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**ENERGY PRICE REFORM PROJECT IN ROMANIA**

**FINAL REPORT**

**MAY 1992**

**USAID EMERGENCY ENERGY PROGRAM  
FOR EASTERN AND CENTRAL EUROPE**

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## **I. Executive Summary**

This report describes the activities, accomplishments, and recommendations of the USAID Energy Price Reform Project in Romania conducted by Resource Management Associates of Madison, Inc. Six major documents were prepared by RMA as part of the work in the project. In addition, three models were prepared and delivered along with three computers and software to counterparts in Romania.

Romania's primary energy requirements in the form of oil, natural gas, and coal totaled about \$9 billion in 1989 in 1990 world prices. Because Romania did not face world prices at that time, it did not feel the full economic effect of that energy bill. However, Romania is now facing world prices for oil and natural gas, and considerably increased prices for domestic coal. At world prices, Romania's 1989 energy import bill was about \$3 billion. Romania's total exports of goods and services in 1990 were about \$3.5 billion. A clear consequence of the movement to international energy pricing is that energy efficiency must become a major priority and the combination of hard budgets and market prices provides massive motivation for efficiency improvement. The results of the Energy Price Reform Workshop indicated that the combination of efficiency gains and macroeconomic structural adjustment could provide \$3 billion in energy cost reduction per year by the year 2000.

The project has provided assistance in both the price adjustments and to understanding and encouraging the efficiency gains that can be achieved. A set of recommendations to the Government of Romania and to USAID and other international donors and lenders are included to help foster the adjustments necessary in the face of the current economic crisis, created in part by the severe difficulties in the energy sector.

## II. Introduction

The Energy Price Reform Project of the USAID Emergency Energy Program for Eastern and Central Europe has a number of objectives. The major objectives are: 1) to provide the Government of Romania (GOR) an analytical basis for understanding energy flows in the Romanian economy; 2) to identify underlying costs in the provision and use of energy; 3) to explore the major environmental consequences of alternative energy strategies; 4) to identify appropriate price levels and economic responses to energy prices; and 5) provide other information to support the transition to a market-based system.

This final report describes the activities, outputs, and accomplishments of the project. It also provides a set of recommendations for USAID and other technical assistance and lending organizations as they seek to assist in the market transformation that Romania is undertaking.

In reviewing the activities of the project, it is important to note the context in which the project has taken place. At the beginning of the project (March 1991), Romania had already begun major transformations towards a market economy and had implemented some major price changes. By the end of the project (May 1992), Romania had established international level energy prices for most of its energy. The GOR had also granted RENEL (the Romanian Electricity Company) autonomous status and had eliminated subsidies to RENEL. While much work remains to be accomplished, including the implementation of least-cost planning, the privatization of much of the energy market, the establishment of a market-based regulatory institution, a central objective of the Energy Price Reform Project has been accomplished: the adoption of market-level pricing for energy.

### A. Project Scope of Work

The project scope of work as provided by USAID is included as Appendix A. The RMA effort addressed each of the seven elements as outlined in section (b), with the exception that the scope of element b.3 was expanded beyond petroleum to all of the major energy forms due to the needs of the GOR.

### B. Project Deliverables

The required reports, as noted in Appendix A, were used to define the specific deliverables for the project. The project deliverables and their associated reports were:

1. Progress (trip) report: Component #4: Energy Pricing Reconnaissance Trip Report-Romania, RMA/ROM-PR-01, April 23, 1991.
2. Progress report after completion of draft outline for the course: Energy Pricing Reform Workshop, Notebook (draft), May 7-16, 1991.

3. Progress report before short-term technical assistance follow-up: Trip Report: Energy Pricing Reform Workshop in Romania, RMA/ROM-PR-02, July 1991.
4. Final report: Final Report of the Energy Price Reform Project, RMA/ROM-PR-03, May 1992.
5. Models and documentation: Energy Pricing Reform Workshop, Final Notebook and Model Disks, August 1991.

In addition to these deliverables, another report was written and provided:

6. Report presented at a high level briefing held during the short-term technical assistance follow-up trip in September 1991: Romania High Level Briefing: the Industrial Energy Efficiency and Energy Price Reform Projects, RMA/ROM-PR/IR-01, September 1991.

### III. Energy Price Reform Project Accomplishments

The accomplishments of the project fall into three interrelated categories:

- Deliverables
- Institution Building
- Impact on Energy Policy and Prices.

For market reform to take hold, prices, including energy prices, must be established at market levels and within a market setting. For these levels of prices to be attained and **maintained**, it is essential that the institutional foundations be established. These foundations include an understanding of market fundamentals by GOR policy makers, the establishment of the constitutional basis for a market economy (including property rights), and the establishment of fair and open regulatory mechanisms for setting energy prices where market forces are not sufficient in themselves.

The deliverables provided in the project contributed to the progress made in institution building and in energy policy and pricing.

#### A. Deliverables

The programmatic accomplishments of the Energy Price Reform Project, including the various meetings and advising sessions, workshop, briefings, seminars, data collection and database development, and model development and analysis, are reported in detail in the deliverables identified in **Section II.B** above. The various program elements were extremely well received by the Romanian Energy Price Reform Working Group and more generally among Romanian officials, analysts and managers. The specific reports and data bases proved to be extremely useful in support of the project goals.

The content of the deliverables are not included in this document, however, a brief summary of each of the deliverables follows:

1. Progress (trip) report: Component #4: Energy Pricing Reconnaissance Trip Report-Romania, RMA/ROM-PR-01, April 23, 1991. Report describes the energy situation both physically and institutionally. Data collected during the trip is included and the counterpart working group is identified.
2. Progress report after completion of draft outline for the course: Energy Pricing Reform Workshop, Notebook (draft), May 7-16, 1991. This notebook consisted of the materials presented to the workshop participants, which included workshop outlines, model descriptions, database, and sets of articles.

3. Progress report before short-term technical assistance follow-up: Trip Report: Energy Pricing Reform Workshop in Romania, RMA/ROM-PR-02, July 1991. This report describes the work accomplished during the May Workshop. Current and future energy price levels are discussed as are the consequences on economic activity and energy flow. The three scenarios developed by the Romanian participants during the workshop are described. The major recommendations resulting from the workshop are presented.
4. Final report: Final Report of the Energy Price Reform Project, RMA/ROM-PR-03, May 1992. This report summarizes the project and provides an assessment, including the status of energy prices and issues.
5. Models and documentation: Energy Pricing Reform Workshop, Final Notebook and Model Disks, August 1991. This notebook includes materials from the initial May notebook plus materials developed during the workshop and the analysis of results of the workshop. Final copies of the RMA Industrial and Transportation models and the Tellus LEAP model are included.
6. Report presented at a high level briefing held during the short-term technical assistance follow-up trip in September 1991: Romania High Level Briefing: the Industrial Energy Efficiency and Energy Price Reform Projects, RMA/ROM-PR/IR-01, September 1991. The Report provides the key findings and recommendations (as of September 1991) of both the pricing and industrial efficiency projects. The report is in question and answer format.

## **B. Institution Building**

At the inception of the Project, there was a critical need in the GOR and in the nation in general to develop an understanding of the workings of a market economy and the role of prices in a market economy. More particularly, there was a need to understand the basis for cost based energy price determination and an understanding of how such prices would influence the flow of energy, energy infrastructure investments, and industrial activity.

A reasonable understanding of these issues by the public will take considerable time to evolve. Knowledge will be obtained from experience as well as through formal education. Economic faculties are being re-tooled and management schools are being created. Current energy policymakers and technical managers and advisors often have some grasp of market economics and can be expected to pick up knowledge more quickly.

The contribution of the Energy Price Reform Project in this context was to work extensively with key policymakers, analysts and educators in the Working Group in advancing their understanding of energy markets. The head of the Working Group was the Director of the

Energy Division of the Ministry of Resources and Industry which was created at the end of 1990.

The project also provided an extensive workshop for more than 50 other managers, technical analysts, and university faculty. Finally, the project provided seminars and meetings for about 200 individuals, ranging from mid-level analysts to the Minister of Resources and Industry.

This training activity contributed to the difficult decisions leading to energy price increases during the Project. The training activities also have influenced teaching at the REENEL (Romanian Electricity Company) Training Center as well as to courses at the Bucharest Polytechnical Institute. Other institutions such as ICEMENERG (Energy Research and Modernizing Institute) and ISPER (Institute for Power Studies and Design) have also benefitted by the assistance in this area. While there is a long way to go in the learning process, the project served as both a stop gap for some of the immediate decisions being made and as a foundation for the broader educational process.

The USAID Energy Price Reform Project also appears to have had some impact. For example, in the treatment of the various industrial enterprises under the Ministry of Resources and Industry, the project has advocated hard budgets and transfer of responsibility to the enterprises. The Pricing Workshp pointed to the fact that under these changes, some industries could not survive. The Ministry of Resources and Industry explicitly recognizes this prospect, particularly in primary aluminum and refining, and based on conversations with the Ministry, is willing to let economically uncompetitive enterprises fold.

Finally, the USAID Project played an important role in preparing the Ministry of Resources and Industry and the Ministry of Economy and Finance for the upcoming work with the World Bank on the energy pricing and costing.

### **C. Impact on Energy Policy and Prices**

The policy level accomplishments and impact on actual energy prices are extremely interesting but complex to evaluate. Among the foremost policy questions are:

- How were energy prices changed toward market levels as a result of the effort?
- What actions were taken in utility regulatory reform?
- Has the project influenced investment decisions?

## Energy Price Changes

Romania has made significant strides in the area of energy pricing. Industrial and commercial sectors electricity sales, accounting for 85% of the total, are now at world price levels (if the Lei can be defended at its current rate). Motor fuel prices are well above world cost, due to a taxation policy which is typical of Western Europe. Domestic crude oil is priced at world levels, while domestic natural gas and coal have been raised substantially, but not yet to world levels. Residential electricity sales (about 15% of total sales) are at highly subsidized prices, but a program beginning in May 1992 has been announced to raise them to world prices. Energy price adjustments for recent months for Romania, Czechoslovakia, and Lithuania are summarized in Appendix B.

Based on the energy price reforms as shown in the tables in Appendix B and a wider set of information gathered during the project, Romania has made many of the difficult adjustments in reaching market energy prices.

The USAID Emergency Energy Program can certainly take some of the credit for this. The Energy Price Reform Project provided important input to the energy price decision making in the May 1991 Workshop and September 1991 High Level Briefing, which came prior to a number of the early World Bank trips in energy. The USAID and World Bank efforts should not be viewed as competitive efforts. Rather, the Energy Price Reform Project can be viewed as providing early assistance as to the appropriate level of prices in a market setting, a supporting analytical basis for these world levels, and a collaborative interaction in considering price levels.

Because of the relatively small number of actors at the top analytical and policymaking level in energy in GOR, it was evident that the Project was able to reach and have an impact on energy policy. A number of these key individuals participated in the workshop, the high level briefing, the seminars, or in smaller meetings.

A potentially important study of energy costing and pricing is anticipated for completion later in 1992 under the auspices of the World Bank. The findings of the study as well as the GOR's willingness to abide by them, may be crucial to the beginning of major World Bank support, including a Structural Adjustment Loan (SAL). The impact of the Project on this work is evident in the memo in Appendix C, which describes how the Energy Pricing Reform Project provided much of the background for the Romanians who are the key counterparts in that upcoming study. Dr. Musatescu is the lead Romanian Counterpart in the World Bank Effort.

## Energy Utility Regulatory Reform

The importance and workings of independent regulatory commissions in market economies were complex issues for the Romanian counterparts. They now understand the knowledge

base required in utility regulation and have recently established a Department for Prices and Protection of Competition in the Ministry of Economy and Finance with the responsibility for administering prices, including energy prices throughout the economy. Whether this new department will lead to a fully independent regulatory body for energy utilities is not known. It appears to be a positive first step.

### Energy Sector Investment Decisions

In the area of investment decisions, the USAID Energy Price Reform Project was the first Technical Assistance to demonstrate that energy demand would be falling and remaining at reduced levels for the foreseeable future. While an economic recovery was anticipated beginning in the mid 1990's, energy growth would not rebound sufficiently to reach 1989 levels until well beyond the year 2000. Due to macroeconomic restructuring and efficiency improvements, much of the anticipated energy capacity additions, particularly in the power area, would not be needed for the foreseeable future.

This brought into question the need and economic advantage of moving forward on the five Candu nuclear reactors under construction. The USAID Project was perhaps the first to suggest that a least-cost oriented refurbishment program was one of the highest priorities. Based on recent World Bank documents, these early findings seem to be becoming commonly accepted wisdom--shared by the Romanian Counterparts. While the USAID Project can not take sole credit, there is certainly some significant credit due in raising this as a critical question to address and for more generally refocussing energy planning on a least-cost approach.

The dilemma posed by the proposed completion of the nuclear power plants are that it will require an enormous amount of the potential western capital being made available to the country during the next few years. The project team was told that completion of the first two units only would require \$400 million. The difficulty with this investment is that other experience in nuclear power station construction indicates that it can not be assured that completion of the stations will be on time or on budget. In addition, even if construction was on time and within budget, marginal cost analysis is needed to ascertain whether the marginal cost of completing and operating the units is less than refurbishing and operating existing thermal units.

#### IV. Conclusions and Recommendations

The conclusions and recommendations are directed to the GOR and USAID. The motivating force behind these findings is the conclusion that over \$3 billion (at 1990 prices) in annual primary energy savings is potentially available by the year 2000.

As shown in Table 1, Romania's 1989 primary energy use (oil, coal, and gas) purchased at 1990 world prices would total about \$9 billion. Based on the May 1991 Energy Price Reform Workshop, projections of annual energy costs in the year 2000 (using 1990 prices) range from \$7 billion to almost \$9 billion. These projected costs are considerably below the \$10.5 billion energy cost in the year 2000 without the structural adjustments and efficiency gains that would result from market forces. Because of its considerable oil and natural gas imports, the energy import bill which must be paid in hard currency is on the order of \$3 billion. This is a severe load for an economy with limited exports on which it earns hard currency (\$6.1 billion in 1989 and \$3.5 billion in 1990).

The achievement of \$1 to \$3 billion reduction in the annual energy bill, mostly in the form of reduced energy imports, will require a number of actions by the emergent private sector and the GOR. The recommendations that follow are intended to provide the basis for some of these.

##### GOR Recommendations

There are a number of planning and management actions which would support the transition of the Romanian economy to a market economy and improve the efficiency of the energy sector. These are:

1. **Energy Prices.** Based on the project effort to date, we recommend that work should continue to improve estimates of cost-based prices using long-run marginal costs in the area of electric power and natural gas (regulated utilities in market economies).

RENEL has a considerable accounting system which, if updated to include a new calculation of cost of capital and other changes, could be used to estimate prices. Simultaneously, RENEL should be assisted in coming up to date in the area of tariff design. This is both a matter of tariff structure and the metering systems required for a modern tariff structure. Thus, as cost estimates increase with more accurate data, rates can be raised accordingly.

To spur domestic production, as well as efficient use of the resources, the recent policy of using border prices for domestic crude oil and gas production appears appropriate. As noted in the workshop discussion, however, there is a need to reconsider existing taxation policy and perhaps shift it to a tax on profits rather

Table 1  
Projected Romania Energy Budget

Primary Energy Supply	1989		2000 no structural change (e)		2000 Scenario B (f)		2000 Scenario C (f)	
	10E18 joules	\$billion(d)	10E18 joules	\$billion	10E18 joules	\$billion	10E18 joules	\$billion
Natural Gas (a)	1.6	\$4.9	1.9	\$5.7	1.0	\$3.1	1.3	\$4.0
Crude Oil (b)	1.0	\$3.4	1.2	\$4.0	1.1	\$3.8	1.2	\$4.1
Lignite (c)	0.78	\$0.74	0.80	\$0.86	0.48	\$0.48	0.57	\$0.54
		<u>\$9.04</u>		<u>\$10.56</u>		<u>\$7.36</u>		<u>\$8.64</u>

## Notes:

- a. Natural Gas price at \$3.22 per million Btu is \$3.05 per billion joules.
- b. Crude Oil price at \$21 per barrel.
- c. Lignite at \$1.00 per million Btu or \$1.05 per billion joules.
- d. All costs expressed in 1990 U.S. dollars.
- e. Assumes 1989 production mix and efficiency at year 2000 GDP for Scenario A.
- f. Scenarios are from May workshop; see report RMA/ROM-PR-02 and Final Notebook of the Workshop.

than on revenue. The resulting prices for crude oil and natural gas should then be accurately reflected at refineries and at power plants (for heavy fuel oil).

For fuels where market determined prices could be used, for example the retail sale of gasoline, the recent decision to allow market determined prices where three or more suppliers are present is a move in the right direction. Monitoring will be needed to see if three firms are really sufficient in a market to support fair prices. Thus, it would seem appropriate to estimate cost-based prices for these markets in order to determine whether any "gouging" is occurring. There is opportunity for market-based prices both in the sale of some energy products as well as in the area of primary production. Monitoring will be required, however, to evaluate how successful the markets are.

Finally, we believe there may be opportunity to introduce competition in the power sector. This could be achieved by the introduction of private power through the sale of existing plants to private owners and/or the introduction of new plants on a competitive basis. This opportunity will require regulatory reform as well as resolution of the constitutional reforms underway.

2. **A strategic electric system refurbishment/expansion plan.** The scenarios indicate that Romania will need less power in the future than was anticipated in past forecasts by Romanian authorities. While this relieves pressure for new plant capacity, it places even greater focus on the need for a strategic plan for retrofitting the power system to improve overall availability, energy efficiency, overall cost reduction, and emissions reduction. A systematic long-term (10 to 20 years) plan for overhauling existing capacity is recommended. Such a plan should be carried out in close collaboration with RENEL and such a plan should address the sequence of plants to be retrofitted, and transmission and distribution improvements to be made. These activities will reduce losses within the supply system as well as make more capacity available.
3. **Demand-side management plan.** Considerable industrial energy efficiency improvements can be made at current prices, although even greater improvements are both possible and cost effective at the prices anticipated in the scenarios. Demand-side management activities should be implemented both within the national utility system and throughout industries at an individual plant level. Promotion and implementation of demand-side energy conservation measures should be integrated with utility generation plans, as conserving energy has often proved to be more cost effective than building new energy supply. RENEL's charter should be redefined by the government and RENEL to include provision of demand-side management services, in addition to traditional supply-side services. Technical assistance in this area will be required and could be provided by international donor or lending institutions.

4. **Restructuring of energy regulatory institutions** of Romania could increase the supply-side responsiveness to energy price increases. A regulatory framework should be created which encourages independent power producers to enter the market - particularly municipal and industrial cogenerators as well as integration of demand-side measures into supply plans. Such a regulatory restructuring may involve the establishment of an independent regulatory commission typical of the U.S. and some other market economics. Such commissions, if carefully designed and administered, provide for a greater level of public confidence in the fairness of energy price levels and removes some of the onus of energy prices increases from the government.
5. **Tax reform of the energy sector** should be evaluated for its impact on energy production levels. The current taxation system appears to drain away much of the profit from the oil and gas business. We cannot believe that sufficient incentive remains for the most active and imaginative exploration, development and recovery of oil and gas. A tax system which focuses on taxation of profits and which provides incentives for investment should be reviewed. This is particularly important for the adoption of equipment for secondary and tertiary recovery that can markedly increase the production rate and yield from the Romanian oil and gas fields. Tax and profit sharing arrangements which encourage joint production and other creative arrangements should be systematically explored.
6. **Education and Training** support is critical to encouraging improvement of energy management in both the short and long run. A support program for existing training institutions, such as the RENEL training center should be considered. Longer-term educational support in the form of visiting professorships in energy management and engineering and the establishment of curriculum in these areas at the Polytechnical University and other universities should also be considered. In addition, in-plant training in energy management and the improvement of in-country technical expertise in this area should be considered. Training and local expertise will be greatly enhanced by the provision of microcomputers and software at existing training institutions.
7. **Refinery model development for scheduling and planning.** Romania is one of the only countries in the world operating a major refining industry without computer models. The cost of not having computer model support is enormous. Without it, it is impossible for Romanian refineries to operate at a profit in an open world market. While other refinery investments are also needed, a refinery model development initiative is a necessary investment at this time.

Near-term:

Develop distribution models for the oil and gas sector to optimize distribution costs from fields to refineries and power plants, and from refineries to demand centers.

This project would take the form of a workshop on distribution modeling, consulting on data acquisition for volumes and transportation costs, and computer model development training in use. Labor required would be about 6 person-months. A computer workstation similar to the IBM AS6000 (IBM, DEC, SUN and HP all make suitable equipment), would be required. A model for production planning would be required (a single site license would be sufficient for this project).

Such models would be invaluable for optimization of the existing system and performing economic analyses on future modifications. For example, if some refineries are shut down and their function combined with other refineries, the changes in the distribution system need to be optimized. Data for this type of model is adequate at present.

#### Long-term:

Develop refinery planning models for use at each refinery for monthly operations planning and economic analysis. A production planning and scheduling model such as Chesapeake's MIMI/E would be used. This project would be comprised of a workshop on refinery modeling and planning, model development for each refinery and training on their operation. This project would have to be delayed until measurement and control capability in refineries is adequate to provide current status and plan implementation capabilities. A project could start as soon as a refinery has this capability. Labor required would be about 4 person-months plus 2 person-months for each refinery model. A workstation similar to an IBM AS6000 would be required in each refinery plus at least one in the central office in Bucharest. A site license would be required at each refinery. A one-time purchase of a set of process planning computer models will also be required.

Develop refinery scheduling applications within each refinery for hourly process and tankage scheduling. This replaces hand scheduling and allows more efficient implementation of the optimum operating plan. The project labor required would be about 2 person-months for a workshop on scheduling and about 2 person-months per refinery for implementation and training. A license for software would be required at each site as a small addition to existing licenses.

8. The false cost savings being achieved by the purchase of high sulfur crude oil should be stopped. Based on observations of the Industrial Energy Efficiency Project, the savings being achieved in reduced purchase costs on imports are more than offset by the corrosion damage being incurred on combustion equipment throughout the nation, by reduced efficiency due to equipment damage, and by increased environmental damage. While we have not been able to analyze this problem in detail, it is our judgement that at least \$10 dollars of damage is incurred for every \$1 of fuel purchase saving achieved.

## USAID Recommendations

USAID and other international donors have an enormous potential for assistance in Romania, and Eastern Europe and the Baltic states in general. The recommendations here are limited to those in the area of energy, including the environmental consequences of energy supply and use.

1. Although considerable assistance is underway which supports some of the previous eight recommendations, assistance would be very valuable for recommendations 3 through 7. To the extent possible, these areas should be addressed by the follow-up USAID energy programs in Eastern Europe.
2. Apart from a number of notorious industrial air polluters in a small number of distinct geographical areas, the air quality in Romania appears to be generally acceptable. An assistance program is recommended to help the Ministry of the Environment establish a basic air quality monitoring network and where appropriate, establish air quality management districts. This assistance would serve to define the air quality situation and if needed, establish the framework for addressing pollution problems.
3. Future energy price reform assistance projects in other countries should be structured in a similar fashion to the USAID project in Romania. The establishment of a multi-institutional counterpart working group is useful to guide the effort, establish linkages to the various areas with policymaking authority and critical information, and to promote communications across ministerial and other organizational boundaries. The use of a workshop focused on basic energy management and spanning all of the major energy forms is extremely useful. Workshops should provide analytical tools as well as a range of literature, including the role of prices and market based regulatory requirements. Existing educational institutions should be utilized to assist in workshops and seminars and to expose those institutions to the materials presented for inclusion in their own curriculum.
4. In situations where a strong rapport is established between USAID, the project team, and top energy policy makers, support should be provided for individual policy support and highly selected, high level briefings.
5. Support is recommended for an expert team in private power evaluation to work with RENEL in identifying the potential for a private power initiative in Romania with a U.S. private sector entity. Such a team should first assess conditions and opportunities in Romania and Romanian willingness to participate, and then present these findings at a U.S. forum for private investors if the findings are supportive of private power investment.

**Appendix A**  
**Project Scope of Work**

## Scope of Work

1. The contractor will meet with USAID and World Bank officials to develop an understanding and approach to energy pricing issues.
2. The contractor will meet with key host country policy makers and experts concerned with market reforms and energy pricing policy.
3. The contractor will identify the key issues in petroleum price reform as they relate to the following criteria for product pricing in a market economy such as:
  - price impact on efficiency of consumer petroleum product use
  - impact of large short-term fluctuation in world prices on the consumer
  - price impact on refinery operation efficiency
  - the extent to which pricing incorporates environmental impacts
  - prices as a resource mobilization mechanism for broader societal goals
  - reliance on market for price setting with limited government role (e.g. taxes).
4. The contractor will develop and conduct a training course on energy/petroleum pricing for key economic and energy officials.
5. The contractor will review existing models and modify existing or develop a model that would allow consideration of the foreign exchange, end-use consumption, revenue, capital investment, and environmental impacts of different petroleum product prices and structure, and vehicle emission standards.
6. Utilizing the model, the contractor will provide training on the model and work with counterparts to analyze different scenarios and consider issues related to the means and feasibility of implementation.
7. The contractor will recommend a program of short and longer-term studies related to price reform as input to national policy discussions and World Bank energy sector investment planning.

**Appendix B**  
**Energy Price Reforms for Romania,**  
**Czechoslovakia and Lithuania**

## ENERGY PRICES IN OWN CURRENCY INCLUDING TAX

AUTOMOTIVE FUELS RETAIL		UNITS	1990				1991				1992		
			1988	1989	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q	1st Q
<u>Leaded Premium</u>													
Czechoslovakia	Kcs/litre	8	8	12.4	-	13.5	18	18	na	na	na	na	na
Lithuania	R/litre	na	na	na	na	na	na	na	na	na	na	na	4
Romania	L/litre	na	na	na	na	na	na	na	na	na	na	na	na
<u>Unleaded Premium</u>													
Czechoslovakia	Kcs/litre	na	9	12.4	-	13.5	18	18	na	na	na	na	na
Lithuania	R/litre	na	na	na	na	na	na	na	na	na	na	na	na
Romania	L/litre	na	na	na	na	na	na	na	na	na	na	na	na
<u>Leaded Regular</u>													
Czechoslovakia	Kcs/litre	na	na	na	na	na	na	na	na	na	na	na	na
Lithuania	R/litre	na	na	na	na	na	na	na	na	na	na	na	3.5
Romania	L/litre	na	na	na	na	na	na	15	na	na	45	na	na
<u>Unleaded Regular</u>													
Czechoslovakia	Kcs/litre	na	na	na	na	na	na	na	na	na	na	na	na
Lithuania	R/litre	na	na	na	na	na	na	na	na	na	na	na	na
Romania	L/litre	na	na	na	na	na	na	na	na	na	na	na	na
<u>Diesel</u>													
Czechoslovakia	Kcs/litre	5.5	6.5	9.8	-	9	15	15	na	na	na	na	na
Lithuania	R/litre	na	na	na	na	na	na	na	na	na	na	na	3
Romania	L/Litre	na	na	na	na	na	na	na	na	na	na	na	na
<u>LPG for Vehicles</u>													
Czechoslovakia	Kcs/GJ	na	na	na	na	na	na	na	na	na	na	na	na
Lithuania	R/GJ	na	na	na	na	na	na	na	na	na	na	na	1.85
Romania	L/GJ	na	na	na	na	na	na	na	na	na	na	na	na

AUTOMOTIVE FUELS WHOLESALE		UNITS	1990				1991				1992		
			1988	1989	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q	1st Q
<u>Leaded Premium</u>													
Czechoslovakia	Kcs/tonne	3550	2474	2476	2476	2476	2476	na	na	na	na	na	na
Lithuania	R/tonne	na	na	na	na	na	na	na	na	na	na	na	2637.5
Romania	L/tonne	na	na	na	na	na	na	na	na	na	na	na	na
<u>Unleaded Premium</u>													
Czechoslovakia	Kcs/tonne	3550	2474	2476	2476	2476	2476	na	na	na	na	na	na
Lithuania	R/tonne	na	na	na	na	na	na	na	na	na	na	na	na
Romania	L/tonne	na	na	na	na	na	na	na	na	na	na	na	na
<u>Leaded Regular</u>													
Czechoslovakia	Kcs/tonne	3550	2474	2476	2476	2476	2476	na	na	na	na	na	na
Lithuania	R/tonne	na	na	na	na	na	na	na	na	na	na	na	1857
Romania	L/tonne	na	na	na	na	na	na	na	na	na	na	na	na
<u>Unleaded Regular</u>													
Czechoslovakia	Kcs/tonne	3550	2474	2476	2476	2476	2476	na	na	na	na	na	na
Lithuania	R/tonne	na	na	na	na	na	na	na	na	na	na	na	na
Romania	L/tonne	na	na	na	na	na	na	na	na	na	na	na	na
<u>Diesel</u>													
Czechoslovakia	Kcs/tonne	2834	2080	2080	2080	2080	2080	na	na	na	na	na	na
Lithuania	R/tonne	na	na	na	na	na	na	na	na	na	na	na	1800
Romania	L/tonne	na	na	na	na	na	na	na	na	na	na	na	na
<u>LPG for Vehicles</u>													
Czechoslovakia	Kcs/GJ	na	na	na	na	na	na	na	na	na	na	na	na
Lithuania	R/tonne	na	na	na	na	na	na	na	na	na	na	na	1785
Romania	L/GJ	na	na	na	na	na	na	na	na	na	na	na	na

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FUEL OIL				1990				1991				1992
RETAIL/RESIDENTIAL		1988	1989	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q	1st Q
Light Fuel Oil		UNITS										
Czechoslovakia	Kca/litre	820	820	820	820	820	820	na	na	na	na	na
Lithuania	R/tonne	na	1877									
Romania	L/tonne	na	na	1875	na							
WHOLESALE/INDUSTRY		UNITS										
Light Fuel Oil		UNITS										
Czechoslovakia	Kca/litre	24.51	24.76	35.69	-	31.3	59.34	54.58	na	na	na	na
Lithuania	R/tonne	na	1785									
Romania	L/litre	na										
Heavy Fuel Oil		UNITS										
Czechoslovakia	Kca/tonne	2290	1700	2718	-	2760	4710	4272	na	na	na	na
Lithuania	R/tonne	na	1171.5									
Romania	L/tonne	na	1875	na	na	na	na	1500	na	na	na	na
PROPANE/BUTANE/KEROSENE				1990				1991				1992
RETAIL		1988	1989	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q	1st Q
Propane Butane Mix		UNITS										
Czechoslovakia	Kca/GJ	na										
Lithuania	R/GJ	na	31.23									
Romania	L/GJ	na										
LPG		UNITS										
Czechoslovakia	Kca/tonne	4203	4249	na								
Lithuania	R/tonne	na										
Romania	L/tonne	na										
Kerosins		UNITS										
Czechoslovakia	Kca/litre	5	5	6	na							
Lithuania	R/litre	na										
Romania	L/litre	na										
WHOLESALE		UNITS										
Propane Butane Mix		UNITS										
Czechoslovakia	Kca/tonne	na										
Lithuania	R/tonne	na	1775									
Romania	L/tonne	na										
LPG		UNITS										
Czechoslovakia	Kca/tonne	4981	3166	na								
Lithuania	R/tonne	na										
Romania	L/tonne	na										
Kerosine		UNITS										
Czechoslovakia	Kca/tonne	3325	2160	2160	na							
Lithuania	R/tonne	na										
Romania	L/tonne	na										
CRUDE OIL				1990				1991				1992
WHOLESALE		1988	1989	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q	1st Q
Czechoslovakia	Kca/tonne	2250	1550	1550	1550	1550	5280	na	na	na	na	na
Lithuania	R/tonne	na	70	na								
Romania	L/tonne	na	na	na	na	na	na	8000	na	na	na	25478
NATURAL GAS				1990				1991				1992
INDUSTRIAL USE		1988	1989	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q	1st Q
Czechoslovakia	Kca/10^7 kKc	2414	1746	1777	-	1530	2520	3350	na	na	na	na
Lithuania	R/ m^3	na	42	na								
Romania	L/tonne	na	1000	na	na	na	2800	na	na	na	6000	na
ELECTRIC GENERATION		UNITS										
Czechoslovakia	Kca/10^7 kKc	2414	1746	2355	-	2027	3338	4439	na	na	na	na
Lithuania	R/ m^3	na	42	na								
Romania	L/tonne	na	1000	na	na	na	2800	na	na	na	6000	na
RESIDENTIAL USE		UNITS										
Czechoslovakia	Kca/10^7 kKc	1080	1056	1056	-	1056	1056	1056	na	na	na	na
Lithuania	R/ m^3	na	3.02									
Romania	L/tonne	na										

COAL	UNITS	1988				1989				1990				1991				1992
		1988	1989	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q	1st Q		
<b>INDUSTRIAL USE</b>																		
<u>Steam Coal</u>																		
Czechoslovakia	Kca/tonne	182	185	235	-	215	311	311	471	na								
Lithuania	R/tonne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na		
Romania	L/tonne	na	179	na	na	na	na	350	na	na	na	810	na	na	na	na		
<u>Coking Coal</u>																		
Czechoslovakia	Kca/tonne	705	917	944	-	917	1320	1487	1661.1	na								
Lithuania	R/tonne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na		
Romania	L/tonne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na		
<u>Coke</u>																		
Czechoslovakia	Kca/tonne	965.32	1314.91	1349.81	1349.81	1349.81	1349.81	1834.2	na	na	na	na	na	na	na	na		
Lithuania	R/tonne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na		
Romania	L/tonne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na		

**ELECTRIC GENERATION**

Steam Coal

		1988	1989	1st Q	2nd Q	3rd Q	4th Q	1991	1st Q	2nd Q	3rd Q	4th Q	1992	1st Q
Czechoslovakia	Kca/tonne	102	109	134	-	120	179	179	na	na	na	na	na	na
Lithuania	R/tonne	na	na	na	na	na	na	na	na	na	na	na	na	na
Romania	L/tonne	na	na	na	na	na	na	350	na	na	na	810	na	na

**RESIDENTIAL USE**

Steam Coal

		1988	1989	1st Q	2nd Q	3rd Q	4th Q	1991	1st Q	2nd Q	3rd Q	4th Q	1992	1st Q
Czechoslovakia	Kca/tonne	180	180	180	-	180	180	180	na	na	na	na	na	na
Lithuania	R/tonne	na	na	na	na	na	na	na	na	na	na	na	na	na
Romania	L/tonne	na	na	na	na	na	na	na	na	na	na	na	na	na

ELECTRICITY	UNITS	1988				1989				1990				1991				1992
		1988	1989	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q	1st Q		

**LIGHT INDUSTRIAL\*\*\***

Consumption Charge

Czechoslovakia	Kca/kwh	0.468	0.477	0.525	-	0.499	0.597	0.597	na	na	na	na	na	na
Lithuania	R/kwh	na	na	na	na	na	na	na	na	na	na	na	na	0.30
Romania	L/kwh	na	na	na	na	na	na	2.2	na	na	na	12.7	na	na

Demand Charge#

Czechoslovakia	Kca/KW	na	na	na										
Lithuania	R/KW	na	na	750										
Romania	L/KW	na	2407	na	na									

**HEAVY INDUSTRIAL**

Consumption Charge

Czechoslovakia	Kca/kwh	na	na	na	na	na	na	na	na	na	na	na	na	na
Lithuania	R/kwh	na	na	na	na	na	na	na	na	na	na	na	na	0.3
Romania	L/kwh	na	0.57	na	na	na	na	0.8	na	na	na	5.7	na	na

Demand Charge#

Czechoslovakia	Kca/KW	na	na	na	na	na	na	na						
Lithuania	R/KW	na	na	na	na	na	na	750						
Romania	L/KW	na	na	na	na	na	na	708	na	na	na	6384	na	na

**RESIDENTIAL**

Czechoslovakia	Kca/kwh	0.506	0.506	0.497	-	0.497	0.497	0.497	na	na	na	na	na	na
Lithuania	R/kwh	na	na	na	na	na	na	na	na	na	na	na	na	0.35
Romania	L/kwh	na	na	na	na	na	na	0.65	na	na	na	0.65	na	na

\*\*\* for Industries < 1KV (Romania) or < 750KV Lithuania

# demand charges are paid annually

HEAT	UNITS	1988				1989				1990				1991	1992
		1988	1989	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q

**INDUSTRIAL**

Consumption Charge

Czechoslovakia	Kca/GJ	57	57	56	56	56	59.2	na	102.96	na	na	na	na	na
Lithuania	R/GJ	na	na	na	na	na	na	na	na	na	na	na	na	65.67
Romania	L/GJ	na	na	na	na	na	na	482	na	na	na	1100	na	na

**RESIDENTIAL**

Czechoslovakia	Kca/GJ	22	22	22	22	22	22	na						
Lithuania	R/GJ	na	11.48											
Romania	L/GJ	na	na	na	na	na	na	86	na	na	na	na	na	na

**KEY**

na, data not available

-, assumed same price as previous period.

## EXCHANGE RATES\*

NATION	Units	1990				1991					
		1988	1989	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q
Czechoslovakia	Krowna/US\$	9.4	10	23.6	23.6	23.6	23.6	27.3	30.2	30.9	29.77
Lithuania*	Rubles/US\$	0.629	0.629	1.6	1.6	1.6	1.6	1.6	1.79	1.6	1.6
Romania	Lei/US\$	14.37	14.44	34.71	34.71	34.71	34.71	36.97	60.35	61.35	183

\*1988-1991 official exchange rates for the USSR.

\*\*The exchange rates are accurate through 4th quarter 1990, after which multiple devaluations could occur per quarter.

This is especially a problem in Lithuania and Romania late in 1991 and early in 1992.

## ENERGY PRICES IN DOLLARS (\$/GJ) INCLUDING TAX

AUTOMOTIVE FUELS		UNITS	1990				1991				
RETAIL			1988	1989	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q
<u>Loaded Premium</u>											
Czechoslovakia	\$/litre	0.55	0.50	0.53		0.57	0.78	0.66			
Lithuania	\$/litre										
Romania	\$/litre										
<u>Unloaded Premium</u>											
Czechoslovakia	\$/litre		0.90	0.53		0.57	0.78	0.66			
Lithuania	\$/litre										
Romania	\$/litre										
<u>Loaded Regular</u>											
Czechoslovakia	\$/litre										
Lithuania	\$/litre										
Romania	\$/litre							0.41			0.25
<u>Unloaded Regular</u>											
Czechoslovakia	\$/litre										
Lithuania	\$/litre										
Romania	\$/litre										
<u>Diesel</u>											
Czechoslovakia	\$/litre	0.59	0.65	0.42		0.38	0.64	0.55			
Lithuania	\$/litre										
Romania	\$/litre										
<u>LPG for Vehicles</u>											
Czechoslovakia	\$/GJ										
Lithuania	\$/GJ										
Romania	\$/GJ										

AUTOMOTIVE FUELS		UNITS	1990				1991				
WHOLESALE			1988	1989	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q
<u>Loaded Premium</u>											
Czechoslovakia	\$/tonnes	377.66	247.40	104.92	104.92	104.92	104.92				
Lithuania	\$/tonnes										
Romania	\$/tonnes										
<u>Unloaded Premium</u>											
Czechoslovakia	\$/tonnes	377.66	247.40	104.92	104.92	104.92	104.92				
Lithuania	\$/tonnes										
Romania	\$/tonnes										
<u>Loaded Regular</u>											
Czechoslovakia	\$/tonnes	377.66	247.40	104.92	104.92	104.92	104.92				
Lithuania	\$/tonnes										
Romania	\$/tonnes										
<u>Unloaded Regular</u>											
Czechoslovakia	\$/tonnes	377.66	247.40	104.92	104.92	104.92	104.92				
Lithuania	\$/tonnes										
Romania	\$/tonnes										
<u>Diesel</u>											
Czechoslovakia	\$/tonnes	301.49	208.00	88.14	88.14	88.14	88.14				
Lithuania	\$/tonnes										
Romania	\$/tonnes										
<u>LPG for Vehicles</u>											
Czechoslovakia	\$/GJ										
Lithuania	\$/GJ										
Romania	\$/GJ										

FUEL OIL		1990				1991				1992		
RETAIL/RESIDENTIAL		1988	1989	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q	1st Q
Light Fuel Oil UNIS												
Czechoslovakia	\$/litre	87.23	82.00	34.75	34.75	34.75	34.75					
Lithuania	\$/tonne											15.84
Romania	\$/litre			54.02								
WHOLESALE/INDUSTRY												
Light Fuel Oil												
Czechoslovakia	\$/litre	2.81	2.48	1.51		1.33	2.51	2.00				
Lithuania	\$/tonne											14.88
Romania	\$/litre											
Heavy Fuel Oil												
Czechoslovakia	\$/tonne	243.82	17.00	115.17		118.95	199.58	158.48				
Lithuania	\$/tonne											9.78
Romania	\$/tonne		129.85					40.57				
LIQUID GAS		1990				1991				1992		
RETAIL UNIS		1988	1989	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q	1st Q
Propane Butane Mix												
Czechoslovakia	\$/GI											
Lithuania	\$/GI											0.28
Romania	\$/GI											
LPG												
Czechoslovakia	\$/tonne	447.13	424.90									
Lithuania	\$/tonne											
Romania	\$/tonne											
Kerosene												
Czechoslovakia	\$/litre	0.53	0.50	0.25								
Lithuania	\$/tonne											
Romania	\$/litre											
WHOLESALE												
Propane Butane Mix												
Czechoslovakia	\$/tonne											
Lithuania	\$/tonne											14.79
Romania	\$/tonne											
LPG												
Czechoslovakia	\$/tonne	529.89	318.80									
Lithuania	\$/tonne											
Romania	\$/tonne											
Kerosene												
Czechoslovakia	\$/tonne	353.72	216.00	91.53								
Lithuania	\$/tonne											
Romania	\$/tonne											
CRUDE OIL		1990				1991				1992		
WHOLESALE UNIS		1988	1989	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q	1st Q
Czechoslovakia	\$/tonne	239.36	155.00	85.88	85.88	85.88	223.73					
Lithuania	\$/tonne										7.00	
Romania	\$/tonne							218.39				139.21
NATURAL GAS		1990				1991				1992		
INDUSTRIAL USE UNIS		1988	1989	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q	1st Q
Czechoslovakia	\$/10 <sup>7</sup> kcal	258.81	174.80			84.83	108.78	122.71				
Lithuania	\$/ m <sup>3</sup>										23.33	
Romania	\$/tonne		69.25				80.87				32.79	
ELECTRIC GENERATION												
Czechoslovakia	\$/10 <sup>7</sup> kcal	258.81	174.80	99.79		85.89	141.44	162.80				
Lithuania	\$/ m <sup>3</sup>										23.33	
Romania	\$/tonne		69.25				80.87				32.79	
RESIDENTIAL USE												
Czechoslovakia	\$/10 <sup>7</sup> kcal	114.89	105.80	44.83		44.83	44.83	38.75				
Lithuania	\$/ m <sup>3</sup>											0.03
Romania	\$/tonne											

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COAL	UNITS	1990				1991				1992		
		1988	1989	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q	1st Q
<b>INDUSTRIAL USE</b>												
<u>Steam Coal</u>												
Czechoslovakia	\$/tonne	19.36	19.50	9.96		9.11	13.18	11.39	15.60			
Lithuania	\$/tonne											
Romania	\$/tonne		12.40					9.47			4.43	
<u>Golding Coal</u>												
Czechoslovakia	\$/tonne	75.00	91.70	4.00		38.86	55.93	53.74	55.00			
Lithuania	\$/tonne											
Romania	\$/tonne											
<u>Coal</u>												
Czechoslovakia	\$/tonne	102.69	131.49	57.20	57.20	57.20	57.20	70.85				
Lithuania	\$/tonne											
Romania	\$/tonne											
<b>ELECTRIC GENERATION</b>												
<u>Steam Coal</u>												
Czechoslovakia	\$/tonne	10.85	11.60	14.28		12.77	19.04	19.04				
Lithuania	\$/tonne											
Romania	\$/tonne							37.23			66.17	
<b>RESIDENTIAL USE</b>												
<u>Steam Coal</u>												
Czechoslovakia	\$/tonne	19.15	19.15	19.15		19.15	19.15	19.15				
Lithuania	\$/tonne											
Romania	\$/tonne											

ELECTRICITY	UNITS	1990				1991				1992		
		1988	1989	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q	1st Q
<b>LIGHT INDUSTRIAL**</b>												
<u>Consumption Charge</u>												
Czechoslovakia	\$/kwh	0.05	0.05	0.06		0.05	0.06	0.06				
Lithuania	\$/kwh											
Romania	\$/kwh							0.23			1.35	
<u>Demand Charge†</u>												
Czechoslovakia	\$/KW											79.79
Lithuania	\$/KW										256.06	
Romania	\$/KW											
<b>HEAVY INDUSTRIAL</b>												
<u>Consumption Charge</u>												
Czechoslovakia	\$/kwh											0.03
Lithuania	\$/kwh											
Romania	\$/kwh		0.06					0.09			0.81	
<u>Demand Charge†</u>												
Czechoslovakia	\$/KW											79.79
Lithuania	\$/KW											
Romania	\$/KW							75.32			679.15	
<b>RESIDENTIAL</b>												
Czechoslovakia	\$/kwh	0.05	0.05	0.05		0.05	0.05	0.05				0.04
Lithuania	\$/kwh											
Romania	\$/kwh							0.07			0.07	

\*\* for industries < 1KV (Romania) or < 750KV (Lithuania)

† the demand charge is levied annually

HEAT	UNITS	1990				1991				1992		
		1988	1989	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q	4th Q	1st Q
<b>INDUSTRIAL</b>												
<u>Consumption Charge</u>												
Czechoslovakia	\$/GJ	6.06	6.06	5.96	5.96	5.96	6.30		10.95			
Lithuania	\$/GJ											9.11
Romania	\$/GJ							49.15			117.02	
<b>RESIDENTIAL</b>												
Czechoslovakia	\$/GJ	2.34	2.34	2.34	2.34	2.34	2.34					1.22
Lithuania	\$/GJ											
Romania	\$/GJ							9.35				

Note: these tables are in draft form.  
 filename: 82NP38LN

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Appendix C  
Energy Pricing Reform Letter

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**RESOURCE MANAGEMENT ASSOCIATES**  
of Madison, Inc.

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February 10, 1992

TO: Mark Hanson

FM: Michael Ellis

SUB: Discussion with Virgil Muscatescu,  
re: Accomplishments under the USAID  
Energy Price Reform Program

During my last meeting with Dr. Muscatescu in Bucharest, I asked him what accomplishments the Ministry had made with Energy Price Reform, and what impact the USAID program had on their efforts. The following is a brief summary of his comments:

1. The Ministry has now set electric rates at world price levels:

- Prices are set based on a rate of \$52/MWH and an exchange rate of 180 lei/\$
- Current price is 9.5 lei/KWH, of which 8.7 lei is based on the world price and FOREX rate, and 0.8 lei/kwh is allocated to a fund for future development of the electric system infrastructure. This is the industrial rate, residential rates have not been adjusted from the 0.65 lei/kwh charge. However, they plan to begin raising rates over a four period to world market levels.
- They are looking into alternate rate structures for time-of-day-use, off-peak, on-peak, and special enticements for energy efficiency, but have not enacted any of these special rates as yet.

2. While many factors influenced their rate adjustment methodology, Dr. Muscatescu felt that the energy price reform program significantly influenced the decision to set rates at market conditions. He cited the following examples:

- The LEAP program enabled the Ministry to compare their forecasts with other models and projections, thus providing a basis upon which to base their rate projections.
- The training program brought people together and gave them a common basis upon which to discuss rate setting methodologies and issues.
- The program also gave the Ministry a sound price setting education upon which to base the upcoming World Bank study.

Overall, Dr. Muscatescu felt the program had enabled the Ministry to reach a more market based approach to price setting much more rapidly than if they had attempted it themselves. And he looks to the World Bank restructuring study as the next step.

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