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Municipal Energy Efficiency Services For Bulgaria Final Report

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1. Project Scope

This project served as the focal point for the development of a municipal network to promote "grass roots" energy efficiency activities throughout Bulgaria, expand the role of the private sector in the delivery of energy efficiency services, equipment and financing, and educate energy consumers about the benefits of energy efficiency.

A variety of activities have been conducted in this project:

1. Development and implementation of municipal network
2. Development of Association of Energy Engineers (AEE) capabilities
3. Development and implementation of 4 demonstration projects in the municipalities of Gabrovo, Plovdiv, Stara Zagora and Varna.

Except for the development of finance capabilities, all project objectives were achieved. As a result of the financial crisis in Bulgaria during the project, it was not possible to consider developing financing mechanisms, and as a result, this component of the project was cancelled and replaced with 3 additional demonstration projects – Plovdiv, Varna and Stara Zagora.

The project supported two of USAID's Strategic Objectives in Bulgaria:

- ◆ *SO 1.3: Increased Growth of Private Sector Firms in a Competitive Environment.*
- ◆ *SO 2.3: More Effective, Responsive, and Accountable Local Government*

2. Development and implementation of the Municipal Energy Efficiency Network (EcoEnergy)

Development and implementation of the EcoEnergy network involved a number of steps, as outlined below, and detailed in Appendix A:

- ◆ Evaluate existing networking infrastructures in Bulgaria
- ◆ Evaluate US networking approaches.
- ◆ Assess relative cost/benefit of various approaches and recommend mechanism
- ◆ Develop rules/procedures for municipal energy networking
- ◆ Establish formal linkages with municipalities in Bulgaria, national government organizations, and foreign NGOs
- ◆ Advertise network through existing Associations of Municipalities / Mayors
- ◆ Implement formal municipal energy efficiency network at ten municipalities
- ◆ Registration of the municipalities wishing to become members of the Network and nomination of the municipal energy efficiency officers

- ♦ Organization of a Network Secretariat to co-ordinate its activities
- ♦ Development of Rules of Procedure for the organization and activities of the Municipal Network and a Program of Work of the Network
- ♦ Organize 5 workshops in different Bulgarian cities

First Workshop, Sofia, EnEffect, March 12, 1997

- ♦ Organizational meeting

Second Workshop, Stara Zagora, November 19, 1997

- ♦ Review/approval of Intermediate Rules of Procedure and Program of Work for the period 1997-1998 and elected its representative bodies.
- ♦ Review of the energy efficiency projects implemented in Gabrovo and Radomir and the energy efficient rehabilitation of the hospital in Stara Zagora

Third Workshop, Sofia, University of Architecture, Construction and Geodesy, February 12, 1998

- ♦ Workshop "Municipal Energy Planning and Management" was held for the municipal officers-in-charge of energy efficiency. The objective of the workshop was to provide the participants with information on the fundamentals and possible approaches to the development of municipal energy efficiency programs. Topics covered included:
 - (a) Fundamentals of municipal energy efficiency planning and management – the European experience and opportunities for its application in Bulgaria;
 - (b) Practical approaches to the development of a local level energy policy: five stages of the development of an energy plan;
 - (c) Planning of energy efficiency projects in buildings, energy audits;
 - (d) Data base on energy consumption in municipal sites: five steps of municipal energy management
 - (e) Opportunities for obtaining funding for energy efficiency projects in municipalities using examples from the USA.

Fourth Workshop, Belene, April 7, 1998

- ♦ A workshop on "Financing of energy efficiency projects" was organized jointly by the Centre for Energy Efficiency EnEffect and the Municipality of Belene in collaboration with the Black Sea Regional Energy Centre and the Association of Danube Municipalities. In addition to the subject of funding for energy efficiency projects, the agenda of the meeting was additionally enriched and included five sessions on the following major subjects: (a) Draft Law on Energy Efficiency; (b) EU organization to promote energy technologies (OPET and FEMOPET); (c) Energy

efficiency and environmental protection – global and local effects; (d) Funding of municipal energy efficiency projects; (e) Energy efficiency programs.

- ◆ The international and national policies to prevent and mitigate climate change after the Third Conference of the States-Parties of the UN Framework Convention on Climate Change, held in Kyoto, Japan, from 1 till 10 December 1997, were presented.
- ◆ The opportunities for funding of energy efficiency projects from the National Environmental Trust Fund were presented

Fifth Workshop, NPC, 10 December 1998. Round-table discussion on "Efficiency in Bulgarian Hospital in the light of the reform in the health care system"

A round table discussion on the subject of the efficient use of the land plots, building stock and technical facilities of hospital complexes was organized on December 10, 1998 in Sofia in the framework of the annual conference of the Municipal Energy Efficiency Network. Senior officials and experts from the ministries of health, the environment, labor and social welfare and regional development and public works, as well as mayors and specialists from the municipalities, managers of health centers, directors of state-owned, municipal and university hospitals, representatives of national and international programs, funds and financial institutions, designers and public figures were invited to participate in the discussion.

- ◆ Develop Business Plan for network activities (Appendix B)
- ◆ Development of an information database on energy efficiency

Initial efforts have been made to create an information system about energy consumption in EcoEnergy member-municipalities. The system covers information about the actual fuel and energy consumption by functions and groups of municipal activities in material expression – initially for the year 1997 as a total and further on by quarters. The collected data has been used for analysis of energy consumption in the municipal sector in member-municipalities – for each municipality separately and total for all member-municipalities. Five pilot municipalities have been selected (Belene, Gabrovo, Gorna Oryahovitsa, Karlovo and Stara Zagora) in which the system will be tried with a view to its upgrading.

A second database was developed for use by municipalities containing information about publications in the field of energy efficiency. A total of 3,000 documents have been processed and about 2,000 inputs have been made. The database is designed and realized using the software product Microsoft Access. The information is structured in five subject groups: energy policy, capacity building, demonstration projects, technological problems of energy efficiency and environmental aspects of energy efficiency. The main subjects are specified further in 26 subject areas. A system user guide has been developed. The system is maintained and updated by EnEffect.

- ◆ Establish a formal peer exchange program for members

3. Development of Association of Energy Engineers Capabilities

Electrotek provided extensive training to Association of Energy Engineers members in the Sofia and Plovdiv Chapters. Specifically, a two week training course in building energy simulation was provided, including the following:

1. Procure building energy simulation software – A Simplified Energy Analysis Method (ASEAM) was procured.
2. Procure 2 laptop computers for AEE
3. Provide extensive training in model set-up and operation, given building construction characteristics in Bulgaria
4. Provide computer simulation of hospital in Gabrovo

Workshops were held on the topics of power quality, motors and adjustable speed drives, hospital energy management, heat recovery and packaged cogeneration systems. Material from the ASEAM, power quality and adjustable speed drive workshop are provided in Appendix C). In addition, Electrotek provided financial support for AEE members to attend a number of international conferences in the U.S. Finally, Electrotek provided financial support to the Plovdiv AEE chapter in the development of a series of university-level energy management courses, as detailed in Appendix D.

4. Demonstration Projects

The original scope of work required the implementation of one demonstration project, and dissemination of the results through the Municipal Energy Efficiency Network. The municipal hospital in Gabrovo was selected as the site for the demonstration project. Appendix E contains the results of the demonstration project, along with a copy of the energy audit. The project in Gabrovo was extremely successful, has received the 1998 International Energy Project of the Year Award from the Association of Energy Engineers, and was featured on a CNN news clip on energy efficiency in Eastern Europe.

As a result for the financial crisis in Bulgaria during 1997-1998, all work associated with implementing financing mechanisms for energy efficiency projects was cancelled, and 3 additional demonstration projects were implemented. Business plans for these demonstration projects are included in Appendix F. As a result of the demonstration project in Stara Zagora, the director of the regional hospital (Dr. Zhelev) traveled to the U.S. two times – once paid for by USAID and once paid for by the hospital. The purpose of these trips was to meet hospital managers in the U.S., to learn about energy and hospital management practices, which could be applied in Bulgaria. As a result of these visits, the Ministry of Health is developing a national hospital energy efficiency program.