



PROJECT FINANCING SUSTAINABLE ENERGY PLANNING

DEVELOPMENT CREDIT AUTHORITY AND MUNICIPAL ENERGY EFFICIENCY PROGRAMME IN BULGARIA

The aim of the material is to present to interested Bulgarian municipalities a new mechanism to finance municipal energy efficiency projects. The mechanism gives a real opportunity to provide long-term project financing resulting in energy savings. Three energy efficiency projects - in the Municipalities of Pernik, Pazardzhik and Silistra have been already financed through this financial mechanism. Projects for other two municipalities – Sevelievo and Popovo – are in progress.

In the framework of Municipal Energy Efficiency Programme (MEEP), financed by the USAID Bulgaria and implemented by Electrotek Concepts, Inc., in November 1999 an agreement was concluded between USAID Bulgaria and United Bulgarian Bank (UBB) for implementation of Development Credit Authority (DCA) mechanism. Through this mechanism USAID grants to UBB on behalf of potential credit applicants guarantees for 50% of the principle of credits provided by UBB for energy efficiency projects. The agreement term is 7 years, up to June 2006 and provide guarantees for a credit portfolio of 6 250 000 USD.

Eligible to benefit from this mechanism are Bulgarian municipalities (as well as municipal or private companies in Bulgaria with state participation less than 49 %) which develop energy efficiency projects. According to agreement terms energy efficiency project is considered each project resulting after implementation in energy savings enough to ensure investment pay-back and debt servicing within acceptable commercial financing terms – up to 5 year depending on applicant specifics and the concrete project.

Application of DCA mechanism leads to several direct benefits for the municipalities. The most significant of them is the opportunity for relatively long term credits (within 3 to 5 years) with a reasonable grace period at competitive and attractive loan terms. As 50 % of the necessary guarantees is provided by

USAID, the loan security required from the credit applicant is twice less than the usual one. The released in this way assets can be used for other purposes by the municipalities.

Within the Municipal Energy Efficiency Programme there is a possibility to use free consultancy help provided by Electrotek for technical and economic project development, financial plan structuring and negotiations with UBB. There are also opportunities to participate in a consequent information campaign with international targeting aiming at successful project results dissemination and promotion of DCA mechanism in the country and region.

DCA mechanism gives a real possibility for interested municipalities to provide the necessary financing for energy saving projects. It should be stressed that the financing terms are negotiable in each particular case between the client (municipality) and financing institution (UBB). The credit terms depend on the risk associated with the applicant. In any case the municipality should pass through the standard bank procedure for lending, including provision of respective documentation and business plan development. During this process the consultancy help of Electrotek experts can be used in order to develop documentation in compliance with all requirements of the financing institution.

Within the programme at present through DCA mechanism there are three municipal energy efficiency projects already financed. The first municipal loan guaranteed by DCA was granted by UBB for an energy efficiency project in Pernik. The total project costs are 399 500 USD and the credit represents 33% of this sum, i.e. 132 000 USD. The MEEP team ensured private financing for the rest 214 000 USD. This is a significant sum for a Bulgarian municipality and the three-year credit term is unique for a municipal loan in the country.



The technical and financial parameters and the business plan were developed by Electrotek in close collaboration with Pernik Municipality. On 28 November 2000 the Credit Authority of UBB approved the project for financing through DCA. The business plan and the analyses of cash flows and risks will be used as models for future municipal projects proposed for financing within the DCA mechanism.

The project in Pernik Municipality comprises of two main parts – street lighting and municipal building heating. The existing old luminaries with inefficient mercury lamps will be replaced with new ones with high-pressure sodium lamps. An improved system for management and reporting of electricity consumption for street lighting will be installed. As a result the electricity consumption decreases by 68 % annually and the level of illumination in the town is increased significantly. In 11 municipal buildings (schools and kindergartens) the insulation of doors and windows is improved and automatic heat management systems is introduced. The heat consumption decreases by 32,8 % at increased comfort level.

The second successfully financed municipal energy efficiency project is this in Pazardzhik Municipality. The total project costs are 144 000 USD and the loan guaranteed by DCA represents 70 % of this sum, i.e. 100 400 USD. On 16 March 2001 The Credit Authority of UBB approved the project for financing under DCA mechanism. The project aims at improving the street lighting in the town. The existing old luminaries with inefficient mercury lamps will be replaced with new ones with high-pressure sodium lamps. An improved system for management and reporting of electricity consumption for street lighting will be installed. The preliminary calculations show that the effect of project implementation will be 59 % an-

nual electricity savings.

On 13 June 2001, just before printing of the present material, the project in Silistra Municipality was financed. The overall project costs are 306 059 USD, and the approved by UBB credit, guaranteed by DCA, represents 71% of this sum, i.e. 216 995 USD. The credit term is 2.5 years.

Other two projects are advanced in the process of development and negotiations with the bank and the decisions are expected by the end of June 2001. Each of the above five developed projects in the Municipalities of Silistra, Sevlievo, Popovo, Pernik and Pazardzhik is an interesting example for flexible commercial financing schemes applicable to municipal energy efficiency projects. These projects include investments in all parts of the municipal infrastructure, including street lighting, municipal building heating, water and gas supply, urban solid waste treatment and utilisation of renewable energy sources. Each project demonstrates the ways to treat specific social, infrastructure or energy related problems in a municipality from the point of view of energy efficiency. Consequently such projects can be developed and presented in a form attractive for a bank and commercial financing can be provided for their realisation at terms acceptable both for the municipality and for the bank.

During the last decade the most serious obstacle before municipal energy efficiency projects in Bulgaria has been the lack of financing. Technical solutions are well known and proved in practice for most of these projects but the realisation is hampered by the lack of long-term project financing. Overcoming this obstacle is the main aim of DCA mechanism application by the experts of USAID, UBB and Electrotek.

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COMMERCIAL FINANCING FOR MUNICIPAL ENERGY EFFICIENCY PROJECTS IN ROMANIA

Under the USAID/Romania *Energy Efficiency Projects Selection - Technical Assistance* program, Electrotek Concepts, Inc. is supporting the improvement of public services (heating and lighting), and rehabilitation and modernization of related municipal infrastructure. The program develops a more eco-

nomically sustainable and environmentally sound energy sector while supporting a focus on privatization of municipal facilities by improving their financial status. In cooperation with the Romanian Agency for Energy Conservation (ARCE), the Electrotek consulting team including local technical

and financial experts visited 17 Romanian cities to evaluate project opportunities where 1) pre-feasibility studies could be developed for projects which would generate a sufficient cash flow to return the investment with commercial loans, and 2) transactions were affordable, i.e., equity financing and debt financing could be secured by project sponsors. The consulting team is developing pre-feasibility studies for the three best project candidates and marketing these “bankable” projects to local and international commercial lenders and investors.

Initial Project – Medgidia, Romania

The city of Medgidia was chosen as the first project for implementation. The goal is to improve the overall operational efficiency and the heat supply capacity of the Medgidia district heating system (generation and primary and secondary distribution networks) so that acceptable heat comfort levels and sufficient domestic hot water supply are realized and affordable to all consumers. The study included an initial credit analysis, a description of energy efficiency measures, proposals on financial schemes, project cash flow analysis, and risk analysis.

The consulting team found that the current installed capacity of 60 Gcal/hour generates 30% less heat due to current system inefficiency. The existing 18 boiler houses are equipped with old and inefficient boilers and shell-and-tube heat exchangers that are clogged with sediments. The hard water supply is not chemically treated. The boilers have oversized tubes that require replacement every year. All boiler houses use high cost fuel oil that results in a cost of heat that is significantly higher than in other Romanian cities.

The transmission and distribution network from each boiler house consists of three pipelines in underground, non-accessible, concrete channels. Most pipes are 25 years old and all are oversized and not properly maintained. The pipe channels are often flooded and pipe thermal insulation is ineffective due to leaking water. The pipes are heavily corroded, resulting in high heat and water losses

Summary of Project Approach

The initial phase of the project establishes the conditions for full-cost recovery for heat generation in 4 boiler houses and heat distribution in their respective pipe networks with a small improvement

in the current level of supply. Revenues from energy savings are sufficient to service the debt and finance additional improvements on a time-phased schedule to upgrade the remaining 14 boiler houses and networks. The final phase of the project increases the supply of heat from each boiler house and completes improvements in end-user heat recovery to provide affordable space heating and domestic hot water supply at a level that is comparable to western standards. The project investment indicators [financial internal rate of return (IRR), net present value (NPV), and the payback period] were calculated for project cash flows before financing (net free cash flow), which were discounted at the fixed rate of 15%. The IRR is 71.4% and the NPV is about \$2 million USD on a \$1 million USD investment for a 2-year payback.

Financing Schemes

The consulting team is working with municipal officials on similar projects in Pietra Neamt and Slobozia in Romania. Commercial financing is being sought for all three projects. The consulting team is exploring applicable financial schemes and security of investments with EBRD, the World Bank/GEF Fund, IFC, Export-Import Bank and other local lenders and investors. A number of these schemes involve cost-sharing using the Development Credit Authority (DCA) mechanism. An energy-efficiency project DCA facility is a US treasury portfolio guarantee program for selected domestic banks to cover up to 50% of the risk exposure on principal for qualifying energy-efficiency project loans to municipal and industrial borrowers. Projects eligible for inclusion under the DCA portfolio guarantee typically include several facilities owned and administered by the same borrower. The borrower allocates funds for specific project beneficiaries within its own budget rules (e.g., as a budget allocation, loan, etc.). Under the DCA program, banks are encouraged to lend at least 70% of the project costs. The size of the projects are tailored to be within the preferred lending size for the banks by packaging different measures into the same loan. Although projects are selected so that savings will be sufficient to cover the cost of servicing the debt, they are structured with various kinds of security including: (a) using property as collateral, (b) assigning receivables from revenue-generation activities, or (c) creating escrow accounts into which funds budgeted for energy use are assigned to the bank.

"BULGARIA – SUSTAINABLE LOCAL ENERGY PLANNING" PROJECT

Background

Energy planning in our country is done mainly at national level and is in the field of so-called "big energy". This approach has a significant disadvantage: it does not take into account and does not include local energy resources (regional and municipal) mainly of RES, and local authorities lack experience in developing energy plans.

In relation to the above in October 2000 a project "Bulgaria – Sustainable Local Energy Planning" started with the support of British Foreign Office and executed by ESD Ltd., U.K. and "ESD – Bulgaria" Ltd. Foreseen project deadline is January 2002.

Participants

- Representative of the Bulgarian government and supervising authority – SEEA (State Energy Efficiency Agency).
- Project executors: British company ESD Ltd. And Bulgarian company "ESD – Bulgaria" assigned after a tender.
- Pilot Municipalities for the project: Kjustendil, Sapareva Banja and Kocherinovo, appointed after a competitive bid.

Methodology

Main rule in the public planning is to find out what is "the driving force" of the society, i.e. which are the **priorities**, and then to focus on the ways of planning and exploring the resources. In this context the project methodology includes:

- **Determining of needs and priorities of the local authorities.** Includes getting acquainted in details with the short-term and long-term development plans and strategies of respective municipality.
- **Development of a planning matrix.** Development in cooperation with local authorities of a MATRIX of priorities from different spheres: education, health care, transport, construction, industry, increase of local revenues, etc. "Energy" is an ELEMENT of the priority development, not an isolated stand-alone component.
- **Data and information collection.** Cooperation with local authorities for determination of key factors such as: economic development (increase, receipts, etc.); energy consumption (by kind and sec-

tor); energy efficiency (end-user); energy resources (conventional and RES); energy production (e.g. in district heating companies); expected increase by sector; main changes in the economy influential for the energy demand, etc.

- **Scenarios. Data processing. SAFIRE Model.** Processing and evaluation of the information is done based on pre-determined scenarios with the computer model SAFIRE.
- **Development of a sustainable local energy plan.**
- **Preparation of investment project proposals.**

Expected results

The most important are:

- Demonstration of the benefits for the municipalities of the development of sustainable local energy plans;
- Training of SEEA experts in the development of sustainable local energy plans and their replication in other Bulgarian municipalities.

Project Phases

The project programmes is developed in four phases:

Phase 1. Establishment of the project Steering Committee under the chairmanship of SEEA. Development of criteria for selection of pilot municipalities. Selection of pilot municipalities.

Phase 2. Determination of planning possibilities in the pilot municipalities. Data and information collection. Determination of scenarios and assessments.

Phase 3. Elaboration of a pilot energy plan. Dissemination of results.

Phase 4. Assistance to SEEA at determination of regulatory and institutional obstacles for increase of energy efficiency. Overview and assessment of existing legislation. Legal and institutional consulting of SEEA in the field of RES and RUE.

Web-site.

A Web-site in Bulgarian and in English starts functioning since 01.07.2001 in order to present current information on the project, its final results, investment project proposals, etc.

The address of the web-site is: <http://bulgariaplan.energyprojects.net>. Адресът на страницата е: <http://bulgariaplan.energyprojects.net>

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