

REPUBLIC OF MOLDOVA

WORK PLAN

**Moldova Energy Sector
Regulatory Development
And
Power Market Operation**

**Contract No. OUT-LAG-I-00-98-00005-00
Task Order No. OUT-LAG-I-806-98-00005-00**

Final Report

Prepared for:

U.S Agency for International Development
Bureau for Europe and NIS
Office of Environment, Energy and Urban Development
Energy and Infrastructure Division

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1. SUMMARY DESCRIPTION

Moldova's energy sector continues to suffer from a number of serious deficiencies which threaten overall economic reform, national financial viability and Moldova's political independence, including:

- A desperate financial condition caused by the continued accumulation of domestic and external debt, the latter mostly to Russia's Gazprom (about \$600 m) and Ukraine (about \$300m);
- Extremely poor quality of energy supplies: unreliable electricity and heat due to restricted fuel supplies and system obsolescence;
- Energy production, distribution and consumption are extremely inefficient; and
- Use of energy by industries, the agricultural sector and residences is very inefficient due to inadequate technology, metering and disincentives due to low prices and the lack of commercial discipline applied to bill collections.

The problems which underlie these energy sector deficiencies are considerable:

1. State owned energy suppliers (including Moldenergo and Moldovagaz) tolerate non-payment in response to political pressure;
2. The government assumption of arrears encourages non-payment and lack of effort to raise and collect tariffs by the companies; and
3. The lack of independent regulation contributes to uneconomic pricing and consequent dis-investment in the systems, and consumers wasting energy.

The GoM has begun to recognize the depth of its problems, as evidenced by the following:

- Government Resolution 478 in September 1996 ordered development of a plan for economic restructuring of the energy sector; initiation of energy price increases; development of a new method for regulation of electricity, gas and heat prices; improvement of the social safety net including targeting households in need with the higher energy bills; and movement to settle payment arrears.
- Resolution 547, dated June 12, 1997, adopted a Debt Restructuring Plan to help to resolve the industry's debt problem and implement reforms for the future;
- Resolution 628, dated July 8, 1997, approved the restructuring of Moldenergo into

separate joint stock companies separately engaged in the generation, transmission and distribution of electricity and heat; and

- Resolution 767, dated August 11, 1997, established the National Agency for Energy Regulation “ANRE” (Agentia Nationala pentru Reglementare in Energetica), which will become an independent regulatory body after implementation of Electricity and Gas Laws which were approved by Parliament in September, 1998.

The energy sector reform and transition are being supported with \$200 million through the IMF and a \$100 million Structural Adjustment Loan from the World Bank. EBRD has a \$10 million power loan in place.

GoM assisted by USAID and other international donors, including the World Bank and EBRD, has recently adopted an Energy Policy which calls for the partial privatization of the power sector (GoM's Resolutions NR 542 as of June 11, 1997 and NR 260 as of March 9, 1998). This Policy envisages the purchase and operation of selected power generation and electricity distribution facilities in Moldova by private investors.

Under this Energy Policy, it is planned to privatize the three combined heat and power (CET) generating stations (the “GENCOs”) and the five distribution companies (the “DISCOs”) on the right bank of the Nistru (Dniestr) River. The existing high voltage transmission network and dispatch functions will remain in the public sector. The generation, transmission and distribution facilities in Transdnestr do not fall under the control of GoM, and hence lie outside this proposed privatization.

As a prelude to the proposed privatization, the three GENCOs and five DISCOs were restructured in 1997 and divided operationally and financially into separate joint stock companies, at present, fully owned by GoM.

It is intended that the successful Bidders will purchase a controlling stake in the Companies to be privatized, that is, a minimum of 51% of the share capital of one or more of the Companies. It is GoM's intention to sell up to a maximum of 90% of the share capital of the Companies to successful Bidders, under arrangements to be set out in the Request For Proposals (RFP).

Potential strategic investors need to understand the power sector market operation and probability of return on an investment and strong regulatory framework. Thus, it is critical to support privatization efforts through formulation of a new power market concept and define an appropriate regulatory setting mechanism to efficiently govern power sector market operation.

2. SPECIFIC GOALS/OBJECTIVES

Hagler Bailly will provide technical assistance and training to:

- ANRE to improve its capabilities and effectiveness as an independent energy regulatory body, and
- Moldtranselectro to restructure its internal transmission and dispatch functions and to develop the operational capability to administer a viable power market.

The specific tasks to be undertaken are set forth in the technical scope of work under this contract and are directed toward support for the strategic goal of preparing for the privatization of power sector companies. The work shall be carried out in close coordination with the World Bank, other multilateral and bilateral donor organizations and consultants and Moldovan counterparts.

3. TECHNICAL SCOPE OF WORK

A. ENERGY SECTOR REGULATORY DEVELOPMENT (ANRE)

1. Strengthen regulatory functions of ANRE

Advise and assist in implementation of new regulatory policy and operational issues:

- 1.1 Prepare implementation plan for and advise on transitional arrangements during the reform implementation period.
- 1.2 Support establishment of a regulatory framework to encourage private investment in the power sector including the expansion of existing and development of new energy facilities.
- 1.3 Review and develop as necessary regulatory reporting requirements needed for effective regulation.
- 1.4 Define ANRE role in privatization process and monitoring requirements for newly privatized facilities.

2. Establish an effective regulatory framework:

- 2.1 Provide advice and proposed revised methodology for cost-based tariffs for adoption by ANRE.
- 2.2 Define new regulatory accounting standards for adoption by ANRE.
- 2.3 Define service quality standards.
- 2.4 Define the approach and mechanism for license monitoring and enforcement for adoption by ANRE.

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- 2.5 Define criteria to resolve disputable issues (producers-suppliers-consumers) and recommend procedures.
 - 2.6 Review public participation procedures and make recommendations to improve.

3. Ensure further institutional development and training:

- 3.1 Facilitate effective interaction with other new CEE/NIS regulators.
- 3.2 Review organizational development plans; advise on structure, staffing and implementation.
- 3.3 Provide technical, legal and accounting training as required for the new staff to accomplish the assigned tasks.

B. POWER MARKET OPERATION EFFICIENCY

1. Improve Organizational Structure Operation:

- 1.1. Assist in re-organization of the state enterprise Moldtranselectro with an aim to create an appropriate market-oriented organizational structures and specifically, separation of functions and accounts consistent with license-based activities of transmission grid operator and central dispatcher and settlement administrator.
- 1.2. Assist Moldtranselectro to properly implement Market Rules and operational procedures including drafting and modification of market rules and procedures.
- 1.3. Assist Moldtranselectro to develop appropriate job descriptions, personnel qualifications and training programs to assure a high level of professional competence.
- 1.4. Advise and train Moldtranselectro staff on the required regulatory reporting requirements, introduce those requirements (as required by ANRE).
- 1.5. Advise on the creation of a Public Relations department and train the necessary staff on issues of public awareness, information transparency.

2. Strengthen Dispatch and Settlement Administrator Functions:

- 2.1. Draft Market Rules, including formulation of “least cost scheduling and dispatch” rules and procedures, and assist Moldtranselectro to prepare for and begin implementation of the transition to economic dispatch development and its proper functioning.
- 2.2. Identify needs and define administrative systems to accurately record energy flows in and out of the high voltage (110KV and higher) transmission grid.
- 2.3. Assist in creating a transparency in Power Market operations, including timely distribution of operating data to all system participants.
- 2.4. Define the system for managing settlements and the administrative requirements for carrying out the settlements process (such as an Energy Settlement Center).

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- 2.5. Develop draft market-oriented grid code for operation of dispatch and transmission suitable to attract foreign investment in greenfield powerplants.
 - 2.6. Develop interim transmission pricing methodology and proposed pricing based on available information.

3. Funds Administrator Operation:

- 3.1. Define administrative organization and arrangements for collection (from DISCOs) and the disbursement of funds among energy market participants.
- 3.2. Design a mechanism for funds distribution information transparency and make recommendations for establishing a mechanism of periodic independent audit.
- 3.3. Define a system of regulatory reporting as required by ANRE.

4. EXPECTED OUTPUTS

The expected outputs from the technical assistance to be provided by Hagler Bailly pursuant to this contract are as follows:

- 1) Draft and submit a detailed work plan to be approved by USAID, including timetables, statement of R4 objectives, intermediate results, indicators and targets as provided by USAID at the time of preparation of the work plan, and submit to USAID for approval within 14 work days of task order signature.

Regulatory (ANRE)

- 2) Report defining key existing and needed procedures to effectively govern transition to and newly privatized electricity market.
- 3) Report on revised methodology and formulae for cost-based tariff adjustment to reflect market prices.
- 4) Report on regulatory reporting requirements, license monitoring procedures and enforcement mechanism.
- 5) Arrange to send three regulators to a Regional Conference and 1 to a Licensing Committee meeting.

Power Market Development

- 6) Report on recommendations on the new organizational structure of “Moldtranelectro”, and separation of Market Funds Administrator.
- 7) Draft Market Rules, including procedures for an economic power dispatch.
- 8) Report on interim transmission pricing methodology and tariff.
- 9) Draft grid code.

-
- 10) Report on recommended Energy Settlement Center structure, staffing and operations including recommended procedures for transparency of information flow on power market operation, including timely distribution of operational data to all system participants.
 - 11) Report on recommendations on Market Funds Administrator and procedures for collection and disbursement of funds among market participants.
 - 12) Deliver monthly reports on the status of funds distribution.

5. TASK ASSIGNMENTS AND SCHEDULE

Based on a careful assessment of the technical scope of work and the specific skills and expertise of Hagler Bailly energy sector advisors, assignments to task were made at a detailed level. The results of these assignments are summarized in Annex A. This report also shows the level of effort on each task category by months from October 1, 1998 through February 28, 1999.

Annex B displays the task/consultant assignments in a different format and includes the summary of consultant time assigned to months as a result of planned travel schedules during this assignment.

6. PROJECT MILESTONES

The estimated schedule for delivery of reports and other products associated with the specific list of deliverables in this contract and the overall scope of work is shown in Annex C. Those deliverables designated with an "S" prefix are supplemental to the required deliverables specifically identified in the Task Order.

7. REPORTING

Hagler Bailly will provide the following additional reports:

- 1) Hagler Bailly will prepare and submit to the Kiev COTR by January 11, 1999 a demobilization plan and close-out schedule which includes the proposed phase-out of personnel, and a detailed list of all USAID funded property and equipment with recommendations for its disposition.
- 2) Monthly Status Report: This will report on progress and problems and shall be submitted within five calendar days after the end of each month. The reports shall itemize activities in the SOW (regulatory development and electricity market development), identify accomplishments, progress against indicators and targets (once established), problems encountered, alternatives and solutions suggested to address problems and trips planned within the next 45 days.

3) Quarterly Report: This report shall summarize activities undertaken by the Contractor, report on accomplishments, problems encountered and strategy to address them over the next 2-3 months' period.

4) Final Report: A 10-page report that includes (a) summary description of activities undertaken; (b) results achieved reported against strategic objective, intermediate results, indicators, and targets; "lessons learned"; (d) and separate attachment of expenditures.

5) The monthly, quarterly and final reports as well as trip reports submitted within 5 days of trip will all be submitted to USAID/Kiev, USAID/Chisinau and ENI/EEUD/EI.

8. KEY PERSONNEL

Key personnel are identified in Task Order No. OUT-LAG-I-806-98-00005-00.

9. APPROVAL

Hagler Bailly respectfully requests the approval of this Work Plan by USAID as required pursuant to the terms of Task Order No. OUT-LAG-I-806-98-00005-00.

Approved by: _____ Date: _____
Contracting Officer's Technical Representative

**MOLDOVA ENERGY SECTOR REGULATORY DEVELOPMENT AND POWER MARKET OPERATION
LOE DAYS BY TASK**

TASK	LOE DAYS BY CONSULTANT										TASK LOE BY MONTHS						
	Bekker	Bonney	Delphia	Fanelly	Farrlik	Kenyan	Lazebnik	Tanos	Tasillo	Wagenbach	TOTAL	OCT	NOV	DEC	JAN	FEB	TOTAL
TASK 1: ENERGY SECTOR REGULATORY DEVELOPMENT																	
1. Strengthen regulatory functions of ANRE	-	4	-	10	-	-	-	-	35	4	53	13	14	14	12	0	53
2. Establish an effective regulatory framework:	-	15	-	15	-	-	-	30	20	3	83	13	33	23	13	0	83
3. Ensure further institutional development and training:	-	-	-	15	-	-	-	-	15	3	33	9	9	10	5	0	33
TOTAL TASK 1	-	19	-	40	-	-	-	30	70	10	169	34	56	47	30	1	169
BUDGET		19		40		10		30	72	10	181						
TASK 2: POWER MARKET OPERATION EFFICIENCY																	
1. Improve Organizational Structure Operation:	-	-	-	-	20	20	12	-	9	5	66	4	33	15	13	0	66
2. Strengthen Dispatch and Settlement Administrator Functions.	30	-	30	-	20	-	50	-	10	3	143	3	37	59	43	0	143
3. Funds Administrator Operation:	-	19	-	-	-	-	-	-	3	-	22	4	7	1	10	-	22
TOTAL TASK 2	30	19	30	-	40	20	62	-	22	8	231	12	77	75	67	1	231
BUDGET	30	19	30		40	10	62		20	8	219						
TOTAL LOE DAYS	30	38	30	40	40	20	62	30	92	18	400	46	133	122	97	2	400
BUDGET	30	38	30	40	40	20	62	30	92	18	400						
Variance	-	-	-	-	-	-	-	-	-	-	-						
Original Budget	30	30	30	40	40	20	60	30	72	18	370						
Delete/Re-allocate Slota (30 days)		10							20		30						
Other Adjustments		(2)					2				-						
BUDGET (Revised)	30	38	30	40	40	20	62	30	92	18	400						

**MOLDOVA ENERGY SECTOR
REGULATORY DEVELOPMENT AND POWER MARKET OPERATION
CONSULTANT LOE DAYS BY TASK BY MONTH**

CONSULTANT	TASK 1: REGULATORY DEVELOPMENT				TASK 2: Power Market Operation Efficiency				TOTAL LOE DAYS	CONSULTANT LOE BY MONTHS					
	1. Strengthen regulatory functions	2. Establish an effective regulatory framework	3. Institutional development and training	TOTAL TASK 1	1. Improve Organizational Structure Operation	2. Strengthen Dispatch and Settlement Administrator Functions	3. Funds Administrator Operation	TOTAL TASK 2		OCT	NOV	DEC	JAN	FEB	TOTAL
Bekker	-	-	-	-	-	30	-	30	30	-	1	17	12	-	30
Bonney	4	15	-	19	-	-	19	19	38	7	12	-	19	-	38
Delphia	-	-	-	-	-	30	-	30	30	-	1	17	12	-	30
Fanelly	10	15	15	40	-	-	-	-	40	12	12	15	1	-	40
Farlik	-	-	-	-	20	20	-	40	40	-	24	-	16	-	40
Kenyan	-	-	-	-	20	-	-	20	20	1	13	6	-	-	20
Lazebnik	-	-	-	-	12	50	-	62	62	-	25	27	10	-	62
Tanos	-	30	-	30	-	-	-	-	30	-	18	12	-	-	30
Tasillo	35	20	15	70	9	10	3	22	92	22	23	24	23	-	92
Wagenbach	4	3	3	10	5	3	-	8	18	4	4	4	4	2	18
TOTAL	53	83	33	169	66	143	22	231	400	46	133	122	97	2	400

MOLDOVA ENERGY SECTOR
REGULATORY DEVELOPMENT AND POWER MARKET OPERATION
PROJECT MILESTONES

TASK	DELIVERABLE	MILESTONE DATES				
		OCT	NOV	DEC	JAN	FEB
TASK 1: ENERGY SECTOR REGULATORY DEVELOPMENT (ANRE)	(1) Work plan.	10/26				
<u>1. Strengthen regulatory functions of ANRE</u>						
1.1 Prepare implementation plan for and advise on transitional arrangements during the reform implementation period.	(2) Report defining key existing and needed procedures to effectively govern transition to newly privatized electricity market.		11/30			
1.2 Support establishment of a regulatory framework to encourage private investment in the power sector including the expansion of existing and development of new energy facilities.	na					
1.3 Review and develop as necessary regulatory reporting requirements needed for effective regulation.	(4) Report on regulatory reporting requirements, license monitoring procedures and enforcement mechanism.		11/30			
1.4 Define ANRE role in privatization process and monitoring requirements for newly privatized facilities.	[See 2 for role in privatization] [See 4 for monitoring requirements for newly privatized facilities.]		11/15			
<u>2. Establish an effective regulatory framework:</u>						
2.1 Provide advice and proposed revised methodology for cost-based tariffs for adoption by ANRE.	(3) Report on revised methodology and formulae for cost-based tariff adjustment to reflect market prices.				1/15	
2.2 Define new regulatory accounting standards for adoption by ANRE.	(S13) Report defining new regulatory accounting standards for adoption by ANRE.		11/15			
2.3 Define service quality standards.	(S14) Report defining service quality standards.			12/19		
2.4 Define the approach and mechanism for license monitoring and enforcement for adoption by ANRE.	[See 4]					
2.5 Define criteria to resolve disputable issues (producers-suppliers-consumers) and recommend procedures.	(S15) Report defining criteria to resolve disputes and recommended procedures.		11/15			
2.6 Review public participation procedures and make recommendations to improve.	(S16) Report reviewing public participation procedures and making recommendations to		11/15			
<u>3. Ensure further institutional development and training:</u>						
3.1 Facilitate effective interaction with other new CEE/NIS regulators.	(5) Arrange to send three regulators to a Regional Conference and 1 to a Licensing Committee	10/20		12/6		
3.2 Review organizational development plans; advise on structure, staffing and implementation.	(S17) Report on ANRE organizational development.			12/19		
3.3 Provide technical, legal and accounting training as required for the new staff to accomplish the assigned tasks.	(S18) Report on technical, legal and accounting training provided for ANRE staff.					2/15
TASK 2: POWER MARKET OPERATION EFFICIENCY						
<u>1. Improve Organizational Structure Operation:</u>						
1.1 Assist in re-organization of the state enterprise Moldtranselectro with an aim to create an appropriate market-oriented organizational structures and specifically, separation of functions and accounts consistent with license-based activities of transmission grid operator and central dispatcher and settlement administrator.	(6) Report on recommendations on the new organizational structure of "Moldtranselectro", and separation of Market Funds Administrator.		12/5			
1.2 Assist Moldtranselectro to properly implement Market Rules and operational procedures including drafting and modification of market rules and procedures.	[See 7]					
1.3 Assist Moldtranselectro to develop appropriate job descriptions, personnel qualifications and training programs to assure a high level of professional competence.	[See 6]					
1.4 Advise and train Moldtranselectro staff on the required regulatory reporting requirements, introduce those requirements (as required by ANRE).	[See 4]					
1.5 Advise on the creation of a Public Relations department and train the necessary staff on issues of public awareness, information transparency.	(S19) Report on creation of a Public Relations department and related issues.					2/15
<u>2. Strengthen Dispatch and Settlement Administrator Functions:</u>						
2.1 Draft Market Rules, including formulation of "least cost scheduling and dispatch" rules and procedures, and assist Moldtranselectro to prepare for and begin implementation of the transition to economic dispatch development and its proper functioning.	(7) Draft Market Rules, including procedures for an economic power dispatch.			12/19		

MOLDOVA ENERGY SECTOR
REGULATORY DEVELOPMENT AND POWER MARKET OPERATION
PROJECT MILESTONES

TASK	DELIVERABLE	MILESTONE DATES				
		OCT	NOV	DEC	JAN	FEB
	(1) Work plan.	10/26				
2.2 Identify needs and define administrative systems to accurately record energy flows in and out of the high voltage (110KV and higher) transmission grid.	(10) Report on recommended Energy Settlement Center structure, staffing and operations including recommended procedures for transparency of information flow on power market operation, including timely distribution of operational data to all system participants.		11/30			
2.3 Assist in creating a transparency in Power Market operations, including timely distribution of operating data to all system						
2.4 Define the system for managing settlements and the administrative requirements for carrying out the settlements process (such as an Energy Settlement Center).						
2.5 Develop draft market-oriented grid code for operation of dispatch and transmission suitable to attract foreign investment in greenfield powerplants.	(9) Draft grid code.				1/15	
2.6 Develop interim transmission pricing methodology and proposed pricing based on available information.	(8) Report on interim transmission pricing methodology and tariff.				1/23	
3. Funds Administrator Operation:						
3.1 Define administrative organization and arrangements for collection (from DISCOs) and the disbursement of funds among energy market participants.	(11) Report on recommendations on Market Funds Administrator and procedures for collection and disbursement of funds among market participants.				1/30	
3.2 Design a mechanism for funds distribution information transparency and make recommendations for establishing a mechanism of periodic independent audit.	(12) Deliver monthly reports on the status of funds distribution.	10/31	11/30	12/31	1/31	2/28
3.3 Define a system of regulatory reporting as required by ANRE.	[See 4]					