15 Annex - Energy

99. ACTION PLAN FOR IMPLEMENTATION OF ENERGY EFFICENCY STRATEGY 2008 - 2012 (PROPOSAL)

Montenegro

Ministry for Economic Development

ACTION PLAN FOR IMPLEMENTATION OF ENERGY EFFICIENCY STRATEGY

2008 - 2012

(Proposal)

Podgorica, May 2008

Abbreviations

A/C: Air Conditioners (heat pumps – split units)

CHP: Cogeneration of heat and power

EAR: European Agency for Reconstruction

EBRD: The European Bank for Reconstruction and Development

EC: The European Commission

ECT(SEE): Energy Community Treaty (South Eastern Europe)

EDS: Energy Development Strategy of Montenegro up to 2025

EE: Energy Efficiency

EPBD: Energy Performance of Buildings Directive [2002/91/EC]

EPCG: Power Utility of Montenegro (Elektroprivreda Crne Gore)

ESCO: Energy Service Company

GoM: Government of Montenegro

KAP: Aluminium Plant Podgorica

kgoe: kilograms of oil equivalent

KWh: Kilowatt-hour

MEEU: Montenegrin Energy Efficiency Unit

M&T: Monitoring and Targeting (Energy Management system)

NGO: Non-Governmental Organization

PEEREA: Protocol on Energy Efficiency and Related Environmental Aspects (Energy Charter Treaty)

RES: Renewable Energy Sources (RE: Renewable Energy)

SEE: South Eastern Europe(an)

SWOT: Analysis of strengths, weaknesses, opportunities and threats

TA: Technical Assistance

toe: tons of oil equivalent

ToR: Terms of Reference

Table of Contents

- Directive on efficiency requirements for new hot-water boilers fired with liquid or gaseous fuels (92/42/EEC)
- Directive on the promotion of cogeneration based on a useful heat demand in the internal energy market and amending Directive 92/42/EEC (2004/8/EC)

Introduction

Energy Efficiency Strategy (EE Strategy) was adopted by the Government of Montenegro on 13. October 2005. The strategy has been implemented by means of action plans, proposed to the line ministry by the Montenegrin Energy Efficiency Unit (MEEU).

Action Plan for implementation of EE Strategy for the period of 2008-2012 is based on:

- Guidelines from the EE Strategy and Energy Development Strategy up to year 2025;
- Need for approximation and convergence with the European Union legislation ("EU Acquis") in the field of EE;
- Progress and acquired knowledge during the implementation of activities forseen in EE Action Plans for years 2006 and 2007, respectively;
- Results from MEEU technical assistance projects, financed by the EU/EAR using a Greek consulting firm "Exergia" as the intermediary in project implementation, with George Georgocostas acting as a team leader. Within the framework of this project, the first proposal of this Action Plan was developed, and MEEU has modified it;
- International donors plans for support in the field of EE;
- Previous experiences of MEEU related to the current issues in energy sector of Montenegro;

Short-term and medium-term perspectives for EE development are defined in the EE Strategy, with a special focus on the principle of EE promotion that is in accordance with best international practice and EU legislation and regulation in the field of EE, as well as with the accent on implementation of relevant EU directives, adaptation of the already proved schemes and policies in the region and EU to Montenegrin conditions and situation;

Furthermore, there is a possibility that EAR and other international donors will offer assistance in the process of preparation of "Terms of Reference" for complex projects. Ministry for Economic Development should accordingly ask for relevant help from experts.

Finally, efficient implementation of Action Plan will depend on necessary allocation of financial and human resources, especially regarding the establishment of the Central institution for EE, on cooperation and support from all parties involved in energy sector, as well as on the level of technical and financial assistance offered from international donors.

It is important to note that the concept of the Action Plan with its suggested activities represent a good basis for further development and implementation of the Project "Year of Energy Efficiency", which represents a timely activation of announced assistance from international organizations/donors (EAR, UNIDO, UNDP, GTZ, World Bank, EBRD, KFW, and the like). This includes faster establishment of a separate coordination body, with the members coming from the Ministry for Economic Development and interested donors, with the assignment of a constant monitoring of the implementation of the Action Plan, identification of important implemented activities and their periodic public promotion (if possible on monthly basis), so as to offer a significant contribution to the raising of general awareness about the importance and effects from the implementation of EE measures.

Executive Summary

A. Overview of the current situation with regard to Energy Efficiency

A.1 Structure of the energy consumption

Montenegro's **domestic energy resources** are coal (lignite, brown coal), hydro energy and biomass (wood and wood wastes). According to the energy balance[1] 2004 the domestic production covers about 55% of the gross inland consumption. The rest is covered through imports. The total quantity of liquid and gaseous fuels and about 35% of the final electricity demand are imported, with the tendency of growth in recent years.

The **structure of the final energy consumption** is characterised by limited diversification of energy forms. Electricity and petroleum products accounted for about 45% each of the final energy consumption in 2004. The rest was biomass (7%) used mainly in households and small quantities of lignite. Natural gas is not available and District Heating is practically not developed.

Two industrial companies, the Aluminium Plant Podgorica (KAP) and the Steel Works Plant in Niksic consume about 45% of the total final energy consumption. Households and transport sector consume about 21% each, the public and commercial sector follow with a share 10%, while industry, other than the two large companies, consume only about 4% of the final energy consumption. The structure of the final energy consumption indicates **the sectors to be addressed in priority** for energy efficiency (EE) measures.

Concerning **petroleum products**, transport is the larger consumer followed by the two large plants (KAP and Steel Works). Less significant consumers are the Commercial and Public Sector and other industry.

The structure of **final electricity consumption** is also dominated by KAP and the Steel Works Plant that consume about 55% of the total consumption. The residential sector is also a significant consumer of electricity with 28% share, while the public and commercial sector follows with 14% share.

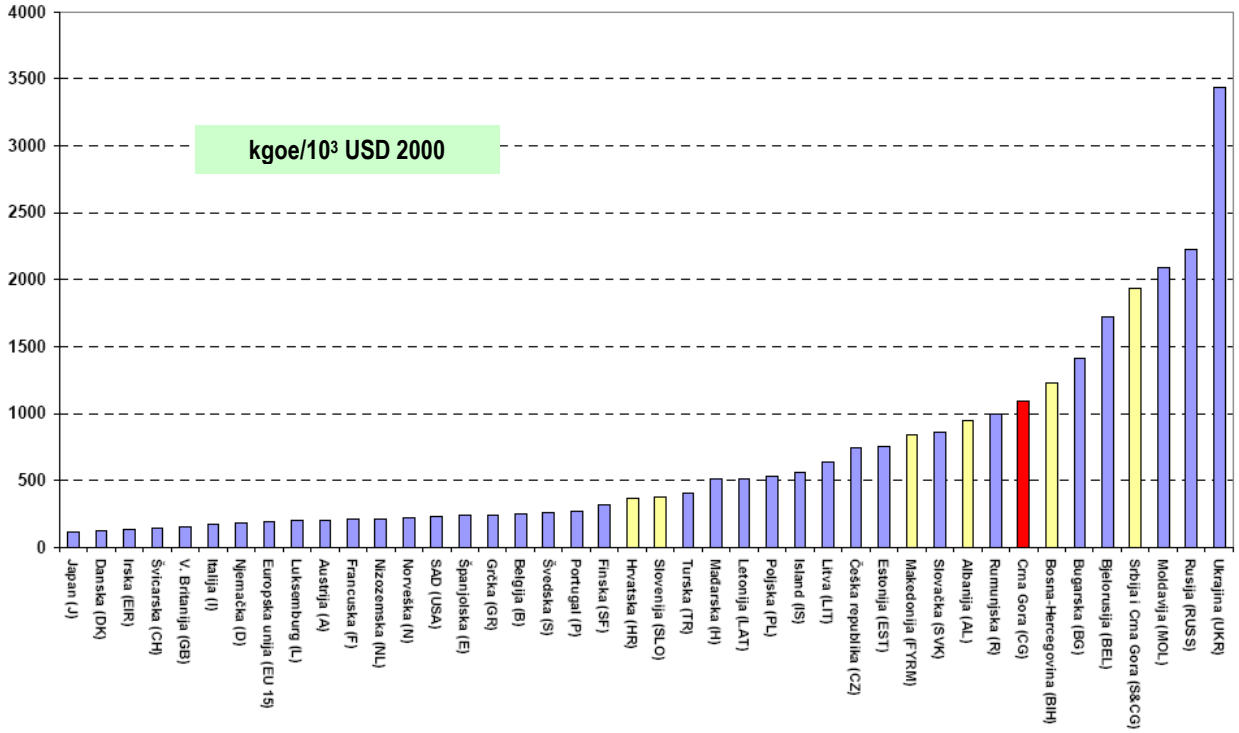
Low electricity prices in the past for the residential sector, along with certain advantages of electric heating appliances, (such as the limited space requirements, easy installation, possibility to operate them independently), resulted to extensive **use of electricity for space heating** in buildings, especially in urban areas. In rural areas biomass (wood) participates significantly in space heating. These are indicated by the significant share of electricity (60%) and secondly by biomass (33%) in the total energy consumption in households. It is worth mentioning that in EU 25 in the same year i.e. 2004, the share of electricity in households' total energy consumption was only 21%, natural gas and petroleum products, coal and District Heating 70% and biomass only 9%.

A.2 The role of EE in addressing key problems of the energy sector.

The whole chain of the energy system from production, electricity generation, distribution to end-use is characterised by low EE. The overall picture about EE in Montenegro is indicated by the **energy intensity** as presented in Figure 1. This was 1098 kgoe/USD 2000 in 2003 i.e 5,6 times higher than EU 15 average. This indicates the significant room for improvements and also the threats if appropriate action is not taken.

[1] Energy balance according to Eurostat methodology included in the documentation of the Energy Development Strategy of Montenegro up to 2025

Figure 1: Energy Intensity in Montenegro in comparison with other countries



The important role of EE for security of energy supply, market competitiveness and the environment, as well as on new jobs' creation, increased employment and improved living standards, is recognised by the EE Strategy the was adopted by the Government in 2005. EE is a very important means to address and relax serious problems and imbalances of the energy sector that are outlined in the previous chapter. The following are particularly stressed out.

EE and development of RES are the reasonable and cost effective means to keep dependency on imported energy to the minimum possible levels, thus contributing to security of energy supply.

Regardless of the existing scenarios for expansion of power generation capacity, electricity is an expensive and high quality energy form. No mater if the power is generated in the country or imported, the value of kWh is defined by the market conditions in the South Eastern European market. **One kWh saved could reduce imports or be exported at regional market prices**. It should be also noted that peak power is of much higher price than the base-load electricity.

As already mentioned, significant part of final electricity consumption in Montenegro is used to cover space heating and other thermal needs. This is an irrational and cost ineffective use of electricity. Furthermore, low energy performance and the poor maintenance level of existing buildings result to high losses, therefore poor comfort level and excessive costs.

With the economic development and increase of the living standards, the expectations of population for better thermal and cooling conditions will also increase. Increased use of air conditioners will particularly affect the demand in peak hours. In addition there will be a tendency for shifting from the use of wood for space heating to more convenient energy solutions.

The above trends coupled with the limited technical possibilities for fuel switch, the expected further increase in electricity prices and the relatively low income level of the population, points out to the importance of saving energy and particularly of electricity in the buildings sector.

A.3 Legislative, regulatory and institutional framework for Energy Efficiency

The Energy Law (2003) and the document entitled "Energy Policy for the Republic of Montenegro" (2005) define the responsibilities of the Ministry for Economic Development and other authorized institutions regarding EE and RES in Montenegro.

In line with the provisions of the Energy Law, the “Energy Efficiency Strategy of the Republic of Montenegro” was developed and adopted by the Government on 13 October 2005.

The EE Strategy provided, among others, for the adoption of an **Energy Efficiency Law**, the creation of the **Montenegrin Energy Efficiency Unit (MEEU)** under the Ministry for Economic Development to be in charge of EE and RES promotion and for establishment of an **EE Fund**.

MEEU was established within the Ministry for Economic Development as an informal unit and staffed with 2 persons. In addition the Energy Efficiency Council for implementation of the EE Strategy was established.

Energy Efficiency Action Plans for 2006 and 2007 were adopted by the Government.

"Energy Development Strategy until 2025", adopted in December 2007 by the Government, also recognizes the importance if EE and foresees the adoption of the Energy Efficiency Law, establishment of the central institution for EE (Agency for EE), as well as the gradual development of the whole legislative, regulatory and institutional framework for EE based on the relevant EU directives and standards.

All the above are very significant initial steps towards promotion of EE. However, **the gap to be covered by Montenegro to reach the minimum EU legislative, regulatory and institutional levels in EE is very large**.

Despite the official adoption of very important documents for EE and the aforementioned initiatives, very few actions have been initiated and there is still an unclear picture about how EE could be better promoted. Awareness about EE remains low on all levels, from end-users to Government officials. Issues that are the pillars of EE policies in EU, such as the development of solid legislative and regulatory frameworks and strong institutional structures to ensure sustainability, implementation of measures to stimulate market mechanisms and to promote behavioural changes, etc. are not given much attention and priority.

The focus is on quick results but the state budget available for EE is very limited. The budgets of MEEU for implementation of the Action Plans 2006 and 2007 were 50,000 EUR for each year, and the budget for the year of 2008 was approved in the amount of 55,000 EUR.

MEEU’s role as the central organisation for the promotion of EE is not yet recognised by ministries and organisations. As a small informal unit within the Ministry, has neither the status required nor the authority to take serious initiatives, influence decisions and play its coordination role. In addition, MEEU’s has very limited personnel capacity and it is understaffed, and budget is too low to accomplish the ambitious Action Plans. Out of the two persons allocated to MEEU officially, one of them is usually occupied with other priorities and regular day-to-day work and responsibilities in the Ministry.

On the other hand, based on information from the Donors Coordination Meetings there is significant interest from the EC/EAR, World Bank, KfW, EBRD, etc. as well as from bilateral assistance programmes to finance projects and provide TA for EE (Norway, Germany, Italy, and others). It is understood that **the distribution of available funds between Montenegro and neighbouring countries,** as well as the share of funds that will be finally directed to EE within the country, **depends on the capacity of each beneficiary to absorb them, the quality of proposals and the guarantees it may present to the donors to convince that the funds will be used in a cost effective way and produce sustainable results**.

In this respect, **strengthening of the central EE institution** (currently MEEU) **should be seen as an investment for the country** that will pay-back both through achieving energy savings and by attracting more international funds for EE. In the opposite case, with weak EE institutional structures, **donors may evaluate the risk of failure high and sustainability of results not guaranteed.**

We understand that Montenegro, as a small country is called to develop a large and disproportional to its population, number of institutions and administrative structures to reach the EU standards. Therefore, one cannot expect that a large EE institution is developed. A small but dynamic EE institution with enough support and recognition from the Government and with

dedicated and qualified staff can mobilise resources from other organisations, local authorities, NGOs and achieve good results. In addition, it will be in the position to co-ordinate domestic and international initiatives in EE ensuring that all needs and sectors are covered in a balanced way, overlapping of projects is avoided and eventually, the EE strategy goals are met.

A.4 Strengths, weaknesses, opportunities and threats in the field of EE

On the basis of the aforementioned remarks, the following table summarises the strengths, weaknesses, opportunities and threats (SWOT) of Montenegro with regard to EE field.

SWOT Analysis for EE in Montenegro

Strengths

The Energy Development Strategy (EDS) defining medium- and long-term objectives, priorities and conditions for development of Montenegrin energy sector is under public discussion before official adoption. The approach of the EDS about EE could be improved (proposals for improvements are submitted with this report).

The Energy Efficiency Strategy of the Republic of Montenegro was adopted by the Government on 13 October 2005.

The MEEU has been established and its staff has acquired significant knowledge and know –how.

Communication between ministries, organisations, local authorities, mass media, NGOs, market actors and energy consumers is facilitated by the small size of the country and interpersonal relations.

The small size of the country facilitates management and monitoring of EE programmes.

Municipalities are organised in a Union and could play an important role in promoting EE at local level.

According to the EDS and based on the

Weaknesses

There is high dependency on energy imports (100% for liquid and gaseous fuels and about 35% of the final electricity consumption are imported, with the growth tendency).

There is predominant share of electricity in the energy balance. Natural gas is not available and district heating is not developed.

Energy infrastructure is in poor condition and inefficient, with increased requirements for maintenance and urgent needs for rehabilitation and technology upgrading.

The whole chain of the energy system from production, electricity generation, distribution to end-use is characterised by low EE.

There are significant commercial losses of electricity and non-payment problem.

The two largest electricity consumers (ferrous and nonferrous metallurgy) consume about half of total electricity consumption.

Industrial infrastructure is energy inefficient due to use of old and inefficient equipment, poor maintenance, non optimum exploitation of production capacity and lack of awareness and of financial means.

Household sector is a significant consumer of electricity and largely contributes to peak demand.

The EE Strategy needs revision on the basis of the new EDS and to take into account new developments in EU (incl. Directive 2006/32/EC on energy services).

MEEU according to the new organisational scheme, will be a part of the Department for EE and RES, under the Sector for energy in the Ministry for Economic Development. MEEU has not been established as the separate unit and is weak in authority, recognition and human resources:

- There is lack of coordination of EE initiatives from different institutions (due to the weak position of MEEU that suppose to play the coordination role).
- There is limited capacity to coordinate large EE programmes planned by international donors
- There are limited human and financial resources to implement annual EE Action Plans

The necessary legislative, regulatory and instructional framework related to EE (linked also to EU

Strengths

international commitments of Montenegro, there will be gradual increase of tariff prices in order to get them closer to the market prices giving the right signals to consumers for EE.

There is significant potential for solar energy applications and other RES.

There is a strong building construction and engineering industry with knowledge about state-of-the-art construction techniques.

The local market could easily offer EE equipment and EE solutions.

There is a small but good basis of local experts and university professors with sufficient knowledge on EE.

The participation of Montenegro in the ECT(SEE) and other international schemes, facilitates international contacts and exchange of experience.

Weaknesses

approximation) is not in place.

The requirements for development of institutional and administrative structures for EE that will enable Montenegro to reach the EU standards are very demanding and disproportional to the size of the economy and the population.

There is no statistical system in place to support monitoring of EE, neither energy data reporting obligations established.

There is limited understanding about EE policy issues, energy management and demand side planning among officials and staff of central and local organisations.

There is low level of awareness and know-how about EE among the general public and all categories of energy consumers.

The small size of the market does not facilitate development of local manufacturing of EE equipment and materials and specialised EE services.

<u>Additional remarks for buildings and public services:</u>

The income level of the population is low in average.

Buildings are usually constructed without respect to the existing thermal insulation standards. In addition there is a fashion to construct glassed office / commercial buildings with unacceptable energy performance both in winter and in summer. There is also limited awareness among the population about the importance of proper thermal insulation.

Low energy performance and the poor maintenance of existing buildings (private and public) result to high losses, therefore poor comfort level and excessive costs.

Low electricity prices in the past lead to unbalanced structure of energy demand, esp. in the buildings sector with extensive use of electricity for space heating and hot water production.

Existing and new multi-ownership buildings are constructed without central heating systems or with provision of spaces for future installation of such systems. This fact and the non availability of natural gas set limitations to the alternatives that the end-users have for fuel change in space heating.

The culture for adoption of collective solutions in blocks of flats is not developed among the population

Strengths

Weaknesses

and not adequately supported be the regulatory framework.

The market share of low efficiency – low quality electrical devices (esp. air conditioners) is significant. There are neither minimum energy performance requirements nor energy labelling to provide information to consumers.

Increasing use of air conditioners increase the demand in peak hours putting pressure to the supply side.

Public lighting and water supply services are energy inefficient. High water losses and uncontrolled water consumption (water consumption in many apartments is not measured individually) increase the volume of pumped water therefore energy consumption.

Energy management schemes at local level and large public buildings are missing (only one case can be reported).

Opportunities

Exploitation of the large potential for EE and introduction of RES would relax problems both in the demand and the supply side and have significant positive energy, economic and environmental impacts.

Montenegro has a clear orientation to EU membership. Transposition of EE Directives and adoption of successful EU practices is a challenging opportunity. This is not only a requirement for EU accession but also the safe path to EE development, as EU framework on EE reflects the accumulated long experience of Member States in promoting EE.

Development of a complete legislative, regulatory and institutional framework for EE would provide the basis for effective and sustainable promotion of EE and mobilisation of the market forces. There is an opportunity to incorporate EE provisions and concepts in the new Law on Spatial Development and Construction of Structures.

Threats

The gap to be covered by Montenegro to reach the minimum EU legislative, regulatory and institutional levels in EE, as well as the EE levels of the economy is very large. In addition EU moves ahead with the new Action Plan for Energy Efficiency [COM(2006)545 final]. If vigorous EE development programmes are not implemented in Montenegro the existing gap will further increase. It should be noted that there is also a gap between Montenegro and all other countries in the region (with the exception of BiH) in the progress for promoting EE.

Without the development of an appropriate legislative, regulatory and institutional framework for EE there is no legal basis for integration of EE into all mechanisms and functions of the economy and implementation of integrated EE programmes.

Without a strong central EE institution there is high risk of uncoordinated, overlapping, imbalanced and fragmental EE actions that

Opportunities

A small but dynamic central EE institution could coordinate actions and programmes and mobilise all Ministries and state organisations, local authorities, NGOs and market forces towards achieving EE.

There is opportunity for the establishment of an EE statistical and information system to facilitate planning and monitoring and be used as a reporting tool.

There is significant interest from international donors to finance EE programmes. International assistance along with the establishment of a Fund for EE could finance integrated programmes for EE. Given the small size of the economy, relatively small programmes could drastically improve the EE situation in all sectors.

Montenegro's energy system is under restructuring. There is an opportunity for incorporation of EE requirements into privatisation and concession agreements and new licences, prior to their realisation.

The major energy consumers (EPCG on the supply side and KAP and the Steel Works Plant in the demand side) could implement management programmes with significant results.

Integrated actions for promotion of EE in the residential and the buildings sector in general could improve the situation in existing buildings and ensure proper construction of new ones. The increase of electricity prices give an excellent opportunity for an effective awareness raising campaign addressed to the population about:

- the significance of proper insulation and construction of buildings to create a market demand for energy efficient buildings (particularly important since enforcement of existing regulations is weak),
- the importance of EE as a criterion in purchasing devices,
- good EE practices and EE measures,
- promotion of collective EE solution in multi-ownership buildings.

Threats

can not ensure sustainability and maximisation of the effects. In addition there is high risk that funds for EE from international donors will be lost if the Montenegrin side cannot present appropriate proposals, prove that it can support implementation and develop the necessary mechanisms to ensure sustainability.

There is a huge work to be accomplished for developing the necessary legislative and regulatory framework for EE and very demanding administrative, organisational, management, monitoring and reporting requirements to implement EE programmes and absorb efficiently all funds from international aid. This work cannot be successfully accomplished without mobilisation of all stakeholders from the public and the private sector. This cannot be achieved without a strong, widely recognised, central EE institution to undertake this coordination/ mobilisation role.

The financial and TA from international donors cannot cover all requirements. In addition every international aid programme has own goals and priorities that may not be the same with the EE policy priorities of Montenegro. Without creation of a Fund for EE and possibly local funds on municipality level, it will not be possible to prepare and support implementation of donors' programmes and finance actions not covered by them.

Without establishment of an EE statistical and information system it will be difficult to monitor implementation of programmes and assess their impacts, prove successes or identify problems and take corrective actions.

If EE requirements are not incorporated in new licences and privatisation and concession agreements at the stage of their preparation, it will be very difficult to impose them afterwards. A

Opportunities

The interest of the Wold Bank and other international organisations to provide financing for EE in the public sector gives the opportunity for an integrated programme for EE in the public sector promoting investments in combination with the establishment of energy management schemes and monitoring/ benchmarking system, introduction of EE criteria in public procurements, introduction of alternative financing mechanisms, training, publicity and marketing, demonstration projects etc.

The on going programme of KfW for financing EE in SMEs could be combined with other measures (TA, promotional activities etc.) to form an integrated intervention programme for industry and the commercial sector.

Programmes for the promotion of specific technologies (e.g. thermal solar systems) could be launched and incentives could be provided to end-users where appropriate.

Threats

significant opportunity for EE in the supply side may be lost.

Currently there is experiencing a boom in building construction. Many more new buildings will be constructed with unacceptable or poor energy performance if implementation of the existing thermal insulation regulation is not urgently and vigorously promoted through straightening of the enforcement mechanisms with parallel publicity and information dissemination to potential owners and tenants to create a market demand and pressure for construction of energy efficient buildings and systems.

In addition, failure to incorporate EE provisions and concepts in the new Law on Spatial Development and Construction of Structures will give a negative signal to the market. This could be a first step towards development of a new framework for EE in building sector, household appliances, boilers, heating systems etc. consistent with the relevant EU Directives (Directive on the energy performance of buildings, Directives on energy labelling, minimum efficiency requirements, etc). Absence of this framework will set problems to EU accession and the conditions for sustainable EE in buildings will not be created.

Without a series of measures to promote electricity savings in buildings, the gradual increase of electricity prices combined with the low income of the population and the limited availability of alternatives for shifting from electricity use to other energy forms, will burden the family budget, make impossible for many families and households to pay their bills or oblige them to lower further the already poor living conditions. Alternatively, financial support to the vulnerable parts of the population will burden significantly the state budget for subsidising consumption that could be easily and cost-effectively saved.

Given the significant potential for EE and introduction of RES in all sectors of the economy and the possibility for introduction of low cost measures, EE is a win-win case. Any delay in promoting of EE

Opportunities	Threats
	measures is a loss for the consumers, the economy and the environment.

B. Overview of the requirements for EU approximation and participation in the Energy Charter Treaty in the field of EE

We consider important that all sides and actors involved have established a common understanding and are aware of the requirements for EU approximation in the field of EE.

Accession can only follow if the country fulfils all criteria of accession. These criteria are political, economic, the capacity of the country to take on the obligations of membership, and the **adoption of the EU *Acquis Communautaire*** (the entire European legislation) and its effective implementation through appropriate administrative and judicial structures.

An essential obligation of the candidate countries in order to become Members of the EU is to achieve approximation of law, that means incorporate into their national laws, rules and procedures, the entire body of EU law contained in the *acquis*.

Approximation of law is not restricted to the legislative work only. It also requires providing the institutions and budgets necessary to ensure implementation (practical application) of the provisions of the law and to provide the necessary controls and penalties to ensure that the law is being complied fully and properly i.e to enforce the law.

The European Commission has taken considerable initiatives in the field of EE which resulted in the adoption of specific Directives as well as a series of other documents.

Besides the legislation, a number of important Policy Documents have been issued by the EC including the *Action Plan for Energy Efficiency:* Realising the Potential [COM(2006)545 final of 19.10.2006. The Action Plan for Energy Efficiency outlines a framework of policies and measures with a view to intensify the process of realising the over 20% estimated savings potential in EU annual primary energy consumption by 2020.

In order to support the ever better integration of EE measures into national legislation, the European Commission has proposed several Directives which have been adopted and are now in force. These concern broad areas where there is significant potential for energy savings. The following paragraphs present in brief the key Directives and important requirements for their implementation.

Directive on energy end-use efficiency and energy services (2006/32/EC)

The Directive provides for a number of compulsory requirements such as the adoption and implementation of Energy Efficiency Action Plans (EEAP), measures for the Public Sector, obligations to energy distributors etc. It is the basis for an EE Law. The EE Law is not an explicit requirement of the Directive but is the most reasonable way to transpose it into the National legislation. To implement this Directive there is need for adoption of a large number of regulations and support actions.

Energy Performance of Buildings Directive 2002/91/EC

The Directive 2002/91/EC, also known as EPBD, introduces the concept of energy performance of buildings that goes beyond the traditional thermal insulation requirements by taking into account other factors that play an increasingly important role such as heating and air-conditioning installations, application of renewable energy sources and design of the building. It also provides for energy certification of buildings and regular inspection of boilers and air conditioning systems. Implementation of Directive is a long and demanding procedure to be carried out in steps.

Other Directives related to EE

The EU EE framework comprises a number of other Directives, outlined in the following paragraphs.

- **Energy labelling** of domestic appliances: (Umbrella Directive 92/75/EEC of energy labelling and "daughter" Directives for labelling of specific appliances). They cover the obligation of Member States to impose labelling to specific household appliances such as washing machines, electric tumble dryers, combined washer-dryers, dishwashers, household lamps etc.
- **Minimum energy performance requirements** of appliances: These Directives specify the performance and efficiency requirements for new hot-water boilers, household electric refrigerators and freezers, as well as ballasts for fluorescent lighting. The EC plans to set minimum energy performance requirements to a number of additional appliances in the near future.
- **Promotion of cogeneration** (CHP Directive 2004/8/EC): The purpose of the Directive is to increase EE and improve security of supply by creating a framework for promotion and development of high efficiency cogeneration of heat and power based on useful heat demand and primary energy savings.
- **Eco-Design**: It aims to improve the environmental performance of products throughout the life-cycle by systematic integration of environmental aspects (such as energy efficiency) at a very early stage in the product design.

Transposition of the above Directives requires a huge effort and resources. On the other hand they will address serious problems in Montenegro especially concerning:

- the organization of EE mechanisms, development of EE services and promotion of EE in the public sector (Directive 2006/32/EC),
- the development of a solid regulatory framework of EE in builds (EPBD), and
- the promotion in the market of EE devices and equipment that have a minimum acceptable performance and quality (energy labelling and minimum energy performance requirements).

Although the economic potential of cogeneration is limited due to the non availability of natural gas, transposition of the CHP directive should be considered.

Eco-design is in an initial stage of development in EU and concerns mainly countries that have a strong equipment manufacturing industry.

Energy Charter Treaty and the Protocol on Energy Efficiency and Related Environmental Aspects (PEEREA)

The Energy Charter was a political initiative for a commonly accepted foundation for developing energy cooperation between the states of the Eurasian continent. The Energy Charter Treaty is the Charter's legally-binding foundation. An area of Treaty's provisions focus on reducing the negative environmental impact of the energy cycle through improving EE. This is covered by a special Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects (PEEREA).

With the signing of the Energy Charter Treaty and PEEREA Montenegro will undertake certain obligations with regard to EE including:

- the promotion of EE policies consistent with sustainable development;
- the creation of conditions which induce producers and consumers to use energy as economically, efficiently and environmentally soundly as possible;
- the fostering of cooperation in the field of EE.

C. Concept and priorities for the EE Action Plan for Montenegro up to 2012

C1. Legal and policy basis

The proposed priorities for the EE Action Plan up to 2012 are based on:

- the Energy Law - Article 3 (2003) and the document entitled “Energy Policy for the Republic of Montenegro”,
- the “Energy Development Strategy of Montenegro up to 2025” (EDS) (adopted in December 2007),
- the “Energy Efficiency (EE) Strategy of the Republic of Montenegro” (adopted by the Government on 13 October 2005),
- the developments in EU and the requirement for approximation of Montenegro in the field of EE,
- the experience from implementation of annual Action Plans 2007 and 2008, and the results of the EU funded project “Technical Assistance to the Montenegrin Energy Efficiency Unit”,
- the identified weaknesses, strengths, opportunities and threats with regard to promotion of EE in Montenegro (SWOT analysis), and
- the lessons learnt and successes in promoting EE internationally.

C.2 Overall concept

According to the international experience and the concept of the EE Strategy, the successful promotion of EE policy requires implementation of a **balanced combination of measures** including:

- Development of the appropriate legislative, regulatory and instructional framework, including financing schemes for EE, as a prerequisite and basis for sustainable promotion of EE.
- Mandatory measures for EE imposed by the law and regulations,
- Measures to promote and facilitate EE investments by the energy consumers such as financial incentives,
- Promotion, awareness raising, training of energy managers, energy auditors and managers, and other EE service providers, technical assistance to energy consumers and measures to promote involvement of market actors, local authorities, NGOs, the academic society, etc.
- Pricing policies that reflect market prices and promote EE.

The best way to improve EE in the country and in each sector separately is to exploit the long international experience, especially in EU. The EU energy efficiency legislation and regulations is the outcome of decades of efforts, lessons learnt and considerable successes.

Therefore, **gradual transposition into the national law of EU Directives in the field of EE and adoption of successful good practices, adapted to the local conditions, is the logical process for promotion of EE in the country**. In addition, transposition and implementation of EU legislation in EE is **part of the harmonization of national legislation with EU legislation that is a prerequisite for EU accession**.

According to international practices, **the role of the state in promoting EE** is to set up the necessary structures and mechanisms, remove obstacles and design and implement

programmes that would mobilise and facilitate the market actors, local authorities, and energy consumers in all sectors to implement EE measures. In addition, it should take initiatives to ensure efficient use of energy in its own facilities i.e facilities of the public sector.

C.3 Proposed Priorities

The following three **Key Axes** of interventions should be promoted in parallel:

- Establishment of the **basic framework** for EE (EE Law, EE central Institution and EE Fund) and gradual development of the necessary legislative, regulatory and institutional framework for EE
- Implementation of **sectoral programmes** for EE including provision of incentives, technical assistance and promotional/ marketing activities
- Promotion of **investments** in EE by mobilizing international financial assistance, state and local funds and private capital.

In parallel actions for development of local capacities and services in EE, research and development and promotion of local manufacturing of EE should be implemented.

Taking into account the structure of the energy demand and the problems in different sectors we would propose that the following **sectors are addressed in priority** for EE measures:

- EPCG in the supply side and the major energy consumers in the demand side (KAP and Steel Works Plant) should be addressed with individual specific EE programmes.
- The buildings sector (residential, commercial and public buildings) should be the main priority for vigorous EE measures.
- Transport as a significant energy consuming sector, should be also addressed with integrated EE plans.
- Industry, other than the two main consumers, is less significant consumer. EE measures addressed to this category of consumers should target also on increasing competitiveness and establishing the basis for development on a healthy basis from EE point of view.

In line with the above analyses we would propose the following areas of activities:

RECOMMENDED AREAS OF ACTIVITIES FOR ENERGY EFFICIENCY

AREA OF APPLICATION	**RECOMMENDED AREAS OF ACTIVITIES**
FRAMEWORK FOR ENERGY EFFICIENCY	Adoption of special Law on Energy Efficiency. The Law, inter alia, will provide for the central EE Institution to play the leading role in promotion of EE and the EE Fund. It will also transpose the main provisions of EU Directive 2006/32/EC on energy end-use efficiency and energy services and introduce the concepts of other important Directives. Establishment/ strengthening and capacity building of the central EE Institution and establishment of the EE Fund. Revision of the EE Strategy on the basis of the new EDS and regular updating in the view of developments in the field of EE in Montenegro and EU. Establishment of an EE statistical and information system to

	facilitate planning and monitoring and be used as a reporting tool.
	Thorough analysis of overall losses in the energy sector in Montenegro and preparation of a special expert study and/or series of sector-specific and technology-specific EE studies for identification of the EE potential and proper design of interventions.
	Gradual development of a complete legislative, regulatory and institutional framework for EE on the basis of relevant EU Directives and standards and establishment of enforcement and implementation mechanisms.
	Promotion of international collaboration in the field of EE
	Promotion of applied Research and Development and know-how transfer in the field of EE and of the development of local manufacturing of EE equipment and materials.
SUPPLY SIDE	Preparation of EPCG Development Strategy and Action Plan including EE actions.
	Preparation of a new study of losses in voltage and energy in transmission and distribution networks in Montenegro and an action plan for the reduction of losses to a foreseen technically achievable level of 10%.
	Incorporation, where appropriate, of EE obligations into privatisation and concession agreements and new licences, prior to their realisation.
LARGE INDUSTRIAL CONSUMERS	Expert analysis of large consumers (KAP, Steel Plant and Railways Company) regarding cost effective reduction of energy consumption.
	Regulatory requirement for large industrial consumers for the mandatory appointment of energy managers, preparation of annual/semi-annual energy balances and EE Action Plans and implementation of EE measures.
ALL CONSUMPTION SECTORS	Promotion of development of local capacities in energy auditing, energy management etc. and of consulting/ engineering EE services.
	Alleviation of barriers and promotion of alternative financing mechanisms (energy performance contracting, third party financing etc.) and of ESCOs
	Subsidizing energy analyses of companies and feasibility studies of EE investments and use of RES; Provision of financial incentives, technical assistance, training and information dissemination, targeting specific sectors and EE interventions, as appropriate.
	Gradual increase of tariff prices to reach the market prices giving the right signals to consumers for EE (with parallel measures to support socially vulnerable population categories).
	Introduction of an awarding scheme to energy efficient companies, energy managers and successful EE projects combined with wide publicity.
BUILDINGS	Urgent measures for the enforcement of the existing thermal

SECTOR (GENERAL)	insulation regulation with parallel implementation of publicity and information dissemination campaigns to potential owners and tenants to create a market demand and pressure for construction of energy efficient buildings and systems.
	Incorporation of EE provisions and concepts in the Law of construction
	Development of new regulatory framework with the adoption the concept of buildings' overall "energy performance requirements" and in second phase, the "energy performance certificates" in line with the Directive on the energy performance of buildings (2002/91/EC).
	Introduction of schemes for energy labelling and minimum energy performance requirements of appliances and energy consuming equipment.
	Regulations for introduction of individual metering and energy cost distribution according to the actual consumption.
	Measures for promotion of low-energy buildings and incorporation of RES (especially passive and active solar systems) into buildings' energy systems.
PUBLIC SECTOR	Introduction of energy management schemes and EE plans at local level and in public facilities, combined with training and pilot projects and establishment of a central monitoring /benchmarking scheme.
	Implementation of EE investments and introduction of EE grant schemes for the broader public sector.
	Regulatory establishment of EE criteria in public procurements.
	Regulatory and other measures to enable energy performance constructing, third party financing and other alternative financing mechanisms in the public sector.
	Energy performance certification of public buildings.
HOUSEHOLDS	Publicity campaigns on "how to save energy" for the general public; Energy saving in households should be encouraged by free energy advising. A scheme entitled «Energy Efficiency advising to citizens» should be introduced!
	When appropriate, provision of financial incentives for energy rehabilitation of residential buildings and use of RES, granted to citizens under public announcements.
COGENERATION (CHP) AND DISTRICT HEATING (DH)	Introduction of legislative and regulatory framework for CHP in line with the Directive 92/42/EEC (2004/8/EC).
	Financing/ provision of grants for studies for estimation of CHP potential and feasibility studies for CHP and DH investments; possible provision of financial incentives for investments.
	Co-financing of projects related to co-generation and heating system for the city of Pljevlja.
TRANSPORT	Measures to promote EE training to drivers, effective maintenance

SECTOR	of vehicles, and EE fleet management schemes in public transport and organisations operating large number of vehicles. Awareness raising and publicity campaigns to general public about effective maintenance and low consumption driving.

C.4 Recommended Actions for Developing the EE Framework

Amendment of the Green Paper of the Energy Development Strategy

We would propose that Chapter 19 "Major Strategy Recommendations" of the Green Paper of the Energy Development Strategy is amended. **We propose that the "Table A. Energy Efficiency" is replaced with the above table with the recommended areas of activities in the field of EE**

Law on Energy Efficiency

The need for introduction of basic legislation on EE is recognised in the EE Strategy and the EDS. This legislation may have the form of an Energy Efficiency Law or be realised through extensive amendments to the Energy Law. The first option is strongly recommended.

The legislation will define the EE terminology, introduce concepts such as the energy performance of buildings, energy labelling, energy services, etc. and provide the legal basis for the transposition of EU Directives relevant to EE, allocate responsibilities and provide for the establishment or strengthening of EE institutions, such as upgraded MEEU or EE Agency, EE Fund etc.

Drafting of the EE Law should be done in parallel with the study for establishing/upgrading of a central EE institution and EE Fund, as the key provisions for these institutions should be incorporated in the Law.

Establishment/ strengthening of the central Institution for EE

The need for **establishing/ strengthening of the central EE institution** (currently MEEU) is analysed in the Report.

There are several options about the areas of responsibilities of the institution that would undertake promotion of EE. The institution could be:

- responsible only for EE
- part of an institution responsible for sustainable energy (EE and RES)
- part of an Energy Agency, responsible for all energy issues.

Given that promotion of EE and RES present a wide range of common and combined activities and the fact that Montenegro can not afford a large number of institutions **we would propose that a central institution undertakes to cover both areas i.e. EE and RES**.

The Sustainable Energy Institution should be legally founded by the proposed Energy Efficiency Law. Its legal status, mission, objectives, specific activities, organisational scheme, operation modalities including an operation manual, financing, etc should be analysed in a specific study and proposed to the Government for incorporation into the EE Law.

There are three basic options about the legal form of the institution:

- Strengthening of the existing MEEU as a Department within the Ministry for Economic Development
- Upgrading of MEEU to a Directorate within the Ministry for Economic Development.

- Establishment of an EE/RES Agency.

We would propose the following:

- The most viable and effective option is the establishment of an **EE/RES Agency**.
- **Financing of the Agency** should come from the State budget and international donations. Flexibility should be given so as the Agency is able to acquire additional funds from services offered either to the state or to local and international organisations (management/ monitoring of programmes, participation in projects), provided that it maintains its role as the central institution for EE/RES and does not compete with the private sector.

As a second option could be considered the upgrading of MEEU to Directorate for EE and RES.

Until the EE Agency is established, actions should be taken for strengthening the existing MEEU, capacity building and development of its infrastructure in the view of transferring all the know-how and infrastructure to the Agency, when established. The following activities are recommended.

- Establishment of **"operational autonomy"** for MEEU with a mandate of the Minister for National Economy ordering that MEEU focuses **exclusively** on EE issues, performs tasks related to the EE Action Plan and has the responsibility for their effective accomplishment.
- **Addition of 2 more experts** in the MEEU: According to the planned organisational scheme of the Ministry for Economic Development, a Department of EE and RES is established under the Energy Sector of the Ministry. It is foreseen one person will be appointed as Coordinator for EE and RES, and that EE Unit will be strengthened with one additional staff member specialised on technical issues, and one economist (engaged both in EE and RES issues)..
- **Infrastructure development**: safeguarding adequate office space for the staff and procurement of desktop and laptop computers, etc.

In addition to the aforementioned tasks, and depending on the availability of funds from International Donors, the following activities are foreseen.

- **Ad-hoc advice, TA and capacity building to MEEU and later to the Agency**
- Part of the previous activity, or a stand alone action should be a **training course to MEEU on EE Programme and Project Preparation.**
- **Energy Bus – training in measurement techniques and energy auditing:** There is a lack of instrumentation and know-how for energy auditing in Montenegro. The Ministry for Economic Development and MEEU will propose to EAR and other International Donors to finance a Technical Assistance training project, combined with supply of an "energy bus" with energy auditing equipment.

Establishment of EE (and RES) Fund

It is expected that international donors and financing institutions, as well as the private sector will finance EE investments. However there is need for the creation of a Fund for EE (and RES) and possibly local funds on municipality level to finance preparation and support of implementation of donors' programmes, as well as actions that are not covered by them.

The Fund can be established by the EE Law. Normally it will be a special bank account, managed by a Fund Board. Day to day operations could be undertaken by MEEU and

later by the Agency. A system of reports, checks and balances should be established to ensure transparency.

The financing sources of the Fund could be the state budget, contributions of utilities and energy suppliers, fees and penalties, international donations, possible special tax on conventional fuels for EE and RES, etc.

A special study for the Fund's design, drafting of statute and necessary by-laws should be carried out as a part of the broader study for the establishment of the EE Agency and drafting of the EE Law.

Updating of the EE Strategy

Since the adoption of the EE Strategy, new legalisation and policy documents on EE have been adopted in EU such as the Directive 2006/32/EC on energy end-use efficiency and energy services and the Action Plan for Energy Efficiency: Realising the Potential" [COM(2006)545 final of 19.10.2006].

In addition:

- the **Sustainable Development Strategy** has been adopted in 2007 and
- the **Energy Development Strategy** of Montenegro until 2025 is expected to be adopted in 2007.

Updating of the EE Efficiency Strategy should take into account the aforementioned documents and be repeated on a regularly basis.

Establishment of an EE statistical and information system

Planning, monitoring, evaluation of results and reporting of any EE programme requires an effective data collection mechanism and statistical system. This need is also evident from the analysis of the transposition and implementation requirements of key EU Directives in which development of databases is an essential requirement.

C5. Recommended Actions for promotion of EE in the Public Sector

The German Government examines the possibility to finance a 3-year 1,5 million EUR programme for promoting energy management schemes and EE training for the broader Public Sector. In addition, the Wold Bank intends to provide a loan of 10 million $ for EE investments in the public sector. These programmes, if realised, could support significantly implementation of certain proposed actions below:

Setting up of an EE Monitoring System for Public Sector

The central monitoring system will be based on the principles of performance indicators and benchmarking. It will be realised through a database for the energy consumption and energy characteristics of all buildings and other facilities of the boarder Public Sector. The database has been developed under the EU financed project "TA to the Energy Efficiency Unit".

It is particularly important to establish a mechanism for obligatory reporting to MEEU about energy performance of buildings under the competence of Government and local authorities, as well as about already implemented EE projects and measures. This obligation should be incorporated in the future EE Law, but before this, it can be enabled by temporary acts.

The following activities are foreseen:

- Issuing of a mandate of the Government to all Ministries and local authorities to provide information and data on the basis of a questionnaire distributed by MEEU;

- Establishment of a degree-days/cooling-days scheme by the Meteorological Institute;
- Collection of data, population of the data base, evaluation of functionality and adaptation of the database structure and of the questionnaire, if required, and preparation of the first reports based on the data collected and elaborated;
- Evaluation of the possibility for an internet based database, where the users/organisations of the public sector can review and submit their own data, as well as evaluate their energy performance on the basis of performance indicators.

Promotion of Energy Management Schemes at local level and capacity building

This activity requires international Technical Assistance for its realisation, possibly through the planned TA programme of the German Government. It also requires close collaboration with various Ministries and local authorities.

The activity includes:

- Design of Energy Management Schemes at local level and in public facilities (role and qualifications of energy managers, EE plans, Energy Management functions, etc.)
- Preparation and publication of a detailed Guide on Energy Management in the broader public sector
- Preparation of brochures for EE measures in buildings, water supply utilities, public lighting and well as for incorporation of RES (solar, biomass etc.) into the buildings energy systems.
- Establishment of pilot Energy Management schemes in large public/local authorities buildings throughout the country.
- Decentralised training courses for Energy Managers (in different cities).
- On the basis of the experience from the above activities, drafting of regulation for the establishment of Energy Management Schemes at local level for facilities operated by Public and local authorities; outsourced energy management and collective energy management for groups of small buildings could be foreseen.
- TA to Energy Managers to prepare pilot EE Action Plans
- EE Demonstration Projects and pilot implementation of EE Action Plans (possibly financed by the World Bank Loan)
- Information dissemination about results and publicity
- Networking of energy managers

Implementation of EE investments and introduction of EE grant schemes for the broader public sector

This action could be financed through the foreseen Wold Bank loan as well as from the EE Fund and local authorities' budgets. It includes:

- Preparation, implementation and monitoring of EE investments
- In the frame of implementation of EE investments, special investment programmes for EE in street lighting and in water supply systems may be launched if funding is safeguarded.
- Establishment of a scheme for financing/ co-financing of energy audits and preparation of EE Action Plans at building/ facility / municipality level.

- Financing/co-financing of feasibility studies for development of CHP systems and small District Heating systems.

Medium term Actions for the broader public sector

At a second stage the following actions are foreseen:

- Regulatory establishment of EE criteria in public procurements;
- Regulatory and other measures to enable energy performance constructing, third party financing and other alternative financing mechanisms in the public sector;
- Energy performance certification of public buildings.

C 6. Recommended Actions for promotion of EE in the Buildings and Residential Sector

The main concept for the promotion of EE in the Residential and Buildings sector is the gradual development and enforcement of a complete framework for EE in buildings and appliances combined with awareness raising and provision of TA and incentives.

Measures for the enforcement of the existing thermal insulation regulation

It is recommended that the Government and the competent Ministries mandate a stringent enforcement of the existing regulations and in particular the thermal insulation regulation. In order this measure to have positive results it should be combined with:

- Public announcement of the mandate and publicity of cases of non compliance
- Announcement of the plan for the development of a new regulatory framework for EE in buildings
- Publicity and information dissemination campaign to potential owners and tenants to create a market demand for energy efficient buildings and systems (see also next action).

Associated measures are:

- Deduction of VAT and import taxes for thermal insulation materials
- Agreement with the major construction companies that they will comply with the regulation and wide publicity.
- Incorporation of EE provisions and concepts in the Law on Constructions: Besides EE concepts, the Law on Constructions should ensure that the new buildings are delivered with proper heating/cooling systems, individual metering of energy and water and that are constructed with respect to applicable technical and energy regulations.

Information Campaigns and Promotion of EE in the Residential Sector

The focus of the first campaign will be on:

- the importance of thermal insulation and proper heating/cooling systems so that buyers and tenants become aware of their benefits and put pressure on the market for proper constructions
- the benefits of EE, especially electricity savings primarily in residential sector and in buildings in general.

The campaign, among others, will provide practical advice on ways to reduce of thermal losses, energy efficient use and maintenance of heating and cooling systems, household appliances, lighting, etc. to cope with the increased energy prices.

Information campaigns should be repeated on a regular basis addressing also specific target groups (eg. engineers and installers, school children, housekeepers, etc.) as well as on the occasion of introduction of new regulations and other energy policy initiatives.

«Energy Efficiency advising to citizens»

A scheme for continuous provision of free EE advice to citizens should be introduced and widely disseminated through the information campaigns. Involvement of municipalities, EPCG and other energy supplies is highly recommended.

Initial actions could include:

- Publication and dissemination of series leaflets on various energy saving topics. Leaflets could be disseminated during the information campaigns, as well as with the electricity bills, by the local authorities etc.
- Information dissemination and advice through a web site that will be developed and maintained by MEEU. Citizens may request advice through e-mails.

In a later stage the scheme could be enriched with:

- A dedicated telephone line of MEEU to provide free advise
- Establishment of advice services centrally and in municipalities.

Training and know-how transfer activities to engineers, constructors, installers and operators

These activities aim at developing local know-how on energy auditing and EE in buildings.

Short term actions may include workshops on modern construction techniques of energy efficient buildings, efficient cooling and heating systems, building energy management systems (BEMS) etc. as well as the project “Capacity building on energy auditing of buildings”. This project is financed by the Norwegian Government.

Intensive training courses and know-how transfer activities will be required with the adoption of new regulations such as mandatory inspection of boilers and air-conditioning systems, energy certification of buildings etc to train inspectors and certifiers.

Measures for promotion of low-energy buildings and incorporation of RES into buildings' energy systems

Depending of the availability of funds this action could include:

- Market studies for introduction of low-energy and passive solar systems or elements in Montenegro, introduction of RES in the housing, hotels, commercial sectors etc.
- Workshops, conferences and training courses
- Pilot projects of low energy buildings and dissemination activities

Financial incentives for energy rehabilitation of residential buildings and use of RES, granted to citizens under public announcements

It is strongly advised that incentive schemes for EE in residential sector are introduced on several occasions, especially with the introduction of new regulations and in parallel with information campaigns.

Incentives can be provided as grants, soft loans from banks, income tax deduction on relevant installation expenses, implementation of works and installations by utilities and repayment through the electricity / water bills, etc.

Introduction of individual metering and promotion of collective EE actions in multi-ownership buildings

A new regulatory framework ensuring that meters measure accurately and frequently actual energy consumption and imposing obligatory individual metering for all new buildings and if technically possible and financially reasonable, for existing consumers should be introduced. The rules in case of individual metering and the cost sharing methods for common energy costs should be specified.

In addition, the regulation should specify for the case of collective metering the methodology for distribution of energy costs (on the basis of energy loads and energy use factors of each ownership rather than per m2).

Furthermore the existing regulations and rules governing the relations between owners and tenants in multi-ownership buildings should be screened and amended to facilitate collective EE investments and collective space heating/ cooling/ hot water solutions and strengthen the owners associations.

The judicial system should be encouraged for a more stringent enforcement of the law in case of non-payment, non-fulfilment of obligations for proper maintenance or illegal constructions/ modifications multi-ownership buildings.

Development of new regulatory framework for the energy performance of buildings

The new regulatory framework for the energy performance of buildings should be in line with the EPBD (Directive on the energy performance of buildings 2002/91/EC). Adoption and enforcement of the new framework it is a very demanding and long process. This process in many EU countries lasts more than 5 years and still the complete framework is not in place.

The proposed management and administration scheme for development and implementation of the new framework is the following:

- an Administration Committee to oversee the development and strategic elements of the scheme with membership from various stakeholders.
- a Secretariat to manage the day-to-day operation of the scheme (possibly within the MEEU and later the EE Agency).

Development and implementation could include the following steps:

- **Planning and preparation**: Planning of implementation and approval by the Government, setting up of initial management and administration scheme, safeguarding of financing of studies, database and activities, incorporation in the EE Law of the basic concepts (energy performance of buildings, regular inspection of boilers/air-conditioners, energy certification of buildings etc) and provisions for secondary legislation.
- **Regulation for energy performance (EP) of buildings:** Adoption of methodology for different kinds of buildings, setting of EP requirements, adoption of associated Technical Standards, establishment/ strengthening of enforcement mechanisms.

  Promotion of implementation of regulation for EP of buildings through publication of guidelines, calculation forms and reports, software, training courses addressed to engineers, wide dissemination and promotion, TA and financial incentives for improving energy performance of existing buildings and incorporation of RES to meet the EP requirements, demonstration projects for low energy buildings, etc.
- **Regulations(s) for regular inspection of boilers and air- conditioning systems**: Adoption of methodologies, adoption of associated Technical Standards, definition of

qualifications and/or accreditation procedures for inspectors, allocation of responsibilities of the inspectors, building administrators etc, as well as training courses to inspectors, wide dissemination and marketing, etc.

- **Regulation for mandatory Energy Performance certificate for buildings**: as above, definition of methodologies, procedures, standard software and forms, definition of qualifications and/or accreditation procedures for certifiers, training, wide dissemination and marketing, etc.
- **Monitoring of implementation** and reporting

Development of new regulatory framework for energy labelling, minimum performance requirements of systems and individual metering

As with the EPBD, the introduction of energy labelling, etc requires adoption of regulations, Technical Standards and associated measures for their implementation.

The EE Law should provide the legal basis for these regulations.

C7. Other Recommended Actions

The work to be accomplished in the next years by MEEU and later by the EE Agency to implement the aforementioned actions is very demanding. However a number of other actions should be initiated as a matter of priority to promote EE in other sectors and avoid irreversible situations. We particularly stress out the need for action for:

- Regulatory requirement for large industrial consumers for the mandatory appointment of energy managers, preparation of annual/semi-annual energy balances and EE Action Plans and implementation of EE measures.
- Incorporation, where appropriate, of EE obligations into privatisation and concession agreements and new licences, prior to their realisation.
- Expert analysis of large consumers (KAP, Steel Plant and Railways Company) regarding cost effective reduction of energy consumption.
- Incorporation of an EE programme in EPCG Development Strategy and Action Plan.
- Development of the legislative/ regulatory framework for CHP.

In addition we would recommend the following short term actions

- Continuation of financing for EE projects in SMEs and introduction of additional incentives.
- Scheme of awarding of the best ones in EE.
- Incentives for establishing of EE Project Bureaus and Consulting Companies.

Overview of the current situation with regard to Energy Efficiency

Structure of the energy consumption

Montenegro's **domestic energy resources** are coal (lignite, brown coal), hydro energy and biomass (wood and wood wastes). As presented in Table 1 with the key figures from energy balance 2004[2], domestic production covers about 55% of the gross inland consumption. The rest is covered through imports.

The total quantity of liquid and gaseous fuels and about 35% of the final electricity demand are imported. Figure 1 presents the structure of the gross domestic energy consumption.

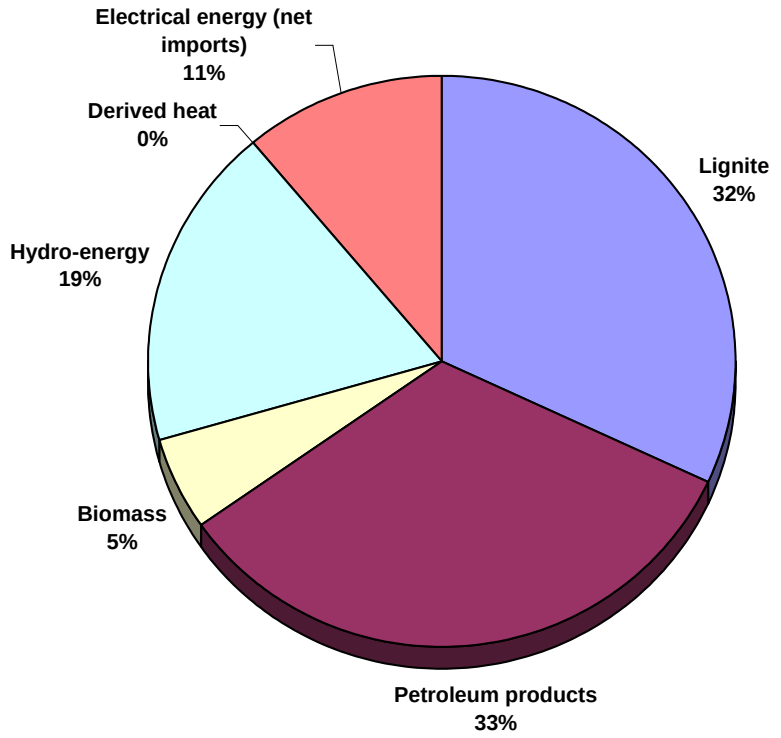
Table 1: Key figures of the energy balance 2004 – Eurostat (in 1000toe)

	Total	**Lignite**	**Petroleum products**	**Biomass**	**Hydro-energy**	**Derived heat**	**Electrical energy**
Domestic production	*583,70*	338,6		52,5	192,6		
Imports – Exports etc.	*453,40*	-7,10	346,60				113,90
Gross inland consumption	***1037,10***	***331,50***	***346,60***	***52,50***	***192,60***	***0,00***	***113,90***
Final energy consumption	***733,90***	***21,10***	***334,40***	***52,50***	***0,00***	***0,70***	***325,30***
Iron & Steel & Non-ferrous Industry	*321,90*	5,70	137,20	0,00	0,00	0,00	179,10
Other Industry	*30,50*	2,90	18,20	3,10	0,00	0,00	6,20
Transport	*151,60*	0,00	149,70	0,00	0,00	0,00	1,90
Households	*152,00*	6,40	4,60	49,40	0,00	0,60	91,00
commercial/ public	*70,60*	6,10	18,30	0,00	0,00	0,10	46,10
Agriculture	*7,30*	0,00	6,40	0,00	0,00	0,00	0,90

Source: Energy Development Strategy

[2] The Energy Development Strategy of Montenegro up to 2025 (EDS) which is currently under public discussion includes two types of energy balances according to two different methodologies about the hydro electricity production as primary energy source. The two approaches give a completely different picture about primary energy production, dependency on imports etc. In this document we use data according to Eurostat methodology while the main body of the EDS is based on the second methodology. This explains certain deviations in the two documents.

Figure 1: Structure of the gross domestic energy consumption (2004)



The **final energy consumption** presented a constant increase in the period 1997-2004 and reached the amount of 734 thousand toe that is about 5% higher than the 1990 level.

The **structure of the final energy consumption** is characterised by limited diversification of energy forms. Electricity and petroleum products accounted for about 45% each of the final energy consumption in 2004. The rest was biomass (7%) used mainly in households and small quantities of lignite. Natural gas is not available and District Heating is practically not developed. Figure 2 presents the structure of the final energy consumption by type of fuel.

Two industrial companies, the Aluminium Plant Podgorica (KAP) and the Steel Works Plant in Niksic consume about 45% of the total final energy consumption. Households and transport sector consume about 21% each, the public and commercial sector follow with a share 10%, while industry, other than the two large companies, consume only about 4% of the final energy consumption. Figure 3 presents the structure of the final energy consumption by sector. The structure of the final energy consumption indicates **the sectors to be addressed in priority** for EE measures.

Figure 2: Structure of the final energy consumption by fuel (2004)

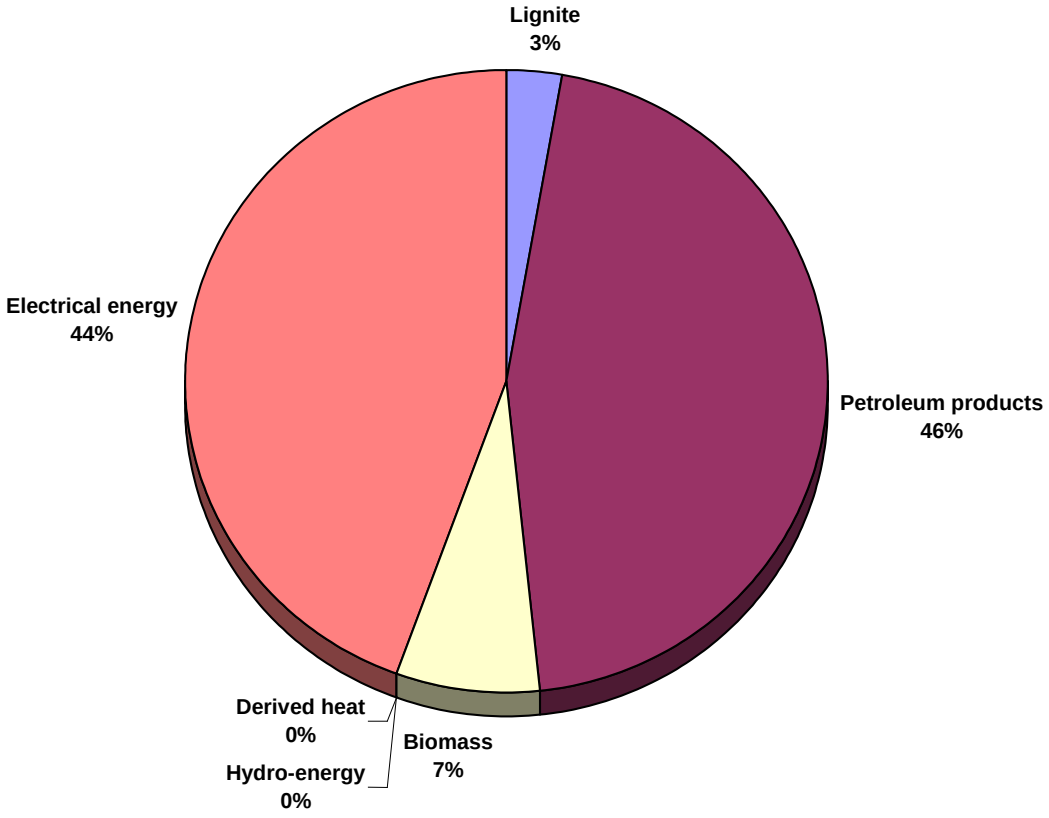
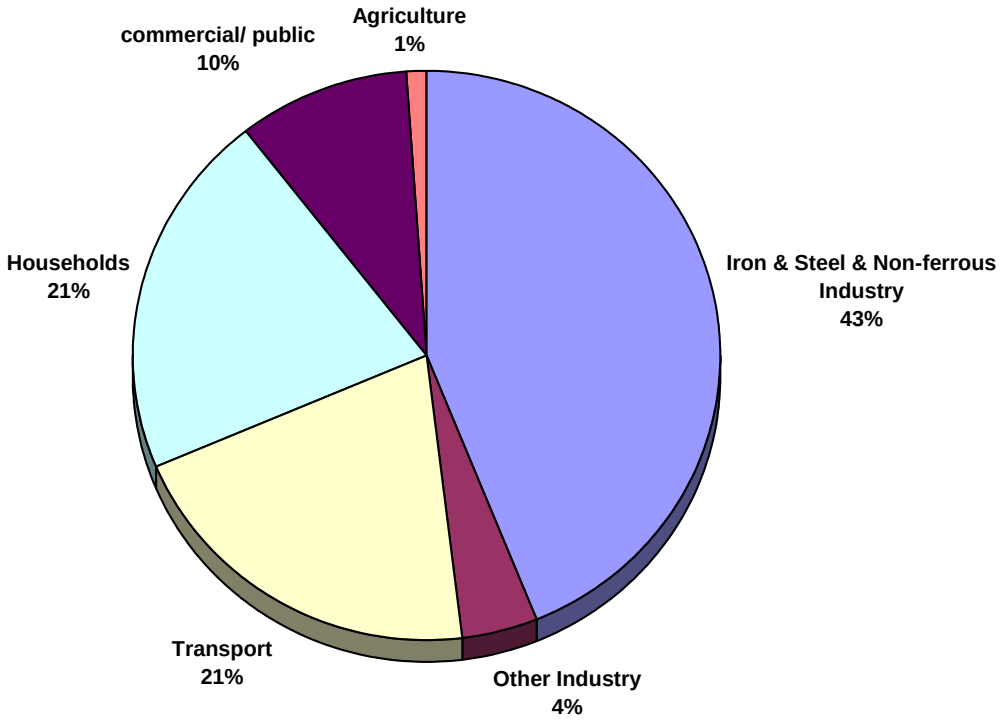
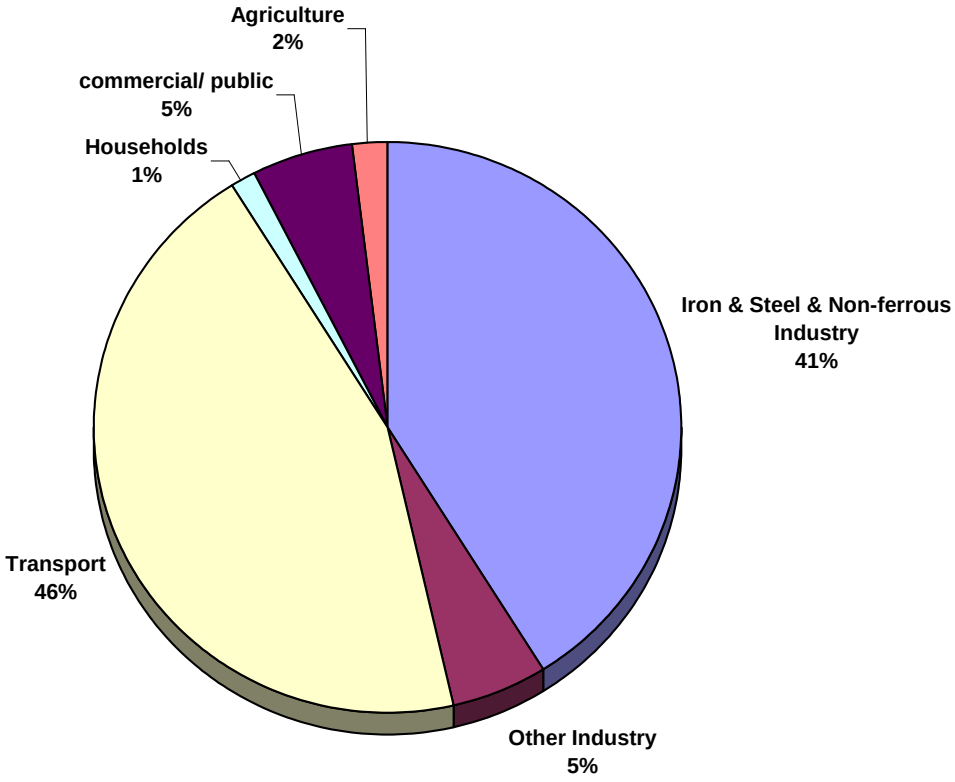


Figure 3: Structure of the final energy consumption by sector (2004)



Concerning **petroleum products**, transport is the larger consumer followed by the two large plants (KAP and Steel Works). Less significant consumers are the Commercial and Public Sector and other industry as presented in Figure 4.

Figure 4: Structure of the final consumption of petroleum products (2004)



The structure of **final electricity consumption** is also dominated by KAP and the Steel Works Plant that consume about 55% of the total consumption. The residential sector is also a significant consumer of electricity with 28% share, while the public and commercial sector follows with 14% share. Figure 5 presents the structure of the final electricity consumption.

Low electricity prices in the past for the residential sector, along with certain advantages of electric heating appliances, (such as the limited space requirements, easy installation, possibility to operate them independently), resulted to extensive **use of electricity for space heating** in buildings, especially in urban areas. In rural areas biomass (wood) participates significantly in space heating. These are indicated by the significant share of electricity (60%) and secondly by biomass (33%) in the total energy consumption in households as shown in Figure 6. It is worth mentioning that in EU 25 in the same year i.e. 2004, the share of electricity in households' total energy consumption was only 21%, natural gas and petroleum products, coal and District Heating 70% and biomass only 9%.

Figure 5: Structure of the final electricity consumption (2004)

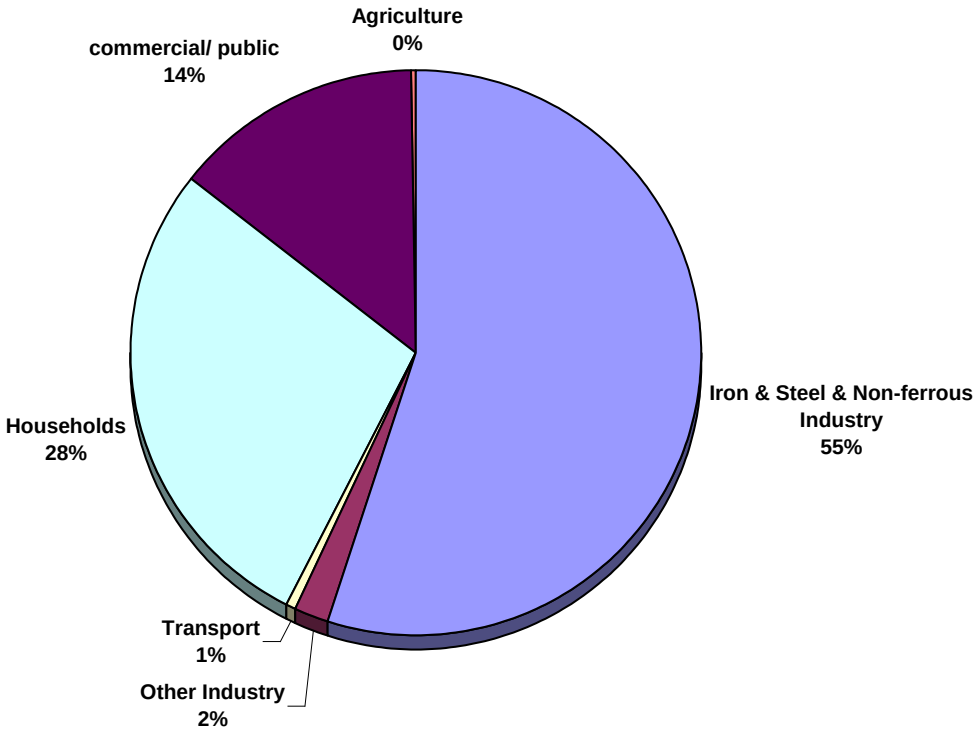
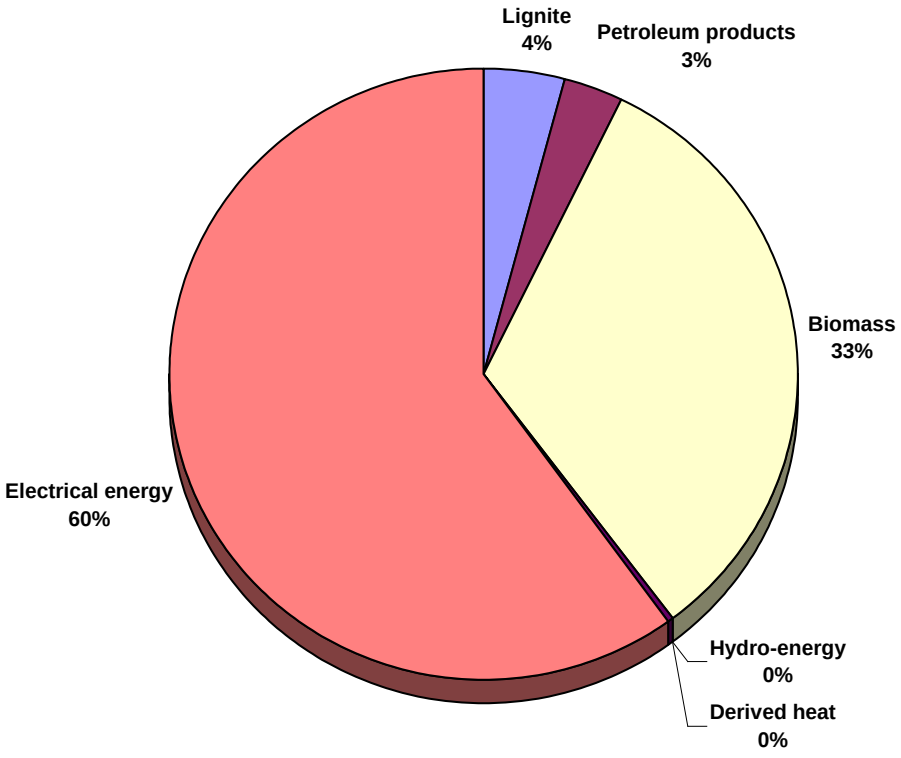


Figure 6: Predominant share of electricity in the final energy consumption in households (2004)



The role of EE in addressing key problems of the energy sector.

The important role of EE for security of energy supply, market competitiveness and the environment, as well as on new jobs' creation, increased employment and improved living standards, is recognised by the EE Strategy the was adopted by the Government in 2005. EE is a very important means to address and relax serious problems and imbalances of the energy sector that are outlined in the previous chapter.

The whole chain of the energy system from production, electricity generation, distribution to end-use is characterised by low EE. The overall picture about EE in Montenegro is indicated by the **energy intensity** as presented in Figure 7. This was 1098 kgoe/USD 2000 in 2003 i.e 5,6 times higher than EU 15 average. This indicates the significant room for improvements and also the threats if appropriate action is not taken.

According to scenarios adopted in the "Energy Development Strategy up to 2025", (EDS) the expected economic development of the country will result to significant **increase of final energy consumption** in all sectors. Table 2 presents the forecasts according to a "medium scenario" that includes moderate development assumptions as well as assumptions about certain structural changes in the energy system.

Figure 7: Energy Intensity in Montenegro in comparison with other countries

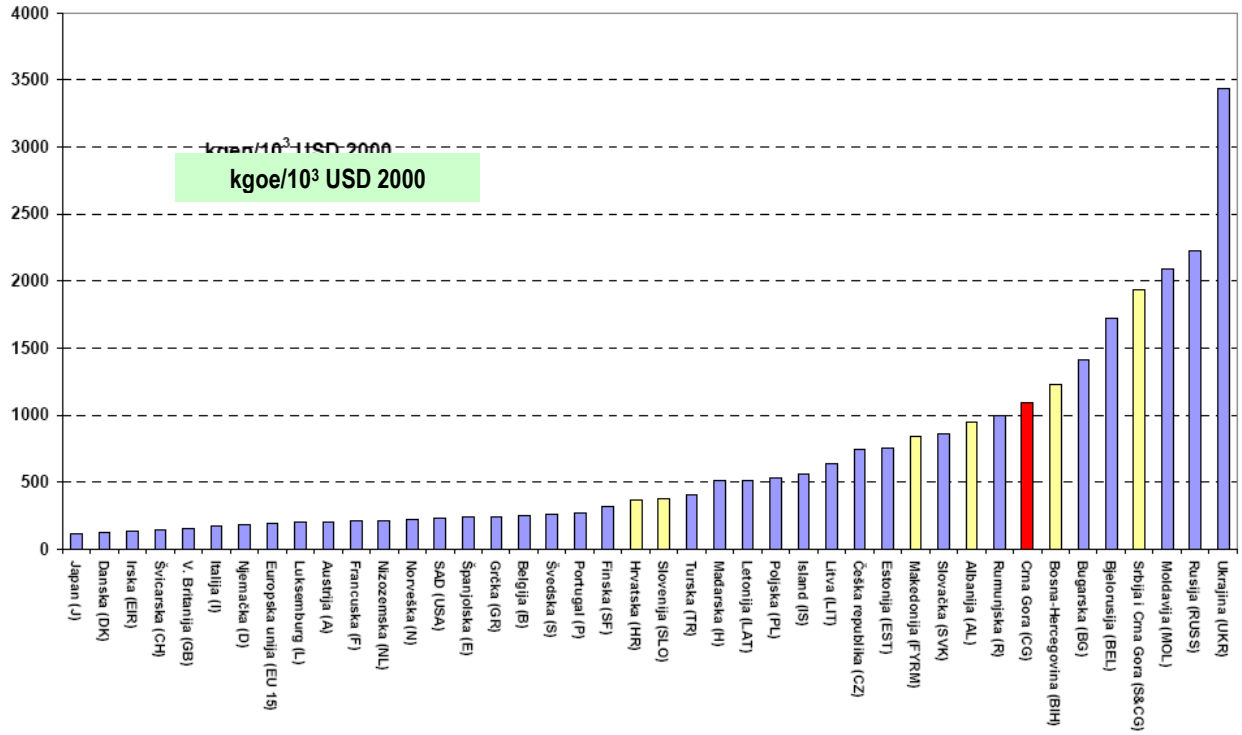
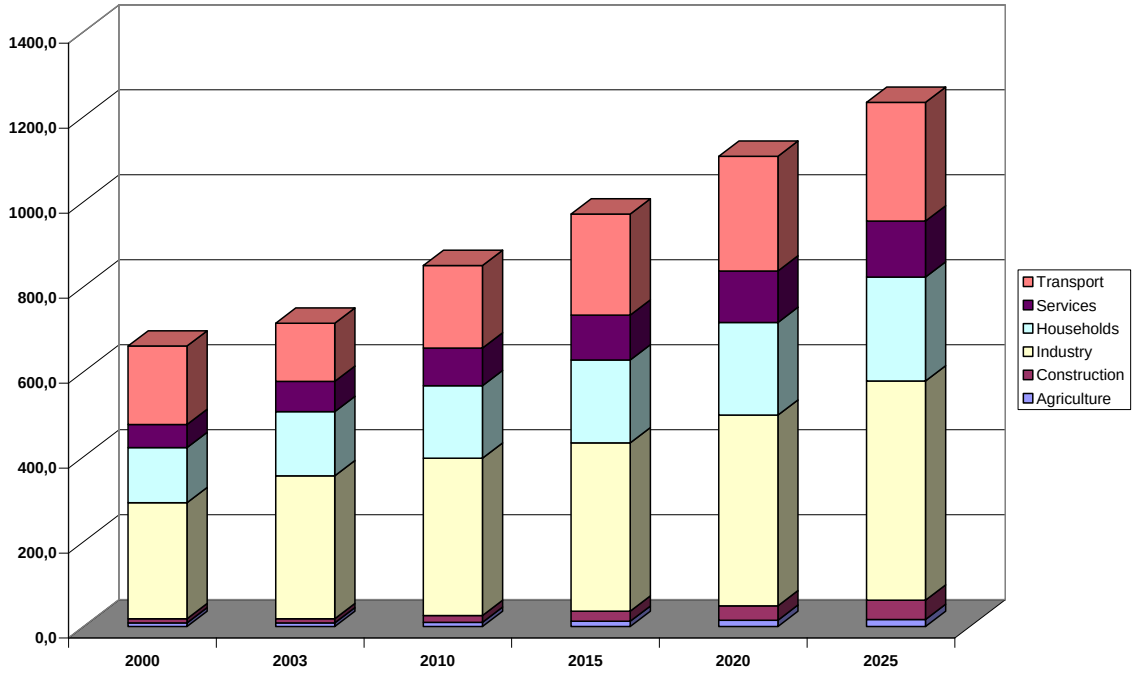


Table 2: Final Energy Demand forecasts - Medium Scenario (in 1000toe)

	2000	2003	2010	2015	2020	2025
TOTAL	***659,93***	***712,24***	***849,34***	***970,67***	***1106,33***	***1232,92***



Source: Energy Development Strategy

Given the limited domestic energy resources of Montenegro and the costly and time consuming process to develop new generation capacities, increase in energy consumption will put pressure on the dependency of the country on energy imports. In the case of oil products any future increase in demand will be met through imports. In the case of electricity, imports will cover all future increase in demand at least up to 2011, when it is expected that additional power generation capacities will start entering into the system. **EE and development of RES are the reasonable means to keep dependency on imported energy to the minimum possible levels, thus contributing to security of energy supply.**

Regardless of the scenarios for expansion of power generation capacity, electricity is an expensive and high quality energy form. No mater if the power is produced in the country or imported, the value of kWh is defined by the market conditions in SEE market. **One kWh saved could reduce imports or be exported at regional market prices**. It should be also noted that peak power is of much higher price than the base-load electricity.

The conditions in the SEE electricity market are characterised by increasing electricity and peak power demand as economies of the region develop and living standards increase, shortage in generation capacity in almost all countries of the region, slow development of new capacities and weak interconnections. These result to high average wholesale and peak power prices.

According to the EDS and based on the international commitments of the country, the energy regulator should make decisions for gradual increase of tariff prices in order to get them closer to the market prices with parallel measures to support socially vulnerable population categories.

As already mentioned, significant part of final electricity consumption is used to cover space heating and other thermal needs. This is an irrational and cost ineffective use of electricity. Furthermore, low energy performance and the poor maintenance level of existing buildings result to high losses, therefore poor comfort level and excessive costs.

Most of the existing building blocks have been constructed without central heating installations. The non availability of natural gas and district heating systems set limitations to the alternatives that the end-users have for fuel change. In addition, the culture for adoption of collective solutions in blocks of flats is not developed among the population and not adequately supported be the regulatory framework.

With the economic development and increase of the living standards the expectations of population for better thermal and cooling conditions will also increase. Increased use of air conditioners will particularly affect the demand in peak hours. In addition there will be a tendency for shifting from the use of wood for space heating to more convenient energy solutions.

All the above, coupled with the expected further increase in electricity prices and the relatively low income level of population, demonstrate the importance of saving energy and particularly of electricity in the buildings sector.

Legislative, regulatory and institutional framework for Energy Efficiency

The **Energy Law** - Article 3 (2003) defines the responsibilities of the Ministry for Economic Development (former Ministry of Economy) regarding EE and RES in Montenegro as follows:

For the purpose of fulfilling its obligations under this Law and other applicable regulations, the Government shall, through the Ministry:

- *Realize EE policies and encourage the conservation of energy resources;*
- *Encourage and advise on EE and the rational use of energy;*
- *Develop and promote incentives for the efficient use of energy and renewable resources;*
- *Promote the increased use of RE Sources and alternative energy sources for generation in the internal market; and*
- *Manage funds contributed for the purpose of energy conservation and EE.*

In addition, the document entitled "**Energy Policy for the Republic of Montenegro**" (2005) obliges the Government of Montenegro and other authorized institutions in Montenegro to accomplish two additional goals directly related to EE:

- Providing institutional and financial incentives for EE improvement and energy intensity reduction in all sectors, including all energy chain, from generation to energy consumption;
- Providing support for research, development and promotion related to new, clean and efficient energy technologies and related to conducting of the energy policy on an expert and scientific basis.

In line with the above provisions, the **"Energy Efficiency (EE) Strategy of the Republic of Montenegro"** was developed with EU Technical Assistance and adopted by the Government on 13 October 2005.

The "**Energy Development Strategy of Montenegro up to 2025**" (EDS) that is under public discussion also recognises the importance of EE and foresees for the adoption of special Law on Energy Efficiency.

The EE Strategy provided, among others, for the adoption of an **Energy Efficiency Law**, the creation of the **Montenegrin Energy Efficiency Unit (MEEU)** under the Ministry for Economic Development to be in charge of EE and RES promotion and for establishment of an **EE Fund**. The EE Strategy needs to be revised and updated to ensure consistency with the EDS and to take into account important developments in EU such as the new **Directive 2006/32/EC on energy end-use efficiency and energy services**, and the **Action Plan for Energy Efficiency: Realising the Potential** COM(2006)545 final.

MEEU was established within the Ministry for Economic Development as an informal unit and staffed with 2 persons initially. In addition the **Energy Efficiency Council** for implementation of the EE Strategy was established.

Energy Efficiency Action Plans for 2006 and 2007 were adopted by the Government.

All the above are very significant initial steps towards promotion of EE. However, **the gap to be covered by Montenegro to reach the minimum EU legislative, regulatory and institutional levels in EE is very large**. In following Chapter the requirements and the amount of the work needed to meet the minimum EU levels in EE is presented.

Despite the official adoption of very important documents for EE and the aforementioned initiatives, very few actions have been initiated. The recent increase in electricity prices gave a signal to the market and brought EE into attention and public discussion.

However there is still an unclear picture about how EE could be better promoted. Awareness about EE remains low on all levels, from end-users to Government officials. Issues that are the pillars of EE policies in EU, such as the development of solid legislative and regulatory frameworks and strong institutional structures to ensure sustainability, measures to stimulate market mechanisms and to promote behavioural changes, etc. are not given much attention and priority.

The focus is on quick results through implementation of a number of projects but the state budget available for EE is limited. It is indicative that the budgets of MEEU for implementation of the Action Plans 2006 and 2007 were 50,000 EUR for each year, with an option for additional 30,000 EUR in 2007.

MEEU's role as the central organisation for the promotion of EE is not yet recognised by Ministries and organisations. As a small informal unit within the Ministry, has neither the status required nor the authority to take serious initiatives, influence decisions and play its coordination role. Various initiatives for EE planned or implemented by other Ministries (e.g. Ministry of Education) or within the Ministry for Economic Development (e.g. the KfW programme for financing EE in SMEs implemented with SMEDA, a Directorate within the Ministry for Economic Development) are organised and implemented without or with very limited involvement of MEEU.

In addition, MEEU's has very limited staff, capacity and budget to accomplish the ambitious Action Plans. Out of the two persons allocated to MEEU officially, one of them is usually occupied with other priorities and regular day-to-day work of the Ministry. The EAR project "TA to MEEU" improved significantly the capacity of the existing staff. However there is a real risk, given the overall unclear situation, that the trained staff remains in MEEU in the future.

On the other hand, based on information from the Donors Coordination Meetings there is significant interest from the EC/EAR, World Bank, KfW, EBRD, etc. as well as from bilateral assistance programmes to finance projects and provide TA for EE. It is understood that **the distribution of available funds between Montenegro and neighbouring countries,** as well as the share of funds that will be finally directed to EE within the country, **depends on the capacity of each beneficiary to absorb them, the**

quality of proposals and the guarantees it may present to the donors to convince that the funds will be used in a cost effective way and produce sustainable results.

In this respect, **strengthening of the central EE institution** (currently MEEU) **should be seen as an investment for the country** that will pay-back both through achieving energy savings and by attracting more international funds for EE. In the opposite case, with weak EE institutional structures, **donors may evaluate the risk of failure high and sustainability of results not guaranteed.** Therefore **the possibility of losing funds for EE is real** and has already been experienced in the case of IPA 2007.

We understand that Montenegro, as a small country is called to develop a large and disproportional to its population, number of institutions and administrative structures to reach the EU standards. Therefore, one cannot expect that a large EE institution is developed. A small but dynamic EE institution with enough support and recognition from the Government and with dedicated and qualified staff can mobilise resources from other organisations, local authorities, NGOs and achieve good results. In addition, it will be in the position to co-ordinate domestic and international initiatives in EE ensuring that all needs and sectors are covered in a balanced way, overlapping of projects is avoided and eventually, the EE strategy goals are met.

Strengths, weaknesses, opportunities and threats in the field of EE

On the basis of the aforementioned remarks, the following table summarises the strengths, weaknesses, opportunities and threats (SWOT) of Montenegro with regard to EE.

SWOT Analysis for EE in Montenegro

Strengths

The Energy Development Strategy (EDS) defining medium- and long-term objectives, priorities and conditions for development of Montenegrin energy sector is under public discussion before official adoption. The approach of the EDS about EE could be improved (proposals for improvements are submitted with this Action Plan).

The Energy Efficiency Strategy of the Republic of Montenegro was adopted by the Government on 13 October 2005.

The MEEU has been established and its staff has acquired significant knowledge and know – how.

Communication between ministries, organisations, local authorities, mass media, NGOs, market actors and energy consumers is facilitated by the small size of the country and interpersonal relations.

The small size of the country facilitates management and monitoring of EE programmes.

Municipalities are organised in a Union and could play an important role in promoting EE at local level.

According to the EDS and based on the international commitments of the country, there will be gradual increase of tariff prices in order

Weaknesses

There is high dependency on energy imports (100% for liquid and gaseous fuels and about 35% of the final electricity consumption are imported).

There is predominant share of electricity in the energy balance. Natural gas is not available and district heating is not developed.

Energy infrastructure is in poor condition and inefficient, with increased requirements for maintenance and urgent needs for rehabilitation and technology upgrading.

The whole chain of the energy system from production, electricity generation, distribution to end-use is characterised by low EE.

There are significant commercial losses of electricity and non-payment problem.

The two largest electricity consumers (ferrous and nonferrous metallurgy) consume about half of total electricity consumption.

Industrial infrastructure is energy inefficient due to use of old and inefficient equipment, poor maintenance, non optimum exploitation of production capacity and lack of awareness and of financial means.

Household sector is a significant consumer of electricity and largely contributes to peak demand.

The EE Strategy needs revision on the basis of the new EDS and to take into account new developments in EU (incl. Directive 2006/32/EC on energy services).

MEEU, according to the new organisational scheme, will be a part of the Department for EE and RES, under the Sector for energy in the Ministry for Economic Development. MEEU has not been established as separate unit and is weak in authority, recognition and human resources:

- There is lack of coordination of EE initiatives from different institutions (due to the weak position of MEEU that suppose to play the coordination role).
- There is limited capacity to coordinate large EE programmes planned by international donors
- There are limited human and financial resources to implement annual EE Action Plans

Strengths

to get them closer to the market prices giving the right signals to consumers for EE.

There is significant potential for solar energy applications and other RES.

There is a strong building construction and engineering industry with knowledge about state-of-the-art construction techniques.

The local market could easily offer EE equipment and EE solutions.

There is a small but good basis of local experts and university professors with sufficient knowledge on EE.

The participation of Montenegro in the ECT(SEE) and other international schemes, facilitates international contacts and exchange of experience.

Weaknesses

The necessary legislative, regulatory and instructional framework related to EE (linked also to EU approximation) is not in place.

The requirements for development of institutional and administrative structures for EE that will enable Montenegro to reach the EU standards are very demanding and disproportional to the size of the economy and the population.

There is no statistical system in place to support monitoring of EE, neither energy data reporting obligations established.

There is limited understanding about EE policy issues, energy management and demand side planning among officials and staff of central and local organisations.

There is low level of awareness and know-how about EE among the general public and all categories of energy consumers.

The small size of the market does not facilitate development of local manufacturing of EE equipment and materials and specialised EE services.

Additional remarks for buildings and public services:

The income level of the population is low in average.

Buildings are usually constructed without respect to the existing thermal insulation standards. In addition there is a fashion to construct glassed office / commercial buildings with unacceptable energy performance both in winter and in summer. There is also limited awareness among the population about the importance of proper thermal insulation.

Low energy performance and the poor maintenance of existing buildings (private and public) result to high losses, therefore poor comfort level and excessive costs.

Low electricity prices in the past lead to unbalanced structure of energy demand, esp. in the buildings sector with extensive use of electricity for space heating and hot water production.

Existing and new multi-ownership buildings are constructed without central heating systems or with provision of spaces for future installation of such systems. This fact and the non availability of natural gas set limitations to the alternatives that the end-users have for fuel change in space

Strengths

Weaknesses

heating.

The culture for adoption of collective solutions in blocks of flats is not developed among the population and not adequately supported be the regulatory framework.

The market share of low efficiency – low quality electrical devices (esp. air conditioners) is significant. There are neither minimum energy performance requirements nor energy labelling to provide information to consumers.

Increasing use of air conditioners increase the demand in peak hours putting pressure to the supply side.

Public lighting and water supply services are energy inefficient. High water losses and uncontrolled water consumption (water consumption in many apartments is not measured individually) increase the volume of pumped water therefore energy consumption.

Energy management schemes at local level and large public buildings are missing (only one case can be reported).

Opportunities

Exploitation of the large potential for EE and introduction of RES would relax problems both in the demand and the supply side and have significant positive energy, economic and environmental impacts.

Montenegro has a clear orientation to EU. Transposition of EE Directives and adoption of successful EU practices is a challenging opportunity. This is not only a requirement for EU accession but also the safe path to EE development, as EU framework on EE reflects the accumulated long experience of Member States in promoting EE.

Development of a complete legislative, regulatory and institutional framework for EE would provide the basis for effective and sustainable promotion of EE and mobilisation of the market forces. There is an

Threats

The gap to be covered by Montenegro to reach the minimum EU legislative, regulatory and institutional levels in EE, as well as the EE levels of the economy is very large. In addition EU moves ahead with the new Action Plan for Energy Efficiency [COM(2006)545 final]. If vigorous EE development programmes are not implemented in Montenegro the existing gap will further increase. It should be noted that there is also a gap between Montenegro and all other countries in the region (with the exception of BiH) in the progress for promoting EE.

Without the development of an appropriate legislative, regulatory and institutional framework for EE there is no legal basis for integration of EE into all mechanisms and functions of the economy and

Opportunities

opportunity to incorporate EE provisions and concepts in the new Law on constructions.

A small but dynamic central EE institution could coordinate actions and programmes and mobilise all Ministries and state organisations, local authorities, NGOs and market forces towards achieving EE.

There is opportunity for the establishment of an EE statistical and information system to facilitate planning and monitoring and be used as a reporting tool.

There is significant interest from international donors to finance EE programmes. International assistance along with the establishment of a Fund for EE could finance integrated programmes for EE. Given the small size of the economy, relatively small programmes could drastically improve the EE situation in all sectors.

Montenegro's energy system is under restructuring. There is an opportunity for incorporation of EE requirements into privatisation and concession agreements and new licences, prior to their realisation.

The major energy consumers (EPCG on the supply side and KAP and the Steel Works Plant in the demand side) could implement management programmes with significant results.

Integrated actions for promotion of EE in the residential and the buildings sector in general could improve the situation in existing buildings and ensure proper construction of new ones. The increase of electricity prices give an excellent opportunity for an effective awareness raising campaign addressed to the population about:

- the significance of proper insulation and construction of buildings to create a market demand for energy efficient buildings (particularly important since enforcement of existing regulations is weak),
- the importance of EE as a criterion in purchasing devices,

Threats

implementation of integrated EE programmes.

Without a strong central EE institution there is high risk of uncoordinated, overlapping, imbalanced and fragmental EE actions that can not ensure sustainability and maximisation of the effects. In addition there is high risk that funds for EE from international donors will be lost if the Montenegrin side cannot present appropriate proposals, prove that it can support implementation and develop the necessary mechanisms to ensure sustainability.

There is a huge work to be accomplished for developing the necessary legislative and regulatory framework for EE and very demanding administrative, organisational, management, monitoring and reporting requirements to implement EE programmes and absorb efficiently all funds from international aid. This work cannot be successfully accomplished without mobilisation of all stakeholders from the public and the private sector. This cannot be achieved without a strong, widely recognised, central EE institution to undertake this coordination/ mobilisation role.

The financial and TA from international donors cannot cover all requirements. In addition every international aid programme has own goals and priorities that may not be the same with the EE policy priorities of Montenegro. Without creation of a Fund for EE and possibly local funds on municipality level, it will not be possible to prepare and support implementation of donors' programmes and finance actions not covered by them.

Without establishment of an EE statistical and information system it will be difficult to monitor implementation of programmes and assess their impacts, prove successes or identify problems and take corrective actions.

Opportunities

- good EE practices and EE measures,
- promotion of collective EE solution in multi-ownership buildings.

The interest of the Wold Bank and other international organisations to provide financing for EE in the public sector gives the opportunity for an integrated programme for EE in the public sector promoting investments in combination with the establishment of energy management schemes and monitoring/ benchmarking system, introduction of EE criteria in public procurements, introduction of alternative financing mechanisms, training, publicity and marketing, demonstration projects etc.

The on going programme of KfW for financing EE in SMEs could be combined with other measures (TA, promotional activities etc.) to form an integrated intervention programme for industry and the commercial sector.

Programmes for the promotion of specific technologies (e.g. thermal solar systems) could be launched and incentives could be provided to end-users where appropriate.

Threats

If EE requirements are not incorporated in new licences and privatisation and concession agreements at the stage of their preparation, it will be very difficult to impose them afterwards. A significant opportunity for EE in the supply side may be lost.

Currently there is a boom in building construction. Many more new buildings will be constructed with unacceptable or poor energy performance if implementation of the existing thermal insulation regulation is not urgently and vigorously promoted through straightening of the enforcement mechanisms with parallel publicity and information dissemination to potential owners and tenants to create a market demand and pressure for construction of energy efficient buildings and systems.

In addition, failure to incorporate EE provisions and concepts in the new Law of construction will give a negative signal to the market. This could be a first step towards development of a new framework for EE in buildings, household appliances, boilers etc. consistent with the relevant EU Directives (Directive on the energy performance of buildings, Directives on energy labelling, minimum efficiency requirements, etc). Absence of this framework will set problems to EU accession and the conditions for sustainable EE in buildings will not be created.

Without a series of measures to promote electricity savings in buildings, the gradual increase of electricity prices combined with the low income of the population and the limited availability of alternatives for shifting from electricity use to other energy forms, will burden the family budget, make impossible for many families to pay their bills or oblige them to lower further the already poor living conditions. Alternatively, financial support to the vulnerable parts of the population will burden significantly the state budget for subsidising consumption that could be easily and cost-effectively saved.

Opportunities

Threats

Given the significant potential for EE and introduction of RES in all sectors of the economy and the possibility for introduction of low cost measures, EE is a win-win case. Any delay in promoting of EE measures is a loss for the consumers, the economy and the environment.

Overview of the requirements for EU approximation and participation in the Energy Charter Treaty in the field of EE

Overview of EU accession process

We consider important that all sides have established a common understanding and are aware of the requirements for EU approximation in the field of EE. The following paragraphs present in brief the EU accession process that should be followed in all sectors including energy and EE.

Accession can only follow if the country fulfils all criteria of accession. These criteria are political, economic, the capacity of the country to take on the obligations of membership, and the **adoption of the *Acquis Communautaire*** (the entire European legislation) and **its effective implementation through appropriate administrative and judicial structures**.

The framework for the Western Balkan countries in the course to their future accession is the Stabilisation and Association Process (SAP). The Commission has decided to create a single Instrument for Pre-Accession Assistance (IPA) for the period covered by the next Financial Perspectives (2007-2013). It replaces the 2000-06 preaccession financial instruments PHARE, ISPA, SAPARD, CARDS etc.

IPA covers the Western Balkan countries with candidate status (currently Croatia, the former Yugoslav Republic of Macedonia, Turkey) and potential candidate status (Bosnia and Herzegovina, Montenegro, Serbia including Kosovo according to UNSCR 1244 and Albania).

An essential obligation of the candidate countries in order to become Members of the EU is to achieve approximation of law, that means incorporate into their national laws, rules and procedures, the entire body of EU law contained in the acquis.

Approximation of law is not restricted to the legislative work only. It also requires providing the institutions and budgets necessary to ensure implementation (practical application) of the provisions of the law and to provide the necessary controls and penalties to ensure that the law is being complied fully and properly i.e to enforce the law.

The Community legislation in force, related to EE and RES is based firstly on a number of Articles of the EC Treaty, which give the general principles and secondly on the Secondary Legislation in force which addresses specific issues. The EU Secondary Legislation includes Directives, Regulations, Decisions, Resolutions and Recommendations.

- **Directives a**re binding to the Member States but they are designed to be sufficiently flexible to take into account differing conditions between countries. Candidate countries must adopt EU Directives before becoming full members.
- **Regulations** are directly binding to Member States and supersede any conflicting national laws. Member states may not transpose the provisions of regulations into national law. **Regulations largely fall outside the approximation process** and come into force in the applicant countries immediately after they become full members. Nevertheless, the institutional and administrative framework required for the implementation of the Regulations **should be in place before accession**. Therefore, candidate countries must take administrative steps **to be ready to implement Regulations** when they will become full members.
- **Decisions** are individual legislative acts. They differ from Regulations or Directives in that they are usually very specific in nature. Decisions, like Regulations, also fall

outside the approximation process but the candidate countries must be ready to enforce them, if applicable in their case, immediate after they become full members.

- **Recommendations and resolutions are non-binding** to the Member States but they reveal future trends in European Policy.
- In addition to the above, a series of other non biding informative documents, such as the Commission's Working Documents, Communications, etc. provide very useful information and proposals for future legislation and policies.

The experience from the approximation process of Central and Eastern European Countries (CEECs) to European standards shows that the energy issues are of particular importance and difficulty. Also a significant part of the environmental "acquis" is related to energy production and use.

Regarding the approximation of EU energy and the relevant environment legislation, the candidate countries have to meet three equally important interrelated challenges:

- **The legislative challenge**: that is transposition of Community "acquis" into the national legislation. It is a time consuming process that should be based on a comprehensive analysis of the legal gaps and on a detailed schedule for the transposition work.
- **The institutional challenge**: Implementation and enforcement of legislation requires new or reorganised institutions, clear distribution of competencies between national, regional or local authorities, sufficient technical infrastructure and trained people. This effort requires considerable financial and human resources.
- **The financial challenge**: the elaboration of financing strategies is of immediate priority as considerable investments are required for infrastructure as well as for strengthening the administrative structures.

Besides, there are sector-specific challenges that may differ from country to country.

The EU EE policy and legislation

The European Commission has taken considerable initiatives in the field of EE which resulted in the adoption of specific Directives as well as a series of other documents.

Appendix 1 presents the EU legislation in force related to EE.

Besides the legislation, a number of important **Policy Documents** have been issued by the EC:

- **Action Plan for Energy Efficiency**: Realising the Potential [COM(2006)545 final of 19.10.2006
- Green Paper on Energy Efficiency: or Doing More With Less [COM(2005) 265 final of 22.06.2005],
- Green Paper on a European Strategy for Sustainable, Competitive and Secure Energy [COM(2006) 105 final of 8.03.2006]
- Green Paper: Towards a European Strategy for the Security of Energy Supply [(COM(2000) 769 final) of 29.11.2000]

In addition the European Commission has issued a large number of Communications and Working Documents related to public discussion of new legislation as well as to implementation of the Directives.

The Directives and policy papers can be found in the EC website:

http://ec.europa.eu/energy/demand/index_en.htm

The EU Action Plan for EE

The Action Plan for EE outlines a framework of policies and measures with a view to intensify the process of **realising the over 20% estimated savings potential in EU annual primary energy consumption by 2020**.

Particular importance in the Action Plan is placed on:

- mobilisation of the **general public** and policy-makers at all levels of **government**, together with **market actors**, and
- transformation of the internal energy market in a way that provides EU citizens with the globally **most energy-efficient infrastructure, buildings, appliances, processes, transport means and energy systems**.

Given **the importance of the human factor** in reducing energy consumption, the Action Plan also encourages citizens to use energy in the most rational manner possible. It is recognized that EE is about **informed choice by individuals**, not just about legislation.

Key EU Directives on EE and implementation requirements

In order to support better integration of EE measures into national legislation, the European Commission has proposed several Directives which have been adopted and are now in force. These concern broad areas where there is significant potential for energy savings.

Appendix 2 presents in detail the **transposition requirements of key Directives**. The various measures listed are not always "legal obligations" but are reasonable recommendations based on the requirements of each Directive and the practices followed in EU countries. The following paragraphs present in brief the key Directives and important requirements for their implementation.

Directive on energy end-use efficiency and energy services (2006/32/EC)

The Directive provides for a number of compulsory requirements such as the adoption and implementation of Energy Efficiency Action Plans (EEAP), measures for the Public Sector, obligations to energy distributors etc. It is the basis for an EE Law. The EE Law is not an explicit requirement of the Directive but is the most reasonable way to transpose it into the National legislation. To implement this Directive there is need for adoption of a large number of regulations and support actions including, but not limited, to:

- EEAPs with concrete goals for energy savings and appointment/ establishment of institution of adequate capacity and authority (i.e EE Agency) to develop, coordinate and monitor EEAPs and verify achievement of targets
- Regulation with methodology for calculating the national indicative energy savings targets and for the measurement and verification of energy savings.
- Establishment of an obligatory data collection and reporting mechanism about the implementation of EEAP and of database for data collection and reporting
- Establishment of an EE Fund to finance actions.
- Action Plan for EE in the Public Sector and appointment/ establishment of institution (i.e EE Agency) to undertake administrative, management and implementing responsibility.
- Regulatory requirement for introduction of EE criteria in public procurements; Publishing/ dissemination of guidelines.

- Requirement enabling energy performance contracting, third party financing etc. in the public sector; Publishing/ dissemination of model contacts.
- Requirement for obligation of distributors/ retail suppliers to provide or make available energy services or energy audits or to contribute to an energy efficiency fund; establishment of a reporting/ monitoring /verification mechanism to ensure compliance.
- Law amendments/regulations removing obstacles to ESCO activities;
- Invectives for establishment, development and equipping ESCOs, EE consulting and services bureaus, etc.
- Establishment of accreditation body and/or qualification scheme for energy auditors etc.; Regulations specifying the qualifications and responsibilities of energy auditors, installers, etc. and their accreditation procedures. Specifications for energy audits, energy measurements, installation of equipment, etc.
- Information dissemination publicity campaigns for the general public and specific target groups
- Requirement for individual energy metering for new buildings; Regulation specifying the rules in case for individual metering and how common costs that are measured by collective meters are shared;
- Requirements for provision of information to consumers about their energy performance with the bills, etc.

Energy Performance of Buildings Directive 2002/91/EC

The Directive 2002/91/EC, also known as EPBD, introduces the concept of energy performance of buildings that goes beyond the traditional thermal insulation requirements by taking into account other factors that play an increasingly important role such as heating and air-conditioning installations, application of renewable energy sources and design of the building. It also provides for energy certification of buildings and regular inspection of boilers and air conditioning systems.

Implementation of Directive is a long and demanding procedure to be carried out in steps. Among the issues to be addressed the following are pointed our:

Establishment of a management and administration scheme for implementation

- Development of a database with registers of assessors for certificates, records of certificates issued for new and existing buildings, database of energy performance of existing large public service buildings (over 1000 m2) etc.
- Regulation of calculation methodology for energy performance of buildings; Preparation of standard calculation forms and energy performance study reports; Training courses addressed to engineers.
- Adoption of Standards on which the methodology will be based (there are tenths of Technical Standards relevant to EPBD – more than 2000 pages)
- Regulation for the determination of the minimum EP requirements in the various types of buildings; Establishment/ strengthening of enforcement mechanisms.
- Regulation defining the EP certification methodology and checklists; establishment of enforcement mechanisms including verification/ sample checking of issued certificates.

- Regulation defining the inspection methodology of boilers and air conditioning systems, the qualifications of inspectors and accreditation procedures, code of practice, etc.
- Establishment of accreditation body and/or qualification scheme for the certifiers and inspectors, etc.

Other Directives related to EE

The EU EE framework comprises a number of other Directives, outlined in the following paragraphs. Each one has series of implementation requirements that are presented in ***Appendix 2.***

- **Energy labelling** of domestic appliances: (Umbrella Directive 92/75/EEC of energy labelling and "daughter" Directives for labelling of specific appliances). They cover the obligation of Member States to impose labelling to specific household appliances such as washing machines, electric tumble dryers, combined washer-dryers, dishwashers, household lamps etc.
- **Minimum energy performance requirements** of appliances: These Directives specify the performance and efficiency requirements for new hot-water boilers, household electric refrigerators and freezers and ballasts for fluorescent lighting. The EC plans to set minimum energy performance requirements to a number of additional appliances in the near future.
- **Promotion of cogeneration** (CHP Directive 2004/8/EC): The purpose of the Directive is to increase EE and improve security of supply by creating a framework for promotion and development of high efficiency cogeneration of heat and power based on useful heat demand and primary energy savings.
- **Eco-Design**: It aims to improve the environmental performance of products throughout the life-cycle by systematic integration of environmental aspects (such as energy efficiency) at a very early stage in the product design.

Transposition of the above Directives requires a huge effort and resources. On the other hand they will address serious problems in Montenegro especially concerning:

- the organization of EE mechanisms, development of EE services and promotion of EE in the public sector (Directive 2006/32/EC),
- the development of a solid regulatory framework of EE in builds (EPBD), and
- the promotion in the market of EE devices and equipment that have a minimum acceptable performance and quality (energy labelling and minimum energy performance requirements).

Although the economic potential of cogeneration is limited due to the non availability of natural gas, transposition of the CHP directive should be considered.

Eco-design is in an initial stage of development in EU and concerns mainly countries that have a strong equipment manufacturing industry.

Energy Charter Treaty and the Protocol on Energy Efficiency and Related Environmental Aspects (PEEREA)

The Energy Charter was a political initiative for a commonly accepted foundation for developing energy cooperation between the states of the Eurasian continent. Russia and many other neighbouring States were rich in energy resources but needed major investments to ensure their development, whilst the states of Western Europe had a

strategic interest in diversifying their sources of energy supplies, thus reducing their potential dependence on other areas of the world.

The Energy Charter Treaty is the Charter's legally-binding foundation. It provides the broadest multilateral framework of rules in existence under international law governing energy cooperation (protection and promotion of foreign energy investments, free trade in energy materials, freedom of energy transit through pipelines and grids, etc.)

An area of Treaty's provisions focus on reducing the negative environmental impact of the energy cycle through improving EE. This is covered by a special Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects (PEEREA).

With the signing of the Energy Charter Treaty and PEEREA Montenegro will undertake certain obligations with regard to EE including:

- the promotion of EE policies consistent with sustainable development;
- the creation of conditions which induce producers and consumers to use energy as economically, efficiently and environmentally soundly as possible;
- the fostering of cooperation in the field of EE.

Montenegro will undertake to establish EE policies and legal and regulatory frameworks which promote, inter alia, the efficient functioning of market mechanisms, including market-oriented price formation. Progress will be reported through **regular monitoring reviews and/or in-depth energy efficiency reviews**.

The REEREA reporting requirements are specified in a questionnaire consisting of two parts: Part I refers to EE legislation, policies and programmes and Part II to quantitative data on energy and EE.

The reporting requirements of REEREA should be taken into account for the development of an EE database.

Concept and priorities for the EE Action Plan for Montenegro up to 2012

Legal and policy basis

The proposed priorities for the EE Action Plan up to 2012 are based on:

- the Energy Law - Article 3 (2003) and the document entitled "Energy Policy for the Republic of Montenegro",
- the "Energy Development Strategy of Montenegro up to 2025" (EDS) (under public discussion),
- the "Energy Efficiency (EE) Strategy of the Republic of Montenegro" (adopted by the Government on 13 October 2005),
- the developments in EU and the requirement for approximation of Montenegro in the field of EE,
- the experience from implementation of annual Action Plans 2007 and 2008, and the results of the EU funded project "Technical Assistance to the Montenegrin Energy Efficiency Unit",
- the identified weaknesses, strengths, opportunities and threats with regard to promotion of EE in Montenegro, and
- the lessons learnt and successes in promoting EE internationally.

Overall concept

According to the international experience and the concept of the EE Strategy, the successful promotion of EE policy requires implementation of a **balanced combination of measures** including:

- Development of the appropriate legislative, regulatory and instructional framework, including financing schemes for EE, as a prerequisite and basis for sustainable promotion of EE.
- Mandatory measures for EE imposed by the law and regulations,
- Measures to promote and facilitate EE investment by the energy consumers such as financial incentives,
- Promotion, awareness raising, training of energy managers, energy auditors and other EE service providers, technical assistance to energy consumers and measures to promote involvement of market actors, local authorities, NGOs, the academic society, etc.
- Pricing policies that reflect market prices and promote EE.

The best way to improve EE in the country and in each sector separately is to exploit the long international experience, especially in EU. The EU energy efficiency legislation and regulations is the outcome of decades of efforts, lessons learnt and considerable successes.

Therefore, **gradual transposition into the national law of EU Directives in the field of EE and adoption of successful good practices, adapted to the local conditions, is the logical process for promotion of EE in the country**. In addition, transposition and implementation of EU legislation in EE is **part of the harmonization of national legislation with EU legislation that is a prerequisite for EU accession**.

According to international practices, **the role of the state in promoting EE** is to set up the necessary structures and mechanisms, remove obstacles and design and implement

programmes that would mobilise and facilitate the market actors, local authorities, and energy consumers in all sectors to implement EE measures. In addition, it should take initiatives to ensure efficient use of energy in its own facilities i.e facilities the public sector.

Proposed Priorities

The following three **Key Axes** of interventions should be promoted in parallel:

- Establishment of the **basic framework** for EE (EE Law, EE central Institution and EE Fund) and gradual development of the necessary legislative, regulatory and institutional framework for EE
- Implementation of **sectoral programmes** for EE including provision of incentives, technical assistance and promotional/ marketing activities
- Promotion of **investments** in EE by mobilizing international financial assistance, state and local funds and private capital.

In parallel actions for development of local capacities and services in EE, research and development and promotion of local manufacturing of EE should be implemented.

Taking into account the structure of the energy demand and the problems in different sectors we would propose that the following **sectors are addressed in priority** for EE measures:

- EPCG in the supply side and the major energy consumers in the demand side (KAP and Steel Works Plant) should be addressed with individual specific EE programmes.
- The buildings sector (residential, commercial and public buildings) should be the main priority for vigorous EE measures.
- Transport as a significant energy consuming sector, should be also addressed with integrated EE plans.
- Industry, other than the two main consumers, is less significant consumer. EE measures addressed to this category of consumers should target also on increasing competitiveness and establishing the basis for development on a healthy basis from EE point of view.

In line with the above analyses we would propose the following areas of activities:

RECOMMENDED AREAS OF ACTIVITIES FOR ENERGY EFFICIENCY

AREA OF APPLICATION	**AREA OF ACTIVITIES FOR ENERGY EFFICIENCY**
FRAMEWORK FOR ENERGY EFFICIENCY	Adoption of special Law on Energy Efficiency. The Law, inter alia, will provide for the central EE Institution to play the leading role in promotion of EE and the EE Fund. It will also transpose the main provisions of EU Directive 2006/32/EC on energy end-use efficiency and energy services and introduce the concepts of other important Directives. Establishment/ strengthening and capacity building of the central EE Institution and establishment of the EE Fund. Revision of the EE Strategy on the basis of the new EDS and regular updating in the view of developments in the field of EE in Montenegro and EU. Establishment of an EE statistical and information system to

AREA OF APPLICATION	AREA OF ACTIVITIES FOR ENERGY EFFICIENCY
	facilitate planning and monitoring and be used as a reporting tool.
	Thorough analysis of overall losses in the energy sector in Montenegro and preparation of a special expert study and/or series of sector-specific and technology-specific EE studies for identification of the EE potential and proper design of interventions.
	Gradual development of a complete legislative, regulatory and institutional framework for EE on the basis of relevant EU Directives and standards and establishment of enforcement and implementation mechanisms.
	Promotion of international collaboration in the field of EE
	Promotion of applied Research and Development and know-how transfer in the field of EE and of the development of local manufacturing of EE equipment and materials.
SUPPLY SIDE	Preparation of EPCG Development Strategy and Action Plan including EE actions.
	Preparation of a new study of losses in voltage and energy in transmission and distribution networks in Montenegro and an action plan for the reduction of losses to a foreseen technically achievable level of 10%.
	Incorporation, where appropriate, of EE obligations into privatisation and concession agreements and new licences, prior to their realisation.
LARGE INDUSTRIAL CONSUMERS	Expert analysis of large consumers (KAP, Steel Plant and Railways Company) regarding cost effective reduction of energy consumption.
	Regulatory requirement for large industrial consumers for the mandatory appointment of energy managers, preparation of annual/semi-annual energy balances and EE Action Plans and implementation of EE measures.
ALL CONSUMPTION SECTORS	Promotion of development of local capacities in energy auditing, energy management etc. and of consulting/ engineering EE services.
	Alleviation of barriers and promotion of alternative financing mechanisms (energy performance contracting, third party financing etc.) and of ESCOs
	Subsidizing energy analyses of companies and feasibility studies of EE investments and use of RES; Provision of financial incentives, technical assistance, training and information dissemination, targeting specific sectors and EE interventions, as appropriate.
	Gradual increase of tariff prices to reach the market prices giving the right signals to consumers for EE (with parallel measures to support socially vulnerable population categories).
	Introduction of an awarding scheme to energy efficient companies, energy managers and successful EE projects combined with wide

AREA OF APPLICATION	AREA OF ACTIVITIES FOR ENERGY EFFICIENCY
	publicity.
BUILDINGS SECTOR (GENERAL)	Urgent measures for the enforcement of the existing thermal insulation regulation with parallel implementation of publicity and information dissemination campaigns to potential owners and tenants to create a market demand and pressure for construction of energy efficient buildings and systems.
	Incorporation of EE provisions and concepts in the Law of construction
	Development of new regulatory framework with the adoption the concept of buildings' overall "energy performance requirements" and in second phase, the "energy performance certificates" in line with the Directive on the energy performance of buildings (2002/91/EC).
	Introduction of schemes for energy labelling and minimum energy performance requirements of appliances and energy consuming equipment.
	Regulations for introduction of individual metering and energy cost distribution according to the actual consumption.
	Measures for promotion of low-energy buildings and incorporation of RES (especially passive and active solar systems) into buildings' energy systems.
PUBLIC SECTOR	Introduction of energy management schemes and EE plans at local level and in public facilities, combined with training and pilot projects and establishment of a central monitoring /benchmarking scheme.
	Implementation of EE investments and introduction of EE grant schemes for the broader public sector.
	Regulatory establishment of EE criteria in public procurements.
	Regulatory and other measures to enable energy performance constructing, third party financing and other alternative financing mechanisms in the public sector.
	Energy performance certification of public buildings.
HOUSEHOLDS	Publicity campaigns on "how to save energy" for the general public; Energy saving in households should be encouraged by free energy advising. A scheme entitled «Energy Efficiency advising to citizens» should be introduced!
	When appropriate, provision of financial incentives for energy rehabilitation of residential buildings and use of RES, granted to citizens under public announcements.
COGENERATION (CHP) AND DISTRICT HEATING (DH)	Introduction of legislative and regulatory framework for CHP in line with the Directive 92/42/EEC (2004/8/EC).
	Financing/ provision of grants for studies for estimation of CHP potential and feasibility studies for CHP and DH investments;

AREA OF APPLICATION	AREA OF ACTIVITIES FOR ENERGY EFFICIENCY
	possible provision of financial incentives for investments.
	Co-financing of projects related to co-generation and heating system for the city of Pljevlja.
TRANSPORT SECTOR	Measures to promote EE training to drivers, effective maintenance of vehicles, and EE fleet management schemes in public transport and organisations operating large number of vehicles.
	Awareness raising and publicity campaigns to general public about effective maintenance and low consumption driving.

Priority Key Recommendations

Establishment of the basic framework for EE

Amendment of the Green Paper of the Energy Development Strategy

We would propose that Chapter 19 "Major Strategy Recommendations" of the Green Paper of the Energy Development Strategy is amended. **We propose that the "Table A. Energy Efficiency" is replaced with the above table (Chapter 3.3) with the recommended areas of activities in the field of EE**

Law on Energy Efficiency

The need for introduction of basic legislation on EE is recognised in the EE Strategy and the EDS. This legislation may have the form of an Energy Efficiency Law or be realised through extensive amendments to the Energy Law. The first option is strongly recommended.

The legislation will define the EE terminology, introduce concepts such as the energy performance of buildings, energy labelling, energy services, etc. and provide the legal basis for the transposition of EU Directives relevant to EE, allocate responsibilities and provide for the establishment or strengthening of EE institutions, such as upgraded MEEU or EE Agency, EE Fund etc.

The basic background document for drafting the Energy Efficiency Law is the EU Directive 2006/32/EC on energy end-use efficiency and energy services. In addition, the basic concepts of other EU Directives (EPBD, energy labelling, CHP) should be incorporated. EE laws from other countries should be taken into account. However most of these laws have been papered before the adoption of the EU Directive 2006/32/EC and need to be drastically amended.

Drafting of the EE Law should be done in parallel with the study for establishing/upgrading of a central EE institution and EE Fund, as the key provisions for these institutions should be incorporated in the Law.

Establishment/ strengthening of the central Institution for EE

The need for **establishing/ strengthening of the central EE institution** (currently MEEU) is analysed in previous Chapters 1.3 and 1.4. It is also described and analysed in the EE Strategy.

Area of responsibility of the Central Institution

There are several options about the areas of responsibilities of the institution that would undertake promotion of EE. The institution could be:

- responsible only for EE
- part of an institution responsible for sustainable energy (EE and RES)
- part of an Energy Agency, responsible for all energy issues.

An **Energy Agency** with broader responsibility for the energy sector is a matter of decision about the organisation of the sector. If such an institution is to be established it should incorporate an EE department. However, the international experience shows that EE and RES are better promoted through specialised institutions.

Given that promotion of EE and RES present a wide range of common and combined activities and the fact that Montenegro can not afford a large number of institutions **we would propose that a central institution undertakes to cover both areas i.e. EE and RES**. It may have two specialised units, one for each area, and a horizontal section to cover common issues for EE and RES such as overall policy issues, economics and

feasibility studies, legal advice, publicity and promotion, pubic relations and international collaboration, as well as accounting, logistics and IT support.

Mission and objectives

The EE Strategy describes the mission and main functions of MEEU. In line with the concept of the EE Strategy we would propose certain additions and adaptations.

The Sustainable Energy Institution (responsible for EE and RES), regardless of its legal form, would have the following mission and objectives.

The mission of the Sustainable Energy Institution is to promote the national strategies and policies for EE in all sectors of the economy and the development of renewable energy sources.

The overall objective of the Sustainable Energy Institution is to promote implementation of the National Energy Efficiency Strategy and RES development plans, advise the Government on issues related to the formulation and implementation of viable, comprehensive and effective policies, programmes, measures and financial incentives and initiate, manage and monitor implementation of these programmes and measures.

Specific objectives of the Sustainable Energy Institution include:

- To analyse and propose legislative reforms, regulatory and institutional, energy pricing, taxation, fuel substitution, and other measures for the promotion of EE and RES;
- To identify, analyse and propose technically sound and cost effective policies and measures for EE improvements both in the energy supply and demand side and prepare National EE and RES development Action Plans with concrete targets;
- To manage, supervise, facilitate and monitor implementation of the EE/RES Action Plans, national and international programmes, incentive schemes, promotional activities and other actions related to EE improvement and development of RES;
- To undertake systematic initiatives for safeguarding the necessary financial resources for the implementation of the above programmes, either from the state budget or from other domestic and international sources, including grants and donations, international assistance programmes, etc.;
- To maintain a statistical and reporting system for EE and RES and report on progress to the Government and international organisations;
- To promote international collaboration and know-how transfer in the fields of EE and RES and act as the focal point for EE/RE and liaison between the European Commission, international organisations, the Government and the energy and economic community of the country, with a view to enhance coordination and facilitate cooperation between all sides in issues related to EE and RE.
- To promote foreign investments in the country in the fields of EE and RES.

Legal Status

The Sustainable Energy Institution should be legally founded by the proposed Energy Efficiency Law. Its legal status, mission, objectives, specific activities, organisational scheme, operation modalities including an operation manual, financing, etc should be analysed in a specific study and proposed to the Government for incorporation into the EE Law.

There are three basic options about the legal form of the institution:

- Strengthening of the existing MEEU as a Department within the Ministry for Economic Development
- Upgrading of MEEU to a Directorate within the Ministry for Economic Development.
- Establishment of an EE/RES Agency.

In addition there are “project type” solutions: i.e. a team of consultants undertakes several functions of the EE institution as a project financed by an international organisation. This is an effective solution that could promote specific actions for a period of time such as large investment programmes or promotion of specific legislative reforms. It could complement, but not substitute the central EE institution.

The following Table 3 summarises the key characteristics of the three options for the legal form of the institution.

Table 3: Comparative assessment of options for the legal establishment

Option/ Characteristic	**MEEU / Department of Ministry**	**MEEU/ Directorate of Ministry**	**EE/RES Agency**
Complexity for the legal establishment of the institution	The less complex option – based on the existing MEEU	Relatively easy option/ establishment can be accomplished mainly within the Ministry for Economic Development	Legal framework and government/ parliament approval is required
Requirements for physical establishment (offices, infrastructure, staff, capacity building)	Limited requirements; existing infrastructure of Ministry can be utilised	Limited requirements; existing infrastructure of Ministry can be utilised	The Agency should be set up from scratch
Recognition from public organisations market actors and energy consumers.	Limited recognition as a unit/ department of Ministry	Recognition due to upgraded status and authority	Wide recognition as a specialised, autonomous organisation.
Recognition from international organisations and collaboration possibilities	Limited recognition; collaboration activities should pass through Ministry procedures	Acceptable; direct contacts and collaboration may be established	Wide recognition; direct contacts and collaboration can be established; The Agency may sign directly collaboration agreements.
Decision making authority and operational autonomy	Limited; as part of the Ministry may be asked to cover day-to day needs not related to EE/RES	Acceptable	The most appropriate option
Ability to act under market criteria, offer competitive salaries to hire qualified staff and adapt its operation to the actual needs and circumstances.	Very limited – the public sector procedures, rules and salary levels should be respected	Very limited - the public sector procedures, rules and salary levels should be respected	The Agency, within the rules for its operation, can increase/ decrease staff according to the needs and offer market level salaries to attract qualified personnel
Flexibility in signing and executing contracts,	Limited flexibility - the public	Limited flexibility - the public	The Agency, within the

Option/ Characteristic	**MEEU / Department of Ministry**	**MEEU/ Directorate of Ministry**	**EE/RES Agency**
outsourcing services, subcontracting other organisations and experts and managing financing schemes	sector procedures and rules should be respected	sector procedures and rules should be respected	rules for its operation, can be quite flexible and efficient
Possibility to receive financing and support from sources other than the State budget.	Can receive only Technical Assistance and support for infrastructure development.	Can receive only Technical Assistance and support for infrastructure development.	Besides Technical Assistance, the Agency, within the rules for its operation and where there is no conflict of interest, could receive financial support from utilities and international organisations, get fees for certain services and participate in international projects.

Recommendations

Based on the above considerations we would propose the following:

- The most viable and effective option is the establishment of an **EE/RES Agency**. Its establishment, mission, objectives, functions and organisation will be foreseen in the EE Law. A study for its design, drafting of statute and necessary by-laws should be carried out as a part of the study for drafting the EE Law.
- **Financing of the Agency** should come from the State budget and international donations. Flexibility should be given so as the Agency is able to acquire additional funds from services offered either to the state or to local and international organisations (management/ monitoring of programmes, participation in projects), provided that it maintains its role as the central institution for EE/RES and does not compete with the private sector.

As a second option could be considered the upgrading of MEEU to Directorate for EE and RES.

Until the EE Agency is established, actions should be taken for strengthening the existing MEEU, capacity building and development of its infrastructure in the view of transferring all the know-how and infrastructure to the Agency, when established. The following activities are recommended.

- Establishment of **"operational autonomy"** for MEEU with a mandate of the Minister for National Economy ordering that MEEU focuses **exclusively** on EE issues, performs tasks related to the EE Action Plan and has the responsibility for their effective accomplishment.
- **Addition of 2 more experts** in the MEEU: According to the planned organisational scheme of the Ministry for Economic Development, a Department of EE and RES is established under the Energy Sector of the Ministry. The Director and the economist of the Department will work for both areas i.e. EE and RES. In addition, the EE Unit will be incorporate three experts that will work exclusively for EE. According to the new organisational scheme, and taking into account the existing staff, the EE Unit will be strengthened with two additional staff members specialised on technical issues. Their profile and qualifications are foreseen in the organisational scheme.
- **Infrastructure development**: safeguarding adequate office space for the staff and procurement of desktop and laptop computers, specialised software and other infrastructure that will fully cover the needs of the existing and new staff and MEEU operations, including promotional activities.

In addition to the aforementioned tasks, and depending on the availability of funds from International Donors, the following activities are foreseen.

- **Ad-hoc advice, TA and capacity building to MEEU and later to the Agency**: The EU financed project "Technical Assistance to the Energy Efficiency Unit" was valuable in capacity building and in supporting MEEU to define and promote priority policy actions, prepare proposals for the promotion of EE to the Government and international donors and, in general, enhance its overall performance and effectiveness. Continuation of this type of assistance is considered indispensable for the next few years, taking into account the weaknesses of MEEU and that the effort for the promotion of EE is still in a rather initial stage in Montenegro, therefore the experience is limited.
- Part of the previous activity, or a stand alone action should be a **training course to MEEU on EE Programme and Project Preparation.** MEEU is called to co-ordinate

activities for project identification, energy auditing, project conceptual design, preparation of feasibility studies and drafting of project fiche and Terms of Reference according to international standards. The training course could comprise training on Programmes, rules and procedures of EC, WB, EBRD etc. for technical and financial assistance to EE; preparation of standard methodologies, software tools and templates for EE pre-feasibility studies, Terms of Reference, standard project evaluation and selection templates, etc.; formal and on-the-job training of the above issues combined with representative case studies. This training course could be addressed, besides MEEU, to other Ministry staff involved in international cooperation projects.

- **Energy Bus – training in measurement techniques and energy auditing:** There is a lack of instrumentation and know-how for energy auditing in Montenegro. The Ministry for Economic Development and MEEU will propose to EAR and other International Donors to finance a Technical Assistance training project, combined with supply of an "energy bus" with energy auditing equipment. It is not the role of MEEU, as part of the Ministry, to perform energy audits. Therefore, training will be addressed, apart from MEEU staff, to specialised institution (eg. University) that has the capacity and resources to undertake to use the energy bus and perform energy audits in buildings, industry and other energy consuming facilities. Later the energy bus will be transferred to the Agency.

Establishment of EE (and RES) Fund

It is expected that international donors and financing institutions, as well as the private sector will finance EE investments. However there is need for the creation of a Fund for EE (and RES) and possibly local funds on municipality level to finance preparation and support of implementation of donors' programmes, as well as actions that are not covered by them.

The Fund can be established by the EE Law. Normally it will be a special bank account, managed by a Fund Board. Day to day operations could be undertaken by MEEU and later by the Agency. A system of reports, checks and balances should be established to ensure transparency.

The financing sources of the Fund could be the state budget, contributions of utilities and energy suppliers, fees and penalties, international donations, possible special tax on conventional fuels for EE and RES, etc.

A special study for the Fund's design, drafting of statute and necessary by-laws should be carried out as a part of the broader study for the establishment of the EE Agency and drafting of the EE Law.

Updating of the EE Strategy

Since the adoption of the EE Strategy, new legalisation and policy documents on EE have been adopted in EU such as the Directive 2006/32/EC on energy end-use efficiency and energy services and the Action Plan for Energy Efficiency: Realising the Potential" [COM(2006)545 final of 19.10.2006].

In addition:

- the **Sustainable Development Strategy** has been adopted in 2007 and
- the **Energy Development Strategy** of Montenegro until 2025 is expected to be adopted in 2007.

Updating of the EE Efficiency Strategy should take into account the aforementioned documents and be repeated on a regularly basis.

Establishment of an EE statistical and information system

Planning, monitoring, evaluation of results and reporting of any EE programme requires an effective data collection mechanism and statistical system. This need is also evident from the analysis of the transposition and implementation requirements of key EU Directives (Appendix 2) in which development of databases is as a common and essential requirement.

The action for the development of an EE database includes:

- Design of information and data flows, identification of sources and responsibilities as well as of procedures for data collection;
- Development of data base, initial population with data and production of first reports;
- Drafting and adoption of the necessary by-laws, Government and Ministerial Decisions etc. necessary for the functioning of the data collection mechanism.

Priority actions for promotion of EE in the Public Sector

The EU financed project “Technical Assistance to the Energy Efficiency Unit” prepared an Action Plan for EE in the broader Public Sector (facilities of pubic organisations and local authorities).

The main priority actions of the plan include:

- Establishment of a mechanism for energy data collection and of a central monitoring /benchmarking scheme for monitoring and evaluation of energy performance;
- Establishment of energy management schemes and EE plans at local level and in public facilities, combined with training and pilot projects, awareness raising and technical assistance for EE projects;
- Adoption of necessary regulations and Government decisions/mandates for the realisation of the above schemes.
- Implementation of EE investments and introduction of EE grant schemes for the broader public sector; Special investment programmes may by launched for EE in street lighting and in water supply systems.

At a second stage the following actions are foreseen:

- Regulatory establishment of EE criteria in public procurements;
- Regulatory and other measures to enable energy performance constructing, third party financing and other alternative financing mechanisms in the public sector;
- Energy performance certification of public buildings.

The German Government examines the possibility to finance a 3-year 1,5 million EUR programme for promoting energy management schemes and EE training for the broader Public Sector. In addition, the Wold Bank intends to provide a loan of 10 million $ for EE investments in the public sector.

Setting up of an EE Monitoring System for Public Sector

The central monitoring system will be based on the principles of performance indicators and benchmarking. It will be realised through a database for the energy consumption and energy characteristics of all buildings and other facilities of the boarder Public Sector. The database has been developed under the EU financed project “TA to the Energy Efficiency Unit”. Data for a number of buildings have been collected from certain Ministries. Other Ministries and organisations did not respond to the relevant requests.

The database will serve as a reporting and monitoring tool to compare energy performance of each facility with other facilities of the same type, as well as to monitor the evolution of the EE performance of each facility over the years. The functions of the database for the public sector facilities can be later incorporated in the EE Database or remain as stand-alone monitoring tool and provide input to the overall EE Database.

During the year 2008 the EE Monitoring System for Public Sector could be set up and operate.

It is particularly important to establish a mechanism for obligatory reporting to MEEU about energy performance of buildings under the competence of Government and local authorities, as well as about already implemented EE projects and measures. This obligation should be incorporated in the future EE Law, but before this, it can be enabled by temporary acts. This barrier have been already identified, for instance during MEEU activities in 2006-07 for the creation of database for public sector. Despite the official requests from the Ministry for National Economy (on the level of Minister), some key Governmental institutions didn't answer (Directorate for Public Procurements, Ministry of Education and Science).

The following activities are foreseen:

- Issuing of a mandate of the Government to all Ministries and local authorities to provide information and data on the basis of a questionnaire distributed by MEEU;
- Establishment of a degree-days/cooling-days scheme by the Meteorological Institute;
- Collection of data, population of the data base, evaluation of functionality and adaptation of the database structure and of the questionnaire, if required, and preparation of the first reports based on the data collected and elaborated;
- Evaluation of the possibility for an internet based database, where the users/organisations of the public sector can review and submit their own data, as well as evaluate their energy performance on the basis of performance indicators.

Promotion of Energy Management Schemes at local level and capacity building

This activity requires international Technical Assistance for its realisation, possibly through the planned TA programme of the German Government. It also requires close collaboration with various Ministries and local authorities.

The activity includes:

- Design of Energy Management Schemes at local level and in public facilities (role and qualifications of energy managers, EE plans, Energy Management functions, etc.)
- Preparation and publication of a detailed Guide on Energy Management in the broader public sector
- Preparation of brochures for EE measures in buildings, water supply utilities, public lighting and well as for incorporation of RES (solar, biomass etc.) into the buildings energy systems.
- Establishment of pilot Energy Management schemes in large public/local authorities buildings throughout the country.
- Decentralised training courses for Energy Managers (in different cities).

- On the basis of the experience from the above activities, drafting of regulation for the establishment of Energy Management Schemes at local level for facilities operated by Public and local authorities; outsourced energy management and collective energy management for groups of small buildings could be foreseen.
- TA to Energy Managers to prepare pilot EE Action Plans
- EE Demonstration Projects and pilot implementation of EE Action Plans (possibly financed by the World Bank Loan)
- Information dissemination about results and publicity
- Networking of energy managers

Implementation of EE investments and introduction of EE grant schemes for the broader public sector

This action could be financed through the foreseen Wold Bank loan as well as from the EE Fund and local authorities' budgets. It includes:

- **Preparation, implementation and monitoring of EE investments**: Project preparation is an activity that should involve primary the Ministries and organisations that will benefit from the investments. MEEU will co-ordinate preparation of initial projects at conceptual level and monitor progress of the whole programme. Preparation of pre-feasibility, feasibility studies and bankable project proposals, as well as tender documents for supply and installation requires significant involvement of the beneficiaries and possibly international Technical Assistance. With the development of Energy Management schemes, the whole investment cycle will be undertaken by the energy managers who may also outsource certain activities.
- In the frame of implementation of EE investments, **special investment programmes for EE in street lighting and in water supply systems** may be launched if funding is safeguarded.
- Establishment of a scheme for **financing/ co-financing of energy audits** and preparation of EE Action Plans at building/ facility / municipality level.
- Financing/co-financing of feasibility studies for **development of CHP systems and small District Heating systems.**

Priority actions for promotion of EE in the Buildings and Residential Sector

The main concept for the promotion of EE in the Residential and Buildings sector is the gradual development and enforcement of a complete framework for EE in buildings and appliances combined with awareness raising and provision of TA and incentives.

The priority actions include:

- Measures for the enforcement of the existing thermal insulation regulation with parallel implementation of publicity and information dissemination campaigns;
- Incorporation of EE provisions and concepts in the Law of construction;
- Publicity campaigns on "how to save energy" for the general public;
- Encouragement of energy saving in households by free energy advising; a scheme entitled «Energy efficiency advising for citizens» should be introduced
- Training and know-how transfer activities to engineers, constructors, installers and operators

- Measures for promotion of low-energy buildings and incorporation of RES (especially passive and active solar systems) into buildings' energy systems.
- When appropriate, provision of financial incentives for energy rehabilitation of residential buildings and use of RES, granted to citizens under public announcements.

Longer term actions, which however should be initiated soon, include:

- Regulations for introduction of individual metering and energy cost distribution according to the actual consumption and promotion of collective EE actions in multi-ownership buildings.
- Development of new regulatory framework with the adoption the concept of buildings' overall "energy performance requirements" and in second phase, the "energy performance certificates" in line with the Directive on the energy performance of buildings (2002/91/EC).
- Introduction of schemes for energy labelling and minimum energy performance requirements of appliances and energy consuming equipment.
- Institutional building and accompany measures for the implementation of the above regulations.

Measures for the enforcement of the existing thermal insulation regulation

It is recommended that the Government and the competent Ministries mandate a stringent enforcement of the existing regulations and in particular the thermal insulation regulation. In order this measure to have positive results it should be combined with:

- Public announcement of the mandate and publicity of cases of non compliance
- Announcement of the plan for the development of a new regulatory framework for EE in buildings
- Publicity and information dissemination campaign to potential owners and tenants to create a market demand for energy efficient buildings and systems (see also next action).

Associated measures are:

- **Deduction of VAT and import taxes for thermal insulation materials:** This will demonstrate the commitment of the Government towards promotion of EE. It is also a strong message to the buildings construction sector and energy consumers about the importance of EE and proper thermal insulation of buildings.
- **Agreement with the major construction companies** that they will comply with the regulation and wide publicity.
- In addition, a very positive signal of the Government about its concern for EE is the **incorporation of EE provisions and concepts in the Law on Constructions.** Besides EE concepts, the Law on Constructions should ensure that the new buildings are delivered with proper heating/cooling systems, individual metering of energy and water and that are constructed with respect to applicable technical and energy regulations.

Information Campaigns and Promotion of EE in the Residential Sector

The implementation of EE information and awareness campaigns for the general public will:

- demonstrate the commitment of the Government to support and promote EE;

- raise awareness of population and companies about the importance of EE and on ways to achieve energy savings;
- motivate market forces to develop businesses in EE.

The focus of the first campaign will be on:

- the importance of thermal insulation and proper heating/cooling systems so that buyers and tenants become aware of their benefits and put pressure on the market for proper constructions
- the benefits of EE, especially electricity savings primarily in residential sector and in buildings in general.

The campaign, among others, will provide practical advice on ways to reduce of thermal losses, energy efficient use and maintenance of heating and cooling systems, household appliances, lighting, etc. to cope with the increased energy prices.

It must be combined with measures indicated in the previous action (VAT and import tax deduction for insulation materials etc.) and the activities of EPCG aiming at increasing collection rates and reducing theft. It will be also combined with promotional activities of EE in other sectors such as the promotion of EE and Energy Management Schemes in the broader Public Sector, etc.

Information campaigns should be repeated on a regular basis addressing also specific target groups (eg. engineers and installers, school children, housekeepers, etc.) as well as on the occasion of introduction of new regulations and other energy policy initiatives.

Information campaigns, implemented in a professional way, are costly and the necessary funding should be safeguarded. In absence of the necessary financial resources, MEEU could undertake certain low-cost information dissemination activities for the promotion of EE in the residential sector using mainly the mass media (press conferences, articles in newspapers and magazines, interviews, etc.)

«Energy Efficiency advising to citizens»

A scheme for continuous provision of free EE advice to citizens should be introduced and widely disseminated through the information campaigns. Involvement of municipalities, EPCG and other energy supplies is highly recommended.

Initial actions could include:

- Publication and dissemination of series leaflets on various energy saving topics such as “how to save energy in air-conditioning systems”, “ways to improve indoor comfort and cut costs”, “household appliances: thieves of electricity”, “free hot water from the sun”, etc. Leaflets could be disseminated during the information campaigns, as well as with the electricity bills, by the local authorities etc.
- Information dissemination and advice through a web site that will be developed and maintained by MEEU. Citizens may request advice through e-mails. MEEU can provide free advice on simple common issues or inform the citizens where they can find specialised advice about more complicated problems.

In a later stage the scheme could be enriched with:

- A dedicated telephone line of MEEU to provide free advise
- Establishment of advice services centrally and in municipalities. These services will normally require one qualified full-time or part-time employee who will disseminate information materials and provide free advice. They will be particularly valuable when incentive programmes for EE in households and other buildings are launched

Training and know-how transfer activities to engineers, constructors, installers and operators

These activities aim at developing local know-how on energy auditing and EE in buildings.

Short term actions may include workshops on modern construction techniques of energy efficient buildings, efficient cooling and heating systems, building energy management systems (BEMS) etc. as well as the project "Capacity building on energy auditing of buildings". This project is financed by the Norwegian Government.

Intensive training courses and know-how transfer activities will be required with the adoption of new regulations such as mandatory inspection of boilers and air-conditioning systems, energy certification of buildings etc to train inspectors and certifiers.

Measures for promotion of low-energy buildings and incorporation of RES into buildings' energy systems

Depending of the availability of funds this action could include:

- Market studies for introduction of low-energy and passive solar systems or elements in Montenegro, introduction of RES in the housing, hotels, commercial sectors etc.
- Workshops, conferences and training courses
- Pilot projects of low energy buildings and dissemination activities

Financial incentives for energy rehabilitation of residential buildings and use of RES, granted to citizens under public announcements

It is strongly advised that incentive schemes for EE in residential sector are introduced on several occasions, especially with the introduction of new regulations and in parallel with information campaigns. They may promote energy rehabilitation of building shells (e.g. insulation of walls, roofs, etc) and introduction of central heating/cooling systems in existing buildings, introduction of high efficiency lighting, introduction of individual metering, installation of solar collectors etc.

Incentives can be provided as grants, soft loans from banks, income tax deduction on relevant installation expenses, implementation of works and installations by utilities and repayment through the electricity / water bills, etc.

Introduction of individual metering and promotion of collective EE actions in multi-ownership buildings

A new regulatory framework ensuring that meters measure accurately and frequently actual energy consumption and imposing obligatory individual metering for all new buildings and if technically possible and financially reasonable, for existing consumers should be introduced. The rules in case of individual metering and the cost sharing methods for common energy costs should be specified.

In addition, the regulation should specify for the case of collective metering:

- the methodology for distribution of energy costs on the basis of energy loads and energy use factors of each ownership (rather than per m2), according to different technological applications (e.g. collective meter only, collective meter with heat cost allocators, time of use meters, etc).
- the competent authorised persons to apply this regulation and issue the heat cost distribution table (% of contribution of each ownership to collective energy costs).
- provisions for closed – temporally non used, or permanently disconnected apartments, etc.

Furthermore the existing regulations and rules governing the relations between owners and tenants in multi-ownership buildings should be screened and amended to facilitate collective EE investments and collective space heating/ cooling/ hot water solutions and strengthen the owners associations. Additional measures could be:

- Financial incentives to promote individual metering and heat cost allocators in existing installations, were applicable.
- Information dissemination and marketing activities to promote the culture of common actions (not restricted to EE) in multi-ownership buildings.
- Encouragement to the judicial system for a more stringent enforcement of the law in case of non-payment, non-fulfilment of obligations for proper maintenance or illegal constructions/ modifications multi-ownership buildings.

Development of new regulatory framework for the energy performance of buildings

The new regulatory framework for the energy performance of buildings should be in line with the EPBD (Directive on the energy performance of buildings 2002/91/EC). Adoption and enforcement of the new framework it is a very demanding and long process. This process in many EU countries lasts more than 5 years and still the complete framework is not in place.

The proposed management and administration scheme for development and implementation of the new framework is the following:

- an Administration Committee to oversee the development and strategic elements of the scheme with membership from various stakeholders.
- a Secretariat to manage the day-to-day operation of the scheme (possibly within the MEEU and later the EE Agency).

Development and implementation could include the following steps:

- **Planning and preparation**: Planning of implementation and approval by the Government, setting up of initial management and administration scheme, safeguarding of financing of studies, database and activities, incorporation in the EE Law of the basic concepts (energy performance of buildings, regular inspection of boilers/air-conditioners, energy certification of buildings etc) and provisions for secondary legislation.
- **Regulation for energy performance (EP) of buildings:** Adoption of methodology for different kinds of buildings, setting of EP requirements, adoption of associated Technical Standards, establishment/ strengthening of enforcement mechanisms.

  Promotion of implementation of regulation for EP of buildings through publication of guidelines, calculation forms and reports, software, training courses addressed to engineers, wide dissemination and promotion, TA and financial incentives for improving energy performance of existing buildings and incorporation of RES to meet the EP requirements, demonstration projects for low energy buildings, etc.
- **Regulations(s) for regular inspection of boilers and air- conditioning systems**: Adoption of methodologies, adoption of associated Technical Standards, definition of qualifications and/or accreditation procedures for inspectors, allocation of responsibilities of the inspectors, building administrators etc, as well as training courses to inspectors, wide dissemination and marketing, etc.
- **Regulation for mandatory Energy Performance certificate for buildings**: as above, definition of methodologies, procedures, standard software and forms,

definition of qualifications and/or accreditation procedures for certifiers, training, wide dissemination and marketing, etc.

- **Monitoring of implementation** and reporting

Development of new regulatory framework for energy labelling, minimum performance requirements of systems and individual metering

As with the EPBD, the introduction of energy labelling, etc requires adoption of regulations, Technical Standards and associated measures for their implementation.

The EE Law should provide the legal basis for these regulations.

Other Priority actions

The work to be accomplished in the next years by MEEU and later by the EE Agency to implement the aforementioned actions is very demanding. However a number of other actions should be initiated as a matter of priority to promote EE in other sectors and avoid irreversible situations. We particularly stress out the need for action for:

- Regulatory requirement for large industrial consumers for the mandatory appointment of energy managers, preparation of annual/semi-annual energy balances and EE Action Plans and implementation of EE measures.
- Incorporation, where appropriate, of EE obligations into privatisation and concession agreements and new licences, prior to their realisation.
- Expert analysis of large consumers (KAP, Steel Plant and Railways Company) regarding cost effective reduction of energy consumption.
- Incorporation of an EE programme in EPCG Development Strategy and Action Plan.
- Development of the legislative/ regulatory framework for CHP.

In addition we would recommend the following short term actions

- Continuation of financing for EE projects in SMEs and introduction of additional incentives.
- Scheme of awarding of the best ones in EE.
- Incentives for establishing of EE Project Bureaus and Consulting Companies.

Implementation recommendations

Establishment of the basic framework for EE

	Action	Proposed implementation period	Remarks on implementation
1.1	Amendment of the Green Paper of the Energy Development Strategy	2007	We would propose that Chapter 19 “Major Strategy Recommendations” of the Green Paper of the Energy Development Strategy is amended. We propose that the “Table A. Energy Efficiency” is replaced with the table of Chapter 3.3 of this report with the recommended areas of activities in the field of EE
1.2	Study/ detailed design of central EE institution and EE Fund and drafting of EE Law.	2007-2008	The action should be undertaken by a group of local officials and experts under MEEU with additional international TA. Estimated total budget 120000 - 150000 EUR.
1.3	Adoption of Law on Energy Efficiency	2008	The Law should be adopted as early as possible. It is the basis and prerequisite for a large number of other actions.
1.4	Strengthening of existing MEEU	2007-2008	About 25,000-30,000 EUR should be provided by the State budget in 2008 for general activities of MEEU (infrastructure development, international collaboration, monitoring of the Action Plan, website, public relations etc.). Budgets for the next years to be defined in annual EE Action Plans
1.4.1	▪ *Establishment of “operational autonomy”; Addition of experts to MEEU; infrastructure development*	*2007*	*Top priority issue; there is high risk of delays and loss of funds*
1.4.2	▪ *Ad-hoc advice, TA and capacity building to MEEU; training on EE Programme and Project*	*2007 and beyond*	*International TA required. Estimated budget 100000 -200000 EUR/year depending on the TOR.*

	Action	**Proposed implementation period**	**Remarks on implementation**
	Preparation		
1.4.3	▪ *Energy Bus – training in measurement techniques and energy auditing*	*2008*	*International TA required. Estimated budget 80,000-120,000 EUR depending on the TOR plus 80,000-100,000 EUR for supplies (energy bus).*
1.5	Establishment of the EE Agency (or the EE/RES institution to be decided)	2008-2009	Establishment immediately after adoption of the EE Law. It is highly recommended that establishment of the EE Agency (infrastructure etc.) is co-financed by international donors and TA assistance to the management is provided. Budgets to be defined by the study in Action 1.2.
1.6	Establishment of EE (and RES) Fund	2008-2009	Establishment immediately after adoption of the EE Law. Initial funds allocation to be defined by the study in Action 1.2
1.7	Updating of the EE Strategy	end 2007- beginning 2008; afterwards regular periodic updating (e.g. every 2 years)	The action should be undertaken by a group of local officials and experts under MEEU after adoption of the EDS. Estimated budget 12000-15000 EUR.
1.8	Establishment of an EE statistical and information system/ databases	design: 2007; implementation 2008-2009	A working group has been established to define specifications; International TA is recommended for realisation. The budget will be defined by the working group.

Priority actions for promotion of EE in the Public Sector

	Action	Proposed implementation period	Remarks on implementation
2.1	Mechanism for energy data collection and a central monitoring /benchmarking scheme for the Public Sector	2008 and beyond	The database for monitoring energy performance has been developed; obligatory reporting to MEEU by government mandate and later by the EE Law required. The action should be undertaken by MEEU supported by external experts. Estimated budget 10,000 -15,000 EUR for 2008 plus about 5,000 EUR/year for annual maintenance for the following years.
2.2	Promotion of Energy Management Schemes at local level and capacity building	2008- 2010 and beyond	Actions 2.2.1 to 2.2.5 could be financed by TA programmes (possibly by the planned TA from the German Government 1,5 million EUR for 3-year programme). Action 2.2.4 could be financed from local administrations or Ministries as well as from the planned loan of World Bank for EE investments in Public Buildings.
2.2.1	▪ *Design of Energy Management schemes; guide to Energy Managers; specialised brochures (EE in water supply utilities, public lighting, incorporation of RES etc.); pilot Energy Management schemes; decentralised training courses.*	*2008*	
2.2.2	▪ *Regulation for the establishment of Energy Management Schemes in public sector*	*2008-2009*	An additional budget of about 10,000-15,000 EUR/year or additional staff should be allocated to MEEU for programme monitoring.
2.2.3	▪ *TA to Energy Managers to prepare pilot EE Action Plans; networking of energy managers*	*2008-2010* and beyond	
2.2.4	▪ *EE Demonstration Projects and pilot implementation of EE Action Plans (possibly financed by the World Bank Loan)*	*2009* and beyond	
2.2.5	▪ *Information dissemination about results and*	*2009 -2010*	

	Action	**Proposed implementation period**	**Remarks on implementation**
	publicity		
2.3	Implementation of EE investments and introduction of EE grant schemes for the broader public sector	2008 and beyond	Actions 2.3.1 to 2.3.2 could be financed from local administrations or Ministries as well as from the planned loan of World Bank for EE investments in Public Buildings. An additional budget of about 15000-20000 EUR/year should be allocated to MEEU for coordination of initial project preparation. Preparation of projects should be financed by the beneficiary organisations and, possibly, by international TA. Actions 2.3.3 and 2.3.4 could by co-financed by the state budget and the EE Fund (after its establishment) as well as from international TA (e.g. TA from German Government – see Action 2.2).
2.3.1	▪ *Preparation, implementation and monitoring of EE investments*	2008 and beyond	
2.3.2	▪ *Special investment programmes for EE in street lighting and in water supply systems*	2009 and beyond	
2.3.3	▪ *Scheme for financing/ co-financing of energy audits, studies and preparation of EE Action Plans.*	*2008* and beyond	
2.3.4	▪ *Financing/co-financing of feasibility studies for development of CHP systems and small District Heating systems.*	*2009 and beyond*	
2.5	Law amendments and regulatory establishment of EE criteria in public procurements.	2010-2011	Actions 2.5 and 2.6 are related to the implementation of provisions of Directive on energy end-use efficiency and energy services. It is proposed that they are initiated after having in place energy management schemes that could support actual implementation. Special studies should be conducted with possible help of international TA.
2.6	Removal of barriers and regulatory and other measures to enable alternative financing mechanisms in the public sector.	2010-2012	
2.7	Energy performance certification of public buildings.	After adoption of regulations of EPBD concerning energy	Action 2.7 should be among the first cases of implementation of the regulation for energy certification of buildings (EPBD 2002/91/EC). It

	Action	Proposed implementation period	Remarks on implementation
		certification of buildings eg. about 2012 and beyond	should be accompanied by TA and other support measures.

Priority actions for promotion of EE in the Buildings and Residential Sector

	Action	Proposed implementation period	Remarks on implementation
3.1	Measures for the enforcement of the existing thermal insulation regulation	2007-2008	Actions 3.1 and 3.2 are priority actions to prevent from building more new constructions with unacceptable energy characteristics. It is a matter of Government decision. A small budget of 3,000-5,000 EUR may be required for external expert assistance for Action 3.2
3.1.1	▪ *Public announcement of the mandate for stringent controls and publicity of cases of non compliance; announcement of the plan for the development of new regulatory framework for EE in buildings; publicity and information dissemination*	*2007-2008*	
3.1.2	▪ *Deduction of VAT and import taxes for thermal insulation materials*	*2007 and beyond*	
3.1.3	▪ *Agreement with the major construction companies that they will comply with the regulation and public announcement*	*2007-2008*	
3.2	Incorporation of EE provisions and concepts in the Law on Constructions.	2007	
3.3	Information Campaigns and Promotion of EE in the Residential Sector	2008 and beyond	Information dissemination and marketing is an integral part of any EE policy measure.
3.3.1	▪ *Campaign on the importance of thermal insulation, practical advice on ways to save*	*2008*	*It is estimated that at least 100,000 EUR from international TA will be required for an information*

	Action	Proposed implementation period	Remarks on implementation
	energy, esp. electricity		*campaign in 2008. If additional funding is available the campaign could be enriched.* *Additional funds from state budget in the order of 10,000-15,000 EUR should be allocated to MEEU for preparation, monitoring and support the campaign.*
3.3.2	▪ *Information campaigns addressing specific issues and target groups*	*2009 and* beyond	*Information dissemination and marketing activities to be implemented and on the occasion of introduction of new regulations and incentive programmes.*
3.4	«Energy Efficiency advising to citizens»	2008 and beyond	
3.4.1	▪ *Leaflets on "how to cut energy cost" etc.; information dissemination and advice through the MEEU web site*	*2008*	*This action could be part of the information campaign 2008 (Action 3.3.1).*
3.4.2	▪ *Dedicated telephone line of MEEU to provide fee advise*	*2009 and beyond*	*These activities could start when MEEU has enough capacity and a number of energy management schemes at local level have been established and are operational.*
3.4.3	▪ *Establishment of advice services centrally and in municipalities (especially when incentive programmes for EE in households and other buildings are launched).*	*2009 and beyond*	
3.5	Training and know-how transfer activities to engineers, constructors, installers and operators	2007 and beyond	
3.5.1	▪ *Capacity building on energy auditing of buildings*	*2007-2008*	*This action is financed by the Norwegian Government. The budget is approximately 315,000 EUR.*
3.5.2	▪ *Workshops, trainings courses, exhibitions, etc.*	*2008 and beyond*	*Initial activities e.g. one or two workshops on modern construction techniques of energy efficient*

	Action	Proposed implementation period	Remarks on implementation
			buildings and on efficient cooling and heating systems could be part of the information campaign 2008 (Action 3.3.1).
3.6	Measures for promotion of low-energy buildings and incorporation of RES into buildings' energy systems.	2009 *and beyond*	These activities should run in parallel with the adoption of the new regulatory framework for the energy performance of buildings. They will require international TA and financing from donors and the EE Fund.
3.6.1	▪ *Market studies for introduction of low-energy and passive solar buildings or elements in Montenegro, introduction of RES in the housing, hotels, commercial sectors etc.*	*2009-2010*	
3.6.2	▪ *Workshops, conferences and training courses*	*2009 and beyond*	
3.6.3	▪ *Pilot projects and dissemination activities*	*2009-2012*	
3.7	Financial incentives for energy rehabilitation of residential buildings and use of RES, granted to citizens under public announcements.	2009 and beyond	It is advised that incentive schemes for EE in residential sector are introduced on several occasions, especially with the introduction of new regulations and in parallel with information campaigns. They will require considerable financing from donors, the EE Fund or granted from the State budget (e.g. tax deduction).
3.8	Regulations for introduction of individual metering and energy cost distribution according to the actual consumption and promotion of collective EE actions in multi-ownership buildings.	2009 and beyond	The regulations should provide the basis and remove barriers for collective heating and cooling of multi ownership buildings with individual or collective meters. They should be adopted in the frame of the new regulatory framework for the energy performance of buildings
3.8.1	▪ *Regulation for obligatory* individual metering in new buildings / regulation for *distribution of*	*2009-2010*	*Special studies should be conducted through international TA or funded from the EE Fund.*

	Action	Proposed implementation period	Remarks on implementation
	energy costs on the basis of energy loads and energy use factors of each ownership according to different technological applications in case of collective metering in existing buildings		
3.8.2	▪ *Information dissemination and marketing activities to promote the culture of common actions (not restricted to EE) in multi-ownership buildings.*	*2008/ 2009 and beyond*	*Initial marketing actions could be included in the information campaign 2008 (Action 3.3.1). This Action should by intensified with the adoption of the new regulations (Action 3.8.1)*
3.8.3	▪ *Financial incentives to promote individual metering and heat cost allocators in existing installations were applicable.*	*2010 and beyond*	*This is a support measure for implementation of the new regulations (Action 3.8.1) Financing can come from donors, the EE Fund or granted from the State budget (e.g. tax deduction*).
3.8.4	▪ *Encouragement to the judicial system for a more stringent enforcement of the law in case of non-payment, non-fulfilment of obligations for proper maintenance or illegal constructions/ modifications multi-ownership buildings.*	*2007 and beyond*	*It is matter of Government initiative*
3.9	Development of new regulatory framework for the energy performance of buildings	2008- 2012 and beyond	*The EE Law should provide the legal basis.*
3.9.1	▪ *Planning and preparation*	*2007-2008*	*A working group has been established (2007) to prepare plan and specifications and promote initial approval by the Government.* *During 2008 is expected the setting up of initial management and administration scheme, safeguarding of financing of studies, database and activities and incorporation in the EE Law of the basic concepts (energy performance of buildings,*

	Action	Proposed implementation period	Remarks on implementation
			regular inspection of boilers/air-conditioners, energy certification of buildings etc) and provisions for secondary legislation. *The indicative state budget for the Action 3.9.1 for the years 2007-2008 is estimated 15,000-20,000 EUR*
3.9.2	▪ *Regulation for energy performance (EP) of buildings (adoption of methodology, EP requirements, adoption of associated Technical Standards, establishment/ strengthening of enforcement mechanisms).*	*2008-2009*	*Implementation of EPBD and the associated measures (Actions 3.9.2-3.9.5) require considerable international TA and additional funding from the state budget to be defined by the working group.*
3.9.3	▪ *Promotion of implementation of regulation for EP of buildings (guidelines, standard calculation forms and reports, software, training courses, wide dissemination, promotion, TA and financial incentives for improving energy performance of existing buildings, demonstration projects for low energy buildings, etc.)*	*2009-2012*	
3.9.4	▪ *Regulations(s) for regular inspection of boilers and air- conditioning systems and associated measures (training courses to inspectors, wide dissemination and marketing, etc.)*	*2009-2010 and beyond* with *associated measures*	
3.9.5	▪ *Regulation for mandatory Energy Performance certificate for buildings and associated measures (training courses to certifiers, wide dissemination and marketing, etc.)*	*2010-2012 and beyond* with *associated measures*	

	Action	Proposed implementation period	Remarks on implementation
3.9.6	▪ *Monitoring of implementation and reporting*	*2008-2012 and beyond*	
3.10	Development of new regulatory framework for energy labelling, minimum performance requirements of systems and individual metering	2009-2011 and beyond with implementation of associated measures	The EE Law should provide the legal basis for these regulations. As with the implementation of EPBD above, this Action also requires considerable international TA and additional funding from the state budget.

Other actions

	Action	Proposed implementation period	Remarks on implementation
4.1	Regulatory requirement for large industrial consumers for the mandatory appointment of energy managers, preparation of annual/semi-annual energy balances and EE Action Plans and implementation of EE measures.	2009	The regulation should be drafted on the basis of a special study. Technical input can be also provided from action 2.2.2. “Regulation for the establishment of Energy Management Schemes in public sector”
4.2	Incorporation, where appropriate, of EE obligations into privatisation and concession agreements and new licences, prior to their realisation.	2007 and beyond	This action should be implemented on ad-hoc basis for large privatisation and concession agreements.
4.3	Expert analysis of large consumers (KAP, Steel Plant and Railways Company) regarding cost effective reduction of energy consumption.	2008-2009	There is an opportunity for voluntary agreements between the Government and the large consumers. It is also linked with action 4.1. Expert analysis to be implemented by the large consumers.
4.4	Incorporation of an EE programme in EPCG Development Strategy and Action Plan.		To be implemented by EPCG.

	Action	Proposed implementation period	Remarks on implementation
4.5	Development of the legislative/ regulatory framework for CHP.	2010-2011	Due to other priorities and the relatively limited potential for CHP (due to non availability of natural gas) it is recommended that this action is implemented in 2010-2011. If international TA is available, development of the legislative/ regulatory framework for CHP could start earlier.
4.6	Continuation of financing for EE projects in SMEs and introduction of additional incentives.	on going	This is a KfW programme. Additional incentives (grants, TA, information dissemination etc.) could be introduced.
4.7	Scheme of awarding of the best ones in EE.	2008 and every year	This action could be financed by donations and covered by wide publicity. A budget of 7,000-10,000 EUR should be allocated to MEEU to set up the system.
4.8	Incentives for establishing of EE Project Bureaus and Consulting Companies.	2007 and beyond	Submission of proposals to the Government is foreseen in Action Plan 2007. A budget of 10,000-15,000 EUR should be allocated to MEEU in 2008 to set up the system.

Appendix 1: EU Legislation in force concerning EE

Area	**Title**	**Reference**
End-use Efficiency and Energy Services	Directive of the European Parliament and of the Council on energy **end-use efficiency and energy services** and repealing Council Directive 93/76/EEC	2006/32/EC of 5.04.2006
Efficiency in Energy using products	Directive of the European Parliament and of the Council establishing a framework for the setting of **ecodesign requirements for energy-using products** and amending Council Directive 92/42/EEC and Directives 96/57/EC and 2000/55/EC of the European Parliament and of the Council	2005/32/EC of 6.07.2005
Cogeneration	Directive of the European Parliament and of the Council on the **promotion of cogeneration** based on a useful heat demand in the internal energy market and amending Directive 92/42/EEC	2004/8/EC of 21.02.2004
Taxation	Council Directive restructuring the Community Framework for the **taxation of energy products and electricity**	2003/96/EC of 27.10.2003
Buildings	Directive of the European Parliament and of the Council on the **energy performance of buildings**	2002/91/EC of 16.12.2002
	~~Council Directive to limit carbon dioxide emissions by improving energy efficiency (SAVE)~~ [Repealed by Directive 2006/32/EC of 5.04.2006]	93/76/EEC
	Council Directive amending Directives […], 89/106/EEC (construction products), […], 92/42/EEC (new hot-water boilers fired with liquid or gaseous fuels) and […].	93/68/EEC of 22.07.1993
	Council Directive on efficiency requirements for **new hot-water boilers** fired with liquid or gaseous fuels [Amended by 2004/8/EC of 21.02.2004 on cogeneration and 93/68/EEC]	92/42/EEC of 21.05.1992
	Council Directive on the approximation of laws, regulations and administrative provisions of the Member States relating to **construction products** [Amended by 93/68/EEC]	89/106/EEC of 21.12.1988
Domestic Appliances and Labelling	Council Directive on the indication by **labelling** and standard product information of the consumption of energy and other resources by household appliances	92/75/EEC of 22.09.1992

Area	**Title**	**Reference**
	Commission Directive amending Directive 94/2/EC implementing Council Directive 92/75/EEC with regard to energy labelling of household electric **refrigerators, freezers** and their combinations	2003/66/EC of 03.07.2003
	Commission Directive implementing Council Directive 92/75/EEC with regard to energy labelling of household **electric ovens**	2002/40/EC of 08.05.2002
	Commission Directive implementing Council Directive 92/75/EEC with regard to energy labelling of household **air-conditioner**	2002/31/EC of 22.03.2002
	Commission Directive amending Directive 97/17/EC implementing Council Directive 92/75/EEC with regard to energy labelling of household **dishwashers**	1999/9/EC of 26.02.1999
	Commission Directive implementing Council Directive 92/75/EEC with regard to energy labelling of household **lamps**	98/11/EC of 27.01.1998
	*Commission Directive implementing Council Directive 92/75/EEC with regard to energy labelling of household **dishwashers** ,[amended by Commission Directive 1999/9/EC]*	97/17/EC of 16.04.1997
	Commission Directive amending Directive 95/12/EC implementing Council Directive 92/75/EEC with regard to energy labelling of household **washing machines**	96/89/EC of 17.12.1996
	Commission Directive implementing Council Directive 92/75/EEC with regard to energy labelling of household combined **washer-driers**	96/60/EC of 19.09.1996
	Commission Directive implementing Council Directive 92/75/EEC with regard to energy labelling of household **electric tumble driers**	95/13/EC of 23.05.1995
	*Commission Directive implementing Council Directive 92/75/EEC with regard to energy labelling of household **washing machines**[amended by Commission Directive 96/89/EC]*	95/12/EC of 23.05.1995
	*Commission Directive implementing Council Directive 92/75/EEC with regard to energy labelling of household electric **refrigerators, freezers** and their combinations, [amended by Commission Directive 2003/66/EC]*	*94/2/EC of 21.01.1994*

Area	**Title**	**Reference**
Domestic Appliances and Minimum Efficiency Requirements	Directive of the European Parliament and of the Council on **energy efficiency requirements for ballasts for fluorescent lighting**	2000/55/EC of 18.09.2000
	Directive of the European Parliament and of the Council on **energy efficiency requirements for household electric refrigerators, freezers** and combinations thereof	96/57/EC of 03.09.1996
	Council Directive on **efficiency requirements for new hot-water boilers** fired with liquid or gaseous fuels [Amended by 2004/8/EC of 21.02.2004 on cogeneration and 93/68/EEC]	92/42/EEC of 21.05.1992
Office Equipment and Energy Star	Council Decision of concerning the conclusion on behalf of the European Community of the Agreement between the Government of the United States of America and the European Community on the co-ordination of energy-efficient **labelling programmes for office equipment**	2001/469/EC of 14 May 2001
	Commission Decision establishing the European Community **Energy Star Board**	2003/168/EC of 11.03.2003
	Regulation of the European Parliament and of the Council on a Community energy efficiency **labelling programme for office equipment**	EC/2422/2001 of 06.112001

Appendix 2: Requirements for transposition and implementation of key EU Directives

This Appendix presents in more detail the transposition requirements of key Directives. The various measures listed are not always “legal obligations” but are reasonable recommendations based on the requirements of each Directive and the practices followed in EU countries.

Directive on energy end-use efficiency and energy services (2006/32/EC)

Directive Articles	Directive Main Provisions	Legal, regulatory, institutional development recommendations	Other support measures
	The Directive provides for a number of compulsory requirements such as the adoption and implementation of Energy Efficiency Action Plans (EEAP), measures for the Public Sector, obligations to energy distributors etc. The exact way to implement specific articles is decided by each Member State. For some measures the Directive provides for a number of alternative options, from which the Member States should choose the most appropriate option(s).	**Law on EE** to: • define the basic terms and concepts of this and other Directives; • provide for secondary legislation and regulations; • define institutional and financial frameworks (EE Agency, EE Fund etc.); • provide for the establishment financing mechanisms and incentives; • provide for responsibilities and involvement of various actors and reporting requirements; • provide for sanctions and penalties, etc. *Note: The EE Law is not an explicit requirement of the Directive but is the most reasonable way to transpose it into the National legislation*	Engagement of consultants for drafting of Law on EE and design of the basic institutions (EE Agency, EE Fund). Establishment of an inter-Ministerial Committee with participation of the Union of Local Authorities, EPCG, etc. to monitor preparation and promote adoption of the EE Law. Awareness and promotional activities addressed to the highest level i.e. Government, members of the parliament, state/local organisations. Information dissemination activities to market actors, NGOs and the general public combined with public discussion on EE Law
Article 4	**Energy Efficiency Action Plans (EEAP)** with **national indicative end-use savings target** of more than 1%	• Content and time frames of EEAP to be defined in the EE Law.	Establishment, staffing and capacity building of the institution (e.g. EE Agency) that will undertake the key role in EEAP design and implementation.

Directive Articles	Directive Main Provisions	Legal, regulatory, institutional development recommendations	Other support measures
	per year, as well as mechanisms, incentives and institutional, financial and legal frameworks **Assignment to authorities or agencies the overall control** and responsibility for overseeing the framework set up in relation to EEAPs	• Regulation with methodology for calculating the national indicative energy savings targets (as per Annex I of Dir. 2006/32/EC). • Regulation with methodology/ procedures for the measurement and verification of energy savings (as per Annex IV of Dir. 2006/32/EC). • Appointment/ establishment of institution of adequate capacity and authority (i.e EE Agency) to develop and control EEAPs and verify achievement of targets • Establishment of an obligatory data collection and reporting mechanism about the implementation of EEAP	Establishment of an EE Fund to finance actions. Establishment of a statistical system; preparation of standard data reporting forms; development of a database for data collection and reporting Promotional activities / information dissemination/ TA/ training of all involved actors Training of persons to be engaged in measurement / verification procedures.
Article 5	**Measures and schemes** to ensure that **the public sector** fulfils an exemplary role (including energy efficient public procurement measures) **Assignment to authorities or agencies the** administrative, management and implementing responsibility for the integration of energy efficiency improvement requirements in the public sector.	• Action Plan for EE in the broader Public Sector • Introduction of Energy Management Schemes in the public sector- local authorities; Possibility for outsourcing Energy Management services • Requirement for introduction of EE in public procurements (as	Establishment, staffing and capacity building of the institution (e.g. EE Agency) to undertake the key role in implementation of EE Action Plan in the public sector. Support measures for establishment of Energy Management (EM) Schemes in the public sector/ local authorities Publishing/ dissemination of detailed guidelines for EM procedures, methodologies, development of EE action plans at Municipality/facility level, energy efficiency

Directive Articles	Directive Main Provisions	Legal, regulatory, institutional development recommendations	Other support measures
		per Annex VI of Dir. 2006/32/EC) • Requirement enabling energy performance contacting, third party financing etc. in the public sector (see also Article 9) • Appointment/ establishment of institution of adequate capacity and authority (i.e EE Agency) to undertake administrative, management and implementing responsibility. • Establishment of an obligatory data collection and reporting mechanism.	measures and energy savings. Dissemination of software tools for Energy Management. Publishing/ dissemination of guidelines for introduction of EE as a possible assessment criterion in competitive tendering for public contracts. Preparation of guidelines and contract models for energy services, energy performance contracting, Third Party Financing (TPF) etc. Training of Energy Managers in public sector. TA programmes for EE in the public sector Networking of energy managers in the public sector to enable the exchange of best practices between public sector bodies, both at the national and international level. Demonstration projects Financing schemes for EE projects in the Public Sector Establishment of a benchmarking / monitoring scheme for EE in the public sector - establishment of a degree-days scheme. Development of a database for EE in the public sector that will also serve as a benchmarking, monitoring and reporting tool.
Article 6.1	**Obligation on energy distributors and/or retail supply companies to**	Requirement for reporting obligations along with reporting	The mechanisms to exploit data and information are

Directive Articles	Directive Main Provisions	Legal, regulatory, institutional development recommendations	Other support measures
	report aggregated statistical information.	specifications	described above for Article 4
Article 6.2a	**Obligation on energy distributors and/or retail supply companies to offer energy services.**	Requirement for obligation of distributors/ retail suppliers to provide or make available through other providers one or more of the following: energy services or energy audits or contribution to an energy efficiency fund.	Establishment of a reporting/ monitoring /verification mechanism to ensure compliance (as described above for Article 4). Information dissemination to customers about the obligations of distributors/ retail suppliers so that they demand these services.
Article 6.2b	Measures to ensure that voluntary agreements and/or other market oriented schemes, such as **white certificates**, exist or are set up.	Regulation governing these schemes.	Establishment of a reporting/ monitoring /verification mechanism (as described above for Article 4). Publication of voluntary agreements prior to application to ensure transparency
Article 6.3	Measures to ensure that there are **sufficient incentives, equal competition** and level playing fields for market actors (other than energy distributors, retail energy sales companies etc.), such as **ESCOs, installers, energy advisors and energy consultants**, to independently offer and implement the energy services, energy audits and energy efficiency improvement measures	Law amendments/regulations removing obstacles to ESCO activities	Training courses for energy auditors, installers etc. Financial invectives for establishment, development and equipping ESCOs, EE consulting and services bureaus, etc. Financial invectives for energy audits and EE project preparation studies.
Article 7	Measures to ensure that **information** on energy efficiency mechanisms and financial and legal frameworks adopted with the aim of reaching the national		Information dissemination publicity campaigns for the general public and specific target groups Regular reporting

Directive Articles	Directive Main Provisions	Legal, regulatory, institutional development recommendations	Other support measures
	indicative energy savings target is transparent and **widely disseminated** to the relevant market actors.		News-letter with wide dissemination and web-site
Article 8	Establishment of **qualification, accreditation and certification schemes for providers of energy services**, energy audits and energy efficiency improvement measures.	• Establishment of accreditation body and/or qualification scheme for energy auditors etc. • Regulations specifying the qualifications and responsibilities of energy auditors, installers, etc. and their accreditation procedures. • Specifications for energy audits, energy measurements, installation of equipment, etc.	Database with accredited / qualified energy auditors etc. (linked to the database described above for Article 4). Availability of information to energy consumers about the list of service providers (through the web-site) Training courses for energy auditors, installers etc. Incorporation of EE related topics in university, technical schools curricula Production of guides for energy audits, etc
Article 9	**Measures to remove barriers for use of financial instruments** for EE in the private/ public sectors. Development of **model contracts** for the different financial instruments	Law amendments/regulations removing obstacles to energy performance contracting, TPF, ESCO activities etc., especially for the public sector	Preparation of guidelines and contract models for energy services, energy performance contracting, TP, etc. Organisation of workshops, conferences and encouragement of sharing experience.
Article 10	**Removal of incentives in transmission and distribution tariffs that unnecessarily increase the volume of distributed or transmitted energy.** (Minor components of schemes and tariff structures with a social aim may be applied). Public service **obligations relating to**	Tariff restructuring to ensure compliance	

Directive Articles	Directive Main Provisions	Legal, regulatory, institutional development recommendations	Other support measures
	energy efficiency to electricity and gas sectors companies (if necessary).		
Article 11	If deemed effective, establishment of a **Fund(s) for EE** (to subsidise the delivery of EE programmes and measures, to promote the EE market development, to provide for grants, loans, financial guarantees and/or other types of financing that guarantee results, etc)	Legal establishment of Fund (according to EE Law) EE Fund regulation EE Fund Management Body EE Fund auditing scheme.	International donors' programmes may contribute to the Fund or establish additional financing schemes. The institution (e.g. EE Agency) responsible for implementation of EEAP (see Article 4) should undertake coordination. Establishment of a system of checks and balances, reporting and auditing of Fund to ensure transparency.
Article 12	Measures to ensure the availability of efficient, high-quality **energy audit schemes**.	(See above – Article 8)	(See above – Article 8). In addition: Availability of simple EE checklists, guides, software for customers with non-complex facilities (eg. of residential sector) where an energy audit has disproportional high cost. Possible programmes for subsidised of free of charge energy audits to small costumes.
Article 13.1	Measures to ensure that meters measure accurately and frequently actual energy consumption; and that billing is informative and sufficiently frequent. **Individual meters** are applicable to existing consumers if technically possible and financially reasonable. It is obligatory for new connections in new buildings or buildings that undergo major	Regulation specifying the rules in case for individual metering and cost sharing of common costs in collective buildings For the case of collective metering the regulation should specify: • the methodology for distribution of energy costs on the basis of energy loads and energy use	Studies to identify where installation of individual meters to existing consumers is technically possible and financially reasonable. Financial incentives to promote individual metering and heat cost allocators in existing installations. Information dissemination and marketing activities to promote the **culture of common actions** (not restricted to EE) in multi-ownership buildings. Encouragement to the judicial system for a more

Directive Articles	Directive Main Provisions	Legal, regulatory, institutional development recommendations	Other support measures
	renovations.	factors of each ownership (rather than per m2). It should specify the methodology according to different technological applications (e.g. collective meter only, collective meter with heat cost allocators, etc). • the competed authorised persons to apply this regulation and issue the heat cost distribution table (% of contribution of each ownership.) • provisions for closed – temporally non used, or permanently disconnected apartments, etc.	stringent enforcement of the law in case of non-payment, non-fulfilment of obligations for proper maintenance or illegal constructions/ modifications multi-ownership buildings.
Article 13.2-3	Where appropriate, **information,** is made available **to final customers with the bills** such as (a) current actual prices and actual consumption of energy; (b) comparisons of the customer's current energy consumption with consumption for the same period in the previous year; (c) comparisons with an average normalised or benchmarked user of energy in the same user category; (d) contact information for consumers' organisations, energy agencies etc.	Requirement for billing according to the Articles 13.2-13.3	Information dissemination to general public about "how to read the new bills".

Directive Articles	Directive Main Provisions	Legal, regulatory, institutional development recommendations	Other support measures
Article 14	**Reporting on EEAPs progress and results**	(See above – Article 4).	(See above – Article 4).

Directive on the energy performance of buildings (2002/91/EC) -EPBD

Directive Articles	Directive Main Provisions	Legal, regulatory, institutional development recommendations	Other support measures
	The Energy Performance of Buildings Directive (EPBD) lays down requirements as regards: the general framework for a methodology of calculation of the integrated energy performance of buildings; the application of minimum requirements on the energy performance of new buildings; the application of minimum requirements on the energy performance of large existing buildings that are subject to major renovation; energy performance certification of buildings; regular inspection of boilers and of air-conditioning systems in buildings; assessment of the heating installation in which the boilers are more than 15 years old	Implementation of Directive is a long and demanding procedure to be carried out in steps. The proposed management and administration scheme is the following: • Administration Committee to oversee the development and strategic elements of the scheme with membership from various stakeholders. • Secretariat to manage the day-to-day operation of the scheme (possibly within the EE Agency).	Development of a **database** with: • Registers of assessors for certificates • Registers of inspectors for boilers/ air-conditioning systems • Records of certificates issued for new and existing buildings, for residential and non residential sectors and for public service buildings • Records of Advisory Reports issued with the certifications and inspections • Possible databases of energy efficiency improvement options, to provide supporting data libraries for the production of Advisory Reports • Records of boilers/ air-conditioning systems inspections • Register or database of energy performance of existing large public service buildings (over 1000 m2)

Directive Articles	Directive Main Provisions	Legal, regulatory, institutional development recommendations	Other support measures
			• Register of new building projects and major renovations over 1000 m2. Regular **progress reporting**
Article 3	Adoption of a **methodology for the calculation of the energy performance of buildings** taking into account relevant EU standards and norms	• Regulation of calculation methodology for different kinds of buildings including thermal characteristics of the building, air-tightness, heating installation, hot water supply, air-conditioning, ventilation, lighting, position and orientation of buildings, passive solar systems and solar protection, natural ventilation etc. CHP, use of RES, etc. are taken into account.	Preparation of standard calculation forms and energy performance study reports Publication of detailed guides with examples of studies Encouragement of the development and use of software tools for application of the methodology. Training courses addressed to engineers. Incorporation of relevant topics in university and technical schools curricula. In addition: **Adoption of standards** on which the methodology will be based (there are tenths of standards relevant to EPBD – more than 2000 pages - the most important are: EN 15217: “Energy performance of buildings — Methods for expressing energy performance and for energy certification of buildings”; EN 15603: Energy performance of buildings - Overall energy use and definition of ratings; EN ISO 13790 Thermal performance of buildings - Calculation of energy use for space heating and cooling).

Directive Articles	Directive Main Provisions	Legal, regulatory, institutional development recommendations	Other support measures
Articles 4,5,6	Setting of **energy performance (EP) requirements:** Measures to ensure that minimum energy performance requirements for buildings are set and implemented: • for new buildings (especially for buildings with total useful floor area over 1000 m2, there is an obligation to consider introducing alternative systems e.g. decentralised energy supply systems based on renewable energy, CHP, district or block heating or cooling, heat pumps under certain conditions, before construction.) • **for large existing buildings** that are subject to major renovation**.**	• Regulation for the determination of the minimum EP requirements in the various types of buildings. • Establishment/ strengthening of enforcement mechanisms.	All measures listed above in Article 3 Training of staff from public building construction licensing and inspection services. Information dissemination campaigns (with the involvement of NGOs, suppliers of EE equipment and thermal insulation materials, consumers associations etc.) to raise awareness and create a market demand and pressure to constructors to implement the provisions of the regulations. TA and financial incentives for improving energy performance of existing buildings and incorporation of RES to meet the EP requirements. Demonstration projects for low energy buildings.
Article 7	Mandatory **Energy Performance certificate**, when buildings are constructed, sold or rented out. It should be available to the owner or by the owner to the prospective buyer or tenant, as the case might be. Measures to ensure that for buildings with a total useful floor area over 1000 m² occupied by **public authorities and by institutions providing public services** to a large number of persons and therefore frequently visited by these persons an energy	• Regulation defining the EP certification methodology and checklists, the type of certificate, the EP rating scale, the qualifications and/or accreditation scheme of certifiers, the certification procedures, responsibilities of owners/constructors and certifiers, etc.	Preparation of check-lists and certification forms. Publication of detailed guides and other documentation. Development and testing of software (preferably officially approved) Information campaign and general preparation for the promotion and marketing of EP certificates to the general population so

Directive Articles	Directive Main Provisions	Legal, regulatory, institutional development recommendations	Other support measures
	certificate is **placed in a prominent place** clearly **visible** to the public.	• Establishment/ strengthening of enforcement mechanisms including verification/ sample checking of issued certificates.	as the market value of the high rated certificate is satisfactory. Development of a database with certifiers and certified buildings (see above) Availability of information to energy consumers about the list of accredited certifiers (through internet) (See also requirements for experts and inspectors – Article 10) Information campaigns to general public and to specific target groups about EE measures and on how to upgrade the energy performance, therefore the certificate of buildings. TA and financial incentives for improving energy performance of existing buildings and incorporation of RES, and upgrading the EP certificate
Articles 8,9	Regular inspection of **boilers** fired by non-renewable fuel of an effective rated output of more than 20 kW Inspection of boilers older than 15 years and the whole heating system and recommendations for replacement or improvement modifications or measures (with the same effect as above) to ensure the provision of advice to the users on the	• Regulation defining the inspection methodology and checklists, the type of reports to be issued, the qualifications and/or accreditation scheme of the inspectors, the inspection procedures, responsibilities of owners, building	Preparation of check-lists, guides and other documentation. Information dissemination about the inspection scheme and the responsibilities of owners, administrators. Development of a database with accredited inspectors (see above) Availability of information to energy

Directive Articles	Directive Main Provisions	Legal, regulatory, institutional development recommendations	Other support measures
	replacement of boilers, other modifications to the heating system and on alternative solutions which may include inspections to assess the efficiency and appropriate size of the boiler. --- Measures to establish a regular inspection of **air-conditioning** systems of an effective rated output of more than 12 kW.	administrators and inspectors, etc. • Establishment/ strengthening of enforcement mechanisms including verification/ sample checking of inspected facilities.	consumers about the list of accredited inspectors (through internet) Incentives for implementation of recommendations where appropriate (See also requirements for experts and inspectors – Article 10) In addition **Adoption of relevant standards** prEN 15378 Heating systems in buildings - Inspection of boilers and heating systems; prEN 15240 Ventilation for buildings - Energy performance of buildings - Guidelines for inspection of air conditioning systems prEN 15239 Ventilation for buildings - Energy performance of buildings - Guidelines for inspection of ventilation systems
Article 10	Measures to ensure that the certification of buildings, the drafting of the accompanying recommendations and the inspection of boilers and air-conditioning systems are carried out in an independent manner by qualified and/or accredited **experts and inspectors**	• Establishment of accreditation body and/or qualification scheme for the certifiers and inspectors • Regulations specifying the qualifications of inspectors and accreditation procedures, code of practice, responsibility and liability of	Training courses for experts and inspectors. Incorporation of relevant topics in university and technical schools curricula.

Directive Articles	Directive Main Provisions	Legal, regulatory, institutional development recommendations	Other support measures
		experts and inspectors.	
Article 12	Measures to inform the users of buildings as to the different methods and practices that serve to enhance energy performance.		*Information dissemination activities are described above for each Article separately.*

Directive on the indication by labelling and standard product information of the consumption of energy and other resources by household appliances (92/75/EEC)

The Directive 92/75/EEC sets the basis for the adoption of "daughter" Directives that cover the obligation of Member States to impose labelling to specific household appliances. The Directive introduces the **obligation of the supplier (manufacturer or his representative) of household appliances** that are offered for sale or hire to accompany them by a fiche and a label providing information relating to their consumption of energy (electrical or other) or of other essential resources, as well as with relevant technical documentation, thereby allowing consumers to choose more energy-efficient appliances

The labelling scheme comprises the following household appliances, even where these are sold for non-household uses such as refrigerators, freezers and their combinations, washing machines, electric tumble driers, combined washer-driers, dishwashers, lamps, air-conditioners and electric ovens. Labelling of office equipment is also covered by regulation.

Directive Main Provisions	Legal, regulatory, institutional development recommendations	Other support measures
• Establishment and provision free of charge of a **fiche and a label** providing information on the consumption of electric energy and/or supplementary information related to household appliances. • Establishment of a **technical documentation** from the supplier (available for inspection purposes) enabling the accuracy of information	• Establishment of a national energy labelling implementation scheme (some countries established decentralised schemes). • Adoption of implementing regulations for each category of devices.	Promotional, information dissemination activities to addressed to the general public and retailers. – Educational packages for schools, consumers associations etc. Involvement of consumer organisations in information dissemination, shop inspections and tests. Reporting and exchange of information and test results between implementing bodies of other countries

contained in the label and the fiche.

- **Measures to ensure that all suppliers and dealers fulfil their obligations** under this Directive; the display of other labels, marks, symbols or inscriptions relating to energy consumption which do not comply with the requirements of this Directive and of the relevant implementing directives is prohibited.
- Specifications for the **implementing directives**.
- Shop inspections scheme.
- Programme for testing of devices (several countries do not conduct sample tests due to high cost and limited laboratory facilities)
- Enforcement mechanisms (several countries have weak enforcement mechanisms).

Adoption of technical standards: *EN 153, EN ISO 15502, EN 60456, EN 61121, EN 50229, EN 50242, EN 50285, EN 14511, EN 50304.*

Although many EU Member States present compliance problems with the enforcement of the labelling Directives, the introduction of the labelling scheme has resulted in a significant market transformation towards high energy efficiency appliances in all countries.

Other Directives Related to EE

Directive on efficiency requirements for new hot-water boilers fired with liquid or gaseous fuels (92/42/EEC)

Key provisions

The Directive provides for:

- Measures to ensure that boilers (4 kW - 400 kW) cannot be put into service unless they satisfy the efficiency requirements set out in the Directive.
- Specific system of labels enabling the energy performance of boilers to be clearly ascertained.
- Obligation that boilers are in conformity with the efficiency requirements, bear the CE marking and have the CE declaration of conformity.
- Certification requirements for boilers' conformity.
- Appointment of notified bodies responsible for carrying out the inspection and the verification tests

In Appendices the CE marking, the EC type-examination i.e. the procedure by which a notified body ascertains and attests, conformity to type, production and product quality assurance and minimum criteria for the notification of bodies.

Main requirements

- Transposition of Directive into the national legislation, including description of responsibilities of manufacturers, importers, retailers, installers of boilers as well as of owners/administrators of facilities.
- Notification of bodies responsible for carrying out the inspection and the verification tests.
- Shop and on-site inspections.
- Information dissemination activities addressed to retailers, installers and the general public.
- Apportion of relevant technical standards

Other Directives on efficiency requirements

Directives defining energy efficiency requirements have been adopted for:

- ballasts for fluorescent lighting (Directive 2000/55/EC)
- household electric refrigerators, freezers and combinations thereof (Directive 96/57/EC)

The EC plans to prepare Directives for minimum energy efficiency requirements for a number of other appliances.

Directive on the promotion of cogeneration based on a useful heat demand in the internal energy market and amending Directive 92/42/EEC (2004/8/EC)

The purpose of the Directive is to increase energy efficiency and improve security of supply by creating a framework for promotion and development of high efficiency cogeneration of heat and power based on useful heat demand and primary energy savings in the internal energy market.

Key provisions

The Directive provides for:

- Harmonised **definitions** concerning CHP, electricity produced from CHP, high efficiency CHP, small and micro CHP etc.
- Harmonized **efficiency criteria of cogeneration**
- **Guarantees of origin** for electricity produced from high-efficiency cogeneration, mutually recognized by the Member States

- Assessment of **national CHP potential** and obligations of its determination
- **Support schemes**: they must be based on the useful heat demand and primary energy savings, in the light of opportunities available for reducing energy demand through other economically feasible or environmental advantageous measures like other energy efficiency measures.
- Measures to ensure that the **tariffs for the purchase of electricity** to back-up or top-up electricity generation are set on the basis of published tariffs and terms and conditions.
- Issues related to **access to electricity networks**, **simplification of licensing procedures** and reduction of barriers etc.

Main requirements

- Assignment to a body (Ministry Department or EE Agency) the responsibility for transposition of the Directive, monitoring of implementation and reporting
- Law on CHP (or incorporation of provisions in other laws) with secondary legislation about methodologies and regulatory issues including establishment of criteria to determine and assess the energy efficiency of the cogeneration production, method for calculation and determination of electricity from cogeneration etc.; also provisions to secure relevant data flows
- Regulation/ amendments on electricity regulations to define the guarantees of origin and a body to supervise implementation
- Regulation/ amendments on electricity regulations that tariffs are according to the Directive provisions, access to grid and removal of barriers in CHP licensing procedures
- Study for assessment of CHP potential and Action Plan
- Establishment of a data collection system and development of a data base
- Establishment of monitoring – verification and reporting procedures
- Introduction of support mechanisms including publication of guides, TA and financial incentives.
- Dissemination activities to market actors.