ENERGY EFFICIENCY POLICY AND INSTITUTIONAL ISSUES SUMMARY REPORT

POLAND

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Introduction

In February 1991, the United States Agency for International Development (A.I.D.) initiated the Emergency Energy Program for Eastern and Central Europe to help newly emerging democracies in the region cope with some of their most pressing energy problems.

The first component of the Program, Industrial Energy Efficiency, involved auditing eight major industrial facilities in Poland. At these facilities, International Resources Group (IRG) engineers analyzed current energy usage and recommended changes in operational and maintenance policies, strategic planning, and investment decision-making. The engineers also specified low-cost equipment items to be purchased as part of the Program.

In conjunction with these audits, Team members also analyzed the policy and institutional factors influencing energy efficiency decision making in Poland. This analysis was meant to supplement the initiatives in energy efficiency improvement taken in the eight demonstration plants and to provide insights into how best to use the demonstration results as a basis for broad, nationwide energy-efficiency improvement.

This report summarizes the main policy and institutional factors which influence the ability of the industrial sector to adopt operational, maintenance, and investment practices that optimize the use of energy as an industrial input.

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Government Policy Reform and Restructuring

The Government of Poland is generally ahead of its neighbors in Eastern Europe in political and economic restructuring. The Government is well into an Economic Transformation Program which includes liberalization of domestic prices, reduction of subsidies, demonopolization, and privatization.

Energy prices should reflect the full cost of extraction, production/conversion, transportation, and distribution, including the cost of capital for additional supplies of such energy. There should be effective competition among alternative forms of energy (for example, coal versus gas versus electricity) and incentives for each user to use the form(s) of energy most cost-effective for its needs.

Recent price changes have gone a long way towards achieving the goal of world-market pricing. Effective early in 1992 industrial energy are paying, with the exception of delayed inflation adjustments, world prices for most forms of energy. With the phase-out of Government subsidies to industry, enterprises no longer can easily recapture energy or other cost increases. These price changes have drastic implications for the incentive structure faced by existing energy-using industrial enterprises.

The situation in the district heating sector is more complex. As with their counterparts in industry, heating plant managers face fuel costs at or moving toward world-market levels. At the same time, the Government will continue to regulate price and other aspects of service provided by the district heating companies. Despite recent increases, maximum prices plant managers may charge for household (residential) heat use remain far below the costs of providing that heat. In mid-1992, residential prices for hot water and steam heat were still subsidized by approximately 50% as a result of the continued decline in real income.

The Government is committed, as a condition of capital assistance for district heating and other purposes, to a schedule of gradually raising prices to levels equal to long-run marginal costs. Marginal cost-based pricing is necessary if Poland is to attract the considerable private capital needed, in addition to official capital assistance, to modernize this sector.

In its approach to energy pricing, the Government decided to phase out budget subsidies to energy consumers and eliminate cross-subsidies between industrial and household energy consumers. Then, as a second step, it sought to ensure that energy prices would reach economic levels by decontrolling prices and/or by establishing appropriate pricing rules as part of new regulatory regimes for inherently monopolistic supply industries.

More or less concurrently, the Government will restructure and demonopolize the energy sector and either decontrol potentially competitive subsectors or, for subsectors which are not inherently competitive, establish new regulatory frameworks to promote competitive behavior to the extent possible. The main instruments of regulation will be "licenses (or equivalent regulatory instruments) which specify pricing, performance, and contractual relationships within the sector and with consumers." Thereafter, the Government will commercialize the sector (i.e., convert the restructured state enterprises to joint stock or limited liability companies) and then progressively privatize the industry.

Sector Analysis

Electricity

The Government has both raised electricity prices and begun wholesale restructuring of the power sector. As a first step, generation was demonopolized by establishing each generating unit as a separate enterprise, and in most cases, granting each the right to negotiate freely to purchase its fuel and sell its power to the grid. Then, the Government spun off distribution companies as separate companies, leaving the Polish Power Grid Company (PSENN) as a transmission and bulk power supply company. In response to the demands of the distribution companies and bulk power users, PSENN will purchase power from individual generating units based on time-of-day economic dispatch, and will be obligated to use its lines to wheel power under agreements concluded directly between generators and end-users.

Effective in January 1992, a new Electricity Law was passed which formalized a cost-based tariff structure through the Rules of Settlement Between Generators, the Grid Company [PSENN] and Distributors. Under these rules, tariffs are regulated by the Ministry of Finance, and energy commodity sales are regulated by the Ministry of Industry and Trade. These rules also establish fuel, customer, and region-specific criteria for determining sales prices and tariff rates. Moreover, the law provides a uniform procedure for recovering costs and settling differences between generators, PSENN, and local distribution companies (of which there are 36 in Poland).

By early 1992, the Government has concluded many individual generating units are too small or too marginal economically to raise needed investment capital of their own. Minemouth lignite-fired plants may remain separate or be combined into a single enterprise. Current state-owned heat/power (CHP) plants will be combined into nine independent enterprises. More than 30 other generating plants, excluding pumped storage units (which remain under PSENN) and industrial generation, will also be combined into 4-5 multi-unit enterprises, economically viable and attractive privatization candidates. Similarly, the Government plans to create 15-18 power distribution companies.

Coal and Lignite

Historically, the most important energy sectors in Poland have been coal and lignite, used primarily as fuel for power generation and direct feedstock for some industries. More importantly, coal has been a major Polish export and is one of the country's largest employment sectors. In the hard coal sector, the Government has moved quickly toward full deregulation of the industry, recognizing this will force closure of many inefficient mines. The Government has already begun closing unprofitable mines and expects by the end of 1992 to have eliminated all industry subsidies other than transition costs for mines to be closed. As in the case of power generation, the Government intends to combine the roughly sixty remaining mines into 10-15 commercial enterprises.

To expedite this process the Government has eliminated uniform national pricing of hard coal (and the corresponding cross-subsidies of coal transport), then allowed individual mines to set their own ex-mine prices based on market and quality considerations. Combined with individual generating plants' ability to negotiate their own fuel supply contracts, this has created

the basis for a competitive market in coal supplied to the power sector.[1] The Government also reduced the previous 20% turnover tax on coal exports and considerably narrowed its application.

In January 1992, a 10% increase in hard coal prices was approved, and in April 1992 an additional 5% price increase was put into effect. Thus, hard coal prices for industry are nearing non-subsidized levels, with only 5-10% of subsidies remaining. Lignite prices have also been gradually decontrolled, with full de-subsidization expected by July 1992. However, prices to the power sector still reflect a higher level of subsidies, at least 30-40% below world market levels. Despite these actions, many of which have a political cost, coal is still subsidized. The pace of elimination of remaining subsidies embedded in coal prices (currently scheduled to be eliminated by the end of 1993)[2] remains an important unresolved energy pricing issue.

Price and market liberalization, together with the prospect of industries not being able to recover environmental fines from government subsidies, have already had the effect of creating/increasing premiums paid for higher-quality types of coal, especially those with lower ash or sulfur contents. The Government believes liberalization is beginning to foster coal-to-gas conversions of small boilers, although industry representatives interviewed said such switching was not taking place because users could not be assured of adequate gas supplies.

Natural Gas

Natural gas policy and pricing are important for a number of reasons. First, in view of the lower emissions from burning natural gas, relative prices between gas and coal should send correct signals to users regarding environmental costs. However, higher prices for natural gas are also important in the long term as a means of stimulating increased gas supply. Poland has the potential to expand natural gas reserves and production extensively if it can attract increased investment in exploration and development. With support from the World Bank and others, it is embarking on an ambitious program to stimulate private-sector exploration and development of both natural gas and coal-bed methane. Prospects for future domestic gas supply and prices are particularly important for industries which use natural gas as chemical feedstock (ammonia fertilizer industry) or as the principal heat source (glass factories).

The Government has committed itself to de-control natural gas prices. In the first quarter of 1992, the price increased 14%. In the second quarter, the price for natural gas rose an additional 10%, and in the third quarter, another 5% jump is projected. Although prices for industry and residential consumers varied substantially in the past with higher subsidies for residential consumers, the Government has attempted to address this situation and now residential consumers pay approximately 25% more than industrial consumers, reflecting the higher cost of service to this consumer class.

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1 All lignite mines supply dedicated minemouth power stations. For each mine and power station, there is but a single buyer and seller. The Government therefore has decided to place each lignite-powered generating station and its associated lignite mine under a single management.

2 In theory, lignite mines will have no subsidies since they are to be owned by the minemouth power plants to which they dedicate their entire supply. Whether electricity prices received by those minemouth plants contain an embedded fuel subsidy depends on the pricing and price negotiation and economic dispatch regimes adopted by the plants and PSENN.

Household Heat and Electricity

Traditionally, governments throughout Eastern Europe extensively subsidize energy costs (especially heat) to households, with the subsidies covered from either the government's general budgets or by higher prices charged to industries (which, in turn, were subsidized from the general state budget). In Poland and other countries, these household subsidies are being removed but more slowly than prices charged to industry. In May 1991, the Polish Government increased prices of electricity and gas to households by more than 100%, to rough parity with industrial prices; but household heating prices remained very low. A 58% increase in prices of hot water delivered to households, which the Government committed itself to instituting as part of a World Bank district heating loan, still leaves household costs at only 30% of parity with industrial prices. As of May 1992, household hot water and steam prices remain subsidized at approximately 50% of the cost of generation.

The Government recognizes higher delivery and servicing costs dictate household energy prices be 40-100% higher than bulk industrial prices, but it also senses considerable political resistance to moving rapidly to price levels. From the industry perspective, even gradual reduction of household subsidies will dampen pressures on industrial energy prices by gradually eliminating industrial cross-subsidization of household energy use. Rapid transition to pricing based on long-run marginal costs also is important to both the electricity and district heating sectors if they are to attract needed capital investment in modernization and, later, supply expansion.

Environmental Costs

Treatment of environmental impacts is an unresolved energy pricing issue. Eastern Europe has a history of imposing stringent standards (often more stringent environmentally than U.S. or European Community standards) and not enforcing them. Most former standards still are in place, and new laws and standards also have been promulgated; but it remains unclear what levels of environmental control will actually be required in enforcement or levying of environmental fines. Until users know the standards and compliance schedules, they cannot correctly assess the cost of using alternative fuels, even if relative prices are correct. In the case of coal, standards will also dictate choice of technologies, such as coal cleaning versus stack-gas cleaning technologies. If standards favor coal cleaning, environmental control will be largely embedded in coal prices themselves, with even more price differentiation than at present. If most cleanup costs are external, however, coal prices will reflect differences in total use costs (including environmental control costs).

Energy Regulatory Issues

An important aspect of energy pricing and restructuring which has yet to be worked out in Eastern and Central Europe is the regulatory regime to be used for those energy subsectors which Governments believe are not amenable to market-based competition. In Poland, these

subsectors are electric power transmission and distribution, natural gas, and heat.[3] All three will require major capital investment in new or rehabilitated/modernized plants and equipment and most financing will have to come from the private-sector. Prices therefore must be sufficiently high, and there must be sufficient private sector confidence in Government adherence to the price-setting mechanisms and formulas, so such investment will be forthcoming. At the same time, the Government must preclude the excessive margins possible with uncontrolled monopolistic price setting.

The Government has stated its intention to have "suitable regulatory bodies for electricity, gas and heating in operation and functioning" by late 1992; this is an ambitious timetable. The important point in terms of energy efficiency incentives is that, assuming that this schedule is roughly adhered to and that the principles espoused by the Government are embedded in the regulatory and associated pricing processes, energy end-users will pay essentially the full economic cost for all forms of energy, whether regulated or unregulated, by 1993.

An important subset of the regulatory regime is treatment of regulated companies' activities to promote improved efficiency in their customers' energy use. This aspect is discussed in the next section.

Plant-Level Issues

Restructuring has placed considerable pressures on enterprise managers. the current overriding objective of plant managers is survival of the enterprises for which they work and their personal survival as managers. This generally leads managers to focus on the following immediate priorities:

- Markets and marketing;
- Labor relations and changes in employee perspectives and motivation; and
- Cash management.

First, most plants that have suddenly become enterprises do not start with the full range of experience needed to survive as competitive entities. Most were formerly production units, with rudimentary plant-level accounting. Marketing was either performed by separate export trading monopolies, the umbrella Kombinats or, for the many plants simply producing/delivering to a government plan, was nonexistent. At the same time they are expected to become effective marketers, most enterprises see their traditional domestic markets declining rapidly (since consumers, with wages fixed and prices up substantially, have dramatically cut back expenditures, and plants have cut back purchases of intermediate goods) or as in the case of many CMEA markets, disappearing altogether.

For the majority of enterprise managers, marketing - and acquisition of marketing skills and relationships - is the number one priority. In this area, metallurgical, chemical, and other heavy industries may have important advantages. First, they, or their associated trading

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[3] Power generation also will be regulated but will include competitive bidding to supply new generation capacity and, for existing capacity, economic dispatch based on prices negotiated between the Polish Power Grid and individual generating units.

companies, often have prior experience in international marketing of commodity-type products. Second, most are very capital-intensive, yet the capital charges and debt levels for such enterprises may be 1% or less of replacement cost because they still are based on former exchange rates. Thus, even where they have outmoded technologies and excessive labor staffing, heavy industries may still be able to price their products competitively in world markets - until they need substantial new capital.

An important strategy in gaining access to new markets at both the Government and enterprise levels, has been to seek joint ventures with firms which can provide such access. In seeking joint venture or other types of investors, Polish enterprises have a major advantage over other countries in Eastern Europe; with 38 million persons, Poland offers a domestic market larger than most other countries combined. Other things being equal, Poland is more attractive to Western companies for whom the domestic markets in Eastern Europe are important, regardless of whether or not they also desire to export.

Second, managers of most enterprises face labor unrest or the prospects of such unrest, and there is considerable pressure on both the Government and individual enterprises to avoid, or at least delay employment reductions. Thus, during the twelve-month period through March 1991, average employment in manufacturing declined less than 8% or less than half the decline in manufacturing income.

Problems in labor relations influence restructuring efforts in important ways other than its effect on political debate and consequent public policy. On one hand, managers strive to maintain cooperative labor relations both to preserve some level of output and to avoid politicalization which may jeopardize the enterprise. At the same time, many managers recognize one of the most important changes needed to compete in open markets is to after the current perspective and motivation of workers and supervisors on the shop floor. Achieving both efficiency improvement and cooperative labor relations will require great skill on all sides.

Finally, another major aspect of economic restructuring has been the continued control of the money supply. In May 1992, nominal interest rates were approximately 50-55%, despite the fact that annualized inflation was running between 55-60%. Thus, the real (inflation adjusted) interest rates were low or negative as part of a deliberate loose money policy, which in theory could enable firms to use debt financing for modernization or other investments - including energy investments. However, in practice, enterprises are not borrowing for structural reasons, and are postponing payment of their accounts payable. This phenomenon is offset by the fact that firms are also not getting paid by firms they supply, including the Polish Power Grid Company (PSENN) and other power distribution companies. These organizations, often have accounts receivable totalling several billion złotys; often, an important concern of enterprise managers is having the necessary cash flow to operate.

The Government, which has gradually reduced inflation after huge initial increases when prices were freed from controls, has been disappointed that interest rates have not declined more quickly and have not prompted the desired level of growth-oriented debt financing. Other governments in the region have had similar experiences. Although real interest rates (that is, the difference between stated interest rates and the rate of inflation), are actually low or negative, unsophisticated borrowers appear to be "scared off" by the high nominal rates. These borrowers interpret such high rates to be indications that suppliers of capital remain pessimistic

about future inflation prospects, country policy risks, or other factors.

Most managers also have the following additional priorities, but that these are subordinate to or addressed in the context of those listed above:

- Cost Reduction and Quality Improvement: In virtually all export and domestic markets, there is pressure to improve cost-competitiveness and product quality. In heavy industry, energy is a sufficiently large percentage of costs to represent an important target for cost reduction. Even in mid-sized industries, many managers were beginning to seek ways to reduce energy costs in reaction to substantially higher prices.

- Environment: A few industries, especially in "hot spots" such as Upper Silesia, are targets of growing environmental and/or occupational safety and health pressures. In chemical, ferrous and non-ferrous metals, oil refining, heat and power, and other sectors, enterprise managers are being forced to devote their energy to finding ways to deal with such pressures. Certain other industries are affected to a lesser extent. Most environmental pressures are for reduction in air emissions associated with industrial processes (e.g., smelting) or boilers. In these cases, environmental and energy improvement go hand-in-hand.

- Capital Investment: Many enterprise managers believe cost reduction, quality improvement, and environmental improvement in target industries will require major capital investment and technology/management transfer. This may be at least as important a motivator in considering joint ventures as market access has been.

Demand for Energy Efficiency Improvement Assistance

Evidence is mixed regarding plant-level demand for assistance in energy efficiency. The Government has not yet offered services in energy-efficiency improvement beyond the eight plants that participated in the initial demonstration program. After evaluating audit results in the eight demonstration plants, the Government is considering possible options for its future role in energy efficiency. In the absence of a test market, comments on demand in the industrial sector are somewhat conjectural. On the other hand, many power generation and district heating plants are hiring consultants and engineers to improve energy efficiency, and are paying for this outside help out of their own financial resources. Although these services are being provided on an *ad hoc* basis, it appears as if a significant market for energy-efficiency services closes exist.

With a few exceptions, most responsible personnel lacked awareness of the specifics and extent of energy wasted and of the measures necessary to use energy more efficiently. This reflects the lack of importance placed on energy in the past, which in turn was reflected not only in-plant operations and incentives, but in an apparent decline in the quality of energy engineering and economics taught in schools at all levels. However, by the conclusion of the audit work, the Emergency Energy Program generated sufficient interest on the part of the plants, that they initiated a number of energy efficiency projects outside the scope of the A.I.D. initiative.

Despite the lack of data and knowledge of specific actions to take, enterprise managers and engineers seem to recognize they must take urgent action to reduce energy costs. There also is concern that their enterprises are in such financial trouble that they could not muster the cash to undertake anything beyond no- or low-cost actions.

Some Polish counterparts felt that few enterprises would participate if they had to pay for the initial energy audit and identification of efficiency improvement opportunities. These members recommended a program of free initial energy audits. One model cited is the Alberta Energy Bus program, where the provincial government uses mobile units outfitted with measurement equipment to conduct free initial plant audits.

At the same time, there is widespread feeling within the demonstration team and among outside experts that the most important precondition for energy efficiency improvement is a change in attitudes and behavior at all levels of enterprises. There are already signs of change in response to new market and pricing conditions, but "old habits die hard" and change has been slow. It may be that expenditure on public and in-plant education will yield more benefits than subsidization of energy audit costs. Also, in the current climate of uncertainty over which firms will survive, it may be better to invest in changing the attitudes of people that are mobile rather than in auditing enterprises which are not.

In addition to demonstration participants, IRG has held discussions with more than a dozen enterprises facing energy or environmental problems. Virtually every one requested assistance in identifying and implementing no-cost and low-cost energy efficiency improvement measures; most expressed willingness to pay for the service. This certainly does not constitute conclusive proof of demand; but taken together with experience elsewhere in the region, it suggests that managers may be more receptive and more willing to pay than is often assumed. It is difficult to say why they would not do so after being shown that an effective energy efficiency program can have a 50-100% rate of return with negligible capital investment.

Energy Efficiency Improvement Equipment and Services

At least as important as demand constraints is the underdeveloped nature of the energy efficiency industry in Poland. The IRG Team found virtually no providers of industrial energy efficiency services, nor a network of reliable providers of such equipment or services. It is difficult to identify a potential nucleus for such an industry - yet an industry must be helped to evolve if energy-efficiency improvement is to become widespread throughout Poland.

Institutions either have been disbanded or may not have great potential to become effective service providers in a market economy. The Foundation for the Rational Use of Energy has retrenched to a small fraction of its former size, and those who could have gained the confidence of industry in the current market environment have departed. The Institute Energetika (Power Institute) has fair coverage (headquarters in Warsaw and branches in Gdansk and Katowice), but is likely to have trouble changing from a government-supported research and analysis institution to a competitive market-oriented service provider. Institutes for other energy sectors face the same problem if they try to become providers of energy efficiency services to paying customers.

There are energy supply organizations with skills that can conceivably be applied to

improvements in industrial energy efficiency and/or cogeneration. Energoproject designed and constructed all but two central station power units in Poland and many industrial and district heating facilities. Rafako will presumably continue to focus on large central station boilers; but Poland's two smaller boiler companies, Fakop and Sefako, are well suited to industrial and mid-scale district heating projects. There also are a number of other entities, including the turbine company (now in a joint venture with Asea Brown Boveri), and private power developers from the U.S. and other countries can play a strong role in industrial power generation. Some have the potential to help industrial clients design and implement energy efficiency programs. They have not yet shown interest, but neither have they been encouraged to do so.

Except for the company equipped by A.I.D. (Energopomiar) as part of the Emergency Energy Program, virtually no enterprises or Government units have adequate equipment to conduct energy audits or to identify and institute energy improvement programs.

It also appears that, while overall industrial and energy engineering training may be good, there is no pool of trained energy efficiency specialists to be tapped by enterprises needing such services. Even the one enterprise that participated in the demonstration program believed that it will need considerable training support to launch an expanded program. The one likely exception is in the area of boiler maintenance where, even though the IRG Team saw no evidence of aggressive marketing of boiler maintenance services, it is likely that Western companies may begin offer such services to enhance their marketing of new or retrofitted boilers.

Another area of weakness is instrumentation/controls and energy efficiency equipment. There are some state-owned enterprises that produce energy instrumentation or energy conservation equipment, but most equipment produced is outdated, energy-inefficient and/or unreliable; examples include stack-gas analysis instruments, combustion controls, steam traps, and insulation. These represent needs and opportunities for joint ventures or other forms of technology transfer from Western firms.

Basic industrial energy audits, identification of no- and low-cost energy efficiency measures, and provision of assistance in designing and implementing long-term energy management programs in individual plants (including design and implementation of employee and supervisor motivation and training programs) could be undertaken by joint venture companies or, with other forms of technology transfer, by Polish firms themselves. Capital requirements are small relative to establishing a manufacturing company or private power-generation company. Key requirements are strong backgrounds in industrial process engineering and management, financial analysis skills, and a working knowledge of technical and institutional aspects, costs, and returns of energy efficiency options. In the U.S. and other countries, many relatively small firms can gain easy market access and do a credible job. At the same time, Polish private sector firms start with little or no capital and a lack of basic information and experience.

Energy Financing

The Government established nine state-owned commercial banks in early 1989 from the regional structure of the National Bank of Poland. According to the Ministry of Finance, these

account for some 90% of all credit extended in the country. Two are headquartered in Posnan and Katowice, but have branches throughout the country. The model discussed so far is for the Government to retain a 30% "Golden share", strategic foreign investors to hold 20% with the opportunity to have a management contract, employees to receive 5%, and the rest to be floated through a public offering. Shares would then be traded on the newly (re)created Warsaw Stock Exchange (which began started trading in April 1991 and currently lists seven stocks).

There also are more than seventy additional institutions (including six foreign banks and two branches of foreign banks) licensed to carry out at least some banking functions. The largest have a total capitalization of $80-120 million, but many are much more thinly capitalized.[4] More importantly, there is concern that some banks formed from previous State-owned financial institutions specializing in particular industrial sectors have inherited weak loan portfolios which are not reflected in reserves on the banks' balances sheets.[5]

Until recently, the Government handed out banking licenses liberally in an effort to build up the sector. It still intends to encourage entry in an effort to build a competitive banking system. However, it also has recognized that the regulatory framework has not developed as rapidly as have the banks' activities and that this imbalance needs to be corrected. Early in 1991, it began tightening licensing requirements (for example, minimum capitalization was increased from 1 billion to 20 billion złotys). With outside assistance, it has begun to develop necessary bank regulatory structures. Recent bank scandals have hastened and lent urgency to these actions. The Government is preparing a new draft Banking Law which it intends to introduce to the parliament in 1992, and is also developing a deposit insurance plan.

As discussed earlier, debt financing of energy efficiency improvement currently does not appear to be a viable option. With nominal interest rates of 55%, enterprises are reluctant to take on new debt given the present economic uncertainties. Nominal interest rates are too high to justify more capital-intensive projects which require substantial debt financing. Until interest rates decline substantially, more capital-intensive energy efficiency projects are likely to be undertaken only on a joint venture basis tied to overall restructuring to make the enterprise economically competitive.

Once these rates decline to levels that re-establish borrower confidence, there will be an option for medium- and long-term financing of investments, assuming loans are available. No one knows what maturities will be available from the present market-oriented banking sector.

Although banks are offering leasing services, there was no definition of or provision for leasing in the Polish Commercial Code as of October 1991. The Ministry of Finance is also considering amendments to the Commercial Code to permit widespread introduction of leasing, and is starting to address the many issues regarding this idea.

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[4] The Ministry of Finance is trying to assure that all banks meet the EC minimum capital ratio of 8% of total liabilities; it acknowledges that all banks do not currently do so, even before consideration of adequacy of reserves.

[5] This is in addition to the Central Investments Fund backed by the State Treasury, which currently has a deficit of more than 15 trillion złotys.

Other Incentives

Higher energy prices alone appear to provide an adequate incentive to energy consumers to seek ways to increase efficiency of energy use. Additional incentives discussed below can be instituted and are reasonable by Western standards. Except for changes which make sense anyway as part of comprehensive tax reform, it may be beneficial to stimulate improved supply of equipment and services rather than increased demand which cannot be satisfied.

One option is tax credit for investment in energy efficiency improvement. The problem with an investment tax credit anywhere in Eastern and Central Europe is that it will strengthen enterprises' inclination to seek capital-intensive solutions to their problems. Most enterprises are not yet implementing no- and low-cost actions. The Government should focus on these before providing new incentives for more capital-intensive solutions. Given their continued political power, heavy industries could also use these tax credits to subsidize wholesale the kinds of process changes discussed earlier even though, such investment may not necessarily represent productive use of the country's scarce capital resources.

Other demand incentives under consideration include standards for insulation or building lighting. Outside the industrial sector, there also is a need for more extensive energy metering (to meter and charge for, for example, energy consumption in individual units of large residential apartment blocks). Standards may be desirable (insulation of industrial piping, for example, is very poor) but only as suppliers are prepared to provide equipment which meets more stringent standards. Moreover, there is a real risk of building a new Government bureaucracy operating on principles which have failed in the past. The IRG Team cautions against any early introduction of standards-based approaches before market-based approaches have been tried and found wanting.

On the supply side, there may be a case for temporary incentives, realizing that supply incentives also entail risks. Potentially beneficial incentives include:

- A temporary period (three years is recommended) during which income taxes would be wholly or partially rebated for a new energy efficiency enterprise that reinvests its profits in training, product development, etc. (realizing since most new firms are unprofitable during their first years, this may not be a major incentive, but neither will it entail a large revenue loss for the Government).

- An investment tax credit and/or long-term credits for companies investing to produce instruments, more efficient and/or multi-fuel boilers, energy-efficient electric lights, better insulation, or other pre-approved energy efficiency improvement equipment. Earlier comments about the drawbacks of investment tax credits and other demand-related incentives apply as well.

- Incentives for energy (oil, gas, coal, and power) supply companies to provide and aggressively market energy efficiency services. At a minimum, the Government should exempt such services from price or profit controls or other regulation and allow supply companies to use their capital to invest in the provision of energy efficiency services. Energy supply companies should be able

to offer shared-savings programs to their customers and to use their normal invoices to bill for such services.

It also will be desirable to permit independent energy service companies (ESCOs) to offer shared savings programs and establish a favorable pricing and regulatory regime for power purchased from industrial cogenerators or other private producers. The regulatory regime should assure that, if the power company also enters the energy efficiency business, it cannot then favor its own subsidiary or joint venture to the exclusion of independent suppliers.