly transportation of coal to the North of the Far East region from Siberia

3 Employment

3 1 It is expected that in 1992-1997 the number of enterprises in Kuzbass would be reduced from 91 to 33-40, i e 2 3-2 8 times and their labor force from 296 3 thousand to 72-83 thousand employees, or 3 6-4 1 times In the Pechora basin, the number of coal producing enterprises is expected to be reduced from 18 to 5-7 mines or 2 6-3 6 times and their employment from 70 4 thousand to 21-32 thousand workers, i e 2 2-3 4 times(p 34)

It is unrealistic to reduce so many enterprises and employees for the remaining period of time Only in Kuzbass, it would be necessary to discharge 22 thousand workers for the remaining 3 years The world practice never faced this

It is stipulated to reduce the coal industry by 155 coal producing enterprises during 1992-1997, i e 2 3 times, and the employment by 475 6 thousand people or 2 7 times (Option I), under Option II, 135 enterprises are to be reduced (2 times) and 424 6 thousand workers laid-off (2 3 times) This challenge cannot be met in Russia due to a number of reasons (meeting the demand for coal, job placement and non-availability of required funds)

The world practice does not know any of such reductions in the coal industry, both in terms of scope and the time required for their implementation

3 2 The massive outflow of workers aged over 50 and, moreover, at 45-50 years of age from the production operations would lead to the distortion of the structure of enterprises, of "promising" enterprises, in the first place The discharge should be specifically regulated within each group "promising" enterprises, "stable" enterprises, "enterprises with no prospects"

4 Environment

The Report gives a controversial conclusion that profitable enterprises are gradually improving the situation related to environment protection (p 75, para 9) Previously, the Report noted the profitable operations of the surface mine "Borodinskij", JSC "Kuzbassrazrezugol" and JSC of the mine "Raspadskaya" The analysis of indicators which characterize their environmental actions shows, with due regard for projections and actions developed by enterprises, that there is no orientation towards environment improvements

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Analysis of "RosUgol" comments to
the World Bank Report, submitted as the Annex
to "RosUgol" letter of September 14, 1994 No 2-7-34/801

"RosUgol" comments	Comments of the Working Group
Page 9, para 4 of the Report contains a groundless conclusion to the effect that in 1993 half of the subsidies was unintentionally channelled for the purpose of support of price levels and investments, as well as that such allocation of funds leads to unreasonable spending on materials and maintenance expenses for the extraction of coal, for which there is no demand	The case, described by IBRD, is true for 1994, for example for the relations between "Zapsibcombinat" joint stock company and coal-mining enterprises of Kuzbass region, where loss-making mines in Prokopjevsk compete with open pits of Mezhdurechensk, although the latter have reserve capacities
2 Quite disputable is the conclusion on page 12, para 1, that if the prices of products are competitive, approximately two thirds of total industry's capacities will become profitable even in mid-term Experience shows that after prices are liberalized, excise taxes are imposed on 4 out of 9 enterprises, generating profits Currently these enterprises generate profits, sufficient only to cover their own needs, while inflation tends to further erode their profits	Neither the IBRD conclusion, nor the "RosUgol" comments are confirmed by calculations

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3 The statement of the report to the effect that subsidies to the industry can be reduced by 50 or more per cent (page 20, para 2) does not take into account the price rise of coal as the result of inflation, drop of production volumes and negative trends in overall economic development in the country	The IBRD estimations of budget funds savings are 50 per cent of 1994 level, but these conclusions are not confirmed by calculations "RosUgol" company's estimations are at the zero level These are two extremities, which are not based on calculations (these calculations might have been made, but they are neither shown, nor discussed)
4 Same page, last para, contains a groundless conclusion that such measures (it is not clear, what measures the authors are referring to) will free funds from an unprofitable part of coal industry, which would make the most active coal companies viable Do authors take into account the fact that total funds have already been cut by 50 per cent?	The comments refer to the above-mentioned measures If "RosUgol" does not understand the essence of these measures, than arguments against calculated figures are worthless
5 The conclusion that enterprises are not encouraged to raise coal prices taking into account market conditions (Section "Subsidies", para 4) as the result of getting subsidies as absolutely wrong	IBRD is correct, while "RosUgol" refers to IBRD conclusions, which can not be found in the report IBRD claims that Sales price is lower than Cost of production, for Sales price equals Cost of production minus Subsidies Cutting subsidies will make loss-making enterprises to raise their sales price, not to reduce the cost And that is the major defect of the subsidies scheme

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6 It is important to mention that in the third quarter of 1994 the subsidies to cover losses have been reduced by the factor of 3 as compared to the first quarter of 1994, an enterprises in coal industry had to raise their prices, however the level of price rises was not sufficient, leading to the fact that shortfall of funds from customers to enterprises was in excess of Rb450 billion The assumptions about interlinkage between subsidies and timely payments of wages and salaries are not correct either, as the subsidies are earmarked to certain purposes (funds to pay wages and salaries are earned by selling production to customers, the remaining part comes in form of government support for the purposes of compensations for consumer prices growth)	"RosUgol" makes a big mistake for a proponent of market mechanisms, saying that if a loss-making enterprise is forced to sell its coal at market price, but not at the cost of production, the customers "underpay the supplier" (Sales price lower than Cost of production) If the amount of Rb450 billion has nothing to do with arrears crisis, than this figure is the cost of excess production (450/Cost of production), for which there is no market demand, as it is properly stated by IBRD

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7 Pages 74, 76 contain the assumptions that coal prices are set by "RosUgol" company It is important to emphasize that "RosUgol" sets the subsidies only, while the level of prices is set by enterprises themselves, at the same time, subsidies are set not to protect the weakest enterprises, but to compensate for excessive costs of production, caused by adverse geological conditions, high extent of depreciation of fixed assets, if the prices of similar types of coal of all the groups of coal-mining enterprises are the same	It is evident than by allocating subsidies to cover losses on price differences, "RosUgol" has levers to influence the market price of coal Currently the government does not regulate the policy of allocation of subsidies for coal production, such allocation is total authority of "RosUgol" In its turn, "RosUgol" does not make this policy transparent There are some examples, evidencing that "RosUgol" tends to support "strong" mines in Kuzbass region, adversely affecting the status of "weak" mines in Vorkuta region, but there are some examples evidencing opposite practices, i e coking coals of "Zapsibmetkombinat" joint stock company "RosUgol" is not sincere in its statements that the company could separate the geological and administrative factors, affecting costs Such a differentiation is possible only if it is qualitative, but not quantitative The Ministry of Coal Industry used to apply the model of planning the number of employees on the basis of factors as well as total wages and salaries, with the breakdown by elements Today the information, required to apply such models (financial reporting) is non-existent

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8 The proposal to totally eliminate all the subsidies (page 88) to compensate for operational losses as well as for investment purposes by the end of 1994 without restructuring of the whole industry, if implemented, will bring about sharp price rises, higher extent of insolvency of enterprises as well as forced close down of mines, as well as shortfall in production in the volume of 150 mn tones of coal	This argument of "RosUgol" is a graphic example of non-market oriented approach, based on a number of logical mistakes First, only the elimination of subsidies could encourage structural adjustments in the industry If subsidies are not eliminated, structural adjustments will be existent in public pronouncements of the heads of the industry only Another evidence is the experience gained in the times of planned economy Second, the term "sharp" price rise of coal can not be considered to be an element of a professional statement The question is by how many per cent the prices will rise, but "RosUgol" does not have a professional answer to this question Although the danger of price rises, which could not be considered as a beneficial factor, does exist Third, arrears are the case even today, when subsidies do exist A reverse situation is also possible, when the budget, relieved of the burden of "coal subsidies" will pay its debts to budget-financed customers of coal enterprises The shutdown of unprofitable mines and open pits because of insufficient demand is quite a normal thing for a market economy, while closing down profitable mines for the same reason is a negative factor Currently customers, issuing their orders in "contact" with coal-miners, tend to overestimate the demand in the hope, that if subsidies to coal industry are increased, consumers will be in a position to purchase coal at lower prices Fourth, shortfall of 150 mn tones is to be considered in the context of budgetary gains from the elimination of subsidies for the production of the above-mentioned 150 mn tones

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9 Subsidies for wages and salaries are paid to compensate the consumer price growth only and they can not be dependent on the employment level, as it is proposed in the report	Its is not clear why subsidies for wages and salaries payments can not be dependent on the number of working hours per employee and on the number of employees (There is no reference to the para or section of the IBRD Report, containing such recommendations)
10 (1 2) Recommendations to concentrate the authority to manage the subsidies fund either in the Interagency Coal Committee or in the Ministry of Finance show the lack of depth in the analysis of specific features inherent in the Russian coal industry, the drive to destroy the vertical structure of administration in the industry, including "RosUgol" At the same time it is important to remember that any agency will have to hire highly qualified specialists in coal industry, if we are to take a serious and governmental approach to the process of setting subsidies for the industry	The whole statement is based on the assumptions, which have their roots deep in the past - it is correct, that when calculating subsidies for the coal production using existing methods it is necessary to consult high qualified experts, specialized in coal industry, at the same time, the IBRD proposal is to eliminate such subsidies, thus eliminating the need in such specialists, - the calculation of subsidies for the social infrastructure of coal-mining does not presuppose the need for specialization in coal mining, - the fact that "RosUgol" has the right to identify its own approach with the governmental approach is highly disputable
11 (1 3) The report ignores the world practice, showing that many countries are constantly subsidizing their coal industry While the authors of the report propose totally eliminate government support to the industry within the nest two years Such a proposal is contained in many sections of the report The authors emphasize western practices of downsizing their coal production, while totally ignoring the fact that this industry receives government support in many countries	This question is to be addressed to the IBRD during the session of the Commission Although the report itself contains the answer to this question, i e that coal industry in Russia in its current shape (as well as military-industrial and agro-industrial complexes) is a bottleneck for market reforms in the economy

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12 If the recommendations are implemented, the ultimate results will be as follows - mass unemployment, with all the relevant consequences, - loss of industrial and labor potential, which is difficult to restore, while in case of economic revival the demand for these capacities will be restored as well, - self-planned economic dependence on western markets, needed for exports of coal, - constant breakdowns in supplies of coal to households as well as industrial consumers of coal	The comments makes us think that is case the IBRD concept is adopted, "RosUgol" will make every effort to prove the inapplicability of this concept It is quite natural that current management of "RosUgol" will do its best to implement its own ideas about the policy of restructuring, thus resisting different views and opinions (those of IBRD, Ministry of Economy, etc) Counterarguments are as follows - mass unemployment can be avoided if IBRD funds are used for these purposes, - in new market environment the revival of old energy intensive economy is out of the question, while for the new, energy-efficient economy the maintenance of the existing levels of production is not necessary, - industrial and labor capacities of inefficient enterprises is hardly valuable for new market conditions, - modern world presupposes some extent of interdependence of different countries, e g currently the United States are "dependent" on imports of consumer goods from China, because they are cheaper than domestic goods, - imports of coal for Far Eastern regions might be much more cost-effective, than subsidizing the transportation of coal, produced in the Kuzbass region, - Russia was dependent on the imports of Canadian wheat was the result of planned economy and subsidized agro-industrial complex The coal component of economic security of Siberia in the foreseeable future will not be endangered, the only concern is connected with low efficiency of coal-mining enterprises in Russia - constant breakdowns in the supplies of coal to households and industrial consumers took place under the

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13 (1 4) The proposed decentralization of the process of concluding tariff agreements will not bring about tougher competition between companies, on the contrary, it will impede such competition For example, "Kuzbassrazrezugol" joint stock company, the cost of production of which are relatively low, raises wages and salaries without changing prices (because market prices are dictated by coal miners), which adversely affects the development and maintenance of its capacities	If it is true that "Kuzbassugol" is currently increasing wages and salaries at the expense of the development and maintenance of production capacities, than its growing operational costs, in the context of tough competition, will make it much insolvent earlier, than the orders, issued by "RosUgol"
14 Moreover, differentiation of the base for setting wages and salaries will result in higher extent of social tensions, particularly between cola mining associations, located close to each other	The fact, that workers leave weak enterprises and are hired by efficient enterprises can be viewed as a natural flow of labor in the market
15 (1 5) Budget subsidies to implement the industry's tariff agreement of coal-miners should not be considered as method of payments to cover labor costs, they serve as the source of covering of enterprises' expenses Against the background of the arrears crises the subsidies under the tariff agreement serve as the only guarantee that at least portion of earned wages and salaries will be received, for these subsidies are earmarked for the above purposes	This allegedly "tough" approach to the utilization of funds only for certain purposes can be argued by the fact that, for instance, the Vorkuta region claims amounts in the repayment of arrears in wages and salaries from the budget, while these funds have already been received by "Vorkutaugol" enterprise
16 Such subsidies could be replaced by guarantees to retain 40 to 50 per cent of the inflow of funds in the payment for goods sold for the purposes of wages and salaries payments	The essence of the proposed measures is far from clear

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17 The amount of subsidies allocated for these purposes is determined on a pro rata basis, depending on the volume of coal production, i e it is closely linked to the enterprise's performance	If that is the case, than why do employees of other enterprises and organizations, not involved in coal production, under the tariff agreement received in the second quarter of 1994 Rubles 14,335 mn
18 (1 6) The World Bank insists (page 9), that subsidies under the tariff agreement do not bring about the expected results, being social protection of population in the transformation period, and that these subsidies are utilized for the maintenance of existing production levels This assumption is based on the fact that per capita subsidy is Rubles 227,000, while average wage is Rubles 145,000, with wages and salaries being 3 to 6 months in arrears This graphic example is just another evidence of the fact that government subsidies are earmarked for certain purposes only	It is not clear, what is actually evidenced by such a "graphic example"
19 Wages and salaries are paid out of funds, received for goods sold, while a certain portion of wages and salaries is paid under the Tariff agreement, while the above amounts are closely interlinked with the production volumes	If that is the case, than what is the production, for which employees of TSNIEIUGOL research institute get their salaries under the tariff agreement

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20 (1 8) Page 7 contains an absolutely groundless assumption that "Tariff agreements are quite effective in putting hurdles on local coal mining enterprises in their attempts to carry out key administrative functions" By this the authors mean the measures to set their own sales prices, level of wages and salaries to employees, systems of social benefits, the right to operate as an independent entity, or to close down some of the mines These conclusions are far from accurate, moreover, the authors make an attempt to exclude trade unions from "setting the rules of the game"	

V A Brodsky

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FEDERAL DEPARTMENT FOR
INSOLVENCY (BANKRUPTCY)

State Committee of the Russian Federation
for Management of State Property

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To the Chairman of the
Interagency Commission
for Social and Economic
Problems in Coal Mining Regions
A N Shokhin

21 09 94 No IT-06/1904

Re Report by the International Bank
for Reconstruction and Development (IBRD)
"Restructuring the coal industry of Russia "

Dear Alexandr Nikolaevich,

The Federal Department for Insolvency (Bankruptcy) of the State Committee of the Russian Federation has considered the report on the restructuring of coal mining industry in Russia submitted by the IBRD and generally agrees with the findings and proposals of the report in matters of advancing subsidies and implementing industry restructuring

Thus, limitation of the time period of the restructuring to 3 to 5 years suggested in the report is economically advisable, but, given the current political and economic situation of Russia, this deadline is unlikely The formulation of restructuring program for coal industry of the Russian Federation for the initial 1 to 2 years and experience gathered in its implementation make it possible to more precisely determine the industry restructuring pace and coal requirements up to the year 2000 The experience gathered in implementation of that program would make it possible to determine the pace of discontinuing subsidies, their pattern, and orientation either, as well as viability of advancing subsidies directly to enterprises (coal mining companies) and to local authorities

Besides, among other basic measures for restructuring coal mining industry of Russia suggested in the draft report, the Federal Department observes the following ones

- To augment impact of the coal mining companies on coal pricing with due consideration of coal grades and transportation tariffs

- The methodology of subsidy distribution does not result in reduction of general recurrent costs with considerable coal output drop which enables some coal mining companies

to artificially keep their coal prices lower than its cost value thus negatively influencing the financial situation of the enterprises with low product cost value

- Railroad tariffs for coal transportation surpassed economic costs (long-term ceiling costs) of transportation of this type of product Establishment of an adjustment mechanism for determination of railroad tariff for coal transportation

- Reduction of the subsidies for coal industry (in % of GDP)

- Full-fledged responsibility of the coal mining companies for meeting their commitments as to paying wages/salaries with no resort to public subsidies Substitution of direct negotiations with the employees and making contracts at the enterprise level for the nation-wide Tariff agreement

- Establishment of fully funded federal and regional systems of social protection for coal miners and generation of new jobs for them as determined by employment drop and shutting-down unpromising and highly unprofitable enterprises of the industry

A Tal

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KUZBASSINVESTUGOL

Judgement on the Report of the World Bank and the Russian Government on the Restructuring of the Coal Industry in the Russian Federation

The principal report contains an assessment of the coal reserves in the territory of Russia, status of the coal production, prospects of the coal markets by regions and fields An international experience in the structural adjustment of the coal industry is considered An analysis of the component costs of the transportation of coal and transport tariffs are shown Matters connected with social protection, structure of subsidies and subsidy financing in the coal industry and the situation with environment protection are considered On the basis of the analysis of the status and prospects of the coal market development recommendations for the restructuring of the coal industry are made

The report notes that Russia possesses enormous reserves of coal which may be actually used in the amount of 300 - 400 billion tons, i e for more than 1000 years of production with its current rates The highest level of the coal production was registered in Russia in late 1980-s and then it started to decrease According to the estimates of the World Bank which took 1992 as a "base" year, the total volume of the coal sales in the country will decrease approximately by a third and then in the period of 1995 - 2000 will remain at the same level for some time Individual coal fields will have to compete with each other to maintain or enlarge their part of the narrow market - a field that will be able to supply coal of required quality at the lowest price that will include the costs of delivery will secure contracts for the sale of coal In the past investment in the coal industry resembled gratis financing but in the future the prices for coal should cover costs for servicing principal amounts of loans and their interests, profits (dividends and undistributed profit) and operating costs

The reduced demand for coal in Russia is caused by the general reduction of the GNP volume, shift of focus under the conditions of inflation and economic instability to the expenditures connected with consumption instead of expenditures for investment, decline of production in the heavy industry and an increased portion of natural gas in the electric and heat supply systems The control year for the forecast of the coal demand in the report of the World Bank was 1997 as a "typical" year in the period of 1995 - 2000 According to the estimates of the World Bank, the demand for coal in 1997 will be 144 9 million tons of coal equivalent, including coke - 28 8 million tons of coal equivalent, and will decrease by 34 - 35 per cent as compared with the "base" 1992 year

With the declined demand for coal the level of employment in the industry remained the same and the subsidies allocated for the coal industry amount to about 1 2 per cent of the gross domestic product (GDP) that is the second largest figure after the agriculture and represents a heavy burden for the State budget The amount of subsidies granted to the coal industry exceeds the total wages fund In the opinion of the World Bank, subsidies protect a production process rather than directly its participants and the methods of subsidy use impede the process of restructuring in the sector rather than promote it

For example, in 1993 in the coal industry 35 per cent of subsidies were allocated for the payment of salaries, 16 per cent for the provision of social services and 49 per cent for

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the covering of production costs and capital investment

The necessity of restructuring in the coal industry of Russia is prompted, in the view of the World Bank, by the following conditions

- low demand for coal,

- high tariffs for the transportation of coal,

- increased requirements to the coal quality under the market conditions

The object of the restructuring process in the coal industry is adaptation to new market relations and creation of a dynamic coal industry which could function with profit, without subsidies in the market economy of Russia

According to the estimates of the World Bank, the structural adjustment of the coal industry in Kuzbass will be accompanied by the reduction of the coal production from 96 2 million tons of coal equivalent in 1992 to 47 4 - 52 8 million tons of coal equivalent in 1997, the number of mines will decrease from 91 to 33 - 40 and the employment will decline from 296 3 thousand persons to 71 8 - 82 6 thousand persons

To prevent serious social upheavals and greater social tension the drastic reduction of employment in Kuzbass requires development, in the opinion of the World Bank, of special employment programs and establishment of an adequate and entirely financed system of social protection for miners and their family members This system of social protection should include, besides the maintaining of the present system of social payments and unemployment benefits, the development of a new, temporary system of special non-recurrent payments to encourage early retirement of workers in the coal industry

The report of the World Bank contains the following recommendations for the restructuring

In the market economy the prices for coal are set in the course of negotiations among independent coal mining companies and their customers New coal mining companies should be entirely responsible for the fulfillment of their obligations connected with the payment of salaries rather than rely on the public subsidies for salaries At the coal mining enterprises with low costs the coal mining companies should reinvest their profits to increase the efficiency of labor, quality of the coal produced and improvement of the environment protection measures At the coal mining enterprises with high costs the production capacities should be reduced to the level of efficiency or, as necessary, the production process should be stopped while ensuring an adequate financing of the environment restoration arrangements

The government should reduce subsidies for the coal industry at the expense of the cancellation of subsidies for the losses caused by the principal activities, make payment of subsidies by the Ministry of Finance directly to the coal mining companies and local authorities, channel the remaining part of subsidies for the financing of special payments, system of social protection and for the closing of mines

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The World Bank considers the Tariff Agreements as a serious barrier to the adaptation of commercial coal companies to the conditions of free market and recommends the Government to redirect these funds from the financing of salaries to the purpose-oriented payments for workers who have agreed to leave the coal industry

In the opinion of the World Bank, the fundamental problem for each coal mining company will be an assumption of the entire responsibility for the regulation of wages in the company which means conducting direct negotiations with its workers on the levels of employment and salaries

In the documents prepared for the report of the World Bank the experience of structural adjustment in the coal industry of the leading countries in the coal production (Great Britain, Germany, France, Poland and the United States of America) is discussed

The report notes that in all countries under consideration restructuring of the coal industry has taken or is taking place, but circumstances were different and different strategies were used

In those countries of Western Europe were hard coal is produced (Great Britain, Germany and France) the structural adjustment in the coal industry represented a response to the changing situation on international markets of energy products that was connected with the development of atomic energy, production of natural gas and emergence of inexpensive imported coal on the market The structural adjustment resulted in the significant reduction of unprofitable coal production, substantial reduction of the number of persons employed in the coal industry, as well as the diversification and development of other sectors of the economy in regions In all cases the development of the coal industry was inevitably carried out in the direction of reduction of production scales, increase in labor productivity and concentration of production at the enterprises with the best performance figures

As the materials of the World Bank show, Germany will maintain its production at some minimum level proceeding from the considerations of the fuel supply security no matter whether this is economically justified

France follows the course for the constant elimination of the coal production taking all necessary political and social measures Starting from early 1960-s and up to the present the volume of production has decreased from 50 million tons to less than 10 million tons During the whole period personnel reductions gradually took place (from 320,000 to 6,000 persons) at relatively stable rates amounting approximately to 10 per cent a year on the average In the last years expenses for the coal production amount to approximately 160 dollars per ton that is twice as much the cost of imported coal The most important forms of the assistance provided by the State are the State support of the sale of coal of a producers that ensures a guaranteed volume of supply, direct subsidies for covering operating losses, as well as for retraining and employment of coal miners, creation of new jobs, with expenses per person being equal to the remuneration for two years

In Great Britain the state subsidies for the coal industry amounted to 32 billion dollars since 1992 In 1991 the coal consumption was 92 million tons of coal equivalent Coal still represents a leading element in the energy balance of Great Britain The portion of electric

and heat supply enterprises in the total volume of sales is 75 percent At the present time almost 65 percent of electric power is produced at power stations using coal Power stations using gas produced only 1 percent of the total volume of electric power in the country Since the early 1960s, coal production has declined from 200 million tons per year to 81 million tons a year in 1993 During the same period the number of persons employed in the coal industry dropped from 490,000 to 30,000 as of the end of 1993, with the number of workers being reduced by 5 percent a year on the average The Government has taken a decision to restructure the process of management in the coal industry in accordance with commercial principles, and in December 1993 a draft law was adopted concerning the privatization of the British Coal companies, but the privatization mechanism has not been definitely determined yet

The most significant forms of assistance on the part of the State were guaranteed sales of coal and direct subsidies for the British Coal Company to cover losses In the period from 1980/1981 to 1991/1992 23 5 billion U S dollars have been allocated for these purposes Moreover, substantial subsidies have been allocated for the solution of labor problems, mainly for the payment of separation allowances to dismissed miners In the period from 1980/1981 to 1991/1992 the total amount of subsidies was 3 7 billion U S dollars, or 20000 U S dollars per one dismissed person In the period from 1985 to 1992 5 3 billion U S dollars have been allocated for the structural adjustment The allowances were offered to miners that on the average were equal to the yearly remuneration

In Germany, in spite of a high level of protectionism for the benefit of the producers of both power station and coking coal, the coal production is constantly decreasing In 1973 coal accounted for 41 per cent of the energy balance of Germany, but in 1991 oil became a main source of energy (38 per cent), coal (33 per cent), natural gas (7 per cent) Electric energy and heat supply represent the main area of the coal consumption in Germany, which absorb 75 per cent of coal produced in the country Electric power station using coal are the principal producers of electric energy (60 per cent)

Since early 1960s up to 1993 the output dropped from 140 million tons to 65 million tons a year During the same period the number of persons employed in the industry decreased approximately from 400,000 to 90,000 The reduction of the number of workers was gradual and stable and amounted to approximately 4 per cent a year The number of operating enterprises dropped from 139 to 17 Nevertheless, the production costs remained the same and amount to 150 dollars per ton that is three times larger than the value of imported coal

The coal industry of Germany consists of two private joint stock companies The coal producers enjoy the protection of legislation which guarantees certain positions on the market and subsidies if a competitive level of prices cannot be ensured With the support of the Government two long-term agreements have been concluded The first agreement provides for annual supply of 45 million tons of local coal for electric power stations at prices ensuring the reimbursement of expenses Under the second agreement, all steel plants undertake to purchase coking coal only from local sources and the Government should cover the difference between the price of the local market and the price of the international market through direct payments

Under these two agreements the State grants subsidies for the restructuring of production at enterprises to increase their profitability (90 per cent) The rest of the State assistance is connected primarily with labor problems (funds are allocated for the payment of long-term pensions and bonuses to miners) Coal mining companies in Germany carry out on a permanent basis major investment programs aimed at production improvement (as a rule, investment represents a half of amounts received as a part of assistance in general) In the coal industry of Germany, personnel reductions are made for the most part through the retirement of workers, including early retirement The RAG association which is a principal coal producer increasingly diversifies its activities in such areas as electric energy, chemistry, development of technologies, environment protection Today the activities that are not directly related to the coal production account for 40 per cent of the total income and ensure jobs for 20 per cent of the total number of workers The reform process is quite successful in the coal production regions, particularly in the Ruhr region where nowadays advanced and multisectoral economy is built

In the United States the coal production increased from 370 million tons in 1960 to 838 million tons in 1993 During the same period the production of electric energy in the country has doubled Electric energy supply enterprises are the main consumers of coal in the United States They account for 85 per cent of the total volume of consumption In 1991 55 per cent of the total volume of electric energy were produced at power stations using coal After the fluctuations of prices that were registered on the world market in 1970s the consumption of oil in the electric power supply system drastically dropped and today is only 4 per cent of the total volume of electric energy produced (as compared with 17 per cent in 1973)

In the period from 1973 to 1991 the portion of coal in the total energy consumption in the United States increased from 18 to 23 per cent Although in the United States the coal market was steadily growing the coal industry underwent constant structural reforms In the last twenty years the coal production increased mainly at the expense of large open cast collieries located in the western part of the United States In the East enterprises with high costs were closed and small-size enterprises merged A number of small-size enterprises reduced from 6550 in 1996 to 2750 in 1992 In the last twenty years productivity of labor has doubled

Proposals and recommendations of the World Bank for the restructuring of the coal industry in Russia are of specific nature and are justified by the analysis of historic development of the coal market and production by regions of Russia, and they have been prepared on the basis of thirty years of experience in restructuring the coal industry in western countries with developed market economies which lead in the coal production However, in spite of all depth of the study of the coal industry development problems and integrated character of the prepared proposals, in our opinion, it should be noted that some proposals are superficial and do not take into account a present-day status of the production relations in regions and an initial stage of economic reforms carried out in the country, and in some cases they are contrary to the experience and strategy of restructuring in the coal industry of countries with developed market economies

The analysis of proposals of the World Bank shows that the model of the coal industry of the United States has been used as a basis for the restructuring of the coal industry in Russia

All coal mining enterprises in the United States are privately owned, and the supply of energy is regulated by the market In contrast to the countries of Western Europe, the United States of America have never faced the problem of noncompetitiveness of the coal industry The reserves of oil in the country are not large and exploration and development of natural gas fields have been restrained by the price regulation After the "oil crisis" in early 1970s the strategy of the State in the energy development was oriented to the reduction of the portion of oil (to 4 per cent) in the electric energy production at heat power stations at the expense of increase of the portion of coal (up to 55 per cent)

In the countries of Western Europe (Great Britain, Germany, France) restructuring in the coal industry is connected with the emergence on the market of inexpensive imported raw materials in early 1960s, consequences of the development of atomic energy and natural gas production The structural adjustment was carried out during 20 - 30 years with the high level of protectionism for the benefit of coal producers and the State support Subsidies and grants allocated by the State are directed to the reconstruction of enterprises and absorbing of production costs (up to 40 -55 per cent) and social support of miners (10 - 15 per cent)

It should be noted that the reduction of the total number of workers at coal mining enterprises did not exceed 4 - 5 per cent a year Dismissed miners received separation grants (equal to the remuneration for two years) Programs of social assistance for miners and creation of new jobs have been developed with the State ensuring financial guarantees

Proposals for the restructuring of the coal industry in Russia and reduction of employment are of an accelerated nature and do not take into account social consequences For example, "the Government should follow the principle in accordance with which no one receiving a pension from coal mining enterprises may not continue his/her work in the sector However, they may look for jobs in other sectors "

"During a limited period of time, maybe 1 - 3 years, the Government should propose to include mines that cannot become profitable in the program of closing of mines which is carried out by the Government "

after 1994 cancellation of subsidies for covering losses incurred in the course of principal activities and investment "

" commercialization and privatization of new coal mining companies may not proceed until

- local coal mining companies remain under control of the national coal monopoly (Rosugol) in which a national company (Rosugol) possesses controlling block of shares "

This is a questionable recommendation, for these days it is difficult to restore the management in the coal industry

The discovery in early 1960s of large reserves of oil and natural gas, as well as the development of nuclear energy have led to the reduction of the portion of coal in the energy balance of Russia to 20 per cent by 1980s and further drop of its portion to 14 per cent in

1990s National interests of Russia necessitate to maintain in the national economy the coal industry which is able to ensure increased output of coal when a threat of energy crisis emerges after the exhaustion of resources of hydrocarbons The coal industry of Russia is based on national scientific, technical and industrial potential that is critical for ensuring energy security of the country

Maintaining of a minimum necessary portion of coal in the energy balance of the country requires substantial public funds, consequently appropriate legislative decisions should be taken which would ensure guaranteed sale of a certain part of produced coal and subsidies from the State budget to maintain a required level of production capacities

To prevent a drastic drop in the coal production in Kuzbass and a forced reduction of miners' employment resulting from serious shrinking of the Kuzbass coal market due to the increased transport tariffs, in our opinion, it is necessary to consider advisability of creation of a regional fuel and energy complex on the basis of promising fields in Erunakovsky region Construction of heat power stations which would use advanced technologies of coal burning and would be environmentally safe, in the immediate vicinity of mine fields and open cast collieries would allow to cut significantly transport costs and to deliver coal by colliery transport vehicles, bypassing the Ministry of Railroads system, and in the future possibly by conveyer and pipeline transport

Creation of a strong energy base in Kuzbass would permit to increase power availability in agriculture, to develop a modern processing industry producing high-quality foodstuffs, to enlarge the use of electric power for household purposes and to carry out fully environment protection measures

The levels of the coal production and sale indicated in the report are insufficient even in the nearest future, and the adoption of this recommendation would mean a destruction of the base industry of the country, and particularly Kuzbass It would be more appropriate, while cutting consumption of oil and gas for the production of electric energy, to increase their export and to increase accordingly a portion of coal in the electric energy production The coal industry of Russia should remain one of the largest in the world

(Signed)

E L Langolf, Director
Diversification and restructuring
Kuzbassinvestugol

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MINISTRY of FINANCE of the RUSSIAN FEDERATION

From A L Samusev
Deputy Minister of Finance
the Russian Federation

To Y M Urinson
First Deputy Minister of Economy
the Russian Federation

Pursuant to the instruction of the Russian Federation Government (N **АШ-П**14-26707 of August 25, 1994), the Ministry of Finance of the Russian Federation reviewed the IBRD report "On the Status and Restructuring of the Coal Industry in the Russian Federation "

1) The main targets (objectives) of the coal industry restructuring proposed in the report are consistent with the concept of expanding economic reform in Russia

However, the underlying principles relating to the resolution of the issue and specific implementation activities need to be modified in a number of respects, including the need for adjusting them in accordance with Russia's geographic conditions

2) First of all, the IBRD's strategy assumes a trend towards a further decline in production in the Russian Federation, which runs counter to the Russian Government policy to stabilize production over the next years and then to increase it In this context, the IBRD report should be revised as follows

3) firstly, with respect to estimated demand, coal production requirements and production capacity with account taken of ensuring economic security of Russia,

4) secondly, as regards the timing (pace) of the industry's restructuring based on the availability of government finances for the purpose

5) Given the economic instability in Russia, the Russian Federation Finance Ministry believes it would be useful to work out a detailed coal industry restructuring program for the next foreseeable and economically calculable period (for example 3-5 years) and make a general projection for a longer-term period

6) French and German experiences show that restructuring of the coal industries there took a long time and was carried out with active government support Since Russia has a lot of similarities in respect of coal operations and has a wide geographic dispersion of coal mines across its territory, restructuring the Russian coal sector will also be likely to take a lot of time and government support

7) The Russian Finance Ministry is of the view that it would not be feasible to stop providing subsidies to the coal sector in the near term Certainly, the formats of such support should be designed on a case-by-case basis in line with specific tasks handled

at each particular phase of restructuring

8) Currently, the Finance Ministry is providing subsidies to many coal enterprises directly through regional treasury offices The structure of subsidies is changing with regard to various groups of enterprises, especially as companies move to market-priced sales of coal

9) The current policy is towards expanding subsidies for mine closures and relative reductions of subsidies allocated for other purposes This trend is likely to continue in the future The Russian Finance Ministry believes that focusing efforts on priority issues involving the closure of 42 non-viable mines in the coming years creates a solid basis for further restructuring of the coal sector

10) According to the Russian Finance Ministry, an active involvement by the IBRD in the efforts to close 42 uneconomic mines and, especially, with regard to covering costs related to the divestiture of mine-owned social assets to the municipal authorities would create a good basis for the Bank's participation in the provision of financial resources to assist the process Financial resources should be made available to address the entire range of issues related to the retrenchment of coal industry workers across the various regions

11) The Ministry of Finance notes that the IBRD report does not provide sufficient coverage of the potential impact that the proposed measure to withdraw budget-financed subsidies to the coal sector in three years would make on the overall price levels of domestically manufactured products (listed by type of industry), price ratios by commodity groups (non-food and food products) and an increase in the total amounts of budgeted subsidies primarily through more subsidies to be paid to the social sector and defense industries Additionally, it should be realized that the coal sector restructuring program is taking place at a time when other industries are also being reformed resulting in closures and reorganization of companies, which certainly requires some nation-wide coordination in addressing social concerns

A L Samusev

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DEPUTY HEAD OF ADMINISTRATION OF THE ROSTOV OBLAST

Ministry of Economy of the Russian Federation

TO Chief of the Division for
Social and Economic Problems of
Coal Mining Regions,
Mr I Kozhukhovsky

103025, Moscow, 19, Novy Arbat

The Rostov Oblast Administration has reviewed the report of the World Bank "Restructuring the Coal Industry in Russia Sector Report" and prepared its comments and proposals jointly with specialists from the "RostovUgol" joint-stock company, "GukovUgol" and the Rostovgyproshakht Institute, which we would request you to take into consideration when considering the World Bank report at the Inter-Ministerial Commission on Social and Economic Problems of Coal Mining Regions

Enclos A copy of the above mentioned doc /3 pages/

signed
A A Khomyakov

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Attachment to Doc No 731/372
of September 20, 1994
September 20, 1994

COMMENTS AND PROPOSALS OF THE ROSTOV OBLAST ADMINISTRATION ON THE WORLD BANK REPORT " RESTRUCTURING THE RUSSIAN COAL INDUSTRY"

1 The report presented by the World Bank experts contains an analysis of the Russian coal industry operation in the period of implementation of market reforms "Scenarios" of the coal mining development are determined with due account of competitiveness of the coal mining companies and the possible demand for fuel

At the same time, the report does not reflect either the state of production assets of the sector, or the perspectives for the production capacity of coal mining companies in view of the demand for coal in regions The costs related to closure of loss-making mines, to employment for laid off workers and solution of ecological problems are not determined In evaluating the competitiveness of coal mining companies only the current prices for coal and transport tariffs are taken into consideration, the effect of other fuels on the coal market as well as possibilities of changes in the structure of the fuel balance in different regions of Russia in the medium-term perspective are not taken into account It is also necessary to consider the possibilities of competition from foreign coal suppliers under conditions of a considerable rise of the world prices if the state subsidies to the coal sector are reduced or discontinued

2 In our view, the evaluation of the demand for coal in the Russian Federation is not correct, including use of gas and oil to substitute for coal and this approach may lead in the perspective to a complete cessation of gas and oil export and, as a result, to a significant reduction of currency inflow

3 Taking into account the considerable influence of coal miners on the level of social and economic tension in the region, the pace of restructuring the coal industry in the Rostov oblast must be conditioned by the following factors

3 1 closure of especially heavy-loss-making mines and construction of highly efficient coal companies which would produce market coal competitive on world market

3 2 evaluation and calculations by the World Bank of the possibility for operating coal mining enterprises, taking into account only the profit gained in the Rostov oblast, are not quite correct In a number of developed western countries production of high quality coal is subsidized by the state

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4 Experts of the Bank believe that an immediate abolition of state subsidies to the coal industry and liberalization of coal prices would allow most coal companies to become profitable, but they do not take into account the growth of production costs at coal companies as a result of the increase in prices for materials and services in other industries due to increase in coal prices

Taking into account the complexities of prices on coal, the inability of consumers to pay is now beginning to manifest itself, and with the cessation of all state subsidies, even in conjunction with a limited reduction in wages - coal prices will increase sharply, the inability to pay will increase, and this will lead, practically, to a halt of the majority of mines and of the branch in general

5 If the number of employed in coal industry - including working pensioners and people approaching the retirement age - is reduced, it would be almost impossible to find jobs for them in other industries, since their economic situation is as difficult as that of the coal industry and they are forced to reduce the labor force and to close down factories

Since coal basins are in different economic conditions we think it necessary to consider the possibility of constructing mines in favorable, promising Russian coal regions and transfer (moving) of coal workers to these regions Example development/construction of new highly productive mines in highly developed North-Caucasian economic region In this case adequate subsidies should be foreseen for development and reconstruction of operating promising mines and enrichment plants

6 The report proposes two options with respect to periods of restructuring - three years and five years

In the present political and socio-economic situation , when we have no practical experience in implementing such large-scale measures in Russia, we believe that the five year term for restructuring is preferable This period may be subdivided into two stages at the first stage practical experience of cleaning up and closing non-perspective mines and finding solutions to social problems will be accumulated and analyzed, as envisaged in" Guidelines for rehabilitation and closure of heavy loss-making and non-perspective mines in Russian coal industry" approved by the Inter-Ministerial Commission on Social and Economic Problems of Coal Mining Regions (Protocol No 2, May 4, 1994)

In view of the present uncertainty with respect to coal consumption in the Russian Federation and bearing in mind that the problem of railway tariffs is not solved, we think it expedient to preserve the level of coal production reached in the Rostov oblast - 22 0 million tons, providing adequate financing for maintaining the capacities and rehabilitation of perspective mines and enrichment plants as well as for construction of new mines together with social infrastructure

At the same time it is necessary to proceed with the implementation of planned activities on cleaning up of heavy loss-making non-perspective mines and provide for that purpose adequate budget financing

On the basis of the above the conclusions and proposals for restructuring the Russian

coal industry contained in the report, in our view, cannot be recommended for implementation until they are appropriately corrected and additional research is carried out

The proposals mentioned above will make it possible to carry out restructuring of the coal industry within the terms planned without sharply aggravating the social and economic tension in coal mining regions and without sharp fluctuations in providing coal to consumers

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MINISTRY OF SOCIAL PROTECTION
RUSSIAN FEDERATION

FIRST DEPUTY MINISTER

The office of the Inter-Departmental Commission
for Social and Economic Issues of the Coal
Mining Regions

Having considered the IBRD draft report "On the Status and Restructuring of the Coal Industry in the Russian Federation" and the attachment thereto, the Russian Federation Ministry of Social Protection hereby advises as follows

The report contains the findings of a comprehensive, large-scale and phased study of complicated technical and socio-economic issues Of special significance are social protection matters in the coal mining areas which are covered in the report by a special section compiled based on analyzing statistical and sociological data The section contains information on employment, pension provisions, housing and everyday life conditions in the coal mining regions as well as conclusions and practical recommendations on resolving social issues during the coal sector restructuring

Analysis of the social sections of the draft report suggests a number of conceptual comments, including

1 Great caution should be exercised towards the World Bank experts' view that there is a need for accelerated coal industry restructuring in Russia, including mine closures and disengagement of employees Comparative studies show that countries with similar numbers of coal industry employment took much longer to reduce their work forces than envisaged in the Russian Federation coal restructuring program For example, in Germany, where the coal sector employed 607 thousand people in 1957 (Russia in 1992 had 763,000 coal employees), the average annual labor redundancy rate in the period from 1957 to 1993 (36 years) amounted to only 2 3 percent In France, employment fell from 360 thousand to 40 thousand in 1950-1990, that is, at an average rate of 2 percent per annum However, the World Bank estimates that the relevant annual figure for Russia in 1992-1997 would be 8-9 percent, i e , 4-5 times higher Even disregarding the differences between the initial social and economic situations in those countries and Russia, such a rapid pace of restructuring will require much more substantial financial and material expenditures and institutional efforts within limited time frames than under an evolutionary industry reform scenario

2 Criticism is warranted with respect to the World Bank's recommendation to withdraw government subsidies to the coal sector as quickly as possible According to foreign experiences, liquidation of loss-making mines does not automatically ensure the removal of government subsidies to the coal industry A case in point is Germany, where financial support from the government to the coal sector increased from DM5 2 billion in 1980 to 9 9 billion DM in 1993 as employment in the industry fell, and, if calculated per ton of coal produced, subsidies rose from 24 DM per ton to 70 DM per ton In the UK, coal subsidies went up from 500,000 dollars in 1979-80 to one billion dollars in 1992-93 The purpose of

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such subsidies is to promote the technological and economic development of enterprises/companies and industrialization of coal mining regions (the latter occurred in France) and to address social concerns related to industry reforms Withdrawal of government subsidies makes it impossible to accomplish technological upgrading of the coal producing assets and to overcome the negative social impacts of loss-making mine closures

3 International experience offers a wide range of activities to provide social protection to people whose jobs are cut as mines are liquidated or closed There is a variety of arrangements and methods of protection, and the size of related investments also varies significantly As a generalization, these types of assistance/protection include the following

- compensatory payments to disengaged workers (severance benefits) the size of which depends on the annual wage and length of service, form of dismissal (UK and other countries) or unemployment benefits (USA),
- early retirement opportunities (based on length of service in the industry), establishment of specialized pension funds,
- management of production sites being vacated in order to maintain economic activity in coal production regions (favorable leasing terms, administrative services, etc),
- pro-active employment policies directed at retrenched workers, including moves to encourage creation of new jobs (both in the coal mining areas and outside them) through special investment projects, soft loans to be made to companies being set up, including small businesses, assistance in retraining and job placement, including in other regions of the country (relocation), away from the former place of residence (development of computer data bases, vocational counselling services)

Despite the differences of these social protection methods, there is one thing that brings them all together the need for a national legislative and regulatory framework - exactly what was done in foreign countries that conducted coal restructuring reforms

It would be appropriate to take fully into consideration and reflect in the report the whole range of such social protection measures to be used while planning Russian coal restructuring, rather than be limited to individual elements

4 The draft report fails to cover at least three groups of issues that are of major social and economic significance

1) The issue of legislative support for coal restructuring In accordance with the Russian Constitution, key social issues (social protection of the population, health care, education, culture) are within the joint jurisdiction of the federal executive authorities and executive authorities of the Federation subjects In keeping with the treatment of employment and migration matters given in the program where they feature prominently, these matters are under exclusive jurisdiction of the executive government authorities of the Russian Federation subjects

Failure to address these circumstances in the program, which is now a predominantly sectoral program, may make its implementation difficult Regional legislatures and executive government agencies will undoubtedly use their legitimate rights to obstruct program activities, should these measures lead to a drop in the living standards, increased social tensions in the regions where social peace is already fragile

In order to prevent this happening, it is necessary, first, to make this program a federal-

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regional one, that is, to identify both national and region-specific activities that would take into account the special circumstances of a specific region like Kuzbass, the Far East or the Moscow region Secondly, this program should be submitted for consideration and approval to the State Duma and the Federation Council, and after that is may acquire the status of law rather than an administrative directive, and would be binding on all levels of government

2 The issue of maintaining living standards in the coal mining regions during the restructuring reforms There are a number of aspects to this issue there is a need to at least stabilize the number of needy individuals in coal mining areas (miners and employees of support industries, including social infrastructure financed by coal producing enterprises), to keep the level and structure of the consumer basket intact (food, non-food items and services), and, finally, the need to prevent a collapse of the social infrastructure in coal mining regions Even today, when unemployment is minimum, one in every three persons is below the poverty line In the Rostov region, for example, the average per capita income is at the subsistence minimum level In the Chelyabinsk region, this indicator exceeds the subsistence level by only 50 percent It is easy to imagine how these figures will change as a result of closures and what sort of popular response this would generate

To find effective solutions to social problems in the coal mining regions during the period of restructuring, the program should address the question of amounts and sources of financing at least three types of expenditures to provide employment to those made redundant, to pay poverty benefits and other social benefits (let alone unemployment benefits), to maintain the existing social assets in coal mining areas that are also in need of modernization, to finance social protection institutions and implement programs directly related to providing social protection to the population in coal mining areas (operation of the industry's standard institutions, social service centers, etc)

3 The issue of establishing the coal mining area social protection system proper This subject is treated rather superficially in the report However, the industry reform will likely require an increase in social assistance in a variety of forms, which in turn will call for involving skilled personnel and strengthening the financial, logistical and information bases of the social protection network The thrust of practical moves to address these concerns is to increase the scale of social benefit payments and provision of social services to the population Each of these issues should be defined and included in the program

A N Khromushin

MINISTRY OF FUEL AND POWER of the RUSSIAN FEDERATION

CHIEF of the COAL INDUSTRY DEPARTMENT

TO Shamrayev N G
Deputy Minister of Economics
Government of the Russian Federation

Dear Nikolai Grigoryevich,

Please find attached comments and suggestions of the Coal Industry Department regarding the World Bank report "Restructuring Coal Industry"

Attached 5 sheets

G A Kassikhin

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COMMENTS AND SUGGESTIONS REGARDING THE WORLD BANK REPORT "RESTRUCTURING COAL INDUSTRY"

The report contains detailed information on the situation of the Russian coal industry provided by Rosugol Some recommendations support the restructuring effort in process

- establishment of joint-stock coal-mining companies which enjoy complete autonomy in their operation, including coal pricing,
- transfer of social assets to the local authorities,
- reduction of government subsidies and more effective use of subsidies,
- development of a regulatory framework for closure of unprofitable mines, preparation of information on such mines,
- preparation of regulatory acts in support of restructuring

At the same time the report largely ignores the role of the coal industry in the Russian economy, possible scenarios of development of the fuel and power sector, and implications of restructuring for other sectors and the Russian economy as a whole The following comments and suggestions concern demand for coal, volumes of production, assessment of mine closures and reduction of employment, composition and scale of subsidies

1 Recommended volumes of production - 210-250 million tons in 2000 and 260-280 million tons by 2010 - are insufficient for fuel security and further economic development of the country These recommendations are built on the assumption that by the year 2000 GDP will not exceed 75% of the 1990 level It is presumed that gross output will increase by 5-7% a year starting from 1995 while demand for primary fuel, including coal, will decrease by 5-7% a year in 1995-1996 In other words, it is assumed a priori that Russia has the technologies, and means of their multiplication, permitting immediate reduction of fuel consumption by 10-14% a year

The report forecasts that in 1997-2002 demand for coal will remain unchanged while GDP will increase by 5 0-5 5% a year, presuming annual decrease of fuel consumption per unit of output at the level of 4 7-5 2% This frame of reference differs from the expectations of the Russian government concerning GDP (90% by 2000), outlook for application of advanced technologies, reduction of power consumption and power-saving per unit of gross output To date, the last value has never exceeded 2% a year in industrialized countries In the former Soviet Union annual reduction of power consumption per unit of output did not exceed 1% Demand for primary fuel is also underestimated

2 Estimates of coal demand in the report presume a mature fuel market In forecasts for periods until 1997, maybe even until the year 2000, focus must be on the need for coal because other approaches including one built on purchasing power may result in miscalculation of required output and a considerable shortfall in energy consumption Several estimates have been made of demand for coal at the federal and regional levels, as highlighted in Table 1

YC2

Table 1 m tons

Estimate	Year 2000	Year 2010
Russian Energy Strategy Draft Outline Ministry of Fuel and Energy July 1994	250-270	300-325
Restructuring Coal Industry Outline Rosugol April 1994	285*	330-350*
Development and Siting of Coal-Mining Enterprises Until the Year 2010 (with detailed plan till the year 2000) Coal Research Institute December 1993	360-365	440-450
Interministerial Co-ordinating Commission for Russian Energy Strategy 1994	310-320	325-345
Government Fuel and Energy Program 1993	329 4	
Joint Protocol of the Department of Energy and the Department of Coal Industry (the Ministry of Fuel and Energy), and Coke Company November 1993	345-370	400-440
World Bank November 1993 August 1994	 200-260 210-250	 285-325 260-280*
Estimates of regional administrations May-June 1994	361	
Electricity and Energy Program of Russia	-	490-500

* Demand for coal

None of the estimates performed in Russian corroborates the World Bank forecast of demand for coal, let alone the estimate of needs for the period till the year 2000 and till the year 2010 It must also be noted that the discrepancy derives primarily from forecasts of power generation in the Kansk-Achinsk coal basin

3 The report contains no substantiation of regional coal market scenarios The conclusions that production in the Donetsk (Rostov region) and Kuznetsk basins will decrease disagrees with estimates of comparative competitiveness of coal produced in those two basins The Donetsk coal is competitive throughout the European part of Russia The Kuznetsk coal is competitive in some European regions of Russia , in the Urals and in West Siberia No consideration is given to the effect on the markets for Donetsk and Kuznetsk coal of power stations in the Urals and West Siberia abandoning Ekibastuz coal with high ash content

Concerning the Far East, the report forecasts a decrease in demand for coal to 10 2 million tons of equivalent fuel by 1997 as against 26 3 million tons of equivalent fuel in 1990 (2 6 times) This is totally ungrounded with respect to a region where coal is the key fuel

4 While the report recognizes that the process of restructuring the coal industry in several countries in the past 20-30 years has been lengthy and painful, it proposes to restructure Russia's coal industry within 3-5 years and shut down all loss-making mines within 2 years According to the proposed scenarios, 135-155 mines will be closed by 1998, and the number of employees will be reduced by 424,600-476,600 The report contains neither cost estimates nor analysis of the potential effect of massive mine closure on other sectors of the regional economy and the Russian economy as a whole

Closure of one mine requiring 100-120 billion rubles (1994 prices for the Kuzbass basin), it is not feasible to implement the proposed program, and cope within its social ramifications, within 2-3 years

5 It is crucial that coal-mining companies prepare their own restructuring programs The government, however, must assume responsibility for preparation of not only regional programs (to define allocation of scarce government resources and co-financing arrangements in the process of mine shutdown), but also federal programs outlining development of the coal industry with a view to creating a competitive coal market

6 Withdrawal of subsidies to the coal industry is totally ungrounded and unacceptable This would lead to immediate conservation of reserve capacity (69 4 million tons) and discontinuation of construction intended to maintain current capacity of operating mines (stripping, preparation of new galleries, re-tooling , etc) That would result in a steep drop in production

Mines which pay their way as of the moment of withdrawal of subsidies (referred to as "the core of the coal industry" in the report) will become loss-making 2-5 years later and will have to be closed According to estimates, conservation of mines under construction, social protection of construction workers made redundant in the process, and changing the business of construction companies will cost 15-17 trillion troubles in current prices

7 The report contains no estimate of restructuring and modernization costs The proposed government subsidies will be insufficient to ensure even social protection of workers

8 Coal export and import estimates are totally unjustified This section must be prepared by the Russian counterpart

PROPOSALS

1 To make note of the World Bank report

2 To negotiate World Bank loans to finance re-tooling and social protection (particularly job creation) in the coal industry

3 To estimate regional and inter-sectoral demand for coal in the next 2-3 years consistently with free-market trends, in order to substantiate decisions on mine closure, re-tooling and modernization

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Mr I S Kozhukhovsky
Department for Socio-Economic Development
in Coal Producing Regions

On Draft Report of the World Bank "Restructuring the Coal Sector in Russia Status of the Sector"
Instruction given by A G Shapovaliants of August 26, 1994 NАШ-П14-26707

In pursuance of the Instruction of First Deputy Minister of Economy of the Russian Federation A G Shapovaliants of August 26, the Main Administration for the Fuel Industry has reviewed the Draft Report of the World Bank "Restructuring the Coal Sector in the Russian Federation Status of the Sector", and its comments and proposals are as follows

Basic objectives of restructuring the coal industry, along with the establishment of competitive, highly efficient enterprises, is the assurance of solvent demand for coal products

The Draft Report of the World Bank "Restructuring the Coal Sector in the Russian Federation" of August 8, 1994 (N13187-RU) forecasts the coal demand for 1997 which is, according to them, typical of the whole period of 1995-2000 (p 25-27), in the amount of 150 million tce or 217 million tons in real terms, it follows from Table 1 (p 25) that it would be 59 percent in relation to the 1990 demand Fig 1 (p 23) forecasts the coal demand at the level of 50 % in 1997-2002 of the 1990 demand (256 million tce or 369 million tons, Table 1 on p 25) If one relates demand indices to 1990 from Fig 1, then the annual coal demand, as projected by the World Bank, would be 128 million tce or 184 5 million tons in 1997-2000, 140 8 million tce or 203 million tons in 2005 (55 % to 1990) and 184 3 million tce or 266 million tons in 2010 (72 % to 1990)

"Proposals to the Integrated Forecast of Socio-Economic Development of the Russian Federation for the Period of up to 2000-2005 (FEC area)" submitted by the Ministry of Fuels and Energy of Russia to the Ministry of Economy of Russia adopt such volumes of production of the fuel and energy resources as set out in "Basic Provisions for Energy Strategy of Russia" approved at the meeting of the expanded Board of the Ministry of Fuels and Energy of Russia on July 27, 1994 Under scenario for production of primary energy resources, the coal production should be 260-270 million tons in 1995, 250-270 million tons in 2000 and 275-300 million tons in 2005

The draft "Basic Areas for Coal Industry Restructuring" prepared by RosUgol prepared with due regard for comments of the Inter-Agency Commission for Socio-Economic Issues in Mining Regions which has reviewed this Draft version on May 4, 1994 and approved it in principle stipulates that implementation of "The Basic Areas for Coal Industry Restructuring" would allow to meet requirements of the national economy for coal in 1994-2000 at the level of 292-285 million tons/yr and maintain, accordingly, production capacities at the level of 350-360 million tons/yr in order to assure necessary reserves (24-25 %)

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Being guided by the methodological documents on making an integrated forecast for socio-economic development of the Russian Federation for the period of up to 2000-2005, it is envisaged that prior to 1997, it would be necessary to achieve stability in the total volume of production and recover the economic growth, in 1988-2000, to assure the average annual incremental rate of GDP at the level of 5 5 %, while in 2001-2005 - at the level of 3-4 % aiming at the projected decrease in power content of GDP and rise of the gas share in the energy balance The Main Administration of Fuel Industry is of the opinion that the forecast for coal production suggested by the Ministry of Fuels and Energy of Russia is the most realistic one

It follows from the above that volumes of coal production (consumption, demand) for the period of up to 2005 projected by the World Bank were significantly underestimated Predicted volumes of coal production (with allowances made for developments in labor productivity) would influence the number of operating coal enterprises and employed labor as well as other critical indicators of coal industry restructuring It means that the indicators suggested by the World Bank may not be adopted as the basis

For instance, according to assessments of the World Bank (Report, p 35, Table 5)

- the number of existing coal enterprises should be reduced from 273 in 1992 to 118-138 in 1997 or 2 3-2 times, in other words, it would be necessary to close 155-135 enterprises during this period According to the Ministry of Fuels and Energy of Russia and RosUgol, less than 50 unpromising or heavy loss making underground or open mines should be closed prior to 2000,

- employed labor at the coal enterprises are suggested to be reduced from 762 6 thousand workers in 1992 to 287-338 thousand in 1997 or 2 7-2 3 times, i e to lay-off 475 6-424 6 thousand employees which appears to be unrealistic According to assessments made by RosUgol ("Basic Areas for Coal Industry Restructuring of Russia", p 11), the labor strength in the sector should be reduced by 300-310 thousand persons by 2000

On p 3, para 5 of the Draft Report of the World Bank, states that this Report is not intended to provide "quantitative evaluations of costs associated with closures of mining enterprises and employment reductions" and this predetermines the inappropriate nature of a number of World Bank proposals pertaining to changes in subsidies for the coal industry from the federal budget and a possible pace of restructuring process

With a view to reducing the labor strength in the coal sector, the World Bank suggests, for instance (vol 1, p 14, paras 3 and 4), that in order to encourage retirement of miners of pension age the "decision on providing them with small lump-sum allowances that could offset an unexpected loss of their rights" should be taken at the governmental level This position takes absolutely no account of the realities in the contemporary social and economic situation of Russia Estimates made by the Ministry of Economy of Russia in cooperation with the Ministry of Finance of Russia and the Council of Ministers of the Republic of Komi at the time of preparing Government decisions on the Pechora coal basin

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in 1993 and 1994 (Resolutions of the Government of the Russian Federation of December 25, 1993, No 1351 and of June 20, 1994, No 761) showed that to meet the financial demands of miners and pensioners and make them agree to abandon Vorkuta and Inta would require allocation of Rb 2 4 billion from the federal budget If such compensatory payments were applied to the coal industry as a whole, it would have entailed annual budget expenditures exceeding the size of subsidies to the coal sector for 1994

The Main Administration for the Fuel Industry deems it necessary to take account of the above considerations in reviewing the draft Report of the World Bank at the meeting of the Inter-Agency Commission for Socio-Economic Issues in Mining Regions

V I Ivanov
Deputy Head
of the Main Administration for the Fuel Industry
Ministry of Economy

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Interministerial Commission for Social and Economic Problems of Coal-Mining Regions

RE World Bank Report "On Restructuring Coal Industry in the Russian Federation"

The Independent Union of Russian Coal-Miners has reviewed the World Bank report on restructuring the coal industry and hereby presents its conceptual comments and suggestions

The proposed timeframe for restructuring the sector and the plan to find new jobs for over 200,000 redundant miners within 3-5 years do not seem quite feasible In our opinion, maintaining living standards of coal miners and coal-mining regions during restructuring must be a key consideration in deciding the pace of reform It must ensure that the government is at least able to keep the current living standards in coal-mining regions from dropping

The approach to restructuring proposed by the World Bank ignores some social and economic realities of the country

For example, the Bank suggests lifting government subsidies relating to tariff agreements, arguing that subsidizing wages through tariff agreements may impede "the success of the job reduction program" Also, the Bank considers tariff agreements to be a serious obstacle in the process of adaptation of newly-established commercial companies to the free-market environment

At present, tariff agreements fix minimum guaranteed tariffs and salaries Companies (enterprises, production associations) enjoy autonomy in their wages policies but may not go below the rates fixed in the tariff agreements

We have certain doubts about another proposal of the Bank which concerns decentralization of the process of concluding tariff agreements and its devolution to the company level We believe that this will may give rise to disputes between the companies and their employees, breed public discontent of the labor force in the industry as a whole and ultimately threaten the process of reform and democratic change in Russia

Regulation of labor relations, particularly tariff agreements offering minimum federal guarantees, will safeguard employees against attempts by individual companies to resolve the problems of transition to the free market at the expense of their workforce

Negotiations on tariff agreements at the federal level could involve delegates of companies and their associations We believe that the employer in the negotiating process should be represented not only by the Ministry of Fuel and Energy but also by Rosugol

The coal industry does not seem to be prepared to accept the pace and scale of job reduction proposed by the World Bank Tariff agreements and protocols signed by Vladimir Shumeiko and Yegor Gaidar instructed the Federal Employment Agency of the Russian Federation, in conjunction with the employers and the local authorities, to prepare an employment program for coal-miners made redundant This program has yet to be elaborated (the adjustment program cannot be considered as one)

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No closures or redundancies should take place until social adaptation (employment) programs have been prepared for all regions concerned

Proposed compensatory payment are insufficient to resolve all problems facing the unemployed workers Ways must be found to find jobs for redundant miners

A A Sergeyev
Chairman
Independent Union of Coal-Miners of the Russian Federation

RUSSIAN COMMITTEE
of the INDEPENDENT UNION of COAL INDUSTRY WORKERS

TO THE CHAIRMAN of the Interagency
Commission for Social and Economic
Issues in Coal Mining Regions

A N Shokhin

Re Report of the International Bank for Reconstruction and Development (IBRD) on Restructuring the Russian Coal Industry

Having studied the draft report of the International Bank for reconstruction and development on Restructuring the coal industry, the Russian Independent Trade Union of Coal Industry Workers notes

1 There is no doubt that the coal industry of Russia needs restructuring, the ultimate aim of which is to raise the competitiveness of coal, so that coal could enjoy a firm position among other fuels and energy resources This is dictated by the requirement to ensure security of Russia in the field of energy Global experience and projections of our leading research institutes show that it is impossible to ensure security of a country like Russia without coal

2 Restructuring is possible only through adapting the coal industry to the market conditions

3 The present system of subsidies for the coal industry is not optimal Alongside with positive elements is has some negative ones, the main of which is its anti-stimulating effect on the process of the production efficiency Therefore the system of subsidies needs to be improved and tied up with objectives of restructuring the sector However, under present conditions it is impossible to completely do away with subsidies in the coal industry, due to the condition of mines as well as to the necessity to take into account social factors

4 Restructuring of the coal industry should proceed at optimal speed Under the present conditions it means at maximum possible - we stress <u>possible</u> And the speed for restructuring suggested by the IBRD does not take into account the social factors and therefore the way proposed by the IBRD is extremely dangerous in our conditions it may cause a social explosion of unprecedented force among miners, who will be supported by workers in other sectors If that is what the IBRD is after, then it has fulfilled its task well, by suggesting such speed of restructuring

5 Hopes of the IBRD that it will be possible to transfer subsidies for production to the social sector to support miners in present conditions are senseless Perhaps, that could be done in the USA, but not here

Conclusion The analytical work that is being carried out is useful, there are no doubts as to the main objectives of the restructuring However, any underestimation of social factors in actual conditions of today's Russia will not permit the authors of the report to get the claimed result Therefore, the IBRD's suggestions as to the speed of restructuring and the mechanism of its implementation are erroneous

Deputy Chairman, Russian Committee
Independent Trade Union of
Coal Industry Workers

I I Mokhnachuk

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State Committee of Russian Federation
for the Management of State Property
(GKI)

To Mr J M Urinson
First Deputy, Minister of Economy of the Russian Federation -- Deputy Chairman of the Joint Committee for Social and Economic Problems of Coal Mining Regions

According to Instruction of the Government of Russian Federation of 25 09 94 № **АШ-П**14-26707, The State Committee for the Management of State Property (GKI) has considered the draft report for the July 1994 on the restructuring of coal industry in Russian Federation, prepared by the World Bank experts, and forwards its proposals to the Joint Committee for Social and Economic Problems of Coal Mining Regions for the discussion

The main provisions of the World Bank draft report on the policy development in the sphere of coal industry restructuring, generally reflect the current situation with the distribution of subsidies, mainly forwarded to cover the expenses of production and investment expenditures This leads to the increase of manufacturing expenses at the overall output reduction and allows some enterprises to keep product sales prices at the level, which is below its wholesale price, thus producing a negative impact on the profitability of other enterprises, having low wholesale prices on their products

The increasing pressure of transport component on the changes of the existing coal market and its output by the regions has been noted The railway tariffs for coal transportation exceed the railway economic expenditures

Out of the proposed in the Report coal industry restructuring measures, aimed to its effective implementation, the following might be noted

- to limit the period of the sector restructuring to 3-5 years and to implement it in a decentralized manner To channel subsidies directly from MOF to the enterprises (coal mining companies) and local authorities To reduce subsidies to the sector (in % of GDP) according to the special schedule,

- to replace the national Tariff agreement by direct agreements at the enterprise level,

- to establish a system of special allowances for coal miners and an ad hoc program of their employment in view of forthcoming redundancies in the coal industry,

- to establish a regulatory mechanism to restrain railway tariffs on coal transportation

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On the consideration and preparation of the proposals to the World Bank draft report, GKI thinks it necessary to carry out a supplementary coal needs analysis for the period up to 2000 in Russia, as the draft report has been worked out on the basis of the assumption, that by 1997 the demand for the coal is about 200-250 million tons per year, besides, the report does not consider the problems of gas, mazut and electric power substitution for coal, the possibility of placing new coal consumers in the regions of mining operations in order to diminish the transport component

GKI supports the proposals, contained in the World Bank draft report, on the transition to the decentralized policy of coal industry restructuring through the establishment of regional coal mining companies, provided that no amalgamation by such companies of all enterprises within a single coal mining basin is admitted To realize this program it is necessary to strengthen regional coal companies, created for the consolidation of coal mining enterprises stock through allocation to them the additional part of federal shares of coal enterprises followed with the increase of their charter capital funds To do this it is necessary to introduce necessary changes in the Decree of the President of Russian Federation of 30 December 1992 N 1702 by way of the new Decree preparation

P P Mostovoy

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Joint Stock Company
for Coal Extraction and Processing
"ROSTOVUGOL"

TO A A Khomyakov
Deputy Head of Administration
Rostov Oblast

COMMENTS TO THE REPORT
OF THE WORLD BANK
"RESTRUCTURING THE RUSSIAN COAL INDUSTRY"

1 The report presented by the World Bank experts contains an analysis of the Russian coal industry operation in the period of implementation of market reforms This analysis reviews problems associated with the formation of a coal market, "scenarios" of the coal mining development are designated with due account of competitiveness of the coal mining companies and the possible demand for fuel

In preparing the report, a wide range of informational and statistical material was used, including material from several associated branches which have an influence on the development of a coal market (railway transport, power, etc) Particular attention is accorded the problems of social protection and employment of workers and their family members in the context of liquidating loss-making production

At the same time, the report does not reflect either the state of production assets of the sector, or the perspectives for the production capacity of coal mining companies in view of the demand for coal in regions The costs related to closure of loss-making mines, to employment for laid off workers and solution of ecological problems are not determined In evaluating the competitiveness of coal mining companies only the current prices for coal and transport tariffs are taken into consideration, the effect of other fuels on the coal market as well as possibilities of changes in the structure of the fuel balance in different regions of Russia in the medium-term and longer-term perspective are not taken into account It is also necessary to consider the possibilities of competition from foreign coal suppliers under conditions of a considerable rise of the world prices if the state subsidies to the coal sector are reduced or discontinued

A rapid cessation of state subsidies to the coal industry and liberation of prices on coal, in the opinion of Bank experts, will allow a large part of coal enterprises to become profitable, but in this connection the growth of production expenditures of coal enterprises connected with the corresponding increase in the value of materials and services in other branches of the economy, as a reaction to an increase of coal prices, is not considered

Nor is there any consideration accorded the significant growth in taxes in connection with the increase of prices on coal

On the basis of the above the conclusions and proposals for restructuring the Russian coal industry contained in the report, in our view, cannot be recommended for implementation until they are appropriately corrected and additional research is carried out

Concrete comments to the report are presented in an attachment

Technical Director, AO "RostovUgol" N A Piseyev

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Attachment

1 Quantitative losses connected with the closure of mines and the provision of employment of workers was not specified by the World Bank (p 3, point 5)

2 The conclusions of World Bank experts (p 6, para 3) about the need to direct subsidies toward wages and social protection of workers, and not to the defense of productive processes, call to mind the principle of a "great leap" (p 78 point 2) rejected by the experts, since it will lead to a halt in production and to massive redundancies of workers in conditions where a system of social protection is absent

At present, the provision of production with necessary materials is lower than sustainable levels since, due to an insufficiency of resources, their delivery has fallen on the average between 3 - 5 times

3 According to the forecasts of the experts, in connection with the creation of conditions for normal operations (to include a full liberalization of coal prices), 2/3 of coal enterprises will become profitable (p 12, point 1) Kuzbass enterprises are used as an example, where a reduction of extraction and employment of 50% and 70%, respectively, is expected, mainly at the expense of underground mining operations

In the Donbass, an increase in the real prices on coal of 2 - 3 times will allow for competition with fuel from the Kuzbass in the European part of the country (p 58, point 5), but will not cover production losses, which will rapidly increase to 75-85% of the growth in coal prices at the expense of an increase in value of materials, expenses, and services, called forth by the increase in value of coal

4 In the report, prospects for the development of gas and oil industries over the medium and long terms (with all certainty, the Bank has additional information), and the influence of these energy products on the formation of regional fuel markets, have not been specified Apart from this, there is no forecast pertaining to the possible competitiveness of coal shipments from abroad in conditions where world price levels on coal are eclipsed

At present, the price on coal shipped from the Kuzbass, inclusive of the cost of transport, for several economic regions of the European part of Russia is on the order of Rb80,000 - 90,000 per ton, which is at the level of world prices on coal

5 Proposals for the complete cessation of subsidies in 1995-1996, with the exception of subsidies to the social sphere (p 19, point 3) will lead to the closure of the majority of mines in the Donbass in connection with their loss-generation, which will contradict the prospects for provision of the Russian market with steam coals from the Donbass at a volume of 15-16 3 million tons of standard fuel (p 40, point 3) (The expected level of production in 1994 is 16 0 million tons)

6 In the opinion of the experts (p 17, point 3), one of the factors contributing to the increase in efficiency of production and labor safety is "an appropriate amount of mining-technical planning," which places in doubt the competence of engineering-technical

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workers of the Russian coal industry If in fact this is a discussion of the necessity of long-term planning, it is necessary in the first instance to conduct a discussion about capital investments

7 (p 18, point 9) For enterprises with high production costs, it is imperative to reduce the level of capacity of the enterprise to an efficient level In conditions of reducing the volume of production, the efficiency of coal enterprises will unavoidably be reduced, with the exception of enterprises having in their ranks units with separate infrastructure

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GUKOVUGOL

PROPOSALS
relating to the report of the World Bank
"RESTRUCTURING THE RUSSIAN COAL INDUSTRY"

The Sector Report on the Russian coal industry and on restructuring the coal industry is a voluminous, substantial, and sufficiently complete document and objectively presents the problems and condition of the Russian coal industry together with a series of conclusions which are incontestable and merit a rapid implementation

However, prior to the adoption of the report, AO GukovUgol has some serious comments demanding investigation and a discussion of the document concerning a series of aspects reviewed in the document

1 If the number of employed in coal industry - including working pensioners and people approaching the retirement age - is reduced, it would be almost impossible to find jobs for them in other industries, since their economic situation is as difficult as that of the coal industry and they are forced to reduce the labor force and to close down factories

Since coal basins are in different economic conditions we think it necessary to consider the possibility of constructing mines in favorable, promising Russian coal regions and transfer (moving) of coal workers to these regions Example development/construction of new highly productive mines in highly developed North-Caucasian economic region In this case adequate subsidies should be foreseen for development and reconstruction of operating promising mines and enrichment plants

2 The report proposes to end subsidies, investments, including even the Tariff Agreement, for mines not slated for closure, that is, these mines must cover all their expenses, including those for development, with their coal sales receipts

Taking into account the complexities of prices on coal, the inability of consumers to pay is already now beginning to manifest itself, and with the cessation of all state subsidies, even in conjunction with a limited reduction in wages - coal prices will increase sharply, the inability to pay will increase, and this will lead, practically, to a halt of the majority of mines and of the branch in general

Technical Director, Kandidat Tekhnicheskikh Nauk
A O "GukovUgol" K I Rutkov

Prepared by V V Antipov
Tel 3-37-63

THE ADMINISTRATION
OF
TULSKAYA OBLAST

To Mr A N Shokhin
Chairman, Joint Committee
for Social and Economic Problems
of Coal Mining Regions

Your ref N **ЯУ**-499/260-160 of 02 09 94
Subject The World Bank report "Restructuring Coal Industry in Russian Federation"
The Instruction of the Government of Russian Federation of 25 08 94 № **АШ-П**14-26707

The Administration of Tulskaya oblast has considered the World bank report "Restructuring Coal Industry in Russian Federation" (further referred as the "Report")

It should be noted, that the Government of Russian Federation, together with the interested bodies and institutions (primarily, State enterprise "Rosugol", Department of Coal Industry of Mintopenergo of RF), as well as local authorities, undertook some practical steps regarding the proposals set forth in the Report (transfer of social sphere to the municipal ownership, mine closure program based on the main principles of sanitation and closure of unpromising and most unprofitable pits and surface mines of Russian coal industry, the new working places creation program, gradual reduction of subsidies, etc)

This suggests, that many provisions of the Sector reform, reflected in the Report, have practical and realistic meaning

However, we consider it necessary to put forward the following general proposals and comments to the Report

1 The literal acceptance of the proposed policy, which aims to turn two thirds of coal industry enterprises into a profitable entities without any subsidization, can't be considered in isolation from the overall process of Russian national economy reformation The proposed pace and terms (the coal sales fall off to 200-250 million tons and the reduction of coal industry employment volume by more than one half by 1997) may ruin our coal industry

The simultaneous curtailment of governmental subsidies to the coal industry, as it is proposed in the Report, may in a very short time result in a critical level of coal output, not ensuring the economic security of the country

The lessons, gained from the initial stage of coal industry reform experience, (taking Tulskaya oblast as an example) show, that for a successful coal sector reorganization it is necessary to develop a sector restructuring transition program with a reliable financing and in conjunction with the other sectors of national economy

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The program should include

- the complete transfer of housing and community services with engineering infrastructure (in this regard the Decree of the RF President N 1702 has not been executed),

- the solution of the problem of coal-miners' ramshackle and not valuable housing resources transfer and the implementation of the program of their pulling down and construction of the new houses instead of the old ones,

- the solution of the non-payment and mutual settlements problem, now typical for all sectors of national economy and, in the first place, for the fuel and power complex

2 We consider it advisable to maintain, for the transition period, the present management structure of Russian coal industry as well as its financing mechanisms

It is necessary to determine the optimum volumes of coal production for each region, ensuring the economic security of the country To consider the possibility of placing of the Governmental Order for these volumes

The financing of the transferred housing and community services with engineering infrastructure, pulling off ramshackle and not valuable houses and construction of the new ones, should be channeled directly from MOF RF through local governments (oblast administrations)

Mine closure programs, the creation of new working places, social protection of the population should be financed through newly established local joint units, including both local authorities and coal mining companies

One of the essential problems is the revision of the Tariff Agreements As one of the possible ways to solve this problem we suggest the conclusion of the Agreement between the Government of RF and the trade-unions, aimed to the regulation of wage levels in various sectors of national economy

3 The restructuring of coal industry will lead to extraordinary high level of unemployment

Taking into account, that about 70% of Tulskaya oblast production volume is taken up by the chemical and metallurgical industry, where manpower reduction processes are also proceeding, the closure of mines in Podmoskovny basin will further aggravate the situation with the employment

Positive solution of this problem requires the implementation of a special Federal transition program on the creation of new working places both in Tulskaya oblast and other regions

4 The Oblast administration supports the need of testing a pilot mine closure program and agrees that Tula region become an experimental site, in view of the planned

closure of 10 coal mines in Tula basin during 1994-1995, according to the mine closure program

First Deputy, Head of Administration N K Popov

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KOMI REPUBLIC ADMINISTRATION

(translation of this covering letter is included with the complete Komi Republic submission on p 69 of this Annex)

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Ministry of Labor
of the Russian Federation

Government of the Russian Federation

Deputy Minister

In pursuance of Instruction № АШ-П14-26707 of the Government of the Russian Federation, dated August 25, 1994, the Ministry of Labor of the Russian Federation has reviewed the World Bank report "On Restructuring Coal Industry in the Russian Federation" and hereby submits to you its comments

Appended 2 sheets

E D Katulsky
Deputy Minister

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Comments on the World Bank report "On Restructuring Coal Industry in the Russian Federation"

The Ministry of Labor of the Russian Federation notes the relevance of the coal-mining restructuring program and supports the key argument of the report that special attention should be given to social protection of the workforce

Given the fact that reorganization and restructuring of the sector will result in closure of loss-making mines, further effort should be taken to define mechanisms of protecting labor rights of the citizens and more emphasis should be placed on the needs of cities and regions, and to creation of new jobs

Many mines earmarked for closure are focal points of their respective towns Cities and towns in the regions rely for their livelihood on coal-mining If mines are shut down and miners are relocated, hospitals, schools, entertainment and recreational facilities, retail outlets, services, railroads, construction companies, utilities, etc , will decline

For that reason, relocation of the population of mining cities and towns requires additional measures to help redundant workers This holds especially true for the most vulnerable groups (retirees, disabled people, single parents, families with many children) People should be helped to move, find jobs for which they have qualifications or receive training It is also necessary to help them to receive housing, including allocation of land, purchase of construction materials and availability of low-interest credit facilities

We believe that there are several ways to address the employment problems resulting from closures of mines and layoffs of miners Job creation must be included as a component in restructuring projects, and, if feasible, programs should be put together to promote small business and self-employment by means of operation of assets of closed mines and other assets sold to employees or purchased at public auctions and by investment tender in the process of privatization

It would seem that the Interministerial Commission should review the aforementioned social and labor issues which arise in the process of restructuring the coal-mining industry

As regards wages in the sector, the Ministry of Labor does not believe in subsidies and subscribes to the opinion of experts who press for self-sufficiency of coal-mining companies in terms of labor costs

On the other hand, in order to achieve consistent reduction of employment in the coal-mining industry, employees should be encouraged to leave voluntarily in which case they should be entitled to severance pay depending on the length of service

To Mr N G Shamraev
Deputy Minister,
Ministry of Economy of RF

The Institute considered the World Bank report "Restructuring the coal industry - Sector report" and informs about the following

The report contains the detailed information on the state of the coal industry in Russia, provided by "RosUgol" The variation approach to the solution of coal industry development and a number of very constructive proposals make the report essential for practical work aimed to the quest for the ways of the sector development

At the same time, the Institute has some comments to the report, which are summarized below

1 The forecasted by the authors of the report an unambiguous decrease by 2000 of the gross domestic product (GDP) down to 75% of the level of 1990, should be well-grounded We believe, that the variant, recommended by the Government of Russia, namely, the achievement by 2000 of GDP equal to 90% of the level of 1990, could be considered in the report as well

2 We can't agree with the authors' consumption forecast for 1997 estimated as 146 million tons of coal (this level is assumed to be preserved up to 2000) The results of the studies, carried out by scientific-research institutes and other entities (VNIIKTEP of RF Ministry of Economy, Energoset project, firm "KOKS" etc), confirmed by the experts from the coal, gas and power sectors of TEK (fuel and power complex) (minutes of the meeting in Mintopenergo RF of 02 11 93) and the data on the demand for the coal in Russia up to 2000, presented to the coal industry department of Mintopenergo RF by the heads of administrations, estimate this demand to be at the level of 230-235 million tons The estimates, carried out by the institute "TsNIEUgol" together with the design and scientific-research institutes of the sector in the frames of "Main principles of coal industry development strategy in Russia" and " The outlines of the development and placement of coal industry in Russia up to 2010", approved by Mintopenergo RF on 11 08 94, also point out to the necessity of further increase of mining operations

3 The levels of coal export and import should also be motivated We suppose, that the export of coal from Russia as a source of currency receipts should be maintained at least at the level of 1993 As for the coal import, the authors of the report keep it up at the level of 14 million tons, retaining the delivery in Russia of high-ash Ekibastuz coal which can't be admitted, as Kuznetsk coal can be quite efficiently substituted for it this thesis being confirmed by the results of joint studies of coal and power engineering experts, carried out in the frames of " The outlines " in 1994

4 While acknowledging the need to close some unpromising and unprofitable coal mining enterprises, we consider the closure of 155 and 135 pits and surface mines (in accordance with the first and the second scenarios of coal industry development) by 1997 to be quite unrealistic, as it is equivalent to the liquidation of almost 50 enterprises per year with the release of about 150 thousand people, working in

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the industry-productive sphere One can't also agree with the proposal to close all mines of Intinsky deposit, over 50 mines in Kuzbass, all mines in the Sakha-Yakut Republic and in Magadanskaya oblast We believe, that the realization of unpromising enterprises closure program, aimed to the prevention of social conflicts, creation of conditions for learning the new jobs, migration and provision of working places for the released labor power, will need much more time (no less than 10-15 years) The estimates show, that the total expenditures, connected with the closing of Donetsk mines (Rostovskaya oblast) and mines of Podmoskovny basin, on the Urals and in Kuzbass, may be of the order of 14,5 and 15,3 billion rubles in 1994 prices, according to the first and second scenarios of coal industry development, proposed in the report

5 The report does not motivate the formation of regional coal markets The conclusions on the reduction of coal output in Donetsk (Rostovskaya oblast) and Kuznetsk basin contradict the estimation of competitiveness of coal in all above mentioned basins The coal of Donetsk basin is competitive in almost all regions of the European part of Russia, and as far as Kuzbass is concerned, its coal (especially from the surface mines) is competitive in some regions of the European part of Russia, on the Urals and in the West Siberia region The estimates show, that the demand for Kuznetsk coal may give a supplementary increase of 30-50 million tons per year with regard to the development of Erynakovsky region

6 The suspension of the sector subsidization from the Federal budget will result in the long process of coal output decline, with the impact on economic security of Russia That is why we believe, that this could be possible only after the implementation of restructuring the overall fuel and power complex of Russia

While appreciating the report as a whole, we consider it essential to point out, that the proposed scenarios of coal industry development could be considered as alternative variants of the temporary reduction of mining operations volume, based on the assumption of GDP being not higher than 75% of the 1990 level by the year of 2000

Director of "TsNIEUgol" V I Iljin

V K Branchugov
928-01-07

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FIRST DEPUTY HEAD
OF THE KOMI REPUBLIC

167010, Syktyvkar,
Kommunisticheskaya 9

TO Mr A N SHOKHIN
Chairman
Interdepartmental Commission
on Social and Economic Problems
of the Coal-Mining Regions

08 09 94 No 03-21/3518

Re your No **AШ-T**14-26707
of 25 08 94

Dear Alexander Nikolayevich,

I am transmitting to you herewith the comments of the Ministry of Industry, Transport and Communications of the Komi Republic on the draft report concerning the reconstruction of the coal mining industry in the Russian Federation, prepared by a division of the World Bank

I believe that the fundamental documents for the reconstruction of the coal-mining sector in our Republic are Decree 716 of the Government of the Russian Federation of 19 06 1994 "Concerning Measures to Stabilize the Social and Economic Situation in the Pechora Coal Basin Region" and a number of follow-up documents, inter alia, the Program of Restructuring Coal-Mining Enterprises of the Pechora Coal Basin, to be prepared by December 1, 1994 and submitted for consideration

First Deputy Head
Komi Republic
(signed) A A Karakchiev

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MINISTRY OF INDUSTRY,
TRANSPORT AND COMMUNICATIONS
OF THE KOMI REPUBLIC

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06 09 94 No 04-1029

Proposals in connection with the results of consideration of the the World Bank report entitled "The Situation in the Industry and Reconstruction of the Coal Industry of the Russian Federation"

In general, the report provides a fairly objective assessment of the situation in the coal industry and, no doubt, can be used as a basic document in development of the coal industry reconstruction regional programs However, we consider it necessary to make a number of comments relating primarily to the situation in the Pechora coal basin

1 It is noted in the report (page 6, para 1 and 2) that the period of reconstruction of the coal industry in many countries lasted from 20 to 30 years At the same time it is stated that the reconstruction period now should not exceed 3 to 5 years In our opinion it would not be possible to complete reconstruction of the coal industry within the stipulated period as this would require subsidies the amounts of which would exceed by many times those provided at present

2 It would probably seem premature to set the goal to phase out completely subsidies to the coal industry in the near future would probably seem premature Most probably, a more rapid reconstruction of the industry would require significant funds to cover the costs of reduction of the staff and of mine closures Moreover, provision of subsidies to the coal industry in some forms does not contradict the world practice

3 One cannot but agree with the provision in the report concerning provision of subsidies directly to coal companies At the same time the report notes the facts of a wrong use of subsidies, these funds are used not for the protection of people from difficult problems of the transition period but for protection of production to cover the costs and to artificially maintain the selling prices for the products at levels below their production costs (vol 1, page 9, para 1-4) Probably, in this case the central management structures should be entrusted with control functions both over the process of reconstruction and the appropriate use of subsidies

4 Restructuring of the coal industry in the Pechora coal basin can be carried out only under its own regional program with due regard for specific features of this basin

4 1 The main part of the region is located beyond the polar circle, which makes it

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extremely difficult to create alternative new production units and new jobs for labor released as a result of staff reductions and coal mine closures,

4 2 During the forthcoming decade the Komi Republic will remain an area supplying mainly raw materials to the market A drastic reduction of coal and other fuel and energy resources production which account for about 70 per cent of the Republican budget could have catastrophic and irreversible consequences for the economy of the region

On the basis of the above and account taken of specific features of the Pechora coal basin decisions concerning this region upon recommendations of the World Bank should be taken very carefully after a detailed and in-depth study of the draft Program of Reconstruction of the Coal Industry specially adapted to the conditions of this basin

Minister (signed) E B Grunis

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Dear Members of the Commission,

The report entitled "Reconstruction of the Coal-Mining Industry", prepared by the World Bank is of certain interest, views and assessments from outside are always useful and advice and recommendations of an experienced and independent expert are simply necessary And no doubt, the report submitted for considerations contains these points However, I would like to discuss this question later

First of all I would like to touch upon the points to which we can not give our consent

1 It was stated in the report that in many countries of the world the coal-mining industry had undergone a protracted and painful process of reconstruction, which lasted from 20 to 30 years And this concerns, inter alia, developed countries where the situation in the coal-mining industry could hardly be called catastrophic However, in the next paragraph of the same document it is recommended to carry out reconstruction of the Russian coal-mining industry within 3 to 5 years and in doing this to close down 10 mines by the end of 1995 and after that from 15 to 20 mines annually during the period up to 2000 Even simple calculations suggest that the amount of government financing of mines closure (according to the experience of the "Khalmer-Yu" mine of the Pechora basin) go far beyond the budget capacity And it is practically impossible to finance these processes from the funds of local coal producing firms The mine closure rates do not conform to the forecasts made by the Ministry of Fuel and Energy of the Russian Federation, the difference being more than 100 per cent

Thus, one of the principal theses of the report concerning restructuring rates can not be considered well-founded and realistic

2 The report contains the following forecast concerning the volume of coal production by 2000 the coal production volume should be at the level of about 185 million tons per year According to the "Main Lines of the Strategy of Russia in the Field of Energy" the volume of coal production in 2000 should be 250-270 million tons while the coal production capacity should be maintained at the level of 350-360 million tons per year

Such a difference (by almost 100 per cent) gives rise to doubts for "The Strategy of Russia in the Field of Energy" was prepared by the Ministry of Fuel and Energy of the Russian Federation while a Deputy Minister of the RF Ministry of Fuel and Energy and the Director-General of the "RosUgol" company are mentioned as the main coordinators of the World Bank report

Therefore, in our view, the second principal provision (concerning production volumes) cannot serve as a basis for the program of reconstruction of the Russian coal industry

3 We can not agree either with the projections according to which the volume of coal production in the Pechora basin would be reduced to 12-15 million tons

This basin in the principal supplier of caking and fuel coals for the North region and about 2 million tons of caking coal and 5 million tons of fuel coal are exported to the North-West and the Central regions as well as abroad Moreover, we have even witnessed a slight increase in the production of fuel coal by the joint stock company "Intaugol"

Taking into account that this balance between demand and consumption can be considered well-established and that any increase of natural gas consumption in the North is not expected by 2000, the most realistic figure of the production volume would be no less than 20 million tons

Furthermore there are two other special factors relating to the reconstruction of coal industry in the Komi Republic, which have been completely ignored by the authors of the report The Pechora coal basin is, geographically, a part of the Extreme North Region and it would not be realistic to consider creation of new jobs in this region in response to a decrease of employment due to the closure of mines

Furthermore, at present and, evidently, in the foreseeable future the Komi Republic would be primarily a supplier of fuel and energy raw materials which account for about 70 per cent in the economy of the Republic

A drastic reduction of the coal production volume in the Pechora basin would undoubtedly lead to aggravation of the critical situation in the economy of the Republic In my opinion, it would be unwise and risky to project the production volumes with no regard for the general economic situation in the region in whole

4 In our opinion, the view of the authors of the report concerning the need to abandon the subsidies system is erroneous This could be possible only in case of a rapid growth of Coal prices, which, if occurs, would have a paralyzing effect on the coal and related industries

Provision of subsidies in some forms does not contradict the world practice

5 The authors of the report rightly note the need to decentralize management and to provide subsidies directly to coal producing companies However, the report notes the cases of a wrong use of subsidies to cover production costs and not for the purposes of social protection of workers

Consequently, a mechanism of control over the use of subsidies

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should be established

CONCLUSIONS the main figures characterizing the reconstruction process in the coal industry - the rates and volumes of reduction - appear unjustifiably overestimated and unrealistic, while following the recommendations based on them could lead to a collapse of the coal industry with unpredictable social and economic consequences

Deputy Head of the Fuel & Power Complex Department
of the Ministry of Industry, Transport,
and Communications of the Komi Republic,
Chief of the Coal Industry Division

A Bernstein

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FEDERAL EMPLOYMENT
SERVICE OF RUSSIA

Interdepartmental Commission on
Social and Economic Problems of
Coal Mining Regions

Regarding the report of the World Bank "Survey of the Branch and Restructuring of the Coal Industry of the Russian Federation"

At the request of the Government of the Russian Federation dated August 25, 1994, № 26707

The Federal Employment Service of Russia has considered the report on the restructuring of the coal industry presented by the World Bank and, on the whole, supports the conclusions and proposals regarding the reemployment of the laid off workers in this industry

At the same time, the Federal Employment Service of Russia maintains that the part of the report dealing with the revenues and expenditures of the State Employment Fund quotes outdated figures for 9 months of 1993 which do not reflect accurately the real state of things in financing employment programs

The FES of Russia has analyzed the social and economic situation in the labor markets of all coal mining regions of Russia The analysis shows that the lay-offs in the coal enterprises to be closed down in 1994 may considerably influence the unemployment level in the regions

Pursuant to order No 37 of "Rosugol" dated June 27, 1994 34 mines with a staff of about 28 thousand employees will be closed down in the second half of this year The closures will mainly affect Tula region (10 mines), Kemerovo region (9 mines), Rostov region (6 mines) and Chelyabinsk region (6 mines)

In connection with the above the regional agencies of the FES of Russia are devising employment programs for the miners of Tula and Rostov regions, specifying concrete measures, sources and amount of financing

Proposals for similar programs have been prepared for Kemerovo and Chelyabinsk regions to be submitted to the FES of Russia in October-November 1994 for approval

A working commission composed of ministries and branch departments executives is leaving for the republic of Komi in the second half of September to study the situation in the labor market the results of the commission's work to be discussed at a meeting of the State Commission on the prevention of emergency situations in the labor markets

The settling of coal industry problems relating to the restructuring of this industry in Russia will be of **clear-cut** regional character - it will take into account the **state of the** labor market in a particular region

For instance, in Smolensk region and in the republic of Sakha (Yakutiya) the number of vacancies exceeded the number of officially registered unemployed, whereas in Sakhalin

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region there were 23 "applicants" for one vacancy, in Leningrad region - 11, in the republic of Tuva - more than 8

In the republic of Komi (1995), Kemerovo region and to a less extent in Sakhalin region the lay-offs in the coal mines to be closed down will have especially adverse consequences It will be necessary to devise special programs of reemployment for these regions with budget transfers and probable subsidies from the federal part of the State Employment Fund of the Russian Federation

In other coal mining regions, such as Rostov, Perm, Tula and Chelyabinsk regions the local administrations and the Federal employment service agencies will be able, in FES estimation, to secure the preparation and implementation of regional employment programs independently

Additional problems that may arise in the labor markets of Primorski krai, Leningrad and Novosibirsk regions as a result of the closures of unpromising coal mining enterprises will not be so acute and could successfully be dealt with by the administrations of the subjects of the Russian Federation and employment agencies

If an emergency situation is predicted in a regional labor market both regional and federal agencies are to act according to the procedure set forth by the FES of Russia and approved by the State Commission on prevention of emergency situations in the labor market in July this year

The Federal Employment Service of Russia has reserved the necessary resources from the federal part of the State Employment Fund of the Russian Federation in the fourth quarter of 1994 to allocate subsidies to regional employment agencies in case of emergency situations

M V Moskvina

FEDERAL EMPLOYMENT
SERVICE OF RUSSIA

Interdepartmental Commission on
Social and Economic Problems of
Coal Mining Regions

In addition to the letter of Federal Employment Service of Russia dated September 14, 1994 No M-1-1-1136

The Federal Employment Service of Russia forwards tentative estimates of unemployment level in the coal mining areas in 1997, based on calculated data from the World Bank report on the restructuring of the coal industry of Russia

The calculation of the projected unemployment level in 1997 in coal mining regions took into account the scheduled lay-offs in barren mines in 1997 and the premise that the tendency of unemployment growth in the regions in January-September 1994 will remain the same in 1995-1996

Unemployment level is determined as a ratio between the probable number of unemployed citizens in 1997 and the able-bodied population (according to the labor resources balance for 1992)

Supplement 2 pages, 1 copy

M V Moskvina

List of BASINS and Constituent Regions	No of Unemployed as of 1 SEP 1994 ('000s)	Level of Unemployment (%) as of 1 SEP 1994	No of Mines as of 1992	Direct Employment in 1992 ('000s)	Assumed redundancies at mines in 1997		Expected level of unemployment in 1997 (%)		Expected number of unemployed in 1997 (000s)	
					Var 1	Var 2	Var 1	Var 2	Var 1	Var 2
PECHORA			18	70 4	49 0	38 4				
Komi Rep	24 0	3 3					8 1	6 7	59 9	49 3
MOSCOW			22	41 0	27 0	8 0				
Tula obl							4 9	2 9	46 5	27 5
DONBASS			42	135 4	38 7	24 6				
Rostov obl							3 6	3 0	86 9	72 8
URAL			33	79 4	63 4	52 5				
Chelyabinsk obl	32 0	1 6					7 1	6 8	136 1	129 5
Perm obl	37 6	2 3					14 4	14 1	231 9	226 7
KUZBASS			91	296 3	213 7	224 5				
Kemerovo obl	14 2	0 8					14 5	15 1	250 9	261 7
Novosibirsk obl	20 6	1 3					2 0	3 2	31 8	49 2
KANSK ACHINSK			9	25 5	12 7	17 9				
Krasnoyarsk krai	23 3	1 4					7 5	7 7	127 4	131 0
Khakassiya Rep	5 6	1 8					10 7	11 1	34 1	35 6
EAST SIBERIA			12	24 4	10 0	13 2				
Irkutsk obl	29 9	2 0					7 3	7 4	112 3	112 6
Chita obl	3 8	0 5					1 4	1 4	10 4	10 4
Buryatiya Rep	6 4	1 1					2 6	2 6	14 6	14 6
Tuva Rep	2 2	1 4					5 6	5 6	9 1	9 0
FAR EAST			36	63 1	46 6	32 5				
Primorskiy krai	13 5	1 0					3 7	3 7	50 2	50 2
Khabarovskiy krai	15 6	1 6					11 8	11 8	113 4	113 4
Amur obl	12 1	2 0					14 2	14 2	87 8	87 8
NORTH EAST			10	27 1	14 5	13 0				
Sakhalin obl	11 3	2 6					5 6	5 6	24 2	24 2
Sakha Rep (Yakutia)	2 0	0 3					1 1	1 1	7 1	7 1
Magadan obl	4 8	2 1					7 8	7 8	17 7	17 7

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Committee
of the Russian Federation
on Metallurgy

103 718 Moscow Slavyanskaya Pl 2
Cable Moscow K 11 Metallurgy Committee

Fax 203 74 82
Interagency Commission
on Social and Economic Problems
of Coal Mining Regions

September 12 1994 No 11 66

Re АШ П14 26707 of 25 08 94

On the report by the International Bank for Reconstruction and Development
On the situation in the sector and reconstruction of coal mining industry
of the Russian Federation

The Committee of the Russian Federation on Metallurgy, having considered the report by the International Bank for Reconstruction and Development "On the situation in the sector and reconstruction of coal mining industry of the Russian Federation" and its annexes, is noting hereby a quite high level of the papers prepared, an ample scope, and comprehensive solution of the issues raised

The findings and proposals as contained in the report may well serve as a basis for further formulation of a reconstruction program for Russian coal mining industry

Some findings and statements by the report authors seem, nevertheless, to offer a cause for argument Thus, the suggestion to further raise coal prices does not take into account the fact that their rise would result, as substantiated by the current practices, in growth of consumers' debts and would fail to resolve the problems of coal mining enterprises

The report entirely overlooks the fact that a price rise for coal, given limited opportunities of its export expansion, would cause significant distortions in the economy and land-slide bankruptcies of the operational enterprises as a result of price and tariff rises for electric power, transportation services, and industrial goods In the last analysis, the industry would loose its domestic users This is why the views of coal mine management, the Rosugol company, the Committee of the Russian Federation for Metallurgy, the Ministry of Economy, and the Ministry of Finance seem to be more pertinent as to establishment of an ad hoc coal fund to subsidize the coal industry

A statement to the effect that consumption of coking coals would drop by 27 5% by 1997 as against 1993 (p 10) does not seen to be correct, for our estimates do not run over a 10% drop

The idea to **immediately** (as from 1995) abolish regular subsidies, but for those for social needs (that runs all through the report) does not seem to be acceptable under the current situation in Russia for a number of reasons **First**, this would result in land-slide price and tariff rises in the supplier industries using coal (power generation, transportation, steel, etc) and would render their products non-competitive, **second**, given unreal

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opportunities of the employees to get housing and employment in other regions, this kind of solution would be a source of high social tension in the region, **third,** wage/salary subsidies in 1995 merely to the regions with an employment rate in the coal mining of over 5% of total employees would chase the employees of those regions (Amur, Chelyabinsk, Irkutsk, Magadan, Perm, Sverdlovsk, Tula, Krasnoyarsk, Primorskiy Krai, the republics of Bashkiriya and Yakutiya) into deadlock That approach absolutely dismisses the fact that the coal miners are housed in a given region in compact settlements, i e in some towns and villages rather evenly in the whole of the area

To our mind, it would more appropriate to apply that approach to the number of jobs in the town or industrial agglomeration in question

Head of the Department
for Economy and Forecasting (signed) V G Bobylev

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220 87 76

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PROPOSALS

of the joint stock company "Severokuzbassugol"

pertaining to the conclusions and recommendations of the World Bank

concerning the restructuring in the coal industry

of the Russian Federation

1 To adopt appropriate policy in the coal industry the requirements in coal produced separately by enterprises of each joint stock company should be determined

In our opinion, without State support enterprises of the joint stock company cannot remain stable A level of State support and a period of State support should be determined When decisions on these matters are taken the problem of released industrial and production workers should be addressed

2 Subsidies for the development of production should remain Subsidies should be provided in accordance with the existing procedure, i e through "Rosugol" Subsidies should be provided for the development of production, closure of mines, personnel reduction and for the production as well Subsidies for the production should be provided on the selective basis

3 An amount of subsidies should encourage the retirement of workers while ensuring their social protection

4 Programs should be developed for each coal field with spelling out every direction

5 Mines should be closed in accordance with a strict Government program simultaneously with the development of a program of social protection of workers and engineer and technical personnel

General Director
AO "Severokuzbassugol"

E V Kukharenko

OPEN JOINT STOCK COMPANY
"CONCERN KUZBASSRAZREZUGOL"

TO S V Loparev
Deputy head of the administration
of Kemerovskaya oblast

Ref Proposals of the World Bank regarding the restructuring of the coal industry in Kuzbass

With reference to your letter № 10-10/1584 of 29 August 1994 we are ready to advise you as follows

Enterprises making a part of open joint stock company "Concern Kuzbassrazrezugol" are not planning to cut the coal production in the years to come

During eight months of 1994 the output at the enterprises of the joint stock company increased by 386 thousand tons as compared with the same period of the previous year

To increase the competitiveness of produced coal the enterprises of the joint stock company have developed and carry out measures aimed at increased efficiency of production, growth of labor productivity, cutting of production costs for all components of cost value, reduction of the number of workers and introduction of advanced cyclical assembly-line technologies at the enterprises of joint stock companies "Razrez Bachatsky", "Razrez Taldinsky", "Razrez Krasny Brod"

According to technical and economic estimates, implementation of developed measures and introduction of new technologies will permit to cut the number of workers and at the same time to increase the coal production by 4 - 4 5 million tons in the next two or three years

High quality of coals produced at the enterprises of the joint stock company allows them to compete with coals produced in other fields

The enterprises of the joint stock company are constantly expanding the coal sales market

For example, an agreement with energy producers in the Ural region has been reached concerning the use of our coal instead of coal produced in Ekibastuz

Moreover, the need for coal in Kuzbass itself is increasing due to the reduced supplies of natural gas

At the same time the search for new consumers of our coal in the regions of Siberia, Far East and other regions still remains a priority task, and for its solution ways to cut the costs of the Ministry of Railroads for the transportation of cargo should be found

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It would be appreciated if in the process of considering the proposals of the World Bank for Kuzbass in general this position of our joint stock company is taken into account

Chief engineer of the joint stock company A L Virula

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RUSSIAN COMMITTEE
OF THE INDEPENDENT LABOR UNION
OF COAL MINING INDUSTRY EMPLOYEES
(R O S U G L E P R O F)
109004 Moscow Zemlyanoy val 64 Phone 915 80 81 Fax (modem?) 915 01 02

STAND
OF THE MINERS' LABOR UNION

on the paper "Report on the situation in the sector Restructuring the coal industry August 8, 1994" prepared by the World Bank

Bankers' Recommendations and an Obscure Outlook for Russian Economy

A distinctive feature of the report by the World Bank is its thrust on purely financial issues with no account taken of the specific nature of the coal mining industry The World Bank is first and foremost a BANK and its report is a BANK DOCUMENT as applied to the coal mining industry Except for plans to cut subsidies, no mechanisms of making the sector competitive are suggested It all is to materialize in some inconceivable way, and that way remains off screen

The calculations disregard the following

- the role the coal mining industry plays in Russian economy,

- the potential of the coal mining industry to develop upwards, and

- the eventual social repercussions of a massive shut-down of mines

Restructuring is aimed at two basic results to improve the financial position of the Government and TO CUT EMPLOYMENT in the coal mining regions, in both instances - the sooner, the better (p 19 of the English version), which is hard to rate as a strategy of restructuring the coal mining industry

The inadequate translation of the English original into Russian gives rise to doubts Thus, the above outlined aims are worded in Russian as follows the pace of the implementation of the actions recommended for setting target figures is kind of a trade-off between two principal tasks, i e to improve the financial position of the Government and

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TO CUT DOWN THE LEVEL OF UNEMPLOYMENT in the coal mining regions, in both instances the sooner, the better (pp 19-20 of the Russian version) The said misinterpretation is a matter of principle, and a negligent translation (we leave aside the assumption that the contents of the report have been purposefully distorted) can result in mutual misunderstanding of the Russian and American parties, given the fact, in particular, that this error is not the only one in the report

Under the Russian version, the paper is a joint report by the World Bank and the Russian Government The English original identifies it as a report by the World Bank As the Government's own position is politically meaningful, the Miners' Labor Union would like to clarify the issue is the paper submitted for deliberations a joint report by the World Bank and the Russian Government setting forth the views of the latter or is it a report made by the World Bank for the Russian Government?

RUSSIAN REALITIES COAL AND THE FUTURE OF RUSSIA

The need for the Russian coal mining industry to be restructured is beyond doubt The current subsidy system is apparently too heavy a burden on the public budget and is unable to improve housing or working conditions of the miners or to promote the long-term development promise for the sector either

The suggestions by the World Bank are resting, however, on an ideal market economy model and on an analysis of the coal mining industry that proceeds from entirely unrealistic statistics For seventy years, the "planning" of the Russian economy has been based on utopian schemes which were a product of morbid imagination of its *fuhrers* Russia has just only begun getting rid of ideological dogmas What people now need is not the market *bolshevism* of the World Bank, but rather a well-conceived program for the coal mining industry that rests upon the reality of Russian economic and social environment

The coal mining industry is the basis of coal regions economy When there is no coal mining, the coal regions will simply die out and millions of people will become refugees The only way to avoid an economic and social catastrophe is the development of the coal mining regions economy on the basis of coal through developing and updating coal user industries and the diversification of the region industrial basis

Coal mining enterprises are not mere bank accounts and equipment, they are a core of miners' community settlements surrounding the mines In a due course, the mines holding no promise must be closed down, but the settlements should develop production substitutes with the participation of the available work collectives

Having familiarized itself with the report of the World Bank on restructuring the Russian coal mining industry the Miners' Labor Union disagrees on the following issues

FORECASTING A CRISIS AND MOTH-BALLING RUSSIAN ECONOMY AT THE CRISIS STAGE OF DEVELOPMENT

The sum total of estimates and the coal industry restructuring concept as a

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whole are built upon an idea of a continuing production decrease in the country Such formulation of the problem is incorrect for a number of reasons First of all, it is contrary to fact Some figures show a halt in the production drop and some stabilization ensuing In its turn, the report by the World Bank also allows of an eventual recovery of the economy, after it has passed its crisis peak in 1995 The World Bank's tactics aimed at a dramatic reduction of the production capacities of the coal industry results, therefore, in moth-balling Russian industrial production at the peak of the crisis It is not by chance that the coal industry has been chosen, for it is basic for the heavy industry, and its moth-balling involves a chain-moth-balling and aggravating of the crisis in all the heavy industry sectors

The argument of the World Bank to the effect that world coal consumption is on decline and the same would, therefore, happen in Russia is not logically true either The principled error consists in the fact that the world coal consumption drop was the result of a technological restructuring of all industrial sectors New energy-conserving technologies emerged, along with change-over from coal to oil, propane/butane, etc , in other words it was a natural stage of the scientific and technological revolution Unlike the situation in the West, the causes for the decrease in Russia were not technological ones, for its production potential has not been renewed or updated The immediate cause was scarce turn-over funds which bring about debts and mutual non-payments Fundamentally, now in Russia, we are witnessing a crisis of a structural change-over from the previous system of economic management to a new one, this is why it is inappropriate to talk about an over-production crisis (The crisis that the World Bank intends to resolve by hard market methodology is actually a response of the Russian economy to the application of market methodology to it - and its failure A restructuring of a vast economic complex requires a planned regulation, which was mentioned, as a matter of fact, in the November report by the World Bank) The simplest example to substantiate the above mentioned is as follows agricultural machinery has not been renewed in **kolkhozes** for 5 to 8 years now, and not because there is no need to, but rather because the State has not paid its debts to **kolkhozes** for several years Hence, the missing demand for agricultural machinery - and metals, and coal Would the heavy industry be able to overcome the crisis if there is a drastic reduction of coal mining capacities?

UNSYSTEMATIC APPROACH OF THE PROGRAM

A major drawback of the report is that a systematic approach is lacking, one production sector is artificially dissociated from its social context, its cultural environment, and from the whole of the production complex, though its interconnection with other sectors is easy enough to see The suggestion to phase out mining power coal in the Pechora field (p 32) which would black out vast areas of the Republic of Komi is one of the oddest

A major issue of the structural change-over facing Russia, and one that is highlighted in the report by the World Bank is the location of industry that was preconditioned rather by past military and political and not economic considerations It resulted in coal mining, metal production, and heavy industry prevailing in the Kuznetsk and Urals coalfields which supply the far regions of Russia, with limited catering to the needs of the local population The ideas of the World Bank applied to other production sectors may lead to the same conclusions as the report on the coal industry does Metal

production, chemical, and heavy industries in the Urals and Kuznetsk coalfields are noncompetitive because of high transportation costs, and, in the wake of World Bank's logic, are to be shut-down In fact, it looks as if the World Bank forecasts of a decrease in coal demand were based on the assumption that the mentioned sectors are to wrap up But what would replace them? Who is supposed to invest in services and production of goods for people if they have neither work nor profits?

The lack of a systematic approach is based on a tactics of isolation of the coal mining from other sectors and the miners from the rest of the population

NEW SOCIAL PROBLEMS AS THE RESULT OF THE IMPLEMENTATION OF THE WORLD BANK'S PROGRAM

The implementation of the World Bank's program poses more new problems, for the Government inclusive, than it promises to solve The World Bank experts have no idea whatsoever of the social and cultural context within which the Russian society is functioning In their suggestions, they proceed from their own experience, that has nothing in common with the Russian reality Their advice in this field tends to destroy the social infrastructure unstable as it is

Such are, for instance, the recommendations on the speediest possible shifting of the social matters from enterprises to municipal authorities In doing this, the "Housing" Section (p 16) indicates the housing available and in no way the construction of the new one With the matters of housing transferred to municipal authorities, people who have lined for (free) dwellings for years are deprived of this right Under the current conditions, a worker cannot solve his housing problem without the support of the enterprise Thus, even if the younger generation can find a job, it would be incapable of facing the problem of housing

Even more dubious seems the advice to the effect that upon having attained the goal of lowering the employment level in a given coalfield by 25 to 30% (p 14, para 1), the main thrust must be made on the formulation of regional programs involving measures to promote migration from the most critical areas to the ones with better mining opportunities or simply with more favorable economic outlooks (p 14, para 1) ***People suggesting measures to encourage migration are absolutely unaware of the Russian reality although even the "experts" of the World Bank should have heard about the problems of the redeployment of the Russian military, not to mention numerous refugees from the former Soviet republics*** For the reasons of lacking a housing market, of the obligatory administrative registration, and other social and cultural factors, people would hold on to the mining to their very utmost Furthermore, people, former miners who have left the areas of a planned disaster and lost housing there would not be able to have it elsewhere **The program of actions to encourage migration** if implemented, would not only result in a tragedy for many families but in a new problem for the Russian Government, i e the one of refugees from coal mining regions The program of the World Bank thus intends to make the miners and their family members not only unemployed but also homeless people who have been sacrificed to the idea of restructuring in Western style

The program suggests that subsidies be channelled to indemnify the

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dismissed, i e the subsidies are supposed to be paid for closing current jobs instead of investing them into the generation of new ones The indemnification of the dismissed employees is an act of payment for closure of a job, i e the individual occupying the given job sells it The Trade Union is against the idea of forcing employees to sell their jobs On top of that, a job is not a property of the individual who occupies it

Instead of discussing the matter of poor indemnities to the dismissed and the amount of those indemnities, it is more appropriate to think of the generation of new jobs Closing mines and the implementation of the program of a comprehensive restructuring would involve 300 000 to 500 000 employees dismissed - not counting the loss of jobs by those employed in the infrastructure servicing the miners - and lacking jobs for the younger generation Does the Russian Government have funds for the construction of new enterprises to provide jobs for such a number of the unemployed? And if not the Government, who is supposed to invest into the deserted coal mining regions?

HOW THE TWO VERSIONS OF THE REPORT BY THE WORLD BANK DIFFER

An analysis of the two versions of the report by the World Bank shows that the report issued in August 1994, as against the one formulated in November 1993, has considerably shifted its thrust

The November version identified labor costs as not being one of the crucial factors bearing on the growth of production costs and subsidies (p 2, para 6), while the August version makes a sharp turn Rises in wages were the main driving force of the growing production costs in 1993 (p 8, para 4), hence mass dismissals and a drop in oversized miners' wages (the latter - through abolished Tariff agreements governing the wage levels in the sector) It is an open secret what Russian statistics are This is why the figures on the changing subsidy pattern is but a juggle with statistics Actually, the subsidies have been relatively stable as from 1991, the reason being not the rising miners' wages, but rather the collapse of the Russian economy in general Furthermore, subsidies for coal mining were heavily cut down in 1994 which was not followed by any kind of planned action to reform the coal industry or economy in general (judging by the figure at page 9 of the report the cut was by 20% and by the figure at page 88 of the same report the cut amounted to 40% Such considerable difference is one more evidence of a shaky statistics reference for the global findings by the experts of the World Bank)

The November report displays a kind of criticism of market economy and concern for eventual chaotic and unorderly changes resulting in major economic and social after-effects (p 1, para 3) and suggests that the process of changes be put under control (i e as based on planning) by turning to coordinated efforts to formulate a comprehensive policy of structural changes in the sector and to settle social consequences (p 2, para 5) In the August report, the market covers everything and a cut-down of subsidies for mining industry is rated as the most important mechanism But the November report has cautioned us against exactly this kind of policy in noting that the experience gathered by other countries is indicative of the fact that this kind of action would have limited effects and would involve major costs manifest in social and political unrest (p 12, para 45), in this instance, increased subsidies for metal production, heat generation, and electric power generation are to be substituted for a subsidy cut for coal industry

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The following actions aimed at making miners drop their jobs are suggested

- to ban the retired from being employed,
- to cut miners' wages, and
- to opt for a modest and short-term indemnity for the dismissed instead of paying subsidies for the coal sector

In other words, the two versions of the report are controversial and even conflicting This kind of dashing is a case for caution and no one can guess the position of principle to be taken by the experts of the World Bank in the year to come Though it is not far-fetched that the second version has merely disclosed the previously concealed purpose to cut the subsidies ASAP, in doing so, the version does not take into account the prospects for those dismissed from the mining industry in miners' regions

SUBSIDIES

Actually, the issue of subsidies has no bearing whatsoever either on the fact that certain mines produce coal at higher costs as compared with other mines, or on low labor productivity level and oversized personnel of the mines The November version of the report (p 5, para 18) states that in 1990, the subsidies were absolutely insignificant This is why the World Bank is in the know that, apart from the dramatic price rise for materials, the problem of subsidies has emerged from a general production drop

The World Bank is puzzled to see that the enterprises do not tend to dismiss their employees in spite of the output drops, that the latter was relatively uniform at all enterprises, and low cost mines failed to dramatically raise their output This is, however, a policy of the industry sustainable enough to retain production capacities and labor force pending an economic revival, all the more so at times where The Employment Fund is short of funds to support the unemployed

EVENTUAL EFFECTS

ECONOMIC EFFECTS

The program of restructuring the coal mining industry proposed is a policy of a drastic cut of the industrial potential of Russia In the August report, all moves are directed to soft-pedal discontent with and protest against the policy of the World Bank In doing so, the Bank has no argument in support of the implementation of the policy proposed and there is no evidence of its positive effects on Russia's economy and welfare standards of its people There is no other purpose there than to reduce production capacities, cut the number of the employed by the industry and, thus, to abolish the subsidies An instrumental aim is promoted as a major one, but its purpose stays off screen It is absolutely unclear how the mines that survived could possibly grow competitive, and the report indicates no way of meeting the challenge Should the answer

be new technologies, would the surviving mines be capable of updating, provided that the main purpose of restructuring is to abolish the subsidies, and they would rapidly decrease?

The proposed program tends to undermine the fundamentals of the heavy industry and is productive in turning Russia into an importer of metals, heavy machinery, etc The reduction is a purpose **per se** It is a wrap-up for wrap-up's sake A false analogy with the West is being drawn where the reduction was conditioned by technological updating Here we are facing either a logical error or a well-conceived policy

SOCIAL EFFECTS

In its drive towards abolishing the subsidies for the coal industry, the Government could dismiss miners It would have, however, to pay funds thus saved on the subsidies through other channels The costs of unemployment are vast and of a long-term character Those payments are not merely the ones for social needs made through municipalities The costs include gigantic economic losses, the loss of skills by the dismissed, the demoralization of the unemployed under impaired social conditions, the cost rise of health care (given a tendency for mental disorders and drug addiction to rise in the areas of mass unemployment), of controlling crime that, under mass unemployment, could become the only source of subsistence The surging wave of refugees from coal mining areas generated by the "measures to promote migration" proposed would exact huge additional costs which are unsustainable under the current situation and are not envisaged in public budget

POLITICAL EFFECTS

The implementation of a program that forecasts and perpetuates Russia's backwardness would be the best promotion in favor of oppositional political forces, the party of Zhirinovsky inclusive The Miners' Labor Union is informed of a growing disapproval of the policy of the current Russian Government in the field In recent months, the workers' movement most definitely has grown politicized At the town and enterprise level and in miners' collectives, the issues of forming their own party by workers or of backing up one of the active parties are discussed There have appeared initiatives to restore workers' and strikers' committees have The absence of its own program of reforming the Russia's industry and the implementation of the program of the World Bank by the Russian Government would bring the country to the brink of economic collapse and would mean a suicide of the current Government

OPINION OF THE MINERS' LABOR UNION

1) The Miners' Labor Union absolutely disagrees with the inhuman principles taken as a basis for the implementation of the restructuring program proposed by the World Bank The Union deems it impossible to agree to the plans of turning the coal mining regions into areas of mass unemployment, the plans to organize impoverishment of miners and a surge of refugees from the miners' areas which would be the result of the World Bank's programs proposing "measures to encourage migration" from one areas to another

2) The Miners' Labor Union rates the indemnities to be paid to the

employees fired from the enterprises as a payment for the liquidation of their jobs and insists on the main thrust to be shifted to the forward-looking generation of new jobs rather than to indemnities

3) The Miners' Labor Union thinks that, for all its draw-backs, the report by the World Bank has played its positive role in prompting public and private agencies to get down to discuss the issues concerning the future development prospects of the coal industry The Miners' Labor Union suggests that the Russian Government should carry on with the discussion of the problems of the coal industry and initiate a forward planning of the reconstruction of the Russian economy To the contrary of the World Bank's approach that promotes a mass vacation of jobs (i e mass unemployment) as a conceptual and instrumental purpose and condition of the implementation of the program, the Miners' Labor Union proposes that the main thrust in the formulation of restructuring programs should be on the retention of social gains, and in deliberations and formulation of a program of comprehensive economic revival of Russia Prominent line experts of the industry, labor unions as well as intellectual potential of academic and research institutes should be involved

The only thing required is the will of the Russian Government to refuse the suggestions by the World Bank and to initiate its own revival program for the Russian economy targeted at the needs of the Russian people

For the implementation of a revival program for the coal industry, the Miners' Labor Union insists on the following

1) The coal industry should be managed and funded by a sole central body that would be able to harmonize the development of the coal industry and its suppliers

2) The Miners' Labor Union turns down the attempt to restructure the coal industry by a forced cutting of miners' wages and insists that the Tariff agreement should stay in place, and the issues of labor remuneration and of wages should stay on as a main item of line tariff agreements

3) Budget funds should be used for investments in the development of coal regions and for the generation of alternative jobs

The need for and expediency of such measures are substantiated by the experience of restructuring of coal industries in the countries of Western Europe, the operation of the Agreement of the Century in the FRG and the actual experience of the European Coal and Steel Union

Moscow, September 21, 1994

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MINUTES
OF THE MEETING OF "KUZBASS COAL" ROUND TABLE
PROBLEMS AND PERSPECTIVES

September 21, 1994 City of Novokuznetsk

The round table was held within the framework of the workshop "Kuzbass Invites to Cooperation" The round table meetings were attended by the heads of the production associations, joint-stock companies, mines and open pits of the coal industry, by the heads of the joint-stock companies in metallurgical industry, by representatives from the administrations of Kemerovo region and Kuzbass coal mining towns, by scientists from the academic and departmental research institutes and higher educational institutions of Kuzbass, by representatives from the company "Rosugol", by representatives from foreign engineering companies, geological exploration agencies and other organizations operating in conjunction with the coal miners

The round table chairman - V Ye Bragin, first deputy director, Kuzbass administration for the coal industry "Rosugol"

G I Gritsko - Chairman of Kemerovo research center, Siberian branch of the Russian Academy of Sciences, corresponding member of RAS

The reports on the agenda were presented by

V Ye Bragin - First deputy director, Kuzbass administration for the coal industry "Rosugol" "Survey of Kuzbass Coal Industry Economic Indices of the Coal Mining Enterprises The place of Kuzbass in the Coal Balance of Russia"

G I Gritsko - Chairman of Kemerovo research center, Siberian branch of the Russian Academy of Sciences, corresponding member of the RAS "Energy Program of Russia and the Role of Kuzbass in its Implementation"

V M Stankus - head of laboratory, the Institute of Coal, the Siberian branch of the Russian Academy of Sciences "Kuzbass Coal Industry Strategy in a Market Economy"

A A Baichenko - head of laboratory, the Institute of Coal, the Siberian branch of the Russian Academy of Sciences "Reprocessing Coal Slime from the Outer Settlers of Kuzbass Coal Enterprises

At the participants' request an additional report "On Recommendations by the IBRD Regarding the Perspectives of the Coal Industry of the Russian Federation" was presented by S V Loparev, deputy head of Kemerovo regional administration

The reports examined the situation in the coal industry of Kuznetsk coal basin, the use of production capacities, the measures to stabilize the coal output The reports clearly outlined a number of drawbacks that make it impossible to improve the technical and economic indices of the mines, open pits and other coal enterprises of Kuzbass region Some of the drawbacks are a decline in the coal production from 159,2 mln tons in 1988 to 107 mln tons in 1993 and a decline by 12% in 1994, unjustified high railway tariffs for

coal transportation and a complicated payment procedure at terminals, delays in payments by customers, unstable prices on equipment, materials and power supply, excess staff on payroll (overstaffing) because of the shortage of jobs in the coal mining towns, reduced demand for coal in summer months and in general, which relates, to a great extent, to a general decline in the industrial output in the Russian Federation

Various strategies of the development of Kuzbass region were analyzed It is worth mentioning that the reports and the ensuing debates displayed much controversy on the perspectives of Kuzbass

Moscow central bodies and the International Bank of Reconstruction and Development suggest a decline in the coal production of both the Russian Federation and of Kuzbass to 220 and 73 mln tons accordingly This suggestion is substantiated in the first place by a decline in the paying capacity and the need for coal production subsidies The majority of the round table meeting were very critical of the unsubstantiated and even harmful nature of such proposals To prove this point a number of well grounded arguments were presented, among them are the following

- the world tendencies in the development of energetics (of primary energy resources in particular) point to a rise of the share of coal from 24% in 1990 to 27-28% by 2010

- the energy program envisages a decline in the power capacity of the GNP by 220-250 mln tons of coal fuel without specifying the concrete measures to be implemented now in order to transfer the national economy to a new scientific and technological level

- the program did not predict a sharp decline in the oil production by almost two times from 1990, but this decline is already a fact and it is not clear how to make up for it

- in case a decline in the industrial output in the Russian Federation stops and, on the contrary, the economy improves, it will not be possible to cover the power deficit earlier than in 10-15 years, given the reduction in the capacities of the mines and open pits

- the termination of investments in the coal industry will not permit the existing mines and open pits to introduce new technologies and to replace the old mines by new highly productive ones, extracting cheap coal of high quality

- the termination of subsidies to the mines will inevitably result in their closures and, consequently, in a sharp increase of unemployment The opening up of one job vacancy requires Rb52-84 mln in production investments in the January 1994 prices (a simple calculation Rb70 mln x 70000 unemployed = Rb4900 bln)

The following speakers participated in the debates

Ye V Pugachev	-	professor, Siberian metallurgical institute,
A I Tartyshkin	-	deputy general director, Kemerovo factory "Khimvolokno" ("Chemical fiber"),

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G N Sharov - chairman of Yuzhsibgeolcom,
S V Loparev - deputy head, Kemerovo regional administration,
Yu A Kustov - general director, West-Siberian metallurgical concern,
M I Reizin - general director, association "Kuzbassuglemash"

The following recommendations and decisions were drawn up and approved by the coal section of the workshop "Kuzbass Invites to Cooperation" after a broad discussion and expert debates

- Kuznetsk basin remains the principal coal producing center of the Russian Federation, providing power engineering with high quality ecologically clean fuel, metallurgical industry - with high quality coking coal, developing new coal extracting and reprocessing technologies, stabilizing, on the whole, the power engineering of the Russian Federation Kuzbass is to supply 43 mln tons of coal for coking annually, supply fuel coal to Novosibirsk, Tomsk, Omsk, Kemerovo regions and Altai krai, export 10 mln tons, besides, the Ukraine declares a demand of 8-10 mln tons of coking coal a year

In the transitional period because of the economic recession there is a natural lack of demand for coal This situation must be used to improve dramatically the technical and economic indices of the mines and open pits and to accelerate the social development of the coal mining towns

The excess labor and material resources must be used to carry out the technical reequipment of the basic production, the upgrading of the mining industry and the infrastructure of the coal mining towns and of the coal basin on the whole The attempt to veil the existing "latent" unemployment through a dramatic decrease of the technical and economic indices of the basic production is politically and economically inexpedient - it increases the cost of coal and serves as a false premise to cut down the share of coal in the fuel balance of the country

- It is necessary to devise scientifically based criteria of the profitableness of the coal fields and on this basis to carry out an inspection of the production capacities of Kuzbass coal industry in order to make a decision on the further operation of the mines and open pits, on the investments for reconstructing or reprofiling them or, in rare cases, on closing down barren mines

- the organization of work of public importance will improve the infrastructure of the mining towns
- housing - renovation and building,
- sewer system, water supply, heating,
- roads,
- living conditions - the improvement of services and the quality of life Provision of different levels of life for different categories of people the minimum of services must be provided for all the population, better quality paid services - for the bulk of the population, superior services - for talented and well paid categories of people The work of public importance will enable to improve the quality of life and to create permanent jobs, people will stop considering it disgraceful to work in the servicing

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- Due to unreasonably high railway tariffs and in order to decrease the spacial component in the commodity cost it is necessary to channel the investments to devise technologies increasing coal marketability

Enrichment of all kinds of coal up to the world standards Ash 10%, Sulfur 1,0%,
Briquetting and sorting of coal,
Use of captured methane and methane from exhausted mines,
Underground gasification of coal,
Construction of thermal power plants of high capacity, supplied with "liquid coal" through pipelines, in Kuzbass and on the Ob and the Irtysh river (there is shortage of water in Kemerovo region),
Setting up "liquid fuel" distribution stations along the perimeter and as far as the area of economical railway coal delivery
Use of underground chambers and cavities for the need of the national economy

- To change the procedure for the use of the funds (budget for restoration of the resources), permitting their use not only for coal prospecting but also for the prospecting of other mineral resources

- To continue the manufacturing of highly productive coal mining equipment at the machine-building plants of Kuzbass, including defence plants

- To secure the use of a multiple approach with due account of the ecological requirements in developing Yerunakovski coal field in Kuzbass, to ensure the use of a unified project for the whole coal field and its implementation in accordance with the schedule attached to the engineering project

Heads of section	V Ye Bragin
	G I Gritsko
Scientific secretary	V M Stankus

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