



*Ministry of
Foreign Affairs
Norway*



Local Government Municipal Energy Efficiency Programme in Macedonia

Municipal Energy Efficiency Planning Programme



2010 - 2011

Programme Background

Municipal Energy Efficiency Planning

The programme “Energy Efficiency in Macedonian Buildings” was launched in June 2005 through support from Norwegian Ministry of Foreign Affairs and co-financing from UNDP Macedonia. Implementing agency was ENSI – Energy Saving International AS and the programme was implemented in partnership with Proaktiva D.O.O. and MACEF.

Main components in the programme were:

- Building energy efficiency capacity in municipalities, including baseline studies and preparation of Municipal Energy Efficiency Programmes (MEEPs)

Municipal Energy Efficiency Programmes were developed in 4 pilot municipalities (Centar, Gevgelija, Karpos and Saraj) and corresponding budgets have been presented to their City Councils for approval. Karpos and Gevgelija have approved the MEEPs and started implementation.

- Training local experts (energy auditors) in using software tools and methods to calculate energy performance of buildings according to the EU Energy Performance of Buildings Directive (EPBD).

The training of local energy efficiency experts has resulted in 11 certified Energy Auditors representing Technical University in Skopje, Energy Efficiency Agency and local consultants. It has also resulted in software tools and text books for energy auditing of buildings adjusted to local conditions (climate and reference values) and harmonized with the EPBD.

Based on the results from the MEEP programme, interest for replicating the methodology has been expressed by several other Macedonian municipalities. Also USAID launched in 2007 the project Macedonia Local Government Activity (MLGA) in order to build capacity and improve performance of local governments, where particular attention was given to fiscal decentralization (Until 2007, local governments were operating under credit quarantine).

The capacity building programme therefore continued in 2010 by scaling up this activity with 5 new municipalities, and ENSI, together with Proaktiva D.O.O, with support by USAID MLGA implemented the programme by providing technical assistance, software and training manuals.

The purpose of the new programme is to develop Municipal Energy Efficiency Programmes for 5 Macedonian municipalities (Kavadarci, Kisela Voda, Kochani, Stip, and Struga) and to identify financial schemes for financing the activities proposed in the action plans. The purpose is also to train local experts that can serve local government in future development of energy efficiency projects.

The main goal is to contribute to:

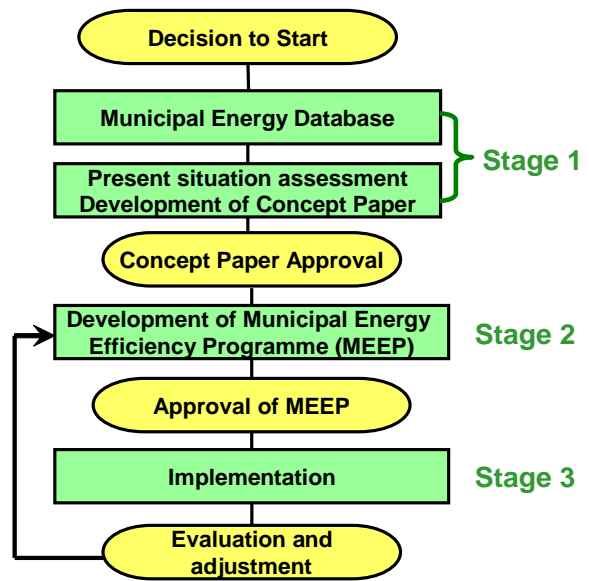
Improved performance of local governments in Macedonia with focus on energy efficiency.

Municipal Energy Efficiency Planning Process

Stage 1. Training of municipal personnel (Energy Efficiency Teams) on energy efficiency in municipal facilities and municipal energy efficiency planning. Assisting the participants in assessing the existing situation, and in preparing the MEEP Concept Paper.

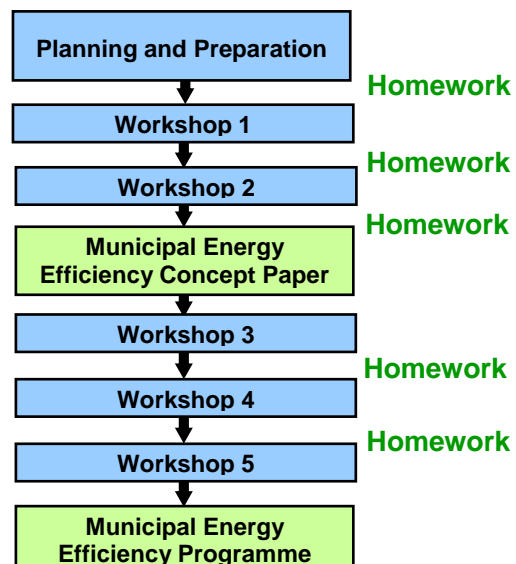
Stage 2. After Mayor's endorsement of the MEEP Concept Paper, the programme continues with further training through interactive development of the Municipal Energy Efficiency Programme and its preparation for political approval by the Municipal Council.

Stage 3. After approval by the Municipal Council, the implementation of the activities proposed in the approved MEEP should be started.



The capacity building programme in Macedonia was organised in 2010 through a series of workshops with plenary sessions combined with individual meetings and technical assistance, as illustrated to the right.

The workshops, typically lasting for 2 days, include lectures, examples, exercises, discussions and consultations. Between the workshops, the participants carry out practical homework on specific tasks as defined. This way they gain experience while repeating and testing out their new knowledge, ending up with a Municipal Energy Efficiency Programme.



Programme coordination

ENSI – Energy Saving International AS from Norway is the overall coordinator of the project. ENSI provides the methodology, training materials and tools for the training process. ENSI experts deliver training and consultancy to the participating municipal teams.



The operational partner, Proaktiva D.O.O., ensures overall coordination with other relevant local projects, programmes and authorities. As the main implementation partner, Proaktiva D.O.O. acts as local facilitator and provides technical assistance to participating local expert teams.



A close cooperation has been established with the USAID funded Macedonia Local Governance Activity (MLGA). MLGA provides technical assistance, training and systems support to Macedonian local governments. This includes fiscal and budget management, local revenue raising, community participation, and planning and development of local government associations. MLGA provided support to the training process with important input on issues related to municipal financing.



The Mechanical Faculty of Skopje University was facilitating the sessions for energy auditors and ensuring successful implementation of energy efficiency audits development component of the programme.



Programme results

The major programme results for every participating municipality are the developed “MEEP Concept Paper” and “Municipal Energy Efficiency Programme”, which is ready to be implemented. Developed Municipal Energy Database is another result with lasting importance.

In addition, a number of other programme results are expected, as listed below:

The Municipal authorities should have increased their understanding and knowledge about:

- What does energy efficiency in municipal facilities mean, and how could the municipality benefit from implementing energy efficiency programmes and projects;
- What are the main barriers to energy efficiency in municipal facilities, and what can be done to overcome them or mitigate their impact;
- How to apply a systematic approach to municipal energy efficiency planning and management;
- Which sources and schemes are available for energy efficiency project and programme financing;
- How to involve other actors in municipal energy efficiency programmes and projects.

Furthermore, the municipal representatives in the training process (the EE Team) should develop skills enabling them to:

- Operate and maintain the Municipal Energy Consumption Database, and utilise the information gathered;
- Negotiate project financing;
- Prepare annual action plans according to the approved MEEP;

- Specify, tender, contract and monitor external consultants for project development, implementation and monitoring;
- Update and further develop the Municipal Energy Efficiency Plan;
- Perform good and consistent monitoring, evaluation, reporting and presentations.

Summary of Programme implementation

- Information about Municipal Energy Efficiency Planning was provided to Macedonian municipalities
- Energy Efficiency Teams were established and trained in the five selected municipalities, in total 16 energy managers were trained
- Guidelines and manuals for Municipal Energy Efficiency Planning were provided
- MEEP Concept Papers were developed in all five municipalities and endorsed by the respective Mayors. Four MEEPs were developed. The Kisela Voda Municipal Energy Efficiency Programme was approved by the Municipal Council in November 2010.



ENSI MEEP Toolbox

The ENSI Toolbox for Municipal Energy Efficiency Planning includes:

- Templates for “MEEP Concept Paper” and “Municipal Energy Efficiency Programme”;
- Supporting MEEP Tools.

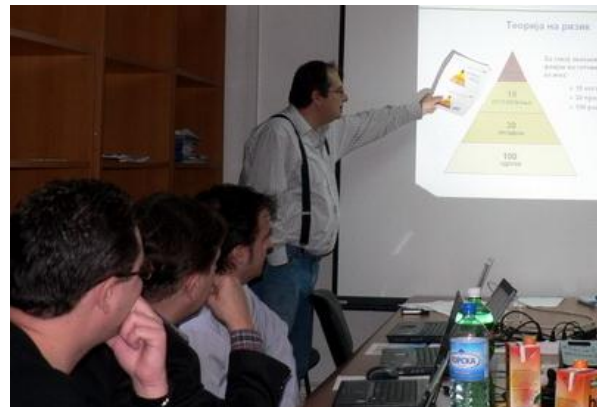
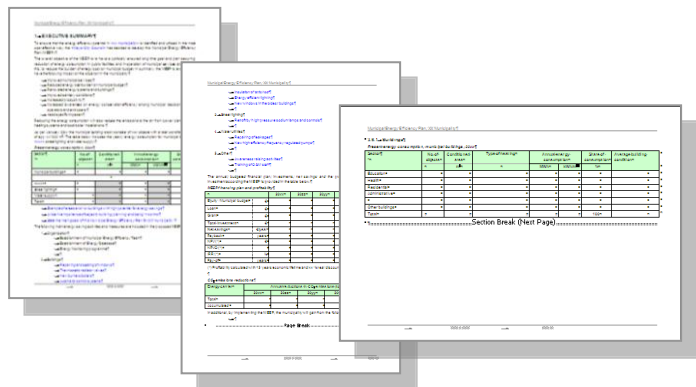
MEEP Templates

Templates for the “Concept Paper” and “Municipal Energy Efficiency Programme”.

The “MEEP Concept Paper” determines the background and prerequisites in a municipality for energy efficiency planning. The “Concept Paper” describes the present situation, which is largely based on the information on municipal facilities and their energy consumption, collected in a specific ENSI Municipal Database provided. The Concept Paper also makes conclusions and recommendations on policy priorities and objectives, target groups, organisation and responsibilities for the development and implementation of the MEEP, energy efficiency financing and further steps to be undertaken in order to ensure a successful energy efficiency planning process. The Concept Paper shall be endorsed by the Mayor before the MEEP Programme continues.

The “MEEP Template” contains the following chapters: Executive summary, Introduction, Present situation assessment, Goals and strategy of the MEEP, Planned energy efficiency activities, Expected benefits from implementing the MEEP, MEEP Financing, Organisation of MEEP implementation, and Monitoring, evaluation and reporting.

The templates are generic and can be adjusted to fit the size and complexity of any municipality.

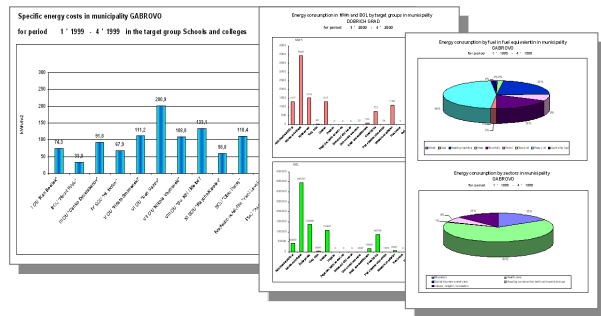


Supporting MEEP Tools

ENSI has developed a set of tools which can be used to facilitate and support the preparation of the Municipal Energy Efficiency Programme.

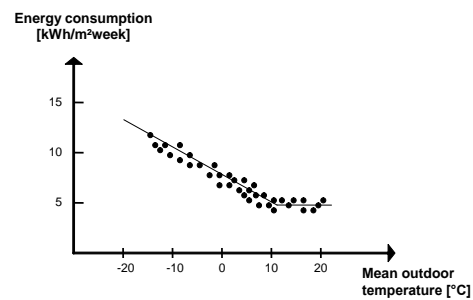
ENSI Municipal Energy Consumption Database

Database software has been developed to get an overview of municipal buildings, street lighting and other facilities and their energy consumption. The database is specifically useful when containing information for the last 2-3 years. It is an important tool for ranking and prioritizing objects for energy efficiency projects. The database is also used to document the results of the implemented energy efficiency projects and activities.



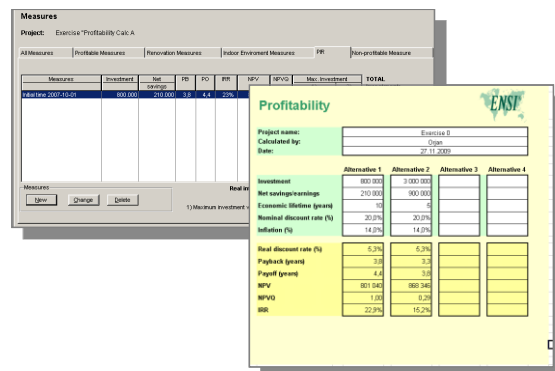
ENSI Energy Monitor

An excel tool for energy monitoring of single buildings: registration of periodically (weekly) energy consumption and climatic data and calculation of weekly and accumulated energy consumption and costs, and deviations from target values.



ENSI Profitability Software

The ENSI Profitability Software is calculating the profitability of individual measures, or package of measures; Payback (PB), Pay-off (PO), Net Present Value (NPV), Net Present Value Quotient (NPVQ) and Internal Rate of Return (IRR).



ENSI Financial tools

ENSI has developed a set of excel tools for financial calculations: Disbursement plan, Repayment plan and Cash flow.

No.	Description	Calendar	Disburse-ments	Interest payment at given date?	Interest calculation	
		Date format 18.02.2008			Date	Interest EUR
		Date	EUR	(Yes/Blank)		
1	Contract signing	15.01.2008	80 000			
2	Components	01.03.2008	180 000			
3	Installation	30.06.2008	60 000	Yes	30.06.2008	7 759
4	Installation II	30.07.2008	60 000			
5	Commissioning	31.12.2008		Yes	31.12.2008	14 957
SUM:			380 000			22 716

ENSI Energy and CO₂ emissions

A tool for calculating emission and emission reductions from energy efficiency measures and projects, adjusted to the MEEP Programme.

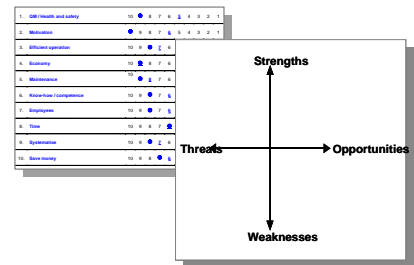
SUMMARY - ENERGY SAVINGS AND CO₂ EMISSION REDUCTION

Municipality:		Energy carrier:							
ENERGY SAVINGS		MWh/year		Electric energy	Heating oil	Direct heating	Natural gas	Heavy oil	Programme
Year	%	Total							
2011	4.3 %	235	75	160					
2012	4.3 %	235	75	160					
2013	4.3 %	235	75	160					
2014	4.3 %	235	75	160					
2015	4.3 %	235	75	160					
Sum savings	24 %	1 175	375	800					
Present energy consumption	100 %	5 506	1 800	3 706					

Municipality:		Energy carrier:							
CO ₂ EMISSION REDUCTION		t/year		Electric energy	Heating oil	Direct heating	Natural gas	Heavy oil	Programme
Year	%	Total							
2011	4.0 %	130	101	29					
2012	4.0 %	130	101	29					
2013	4.0 %	130	101	29					
2014	4.0 %	130	101	29					
2015	4.0 %	130	101	29					
Sum CO₂ emission reduction	20 %	669	507	162					
Present CO ₂ emissions	100 %	3 406	2 539	866					
CO ₂ emission coefficients K (kg/MWh)			1.340	2.539					

SWOT analysis

A tool for analysing “Strengths, Weaknesses, Opportunities and Threats”, a method used for prioritising and selecting areas for development.



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