

## SUMMARY OF ROUNDTABLE DISCUSSIONS

From analysis to realisation:

- How to realise energy efficiency projects in Macedonian industry?

**VENUE: "ECONOMIC CHAMBER OF COMMERCE", DIMITRIE CUPOVSKI 13, SKOPJE**

**2<sup>ND</sup> MARCH 2010**

The Norwegian funded programme "Cleaner and more cost effective industry in Macedonia" ([www.ccei.org.mk](http://www.ccei.org.mk)) conducted the 2<sup>nd</sup> March 2010 a Round Table Discussion focusing on realisation of energy efficiency projects in the industry in the Republic of Macedonia. Under the three-year programme that started in the second half of 2009, pre-feasibility studies for energy efficiency projects have been prepared by technical experts and company representatives. These projects were presented at the event and used as the basis for discussing how to realise energy efficiency projects in Macedonian industry.

The event was chaired by Senior Researcher, Ms Natasa Markovska from the Macedonian Academy of Sciences and Arts, and key representatives from authorities, financing institutions and the companies took part in discussions. This document presents the main conclusions and provides a summary of the presentations held by authorities, financing institutions and industry. The agenda, a list of participants and an evaluation of the event is included in the annex.

### MAIN CONCLUSION FROM DISCUSSIONS

1. Industry could contribute with useful input in the process of developing energy efficiency policy documents and new financing programmes. It would be good if authorities and IFIs took a more active in involving the industry in these processes.
2. In manufacturing industry investments in process equipment and increased production output is prioritized ahead of implementing energy saving measures. The cost saving of implemented energy efficiency measures should therefore be monitored and disseminated more widely.
3. Very little has been done in this field the last 20 years. RM has a lot of good technical expert, but few today have the experience in preparing bankable projects. International programmes should focus on energy auditing and in training local experts in preparing high quality feasibility studies.
4. The programmes the IFIs have today don't fit all projects, but the IFIs are trying to adapt to the market and provide the necessary services. Technical assistance is often provided for by the IFIs. Main considerations when assessing applications for financing are the following: company solidity documented by balance sheets, company history of settling of debts, the viability of the project proved by well prepared project documentation and which guarantees that can be provided.

5. Large companies have fewer problems with preparing good projects than smaller companies.
6. The specific project of ensuring safe energy supply to the University Clinical Centre is a complex case which requires immediate attention from authorities. Due to the legal status of the company operating the energy supply, no loan can be obtained without the involvement of Ministry of Health.

## SUMMARY OF PRESENTATIONS FROM AUTHORITIES

### **Ministry of Economy**

*Department of Energy investment, Mr Andon Kirov*

Industry consumed almost 34% of all final energy consumption in 2006. The main primary energy sources in the industry are electricity (33%), oil products (32%) and coal (19%). Several strategic documents are under preparation and expected to be adopted this year. The National Energy Efficiency Action Plan for 2009-2016 stipulates annual energy savings of 147,2 ktoe by 2016, of which 81ktoe should be done in the industry. Over the period until 2016 a total reduction of 364,8 ktoe energy consumption should be made in the industry

### **Ministry of Environment and Physical Planning**

*State Councilor for Climate Change, Ms Teodora Grncarovska*

The Designated National Authority for the Clean Development Mechanism in Macedonia is the Ministry of Environment and Physical Planning. Energy efficiency projects in the industry can benefit from CDM and the procedures for utilizing this flexible mechanism of the Kyoto Protocol is already in place in Macedonia. Due to the large share of fossil fuel based in the Macedonian electricity mix, the greenhouse gas emission reduction potential per kWh electricity saved is higher in Macedonia than in other countries. Several potential projects have been identified and developed under the Italian Programme and the Norwegian funded CDM capacity building programme. 2 projects have been issued host country approval and 1 project is registered by the CDM Executive Board. In the future the MoEPP expect that Macedonia will have to change status under the Kyoto Protocol and take upon obligation to reduce greenhouse gas emissions and become a part of the EU Emission Trading Scheme (EU-ETS). An action plan for reducing greenhouse gas emissions was presented in Copenhagen in December.

## SUMMARY OF PRESENTATIONS FROM INDUSTRY

### **Silmak**

*Prof Margarita Ginovska, UKIM*

Silmak is a private company producing ferrosilicon, located in Jugunovce, 45 km west of Skopje. It is the biggest ferroalloy producer in the Balkan Peninsula. Silmak is one of largest electricity consumers in Macedonia, with an annual consumption 320 GWh per year. The majority of this is consumed by the electro furnaces. Silmak has seven electro furnaces with a total installed capacity of 94 MW.

The main identified energy efficiency option is recovering the waste heat from the furnaces for producing electricity. Combined with the installation of bag-house filters Silmak may also separate out and sell the microsilica dust in the offgas. In addition to selling this by-product, CDM help make the project viable. The annual emission reduction is estimated to 69.000 tCO<sub>2</sub> per year. In addition, the installation of baghouse filters will avoid huge amounts for particle emission in the area. Rough estimates of the investment cost for waste heat recovery range between 16-20 million Euro, and the project may be economically feasible if one includes income from sale of CERs. .

Due to low market price for ferrosilicon, Silmak has not been in operation the last time. The company was purchased by EFT in the middle of February and production has been resumed.

### **Wabtec-MZT, Wabtec Group**

*Coordinator Quality and Performance Systems, Silvana Petrovska*

Wabtec MZT is a company which is specialized in the manufacture of railway braking equipment. The main energy efficiency options identified during the pre-feasibility study are

#### Forging and welding area

- Re-design of furnaces
- Heat the combustion air for furnaces in a recuperative air-heater
- Switch- over from the existing fuel, light oil, to natural gas

#### Surface protection

- Signalizing unit's application for the surface process duration
- Automation and computer follow-up of Waste water treatment station
- Internal control of el. power consumption by regulation of Maxi graph

#### Mechanical machining

- Replacing electrical heating with gas heating of premises where electrical heating exist
- Replacing existing heating with oil by heating with natural gas
- Monitoring of the el. power consumption and production process organization improvements

## Karpos

*Technical Manager, Ilja Janev*

The factory Karpos AD Skopje is established in 1948 and it is one of the oldest companies in the building and construction industry sector in the Republic of Macedonia. The main energy efficiency options identified during the pre-feasibility study are a new boiler plant and new compressor unit, as presented in the below table:

Option	Estimated energy savings	Estimated cost savings	Investment budget	Simple payback period
New, container type, boiler plant	Heavy oil (mazute) saving 10% = 38 t/year 1)	38000 kg/year x 0.50 €/kg = 19000 €/year	About 70 000 Euro	Simple payback 3.7 years
New compressor unit	1) 2% electrical energy saving = 0.02x2680 = 54 MWh/year 2) 3% electrical energy saving = 0.03x2680 = 80 MWh/year	1) 54000 kWh/year x 0.04 €/kWh = 2160 €/year 2) 80000 kWh/year x 0.04 €/kWh = 3200 €/year	About 6000 Euro	1) 2.78 years  2) 1.88 years

## University Clinical Centre

*Mr Stojce Nikolovski*

The University Clinical Centre, as an institution that provides health-care activities, is a large consumer of various forms of energy. It is a consumer of fuels for heating and transportation, production of process steam, hot water, compressed air, other compressed gases etc. The whole system of energy facilities is very complex. The energy system is of essential importance for the overall functioning of the Clinical Centre.

Most of the energy equipment and installations operate with relatively large energy losses, mostly due to the years of insufficient investment and improper maintenance.

There are plenty of options and measures that would contribute to energy saving and the overall energy efficiency improvement of the energy facilities in UCC. Some of the priorities are listed below:

- optimisation of steam/hot water heating network
- installation of measurement and control equipment
- replacement of old burners
- fuel switch from residual fuel oil to natural gas will improve significantly the overall energy-environmental operating conditions
- revitalisation and modernisation of the equipment and devices in the boiler room and in the sub-stations in separate clinic units

## SUMMARY OF PRESENTATIONS FROM FINANCING INSTITUTIONS

### **Macedonian Bank for Development Promotion, MBDP**

*Manager, Credit and Guarantee Department, Mr Aleksandar Stanojkovski*

The mission of the bank is to help Macedonian economy and promote Macedonian export through financing. MBDP administrates three credit lines from own sources and five foreign credit lines. MBDP works via five local banks, Komercijalna banka, Ohridska banka, IK banka, UNI banka and NLB Tutunska banka. So far Komercijalna banka has been most successful in financing energy efficiency projects. The Energy Agency assists the banks in assessing whether the project is viable or not.

MBDP provides loans for energy efficiency with a maturity of up to 6 years. Minimum project amount is 10.000 USD and maximum is 500.000 USD, of which minimum 10% should be own funds, 60% from MBDP, 30% from on-lending banks. Companies that are legal entities registered in RM and that are minimum 51% in private ownership can apply, and application is made to one of the participating banks. The acceptability of the applicant is assessed by credit policies and procedures of the commercial banks. The applying company should have no unsettled debt towards the state. The applicant should be prepared to present balance sheets, a copy of the trade register of the company, a business plan, collateral etc. Before accepting giving loan, the Energy Agency has to confirm that the energy efficiency or renewable energy project is cost efficient.

MBDP also provides loans for renewable energy with a maturity period of up to 10 years including 3 years grace period. The project amount must be between 500.000 to 4 million USD

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#### **US Aid**

*Project Manager Specialist, Office for Economic Growth, Ms Margareta Lipkovska Atanasov*

US Aid has introduced two Development Credit Authority (DCA) Facilities that can fund energy efficiency and renewable energy programmes in Macedonia, one for municipalities and one for Small and Medium Enterprises. The latter covers also SME expansion and working capital in addition to project financing. Guarantee agreement is signed with two local banks, and the maximum loan to one borrower is 500 000 USD. Maximum payback period is 5 years, but only until 2014.

US Aid consider the main barrier for implementing energy efficiency projects is the lack of staff in local banks that are trained to assess loan applications for EE projects. US Aid is planning a new project on energy efficiency in industry from mid 2011.

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**European Bank for Reconstruction and Development, EBRD**

*Head of Skopje Resident Office, Ms Elena Urumovska*

For loans smaller than 1 million euro EBRD works via intermediaries. In Macedonia EBRD is currently negotiating with local banks for the credit line providing loan for energy efficiency measures up to 1 million Euro.

The Western Balkan Sustainable Energy Direct Financing Facility (WBSEDF) can provide financing for industrial energy efficiency projects from 1-6 million euro. Interest rate is market based, and expected average maturity period is 6-8 years with grace period depending on the project. Technical assistance can be provided for project identification and preparation. Require minimum 20% energy saving. Process of loan approval is between 4-9 months. Cost of legal consultant is covered by EBRD and the interest rate is market based (normally between 3.5-6 %). On project completion the verified GHG emission reductions can lead to 15-20% reduction of outstanding principle loan. The formula to determine this incentive payment takes into account the CO2 emissions avoided per year, a price per ton CO2 and the annuity factor, a variable depending on the discount rate and the number of years the CO2 reductions will be remunerated.

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**United Nation Economic Cooperation for Europe, UNECE**

*Senior Consultant Ms Åse Sørensen, Norsk Energi on behalf of UNECE*

Under the Programme Energy Efficiency 21 (EE21) UNECE is setting up the investment fund “Financing Energy Efficiency Investments for Climate Mitigation”. Macedonia is one of the member countries and the Energy Agency is one of the counterparts to the Programme. The Fund is currently in the design phase, but it is expected to be launched in the end of 2010.

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## ANNEX 1 - AGENDA

### ROUNDTABLE DISCUSSION

From analysis to realisation:

- How to realise energy efficiency projects in Macedonian industry?

VENUE: "ECONOMIC CHAMBER OF COMMERCE", DIMITRIE CUPOVSKI 13, SKOPJE

2<sup>ND</sup> MARCH 2010

#### Agenda Roundtable Discussion

Chairman: Ms. Natasa Markovska

13:00-13:10	Opening and introduction of participants	<b>Ms. N. Markovska</b>
13:10-13:20	Introduction to the Roundtable discussion	<b>Ms. A.I. Glimsdal, Norsk Energi</b>
13:20-13:35	Energy efficiency policy in Macedonia - <b>Goals, policy measures, challenges</b>	<b>Mr A Kirov Ministry of Economy</b>
13:35-13:50	The Clean Development Mechanism in Macedonia - <b>Status, projects in pipeline, activities promoting projects</b>	<b>Mrs. T. Grncarovska Ministry of Environment and Physical Planning</b>
13:50-14:30	Energy efficiency project identification in companies <b>Cases from</b> - <b>Silmak, Ferrosilicon production</b> - <b>Poli-MZT, Manufacturer of railway brake equipment</b> - <b>Karpos, Building and construction industry</b> - <b>University Clinical Centre, Boiler room and heating network</b>	<b>Company representatives</b>
Coffee break		
14:50-15:20	Presentation of financing instruments - <b>Macedonian Bank for Development Promotion</b> - <b>US Aid</b> - <b>EBRD</b> - <b>United Nations Economic Commission for Europe (UNECE)</b>	<b>Mr. A. Stanojkovski Ms. M. Atanasov Ms. E. Urumovska</b>
15:20-16:30	Discussion: How to realise energy efficiency projects? <b>Initial question to industry:</b> - <b>Can government and financing institutions contribute to overcome the described barriers?</b> <b>Initial question to financing institutions:</b> - <b>What is a good EE project seen from your side, and how to get more of them in Macedonia?</b> <b>Questions to all participants:</b> - <b>How can government, financing institutions and industry join forces to realise more EE projects?</b> - <b>How can assistance programmes, such as this Norwegian programme, contribute in this process?</b>	
18:00	Dinner	



**Почиста и поефективна индустрија во Македонија**  
 Проект финансиран од Владата на Кралството Норвешка

## ANNEX 2 – LIST OF PARTICIPANTS

	Име и презиме/ Name and Surname	Институција/ Institution	Позиција/ Position	Потпис/ Signature
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## Почиста и поефективна индустрија во Македонија

Проект финансиран од Владата на Кралството Норвешка

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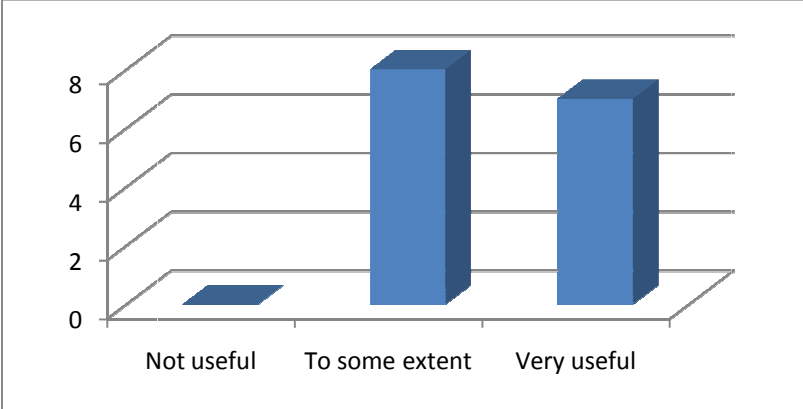


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 Проект финансиран од Владата на Кралството Норвешка

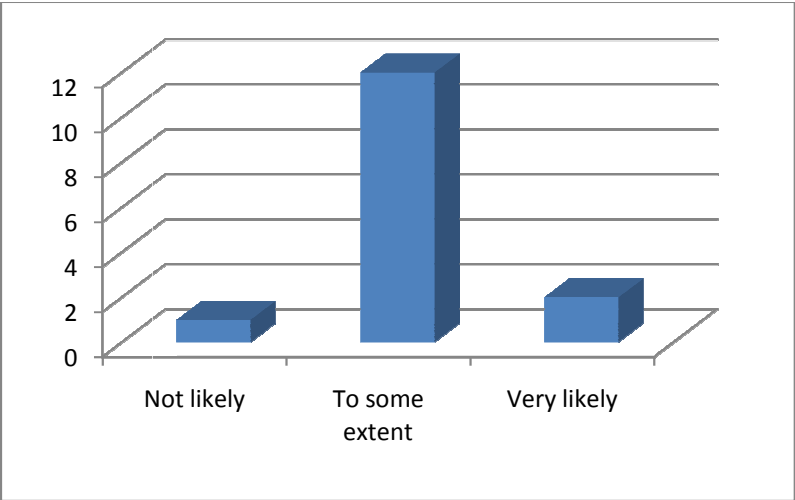
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ANNEX 3 – SUMMARY OF QUESTIONNAIRE AFTER RT DISCUSSION

1. Did you find this round table discussion useful?



2. Is it likely that you will use information from this meeting in your further work?



3. Will you participate if this becomes a regular meeting forum?

