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ANNUAL PROJECT REPORT (APR) – 2010

Basic project information

Project number and title:

00059896 “Mitigating climate change through improving energy efficiency in building sector”

Designated institution: **Ministry of Environment and Physical Planning**

Project starting date: *July 3rd 2009*

Originally planned: *July 3rd 2009*

Actual: *October 2009*

Project completion date: *June 2011*

Originally planned: *June 2011*

Total budget (US \$): *350,000 Euro equivalent to 510,204.08 \$USD*

Original: *350,000 Euro*

Latest signed revision: *29 July 2010*

Period covered by the report: *January 1st –December 31st 2010*



25.02.2011

NOTE TO THE FILE

Subject: Signing of Annual Progress Report (APR) for 2010 for the Mitigating Climate Change through Improving Energy Efficiency in Building Sector Project

Attached to this note is the Annual Progress Report for 2010 for the Nationally Implemented Project #00059896 "Mitigating climate change through improving energy efficiency in building sector". As an imperative document, the Annual Project Report is reflecting all the major achievements on project level for 2010, as well as lessons (both positive and negative) drawn from the project implementation in the respective year.

Signing of this note will form integral part of the Annual Project Report which has been presented and endorsed at the Third Project Board meeting on 20 December 2010. Based on the review of the internal business processes, it has been agreed that all Annual Project Reports are also endorsed by the UNDP Deputy Resident Representative.

Prepared by: Ilija Sazdovski, Project Manager

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Reviewed by: Anita Kodzoman, Head of Environment Unit

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Endorsed by: Ann-Marie Ali, Deputy Resident Representative

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TEXTUAL ASSESSMENT

1. **What are the major achievements of the programme or project vis-à-vis the expected results during the year under review? To the extent possible, include an assessment of the potential impact, sustainability and contribution to capacity development.**

OUTPUT 1: National database, including required climate parameters per regions in the country developed.

Development of the climatological database for calculation of energy performance of buildings and climate mapping of the country

The energy use in buildings is strongly related to the climate zone where it is located. Therefore, current energy codes and standards contain numerous requirements based on climate; e.g. minimum R-values for roof insulation and maximum solar heat gain coefficients (SHGCs) for window glazing. In order to develop successful measures for energy efficiency in buildings adequate and reliable data are needed on the building sector that will be further linked with the specific climate conditions in the country. Furthermore, an adjusted climate classification needs to be developed to help improve the implementation of building energy codes and standards by making them climate-responsive.

Firstly, based on the findings of the First National Communication on Climate Change (2003) the project developed a report to determine the required climate parameters. Additionally, data gaps were filled by the collection of accurate and missing data. The developed climate maps and parameters show unambiguously which requirements apply for each location in the country. Maps have proven useful as an effective way to enable code users to determine climate dependant requirements. In the context of building regulations, climate zones are regions which are of sufficiently similar climate that a common solution for energy efficiency measures is possible and justifiable. Climatic variations will lead to considerable regional variations on the benefits of energy efficiency measures and must therefore be reflected in the provisions/Book of Rules.

Secondly, the project developed an operational database to systematize the climatological data needed for the determination of locally accurate energy efficiency measures. The database will provide the main input parameters necessary for the component 2 of the project "Enabling the Environment for Introducing Energy Efficiency in Buildings in the Republic of Macedonia", which is currently under implementation by the Austrian Energy Agency in cooperation with the Macedonian Energy Agency and Ministry of Economy. This component aims to improve the legal framework for energy efficiency in the building sector in order to set the basis for implementing directive 2002/91/EC of the European Parliament and of the Council on the energy performance of buildings (EPBD), through i.e. preparation of the Book of Rules, development of methodology for calculation the energy performance of buildings, development of the software and other tools necessary for proper implementation of the Book of rules and its methodology, and setting the minimum energy performance requirements for certification of buildings.

A Consultant was hired in 2009 to perform a climatological assessment. The aim of the assessment was to evaluate and determine the specialized technical aspects necessary for developing a Climate Database (Output 1 of the project), with special emphasis on the required climate parameters per regions and its compatibility to a country specific calculation methodology. Presentation of the



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findings of the final report was done on a consultation workshop that was held on 22 April in ERA CITY, Skopje, with an audience of app. 40 key stakeholders from all relevant institutions, faculties and the business sector. Additionally a technical meeting was scheduled on 7th of May with key stakeholders from technical faculties and the private sector (as agreed on the workshop) to finalize the remaining issues of the report - like detail range of the required climate parameters, necessity of hourly or mean daily values for the temperature, humidity, solar radiation and wind – speed and direction - as well as to agree on the number of climate regions and to identify the referent stations.

After in-depth discussion, participants agreed that it is feasible to divide the country in 4 climate regions on basis of difference of 200 Heating Degree Days. Selected referent stations (one for each climate region) from HMI are: Skopje, Bitola, Berovo and Demir Kapija. Selected referent stations (one for each climate region) from MOEPP are: Skopje – Gazi baba, Bitola, Kavadarci and Kocani. According to findings of the finalized report first climate mapping of the country was produced (see Annex1) and the process of collecting data from the indicated sources was implemented.

The climatological data is stored, managed and processed within the internet application called External Climate and Inventory Tool for Energy efficiency (ExCITE) The data in the database is organized according to the Macedonian standard MKS EN ISO15927 for hygro-thermal performance of buildings - calculation and presentation of climatic data.

Based on the conclusions from the workshop, the process of data acquisition needed for calculation of energy performance of buildings was initiated by contracting the HMI, cooperating with MOEPP and utilizing the internet tool Metenorm 6.1. More detailed:

- HMI provided mean daily data (based on 3 daily reference values) for temperature, humidity and wind (direction, speed, duration) for 15 year period (1994-2009) for 4 referent meteorological stations (Skopje, Bitola, Berovo and Demir Kapija).
- HMI provided hourly data for dry bulb temperature duration for 10 year period for 4 referent meteorological stations (Skopje, Bitola, Berovo and Demir Kapija).
- MOEPP provided hourly data for solar radiation, humidity and temperature for up the longest period of measurement for 4 referent meteorological stations (Skopje, Bitola, Berovo and Kavadarci).
- Using the internet tool Metenorm 6.1 for gathering climatological data, the data gaps shall be validated and additional data will be collected if needed.

OUTPUT 2: Inventory of Public Buildings and dynamic database developed, the most effective investment-oriented energy efficient building programme identified, and energy efficiency programmes for public buildings in selected municipalities developed.

A crucial milestone in data acquisition was achieved by establishing a cooperation mechanism with EVN Macedonia and Toplifikacija A.D., the two biggest energy distributors in the country. To complete the inventory data base, there is the need to gather historical energy consumption data of public buildings. Collecting and archiving electricity bills from over 600 objects turned out to be a big



challenge due to lack of access to and availability of electricity bills on the local level. The only way how to overcome this challenge was to establish strategic cooperation with the biggest electricity distribution companies. After several rounds of negotiations, MoUs were successfully drafted and signed by the parties in the frame of public events and press conferences. By the means of the MoUs, the aforementioned companies agreed to provide UNDP the electricity consumption data for public objects complying with the EPBD requirements. This lays the foundation for the generation of electricity consumption statistics for public buildings for the first time in the country and can be acknowledged as an outstanding example of public private partnership. The MoU with EVN also sets the stage for further collaboration in the field of public raising awareness within the frame of this project. A first step in this direction was undertaken by including EVN as part of the energy efficiency and ExCITE training events were organized (for more detailed explanation on the trainings see output 3). During the training sessions, space was created to facilitate the communication between EVN and municipalities. The technical feedback received will enable EVN and the municipalities to enhance the cooperation between them which will ultimately lead to an improvement of service delivery.

Key milestones of the MoUs are:

- To facilitate the data gathering process, Toplifikacija a.d. Skopje provided the heating consumption data (measured and projected) and the heated area of the public objects complying with the EPBD requirements. .
- To facilitate the data gathering process, EVN will provide (in January 2011) electricity consumption data for the public objects complying with the EPBD requirements.
- Additionally, EVN will support the raising awareness and capacity building activities organized as part of the project.

Through these strategic partnerships a considerable amount of project funds was preserved, which will be used for supporting municipalities on implementing energy efficiency programmes for public buildings in selected municipalities (as agreed during the last project board meeting).

Development of the software tool for organizing the data on energy consumption and climatological data – ExCITE Software

In order to strengthen the capacities of the local government units a software was produced by the project, comprising the databases for climatological parameters and the inventory data. External Climate and Inventory Tool for Energy efficiency application (ExCITE) is a software that can be used for the purpose of continuous energy monitoring in public buildings. As mentioned above, the software includes a database of climate data which is required for calculating the energy performance of buildings linked to the overall EE programme implemented by the Austrian Energy Agency.

ExCITE is a software tool that connects processes of entering data for buildings, street lighting, energy consumption and energy expenses on the one side and climatologically data needed for calculating energy performance on the other. For ease of use and access the software is conceived as an internet application.



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Series of workshops were organized involving all of the key stakeholders for providing comments on design and functionalities. An inception workshop for the municipalities was organized on the 3rd of March where the draft version of the software functionalities was presented. The draft version presented at the workshop was according to international standards. Additionally, it was essential that the software fulfills the needs and expectations of the municipalities in order to create sustainability and ownership. At the workshop 124 members from the local self-governments were present, including 12 mayors. The workshop was evaluated with an average grade of 4.65 (on a scale of 1-5).

A user friendliness test was organized with the representatives of local authorities and an institutional assessment for the most appropriate host institution was conducted. Consequently, a stakeholders meeting for determination of the host institution and future users of the software was organized. Members from the Ministry of Environment and Physical Planning, Ministry of Economy, Macedonian Energy Agency, ZELS and Project 4E-SEGO were present. At the meeting ZELS was identified as the most appropriate host institution. It was agreed between all stakeholders that representatives from the Ministry of Economy – Sector Energy, Macedonian Energy Agency and the Ministry of Environment and Physical Planning will be additionally trained to use the software tool for the role of energy manager (please see below a description of roles and information flow).

Meetings with ZELS in terms of defining the future obligations, maintenance, sustainability and costs followed. The software was accepted by the Secretariat of ZELS and presented at the annual assembly of ZELS. It will be part of the ICT Strategy of ZELS and the software will be maintained as a service for the municipalities free of charge.

The ExCITE software tool can be used for fulfilling the obligations for the municipalities under the new Law on Energy which will presumably enter into force at the beginning of next year, i.e.:

- Preparation of a 3-year action plan for energy efficiency for the baseline calculations
- Preparation of an annual analysis on energy consumption
- Organizing a system for monitoring on energy consumption

That way the software application can be used as an important link between the central government and local authorities and as a tool for meeting the responsibilities under the new Law on Energy. The software will allow national institutions to create energy consumption statistics for public buildings on a rolling basis for the first time. These statistics represent the foundation for the development of any future national, regional and local energy efficiency programme of public buildings.

This software offers a standardized format of reporting to Governmental Institutions on the energy consumption of public buildings. But currently Local Self Governments are not obliged to use the software and to update it with data. Possibilities for the inclusion of the ExCITE software into existing legal acts and/or other legally binding documents as the book of rules is required to assure sustainability of the product.

The software was publicly promoted during the energy week on October 12th.



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OUTPUT 3: Public awareness and knowledge about energy efficiency and energy saving measures in building sector increased.

In the course of creating strategic partnerships with Local Self-Governments, in March 2010 all municipalities in the country were invited to establish energy teams by nominating two representatives for advancing the energy efficiency agenda on the local level. The nominated representatives are mainly engaged in the fields of urbanism, street light, local economic development or environment related issues.

In order to strengthen the capacities of the energy teams', trainings on energy efficiency and ExCITE software was conducted and designed based on the needs assessment undertaken during the inception workshop held on March 3rd, attended by representatives from all municipalities in the country. The trainings were organized in 9 training sessions in the period between November 29th and December 15th. The training module was prepared and implemented by professors from the key faculties: Faculty of Electrical Engineering, Faculty of Mechanical Engineering, Faculty of Civil Engineering and the Faculty of Architecture. The training sessions included environmental and energy efficiency topics as stated below:

- Advantages for implementation of measures for energy efficiency;
- Related EU legislation and related national legislation (European directives, national laws, sub-laws and legislation concerning energy efficiency for implementation of projects on municipal level);
- Best practices of implementing energy efficiency and renewable energy projects in municipalities in the country and the EU;
- Concrete energy saving measures in public objects;
- Types of systems for energy efficiency and renewable energy available in the country;
- Overview of funds available for funding energy efficiency and renewable energy projects in the country;
- Clean Development Mechanism – networking, possibilities for implementation on a local level, regional best practices and preparation of PINs.

Through the trainings the energy teams were equipped with knowledge essential for local energy management and for designing, mobilizing of resources and implementing future energy efficiency projects. The energy teams were trained on the usage of the ExCITE software, which will enable them to create local energy consumption statistics and complying with the obligations deriving from the new energy law. Furthermore, bringing together representatives from all municipalities supported networking, knowledge transfer and sharing of experiences between the municipalities with regards to energy efficiency. 96 local authorities passed the trainings and the training was evaluated with the average grade of 4,58 (scale from 1 to 5).

Enhancement of East-East Cooperation



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There were two objectives for entering into partnership with the Czech Trust Fund: First, to enhance East East Cooperation in terms of knowledge transfer and experience sharing. Second, to enhance the partnership and trust building process with local municipalities in order to increase their commitment for cooperation. A project proposal was prepared and submitted to the Czech Trust Fund. Consequently, additional funds for implementing a study tour to the Czech Republic as well as to develop a report on the Czech experience implementing the EPBD were granted by the Czech Trust Fund. This activity is complementary to the Output 3 of the project: Raising awareness and knowledge about energy efficiency and energy saving measures in building sector increased.

A Czech company was selected to analyze the Czech experience in implementing the EPBD and to provide recommendations for the Macedonian context. The overall report includes three main chapters. The introductory chapter summarizes the experience and benefits gained through the implementation of the EPBD in the Czech Republic. The main chapter addresses the key approaches, measures and strategies used to facilitate the implementation process of the EPBD. The last chapter is summarizing lessons learned and recommendations for the context of the country.

The report was reviewed by the key national stakeholders along with the Austrian Energy Agency and was presented on a round table to a wider audience on September 2nd. 117 participants present from Governmental, local, civil, private and academia sector were present. It was the first time that the EPBD transposition process was publicly discussed in the country and the Czech experience served as ideal instrument for mirroring future needs and challenges.

The report is emphasizing a series of legal, institutional, technical, awareness, fiscal and financial recommendations and conclusions that can be implemented in country. By coordinating the report's recommendations with the Macedonian Energy Agency and the Ministry of Economy national acceptance of the recommendations for the country was ensured. Especially coordination during the preparation of the report with the Austrian Energy Agency, assigned for the preparation of the sub laws and tools for successful implementation of the EPBD directive in the country, ensured utilization of the recommendations within the frame of the overall programme implementation.

A study tour was organized for strengthening the capacities of local authorities regarding the compliance of laws and regulations deriving from the transposition of the EPBD and the successful implementation of energy efficiency programmes for public buildings on the local level. The objective of the Study-Tour was to enhance understanding of the energy situation and policy in the new EU member states and to study the practical application of methodologies for energy management as well as energy conservation. The study tour provided insights into the legal, regulatory, administrative, technical and commercial aspects of energy efficiency programmes on municipal level capitalizing on the Czech experience in the field.

Through a public call, 12 participants from the local government were selected from throughout the country based on criteria regarding human and municipal capacity. Selected participants are employees of the Municipalities of Chashka, Karposh, Aerodrom, Mogila I Novaci, Gevgelija, Kisela Voda, Strumica, Kichevo, Radovish, Prilep and Zrnovci. All of the participants received certificates of recognition within the frame of a public event. The study tour took place in the period between 5th and 11th September in Prague, Brno and Litomerice. The study tour completely fulfilled the expectations of the participants. All important materials from the study visit and the report were shared with all other municipalities. A video was produced accessible over the webportal highlighting



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the key benefits of the study tour as well as other important achievements of the project so far. Within the first week of publication on you-tube, already over 300 visitors were counted.

Web based information clearing house – portal on energy efficiency (www.eeportal.mk)

In order to organize the information, analysis and other important issues on energy efficiency a web based information clearing house was prepared. The clearing house involves:

- Analysis, report and publications
- Market analysis with more than 100 entities working on energy efficiency and renewable energy (database)
- Information about events and different activities
- Pool of questions for participatory analysis of the public opinion
- Complete legislation and strategic documents related public objects and energy efficiency
- Calculator for CO₂ emissions and energy consumption
- Simple advices on energy efficiency

The entire building sector will benefit from this internet platform. For the first time all relevant information for energy efficiency in the building sector is organized and easily accessible through the internet on Macedonian and English language. The portal is especially useful for the municipalities in terms of providing information needed for successful implementation of energy efficiency projects. The portal will be maintained along with the ExCITE application by ZELS as key information tool for all of the municipalities.

2. What major issues and problems are affecting the achievement of programme or project results?

- a. As the project "Enabling the Environment for Introducing Energy Efficiency in Buildings in the Republic of Macedonia" faced considerable delays, the calculation methodology was not prepared at the moment of developing the climatological assessment.
- b. Data gathering on electrical energy consumption from the EVN Macedonia has slight delays because of changes at the senior management of the company changes of the billing system.
- c. The law on Hydro-meteorological issues creates a powerful monopoly of the Hydro-meteorological Institute (HMI). The procurement process of climatological data suffered slight delays and close contract management was required by the project unit. The Excite software offers a standardized format of reporting to Governmental Institutions on the energy consumption of public buildings and allows Municipalities to fulfill the requirements deriving from the new Law on Energy. But currently Local Self Governments are not legally bound to use the software and to update it with data. An assessment of the possibilities for the inclusion of the ExCITE software into existing legal acts and/or other legally binding documents as the book of rules is required to assure sustainability and institutionalization of the product.

3. How should these issues or problems be resolved? Please explain in detail the action(s) recommended. Specify who should be responsible for such actions. Also indicate a tentative time-frame and the resources required.



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- a. The climate requirements were identified based on a comparative analysis of several calculation methodologies applied in Europe, which enabled the approximation of climate data relevant for the country. In this process, close cooperation with the Austrian Energy Agency was maintained to assure accuracy and quality of the results of the climatological assessment. As an additional measure of risk mitigation a renowned international consultant was hired to review the assessment.
- b. The project unit organized a meeting between the senior management of UNDP and senior management of EVN Macedonia in terms of presenting the importance of the project especially on a local level. Also, the project unit is in a constant communication with the EVN focal points assigned after the signing of the memorandum of understanding to cooperate with UNDP. As agreed by the parties, the data gathering process is supposed to finish in January 2011.
- c. After a number of meetings and negotiations the project unit managed to convince the HMI to provide the data needed for fulfilling the Output 1: National database, including required climate parameters per regions in the country developed. All of the data were not digitalized and a considerable amount of time was needed to prepare the data sets in digital form. Moreover, they were not willing to share the percentiles of climatological data. Considering the fact that the internet tool for valorization of climate data (METEONORM) can be used for the generation of validated data, the project unit will use Meteonorm for acquiring the additional data needed. The technical consultant of the project unit will undertake this exercise. No further impacts of project activities and budget are expected.
- d. No formal consultation with the Government has been initiated so far regarding the institutional setup and usage of the Excite Software. Though, for ensuring sustainability and institutionalization of the software it is crucial to initiate the consultation process, starting with submitting a comprehensive document on the Excite Software for Governmental consideration. This document should demonstrate the functionality of the software and its assets, map all relevant Governmental Institutions that will benefit from its use as well as locate the software within the legal context. Formalization of the roles and obligations/responsibilities of the governmental institutions linked to the software will contribute to its sustainability in terms of effective future use, especially with regard to future need of up-dating the local inventory and climate data.

4. What new developments (if any) are likely to affect the achievement of project results? What do you recommend to respond to these developments?

- a. Further delays in the launch of the above mentioned project "Enabling the Environment for Introducing Energy Efficiency in Buildings in the Republic of Macedonia", might effect the overall coordination and the quality of project outputs. One of the outputs of the project "Macedonia Sustainable Energy Project" implemented by World Bank is the development of a National Programme on Public Building. One activity of the project "Mitigating climate change through improving energy efficiency in building sector" is to develop an Investment oriented energy efficiency programme on public buildings, which aims to achieve similar targets. In terms of avoiding duplication, a meeting between the management of both project team, World Bank and UNDP, was organized. Both sides agreed to coordinate and cooperate closely in the implementation of the respective outputs in order to avoid overlapping and unfold synergies. Moreover, involvement of the national partners and overall coordination by the designated institutions is needed for further harmonize this activity.
- b. Applicability of developing Project Idea Notes (PINs) for energy efficiency in public buildings must be reviewed, also in light of a closing first commitment period of the CDM mechanism



and uncertainties regarding the outcome of the global climate change negotiation process. There is agreement that flexible mechanisms will continue in the post-2012 period. And there are many ideas to adapt and modify the existing flexible mechanisms in line with the post-2012 GHG reduction requirements. Significant work is undertaken on how different instruments could work and fit into a post-2012 architecture but the future framework of the CDM is still not clear. Moreover, during the implementation of the CDM capacity building process implemented by the Ministry of Environment and Physical Planning in cooperation with Energy Norsk, two PINs in the sphere of energy efficiency in buildings were prepared. Both showed that not enough Certified Emission Reduction's can be created to ensure the future classification as CDM project.

5. What are the views of the target groups with regard to the project? Please note any significant gender-based differences in those views.

Extensive efforts were made to establish intensive working relations with all municipalities and building up of social capital. Target groups are satisfied with the project which is confirmed by their active participation and evaluation of all of workshops and round tables organized. Overall average evaluation of all of the trainings and round tables is 4,67 (in a scale 1 to 5) .

The media is showing continuous and increasing interest for the energy efficiency and climate change issues and activities in the country and are reporting positively on the project activities.

There are not any gender-based differences expressed but during next year the project unit will engage a consultant for the preparation of a report on gender-energy efficiency analysis and the recommendations will be taken into consideration during future activities. .

6. To date, what lessons (both positive and negative) can be drawn from the experience of the project?

Positive: Some of the Municipalities have already organized systems for local energy management, and relevant data gathered for the purposes of improvement of the municipal budget planning. The capacity of the municipalities is highly diverse. Some of the municipal authorities have long history and excellent capacity for implementation of energy efficiency projects. There is a common understanding among all stakeholders of the problems of the energy sector and they are willing to contribute in resolving by their active involvement in the processes of creation of new legislation, strategies and methodologies. Important stakeholders from central and local government, NGOs, academia, experts and private sector participated in all of the public events organized by the project. That shows their interest and commitment in future involvement of the processes and discussions on energy efficiency issues.

Negative: According to the international experiences in implementing similar projects, approaching local self-governments is highly sensitive, can be complicated and therefore must be dealt in a well-planned and strategic manner. Within the sector there is lack of information on European legislation and directives and how they are affecting the country, especially among the local authorities. In this regard the Czech experience was important. Also, concerning private sector, there are few companies that can produce and/or trade high quality energy efficiency materials. This might create problematic and challenging dynamics during the procurement and future implementation of activities related to technical projects.



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7. If the project has been evaluated, what is the implementation status of the recommendations made by the evaluators?

N/A

8. Do you propose any substantive revision to the project document? If yes, what are they? State justification.

Revision in terms of the length of the project activities is required, because of initial delays in establishing the project unit (the project document was signed in June 2009 but the project team was established end of October 2009) as well as preserved funds. During the implementation of the activities, strategic partnerships were established with the private sector - through signing Memorandum of Understandings with the key energy distribution companies like EVN Macedonia and Toplifikacija A.D. - Skopje - which preserved a significant amount of budget funds. Additional funds were mobilized from the Czech Trust Fund which complemented the activities of Output 3 i.e.. These funds will be used for energy efficiency programmes for public buildings in selected municipalities (output 2 of the project) as agreed on the Second Project Board meeting. Possible technical intervention can be implemented only when the public objects are closed. Considering the fact that most of the public objects under the municipal jurisdiction are schools and kindergartens, those technical activities can be implemented during the period between June 2011 and September 2011 and when the weather conditions are satisfactory for implementation of these activities. Therefore the project unit proposes an extension of the project till fall 2011.

9. Provide any other information that may further support or clarify your assessment of the programme or project. You may include annexes as you deem necessary.

Annex 1: Climate mapping of the country according heating degree days

Annex 2: Dataflow of the ExCITE software application

Annex 3: Type of users and roles of the ExCITE application

Annex 4: Functionalities of External Climate and Inventory Tool for Energy efficiency

Ilija Sazdovski
Project Manager

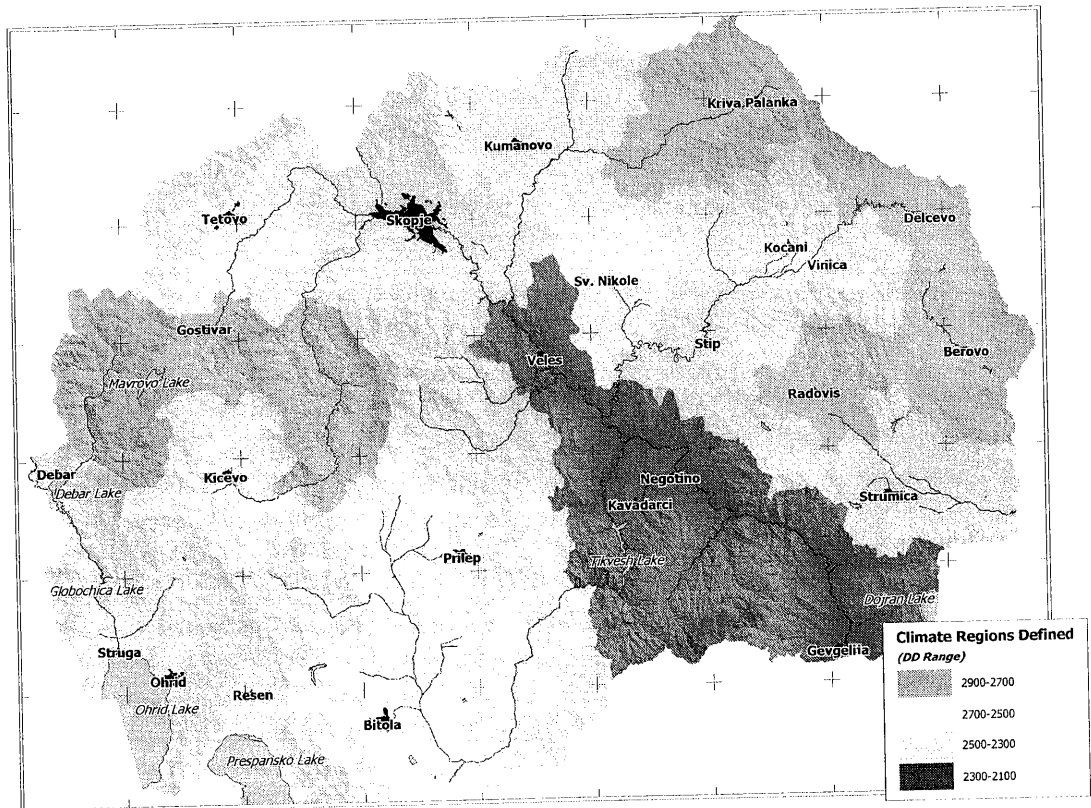
Teodora Grncarovska Obradovic
Ministry of Environment and Physical Planning

Georg Schoen
Programme Officer



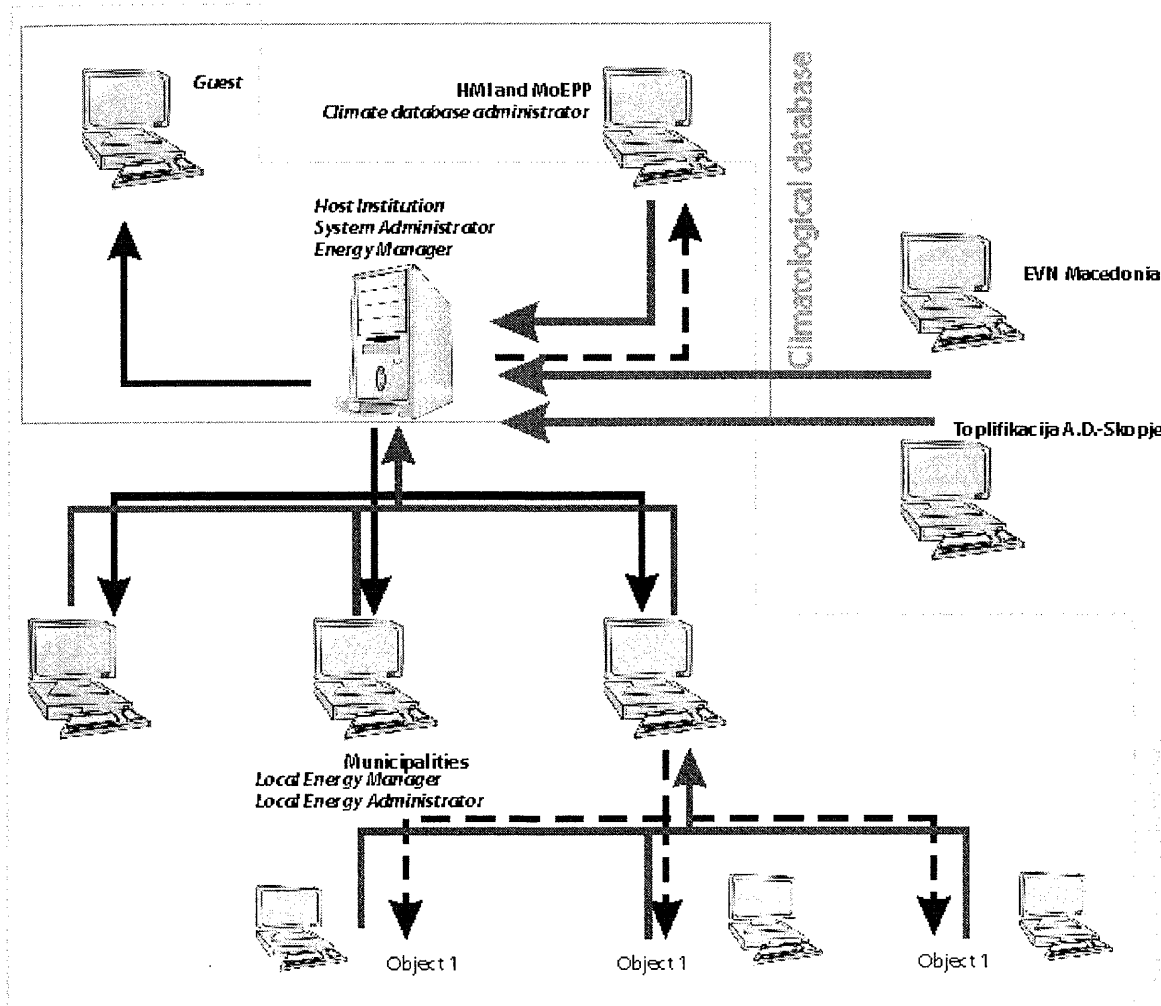
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Annex 1





Annex 2





Annex 3

- **Climate data administrator (CDA)** - Primarily uses ExCITE for monitoring of climatological data and provides climatological data for the System Administrator from Hydro-Meteorological Institute, Ministry of Environment and Physical Planning and Meteonom;
- **Local Energy Manager (LEM)** - Primarily uses ExCITE for data verification and entry, and uses the software for reporting on energy consumption and expenses responsible for a group of buildings and the streetlight system. LEM can validate and change data only for that group of buildings and the streetlight system in the respective municipality;
- **Local Energy Administrator (LEA)** - Uses ExCITE as one of the basic tools for energy management, responsible for gathering data for group of buildings and the streetlight system owned by the municipality;
- **Energy Manager (EM)** - Primarily uses ExCITE to view reports and trends in consumption (access to all data);
- **Guest (G)** - Review of data marked as available to the public and using relevant reports;
- **System administrator (AS)** - Person who provides technical support in terms of software maintenance, users and tables in the database management. Person responsible for entry of the climatological data.



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Annex 4

- Continuous updating and maintenance of a database of general information on public buildings and street lighting in Macedonia;
- Continuous updating and maintenance of a database of climate data for calculating the energy performance of public buildings in Macedonia;
- Continuous entry and monitoring of consumption data for all types of energy used in buildings and street lighting;
- Continuous entry and monitoring of expenses for energy used in buildings and street lighting;
- Calculation of energy consumption indicators by user-selected independent variables entered in the database data and via preset parameters;
- Calculation of energy expenses indicators by user-selected independent variables entered in the database data and via preset parameters;
- Calculation of green house gases, calculated by pre-determent coefficient and by user-selected independent variables entered in the database data and via preset parameters for energy consumption;
- Monitoring of energy consumption and energy expenses for individual building, groups of buildings and street lighting on a monthly bases;
- Report creation according to user defined criteria or according to preset templates.



Programme or project summary table

Programme/project title and number:	Mitigating climate change through improving energy efficiency in public buildings, 00059896	Management arrangement:	NEX
Designated institution:	Ministry of Environment and Physical Planning	Period covered:	01.01.2010-31.12.2010

OVERALL ASSESSMENT

Brief analysis of progress achieved in the contribution of the programme or project to the expected results.

The main objective of the project is to contribute to an enabling environment for improving energy efficiency in building sector and at that end contributing to climate change mitigation at national level.
All of the planned project activities for the period covered by the report were implemented.

SUMMARY OF RESULTS by OUTPUTS and RESOURCES USED

Output 1: Climate database developed

Activity	Quality Method	Quality Criteria	Results of activities	Resource usage	Timeliness
Development of methodology to determine the required climate parameters	Review of the methodology by the Ministry of Economy	Methodology in line with the requirements of the ADA project and approved by the Ministry of Economy	<ul style="list-style-type: none"> Workshop for commenting the methodology held and all relevant stakeholders present. Expert workgroup formed and the climatological data indentified. Methodology finished and reviewed by MoE, MoEPP, AEE, MEE. Draft Climate mapping of the country finished. 	<ul style="list-style-type: none"> National Consultant for preparation of the methodology (14.000\$) International Consultant for peer review of the methodology (553\$) Technical consultant (1.203\$) Two workshops for commenting and determination of climate data (1.700\$) 	All the activities finished according to the work plan



					<ul style="list-style-type: none"> • Draft Climate GIS mapping (240,67\$) • Contract with HMI (36277\$) • Meteorom (460\$) 	<p>All the activities finished according to the work plan</p>
Collect the required data and fill the data gaps	Final report submitted by HMS	Data gaps filled according to European standards and involving best technology available in the country	<ul style="list-style-type: none"> • The final report reviewed by HMS. • The data from the referent stations from the MoEPP gathered (temperature, humidity, wind and solar radiation) • HMS hired and all data gathered. • Meteorom software tool for filling data gaps provided 			
Develop specific software for the database	Testing of the user friendliness and functionality of the software	Compliance with international best practices	<ul style="list-style-type: none"> • EXCITE application prepared and the climatological data inserted • User friendliness test organized, software evaluated with highest grade and without comments 	<ul style="list-style-type: none"> • Infinite Solutions (29664\$) • Hardware for EXCITE (8000\$) 		<p>All the activities finished according to the work plan</p>
Discuss the database design with the relevant stakeholders	Attendance of relevant stakeholders	Design matches international standards	<ul style="list-style-type: none"> • EXCITE application discussed with all relevant stakeholders and host institution identified 	N/A		<p>All the activities finished according to the work plan</p>
<p>Output 2: Inventory of Public Buildings developed, most effective investment-oriented energy efficient building programme identified, and energy efficiency programmes for public buildings for selected municipalities developed.</p>						
Activity	Quality Method	Quality Criteria	Results of activities	Resource usage	Timeliness	
Inventory of public buildings developed	Consultant report prepared and round tables to discuss the draft design of the inventory organized	Parameters and methodology for developing the inventory developed by consultant according European	<ul style="list-style-type: none"> • The Technical consultant involved in the process the parameters of the software determined according to the municipal needs on a national workshop. • MoU with EVN Macedonia and 	<ul style="list-style-type: none"> • Technical consultant (402\$) • IT consultant for preparation of the functional specification (902.53\$) • 4 Data Gathering Officers 	<p>All activities are proceeding according to work plan. EVN shall transfer the data in January.</p>	



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		standards and country specific conditions	<p>Toplifikacija A.D. – Skopje signed</p> <ul style="list-style-type: none"> • General data of all public objects above 1000m² gathered • Data Gathering Officers for 4 regions hired • Functional specification of the software prepared. • Company for development of the software for the database hired • User friendliness test organized, software evaluated with highest grade and without comments • EXCITE application discussed with all relevant stakeholders and host institution identified 	(2.040\$ - 1 st installment for travel expenses)	
Investment-oriented energy efficient building programme identified	Coordination and collaboration with ADA Project (Component 3)	Input parameters for the analysis of the public building sector in terms of EE identified and data collected	N/A	N/A	Planned for the second year of the project
Energy efficiency programmes for public buildings in selected municipalities developed	Consultation and Planning workshops targeting local authorities organized	Energy efficiency programmes adopted by the municipal councils	N/A	N/A	Planned for the second year of the project
PIN for potential CDM project (s) develop	Review of the PIN by the CDM DNA	PIN for the CDM project approved by the DNA	N/A	N/A	Planned for the second year of the project

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Output 3: Inventory of Public Buildings developed, most effective investment-oriented energy efficient building programme identified, and energy efficiency programmes for public buildings for selected municipalities developed.

Activity	Quality Method	Quality Criteria	Results of activities	Resource usage	Timeliness
Organize workshops to raise knowledge on energy efficiency in the building sector	Questionnaire for participants for assessing the quality of the workshops	Top notch consultants engaged for the delivery of the workshop.	<ul style="list-style-type: none"> Inception workshop for local governments implemented. The workshop evaluated with general grade 4,6 (from 1-5) by the participants. Study visit in Czech Republic for 12 Municipal officials organized (5 days). Study visit evaluated with 4,7 (from 1-5) by the participants. 	<ul style="list-style-type: none"> Inception workshop for the LSG (6804,43\$) Study visit co-financed by CTF. The project financed the travel expenses for the participants (5992,15\$) 	All the activities finished according to the work plan. Additional workshops shall be organized in Year 2
Organize round tables for discussion of the benefits from improving energy efficiency in the building sector	Attendance of relevant stakeholders	European best practices channeled in the country.	<ul style="list-style-type: none"> Round table for presentation of Czech experience in implementing EPBD organized. 117 participants present from Governmental, local, civil, private and academia sector present Study on Czech experience in implementing EPBD prepared in Macedonian and English 	<ul style="list-style-type: none"> Venue, translation and refreshments for the event (1621,11\$) Company for publishing the CD and the summary (798,28\$) 	All the activities finished according to the work plan. Additional roundtables shall be organized in Year 2
Establish Web based information clearing house as a channel for information dissemination and as a link	Testing of the user friendliness and functionality of the webpage	Compliance with international best practices	<ul style="list-style-type: none"> Consultant for preparation of the web-clearing house hired Structure of the web-clearing house prepared Web clearing house prepared Testing of user friendliness organized during trainings with 	<ul style="list-style-type: none"> Consultant for preparation of the web-clearing house (2.462\$) 	Sub activity planned in the project document for the Year two, moved to year one and was promoted at the Energy week

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<p>between customers and providers</p>	<p>Conduct training for targeted group of stakeholders on local level to adopt EE aspect into the building design and construction.</p>	<p>Questionnaire for participants for assessing the quality of the workshops</p>	<p>Top notch consultants engaged for the delivery of the workshop.</p>	<p>municipalities. No comments received so far.</p>	<p>All the activities finished according to the work plan.</p>
<p>Develop simple promotional materials.</p>	<p>Coordination cleared by the UNDP communication unit</p>	<p>Company for preparation of the training curricula, compendium and programme for LSG hired. Top notch consultants from all relevant faculties included in preparation of the trainings</p> <ul style="list-style-type: none"> • Training compendia prepared and training manuals for the ExCITE application prepared • Trainings organized and 96 local authorities and evaluated with 4,58 (from 1-5) by the participants. 	<p>• MACEF (19987\$)</p> <ul style="list-style-type: none"> • Venue and refreshments (4000\$) • Printing of the training materials (2264\$) 	<p>All the activities finished according to the work plan.</p>	<p>All the activities finished according to the work plan.</p>
<p>Develop simple promotional materials.</p>	<p>Coordination cleared by the UNDP communication unit</p>	<p>Summary of the EPBD directive published and distributed. Cleared by the UNDP communications</p> <ul style="list-style-type: none"> • Info on energy efficient light systems published. Cleared by the UNDP communications • Two documentaries on energy efficiency published 	<p>• 77\$ printing</p> <ul style="list-style-type: none"> • 201\$ technical consultant for preparation • Animations, recording and directing in MKD and Czech Rep. (2769\$) 	<p>All the activities finished according to the work plan.</p>	<p>All the activities finished according to the work plan.</p>

Project **"Mitigating climate change through improving energy efficiency in building sector"**

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