

**PHARE 2001**  
**STANDARD SUMMARY PROJECT FICHE**

**1. Basic Information**

- 1.1 Désirée Number:** RO-0108.04
- 1.2 Title:** Energy efficiency improvement in district heating systems
- 1.3 Sector:** Infrastructure (Energy, Transport, Telecom)
- 1.4 Twinning Component:** N/A
- 1.5 Location:** Romania

**2. Objectives**

**2.1. Overall Objectives**

- Improvement in energy efficiency in the housing sector.
- Reduction in subsidies and improvement in the affordability of heat and hot water.

**2.2. Purpose of project**

- To improve energy efficiency through the introduction of controls and heat cost allocation at the level of individual apartments.
- To achieve increased collections for district heating (through the individual control and cost allocation).
- To demonstrate the technical and financial viability of improving energy efficiency in district heated housing in order to replicate this project at a wider level in Romania.

**2.3. Accession Partnership and NPAA priority**

*The 1999 AP - medium term priorities:*

- Align energy pricing, energy efficiency, and fuel quality standards.

*NPAA 2000 – short term priorities:*

- Growth of efficiency for electricity and heat generation and distribution, through rehabilitation of power plants and network.

**3. Description**

**3.1. Background and justification**

There are approximately 3 million apartments in Romania in multi family blocks (from a total housing stock of approximately 7.8 million). Of these, approximately 2.5 million are heated by district heating, and 0.5 million have block level heating.

Energy efficiency of district heating supply, distribution, and end-use are all at a low level. Controls on boilers and burners are in most cases manual, and therefore efficiency is low. Heat exchangers are normally steel or copper pipe, rather than the modern plate heat exchange technology. Distribution networks are a source of losses both because of heat and water losses from cracked or corroded pipes, and because of high energy consumption from pumping due to over-extended distribution networks. Water losses are up to 30% in distribution on some systems (causing flooding and further damage to pipe insulation). Finally, at the level of consumers, few meters have yet been installed at the distribution/ block interface, and even fewer controls exist in apartments.

More than 90% of household energy consumption is used for heat and domestic hot water, a proportion of heating costs being subsidised.

Without thermostatic radiator valves and other controls, consumers have no means of control heat consumption in their flats, and without heat cost allocators (or even in some cases metering at the level of a block) consumption is billed on the basis of calculated rather than actual consumption. It is therefore proposed to equip a certain number of apartments with thermostatic radiator valves and heat meters, in order to allow the households to control their heat consumption and pay according to their energy consumption.

Experience in other Central and Eastern European countries with similar projects (with technically similar heating systems) demonstrated reductions in specific heat consumption of approximately 15-25% through the installation of thermostatic radiator valves and heat cost allocators, allied to an increase in prices to reflect economic costs. This experience has also shown that a reduction in subsidies of 20% can be realised through the reduction in end use consumption caused as a direct result of the introduction of heating controls and billing based on individual heat consumption.

### **3.2. Linked activities**

One previous Phare funded activity in this sector that is relevant to this project is the Phare Multi-Country Energy Project ZZ9511.02-01'Heat Supply: Legislative and Regulatory Framework'. This project prepared (for all Phare partner countries) a compendium of legislation and an assessment of the legislative, regulatory, economic, and technical dimensions of the heat supply sector.

A study is being undertaken through Phare 2000 Project Preparation Facility in order to assist the Ministry of Industry and Resources (see annex 4). This study started the second week of April 2001 and is realised by Cowi Consult. It is examining the legal and the technical background to the proposed project, including clarification of questions relating to ownership of district heating pipes, and other installations; the contractual relationships between the heating companies, and the billing procedures to be adopted where heat is billed on the basis of measured, as opposed to calculated, consumption. The study is also undertaking a technical assessment of the energy saving measures to be installed, and their cost in typical Romanian apartment blocks. Suitable sites for the demonstration project are presently being identified.

A major (90 M EUR) project of improvement to the energy efficiency of heat supply and primary distribution in five Romanian cities is currently underway ('Thermal Energy Conservation Project'), with funding from EBRD, German government bilateral assistance for TA, and local funding in 5 Romanian cities: Buzau, Fagaras, Oltenita, Pascani, and Ploiesti. A new programme has been developed to provide finance for rehabilitation of district heating in a further five cities through concession or other private sector involvement: Oradea, Tirgu Mures, Constanta, Rimnicu Vilcea, and Bistrita. These projects concern primarily the improvement of the efficiency for energy production and supply through improvements of boiler efficiency and the rehabilitation of the transport and distribution networks.

EBRD and the Development Bank of the Council of Europe have expressed a strong interest in having these projects complemented by end user focussed activities like the ones that are foreseen under this programme.

A similar project is underway in Bucharest to rehabilitate the heat distribution network (up to the apartment blocks, but not inside) with funding from a 60 MEUR EIB loan and from the city of Bucharest.

In case the Phare 2001 project proves to be highly successful, it could be further promoted and extended to other areas, with a digressive support from Phare funds that could come from Phare 2003 programme.

### **3.3. Results**

- Energy savings in individual apartments.
- Increase in the level of collections for district heating through the improved control and reduced costs for consumers.
- Reduction in the subsidies which are required to be paid to cover the difference between the chargeable cost (based on the ability of the population to pay) and the actual cost of heat and hot water.
- A 'demonstration effect' through the demonstration of the technical and financial viability of this approach to improving energy efficiency in district heated housing in Romania.
- The legal, economic and organisational aspects of introduction of individual apartment metering will be better understood by all parties involved in district heating.

### **3.4. Activities**

The project has two main components: technical assistance in design, implementation, and monitoring; and the procurement and installation of the energy saving equipment (mainly thermostatic valves and metering devices).

A- The technical assistance will cover:

- Implementation and monitoring of the works. Technical assistance will be provided for the implementation phase, ensuring (through site supervision and monitoring of works and equipment) that the investments made in this project are in conformity with the technical specifications and project designs, and to a quality standard acceptable to the European Commission, and for controlling the quality of goods and equipment procured and installed.
- Training and Public awareness. Experience with similar projects in other Central and Eastern European Countries suggests that public awareness (that flat owners fully understand the project) is a crucial element of success. A training and public awareness element will be included in this component in order (a) to inform the public concerning the objectives of the project and to explain how to use the equipment installed. (b) to publicise the results of the project in order to realise a demonstration element. Block administrators must be trained in the implementation of the new billing procedure.
- Evaluation of the quantitative results. Also in order to realise the demonstration effect of this pilot project, it is important to closely monitor the results (both quantitative and behavioural) of the project. Monitoring and evaluation of the before and after situations will require sample measurements of consumption and indoor temperatures during the heating season before the measures are installed and during the heating season following installation. This is compatible with the time schedule for the project.
- Review and modification of legislation. In addition, in order to change from a billing system based on the consumption of the block (with the consumption of each flat calculated based on the volume and number of occupants) to a system of billing based on the actual measured consumption, legislative/ regulatory changes may be required. Identification of the regulatory or legislative changes needed is being carried out through a PPF project currently underway. The drafting of any such changes that are required will be assisted by the consultants under this sub-project. The review of the billing system should cover development of arrangements for financing the cost of large-scale installation of individual metering, on the basis that proprietors are unlikely to agree to participate in the introduction of metering unless it is economically advantageous to them. The billing system should therefore allow for the costs of large-scale installation of metering to be spread between all households benefiting from heating, rather than being concentrated on those agreeing to participate in introduction of metering.

B- The equipment and work component will include:

- The energy saving measures The measures to be installed will include thermostatic radiator valves (allowing users to control the temperature and hence heat usage from each radiator) and heat cost allocators which will allow calculation of heating bills on the basis of actual consumption of heat, rather than the present calculated basis. Other measures which could be installed are domestic hot water meters, and rebalancing of the hydraulic system of the blocks.

- Limited complementary measures. In addition, it may also include complementary measures where necessary to reduce the heat losses of the blocks where the controls and meters/ cost allocators are installed (e.g. sealing of windows and doors, and/or partial window replacement, and/or major heat losses through missing thermal insulation). These complementary measures should not represent more than 10% of the total cost of the project.

*Activities:* It will include technical assistance to prepare the works and to implement them, a limited public awareness campaigns both among the flat owners who are the direct beneficiaries and to other municipalities and district heating companies, training of the block administrators in the operation of the new billing system, evaluation of the project and adaptation of the legal framework if necessary. It will also include the procurement and installation of the equipment, and complementary measure for energy saving in apartment blocks.

The Ministry of Industry and Resources will undertake all the preparatory works, the Terms of Reference and the Tender Documentation necessary to launch the tender, on the basis of the study financed under the Phare 2000 Project Preparation Facility. In case additional studies are necessary (e.g. to identify the exact blocks that will be concerned), they will be financed by the Romanian authorities. .

The introduction of metering under this project will be financed on the basis of 100% coverage by Phare of the costs in all blocks/apartments concerned.

#### **4. Institutional Framework**

The institutions involved in this project are:

- The Ministry of Industry and Resources, which has overall responsibility for the energy sector, will be the Implementing Authority for this project.
- ARCE - the Romanian Energy Conservation Agency, which is responsible for the promotion of energy efficiency.
- District heating companies in the cities concerned and the Local authorities, who are the owners of the district heating companies, and who are responsible for the funding of subsidies for district heating to energy users in the housing sector.

The direct beneficiaries of this investment project will be the flat dwellers where the investments are made. Upon completion of the project the investments will become assets of the apartment owners.

The PIU established within the Ministry of Industry and Resources will be responsible (on behalf of the GOR) for ensuring that the investments made in this project are in conformity with designs, and to a quality standard acceptable to the European Commission, and for controlling the quality of goods and equipment procured and installed.

This project will be implemented by Ministry of Industry and Resources (in collaboration with ARCE and local authorities/ district heating companies) who will

provide the necessary technical input to ensure correct implementation, through a PIU. The PIU will be advised by independent consulting engineers. These engineers will act as independent, impartial contracts supervisor, to control the implementation of Phare financed investments, to ensure respect for design and technical specifications, and endorse invoices for payment on works and supplies contracts. The supervisors should conduct regular on-site inspections of work-in progress, identify any problems in implementation, and advise on any remedial action to be taken by contractors.

## 5. Detailed Budget, in Meuro

Activities	Phare support		Total Phare (=I+IB)	National co-financing	IFI(*)	TOTAL
	Investment Support	Institution Building				
1. Technical assistance for engineering supervision, and monitoring and evaluation of results.	0.40		<b>0.40</b>			0.40
2. Procurement and installation of heating controls and heat cost allocators	4.60		<b>4.60</b>		10	14.6
<b>TOTAL</b>	<b>5.00</b>		<b>5.00</b>	<b>0</b>	<b>10</b>	<b>15</b>

(\*) This project is an integral part of national and municipal efforts to rehabilitate district heating systems. The National Co-Financing requirement of the Phare project is covered by the municipal financing and IFI loans for rehabilitation of the district heating system where the flat will be rehabilitated. At this stage, this amount is only indicative, but far above the minimum level of 25%.

## 6. Implementation Arrangements

### 6.1. Implementing Agency

The Romanian Implementing Agency is the Central Finance and Contracts Unit (CFCU) within the Ministry of Public Finances, which retains overall responsibility for the implementation of the project (approval of tender documents, of evaluation criteria, of evaluation of offers, signature of contracts, authorisation and payments of invoices).

The Romanian Implementing Authority is the Ministry of Industry and Resources, which is responsible towards the Implementing Agency for the operational management of the project: preparation of Terms of Reference, of tender documents, of evaluation criteria, of evaluation of offers, of contracts.

### 6.2. Non-standard aspects

There are no “non-standards aspects”. The “Practical Guide to Phare, Ispa and Sapard contract procedures” will strictly be followed.

### 6.3. Contracts

Two contracts are foreseen: one contract of 0.4 MEUR for the technical assistance (for implementation and monitoring and evaluation) and one of 5.6 MEUR for the procurement of supplies and the installation works. This activity should be seen as a pilot project which will test the technical feasibility of introducing metering at the level of individual apartments. The tender for supplies and installation works will be evaluated on the basis of the proposals made by bidders which should be developed in the context of IFI loans supporting the refurbishment and development of municipal district heating. Bidders will develop a proposed approach to implement the Phare project showing its compatibility with IFI financed programmes.

## **7. Implementation Schedule**

Both the supplies and installation and the technical assistance contracts will have a long duration of (around two years and a half) which can be explained by the numerous individual tasks that have to be achieved (works in many individual flats) and by the impossibility to work during the cold seasons (installation work can only be performed during the summer heating shut-down periods), and the necessity of evaluating the results only after the measures have been installed and monitored during a heating season. Therefore, a 2 year disbursement period will be necessary for this project, till 30 November 2005.

Start of tendering:	February 2002
Start of project activities:	August 2002
Completion:	March 2005

## **8. Equal Opportunity**

Equal opportunity for men and women to participate in all the components of the project will be ensured.

## **9. Environment**

No adverse environmental effects are foreseen. The equipment to be installed allows individual control of heating in apartments, and individual billing based on actual consumption. Experience in both other Central and Eastern European and (limited) experience in Romania indicate that substantial energy savings can be realised through this investment. This will realise a substantial positive environmental effect through the consequent reduction of the air pollution caused through the generation of the heat and hot water (through the combustion of coal, gas, or oil).

## **10. Rates of return**

Extensive experience with similar projects (with technically similar heating systems) in other Central and Eastern European countries together with limited experience in Romania suggest that this project will be highly cost effective, realising average internal rates of return of 20%.

## **11. Investment criteria**

### **11.1. Catalytic effect**

Without Phare assistance, the project would have never taken place due to a lack of funds.

### **11.2. Co-financing**

The Phare co-financing requirements for this project are met through the national and municipal budget contributions to the costs of rehabilitation of district heating systems, as well as the relevant IFI loans.

### **11.3. Additionality**

The project respects the principle of additionality. Phare financing is provided to cover investments within the overall programmes of rehabilitation of district heating systems, on a pilot basis, in an innovative area for which it would be difficult to secure other sources of financing.

### **11.4. Project readiness and size:**

The preliminary studies are completed and the implementation of the project can start according to the implementation chart (Annex 2). The project complies with the 2 Meuro minimum Phare allocation requirement.

### **11.5. Sustainability:**

Thermostatic radiator controls and heat cost allocators are robust and technically simple, with an extensive design lifetime (well beyond the period of this project). Reading of the heat cost allocators will be ensured through the district heating companies. The cost for this reading (i.e. for the operation of the allocators) will be added to the fixed cost element of the heating and hot water bill. The review to be undertaken of the billing systems for district heating should help establish the basis for a wider introduction of individual apartment metering in future, providing economic benefits for both the operators and the individual proprietors.

### **11.6. Compliance with state aids provisions**

The project respects the state aids provisions.

## **12. Conditionality and sequencing**

- The Ministry of Industry and Resources will undertake all the preparatory works including elaboration of the Terms of Reference and the Tender Documentation necessary to launch the tender in early 2002. This will be done on the basis of the study financed under the Project Preparation Facility. In case additional studies are necessary, the Romanian authorities will finance them.



## **ANNEXES TO PROJECT FICHE**

1. Logical framework matrix
2. Detailed implementation chart
3. Contracting and disbursement schedule by quarter
4. Reference to feasibility/pre-feasibility studies



<b>Annex 1 : Logframe Matrix for project:</b>  <i>Energy efficiency improvement in the district heated housing sector</i>		Contracting period expires: 30/11/2003	Disbursement period expires : 30/11/2005
		Total budget: 15 MEUR	Phare budget: 5 MEUR
<b>Overall objective</b>	<b>Indicators of Achievement</b>	<b>Sources of Information</b>	
<ul style="list-style-type: none"> <li>Improvement in energy efficiency in the housing sector</li> <li>Reduction in subsidies and improvement in the affordability of heat and hot water.</li> </ul>	<ul style="list-style-type: none"> <li>A reduction in the specific energy consumption of district heated housing of 10% over 5 years.</li> </ul>	<ul style="list-style-type: none"> <li>ARCE, Ministry of Industry and Resources.</li> </ul>	
<b>Project purpose</b>	<b>Indicators of Achievements</b>	<b>Sources of Information</b>	<b>Assumptions</b>
<ul style="list-style-type: none"> <li>Improve energy efficiency through the introduction of controls and heat cost allocation at the level of individual apartments.</li> <li>Increase collections for district heating where individual control and cost allocation exists.</li> <li>Demonstrate the technical and financial viability of improving energy efficiency in district heating in order to replicate this project through future Phare programmes.</li> </ul>	<ul style="list-style-type: none"> <li>Measured energy savings of a least 10% in the heating season following installation of measures.</li> <li>Collections ratio increased by a minimum of 10%.</li> <li>Agreement on expansion or follow up of the project in future Phare programmes before the end of the project.</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring and evaluation report of consultants (measured through the project).</li> <li>Local district heating companies.</li> <li>Local district heating companies, municipalities.</li> <li>European Commission, Ministry of Industry and Resources</li> </ul>	<ul style="list-style-type: none"> <li>Agreement and continued support of all parties concerned to implement the project (flat owners, district heating companies, and municipalities).</li> </ul>

Results	Indicators of Achievement	Sources of Information	Assumptions
<ul style="list-style-type: none"> <li>• Energy savings in individual apartments.</li> <li>• An increase in the level of collections for district heating in the blocks where the energy saving measures have been installed.</li> <li>• A reduction in subsidies paid by municipalities for district heating.</li> <li>• A demonstration effect to allow the project to be expanded in following years to further cities</li> </ul>	<ul style="list-style-type: none"> <li>• Measured energy savings of at least 10% in the heating season following installation of measures.</li> <li>• Collections ratio increased by a minimum of 10%.</li> <li>• Subsidies reduced for the concerned blocks by 15% by the end of the project</li> <li>• Agreement on follow up project in future Phare programmes.</li> </ul>	<ul style="list-style-type: none"> <li>• Monitoring and evaluation report of consultants (measured through the project).</li> <li>• Local district heating companies.</li> <li>• Local district heating companies, municipalities.</li> <li>• European Commission, Ministry of Industry and Resources.</li> </ul>	<ul style="list-style-type: none"> <li>• Agreement and continued support of all parties concerned to implement the project (flat owners, district heating companies and municipalities).</li> </ul>
Activities	Means		Assumptions
<ul style="list-style-type: none"> <li>• Design and technical specification of the measures to be installed</li> <li>• Engineering supervision of procurement and commissioning</li> <li>• Public awareness campaigns</li> <li>• Training of block administrators and district heating companies</li> <li>• Monitoring and evaluation</li> <li>• Adaptation of the legal framework</li> <li>• Procurement of supplies and installation works for the energy saving measures in the apartment blocks.</li> </ul>	<ul style="list-style-type: none"> <li>•</li> <li>• Technical assistance (implementation, and monitoring and evaluation)</li> <li>• Supplies and works contract (single contract)..</li> </ul>		<ul style="list-style-type: none"> <li>• Agreement on energy saving measures to be installed.</li> <li>• Co-operation of block administrators and apartment owners.</li> <li>• Co-operation of district heating companies.</li> <li>• Low technical risks, proper installation.</li> </ul>

## Annex 2 – Detailed implementation chart

### Energy efficiency improvement in the district heated housing sector

	2001						2002						2003						2004						2005																												
	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S		
Technical Assistance .	D	D	D	D	D	D	D	T	T	T	T	T	T	C	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	R	R	R	R	R	R									
Supply and installation of energy saving measures								T	T	T	T	T	T	C	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I															
D = Design/Tender preparation																																																					

*Annex 3 –Cumulative contracting and disbursement schedule by quarter for project: RO0108.04*

Energy efficiency improvement in the district heated housing sector																			
Components	Cumulative contracting schedule by quarter in MEUR 5																		
	2001		2002				2003				2004				2005				
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Total contracting:					5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00					
Components	Cumulative disbursement schedule by quarter in MEUR (planned)																		
	2001		2002				2003				2004				2005				
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Total disbursement:					1.10	1.40	1.80	2.20	2.70	3.00	3.40	3.80	4.25	4.55	4.95	5.00	5.00	5.00	

## PROJECT PREPARATION FACILITY

### Energy Efficiency in District Heated Housing Sector

#### TERMS OF REFERENCE (ToR)

##### 1. Background

###### 1.1 Background to the PPF

Under the Phare 2000 programme, a special Project Preparation Facility (PPF) has been identified which can be used for financing relevant studies and short-term technical assistance required for a proper design of project activities finally resulting in more mature project formats to be included in future Phare programmes or proposals financed through other International Financing Institutions (IFIs).

For this project the bidding Framework Contractors are required to submit a proposed methodology.

###### 1.2 Background to the project

Romania has a well developed district heating sector with 258 district heating systems in operation. The structure of the district heating sector is as follows:

- Termoelectrica supplies around 40 % of heat generation, supplying heat to 29 cities. In 21 cases, Termoelectrica also operates the transport systems (the primary loop), while the secondary loop is operated by local municipally owned district heating companies or Regie Autonomes. Termoelectrica supplies heat to nine big DH systems with over 100 substations, in which the heat flow is at least 600 Gcal/h and the pipe networks are over 50 km. The next category supplied by Termoelectrica is formed by thirteen systems with heat flows between 100 and 600 Gcal/h and the third one, by nine smaller systems of below 100 Gcal/h. RENEL supplies heat to over 4000 substations, of which 1260 are in Bucharest.
- Local *regie autonomes* with a local (town or city) or county monopoly for heat distribution and/or heat supply. After 1989 a large number (over 400) local RA were established. However, this number was reduced after a Government Ordinance (Ordinance 69/1994) limited the number of local Regie Autonomes to 250, through either amalgamation or transformation into commercial companies. Most of the remaining local Regie Autonomes are in larger cities and have kept their status through being recipients of loans with international financial institutions (EIB or EBRD) who have kept this status through covenants in the loan agreements which prevent changes of legal status.
- Local district heating companies (in smaller towns): Over 100 local district heating companies ('Societe Comerciale') have been established, including former local RA s which were corporatised following Government Ordinance 69/ 1994. Attempts have been

made to eliminate the cross subsidy from industry to the residential sector, although this cross subsidy has only partially been eliminated.

Energy efficiency of heat supply, distribution, and end use are all at a low level. Boilers are generally at a low level. Controls on boilers and burners are in most cases manual, and therefore efficiency is low. Heat exchangers are normally steel or copper pipe, rather than the modern plate heat exchange technology. Distribution networks are a source of losses both because of heat and water losses from cracked or corroded pipes, and because of high energy consumption from pumping because of over-extended distribution networks. Water losses are up to 30% in distribution on some systems (causing flooding and further damage to pipe insulation). Finally, at the level of consumers, few meters have yet been installed at the distribution/ block interface, and even fewer controls exist in apartments.

Without thermostatic radiator valves, consumers have no means of controlling heat consumption in their flats, and without heat cost allocators (or even metering at the level of a block) consumption is billed on the basis of calculated rather than actual consumption. Experience in other Central and Eastern European countries, together with (limited) experience in Romania, suggests that significant energy efficiency gains can be made from the installation of end user level controls and consumption based billing.

A major (90 M EUR) project of improvement to the energy efficiency of heat supply and primary distribution in five Romanian cities is currently underway ('Thermal Energy Conservation Project'), with funding from EBRD, German government bilateral assistance, and local funding. This project is concerned primarily with improving supply side efficiency rather than end user efficiency.

The Ministry of Industry and Trade (with overall responsibility for the energy sector) has proposed therefore a significant demonstration project to improve energy efficiency at the end use level, building on the lessons of the Thermal Energy Conservation Project, but working at the end user level. The project would install energy efficiency measures (for example thermostatic radiator valves and heat cost allocators) in multi-family apartment buildings in several locations. The aims of this project would be (a) to demonstrate the cost effectiveness of energy efficiency improvements at the end user level in district heated apartments in Romania, and (b) to bring about a demonstrative effect whereby the project can be replicated on a wide scale.

However, in order to prepare the project fiche (and hence project proposal) the Ministry of Industry and Trade require assistance in the analysis of the feasibility of the proposed project (in view of known legislative and ownership hurdles) and in the detailed preparation of the project for project fiche purposes.

### 1.3 Previous related projects include:

- Phare Multi-country Energy Project ZZ 9511.02-01 Heat Supply: Legislative and Regulatory Framework.
- Ongoing project 'Thermal Energy Conservation Project' jointly funding by EBRD/ German bilateral funding to improve heat supply in five Romanian cities, and capacity building for management of district heating.

## **2. Description of the Assignment**

### **2.1. Responsibilities**



#### Contracting Authority

The Central Finance and Contracts Unit (CFCU) within the Ministry of Finance will be the Contracting Authority and as such responsible for all procedural aspects of the tendering process, contracting matters and financial management (including payments) of the project activities.

**Contact:**

PAO: Mircea Ionut Costea  
Director General: Daniela Gheorghe Marinescu  
Address: Central Finance and Contracts Unit  
36-38, Mendeleev Street, sect.1, Bucharest  
Tel: +40-1-313 66 30  
Fax: +40-1-315 35 36

#### Implementing Authority

The Implementing Authority for the PPF instrument will be the Department for European Affairs within the Ministry of Foreign Affairs.

**Contact:**

Department for European Affairs (DEA), Accession Assistance Directorate  
Director: Mr. Razvan Cotovelea  
Address: Str. Alexandru 33, Bucharest  
Tel.: +40-1-2226728, 2302062, 2302160  
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#### Beneficiary

The beneficiary of this project is the Ministry of Industry and Trade, who are responsible for the preparation of the project fiche for energy sector related projects for Phare 2001.

Ministry of Industry and Trade  
Department for European Affairs  
Deputy Director General Steluta Goanta  
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Sector 1, Bucharest  
Tel/ Fax: +40 1 211 1560

## **2.2. Global and Specific Objectives**

### **2.2.1 Global Objective**

The global objective of this project is to strengthen the Ministry of Industry and Trade with short-term technical assistance in order to produce relevant background documentation, and project design, with the ultimate goal to develop solid project documents feasible for implementation.

### **2.2.2 Specific Objective**

The specific objectives of this assignment are:

- To examine the legal and technical background to the proposed project in order to assess its likely viability

- To assist the Ministry of Industry and Trade in the selection of suitable demonstration projects for the installation of individual metering devices and thermostatic radiator valves to improve energy efficiency in district heated housing.
- To provide sufficient technical project design for the Ministry of Industry and Trade to prepare the project fiche.

### **2.3 Requested Services**

#### Task 1 Review of legislative and regulatory background to the proposed project

The consultant should review the relevant Romanian legislation and regulations from the point of view of the following questions and issues:

- Examine the situation concerning the ownership of district heating pipes and other installations and the split of ownership between district heating companies and apartment owners. Can energy efficiency improvements (individual metering devices and thermostatic radiator valves) be made in individual apartments if some apartment owners do not agree?
- Examine the contractual relationship between the district heating companies and the associations of apartment owners. Can individual apartments or individual blocks (where an association of block owners is made up of more than one apartment block) be billed on the basis of actual heat consumption if individual metering or cost allocation devices are installed in apartments?
- How could energy efficiency improvements in apartments be financed? Is there a potential for replication of the project in other towns and cities in the absence of direct financial support from Phare or other donors?

Based on this review, the consultants should produce a short task report, setting out the findings of this task. The consultants should give a clear answer to the questions relating to whether the proposed project to install energy efficiency devices and heat cost allocators is feasible from the point of view of the legal and regulatory background to ownership rights and billing questions. The consultant should also examine the question of the replication of the project. What is the feasibility of replicating the energy efficiency improvements demonstrated through the project in other towns (will there be a 'demonstration' effect or not?)?

In undertaking this task the consultants should take full account of the findings of previous Phare funded projects relating to district heating (most particularly the Phare multi country study of the 'Heat Supply Legislative and Regulatory Framework', and the 'Corporatisation of Public Utilities' project under implementation by the Ministry of Public Works.

#### Task 2 Review of previous and on-going similar projects

Both Phare, bilateral donors, and IFIs (EBRD, World Bank, EIB) have funded many projects aimed at improving energy efficiency in district heated housing in Romania, and in other Associated countries. It is important that this considerable experience is available for the design of this project. The consultants should therefore undertake a review of the results of similar projects which have been undertaken:

- In Romania (notably the EBRD funded district heating improvements in five cities); and
- In other Central and Eastern European countries.

The purpose of this review is to examine

- (a) what measures were installed and what were the results of these projects, both in terms of energy efficiency improvements, and in terms of their replication (i.e. were they successful in encouraging similar investments without the donor financing?)
- (b) What lessons or conclusions can be drawn from this review of previous and present experience

#### Task 3. Technical assessment and cost estimation of proposed project

The consultants should undertake a technical assessment of the potential for energy efficiency improvements in district heating in typical Romanian apartment block. The output of this task should be a task report setting out:

- A proposed list of measures to be installed in a typical apartment building (including individual metering or cost allocation devices, and thermostatic radiator valves).
- Estimated costs for the demonstration project (based on actual costs in Romania) including both equipment procurement, and installation.
- Estimated costs of monitoring and evaluation of the energy efficiency effects of the installations and measures.

This report should be discussed and agreed with the Ministry of Industry and Trade.

#### Task 4. Identification of demonstration project

Based on the finalised list of measures to be installed, and on the cost estimates produced under the previous task, the consultants should proceed to the detailed project design (for the purpose of preparing the project fiche). This will involve identification and selection of the sites for the demonstration project. Working with the district heating companies, the consultants should identify, and make recommendations for representative sites for the demonstration project. The proposals will be discussed and agreed with the Ministry of Industry and Trade. The output of this sub-task will be a sub-task report setting out the proposed sites, and the justification for this selection.

The total assistance required for these tasks (tasks 1-4 inclusive) is 150 calendar days, broken down as follows:

- 75 calendar days per expert for two Category I experts giving a total of 150 calendar days.
- 60 calendar days for one Category II expert (who could be a local expert)

### **2.4. Expected Results**

The expected results of this project are:

- (a) Evaluation of whether the project is feasible bearing in mind the legal, regulatory, and financial situation in Romania.
- (b) Identification of the proposed energy efficiency measures and estimation of the costs of these measures to allow accurate budgeting.
- (c) Design of the project to allow the preparation of the project fiche

### **3. Experts Profile**

The experts proposed should have the qualifications and experience to meet the work tasks set out above.

As mentioned in Section 1.1, for this project bidding Framework Contractors are required to submit a proposed methodology in addition to the CVs of the proposed experts.

### **3.1 Education, Experience, References and Category of Each Expert**

3.1.1 **Education:** Degree level (engineering related)

3.1.2 **Experience;** Experts should be proposed who have the following experience:

- Experience of energy efficiency related improvements at the end user level in district heating
- Experience in the design and operation of secondary distribution systems of district heating in multi-family housing
- Experience with energy efficiency related improvements and retrofits to district heating in CEE countries.
- Experience in preparing project design, including project scheduling, preparation of technical specifications, and terms of reference
- Knowledge of monitoring and evaluation methods for the evaluation of energy efficiency improvements in the multi-family housing sector.

#### **3.1.3 Category of Expert**

Minimum of two short term experts of category I, and one expert of category II should be proposed.

### **3.2 Working Languages**

The working language of reports will be English. However for communications with district heating companies and municipalities, Romanian language will be required. Either experts with Romanian language skills or suitable interpretation arrangements should be proposed (it should not be assumed that all background material will be translated into English).

## **4. Location and Duration**

### **4.1 Starting Date**

January 2001. The activities related to the contract should start at the latest two (2) weeks after the signature of the letter of the contract.

### **4.2 Finishing Date**

April 2001 (duration 3 months).

### **4.3 Schedule and Number of Days for the Assignment per Expert**

It is foreseen that the overall coverage of the assignment will require a maximum of 210 calendar days:

Two experts of category I – 75 calendar days per expert.

One expert of category II – 60 calendar days per expert (could be local expert).

#### **4.4 Location of the Assignment**

Romania and the consultant's home office (preparation of reports and analysis of background documentation can be carried out at the consultant's home office). Both category I experts should spend 50 calendar days in Romania per expert (66% of time input, giving a total of 100 calendar days). The category II expert should spend all 60 calendar days in Romania (100% of time input).

### **5. Reporting**

#### **5.1 Content, language, format, and number of reports**

The following task reports are required (contents of each report is set out in Section 3, work tasks, above)

Task 1, Task 2, Task 3 and Task 4.

All reports must be submitted in the English language in 6 printed copies, plus diskette (electronic format). All reports should be submitted to the beneficiary.

One copy in the English language should be submitted directly to the Implementing Authority (DEA), to the CFCU (Attention Mrs Daniela Gheorghe Marinescu, Director General) and to the Delegation of the European Commission in Bucharest (11 Str. Grigore Mora, Bucharest Sector 1, Attention Mr Andre Lys).

#### **5.2 Date of submission**

The deadlines for all reports in this project are very time sensitive, given the need of this input for the preparation of the project fiche, and the need to respect the deadlines for the fiche preparation. It is crucial that these deadlines are respected.

Task 1 report should be submitted within 4 weeks of the start of the project.

Task 2 report should be submitted 6 weeks after the start of the project.

Task 3 report should be submitted at the latest 9 weeks of the start of the project

Task 4 report. This task report should be submitted at the latest 11 weeks after the start of the project.