

Igor GEORGIEV

STRATEGIES FOR DEVELOPING ENERGY EFFICIENCY IN MACEDONIA

1. ENERGY EFFICIENCY IN MACEDONIA

In the Republic of Macedonia there are a number of available credit lines and grant opportunities for implementing strategies and goals for energy efficiency. The main reason for the poor usage of these financial means is primarily the low level of utilization of these programs and means as well as the complex administrative procedures.

When Macedonia was still part of the Socialist Federative Republic of Yugoslavia (SFRY), it had paid great importance on the rational usage of energy and in 1988 a program for saving and efficient usage of energy, which was in accordance to the Law on Energy, was implemented. The program was financed by the budget of the Republic of Macedonia for the period 1989 – 1991 and through it 200 programs for energy efficiency were implemented into the industrial sector, achieving 5% savings of the total electric energy consumption.

The author is MA in project management from Faculty of Electrical Engineering and Information Technologies at the University "St. Cyril and Methodius" in Skopje, and project specialist in Habitat Macedonia

In the period of 1991 – 1996 there are no major activities from the government or the institutions regarding energy efficiency due to the priority being given to other political goals.

In 1997, the government enacted the National Developing Strategy, which included principles for achieving economic development with minimal usage of energy. In the same year, 1997, a Law on Energy was passed and it made continuation in the activities regarding energy efficiency.

In 1998, a Program for Rational Energy Use up to 2000 was adopted, which represented a new frame in the development of energy efficiency. The program was financed by the State Budget and the funds were marketed as beneficial credit lines mainly in the industrial sector.

In 2006, the Parliament of the Republic of Macedonia adopted a new Law on Energy which brought prerequisite for achieving energy efficiency, promotion of the usage of renewable energy sources and other important issues concerning energy.

In 2011, the Parliament of the Republic of Macedonia passes a new Law on Energy. This law regulates all activities in the field of energy and at the same time it presents basis for liberalization of the electricity market.

1.1. Energy policy and strategy for energy efficiency in Macedonia

In 2004, the Parliament ratified the EU Stabilization and Association Agreement and the Republic of Macedonia started working on meeting EU standards regarding energy and energy efficiency.

With such determination, in September 1998, Macedonia became signatory to the Energy Charter Treaty (ECT) and the Protocol on Energy Efficiency and Related Environmental Aspects (PEEREA). With the ratification of PEEREA, Macedonia committed to establish policies for advancing energy efficiency, to reduce negative impact from the energy cycle as well as developing, implementing and supplementing the program for energy efficiency through regulations. In addition, it should be also noted that the Republic of Macedonia is signatory on the Framework Conference of the United Nations concerning climate changes and the Kyoto Protocol.

Regulating energy and energy efficiency are responsibility of the Ministry of Economy of the Republic of Macedonia. The Ministry itself adopts laws, bylaws, rules and strategies regarding this area. The energy politics of the Republic of Macedonia has further developed in all the adopted laws and strategies for energy since it has gained its independence. According to the last Strategy for Energy "...the strategic goals of Macedonia in the energy sector, including the definition for coordinating with

acquis communautaire, are embedded in the Law on Energy. Within the energy policy, Strategy for Developing Energy Efficiency until 2020 was adopted in the Republic of Macedonia.

The main goal of the Strategy is "...to develop a framework for accelerated adoption of energy efficiency practices in a sustainable way and to implement series of programs and initiatives that are related to reducing dependence on imports, energy intensity, non productive use of energy, preparation for a good climate to maximize involvement and the opportunities of the private sector in complementary advocacy and training.

The expected results of implementation of this Strategy are savings of over 9% of the average consumption that has been registered in the period of five years (2002 – 2006) until 2018 or more precisely the expected energy savings in 2020 should amount to 237.31 ktoe (14.5% energy savings compared to the average consumption in the period 2002 – 2006).

The implementation of this Strategy will cost the society approx. 380 million Euros, but the benefits that will be achieved on financial, social and ecological level are much higher.

Besides this Strategy, which regulates the national policy in this area, certain self-government units have brought their own energy efficiency programs.

1.2 EU Energy policy

The European Union works more intensively on the formation of common European Energy Policy, which is created on the basis of two kinds of programs. The first program is a sort of internal plan between EU member states, through which the regulation is strengthened, liberalization of the electric energy market is introduced and measures to reinforce electric efficiency are adopted. Above all this program is for more intensive use of renewable energy types. The other program refers both to better connection with its energy suppliers, primary with the Russian Federation as the biggest supplier on natural gas and to the diversification of the supply sources.

For many years EU was committed to internal reforms and institution building, and greater attention was focused on the influence of the production of energy on the environment. Parallel to this, Brussels launched series of programs for developing energy technologies, particularly ones in relation to energy efficiency and renewable energy. The next step was signing the Energy Charter Treaty with intention to extend energy cooperation with Eastern European countries. Although in 2000 first the Green, and later the White Book on energy were published, with intention to initiate

initiation of a wide, integrated platform for energy policy, there was no significant progress until 2005, when there was an informal European Council in Hampton Court. In one of the conclusions the European Commission was called to prepare a Green Book with new initiatives and access to EU energy policy. Shortly afterwards in 2006, there was a dispute between Russia and Ukraine about the gas transportation, which showed just how much EU was vulnerable and energy dependent. It showed that the crisis in the energy supply is the main driver of changes and contracts regarding common EU energy policy.

“The Green Book represents a new beginning for the common energy policy for Europe”, are the words with which the energy commissioner Andris Pībalgs (“A common Energy Policy for Europe”, speech at the conference “Energy Policy for EU and Law” Brussels, March 9, 2006) announced the publishing of this document as a kind of manifesto for common European energy policy. He also added that: “it represents a real change of direction and it shows that energy is truly a global issue, and the challenges that we face can be solved on global and European level.” The entry mark in the Green Book is EU to enter “a new energy era”, marked with great challenges.

The main objective of the package is a new energy policy for Europe. According to the energy commissioner Andris Pībalgs (“Energy and Climate Change”, speech at the conference in Paris May 31, 2007) the package represents “nothing less than a new industrial revolution in European energy policy.” This objective is known as “3(three) times 20 till 2020”. Namely, it is about objectives from the area of energy efficiency (increased by 20%) and reducing gas emission also by 20%.

Those are the three basic pillars of the new EU energy policy. Above all it is formation of an integral internal market – its strengthening in terms of competitiveness and in terms of sustainability and security of supply. In other words, there is a distinction between supplying and producing energy on one hand and its distribution on the other hand. The second pillar of the energy policy is energy production with the lowest possible emissions of CO₂. The third pillar is increasing energy efficiency. Practically, it is about saving energy and its rational usage. If this goal is effectuated, until 2020 the EU will use 13% less energy compared to 2006. The methods and means for realization of this goal are different, for example using more economical internal combustion engines, more effective household appliances, advancing the insulation of residential and business facilities and greater efficiency in the distributional system.

1.3. Macedonia and the EU

Based on the previously mentioned information, it can be said that the Republic of Macedonia in terms of legislation is aligned with the EU to certain extent, whereas in the domain of implementation it needs to accomplish more.

In addition to the standards and the requirements that the country needs to meet in the area of energy to join the EU, above all in terms of advancing the field of energy, the country is bound also by a number of agreements signed with the EU. For instance, on April 8, 2011 the Government of Macedonia signed a Memorandum of Cooperation with the Energy Community with which it committed that Macedonia will make advancements in enacting and implementation of laws and bylaws in the field of energy and it will increase the independence of the Regulatory Energy Commission.

Unlike the EU, Macedonia has a forthcoming liberalization of the electricity market, as one of the prerequisites for EU accession. This includes more rational and safer supply of electricity and gradual abolition of monopolies in the distribution of the electricity in the country.

In regard to the usage of renewable sources of energy, things slowly started moving from a blind spot. Since the implementation of the regulations of buy-out prices for energy from renewable sources, a greater number of smaller hydropower plants have been built. The utilization of solar energy is also low. Licenses for production of electricity have been granted, but nevertheless only a few mini solar power stations with maximal installed power of 40 kW have been built.

The same case is with the use of wind and biomass as energy sources. Despite the few announcements about building wind parks in the country, nothing has been built so far. The utilization of biomass is just sporadic, although there is great potential.

Every member of the EU is intensively working on achievement of its objectives which are defined in the strategy “3 times 20 until 2020”. Compared to the EU, our country is still at an early stage of achieving its prime goal of 20% production from renewable sources of energy until 2020.

1.4. Effectuated projects for energy efficiency in the Republic of Macedonia in cooperation with EU countries

Since its independence, the Republic of Macedonia has implemented or is currently implementing few projects for improvement of energy efficiency. Some of those projects were funded by the Government itself, but most of the projects are being implemented through foreign financial

institutions. For that reason, the projects can be divided into:

- Projects funded by the European Bank for Reconstruction and Development (EBRD)
- Projects funded by other financial and non-governmental institutions

1.5. Projects financed by the European Bank for reconstruction and development

In continuation, this paper describes the projects implemented by the European Bank for Reconstruction and Development (EBRD) regarding energy and energy efficiency, where the Europe Union is one of the major funders and donors in the country of this kind of projects. The main objective is technical assistance and raising public awareness.

1.5.1. Increasing the efficiency of the distributional network

EBRD launched this program in 2007 – 2010. With this program the European Union will invest 100 million Euros in advancing the electrical distributional network. 50 million Euros will be invested in a credit line for the Electric Power Company of Macedonia (ECM) and the other 50 million will be invested by the International Finance Corporation (IFC).

The credit supported the current reorganization of that time regarding the operational efficiency of the privatized company for distributing electric energy ECM, demonstrating the positive effect of the private participation in the energy sector and its key role in the current liberalization and restructuring of the sector. Further, the project was supposed to support the knowledge transfer from the donor to the end user.

1.5.2. Improving energy efficiency in the company Mital Stil – Skopje

In 2005, EBRD approved a loan of 50 million Euros to the company “Mital Stil” Skopje. The purpose of the credit was to improve energy efficiency in the company. Besides this purpose, part of the credit was approved for working capital as well as for promoting integration of metallurgy in the region. Increasing energy efficiency in the company, actually involved revitalization of the existing furnaces and replacement of oil with gas as driving fuel in the hot rolling-mill. These activities were undertaken after the energy revision of the operations of the company in November 2004.

1.5.3. Modernization of the energy system “Meat Industry Sveti Nikole”

In 2010, the meat industry “MIK Sveti Nikole” got a loan from EBRD in the amount of 1.3 million Euros for modernization of the energy system of the factory. The funds from EBRD will be used to implement of a number of measures for implementation of energy efficiency in the production capacities of the company like replacement and modernization of the existing equipment, implementing a system for energy managing and renovation the sewage treatment plant water of the factory.

1.6. Other projects and activities

The Swiss State Secretariat for Economic Affairs (SEKO) has supported the project “Improving the basic infrastructure in Macedonia: Program for efficient distribution of energy” in the period 2003 – 2006.” This program consisted of two mutually complementing projects that are of great importance to the energy infrastructure in the country.

One of the activities of this project was a research on energy consumption in households. 1412 households from across Macedonia were included in the research. The research was conducted in 2005 and covers the following topics: heating, sanitary hot water, refrigerators and freezers as well as awareness about energy efficiency. Based on these results there was a public campaign for raising public awareness regarding the rational use of energy and for labeling the energy efficient devices. The project was supported by the Swiss Agency for Efficient Use of Energy, DAAD Competence Center and the Faculty of Electrical Engineering and Informational Technologies – Department of Research.

ENER – SUPPLY project

The main purpose of this project is to strengthen the capacities of the public administration for promoting, informing and correct planning of projects in the field of energy efficiency and using alternative energy sources. Further, the project is conceived as a way of improving the cooperation between the public and the private sector regarding the implementation of projects related to energy efficiency and renewable energy sources.

Project of the Austrian Developing Agency

The Project of the Austrian Developing Agency (ADA project) presents a mutual Macedonian – Austrian project for introducing energy efficiency in buildings in order to reduce electricity consumption and costs.

The aim of this project is to reduce energy consumption in short and

long term in residential and public buildings in Macedonia through the establishment of framework conditions for energy efficiency in buildings. The directions of the project are towards strengthening the capacities of the Energy Agency in the Republic of Macedonia in whole, but especially regarding the energy efficiency in buildings, supporting the implementation of European regulations on energy efficiency in particular the European Energy Performance of Buildings Directive, towards being the holder of pilot- projects for energy efficiency in buildings, supporting the exchange of academic knowledge and performing activities for increasing public awareness about energy efficiency.

Effective energy municipalities

The Association of Citizens Proaktiva from Skopje in cooperation with Municipality of Centar in the period from June 2010 to May 2011 implemented the project “Energy Efficient Municipality – Part Three” in the public buildings under the authority of the local self-government. The project is financially supported by Global Environmental Facility (GEF) – Small Grants Program for Macedonia, Association of Citizens Proaktiva – Skopje, Municipality of Centar and Public Enterprise - Kindergarten “Rade Jovcevski Korcagin”. The main objective of the project is undertaking energy efficiency measures in order to reduce environmental pollution, especially greenhouse gases. Some of the more specific goals are: reducing carbon dioxide emission and reducing the energy costs for public facilities in Municipality of Centar, and implementing theoretical and practical training of local population for energy efficiency and renewable energy sources. In the first two months the energy effective interventions were conducted in the facility “Rade Jovcevski Korcagin”, Chapter Pinokio – Skopje, which was the proposed building by the Municipality of Centar and it was accepted as an appropriate after the assessment by the professional team.

2. SOURCES OF FINANCING PROJECTS FOR ENERGY EFFICIENCY

Based on previous analysis it can be concluded that the most acceptable way of funding energy efficient projects are international and non-financial institutions. Energy efficiency is a worldwide trend and every organization regardless of whether it is financial institution or nongovernmental organization has prepared financial measures for implementation of projects.

From that aspect the sources can be divided into:

- Loans from financial institutions
- Grants

With regard to the first kind of funding – loans and credit lines, primarily we think about institutions that have already financed energy efficiency projects in the Republic of Macedonia:

- World Bank
- European Investment Bank EIB, European Bank for Reconstruction and Development EBRD
- The Green for Growth Fund, Southeast Europe

What characterizes these loans is primarily the long return period, low interest rate, included grace period.

Besides these sources, the Republic of Macedonia has a large selection of grants from the following organizations:

- UNDP Macedonia – United Nations Developing Program
- Clear Development Mechanism CDM
- European Agency for Reconstruction EAR
- USAID Macedonia (U.S. Agency for International Development)
- Pre – accession funds
- GEF Program for small towns (Global Environmental Facility)
- Donor funds by foreign embassies present in RM

The main characteristic of these means is that besides being non - returnable, they can be used by the local self – managing units and civil society.

2.1. International financing sources

2.1.1. Southeast Europe growth fund for green

The mission of the Fund is to advance energy efficiency in Southeast Europe and Turkey through the promotion of public – private partnership. The Fund provides financial means for financing business subjects and households through other financial organizations or with direct placement of the financial means.

The fund is founded in 2009 in order to increase energy efficiency as well as to reduce CO₂ emission. The purpose of the investments of the Fund is to reduce energy consumption by 20% and CO₂ emissions by 20% in the region. This goal will be realized by:

- Placing financial assets through other financial institutions (banks, funds, leasing companies etc.) that will further place the means by favorable credit lines in order to improve energy efficiency and for projects for

renewable sources of energy etc. The planned means can be used by the companies, the households as well as the government institutions and the local self-management.

- Direct financing of projects in the area of energy efficiency.

In the Republic of Macedonia there is placing of funds in the amount of 5 million Euros through IK Bank which are intended for investments in energy efficiency. They will help Macedonian firms and households to reduce electric energy consumption.

2.1.2. Western Balkans Sustainable Energy Direct Financing Facility WeBSEDF

Basic characteristics of the WeBSEDF credit line

The credit line WeBSEDF is part of EBRD, initiative for Sustainable Development in Western Balkan. This line is initiated as a result of bad energy situation in Western Balkan. Namely, the largest part of the electric energy in Western Balkan is produced in coal power plants. If there are no encouragements about solutions based on energy efficiency and acceptable technology in aspect of environmental protection, the expected increase of consumption of electric energy and the increased usage of fossil fuels for production of electric and thermal energy will inevitably lead to dramatic increase of gas emission that will produce the greenhouse effect.

The credit line WeBSEDF through EBRD gives support to the small and medium enterprises for investing into sustainable energy projects through individual credits from 2 to 6 million Euros. Within this funding, the loan users that qualify can get:

- Free consulting services from the Project Consultant who assists in the preparation of the sustainable energy projects
- Stimulating payments based on the estimated reduction of CO₂ emission, which results from the implementation of the project.

The credit line WeBSEDF is realized in Albania, Bosnia and Herzegovina, Croatia, Macedonia, Montenegro and Serbia (including Kosovo). The line WeBSEDF it is expected to realized up to 25 projects that meet the conditions in all the countries from Western Balkan, with total budget of 50 million Euros and additional budget of 8 million Euros for stimulating payments.

2.1.3. WeBSEFF credit line for sustainable energy

In 2009 EBRD launched the project Western Balkans Sustainable Energy Credit Line Facility (WeBSEFF), supported by the European Com-

mission and the Western Balkan Fund. The countries that are eligible for this project are:

- Serbia
- Bosnia and Herzegovina
- Montenegro
- Macedonia

The project provides 60 million Euros for financing energy efficiency projects and for usage of renewable energy sources that will be made available for end users through commercial banks. Also there are means for stimulation - grants of 15-20% of the loan, that are made available after the investment is made.

Terms of financing are:

- The maximum value of the project is up to 5 million Euros
- The share of the company that makes the investment should be at least 15% of the total value of the project
- Repayment period of 5 years with at least 2-year grace period
- The instrument of the guarantee should be in accordance with the business policy of the bank that places the credit
- Bonus – grant of 15-20% of the amount of the realized credit.

2.2. Domestic sources of funding

2.2.1. Credits for sustainable energy sources through the Macedonian Bank for development promotion

The Macedonian Bank for Development Promotion (MBDP) has favorable credit line whose goal is:

- Using renewable energy sources
- Effective usage of electricity
- Environment protection
- Improving the energy climate in Macedonia

The means are divided into two groups depending on the purpose: credit line for energy efficiency and credit line for using renewable energy sources.

The credit line for energy efficiency offers credits for a period up to 6 years. The maximum amount of the credit is 500,000 US Dollars. At least half of the benefits of the project should derive from energy savings that should be measurable. The technology for energy savings must be well supported with evidence in the application for credit.

The credit line for renewable sources of energy offers credits for a period from 5 – 10 years with grace period of at least 3 years. The maximum amount of the credit is 4 million US Dollars. The target group of this credit

line is investments in:

- Small (mini) hardware for hydro energy (with capacity lower than 10MW)
- Production of electric and thermal energy from biomass
- Projects for heating based on industrial heat surplus or renewable thermal sources
- Projects for energy derived from sun and wind.

Also, these two credit lines are placed through other commercial banks in the Republic of Macedonia.

2.3. Grants

2.3.1. Clean Development Mechanism

The Clean Development Mechanism (CDM) is defined in article 12 of the Kyoto Protocol and it allows the countries that are listed in Annex I to invest into projects that reduce greenhouse gases and that contribute to the sustainable development of the countries that are not listed in Annex I. CDM represents mechanism for trading with harmful emissions of gasses and it is the only flexible mechanism created by the Kyoto Protocol that is open to the developing countries. The Clean Developing Mechanism was adopted at the Third Conference of Parties (COP-3) at the United Nations Convention for Climate Changes. It is an innovative and complex mechanism, whose goal is to stimulate and encourage the reduction of gas emission in the developing countries while promoting sustainable development.

The Clean Development Mechanism is the only flexible mechanism with which the Republic of Macedonia has access according to the Kyoto Protocol.

2.3.2. The Regional Network for Efficient Use of Energy and Water Resources for Southeastern Europe (RENEUER)

The Regional Network for Efficient Use of Energy and Water Resources for Southeastern Europe (RENEUER) is an informal network that was founded upon initiative of the representatives of the central and the local governments, non-governmental organizations and companies from Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Romania, Serbia and Montenegro.

The participants in the network are number of organizations, firms, institutions and individuals, as well as public authorities – authorities of central government (ministries, agencies), regional and local authorities, private sector – banks, companies and funds, non-governmental organizations – associations of employers, professional associations and other

organizations for effective use of resources, international initiatives - Southeast Europe and Initiative for Cooperation in the Pact for Stability in Southeast Europe; international organizations, programs and funds like UNDP, GEF, UNFIP, UNECE Program, European Commission programs, REC Program, The USAID Project Ecolinks, Municipality Network for Energy Efficiency (MUNEE); international financial institutions – World Bank, EBRD, EIB, etc.

2.3.3. *Intelligent energy Europe (IEE)*

This program has an objective to implement better energy efficiency and to make greater use of alternatives – renewable energy sources. The budget of this program is 727 million Euros, 20% of which are allocated for planned activities. This program is managed by the Directorate General for Energy and Transport of the European Commission.

For the implementation of this program, the EC has established the European Agency for Competiveness and Innovation (EACI). This agency is a successor of the European Association for Creativity and Innovation established in 1987 as an informal initiative and in 1993 it had grown into an official organization – agency established under the Dutch laws. The Board members are all EU member states that have the right to vote on all strategic issues. Its role is to announce public calls, to monitor the implementation of the projects and to provide feedback to the Directorate General for Energy and Transport of the European Commission.

3. CONCLUSION

With implementation of the strategy for energy efficiency, Macedonia will have many benefits, especially in terms of reducing electricity consumption, which directly leads to reduction of electricity imports, as well as to increased use of renewable sources, which directly reduces the energy dependence on fossil fuels.

For that reason, the Government of the Republic of Macedonia should take responsibility within the adopted strategies for energy and energy efficiency and to encourage all entities, citizens and business sector alike, to raise awareness about the importance of energy efficiency. This has to be done, not only because of the goals adopted in the strategies and commitments made towards the EU, but also as an obligation towards its citizens, in order to provide better living conditions and better living standard.

Abstract

This study deals with energy efficiency in the Republic of Macedonia, the development and the future of energy efficiency in our country in the last 20 years. The analysis covers laws, bylaws and strategies that regulate energy efficiency as well as the implemented project in this area and their sources of funding in the Republic of Macedonia. Great part of the research is dedicated to the available international and domestic sources of financing projects regarding energy efficiency. There is special emphasis on the pre – accession fund “Intelligent Energy Europe”, process of applying and analyzing financing possibilities. This fund is crucial for Macedonia as a future potential member of EU, for implementing planned projects which are defined in the strategies for developing energy efficiency and in separate municipal energy efficiency programs.

Резиме

Овој труд се занимава со енергетската ефикасност во Република Македонија, развојот и иднината на енергетската ефикасност во нашата земја во последните 20 години; во анализата се опфатени и законските, подзаконските акти и стратегиите кои ја регулираат енергетската ефикасност, како и реализираните проекти од оваа област и нивните извори на финансирање во Р. Македонија. Голем дел на истражувањето е посветено на расположливите меѓународни и домашни извори на финансирање на проекти од областа на енергетската ефикасност. Посебен акцент е сставен на претпристапниот фонд „Интелигентна енергија Европа“, процесот на аплицирање, и анализа на можностите за финансирање. Овој фонд е клучен за Македонија како идна потенцијална членка на ЕУ, за реализација на планираните проекти дефинирани како во стратегиите за развој на енергетска ефикасност, така и во поединечни општински програми за енергетска ефикасност.

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