EUbuild
ENERGY EFFICIENCY



FINANCING ENERGY EFFICIENCY IN BUILDINGS

Future Perspectives

European Union

İMSAD
Project Leader

GUIDEBOOK

EUbuild EE
Sectoral Collaboration Project
with regard to Financing Energy Efficiency in Buildings
within the frame of EU Regulations and Legal Arrangements

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Future Perspectives

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EU Energy Efficiency Centre

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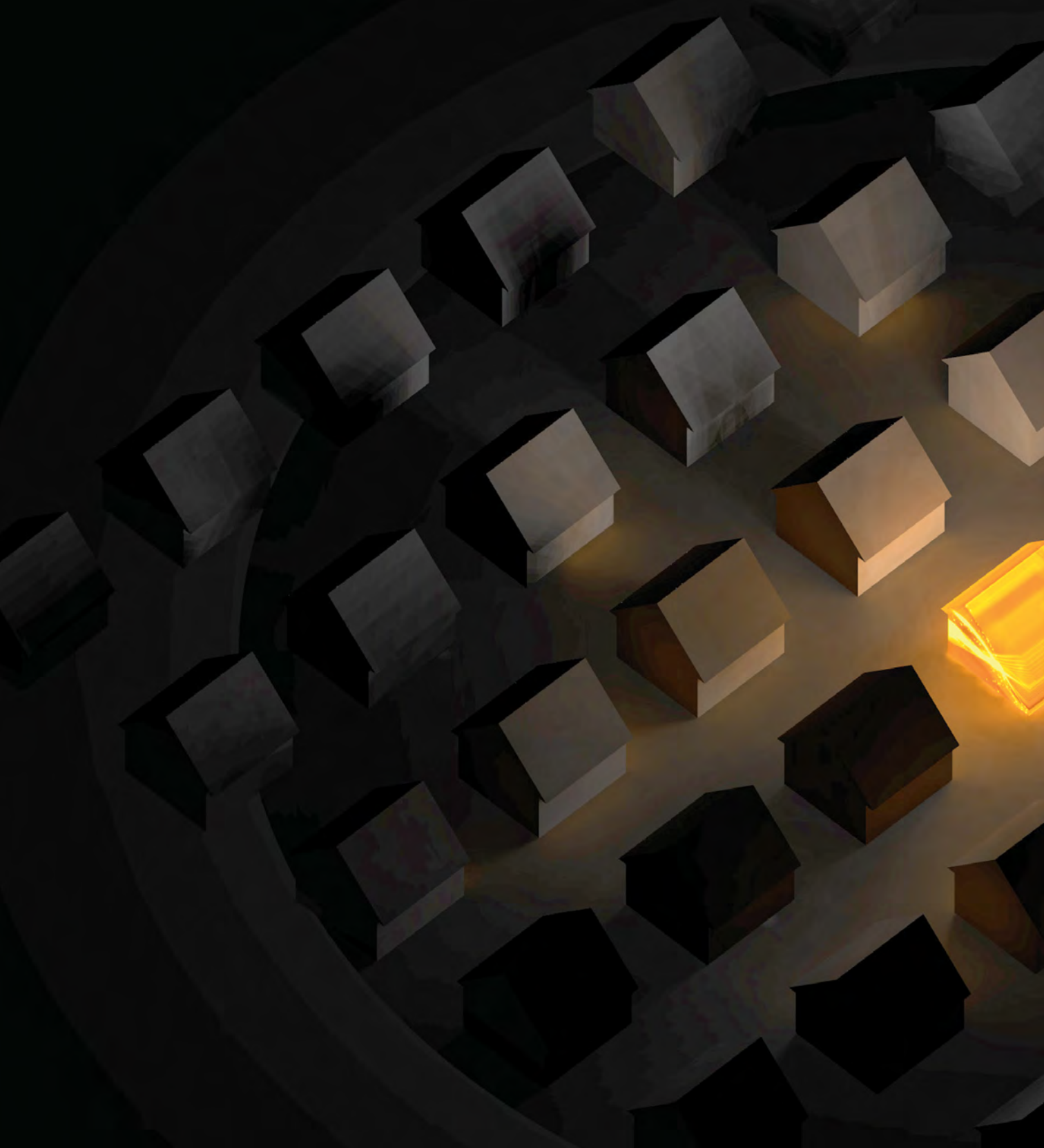
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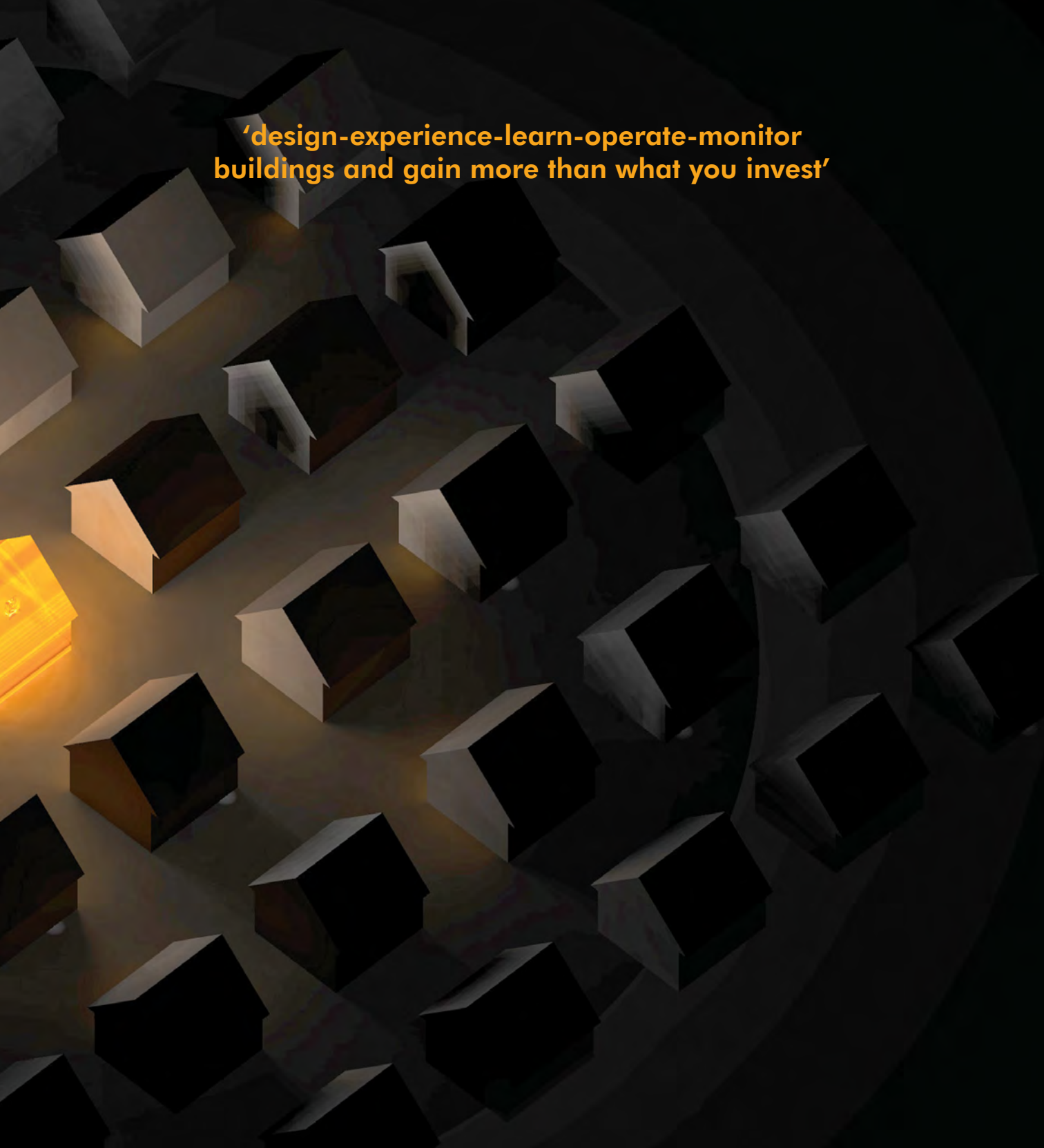
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‘design-experience-learn-operate-monitor
buildings and gain more than what you invest’



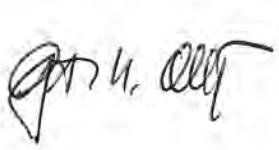
MESSAGE from the EUROPEAN COMMISSION

Energy efficient renovation of Europe's existing building stock is crucial for meeting our ambitious energy and climate policy goals. Increasing the building renovation rate in Europe can also make a strong contribution to job growth and competitiveness in the construction sector. We all know, however, that this is easier said than done. Barriers continue to exist and there is a need for a large amount of financing. Nevertheless, there are three main reasons why I am optimistic that we can achieve our goals.

First of all, we are putting in place a comprehensive policy framework in support of energy efficiency. Next to our Europe 2020 objectives, the Commission has elaborated Roadmaps for energy for moving the European Union to a competitive low carbon economy in 2050. With the revised Energy Performance of Buildings Directive and the newly agreed Energy Efficiency Directive, we have now also put in place a broad range of measures that Member States can use to improve the efficiency of their energy use, including the development of long-term strategies for mobilising investments in the renovation of national building stock, the mandatory refurbishment of at least 3% of central Government Buildings each year, and the requirement to ensure that by 2012 all new buildings are nearly zero-energy buildings.

Secondly, the Commission has proposed increased financial support for energy efficiency projects during the next Multi-Annual Financial Framework between 2014 and 2020, with a minimum of 17 billion Euros to be ring-fenced for low carbon economy measures, including energy efficiency. This is a doubling of resources compared to the current financing period. Of course, the amount of money available from EU-level or Member State budgets can never cover the investments needed for a comprehensive renovation of all Europe's buildings. That is why the Commission attempts to create the right conditions for more private sector financing to flow into the energy efficieny market. We already have several instruments in place to facilitate this process, such as the ELENA facility, but more efforts are needed.

The third reson is the depth of public awareness and the existence of projects such as EUbuild. These show that the Europe's business sector is at the forefront of the drive toward energy efficieny improvements through innovation and cooperation. This is especially important for the building sector which has been one of the hardest hit by the financial and economic crisis. Increased focus on energy efficient renovation and maintenance of buildings is a good way to promote the sector as a driving force in the creation of jobs. Thus all the more reason to continue working together to renovate Europe's buildings.



Günther H. Oettinger
European Commissioner for Energy

1 FOREWORD

Energy efficiency is a global and multi-faceted issue. The EU's "2020 Strategy for Sustainable Growth" aims to improve energy efficiency by 20% by the end of this decade. The construction sector and the buildings seem to be the most effective tools to achieve this 2020 target.

The European Union Energy Commissioner Mr. Oettinger had stated that European Union was dependent on others for 55% of their energy and that this need was increasing day by day. For Turkey this need rises to 75% and is about almost 100% for Balkan countries Albania, Bosnia Herzegovina, Macedonia, Montenegro and Serbia. On the other hand, buildings as being at the centre of our lives, our need for better quality buildings is increasing. Now we are all aware of buildings that are environmental friendly, smart, zero-energy and zero-carbon. While new buildings are being constructed, the need for restoration and renovation of the existing buildings also gains much more importance. This issue is even more important for Turkey and Balkan countries which are still developing countries where there exists a huge unregistered and unsecure existing building stock compare to EU members. Therefore a considerable part of this building stock has to be either demolished or renovated in near future. When it is considered that 40% of the total energy is consumed at the buildings, the efficiency provided at the buildings has a key role in decreasing the dependence on energy and on reaching the goal of zero carbon. EU's goal of decreasing the energy need by 20% by 2020 has also been targeted by Turkey and Balkan countries. But how this target can be realized is the main question. It seems there is an important task for the construction sector and this task can be carried out only by developing a variety of supporting financial instruments together with rationalist mechanisms and incentives.

EUbuild EE Project is a sectoral collaboration project funded by EC, designed to contribute the development of the financial instruments in order to build up the market for energy efficiency in buildings. This is the second EU funded Project prepared and leaded

by IMSAD, Association of Turkish Building Material Producers under the name of EUbuild which is actually designed to become a sustainable brand for EU's construction industry. Before starting the EUbuild Energy Efficiency Project, İMSAD conducted a research on what was achieved in the European Union member countries on energy efficiency in buildings. This research especially focused on financial instruments, various incentives and especially to the critical role of Governments, Ministries and Municipalities being as the impulsive forces. This research did not receive enough attention at that time. Of course there are roles that the private sector and sectoral organisations have to fulfil as well. As a part of it, the EUbuild EE Project is designed to increase the cooperation between all related parties.

Project Partners started this route with the motto "Energy that is not wasted means money that is not wasted" and they have reached and are still achieving important results with the Workshops, Conferences, sectoral meetings organized as well as country reports and this guide book prepared. All partners are all of one mind that the issue of energy efficiency needs a strong coordination at one centre. An independent, strong and effective, public-private Energy Agencies or Energy Efficiency Centres should be established in Turkey and in Balkan countries. It is stated that energy efficiency must be supported and encouraged with financing models such as incentives, privileged loans, subsidies and tax exemptions. There exists a need for awareness raising, cooperation and coordination between various parts starting from building users to investors, designers, finance sector, Government officials, municipalities, sectoral organisations, universities, etc.

As the players in the building and energy sector, each and every EUbuild EE partner is very happy to create public opinion by carrying the energy efficiency issue on the agenda. It is remarkable to state that for example in Turkey 12 – 15 billion dollars can be saved yearly with the energy efficiency precautions in the buildings which means that 20% of the current deficit announced last year and 30% of the energy import can be avoided by way of energy efficiency.

In this respect this Guidebook aims to present the current poor situation on financial support on energy efficiency in buildings, a SWOT analysis and comparisons in between Albania, Bosnia Herzegovina, Macedonia, Montenegro, Serbia, Turkey and EU for the first time as well as conclusion and recommendations.

In the European Union, the goal of making the new buildings consuming zero energy from 2021 on has also been added recently to the goal of decreasing energy consumption by 20% by 2020. In order to reach these goals, the Project Partners believe that results of EUbuild project will make significant contribution.

As the leading partner IMSAD would like to express its gratitude to the partners for their valuable and fruitful cooperation along with the Project which are:
Albania European Union Energy Efficiency Center (EEC),
Council of European Producers of Materials for Construction (CEPMC),
Chamber of Economy of Sarajevo Canton (CESC),
Macedonian Center for Energy Efficiency (MACEF),
Montenegrin Employers Federation (MEF),
Belgrade Chamber of Commerce (BCC).

During the Project, we believe that the researchers achieved an excellent harmonized working environment. As Project Partners we also would like to thank them all. We also want to submit our special gratitude to Istanbul Technical University Energy Institute and to Prof. Dr. Sermin Onaygil who managed the research and reporting with her dedicated efforts.

IMSAD and all partners will continue to work to realize the goals and recommendations mentioned in this Guidebook and are looking for the others to contribute in order to meet in a more sustainable future.

On behalf of EUbuild EE Project Partners
IMSAD Association of Turkish Building Material Producers Association




‘the crucial point in energy efficiency is financing’

2 INTRODUCTION

This "Guidebook: Future Perspectives with regard to Financing Energy Efficiency in Building Sector on the basis of Country Profiles of Partner Countries" has been prepared for the Project "EUbuild ENERGY EFFICIENCY EUbuild EE - Financing Energy Efficiency in Buildings within the Frame of EU Regulations and Legal Arrangements". This Project is funded by European Union under the Socio Economic Partnership (SEP) Program with a reference: Europe Aid/129637/C/ACT/Multi for the duration 2010 to 2012.

Partners of the Project are listed below:

- IMSAD - Association of Turkish Building Material Producers – Turkey, leading partner
- Albania EU Energy Efficiency Centre (EEC) – Albania
- Council of European Producers of Materials for Construction (CEMPC) - Belgium
- Chamber of Economy of Sarajevo Canton (CESC) - Bosnia Herzegovina
- Macedonian Centre for Energy Efficiency (MACEF) - Macedonia
- Montenegrin Employers Federation (MEF) – Montenegro
- Belgrade Chamber of Commerce (BCC) – Serbia, and 47 associates from all partner countries additionally from France, Austria and Norway.

In the EUbuild EE Project, Turkey is the leading partner, having major responsibilities, such as preparing the country report for Turkey and also by means of country reports from other partner countries, Albania, Bosnia Herzegovina, Macedonia, Montenegro and Serbia, preparing a "guidebook" on financing EE in building sector, which shall comprise not only the comparison of the status in the project partner countries but also the development of previsions and recommendations to improve the current situation.



In the whole over the world, it could not be possible to talk about a sustainable future without mentioning energy efficiency in buildings.

However, 'the crucial point is financing'

Especially for developing countries, lack of diversified financial instruments, even without any awareness, is one of the main obstacles. On this basis, general objective of the EUbuild EE Project is; ***'to contribute the development of the financial instruments and mechanisms in order to build up the market for energy efficiency in the partner countries'***

Moreover, special objectives of the project are as follows:

- To create a database/document about energy efficiency regulations, incentives and financial mechanisms in the partner countries and in the EU and provide regular flow of information and knowledge sharing between project partners.
- To provide coordination and regular flow of information between public institutions, private sector and non-governmental organizations (NGO's) about developing financial instruments.
- To develop recommendations for partner countries, European Commission and public institutions and make contributions for them to form strategic collaborations and action plans and raise awareness among end-users on energy efficient and certified products.

Targeted groups are sector bodies in construction and finance sectors, local and central regulatory administrations, universities, research centres and think thanks, private companies, energy efficiency consultancy firms in the partner countries and in the EU.

In terms of expected results from the project, the following outcomes could be stated:

- A network shall be established among Turkish, Albanian, Macedonian, Serbian, Montenegrin, and Bosnian partners who have limited capacity in adopting energy efficient applications and implementing EU acquis and shared its expertise on the subject.
- International conferences shall be organized and inter-country study visits of the representatives from partner organizations to share best practices: Improve the capacities of the sector as a whole on significance of adopting energy efficient applications and best-fit financial instruments.
- As a result of awareness raising activities in line with increased knowledge about the new financial instruments and incentives there will be new products and methods in the market. It is expected with the availability of new tools and incentives end users production and consumption habits shall be changed in a positive manner.

Under this framework, this "Guidebook" comprises;

- Current situation on financial support for EE in buildings in EU
- Strength-Weakness-Opportunity-Threat (SWOT) analysis of partner countries
- Comparisons of partner countries on:

- general indicators (population, gross domestic products (GDP), primary energy production, final energy consumption, energy saving potentials, carbon di oxide (CO_2) emissions, etc.)
- legal and institutional frameworks present in the country for EE,
- related EE measures/applications,
- possible/alternative financing mechanisms
- future prospects of the country on EE
- recommendations for realizing the what is planned on EE in the future

» Conclusion/recommendation for further EU support.




‘energy agencies have an essential role in the field
of EE and RE having more power to do more’

3

CURRENT SITUATION on FINANCIAL SUPPORT for EE in BUILDINGS in EU

3.1.Introduction

In the European Union (EU), it is commonly stated that buildings account for 40 % of the energy use and a third of the greenhouse gas emissions. To help address climate change the European Commission (EC) has set specific targets to be achieved by 2020, known as the 20-20-20 targets. These targets set three key objectives: a 20% reduction in EU greenhouse gas emissions from 1990 levels; raising the share of EU energy consumption produced from renewable resources to 20% and a 20% improvement in the EU's energy efficiency.

Investing in energy savings has a positive and well-documented effect on job creation, reduction of energy bills and of fuel poverty. Saving energy is the most cost effective option to reduce CO_2 emissions and improve energy security through lower energy imports. The untapped potential of the building sector for cost-effective energy savings could bring a reduction in final energy consumption, delivering a substantial part of the energy consumption reduction goal. This does not take into account the potential of buildings as energy producers through the installation of renewable energy sources.

However, if the EU is on the right track to achieve the first two Energy 2020 targets, it is only halfway towards the third goal for 2020 - improving energy efficiency by 20%. Much greater efforts are needed to meet this target. Therefore, the EC published its "Low-Carbon Roadmap 2050" and Energy Efficiency Directive has been adapted.

These are the latest in a series of legislative proposals and communication from the EC and the report will look at the impact and opportunities these may have on the building sector in terms of energy efficiency.

3.2. General Situation in Terms of Energy/Environment Concerning Energy Efficiency, Renewable Energy and Global Warming with Related Data and Figures in Buildings

In recent years, two main energy consumption trends have been observed in the building sector. There are a 50% increase in electricity and gas use and a decrease in use of oil and solid fuels by 27% and 75%, respectively. The global trend during the last twenty years is a net increase from around 400 to 450 Million Tonnes of Oil Equivalent (Mtoe). This increase is likely to continue if insufficient action is taken to improve the energy performance of buildings.

Residential buildings are responsible for the majority of the sector's energy consumption. In 2009, European households were responsible for 68% of the total final energy use in buildings. Households mainly consume energy for heating but also for cooling, for heating water, cooking and appliances. The correlation between fuel and heating is clearly shown in the graph below which compares time heating degree days and fuel consumption. As regards electricity consumption, the increase use of appliances in households is illustrated by the trend line.

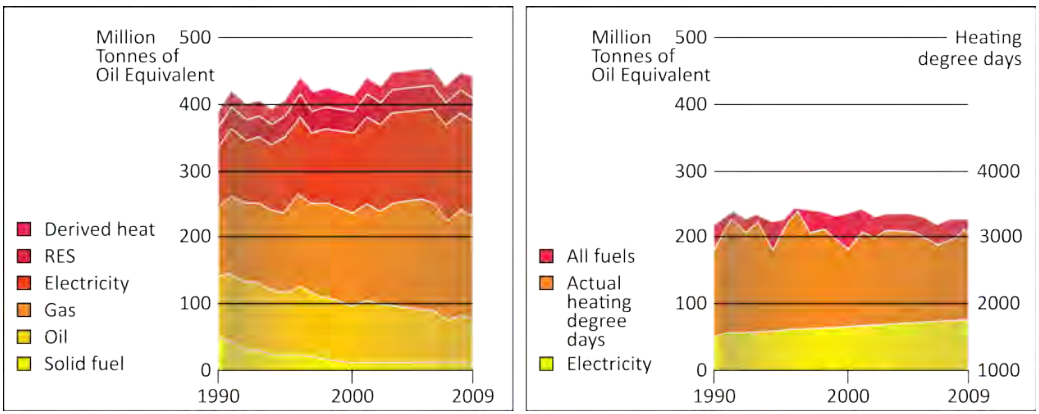


Figure 1 - Historical final energy consumption in the building sector since 1990 for EU27, Switzerland and Norway (Ref. 1.d)

Figure 2 shows gas as the most common fuel in all regions, which stands at 41%, 39% and 26% in North and West, South and Central and East regions, respectively. The highest use of coal in the residential sector is found in Central & Eastern Europe where the largest share is used in Poland. Oil use is highest in North and West Europe where Germany and France are the biggest consumers (inevitably due to the size of these countries).

District heating is most common in Central and Eastern Europe and least in Southern countries while renewable energy sources (solar heat, biomass, geothermal, wastes) have a share of 21%, 12% and 9% in the total final consumption of Central and Eastern, South and North and West regions, respectively.

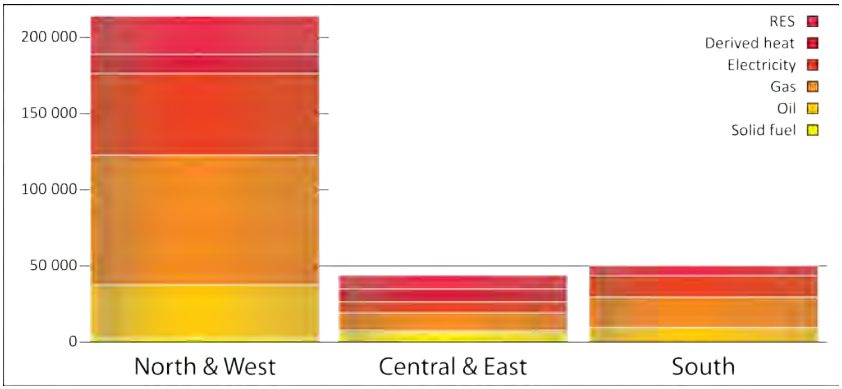


Figure 2 - Energy product per region in 2009 and by end-use in the three regions (Ref. 1.d)

CO_2 emissions are directly linked to the use of energy; this relationship is proportional for fossil fuels and depends on the energetic profile of the relevant Member State for electricity. The situation in the different Countries is shown here below:

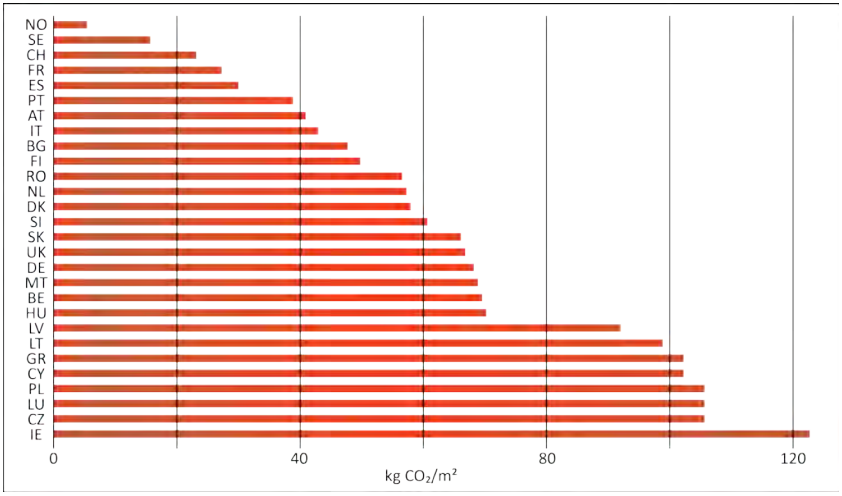


Figure 3 - CO_2 emission per useful floor area (Ref. 1.d)

Figure 4 show how, over the last 20 years, electricity consumption in European non-residential buildings has increased by a remarkable 74%. This is compatible with technological advances over the decades where there has been an increasing penetration of Information Technology (IT) equipment, air conditioning systems etc... It means that electricity demand within this sector is continuously increasing.

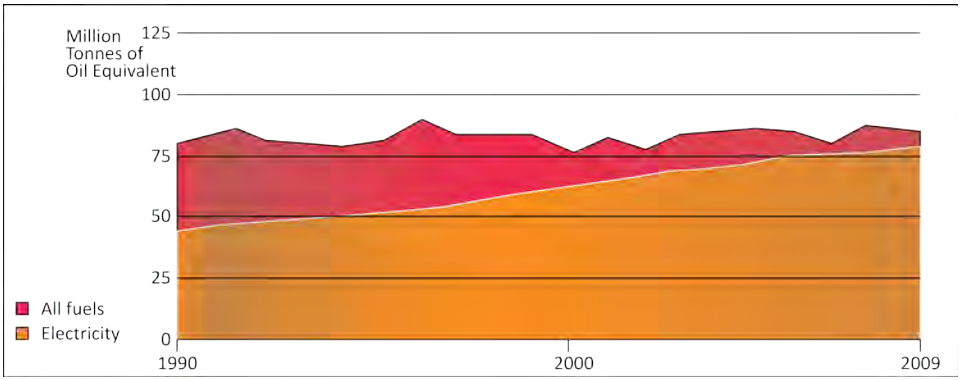


Figure 4 - Historical final energy use in the non-residential sector in the EU27, Switzerland and Norway (Ref. 1.d)

It is estimated that the average specific energy consumption in the non-residential sector is 280kWh/m^2 (covering all end-uses), 40% larger than the equivalent value for the residential sector. The distribution of sources of energy and the difference between 2010 and 1990 are shown in the following Figure 5:

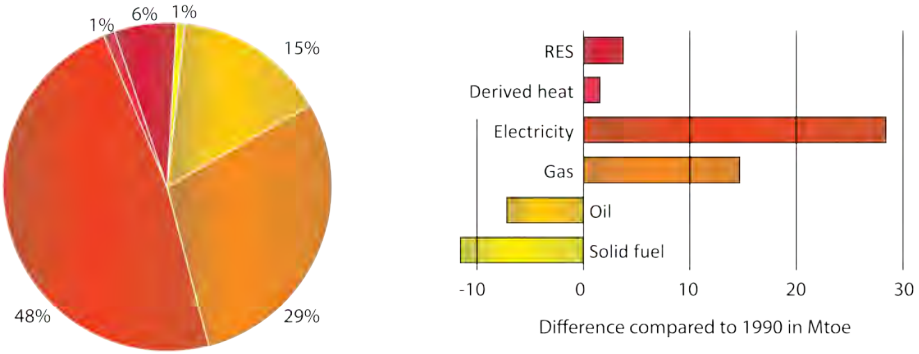


Figure 5 - Energy mix in the non-residential sector in the EU27, Switzerland and Norway and corresponding difference compared to 1990 profile (Ref. 1.d)

Non-residential buildings consume different amounts of energy depending on the use:

- Hospitals are, on average, at the top of the scale;
- Hotels & restaurants have a similar behaviour to hospitals;
- Offices, wholesale & retail trade buildings, represent more than 50% of energy use;
- Education and sports facilities account for a further 18% of the energy use;
- Other buildings account for some 6%.

It must be noted that when it comes to renewable energy, the 27 Member States of the EU have selected different targets and some are on the way to achieving their objectives, as shown in Figure 6.

Use of renewable energy in Europe is increasing every year but the final target is far to be achieved for the majority of EU Members States. We can consider two different sources of non-renewable energy for buildings: direct fuel consumption and electricity consumption. The first one can be reduced using building systems but the non-renewable sources for electricity depend on the energy mix of the country.

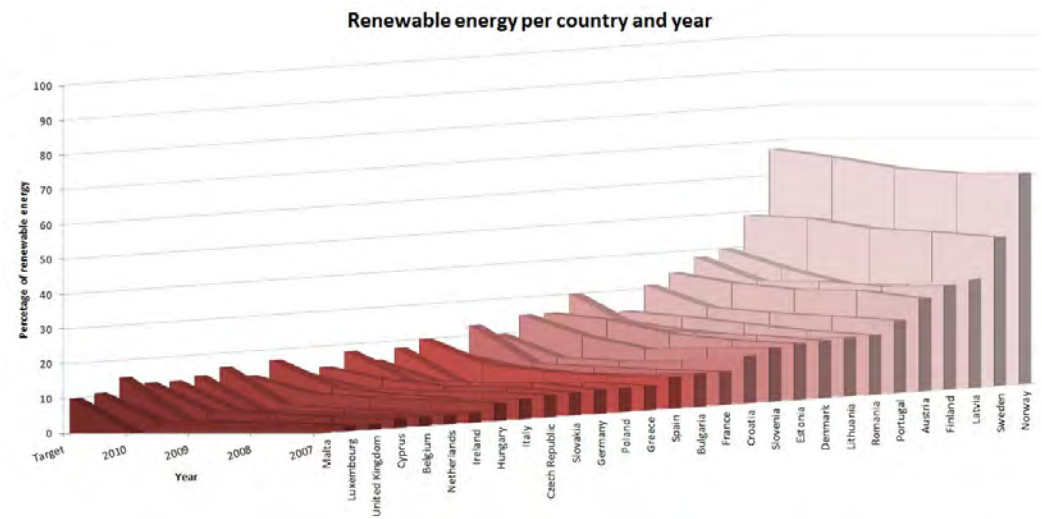


Figure 6 – Percentage of renewable energy per country and year (Eurostat)

Actions to increase the rate of renewable energy for buildings should focus on reducing the fossil fuels consumption either by improving the heating systems or by replacing them by alternative and renewable options. Governments are responsible for improving the rate for electricity production.

3.3.Related Legislative/Institutional Framework in EU (Not in Every EU Member Country)

The European building sector is a highly regulated sector. The figure below summarises the European legislation which shape the building industry.



Figure 7 - European regulations and policy strategies impacting the building sector (CEPMC)

This following chapter gives an overview of the main texts impacting the construction sector. It is organised as follows:

- Policy orientation: fighting climate change
- Initiatives focusing on energy
- Regulations targeting the buildings
- Regulations targeting the products

3.3.1. Policy Orientation: Fighting Climate Change

Mitigating climate change is a strategic priority for the EU. Europe is working hard to substantially cut its greenhouse gas emissions while encouraging other nations and regions to do likewise. EU leaders have committed to transforming Europe into a highly energy-efficient, low carbon economy. The EU has set itself targets for reducing its greenhouse gas

emissions progressively up to 2050 and is working successfully towards meeting them. We will now look at the main policy orientation texts of the EU concerning climate change, CO_2 emissions and energy consumption.

↗ THE ENERGY 2020 STRATEGY

On 10 November 2010, the EC published a communication entitled "Energy 2020 - A strategy for competitive, sustainable and secure energy". In this text, the EC presents its energy strategy for the coming decade, calling for investment of around €1 trillion to secure the bloc's energy needs in a sustainable way. The EU aims at achieving ambitious energy and climate-change objectives for 2020: reduce the greenhouse gas emissions by 20 %, increase the share of renewable energy to 20 % and make a 20 % improvement in energy efficiency.

The strategy is structured around 5 priorities:

- limiting energy use in Europe;
- building a pan-European integrated energy market;
- empowering consumers and achieving the highest level of safety and security;
- extending Europe's leadership in the development of energy technology and innovation;
- Strengthening the external dimension of the EU energy market.

To achieve 20% energy savings by 2020, the EC sees buildings and transport as sectors with a substantial energy-saving potential. It therefore suggests to:

- accelerate the renovation rate;
- introduce energy criteria into all public procurement of works, services or products;
- develop financial programmes targeting energy savings projects;
- improve the sustainability of transport;
- reduce oil dependence.

↗ THE 2050 ROADMAP

With its "Roadmap for moving to a competitive low-carbon economy in 2050", the EC is looking beyond these 2020 objectives and setting out a plan to meet the long-term target of reducing domestic emissions by 80 to 95% by 2050 as agreed by European Heads of State and governments.

The EC indicates that emissions in the building sector could be reduced by around 90% by 2050.

The EC plans to reach this by:

- Achieving the objective of the recast Directive on energy performance of buildings;
- Setting up a strategy for the sustainable competitiveness of the construction sector;
- Encouraging and supporting investments in renovation.

GHG reductions compared to 1990	2005	2030	2050
Total	**-7%**	**-40% to -44%**	**-79% to -82%**
Sectors			
Power ($C0_2$)	-7%	-54% to -68%	-93% to -99%
Industry ($C0_2$)	-20%	-34% to -40%	-83% to -87%
Transport (incl. $C0_2$ aviation excl. maritime)	+30%	+20% to -9%	-54% to -67%
Residential and services ($C0_2$)	-12%	-37% to -53%	-88% to -91%
Agriculture (Non-$C0_2$)	-20%	-36% to -37%	-42% to -49%
Other Non-$C0_2$ emissions	-30%	-72% to -73%	-70% to -78%

Figure 8 – Sectoral targets for Green House Gaz (GHG) reductions (Ref. 1.f)

↗ SMART CITY INITIATIVE

Also related to the 2020 Energy strategy, the EC Smart Cities Initiative is a project "of European dimension for energy efficiency and for accelerating the large scale deployment of innovative low carbon technologies."

On 10 July 2012, the EC published its Smart Cities and Communities (SCC) Initiative, an industry-led initiative that addresses multi-sectorial issues in the areas of energy, transport and information and communication technologies (ICT). It aims at stimulating the development of innovative solutions for the enhancement of resource and energy efficiency, as well as the sustainability of urban transport.

The SCC Initiative will pool research resources from the energy, transport and ICT sectors to concentrate them on a number of demonstration projects, which will be implemented in partnership with cities.

In particular, the Communication lists the following areas to be addressed by the SCC Initiative:

- Smart buildings and neighbourhoods;
- Smart supply and demand systems and services for better information to citizens;
- Sustainable urban mobility;
- Smart and sustainable digital infrastructures and
- Strategic planning for identification, integration and optimisation of flows.

In 2013, € 365 million of EU funds will be allocated for the development of these projects. The Communication has been sent to the European Parliament and the Council, who may decide to formally respond to it.

↗ EUROCODES

The objective of Eurocodes is to unify international buildings and civil engineering designing codes. These codes (which include 58 standards) were established to deal with three basic work requirements, initially listed in the Construction Product Directive (Directive 89/106/EC) and now in the Construction Product Regulation (Regulation (EU) 305/2009):

- BWR1: stability and mechanical resistance,
- BWR2: safety in case of fire and
- BWR3: safety of the users.

The basis of the applied principles of the Eurocodes is laying in the fact that there are loads and aggressions on and to the building fabric. The fabric shall deal with them due to its properties resistance and durability. Values fixing the resistance and durability requirements are measured or calculated with assumptions to a system model.

Adaptation to climate change may lead in the future to increase the requirements resistance and durability of the building fabric to face floods, additional loads (windows stronger than the average, anomalous snow loads…), external impacts… The increasing level of performance to cover these situations will be applied according to the current research to protect buildings and their users from climate change.

3.3.2. Initiatives Focusing On Energy

↗ THE ENERGY EFFICIENCY DIRECTIVE

The EC published its proposal for an Energy Efficiency Directive (EED) on 22 June 2011. The proposed EED will repeal two existing Directives, the Cogeneration Directive (2004/8/EC) and the Energy Services Directive (2006/32/EC). A political agreement on the draft Energy Efficiency Directive between the European Parliament and the Council was reached on 13 June 2012. It was adopted on 4 October 2012. The Directive will enter into force 20 days after its publication in Official Journal.

The Energy Efficiency Directive is the first EU framework for Energy Efficiency which concerns all sectors. It brings forward legally binding measures to step up Member States efforts to use energy more efficiently at all stages of the energy chain – from the transformation of energy and its distribution to its final consumption. Measures include the legal obligation to establish energy efficiency obligations schemes or policy measures in all Member States. These will drive energy efficiency improvements in households, industries and transport sectors. Other measures include an exemplary role to be played by the public sector and a right for consumers to know how much energy they consume.

The EC Report assessing the progress achieved in the national energy efficiency targets of Member States is now expected by 30 June 2014. The Report was previously expected for the first quarter of 2013. However, following the recent agreement on the draft Energy Efficiency Directive (EED), the review of national energy efficiency target has been set for June 2014. Article 3(1) of the draft EED obliges every Member State to set an indicative national energy efficiency target, based on either primary/final energy consumption, primary/final energy savings or energy intensity. According to Article 3(2) of the draft Directive, the EC has to review the progress achieved in the national energy

efficiency targets, as well as in the overall EU energy efficiency target.

According to the results of the Report, the EC may decide to propose new legislative measures aimed at achieving the 2020 energy efficiency target.

↗ UPCOMING ENERGY EFFICIENCY COMMUNICATION (2013)

The EC is expected to present a Communication on energy efficiency in the first quarter of 2013. The Energy Efficiency Directive (EED), together with measures on eco-design of products and energy efficiency of vehicles is expected to deliver only 17% of the 20% EU energy efficiency target for 2020. There is therefore the need for further action on the matter. This EC Communication will follow up to the Energy Roadmap 2050 and lay out strategic policy options for further measures aimed at boosting energy efficiency in the coming years, including the setting of binding energy efficiency targets for 2030. The Communication is expected to:

- Evaluate projections for energy efficiency progress to be in line with projected 2050 demands;
- Analyse the long-term energy efficiency needs and lay out related policy options;
- Propose short-term instruments that fit into the needs and the objectives of the long-term goals.

↗ EUROPEAN TRADING SYSTEM

The EU Emissions Trading System (EU-ETS) is a cornerstone of the EU's policy to combat climate change and its key tool for reducing industrial greenhouse gas emissions. It is an important system since it has an impact on energy prices.

Launched in 2005, the EU-ETS works on the "cap and trade" principle. This means there is a "cap", or limit, on the total amount of certain greenhouse gases that can be emitted by the factories, power plants and other installations in the system. Within this cap, companies receive emission allowances which they can sell to or buy from one another as needed. The limit on the total number of allowances available ensures that they have a value.

At the end of each year each company must surrender enough allowances to cover all its emissions, otherwise heavy fines are imposed. If a company reduces its emissions, it can keep the spare allowances to cover its future needs or else sell them to another company that is short of allowances. The flexibility delivered by trading ensures that emissions reductions are carried out where the costs are minimal.

The number of allowances is reduced over time so that total emissions fall. In 2020 emissions will be 21% lower than in 2005.

The EU-ETS now operates in 30 countries (the 27 EU Member States plus Iceland, Liechtenstein and Norway). It covers CO_2 emissions from installations such as power stations, combustion plants, oil refineries and iron and steel works, as well as factories making cement, glass, lime, bricks, pulp, paper and board.

Nitrous oxide emissions from certain processes are also covered. Between them, the installations currently in the scheme account for almost half of the EU's CO_2 emissions and 40% of its total greenhouse gas emissions.

Airlines will join the scheme in 2012. The EU-ETS will be further expanded to the petrochemicals, ammonia and aluminium industries and to additional gases in 2013, when the third trading period will start. At the same time a series of important changes to the way the EU-ETS works will take effect in order to strengthen the system.

Emissions covered by EU-ETS were 1.89 billion tonnes in 2011, a slight fall on the 2010 figure of 1.94 billion tones. But those numbers were also 114 Million tonnes below the EU's ETS cap. This indicates that the market is oversupplied with carbon allowances for the third year in a row, and for the sixth in seven years. The carbon price is therefore way too low.

Low carbon prices are bad news for the EU's climate change policy as the CO_2 trading scheme draws its strength from the benefits companies can make from selling their potential surplus pollution allowances on the market. With falling prices, incentives for companies to cut down their emissions and free up extra credits (through investment in energy efficiency for example) are consequently diminished.

↗ RENEWABLE ENERGY POLICIES

Developing the use of renewable energy is also a clear direction that the EC wants to take.

The Directive on the promotion of the use of energy from renewable sources (2009/28/EC, RES Directive) sets the objective of reaching 20% of the EU's energy consumption through renewable energy sources by 2020. It sets mandatory national targets for the overall share of RES in gross final consumption of energy, as well as a mandatory share of 10% RES in transport for each Member State. It also includes the use of renewable energy for heating and cooling (growth in this sector has been slower compared to the growth rates achieved in the renewable electricity and transport sectors). In fact installing renewable heating and cooling systems is one of the best ways to improve the ratio renewable /non-renewable energy consumption for buildings.

↗ THE ENERGY TAXATION DIRECTIVE

In April 2011, the EC proposed a revision of the Energy Taxation Directive explaining that the legislation had to be updated to address energy and climate concerns.

The directive's current scope, it said, is incoherent with the EU Emission Trading System (EU-ETS) and the need to reduce CO_2 emissions, as current taxation systems give unfair competitive advantage to polluting fuels over renewables such as biofuels for example.

According to the EC, these issues would be addressed by shifting taxation to energy content, rather than volume. The new rules aim to restructure the way energy products are taxed to remove current imbalances and take into account both their CO_2 emissions and energy content. However, in April 2012, the European Parliament delivered a setback for EC plans to erase tax benefits for diesel fuel, saying that a period of austerity and high fuel costs is not the time for such moves. This vote is unlikely to have a decisive influence on the proposal's survival because the parliament can only offer its opinion on taxation issues.

However, it is Member States that have the real say on whether or not it should become law. So far, negotiations in the Council of Ministers have progressed very slowly since Poland is blocking the moves to impose stronger emission-reductions obligations.

3.3.3. Regulations Targeting The Buildings

The EU also has a legislative text specifically dealing with the energy use in buildings. The recast Energy Performance of Buildings Directive (EPBD 2010/31/EU) repeals Directive 2002/91/EC. It sets out minimum requirements as regards the energy performance of new and existing buildings, ensures their energy performance and requires a regular inspection of boilers and air conditioning systems in buildings.

The EPBD requires Member States to develop national plans for increasing the number of nearly zero-energy buildings. It extends its scope to cover buildings less than 1000 m^2 in order to achieve further energy savings. More so, the Directive aims to ensure that:

- By the 31 December 2020 all new buildings are nearly zero-energy buildings and
- After 31 December 2018 new buildings occupied and owned by public authorities are nearly zero-energy buildings.

So Member States are required to develop frameworks for "nearly zero energy buildings" and the EC is expected to publish its report on the progress of Member States in increasing the number of nearly zero-energy buildings by the end of 2012 and every three years thereafter. On the basis of this progress report, the EC may develop an action plan. However, no common reporting approach for the Member States has been developed. To facilitate the monitoring and reporting task of the EC, a common approach for the reporting of national plans is therefore being drafted. An integral part of this project is further to develop an analytical framework on which the EC can assess the national plans and, if needed, issue recommendations. The project also seeks to develop benchmarks to determine cost-optimal performance levels to be used by Member States for comparison with their current regulations and to set new requirements with a view to achieving at least cost optimal performance levels. The project should shed some light on the relationship between cost-optimality and nearly zero-energy and will develop an argumentation how to ensure a smooth transition of policies and markets from one system to the other.

The expected EC report will build on a study "Nearly zero-energy buildings - definition of common principles under the energy performance of buildings Directive." This study identifies three guiding basic principles for the setting up of a proper nearly zero-energy buildings definition:

- Energy demand;
- Renewable energy share and
- Primary energy and CO_2 emissions.

Based on the definition of these principles, the study makes the following recommendations:

- Create benchmarks as a basis for comparison between different Member States;
- Agree on a value for a threshold for nearly zero-energy buildings;
- Put in place a common reporting format for Member States;

- Create a stable regulatory framework to help investments and
- Develop a definition for building renovation at near zero-energy buildings levels.

The study also analyses the technological, financial and policy implications of the identified principles for near zero-energy buildings:

- From a technological point of view, the identified principles are achievable through existing technologies;
- From a financial point of view, the estimated investments to implement the near zero-energy buildings requirements for every new building is of EUR 62 billion per year;
- The near zero-energy buildings principles are coherent with the EU's energy and climate targets, as well with job creation goals.

It is also worth noting that the EC is considering coming forward with a benchmark report on the costs and benefits of smart meters. This report, which is expected in the second quarter of 2013, will consider and compare the results of the cost-benefit analysis on the development of smart meters carried out by Member States. The EC had previously published a Recommendation providing guidelines on the cost-benefit analysis to be carried out by Member States by 3 September 2012 according to the Directive 2009/72/EC (the "Electricity Directive" of the third energy package). According to the EC recommendation, the cost-benefit analysis should be based on:

- Tailoring to local conditions;
- Cost-benefit analysis;
- Sensitivity analysis;
- Performance assessment, externalities and social impact.

Last but not least, Article 19 of the EPBD requires the EC to carry out a review of the Directive by 1 January 2017.

3.3.4. Regulations Targeting the Products

In its sustainable consumption and production (SCP) and sustainable industrial policy (SIP) action plan (2008), the EC aims at ensuring EU continued leadership in environmental performance by:

- Creating a new sustainable product policy, in order to improve the environmental performance of products on the market and help consumers to buy more eco-friendly products;
- Encouraging eco-innovation so that EU businesses adapt to the markets of the future;
- Supporting the competitiveness of eco-industries
- Contributing to a low carbon economy internationally.

The sustainable product policy is of particular interest to us since it mainly targets resource efficiency with the tools described hereafter. A revision of the SCP SIP Action plan has been announced for 2012. A stakeholder consultation took place in winter 2012 as a first step of the revision. This new document will propose new ideas for all the legislative tools related to product policy.

Product policy helps identifying products with a reduced impact on environment. The EC wants thereby to increase the demand for more sustainable goods and production technologies.

↗ ECODESIGN

The Ecodesign Directive (EC/2009/125) provides EU-wide rules for improving the environmental performance of energy related products (ERPs). It prevents disparate national legislations on the environmental performance of these products from becoming obstacles to the intra-EU trade. Energy related products (the use of which has an impact on energy consumption) account for a large proportion of the energy consumption in the EU and include.

Energy-using products (EUPs), which use, generate, transfer or measure energy (electricity, gas, fossil fuel), such as boilers, computers, televisions, transformers, industrial fans, industrial furnaces etc.

Other energy related products (ERPs) which do not use energy but have an impact on energy and can therefore contribute to saving energy, such as windows, insulation material, shower heads, taps etc.

When the product is under the scope of an Ecodesign measure, minimum requirements are set focusing on key environmental aspects. The products have to respect these minimum requirements to be put on the market.

As the first version of the Directive (2005) focused on Energy-using products, the first measures mostly concerned energy consumption. This might change, since the new version of the directive (2009) includes other energy related products and the EC intends to deal with other environmental criteria (like water consumption, waste production, etc.). With the extension of the directive scope, more and more construction related products are being targeted. Some products are already present in the working programmes of the EC like boilers or industrial furnaces. Some could appear in the upcoming EC working programme (2012-2014), like taps & showerheads, insulation materials (not likely), or windows. More so, in 2012, the Centre for Strategy & Evaluation Services (CSES) published a report assessing the efficiency of the Ecodesign directive and the relevance of extending it to non-energy related products. The consultants carried on five case studies on specific product groups, one of them being housing products. This information gives a clear sight of where the EC wants to go.

↗ ECOLABEL

Close to the Ecodesign approach, the EU Ecolabel identifies the top 10% products and services according to their reduced impact on the environment throughout their life cycle. It is a voluntary label. The functioning of the EU Ecolabel is set through a Regulation (EC/66/2010). The following buildings related products can have an Ecolabel: Hard Floor Coverings, Heat Pumps, Indoor Paints & Varnishes, Outdoor Paints & Varnishes, Light Bulbs, Soft (Textile) floor coverings, Wooden floor coverings, Tourist Accommodation Services, Camp Site Services.

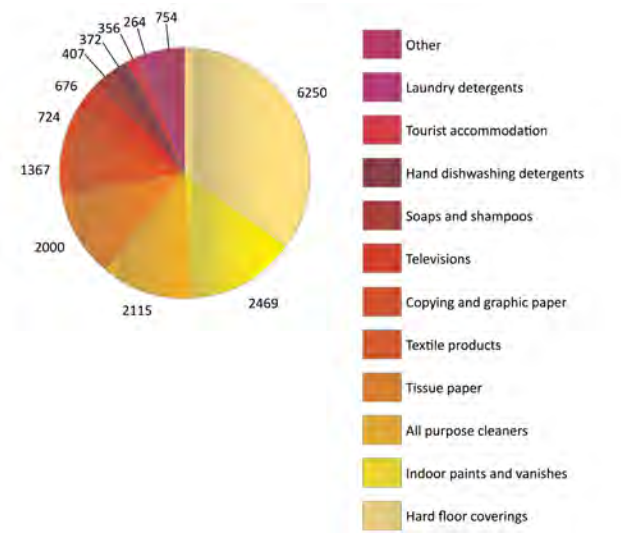


Figure 9 - Number of EU Ecolabelled products per Product Group Category (January 2012) (Ref. 1.f)

↗ GREEN PUBLIC PROCUREMENT (GPP)

Green Public Procurement is a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle. EU GPP criteria have been already developed for construction works, windows, glazed Doors and skylights, thermal insulation, hard floor-coverings, wall panels, indoor lighting.

EC DG Environment with the help of the Joint Research Centre, is developing Ecolabel and GPP criteria for office buildings.

A study is being carried out by the Joint Research Centre's Institute for Prospective Technological Studies (JRC-IPTS). The criteria will be based on scientific assessment studies of the environmental impacts of the building for each part of its life cycle (e.g. LCA studies) and consider different environmental aspects such as air quality, water quality, soil protection, waste reduction, energy savings, natural resource management, GWP, ozone layer protection, environmental safety, noise and biodiversity.

↗ ENERGY LABELLING

On 19 May 2010, the EU adopted the Directive 2010/30/EU on energy labels. This Directive establishes a framework for the harmonisation of national measures on end-user information, particularly by means of labelling and standard product information, on the consumption of energy and where relevant of other essential resources during use, and supplementary information concerning energy-related products, thereby allowing end-users to choose more efficient products.

3.4.Major Energy Efficiency Applications/Measures Targeting the Building Sector

Two recent legislative acts define the energy efficiency measures in the building sector. These are the recast of the Energy Performance of Buildings Directive (EPBD - 2010/31/EU of 19 May 2010) and the Energy Efficiency Directive (EED).

The recast EPBD was adopted after experiencing the implementation of the first EPBD Directive in 2002 in the Member States. The aim of the revision was to clarify and simplify certain provisions, extend the scope, make some more effective, and provide for the leading role of the public sector.

Following a first-reading agreement with the European Parliament, the Council adopted the EED on 4 October 2012. Member states will have to comply with the provisions of this directive within 18 months from its entry into force (tentatively Spring 2014). The EED will require Member States to renovate 3% of the total floor area of "heated and/or cooled buildings owned and occupied by their central government" (administrative departments whose responsibilities cover the entire territory of a Member State). This will apply to buildings with a "total useful floor area" of more than 500 m^2, and as from July 2015, of more than 250 m^2. However, Member States will also be able to use alternative means to achieve equivalent energy savings. All large enterprises will be required to undergo an energy audit. These audits will need to start within three years of the directive's entry into force and should be carried out every four years by qualified and accredited experts. Small and medium-sized enterprises (SMEs) will be excluded from this obligation.

The measures introduced by the recast EPBD are:

Limit the energy use of **air conditioning;**

- Undergo regular **inspections** of boilers and air conditioning systems;
- Design all new buildings to be **'nearly zero-energy buildings'** by 2020, including existing buildings undergoing "major renovation";
- Calculate cost-optimal levels for setting **minimum standards of energy performance;**
- As of 2013, display **energy performance certificates** (EPCs) in all public buildings over 500 m^2, and in 2015 this affects public building with surface area larger than 250 m^2.

The measures that will be introduced by EED are:

- Purchase of products, services and buildings with high energy efficiency performance;
- **Annual renovation target** of 3% for public buildings above 250 m^2;
- Local **energy efficiency plans** and introduction of energy management systems;
- More systematic use of **Energy Performance Contracting;**
- Obligation for individual **energy meters,** reflecting actual energy consumption and information on actual time of use.

3.5.Who is Handling the EE Issues in EU

It is understood that no definitive list of EU stakeholders can be drafted when it comes to such important dossiers.

At the European Commission (EC), Mr Günther Oettinger is the Commissioner in charge of Directorate General (DG) Energy until 2014. Within DG Energy, Mr Philip Lowe is Director-General; Mrs Marie Donnelly is the Director of Directorate C "Renewables, Research and Innovation, Energy Efficiency" and Mr Paul Hodson is the Head of Unit C3, Energy Efficiency.

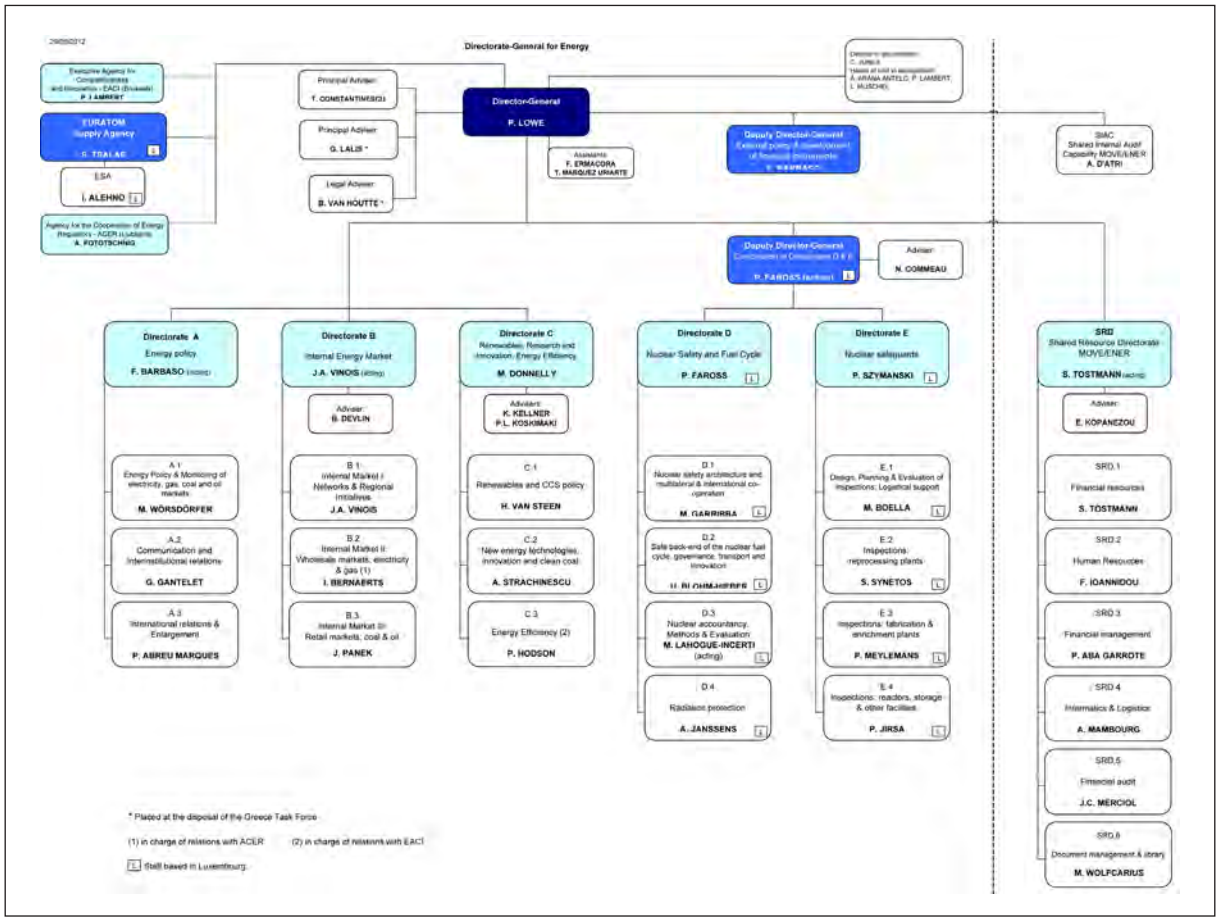


Figure 10 – DG Energy structure (Ref. 1.f)

Still in the EC, other DGs deal with energy efficiency, such as Mrs Connie Hedegaard, Commissioner for Climate Action; Mr Antonio Tajani, EC Vice-President and Commissioner for Industry and Entrepreneurship and Mrs Máire Geoghegan-Quinn, Commissioner for Research, Innovation and Science.

In the **European Parliament** (EP), the Luxembourg Member of the EP (MEP), Mr Claude Turmes was the rapporteur on the Energy Efficiency Directive. A rapporteur is the MEP who prepares a draft report which is then discussed within the political groups and amended in the EP committee(s) responsible.

The Parliamentary Committee responsible for energy questions is the Industry, Research and Energy (ITRE) committee.

The Convenant of Mayors is the mainstream European movement involving local and regional authorities, voluntarily committing to increasing energy efficiency and use of renewable energy sources on their territories. By their commitment, Covenant signatories aim to meet and exceed the EU 20% CO_2 reduction objective by 2020.

Established in 1988, **CECODHAS** Housing Europe is the European Federation of Public, Cooperative and Social Housing - a network of 45 national and regional federations which together gather about 41 400 public, voluntary and cooperative housing providers in 19 countries. This year, CECODHAS Housing Europe - under aegis of the POWER HOUSE Nearly Zero Energy Challenge initiative - has teamed up with the Solar Decathlon to tap into the leading architectural schools in order to push energy efficiency in its sector.

The mission of **EuroACE** is to work together with the European institutions to help Europe move towards a more sustainable pattern of energy use in buildings, thereby contributing to the EU's commitments on carbon emission reductions, job creation and energy security. In 1998, European companies involved with the manufacture, distribution and installation of a variety of energy saving goods and services joined forces as The European Alliance of Companies for Energy Efficiency in Buildings (EuroACE).

The **European Alliance to Save Energy** (EU-ASE) was established at the United Nations Climate Change Conference in December 2010. Founders include European companies such as 1E, Danfoss, Knauf Insulation, Philips Lighting, Schneider Electric and Siemens, and prominent NGOs and foundations including the European Climate Foundation and Kyoto Club.

The **Coalition for Energy Savings** brings together business, professional, local authorities and civil society organisations. Its purpose is to make the case for a European energy policy that places a much greater, more meaningful emphasis on energy efficiency and savings. In particular it is arguing for the current 20% energy savings target to be binding.

The **European Climate Foundation** (ECF) was established in early 2008 as a major philanthropic initiative to promote climate and energy policies that greatly reduce Europe's greenhouse gas emissions and to help Europe play an even stronger international leadership role to mitigate climate change.

The **Building Performance Institute Europe** (BPIE) is dedicated to improving the energy performance of buildings across Europe, and thereby helping to reduce CO_2 emissions from the energy used by buildings. Their mission is to support the development of ambitious, yet pragmatic building-related policies and programs at EU and Member State level and to drive their timely and efficient implementation by teaming up with relevant stakeholders from the policy and research community, the building industry and consumer bodies.

BUILD UP is the European web portal for energy efficiency in buildings. It serves the needs of building professionals,

public authorities and occupants alike. The aim is to reduce the energy consumption of buildings across Europe by transferring best practices to the market and fostering their uptake.

In order to help the construction industry reach the 20/20 targets and achieve energy neutral buildings and districts by 2050 the European Construction Technology Platform (ECTP) has set up the **Energy Efficient Building European Initiative (E2B EI)**, steered by the **Energy Efficient Buildings Association (E2BA)** founded in November 2008. This is a Europe wide industry driven research and demonstration programme for energy efficient buildings and districts.

Energy-Cities is a non-profit organisation of European municipalities, founded in 1990, committed to sustainable energy policies and active in sharing their experience and know-how with their members. The association represents about 1,000 members from 26 Member States.

In terms of construction products, the main actors is the building's energy efficiency debate are **EURIMA** and **PU-Europe**. EURIMA is the European Mineral Wool Manufacturers Association and PU-Europe is the European voice of the polyurethane (PUR / PIR) insulation industry.

Supported by the EU, different projects have also been set up: the **Shelter-IEE project** is a project bringing Social Housing organisations and European professionals for testing and promoting project teams in Energy Renovation. **Trainrebuild-IEE** Project aims at encouraging retrofitting in a wide range of residential buildings. To successfully reach building owners, training materials presenting technical and financial aspects of residential retrofitting works, have been produced. **LEEMA-FP7** Project's goal is the development of a new generation of inorganic insulation materials and building-insulation masonry components. The LEEMA consortium comprises 14 partners, among whom 6 large industries related to building materials, 2 SMES, 2 Universities and 2 Building Research Institutes as well as one large engineering company and the Architects' Council of Europe.

The **International Union of Property Owners** (UIPI), the **Architects' Council of Europe** (ACE), the European Trade Association for the Promotion of Cogeneration **(COGEN Europe)**, the European Council for an Energy Efficient Economy **(ECEEE)** and the **European Heating Industry Association** (ehi) are some of the many other relevant stakeholders that are involved in the European energy efficiency dossier.

3.6.Current Financing Mechanisms for EE in Building Sector

The BPIE study on the use of financial instruments in Member States regarding energy efficiency identifies three key multilateral financial organisations playing a role in financing improvements in energy performance in buildings at European level:

- The European Investment Bank (EIB);
- The EU itself;
- The European Bank for Reconstruction and Development (EBRD).

3.6.1. The European Investment Bank (EIB)

The European Investment Bank (EIB) provides the public and private sectors with a wide range of financial instruments for energy efficiency investments within and outside the EU:

Intermediated lending, including framework loans are available through financial intermediaries in the banking sector or through public authorities, energy service companies or public-private partnerships. It also provides indirect financing to energy efficiency projects via investment funds that have different geographical coverage and are established with the private sector and a range of international financial institutions.

Risk-sharing instruments combining loans with grants and providing technical support, partnering with the EC or national authorities. For example, the EEEF (European Energy Efficiency Fund) launched jointly with the EC and other investors in 2011 to provide finance for sustainable energy projects. The Fund has a capital of € 265 million and also includes technical assistance to projects financed by the facility. The first project is the renovation of the Jewish Museum in Berlin which also involved the use of energy performance contracting.

To support project preparation and operation, the EIB manages and participates in several initiatives and programmes.

ELENA (European Local Energy Assistance) forms part of the EIB's broader effort to support the EU's climate and energy policy objectives. This initiative, managed by the EIB and funded by the Commission, helps local and regional authorities to prepare large-scale energy efficiency and renewable energy projects.

JESSICA – Joint European Support for Sustainable Investment in City Areas – is also an innovative initiative that uses existing Structural Fund grant allocations to support urban development including energy efficiency projects. 11 Member States (BG, CZ, DE, EE, EL, SE, IT, LT, PL, PT and UK) have moved part of their ERDF allocation into specific JESSICA projects (both for EE and RES) for a global amount of around €1.6 billion (of which 75% are ERDF resources), resulting in the creation of 16 holding funds (of which 15 are managed by the EIB), while 4 financial instruments are set up without a holding fund.

The EIB lent €125 million to finance the refurbishment of 365 multi-storey residential buildings in Bucharest. The EIB loan financed up to 75% of the programme's investment cost, covering thermal rehabilitation, including the thermal insulation of walls, windows, roofs and cellars of multi-family residential buildings containing some 20 000 apartments.

3.6.2. European Union

The Structural Funds and the Cohesion Fund are the financial instruments of EU regional policy for the period 2007-2013. They are intended to narrow the development disparities among regions and Member States. Structural and Cohesion Funds (2007-2013) may be used for energy-efficiency and renewable-energy investments, not only in public and commercial buildings, but also in existing housing.

The new proposal for an EU Cohesion Policy for 2014-2020 places a clear emphasis on supporting investments related to EU energy targets and suggests nearly doubling the amount allocated to sustainable energy in the current period, including for building renovation.

Cohesion Policy Funds have helped to trigger more investments, especially in the building sector, even though they have a wider remit than energy efficiency. Between 2007 and 2013, around €4.6 billion is available for energy efficiency. Since 2009, up to 4% of the national European Regional Development Fund (ERDF) allocations can be used for energy efficiency improvements and renewable energy investments in existing housing that supports social cohesion. If the Commission's proposals are maintained for the next phase (2014-2020), the funds available for energy efficiency and renewable energy will almost double, reaching to €17 billion.

The Commission has also proposed that the current 4% upper limit on spending on sustainable energy refurbishment of existing housing should be abolished, leaving Member States free to invest as much as they want in energy efficiency in housing. The Commission has also proposed that at least 5% of ERDF resources should go to integrated actions run by cities, to tackle the economic, environmental, climate and social challenges in cities.

The EU also provides funding for buildings through the 7th Framework Programme for R&D (2007-2013) which will soon be replaced by the Horizon 2020 programme (2014-2020). Under the Horizon 2020 programme, the EU Commission proposes that € 6.5 billion be allocated to energy research and innovation. Horizon 2020 includes:

The Energy-efficient buildings (EeB) PPP which consists of a financial envelope of €1 billion to boost the construction sector, and aims at promoting green technologies and the development of energy efficient systems and materials in new and renovated buildings.

With small and medium-sized enterprises (SMEs) as its main target, the Competitiveness and Innovation Framework Programme (CIP) supports innovation activities (including eco-innovation). It also promotes the increased use of renewable energies and energy efficiency. The CIP runs from 2007 to 2013 with an overall budget of € 3.6 billion. Regarding eco-innovation activities, a whole part is dedicated to sustainable building products.

The CIP is divided into three operational programmes, one of them being the Intelligent Energy Europe Programme (IEE). The CIP will be replaced by the Programme for the Competitiveness of enterprises and SMEs (COSME#) which will run from 2014 to 2020, with a planned budget of € 2.5bn.

3.6.3. European Bank For Reconstruction And Development (EBRD)

The European Bank for Reconstruction and Development (EBRD) was created to support the development of market economies in the region following the widespread collapse of communist regimes. The principal forms of direct financing provided by the EBRD are loans, equity and guarantees.

Over the years, it has provided financing that has had an impact on buildings. It was very active in improving the performance of district heating systems and also helped fund Third Party Financing companies in new Member States, starting in the 1990s. Of the new Member States, it has set up dedicated funds in Bulgaria, Romania and Slovak Republic that have helped fund renovation of buildings.

The EBRD has an initiative called the Sustainable Energy Initiative. From 2006 to 2011, the EBRD invested € 8.8 billion in 464 sustainable energy projects in 29 countries. The total project value was 46.9 billion, showing a strong leveraging effect. This represented 30% of the EBRD's activities. The EBRD has been transitioning away from the new EU members, apart from

Bulgaria and Romania, where they the EBRD remains quite active. The refurbishment of buildings has not been a distinct work area and many of the activities in buildings are integrated into the theme of industrial energy efficiency, which includes commercial buildings. Until recently, the EBRD saw a difficult business case for investing in energy efficiency in buildings due to, in part, the need for bundling and because of the difficulty in developing a bankable project that is interesting to investors.

3.7. Future Prospects on Other Possible Financing Mechanisms for EE in Building Sector

On 31 July 2012, the EC adopted the Communication on a strategy for the "sustainable competitiveness of the construction sector and its enterprises" – COM (2012) 433. The action plan proposes five key objectives:

- Stimulating favourable investment conditions;
- Improving the human-capital;
- Improving resource efficiency, environmental performance and business opportunities;
- Strengthening the internal market and
- Fostering the global competitiveness of EU companies.

The Communication specifically refers to the Structural and Cohesion Funds and indicates that these may be used for energy-efficiency investments not only in public and commercial buildings but also in existing housing. In addition, the communication explains that financial-engineering instruments such as JESSICA offer the possibility to invest in small urban development and regeneration projects that would not be financed through normal market mechanisms. Equity funds and loan guarantees from the European Investment Bank (EIB), the European Bank for Reconstruction and Development (EBRD) and the European Energy Efficiency Fund (EEEF) together with project development assistance to final recipients, such as ELENA, also provide opportunities to leverage public grants. As an indication, the Communication refers to the €120 billion in loans available from the EIB.

Commissioner Johannes Hahn is in charge of the EU Regional and Cohesion Policies. Current regional funding programmes will run until 2013. Within the EU cohesion policy package published on 6 October 2011, we find an overarching regulation setting out common rules and specific regulations for the European Regional Development Fund (ERDF) and the Cohesion Fund. These are now discussed by the Council and European Parliament as this is linked to the broader context of the EU budget and the Europe 2020 strategy. The new Regulations should enter into force in 2014.

The EC has already proposed to allocate € 336 billion for Cohesion policy instruments in 2014-2020. The final allocations by Member State, and lists of eligible regions by category, will only be decided after the final adoption of the package on the table today. The ERDF proposal includes earmarking 20% of the funds for investments in the low-carbon economy (article 4) in order to make Member States spend a minimum percentage of their ERDF allocation on energy efficiency.

The EC has published the Communication on the Smart Cities and Communities Initiative on 10 July 2012. The Smart Cities and Communities (SCC) Initiative is an industry-led initiative that addresses multi-sectorial issues in the areas of energy, transport and information and communication technologies (ICT). It aims at stimulating the development of innovative solutions for the enhancement of resource and energy efficiency, as well as the sustainability of urban transport.

The SCC Initiative will pool research resources from the energy, transport and ICT sectors to concentrate them on a number of demonstration projects, which will be implemented in partnership with cities. These projects would aim at:

- Stimulating the market entry of innovative and integrated energy and transport technologies and services, as well as enabling ICT for urban applications;
- Testing solutions to bridge innovation gaps and to stimulate the convergence of industrial value chains in the energy, transport and ICT sectors;
- Taking market-oriented measures to accelerate the commercial deployment of innovative technologies and
- Ensuring coherence between regulatory and standardisation policies by rationalising the portfolio of city initiatives.

In particular, the Communication lists the following areas to be addressed by the SCC Initiative:

- Smart buildings and neighbourhoods;
- Smart supply and demand systems and services for better information to citizens;
- Sustainable urban mobility;
- Smart and sustainable digital infrastructures and
- Strategic planning for identification, integration and optimisation of flows.

In 2013, EUR 365 million of EU funds will be allocated for the development of these projects. The Communication has been sent to the European Parliament and the Council, who may decide to formally respond to it.

The EC report on financial support for energy efficiency in buildings is expected by the end of 2012. The Energy Performance of Buildings Directive (EPBD) repeals Directive 2002/91/EC and extends its scope to cover buildings of less than 1 000 m^2 in order to achieve further energy savings. It requires Member States to ensure that all new buildings by 2020 and all new public sector buildings by 2018 are nearly-zero energy buildings. Member States are also required to develop frameworks for nearly zero energy buildings. Article 10 (5) of the Directive requires the EC to present an analysis of the effectiveness of the financial instruments supporting measures for energy efficiency in buildings. This analysis, which would take the form of a report, would examine the various EU and national financial instruments supporting energy efficiency in buildings and provide recommendations in order to unlock the potential for reducing energy consumption in the building sector in the EU.

3.8. Recommendations for Further Improvements EE And Its Financing in Building Sector

As stated on the Renovate Europe website, *"Of Europe's existing buildings, only about 1.2% are renovated and about 0.1% demolished in any given year. Even if the 1.2% of buildings being renovated incorporated the highest standards of energy efficiency, the European Union would miss its 20% energy saving targets for 2020. In fact, this alone will deliver almost zero absolute reductions in energy use from the built environment."* The EU still has a long way to go and some of the barriers are described below:

3.8.1. The Role of Member States

The Cohesion Policy regulations do call upon Member States to come up with targets on energy savings, renewables, recycling and biodiversity in line with the EU 2020 climate goals. However, as the regulations stand today, Member States are free to set their own targets. This flexibility is of one the main reasons why these legislative texts are accepted by the Council but it makes it more difficult for the EC to ensure that the national targets add up to energy efficient measures.

More so, Member States are slow to implement the existing legislative framework. On 20 July 2012, less than half of the Member States had met the transposition deadline for the EPBD recast. It is regrettable that such delays occur regularly. Only five Member States had met the earlier deadline (30 June 2011) for submitting information on financing measures taken to promote the EPBD objectives. Another example was given by a new study conducted by the Tipperary-based Sustainable Energy for the Rural Village Environment (SERVE). It shows that Ireland will have to double its efforts in making dwellings more energy-efficient or it will have to pay fines to the EC for not complying with the EU's newly adopted Energy Efficiency Directive.

3.8.2. Importance of European Funds

The EC has proposed to almost double the funds that will be made available for energy efficiency and renewable energy, reaching € 17 billion for the next phase (2014-2020). The Cohesion Policy can provide needed leverage to help public authorities speed up the renovation of the buildings they own as proposed in the draft Energy Efficiency Directive.

More so, the Energy Coalition believes that the challenge of absorbing all available funding can be overcome by new instruments such as technical assistance programs and new tools being developed in the context of the Energy Efficiency Directive (i.e. national energy efficiency funds which would help to streamline funding, concentrate assistance and provide a one-stop shop).

3.8.3. Barriers to Investments

The Copenhagen Economics study published on 5 October 2012 on the "multiple benefits of investing in energy efficient renovation of buildings" identifies structural barriers holding back investments in energy efficiency and recommends the following actions:

- **Barrier 1:** Rent regulation in both publicly and privately owned residential houses, and to a certain extent commercial buildings, often prevents landlords from passing on the costs for improvement in the quality of the buildings, including a lower energy bill to tenants. This greatly reduces the landlords' incentive to invest in energy efficient renovation of buildings. This is a problem as such investments would reduce the total housing bill for the tenant.
  - **Action:** Modernise rent regulation to allow landlords and tenants to split the gains from energy efficient renovation of buildings. This is largely without direct costs to public finances.

- **Barrier 2:** Budget management of publicly owned buildings tend to focus on shorter term cash flows as opposed to longer term running costs. This punishes projects with higher upfront costs as counterpart to lower future operating costs i.e. a lower energy bill. In addition, the discount rates applied to assess public investments have not followed the general current trend towards lower market rates.
  - **Action:** Reform budget management of publicly owned buildings to allow for a longer term focus in investments and renovation of buildings. This will reduce longer term operating costs in the publicly owned building stock.
- **Barrier 3:** The relatively widespread favourable tax treatment of heating and electricity use in buildings reduces gains from otherwise viable energy savings projects.
  - **Action:** Remove/reduce such tax advantages to render energy efficient renovation of buildings more attractive, and provide direct net revenue gains to public budgets.
- **Barrier 4:** Handling of risk in renovation projects has traditionally been a weak point. Investors may face high up-front costs, which imply that they run more substantial risks than for a similar project with lower up-front costs. In this respect it is an important question how you set up, monitor and evaluate performance contracts that ensure that the owner/user of the building de facto gets the promised benefits required to pay back the substantial and non-reversible investment cost over time. Concepts such as Energy Service Companies (ESCO) and Energy Performance Contracts (EPC) which are explicitly designed to align risks and responsibility for the outcome of such projects have not been fully developed to deliver on deep renovation projects. In fact, there are examples of countries not allowing the use of EPCs in the public sector.
  - **Action:** Well-designed risk-sharing programmes can help government as well as private building owners to realise cost savings with very limited budget costs.

3.8.4. Market Limits

An EC report outlining recommendations on further private sector financing into the energy efficiency market is planned for the end of 2012. Yet, there is evidence that market players do not implement the expected behavioural changes. According to a draft report published by the Energy-efficient Buildings PPP, the market has to overcome the following difficulty:

- The probability of a market failure is rising since stringent Directive targets are set, whereas the building sector is unable to transform them into opportunities, either because the supply is not adequate (too expensive) or the demand is not ready (too high upfront investment costs).
- Reducing the probability of a major market failure requires that all the stakeholders of the building sector (manufacturers, constructors, energy service companies) accelerate and deepen refurbishment, while keeping construction costs under control. Increased technological, social and business innovation is therefore needed now and in parallel to address several issues:
- Most technology solutions are too expensive: volume effects to reduce unit manufacturing costs cannot be obtained in a highly segmented building stock. And technological innovation is still needed to find solutions

complying with constraints, such as aesthetics, acoustics and health at affordable prices.

» Construction processes lack productivity and quality: the most promising technologies will deliver savings if and only if their building integration has been carried out properly and controlled step by step. Innovation on construction processes is needed to find reliable and worker-centric approaches where existing gaps between performance by design and performance at commissioning are narrowed down.

» Renewable energy sources have not yet reached mature integration into existing or new buildings to provide users with heat and/or electricity that are independent from fossil fuel uses. Innovation is still needed to optimize renewable energy impacts and uses at building and district level.

» The refurbishment market (supply and demand) must be better understood and some questions remain unanswered, such as the financial assessment refurbishment market; the users' behaviour and its impact on energy savings.

We can conclude by quoting the BPIE study on financing energy efficiency: "The EC is actively trying to provide a larger percentage of Structural Funds to be used for improvements in the energy performance of buildings and to work with Member States who are currently not using their potential allocation to their full potential. Undoubtedly, more innovative ideas and initiatives will be necessary. Deep renovations are expensive, even if they are cost effective. They require considerable up-front capital that is normally beyond the support of any single financial instrument. Thus, there will be the need for some form of bundling. New strategies to secure sufficient financing for the deep renovation of the European building stock are needed which ideally bring together private and public investment streams. Policy-makers and the relevant stakeholders in the building sector, e.g. the real estate community, should elaborate which policy framework would enable the necessary investments. This would not only create new investment opportunities for the private sector but would also reduce the burden on public budgets."





‘grants from the Government side are not considered for the building sector in all countries’

4

SWOT ANALYSIS of EUbuild EE PARTNER COUNTRIES

Strength-Weakness-Opportunity-Threat (SWOT) analysis can be regarded as a strategic planning method used to evaluate the strengths, weaknesses/limitations, opportunities, and threats involved in a project. It involves specifying the objective of the project and identifying the internal and external factors that are favourable and unfavourable to achieve that objective.



Figure 11. SWOT analysis matrix

Figure 11 represents a matrix formed by SWOT analysis and can be detailed as follows:

- Internal factors – The internal factors may be viewed as strengths or weaknesses depending upon their impact on the defined objectives. What may represent strengths with respect to one objective may be weaknesses for another objective.
  - Strengths: characteristics that give it an advantage over others
  - Weaknesses (or Limitations): characteristics that place a disadvantage relative to others
- External factors – The external factors may include macroeconomic matters, technological change, legislation, and socio-cultural

changes, as well as changes in the markets or competitive position.

- Opportunities: external chances to improve in the environment
- Threats: external elements in the environment that could cause trouble

Table 1. Main questions asked for the countries' SWOT analyses

STRENGTHS:	WEAKNESSES:
› What are your advantages? › What do you do better in your country? › What is giving you the most benefit? › What unique resources do you draw upon? › What do others see as your strengths?	› What are you avoiding/hesitating? › Where do you lack resources? › What obstacles are in your path? › Where are you losing? › What needs improvement? › What do stakeholders complain about?
OPPORTUNITIES:	**THREATS:**
› What new trends or emerging markets have possibilities? › What product or service niches are promising? › What strengths could you turn into opportunities? › What are some new needs or desires of building sector? › How could you take advantage of new technologies? › P.S.: Exploiting your strengths or overcoming weaknesses can also provide you with new opportunities.	› What barriers are in your way? › What external conditions threaten your country and building sector? › Are other end-use sectors getting stronger or more aggressive? (eg. industry) › Do you have problems about financing? › Do you have weak business systems or processes? › Is the economics/climate hurting your sector's growth? › Could changing technologies or government regulations threaten you? › P.S.: Remember that every business goes through cycles up and down. When you are up, market pressures are at work to level the playing field by bringing you down. (rebounding effect)

While preparing the SWOT analysis of the partner countries about financing EE in the building sector, main questions asked can be seen from Table 1. As a base for this analysis as well as the introduction of each country; geographical, administrative, demographic, economic and energy related information were also given together with need assessment of these countries.

4.1. Albania



Figure 12. Map of Albania

Geographical Information (Figure 12):

- Location of Albania is on the South-eastern Europe, bordering the Adriatic Sea and Ionian Sea, between Greece in the south, Macedonia in east, Montenegro in northwest and Republic of Kosovo to the North.
- Area of Albania is 28 880 km^2.

Administrative Information (Figure 13):

- Capital of Albania is Tirana.
- As can be observed from Figure 2, Albania is divided into 12 administrative counties. These counties include 36 districts and 373 municipalities.
- 72 municipalities have city status. There are overall 2980 villages/communities in all Albania.
- Each district has its council which is composed of a number of municipalities. The municipalities are the first level of local governance, responsible for local needs and law enforcement.

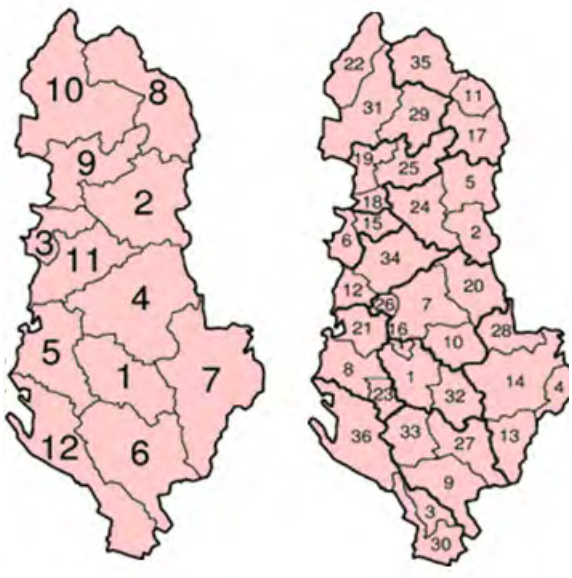


Figure 13. Regional breakdown of Albania according to administrative division (Islami and Hido, 2012)

Demographic Information:

- According to July 2012 estimation the population of Albania is about 3.002.859, including approximately 1 million emigrants.
- Age structure can be summarized as follows:
  - 0 -14 years: 21.4% (male 337.364/female 303.669)
  - 15-64 years: 68.1% (male 996 666/female 1 043 472)
  - 65 years and over: 10.5% (male 148.151/female 165.345) (2011 estimate)
- On the basis of 2012 estimation the below stated figures can be given:
  - Population growth rate: 0.28%
  - Birth rate: 12.38 births/1,000 population
  - Urbanization: Urban population: 52% of total population (2010 figure)
  - Rate of urbanization: 2.3% annual rate of change (2010-15 estimate)
- Life expectancy at birth:
  - Total population: 77.59 years
  - Country comparison to the world: 61
  - Male: 74.99 years, Female: 80.49 years (2012 estimate)

Economic Information:

- Albania, a formerly closed, centrally-planned state, is making the difficult transition to a more modern open-market economy. Macroeconomic growth averaged around 6% between 2004 and 2008, but declined to about 3% in 2009-11.
- Inflation is low and stable. The government has recently adopted a fiscal reform package aimed at reducing the large grey economy and attracting foreign investment.
- Remittances, a significant catalyst for economic growth declined from 12-15% of GDP before the 2008 financial crisis to 8% of GDP in 2010, mostly from Albanians residing in Greece and Italy.
- The agricultural sector, which accounts for almost half of employment but only about one-fifth of GDP, is limited primarily to small family operations and subsistence farming because of lack of modern equipment, unclear property rights, and the prevalence of small, inefficient plots of land.
- Energy shortages because of a reliance on hydropower - 98% of the electrical power produced in Albania - and antiquated and inadequate infrastructure contribute to Albania's poor business environment and lack of success in attracting new foreign investment needed to expand the country's export base.

Energy Related Information:

- Figure 14 presents the primary energy production/supply from the energy resources. It can be stated that continuous importance of electricity, fuel oil and diesel fuel shall correspond approximately 79% of the primary energy production, meaning dependence on fossil fuels and electricity, while it was about 69% in 2010.

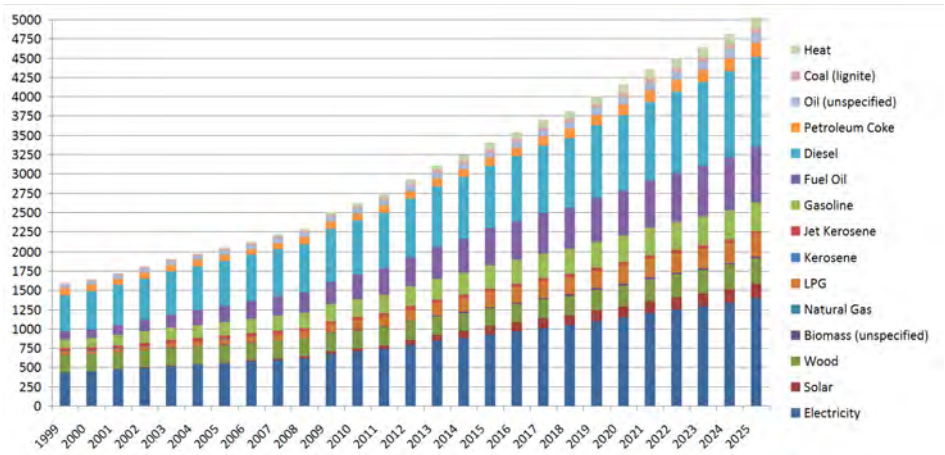


Figure 14. Primary energy production/supply from 1999 and estimation up to 2025 (ktoe)

» Figure 15 shows share of final energy consumption by sectors and building sectors comprise 33% (residential and services) after the transport sector with 44% sharing. In household/residential buildings, the energy consumed more in space heating, air conditioning, domestic hot water, cooking, lighting, electric appliance usage.

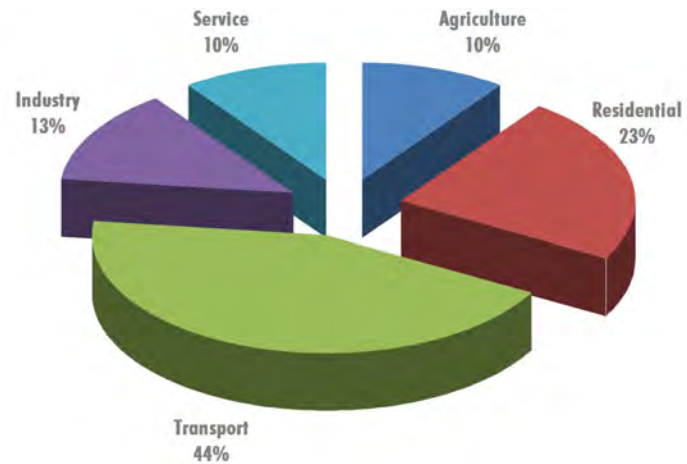


Figure 15. Sectoral breakdown of the final energy consumption

» When the energy saving potentials of the sectors are analyzed, considering the building sector, it was about 30% in 2010 and in the 2020 estimation it shall be 25%, which can mean realization of energy efficiency activities within the sector.

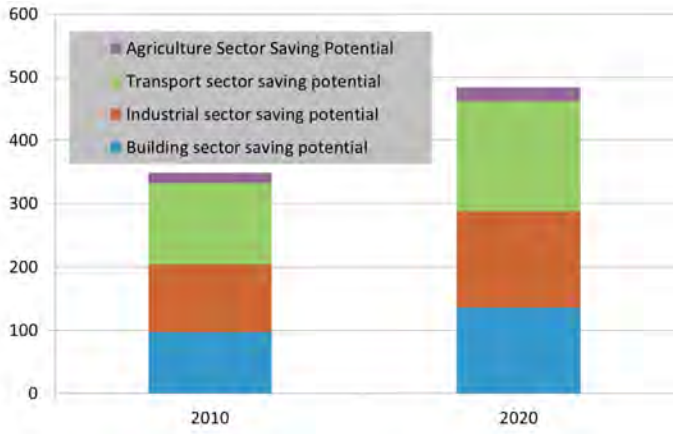


Figure 16. Energy saving potentials, ktoe for 2010 and estimation for 2020

Need Assessment:

» It is task of Albanian Government to show good will for improvement of EE by established finance scheme and the best will firstly to have the establishment of the EE & RES Fund (requested from both draft laws) and for securing finance especially grants and soft loans for EE Program into Building Stock

» New Draft Laws which will be approved by the end of 2012 are being discussed in the Parliamentary Commission at the moment. A lot of work should be done for preparation of Secondary Legislation for implementation of EE measures especially into Building Stock.

» Implementation of National EE Action Plan (NEEAP) means rising finance and if this in not happen than will be very difficult for our country to fulfil EE targets.

» Albanian Government should revised Energy Building Code based on the EU Directive of "Energy Performance into Buildings."

» Albanian Government should implement EE Measures first into Public Building Stock by showing in this way leading role in this field.

SWOT Analysis - ALBANIA

STRENGTHS:

- High Energy Saving Potential is in all economic sectors
- Lower Unit Cost (Euro cent/kWh) of energy savings measures than unit prices of energy commodities
- The highest energy saving potential in Building Stock, which will help to maintain same economic growth and reduce trade deficit for the country.
- Great advantage to learn and to adapt under each country conditions the most suitable EE lessons of other New and Old EU Member States

WEAKNESSES:

- Educating/training of Albanian society (Government, Universities, household owners, private and public building owners, engineers, construction companies and Banks) to think more energy supply projects rather than energy savings projects
- Not completed Primary Legal base regarding EE in building and needed revisions in secondary legislation
- Losing a lot of time to prepare projects on EE especially to be easy understandable from the Banks
- No Energy Efficiency Fund;
- No ESCO concept approved and missing legal to develop projects especially in public buildings stock

OPPORTUNITIES:

- New trends or emerging markets related with Building Stock of all categories mostly in the direction of high quality, meaning EE
- Qualitative materials for EE Buildings
- Reachable energy saving targets by implementing the measures in building sector Albania
- A lot of liquidity in Albanian Banks
- Carrying out energy awareness campaign for showing up in the simply way the advantages of new technologies to general public and all stakeholders related with Building Stock

THREATS:

- Not fully placed legal base of implementation of EE measures in Building Stock
- Real risk that country will get less money from the WB, EBRD, KfW, EU Regional EE Programmes, if Albania move slowly in this process
- The Banks looking more for big projects (less transaction cost and less requirements like in the industry) than Buildings sector (need bounding)
- Banks (leaded from Pro Credit) full with liquidity, but there are barriers for financing Building Sector (due to actual worldwide crises in this sector)
- Technical and especially Energy Audits and Feasibility Studies need to be prepared from consultant to be easy understandably from the Banks
- Construction sector slow down for some years and concentration of this sector should to shift more in the direction on improvement of EE Building Stock situation

4.2. Bosnia and Herzegovina



Figure 17. Map of Bosnia and Herzegovina

Geographical Information (Figure 17):

- The country's name comes from the two regions Bosnia and Herzegovina (BH), which have a very imprecisely defined border between them. Bosnia occupies the northern areas which are roughly four fifths of the entire country, while Herzegovina occupies the rest in the south part of the country which accounts total area of 51 066 km^2.
- BH is bordered by Croatia to the north, west and south, Serbia to the east, and Montenegro to the southeast, having 24 km of the coastline on the Adriatic Sea.

Administrative Information:

- BH has several levels of political structuring, according to the Dayton accord. The most important of these levels is the division of the country into two entities: Republika Srpska and the Federation of Bosnia and Herzegovina.
- The Federation of Bosnia and Herzegovina covers 51% of Bosnia and Herzegovina's total area, while Republika Srpska covers 49%.
- The entities, based largely on the territories held by the two warring sides at the time, were formally established by the Dayton peace agreement in 1995 because of the tremendous changes in Bosnia and Herzegovina's ethnic structure.
- The third level of Bosnia and Herzegovina's political subdivision is manifested in cantons. They are unique to the Federation of BH entity, which consists of ten of them. All of them have their own cantonal government, which is under the law of the Federation as a whole. Some cantons are ethnically mixed and have special laws implemented to ensure the equality of all constituent people.
- The fourth level of political division in BH is the municipalities. The Federation of Bosnia and Herzegovina is divided in 74 municipalities and Republika Srpska in 63.

Demographic Information:

- Large population migrations during the Yugoslav wars in the 1990s have caused demographic shifts in BH.
- No census has been taken since 1991, and political disagreements have made it impossible to organize one. Therefore all data dealing with population are subject to considerable error because of the dislocations caused by armed conflict and ethnic cleansing from 1992-1995.
- According to the state Agency for statistic, in 2010 BH had 3 843 126, meaning a decrease of 500 000 since 1991.
- Density of population is 71 inhabitants per km^2.
- Population growth rate in 2010 was -0.41 %.

Economic Information:

- » According to Eurostat data, BH's GDP (corrected on the basis of power purchasing parity) per capita stood at 30 per cent of the EU average in 2008.
- » Annual inflation is the lowest relative to other countries in the region at 1.9% in 2008.
- » Real GDP growth rate was 5% for period from 2004 to 2008 according to the Central Bank of BH and Statistical Office of Bosnia and Herzegovina.
- » GDP, GDP growth rate and GDP per capita were 12.5 billion EUR, - 2% and 3.258 EUR in 2010, respectively. 20% of GDP is regarded as energy related costs.
- » The service sector accounts for a large part of the economy, 64.9% of GDP, while industry accounts for 24.7% and agriculture for 10.4 % of GDP.

Energy Related Information:

- » In 2010, primary energy production and total primary energy supply values were 4.47 Mtoe and 5.95 Mtoe, respectively.

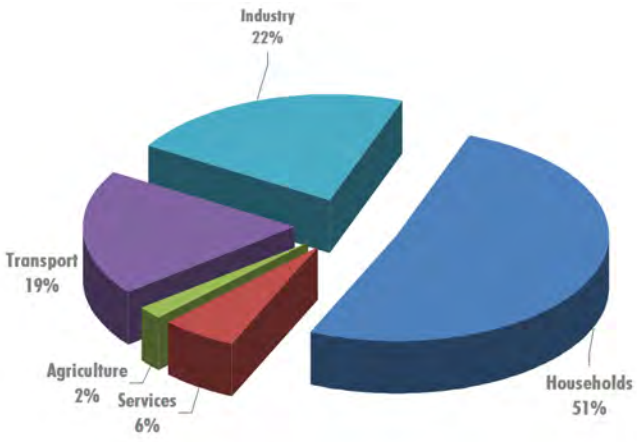


Figure 18. Energy consumption per sectors, 2008 (Husika, 2012)

- » As can be seen in Figure 18, building sectors (residential/household and services) accounts 57% (total of households and services) in total energy consumption.



Figure 19. Energy saving potential targets according to National EE Action Plan (Husika, 2012)

» Figure 19 presents energy saving potential targets for industry, building (residential and service) and transport sectors according to National EE Action Plan. As can be understood from the figure, while in 2011 no saving could be possible, in 2018 the target shall be 6.52% and 16.80% for residential and service sectors, respectively, which is totally 23.32% for whole building sector.

Need Assessment:

» Operation of funds for EE in buildings should be available.

» Establishment of state agency shall be stated as crucial, which will be in charge for NEEAP implementation and EU aid.

» Faster implementation of existing legislation should be performed.

» Improvement of existing regulations should be done.

» Education/training of all stakeholders (authorities, enterprises, users etc.) should be handled carefully.

SWOT Analysis – BOSNIA AND HERZEGOVINA

STRENGTHS:

- Big potentials for EE (low EE in baseline)
- Skilled human resources and capacities for implementation of EE projects
- Modern legislation
- Few pilot projects implemented
- National target established

WEAKNESSES:

- Inadequate approach to EE issue on the part of authorities
- No operative fund for financing of EE in buildings
- No reduced VAT for EE materials and systems
- Lack of administration capacity
- High capital costs
- Unclear administrative procedure
- Overlapping of competences
- No multidisciplinary approach
- Non-commercial price of energy
- There is no motivation of residents for EE due to inadequate tariff system

OPPORTUNITIES:

- Attraction of investors
- Domestic employment
- Strengthening of ESCO business
- Negative costs of CO_2 emission reduction
- Available EU funds
- Reduction of energy bill for imported energy
- Improvement of energy security

THREATS:

- Lack of capacities for participation in international projects/ initiative
- Reputation of B&H in terms of risk of investment
- International funds have financed more EE in industry
- Low rate of economy growth (low rate of new building, relatively low price of buildings)

4.3. Macedonia



Figure 20. Map of Macedonia

Geographical Information (Figure 20):

- Republic of Macedonia is sovereign independent country since 1991 and surrounded by Albania, Bulgaria, Greece, Kosovo and Serbia.
- The area of the country is 25.713 square kilometres.

Administrative Information:

- Macedonia is consisted of 84 municipalities. According to the population there are 14 municipalities with population over 50.000 people, 38 municipalities with population between 10.000 and 50.000 people, and 32 municipalities with population less than 10.000 people.
- Rural communities are represented in big percentage in almost all regions, but most of the population lives in major urban centres, which leads to the uneven concentration of population within the regions. Specifically in the Republic of Macedonia is the absence of transitional forms of settlements between the city and village.
- In essence there are two separate types of settlements, urban (80% of the population) and rural (20% of the population). Moreover, from the total urban population (80%) - one city (Skopje) absorbs half of the population, while others live in several cities with an average size.

Demographic Information:

- According to the data from the last Census of Population, Households and Dwellings in 2002, the Republic of Macedonia had 2 022 547 inhabitants, which is 3.9% more compared with the Census in 1994.
- According to population estimates (on 30.06.2010), the Republic of Macedonia has 2.055.004 inhabitants, and the population density is 80 inhabitants per km^2.
- As a result of the declining birth rate and the increasing rate of general mortality in the last 10 years, the rate of natural increase has dropped from 4, 5‰ in 2000 to 2.5‰ in 2010.
- The media age of the population is 37 years while 41.5% of the population is under 30 years old.

Economic Information:

- The national income per capita was reported to be $ 4.570 in 2011.
- GDP, GDP/capita and GDP growth rate were € 7.058 mil, € 3.553and 2.9%, respectively in 2010.

Energy Related Information:

- In 2010, primary and final energy consumption figures were 2837 ktoe and 1899 ktoe, respectively.

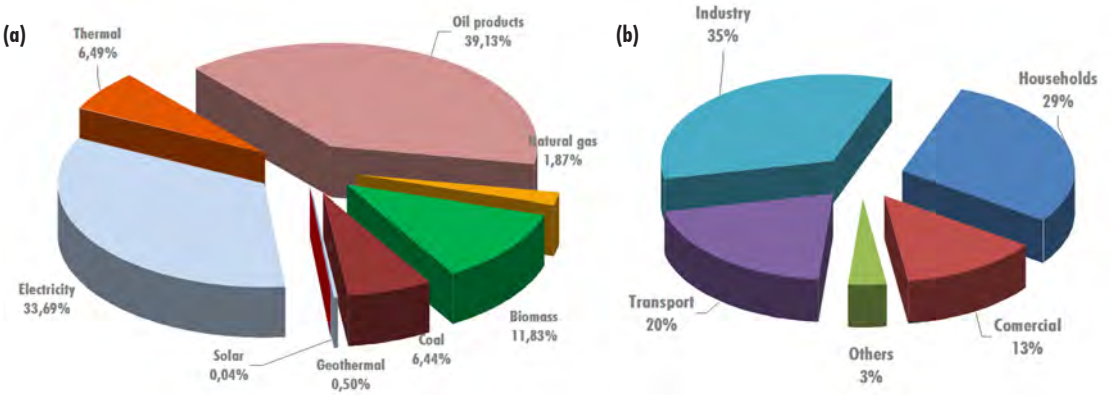


Figure 21. Final energy consumption a) by energy source, b) by sectors, 2006 (Dimitrova, 2012)

» According to the energy source as well as by sectors, final energy consumption breakdown can be shown in Figure 21. As can be concluded from the Figure 21-a, fossil fuels constitutes about 44% of the final energy consumption and from Figure 21-b, the most important sector in terms of final energy consumption is the building sector (household and commercial) with total 42.3% share.

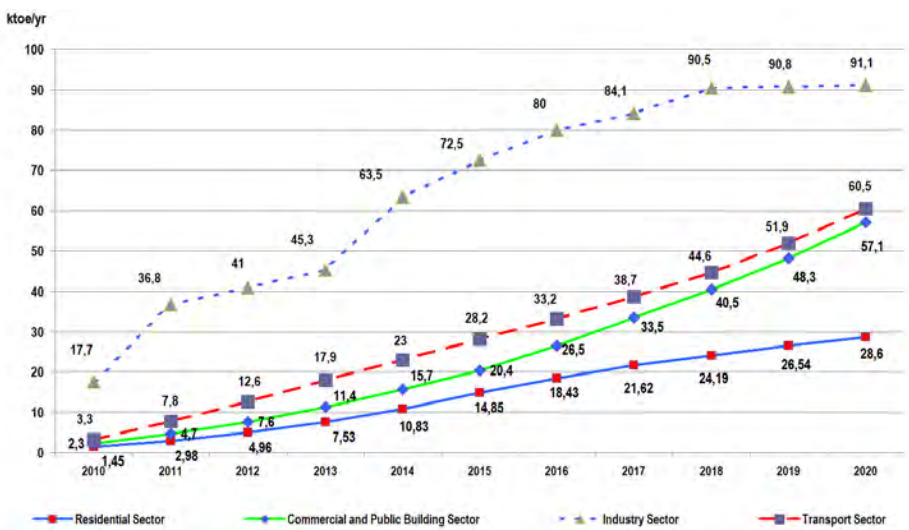


Figure 22. Energy saving potential targets according to EE Strategy until 2020 (Dimitrova, 2012)

» Figure 22 presents energy saving potential targets for industry, building (residential and commercial & public buildings) and transport sectors according to National EE Strategy. As can be understood from the figure, up to 2020 57.1% for residential, 28.6% for commercial & public buildings shall be possible to gain by means of energy efficiency measures.

Need Assessment:

» Building stock inventory and reconstruction road map should be developed.

» Minimum saving regulations on a short and medium term basis should be adopted.

» Targeted and well-structured awareness campaigns for different stakeholders should be organized on the benefits of EE in the long term.

» Governmental lobbying activities at international donor community and financial institutions are crucial to offer support in the EE sector.

» Establishment of National fund for energy efficiency and introduction of energy certification of buildings is anecessity;

» Secondary legislation should be strengthened i.e. recasting of Energy Performance Certification considering the existing buildings, as well.

» Mandatory surveying and energy efficiency auditing together with bonus-malus for the database formation and good monitoring i.e. known saving potentials, reference values are very important.

» Public-private partnership, energy performance contracting, third party financing applications should be considered for demonstration and formation of best practices.

» Low interest rate loans/credits, tax exemptions for EE materials, equipment, systems should be provided.

SWOT Analysis - MACEDONIA

STRENGTHS:

- Primary legislation in place in accordance with EU Directives
- Strong position in the Energy Community and existence of all strategic documents for the further development of EE
- Strong support from the non-governmental organizations
- Increased interest by the Banks in offering EE construction loans
- Established competition between the municipalities in preparation of EE Action Plans
- Strong donor support in renovation projects in the past 5 years
- Municipal orientation towards regulation of local construction permits issue towards EPBD
- Chamber of certified engineers to positively influence on energy savings in the design phase of the buildings
- Good basis of energy auditors in the country to support the EPDB

WEAKNESSES:

- No unity among construction companies and lack of trust, no loyal competition
- Lack of building stock information
- Lack or human resources and low capacity issues in the key governmental bodies in the sector (especially the law's implementation side is affected)
- Imported construction goods with non-certified origin and performances
- Secondary legislation needs urgent improvements
- Lack of awareness among general public for the benefits of EE constructions
- Shortage of financial resources to finance EE renovations
- Lack of strong dedication by the construction companies to use EE construction materials
- No laboratories for construction materials testing
- Lack of good demonstration of EE buildings

OPPORTUNITIES:

- Support the construction sector in introducing EE building on the market by awareness campaigns on the later benefits of such buildings
- Support to municipalities in better implementation of the EE Action Plans
- Governmental campaign "Buy a house, buy an apartment" could introduce EE basics in the awareness campaign
- Stimulate production of domestic construction materials by introduction of fiscal incentives
- Construct EE buildings in parts of the country other than the capital, to stop the internal migration
- Help production facilities commit to European programs financing to modernize production and release cutting edge construction materials
- Stimulate commercial Banks for commit to international funds like KfW or EIB to help them offer favourable low interest rate reconstruction loans
- Voucher system for low income families
- PPP financing models

THREATS:

- EPBD secondary legislation not being in place may negatively affect the whole country
- Lack of interest among the local bank for project financing
- Nonexistence of active and vital ESCOs in the country
- Lack of donor coordination to further elevate the level of EE awareness thru demonstration projects
- Non-existent roadmap of building renovation
- Deeping of the economic crisis may affect the citizen welfare and turn their focus on the survival priorities and may increase the poverty of the population
- International Banks financing schemes may fail if not accompanied with free technical support and incentive payments

4.4. Montenegro



Figure 23. Map of Montenegro

Geographical Information (Figure 23):

- Montenegro, Crna Gora, (MNE) is a Mediterranean country located in South-eastern Europe, on Balkan Peninsula.
- Montenegro covers the area of 13 812 sq. km (land 13.452 sq. km, water 360 sq. km).
- Bordering countries of Montenegro with the length of borders are: Albania, Kosovo, Serbia, Bosnia and Herzegovina and Croatia.

Administrative and Demographic Information:

- Capital and the largest city of Montenegro is Podgorica with the population of 185.937, or 30% of total population of Montenegro, while the Royal Capital is Cetinje (former seat of the throne) with the population of 16.657, or 2.7% of total population.
- Results of the census of 2011 show that the numbers of inhabitants in Montenegro have declined slightly (620.029) since the last census in 2003 (620.145). Average rate of population growth is -0.705%.
- Average age of the population in Montenegro is 37.2 years, and 63.23% of the total population lives in urban settlements while remaining 36.77% live in rural settlements.
- The most populated cities are Podgorica with 27.27%, and then Niksic and Bijelo Polje with the population of 75.282 (12.14%), and 50.284 (8.11%), respectively.

Economic Information:

- During the period 2002 – 2010 economy of Montenegro recorded constant rise except for 2009 when it slowed down due to the global crisis. In 2010 GDP of Montenegro was more than doubled in value compared to the situation in 2002. The highest increase was recorded in 2007 when GDP rose by over 10%. In 2009 Montenegro economy recorded GDP growth index of -5.7%, in 2010 it recovered slightly and scored the growth index of 1.1%.
- Forecasts for growth in this year are 2% according to IMF and 2.5% according to Ministry of Finance of MNE. GDP for Montenegro in current prices in year 2010 was EUR 3.1 billion Euros or just above 5000 EUR per capita.

Energy Related Information:

- Overall energy consumption in 2006 is 1.1 Mtoe or 0,009% of total world consumption in terms of primary energy (PE), while the population of country is approximately 0.01% of the world total.
- In the structure of total consumption of primary energy, major share is of petroleum products (32.3%), coal (30.1%), hydro-energy (19.6%) and wood and waste (5.3%).
- Figure 24 shows the structure of energy consumption in Montenegro, and provides the information where

energy efficiency measures should have the highest impact. In case of Montenegro, it matches the world average, households (building sector) which represent 42% and manufacture – industry sector with 40% of total energy consumption.

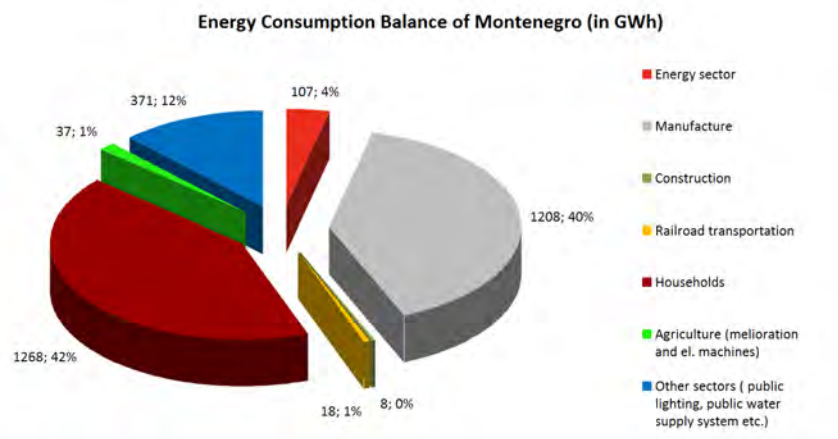


Figure 24. Energy consumption in Montenegro (GWh), 2008 (Vujosevic, 2012)

» When energy saving potentials is of concern, overall target for all end-use sectors shall be 9% or 58.9 ktoe by 2018 while in the building sector shall be about 23.6 ktoe.

Need Assessment:

» Strong incentive mechanisms should be introduced
» New innovative and more affordable EE loans should be made available.
» EE Law should be implemented properly and on time.
» Buildings certification should be applied as an obligatory measure.
» ESCOs are crucial and should be developed.
» EE awareness raising campaigns with the participation of all stakeholders (local governments, public companies, financial institutions…) should be organized to have more positive impact on EE applications.

SWOT Analysis - MONTENEGRO

STRENGTHS:

- EE and RE recognized among national priorities
- Solid legislative framework
- Cooperation between research energy institutions in the region
- Favourable geographical position

WEAKNESSES:

- Insufficient budget for Research and Development
- Non implementing of the existing legislations
- Lack of incentives
- Low level of buying power (lack of EE investments)
- Lack of targeted EE loans – access to finance
- Absence of ESCOs
- Lack of modern and sophisticated technologies, energy-intensive and often obsolete technologies and equipment
- Insufficient knowledge about the possibilities for rational energy use
- EE in low priority

OPPORTUNITIES:

- Large building stock needing renovation (potential for use of RE and EE in building sector)
- Building certification
- Harmonization with EU standards
- Decrease in price of new technologies – availability
- Strict implementation of EE law

THREATS:

- Expensive technologies
- Lack of funds for EE
- Financial institutions - Lack of interest (mainly foreign banks) to innovate
- Absence of Agency for EE (various support mechanisms)
- Lack of energy management in the buildings
- Unavailability of centralized heating systems
- Prolonged financial crisis

4.5. Serbia



Figure 25. Map of Serbia

Geographical Information (Figure 25):

- Serbia is located in the central part of the Balkan Peninsula.
- Serbia borders Bulgaria to the east, Romania to the north-east, Hungary to the north, Croatia and Bosnia-Herzegovina to the west, Montenegro to the south-west and Albania and Macedonia to the south.

Administrative Information:

- The country is divided into 29 administrative districts, with 194 municipalities, 6.169 settlements, 207 city settlements and 5.962 other settlements.
- The Belgrade territory covers an area of 322 268 ha (inner-city area covers 35.996 ha), and it is administratively divided into 17 municipalities - 10 urban and 7 suburban municipalities.

Demographic Information:

- According to 2002 census, there were 1 576 124 citizens in the larger-city area, and 1.273.651 citizens in the inner-city area.
- Population for 2009, 2010 and population growth rate are 7.334.937, 7.306.677 and -0.46% between these years, respectively.

Economic Information:

- As can be observed from Table 2, although the GDP/per capita figure has an increasing trend mainly due to the effect of negative population growth rate, GDP real growth rate has an decreasing trend with the lowest value in 2009 due to the worldwide economic crisis.

	2005	2007	2008	2009	2010
GDP, million EUR	20.306	28.785	33.418	29.967	29.343
GDP, per capita, EUR	2.729	3.900	4.547	4.093	4.016
GDP real growth, %	5.6	6.9	5.5	-3.1	1.7

Table 2. GDP, GDP/capita and GDP growth rate between 2005 and 2010 (Lilic, 2012)

Energy Related Information:

- In 2008, final energy consumption is 8.411 Mtoe and the import dependence was 40% whereas in 2010 it was 8.889 Mtoe, meaning about 5.7% increases after the economic crisis.
- Figure 26 shows final energy consumptions by sectors for 2008 and 2010. It can be concluded that the share of building sector increased about 10%, mainly because of not evaluated energy saving potentials for old age buildings and structural changes in the industry sector (demolishing the energy intensive ones)

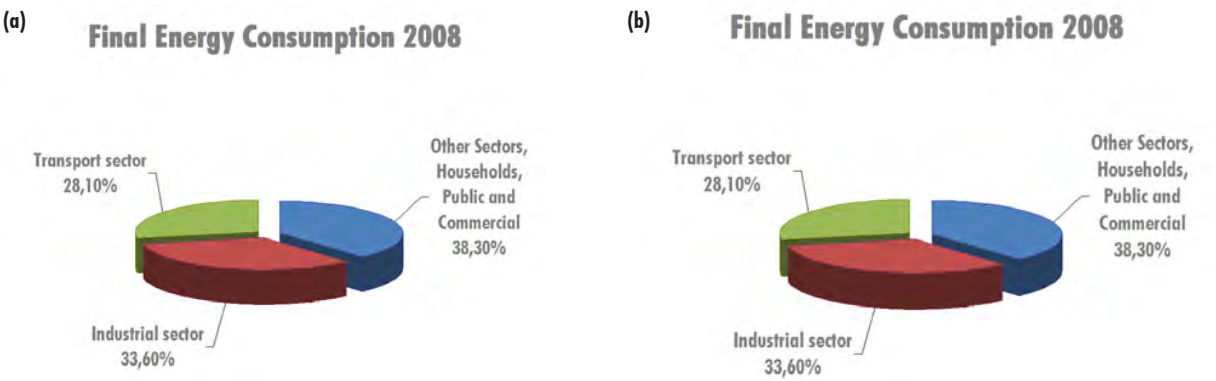


Figure 26. Final energy consumption a) in 2008, b) in 2010 (Lilic, 2012)

- Among the building sector about 70% of the final energy consumption comes from the residential buildings with remaining 30% for commercial and public buildings.
- Figure 27 presents the energy saving potentials for the end-use sectors in 2012. Total potential is 125.4 ktoe and approximately 18.7% is for the building sector. On the other hand for 2018 total saving potential shall be 752.445 ktoe and building sector amount shall be 303.1 ktoe, representing 40% of the total energy saving.

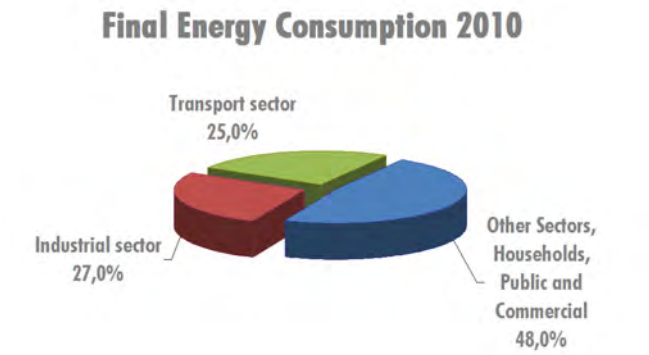


Figure 27. Energy saving potentials by sectors in 2012

Need Assessment:

- Renovation of the existing building stock is a large untapped potential for energy savings and implementation of measures to increase EE
  - Buildings and apartments built before 1970 have almost no thermal insulation.
  - Buildings built before 1980 have an unsatisfactory thermal insulation.
  - Over 75% of the building was built before 1980.
  - On these buildings the largest energy savings are possible, up to 80%.
- Public sector has to take a leading role in the renovation of the existing buildings starting from their buildings.
- National regulation should be periodically discussed and reinforced and all relevant stakeholders should be involved in this process.
- Government should continually improves instructions and awareness for citizens and other stakeholders according the latest regulations, how to apply energy efficiency measures in the households and invest in increasing energy efficiency, especially in the building sector.

SWOT Analysis - SERBIA

STRENGTHS:

- Legislative framework- mainly developed
- Feed - in tariff system for electricity generation using renewable energy and combined heat and power
- Presence of financial instruments for energy savings such as funds, subsidies, loans, donations and credits Developed banking sector
- Two Agencies in Energy Sector Established:
- Serbian Energy Efficiency Agency (SEEA) -
- Governmental executive Agency (was merged, from 07 October 2012, with the newly formed Ministry of Energy, Development and Environmental Protection - MEDEP);
- Serbian Energy Agency (SEA) – independent
- regulatory agency
- Fund for Environmental Protection was merged, from 07 October 2012, with the newly formed Ministry of Energy, Development and Environmental Protection - MEDEP);
- EE Self – investment in building sector: minor part of the consumers has own financial potential to self -invest in EE improvement
- Energy efficiency project applications of central and local governments

WEAKNESSES:

- Financial mechanisms such as third-party financing, energy performance contracting, guarantee of energy savings contracts, and other similar mechanisms not yet present
- Legalization of the illegal buildings is done partially
- EE Self – investment in building sector: The most part of the population and consumers of energy has insufficient financial potential to self-invest in EE.
- Insufficient motivation for investment in EE applications
- White certificates - This mechanism is not yet present.
- ESCO model and ESCO market aren't developed
- Slow practical implementation of the adopted Laws
- Lack of national data collection system concerning the energy performance of buildings

OPPORTUNITIES:

- Legislative framework – complete the relevant laws and appropriate sub laws
- Adoption of the Law on the Rational Use of Energy (should be adopted in 2012): By this law should be:
- Establishing Energy Efficiency Fund, Reduction or exemption EE applications from taxes
- Contributing building energy performance evaluation/ building energy performance certification system should to development of the market
- Stimulate Public-private partnership
- Voluntary emission trading market on the development phase with some introduction projects
- Enlarge budgets for R&D on Energy Efficient

THREATS:

- Market organization and price distortions that prevent customers from appraising the true value of energy efficiency;
- Split incentive problems created when investors cannot capture the benefits of improved efficiency (the classic case being the landlord-tenant situation);
- Transaction costs when project development costs are high relative to potential energy savings.
- Lack of understanding of EE investments,
- Perception of EE investments as complicated and risky, with high transaction costs discourage investors.
- Energy tariffs and parity of different fuels discourage EE investment;
- Institutional tendency towards supply-side

4.6. Turkey



Figure 28. Map of Turkey

Geographical Information (Figure 28):

- Turkey can be stated as a Eurasian country located in Western Asia and in East Thrace in South-eastern Europe.
- The territory of Turkey is more than 1.600 kilometres long and 800 km wide.
- Turkey's area, including lakes, occupies 783.562 square kilometres, of which 755.688 square kilometres are in Southwest Asia and 23.764 square kilometres in Europe. Turkey is the world's 37th-largest country in terms of area.
- Turkey stands in GMT+2 Standard Time. The time difference between the most east and the west part is 76 minutes.

Administrative Information:

- The territory of Turkey is subdivided into 81 provinces for administrative purposes and the capital city of Turkey is Ankara.
- The provinces are organized into 7 regions, Marmara, Aegean, Black Sea, Central Anatolia, Eastern Anatolia, South-eastern Anatolia and the Mediterranean, for census purposes; however, they do not represent an administrative structure.
- Each province is divided into districts, for a total of 923 districts. The most densely populated province and the pre-Republican capital Istanbul is the financial, economic and cultural heart of the country.

Demographic Information:

- 2010 population of Turkey is 73.728.928 according to Turkish Statistical Institute (TSI), whereas according to data for 31st of December, 2011, the population of Turkey is 74.724.269, nearly three-quarters of who lived in towns and cities.
- Although the increase in the population between 2010 and 2011 is 1.35%, according to TSI, the population shall be increasing by 1.25% each year by average in the period of 2010 -2015. In addition, it is estimated that Turkish population in 2050 shall be about 94.600.000, considering 0.18% increase between 2045 and 2050 (Figure 29).
- Turkey has an average population density of 97 people per km^2.
- People within the 15–64 age group constitute 67,4% of the total population; the 0–14 age group corresponds to 25.3%; while senior citizens aged 65 years or older make up 7.3%.

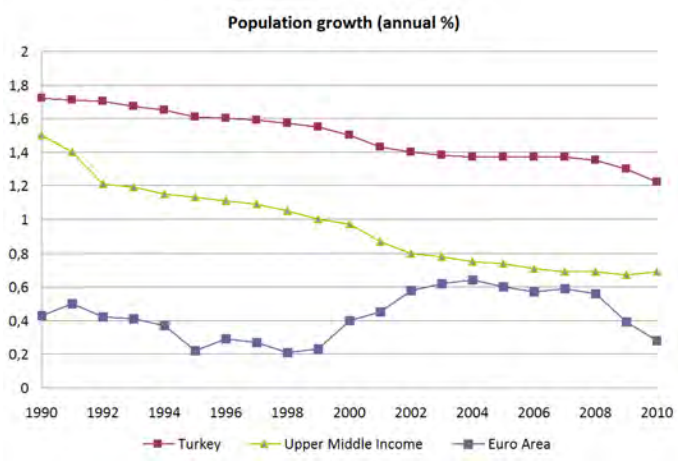


Figure 29. Comparison of annual growth rate among upper middle income world, Euro area and Turkey (Acuner, 2012)

Economic Information:

» As announced in 2nd of April, 2012; GDP of Turkey in 2011 was 772.3 billion US Dollars, meaning that as compared to 2010, Turkish economy do grow about 5.2% (Figure 30)

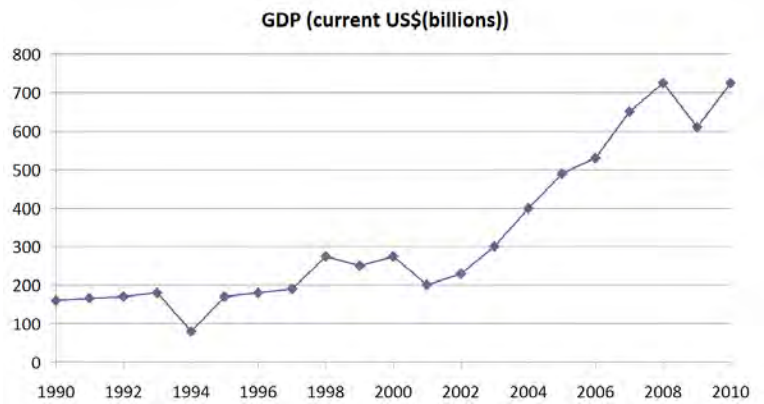


Figure 30. GDP of Turkey between 1990 and 2010 (Acuner, 2012)

» This growth was about 9% in 2010 as compared to 2009, which was mainly from the economic crisis effect seen in 2008 and 2009 (0.66% and 4.83% decrease in GDP, respectively) (Figure 31).

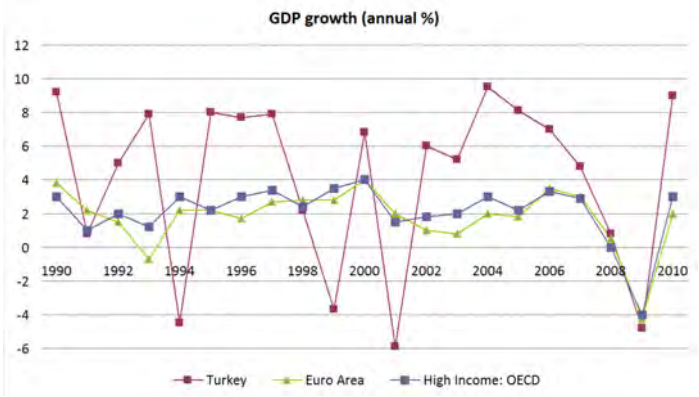


Figure 31. GDP growth of Turkey between 1990 and 2010 (Acuner, 2012)

» Additionally, as announced by TSI in September 2012, the first 6 months GDP of Turkey grows about 3.1% as compared to the same period in 2011 in terms of fixed prices.

Energy Related Information:

» According to newly accepted (25 February 2012) "Energy Efficiency Strategies for Turkey (2012-2023)" between 1998-2008; the following data can be summarized (Table 3) about total energy/electrical energy consumptions of the sectors; industry, building (residential, commercial/service, transport).

Increase in total energy consumption	3.81%/annually
Industry sector	3.56%
Residential building	3.49%
Commercial/Service buildings	7.44%
Transport sector	4.07%
Increase in total electricity consumption	7-8%/annually

Table 3. Increase in total, industry, building (residential, commercial/service), transport sectors' total energy consumption and total electricity consumption

» Total energy demand, domestic production and energy import values as well as ratio of domestic production to meet the demand ratios for 1990 and 2010 together with percentage changes can be presented in Table 4. According to the given information, while total energy demand increases about 106%, ratio of domestic production to meet this demand decreases about 40%. In other words, import dependency increases approximately 182% between 1990 and 2010.

	1990	2010	Change
Total Energy Demand (Mtoe)	52,9	109,2	↑ 106%
Total Domestic Production (Mtoe)	25,6	32,4	↑ 26%
Total Energy Import (Mtoe)	30,9	87,4	↑ 182%
Ratio of domesticv production to meet the demand (%)	48%	29,7%	↓ -40%

Table 4. Total energy demand, domestic production, energy import and ratio of domestic production to meet the demand between 1990 and 2010 with % changes

» In addition, for the period of 2010-2030, the need for investment to meet the demand increase is about 225 - 280 Billion $ declared by Energy Market Regulatory Authority.

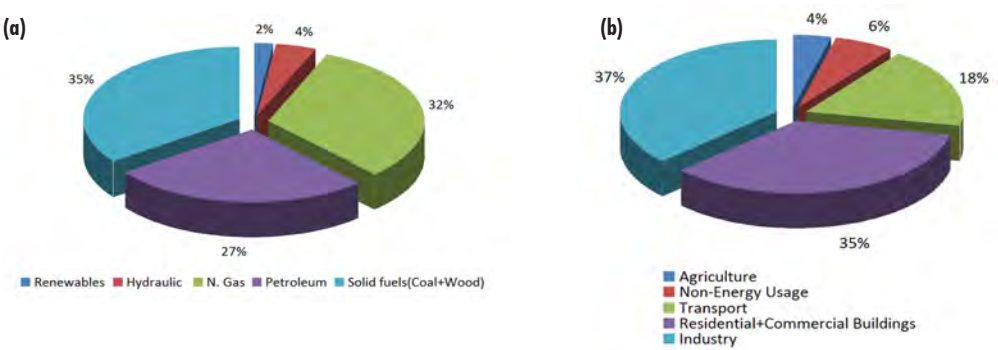


Figure 32. Total energy consumption a) by primary energy resources and b) by sectors (2010) (Acuner, 2012)

» Figure 32 presents the energy consumption values according to primary energy resources and by sectors for 2010. As can be seen from the figure, dependence on fossil fuels is almost 93%. Moreover, after industry sector, buildings, constituting residential and commercial buildings, are in the second place in terms of total energy consumption.

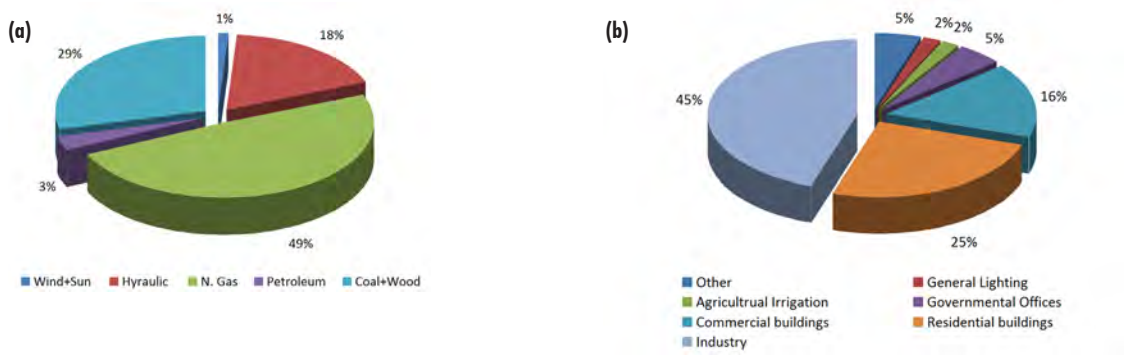


Figure 33. Total electricity consumption (a) by primary energy resources and b) by sectors (2009)

» Total electricity consumption according to primary energy resources and by sectors for 2009 is represented in Figure 33. Again, the electricity production from fossil fuels constitutes 81% of the total. In the consumption side, building sector, including residential and commercial buildings, government offices, is in the first rank with 46% share.

» Table 5 gives the energy saving potentials for the various industry and building sectors. It can be stated that for the electricity, residential and commercial buildings have the same potential, whereas for the thermal energy, residential buildings has about twice more saving potentials than the commercial ones.

Sector	**Energy Saving Potential, %**		
	Electricity	Thermal	**General**
Industry			
Iron-steel	21	19	
Textile	57	30	
Paper	22	21	
Sugar	26	46	
Glass	10	34	
Ceramic			15-20
Chemical			15-30
Food			25
Cement			7
Building			
Residential	29	46	
Commercial	29	20	

Table 5. Sectoral energy saving potentials

Need Assessment:

- There is a need for collaborative studies of related governmental institutions and for better/widespread implementation national agency (ies) formation is crucial.
- What is targeted in terms of EE buildings should be defined clearly in order to see the differences with what is realized in the application.
- Secondary legislation should be strengthened i.e. recasting of Energy Performance Certification considering the existing buildings, as well.
- Mandatory surveying and energy efficiency auditing together with bonus-malus for the database formation and good monitoring i.e. Known saving potentials, reference values are very important.
- Governmental incentives should be defined and applied for the building sector i.e. starting from the commercial ones. In the Medium Term Plan for the first time the need for energy efficiency is announced as an inevitable action by the Government in Oct. 2012 and now related planning should be made.
- Public-private partnership, energy performance contracting, third party financing applications should be considered for demonstration and formation of best practices.
- EE and RE technology database for more implementation practices should be developed.
- Low interest rate loans/credits, tax exemptions for EE materials, equipment, systems should be provided.
- Overcoming information gap has great importance to be more involved private sector and the

SWOT Analysis - TURKEY

STRENGTHS:

- Developed EE legislation under implementation (in accordance with EU Directives)
- Developed energy manager and management application together with energy efficiency auditing
- Developed and competitive construction industry
- Developed ESCO market
- Developed Energy Performance Certification and under application by ministries
- Increased interest by the national financing institutions offering different types of EE loans/credits
- Feed-in tariff system for renewable energy/cogeneration integration to buildings
- Inclusion of EE in environmental strategies

WEAKNESSES:

- Much concern in EE in industry sector rather than buildings
- Not sufficient building stock, energy related information data, database formation and monitoring
- Presence of illegal construction and unfair competition in construction industry
- Not developed financial mechanisms like public-private partnership, third-party financing, energy performance contracting,
- Insufficient EE self – investment in building sector
- Insufficient information/motivation for investment in EE applications among consumers
- No laboratories for EE construction materials testing
- Lack of good demonstration on renovation of existing buildings

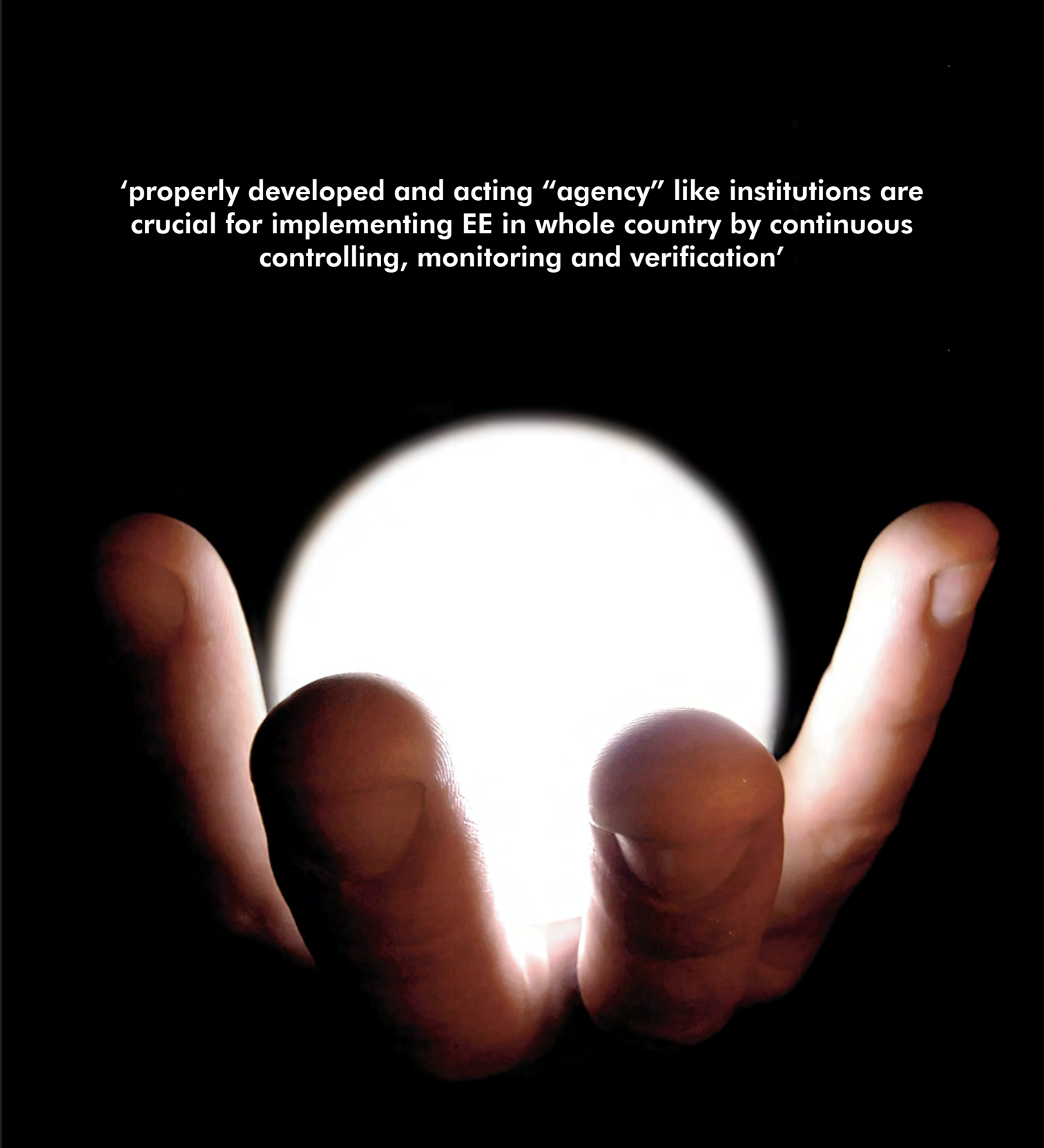
OPPORTUNITIES:

- High energy saving potentials especially in governmental buildings
- Mandatory energy efficiency audits by new EE strategy
- Building energy performance certification under development especially for the evaluation of existing buildings
- Diverse international financial sources
- Developed voluntary emission trading market
- Enlarge budgets for Research and Development Energy Efficient technologies
- Developing eco-labelling of energy consuming equipment
- Voluntary LEED, BREAM, etc. certification is under application considering social responsibility and competitiveness

THREATS:

- Being a wide country with different climatic conditions as well as building types
- Thinking supply side more than demand side
- Not defined EE/Intelligent/green building as a target
- Non-existent action plan of building renovation i.e. Risk of not reflecting what is in legislation thru implementations
- High level of bureaucracy , lack of coordination
- Not exactly known average/maximum saving potentials, reference values for different building types
- Not defined governmental incentives for buildings
- Unfavourable loan/credit conditions of national banks i.e. high interest rate application
- Discussion on public-private partnership i.e. delay of demonstration projects
- More concern on comfort conditions rather than EE
- Not enough representation of EE benefits for the costumers for awareness i.e. tariff structure

‘properly developed and acting “agency” like institutions are crucial for implementing EE in whole country by continuous controlling, monitoring and verification’



5

COMPARISONS of EUbuild EE PARTNER COUNTRIES

After summarizing the current state of the partner countries; Albania, Bosnia and Herzegovina, Macedonia, Montenegro, Serbia and Turkey in the framework of EUbuild EE project, comparison of their respective situation were conducted according to below stated headings:

- General indicators (population, GDP, primary energy production, final energy consumption, energy saving potentials, CO_2 emissions, etc.)
- Legal and institutional frameworks present in the country for EE,
- Related EE measures/applications,
- Possible/alternative financing mechanisms
- Future prospects of the country on EE
- Recommendations for realizing the what is planned on EE in the future

5.1.General Indicators

Table 6 summarizes the comparison of the partner countries in terms of population, yearly population growth rate, GDP, yearly GDP growth rate, education/literacy rate, building allocation rate, illegal usage/restoration/renovation needs, new building need rate, primary energy supply, primary and final energy consumptions, total/building/industry/transport sectors energy saving potentials and last but not the least yearly CO_2 emissions for current (2010 was chosen as this data mostly could be reached by the countries) and for 2020 to see the future perspectives.

When population growth rates of the six countries are compared (Table 6), Montenegro has the least population whereas Turkey is the most crowded and for Bosnia-Herzegovina, Montenegro and Serbia have minus population growth rate. The lowest rate is for -4.6% for Serbia and the highest for Turkey with 1.25%. These trends are almost projected for 2020 for Albania (with increasing trend) and Turkey (with decreasing trend) as well as the others although no data are the case.

In case of GDP growth rate, in 2010, Albania and Turkey (after economic crisis, 9% is the highest value, that is reached) has the highest rates, while, Montenegro and Serbia has the lowest rates. These differences are mainly due to the difference in the structure of value-added sectors. For the future, it shall be expected to have average values for Albania and Turkey. On the other hand, for Serbia, it shall be waited to increase to 5.2% in 2018 as compared to 1.7% in 2010, may be mostly affected possible integration to the EU.

It is observed that indicators regarding the building sector specifically; the building allocation rate, illegal usage/restoration/renovation needs and the new building need figures were not provided and clarified from most of the countries. This indicates that the information could not be monitored/verified properly. On the other hand, these basic figures are very important for the EE studies, i.e. determination of reference values for energy certification and true energy saving potentials as well as reliable forecasting studies, and there should be a good monitoring/verification system in the partner countries.

In order to understand the situation of partner countries concerning energy supply and consumption patterns, primary energy supply, primary energy consumption and final energy consumption were analysed. From the figures provided, it can be concluded that there exist losses in the distribution and transmission systems. In addition, if these systems are rather old, these losses increases and also the quality of energy are reduced. These issues are important to determine exact energy supply/demand/consumption figures. Furthermore, there should be noted that as can be observed from the figures of these indicators for 2020, forecasting studies are under implementation, however, the scope of these projections should be widened by the inclusion of EE and RE alternative strategies, meaning more scenario analyses should be the case.

Once indicators with regard to energy saving potentials were examined, it is seen that almost for all countries have analyses for the potentials for current situation (2010) and for the future (2020) in view of EE studies. Specifically within the building sector, differentiation between residential and commercial buildings is crucial. Only for Albania, this was considered and for Turkey calculation of residential buildings' saving potential was made. But, no analysis of transport sector was performed for Turkey. When EE and RE options are of concern in the scenario and forecasting studies together with a proper database on these general parameters, overall or sector specific energy saving potentials shall be more realizable.

Table 6. Comparison of general indicators for 2010 and 2020 (Acuner, 2012)

Indicator	ALBANIA		BOSNIA HERZEGOVINA		MACEDONIA		MONTENEGRO		SERBIA		TURKEY	
	Current	2020	Current	2020	Current	2020	Current	2020	Current	2020	Current	2020
Population	2.985.707 2010	3.320.000	3.843.126 2010		2.055.004 2010	2.106.374	620.029 2010		7.306.677 2010		73 728 928 2010	87 759 000
Population growth rate/year	% 0.0285 2010	% 0,16 2012	% -0,41% 2010	Expected being negative	% 0,21 2010		% -0,705		% -4,6 2010		% 1.25 2010	% 1.0
GDP	9.013 million € 2010	16.7 million € 2020	12.500 million € 2010		7.058 million € 2010		3.100 million € 2010		29.343 million € 2010		563.000 million € 2010	
GDP growth rate/ year	% 8 2010	% 5 2020	% 2 2010		% 2,9 2010		% 1,1 2010		% 1,7 2010	% 5,2 2018	% 9 2010	% 5 2020
Education Literacy rate	99 %	100 %	Male 94,1% Female 78%		97 %		97.7%		96,4 %		Male 96,8% Female 80,4%	
Building Allocation rate	90-95.000 families 2012	95-100.000 families 2015	1.054.613 households 2010	1.292.600 households 2020	Number of households: 564 296 Number of dwellings: 697 529		314.704 households 2011		2.847.000 apartments 2008		19-20 million households 2012	
Illegal/ Restoration/ Renovation	166.000 78.400 117.600	264.000 198.000 264.000	No data No data No data	No Data No Data No Data Estimation 2012 – 2018: 40 million m^2 residential and 12 million m^2 commercial	No data/ No data/ 41 buildings renovated		80-100.000 No data No data		>1.000.000 No data No data		71.6% of households as illegal	
New Building Need	777.592 2004	978.961 2015	568.033 m^2 2010								7560 building 2012-2023	

It is definitely stated that besides energy and economy, environmental issues should be in the agenda of the countries, i.e. greenhouse gas (GHG) emissions, since EE and RE are utmost important strategies to mitigate these emissions. Among GHG, the most important one is carbon dioxide (CO_2), it is beneficiary that the partner countries are giving importance to this issue, as well (only the values for Serbia are rather old). For the future projections, only Albania, Macedonia and Turkey have the figures. Therefore, continuous monitoring of CO_2 and also other GHGs shall have positive impact on showing the secondary effects of EE /RE implementations to create more awareness and consciousness not only on the energy (decrease in the energy consumption) but also the environmental (decrease in GHGs) sectors, so increasing the country ranking for saving the world.

Table 6. Continued

Indicator	ALBANIA		BOSNIA HERZEGOVINA		MACEDONIA		MONTENEGRO		SERBIA		TURKEY	
	Current	2020	Current	2020	Current	2020	Current	2020	Current	2020	Current	2020
Primary Energy Supply TOE/year	2.037 Mtoe 2010	3.600 Mtoe 2020	5.95 Mtoe 2010		2.947 Mtoe 2010		1.1 Mtoe 2010		15,531 Mtoe 2010		109.3 Mtoe 2010	255 Mtoe Without measure 232 Mtoe With measure
Primary Energy Consumption	1.879 Mtoe 2010	3.320 Mtoe 2020	5.1 Mtoe 2010		2.837 Mtoe 2010		0.717 Mtoe 2010		12.194 Mtoe 2010		106 Mtoe 2010	222 Mtoe
Final Energy Consumption TOE/year	1.720 Mtoe 2010	3.030 Mtoe	3.48 Mtoe 2010		1.899 Mtoe 2010	2.703 Mtoe	0.714 Mtoe 2010	1.1 Mtoe (medium scenario)	8.889 Mtoe 2010	10.128 Mtoe without measure 9.376 Mtoe With measure 2018	80.574 Mtoe 2010	170 Mtoe without measure 152 Mtoe with measure
Overall energy saving potentials	414.5 ktoe 2012	583 ktoe 2020	160 ktoe 2012	1300 ktoe in period 2012 -2018	66,10ktoe 2012 Target	199,78ktoe 2018 target	7.2 ktoe per year	58.9 ktoe 2018 target	125.4 ktoe 2012	752.45ktoe 2018		
Building sector saving potential	96.8 ktoe -Residential 86.4 ktoe Service	136 ktoe Residential 121 ktoe Service	70 ktoe 2012	190 ktoe in period 2012 -2018	12,59 ktoe	64,70 ktoe	2.94 ktoe	23.56 ktoe	23,5 ktoe 2012	303,1ktoe 2018	3058 ktoe 2015 residential	4750 ktoe residential
Industrial sector saving potential	107.5 ktoe	151.5 ktoe	90 ktoe2012	700 ktoe in period 2012 -2018	40,96 ktoe	90,45 ktoe	2.25 ktoe	18 ktoe	56.6 ktoe 2012		7378 ktoe 2015	11478 ktoe
Transport sector saving potential	123.8 ktoe	174.5 ktoe	No potentials	400 ktoe in period 2012 -2018	12,55 ktoe	44,63 ktoe	1,37 ktoe	11 ktoe	45.3 ktoe 2012			
CO_2 emissions Ton CO_2/year	4.969 Mton/year 2010	8.053 Mton/year 2020	19,47 Mton 2010		11.815 Mton/year 2008	12.853 Mton/year 2020	2.98mil Ton CO_2/ year 2005		80.803 M tCO_2eq 1990 66.346 $MtCO_2eq$ 1998		369.65 Mton CO_2eq	706 Mton CO_2eq without measure 609 Mton w/measure

5.2.Legislative Framework

Regarding EE studies and implementations, first thing that should be taken into account is the related applicable legislative framework, consisting of mandatory EE implementations as well as incentives/punishments. Table 7 represents the comparison of the partner countries on the basis of presence of EE law, building energy performance (BEP) regulation, EE strategy and national EE action plan (NEEAP).

Table 7. Comparison of EE legislative framework

Legislation	ALBANIA	BOSNIA HERZEGOVINA	MACEDONIA	MONTENEGRO	SERBIA	TURKEY
EE law	Draft EE Law	Draft EE Law	Energy Law	EE Law	Draft EE Law	EE Law
BEP regulation	Not yet developed	Present	Present	No separate regulation	Present	BEP TR
EE strategy	Albanian National Strategy of Energy June 2003/2008-2010	Present in both FBH (2009) and RS (2012)	EE Strategy of the Republic of Macedonia until 2020	Present	Present	EE strategy of Turkey 2012-2023
National EE Action Plan	National Action Plan 2009-2018	National EE Action Plan	EE strategy of Turkey 2012-2023	Present	National Action Plan for Energy Efficiency 2010-2012	None

As can be seen from the Table 7, only in Turkey and Montenegro have EE law, whereas Albania, Bosnia and Serbia have the draft (not ratified yet). In Macedonia, Energy Law is dealing with EE issues and no separate EE Law is present.

BEP regulation is very fundamental legislation for the energy certification of the buildings; implying EE auditing, determination of EE saving potentials and energy codes and the EE implementations for getting at least the required class, which is set in this regulation. Albania and Montenegro do not develop this regulation up to now. On the other hand, it should be emphasized that this regulation should as compatible as for the proper implementations.

The other step for the countries to have proficient legislation is to develop national EE strategies and their actions plans. Although all partner countries have developed EE strategy, only Turkey has no national action plan (on the way of preparation). Strategy defines what are the basic objectives, targets and actions to reach them, where action plans comprises the applicable real actions to give directions to energy consuming sectors. Other critical point is that these strategies and plans should be re-evaluated in some periods of time after taking the results of implementations in terms of what is targeted and what is realized.

5.3.Institutional Framework

Other than applicable legislation, the responsible institutions should be defined in various structures; such as, central/ local governments, agencies and private sectors. As can be seen from the Table 8, in all partner countries, central government has defined EE related studies under related ministry (ies). In terms of local governments, apart from Montenegro and Turkey, they are active in EE studies. In Turkey, for example, there is no provision with regard to mandatory applications in local governments and there are very few examples of EE projects with self-financing. It should be stressed that local governments are one of the key actors for the proper on-site EE implementations as a demonstration projects starting from their buildings with the application of different financing mechanisms. Therefore, they should be actively involved in EE activities.

Table 8. Comparison of institutional framework (Acuner, 2012)

Institution	ALBANIA	BOSNIA HERZEGOVINA	MACEDONIA	MONTENEGRO	SERBIA	TURKEY
Government responsible ministry (ies)	Ministry of Economy Trade and Energy	Ministry of Foreign Trade and Economic Relations of BH	Ministry of Economy, Ministry of Transport and Communication, Ministry of Local Self Government	Ministry of Economy	Ministry of Infrastructure and Energy Ministry of Environment, Mining and Spatial Planning After 26. July 2012: Ministry of Energy, Development and Environmental Protection - MEDEP Ministry of Construction and Urbanism	Ministry of Energy and Natural Resources Ministry of Environment and Urban Planning
Local government	Infrastructure office which deal also with energy issues	Cantonal ministries for responsible for energy issues in FBH, municipalities in RS	All units of the local self-governments (84 municipalities plus Skopje)	Not active but articles in EE law to be more strong	Established five Regional energy efficiency centres REECs	Self-Financing Covenant of Mayors
Agency	State institutions	None	Energy Agency of the Republic of Macedonia; Energy Regulatory Commission	Energy Regulatory Agency not on energy efficiency	Serbian Energy Efficiency Agency (SEEA) -Governmental -(was merged from 07 October 2012 with the newly formed Ministry of Energy, Development and Environmental Protection) Serbian Energy Agency (SEA) –independent	None
Private sector	Not enough interest,	Not enough interest Things getting to be improved	The private sector is involved but not to a desired level because of lack of legal framework.	Not enough interest Especially if we are talking about the banks	Private sector, SME-s is interested in EE issues but could be more.	Involved but not sufficiently

It can be clearly stated that from the examples of developed countries, like EU member states, 'energy agencies have an essential role in the field of EE and RE having more power to do more.'

If all these activities are centralized, it could be very difficult to spread, control and monitor, appropriately. From Table 8, except Bosnia-Herzegovina and Turkey, the other countries have different structured agencies. (Serbian Energy Efficiency Agency (SEEA) -(was merged from 07 October 2012 with the newly formed Ministry of Energy, Development and Environmental Protection) These are also important for the market formation together with the private sectors, comprising NGOs, and also controlling the related market. As stated, private sector interest should be provided to have sustainable market with utilization of existing or creating new financial mechanisms while saving energy.

5.4. EE Applications/Measures Targeting the Building Sector

As a following step after having legal and institutional bases, in the market, defining and implementing either mandatory or voluntary EE applications/measures to save the energy, the economy and the environment are compulsory. Table 9 summarizes various EE applications/measures and their presence in the partner countries.

One of the basic differences among countries is the definitions of energy auditors and managers. Apart from Turkey, the others have both energy managers and energy auditors. In Turkey, on the other hand, energy manager is defined, responsible for management and auditing, together. In addition, in Turkey, mandatory applications is specified for large scale (on the basis of either the energy consumption or the construction area) industry and buildings. As this can be regarded as very basic for the determination of the current situation, energy saving potentials, possible/applicable EE saving measures, etc., mandatory applications shall be worthwhile.

In the world, there are two standards (very close to each other in terms of the contents) for energy management: EN 16001 and ISO 50001 with the same name as "Energy Management Systems". As all known, EN is the standard for "European Committee for Standardization (CEN)" and ISO stands for International Organization for Standardization. EN 16001 was published in 2009 whereas ISO 50001 is in 2012. After a transition period, ISO 50001 shall be the only the standard to be applied. Hence, the countries should start to adopt this standard, because, this helps continuous and stable EE applications and also good monitoring and verification systems.

Table 9. Comparison of EE applications/measures targeting the building sector

EE application/measure	ALBANIA	BOSNIA HERZEGOVINA	MACEDONIA	MONTENEGRO	SERBIA	TURKEY
Energy Manager	No application	There is no obligation	Defined in the Law on Energy as a post. Emerging responsibilities but not defined as a profession. Already in place in some of the municipalities.	Recognized by EE Law but not in practice. Referred as authorized person for performing energy audits	Present but wide application on legal basis should be established	Present and mandatory by EE Law
Energy Auditor	Officially not yet certified but training considerable number of experts in this field	There is programme for education of energy auditors in buildings. After exam, they can perform audit.	Defined in the Energy Law.	There are around 40 certified energy auditors	Present but wide application on legal basis should be established by legislation	No application
EE audit	This is part on new Draft EE Law	It is obligatory in buildings in FBH (new and renovated), in RS there is no legislation in place	Case by case method, but not yet defined in details. Once the Rulebook on EPB in place it will be required for new buildings and buildings that will undergo major reconstruction.	Obligation for big energy consumers and buildings with useful floor area bigger that 1000 m^2	Present but wide application on legal basis should be established	Present for new buildings, after 2017 for existing buildings
Energy management system	This is part on new Draft EE Law	Some companies have introduced, but no interest from public organization	Limited to small scale projects in the public sector	Public administration bodies, organizations, regulatory bodies, agencies, local self – governing units and public companies	Mainly for industry. Law on the Rational Use of Energy (draft) should establish Energy Management System in municipalities	Present but concentrating more on industry – ISO 50001
Energy Consumption Monitoring	In application	There is no requirement for energy monitoring	The Electricity consumption measurement is regulated for all consumers by the distribution company EVN Macedonia.	As a part of energy audit procedure and for big consumers and public sectors submission to the Ministry in every year	Annual Energy Balance, published by former Ministry of Infrastructure and Energy	Over 200.000 m^2 or 500 toe commercial buildings and over 100.000 m^2 or 250 toe public & governmental buildings should submit yearly consumptions.

Table 9. Continued

EE application/measure	ALBANIA	BOSNIA HERZEGOVINA	MACEDONIA	MONTENEGRO	SERBIA	TURKEY
Building energy performance evaluation/ building energy performance certification	Not yet and it is part of secondary legislation of Draft EE Law	FBH, every new building when apply for operation permit with at least a class B rating Existing buildings in case of renovation, renting and sale/ purchase All public buildings have to have energy certificate until 2013	Energy Agency of the Republic of Macedonia; Energy Regulatory Commission	Energy Regulatory Agency not on energy efficiency	Serbian Energy Efficiency Agency (SEEA) -Governmental -(was merged from 07 October 2012 with the newly formed Ministry of Energy, Development and Environmental Protection) Serbian Energy Agency (SEA) – independent	None
ESCOs	Not yet and it is part of secondary legislation of Draft EE Law	Limited activity	Not systematic program in place	Regarded as energy services and defined EPC No practice	The recently adopted Law on Public-Private Partnerships and concessions should provide long-term cooperation between public and private partners, ESCO companies, based on strict rules.	Present since 2008 but no EPC application
Awareness raising	Many energy saving awareness campaign, but government should do more in this field	Recently, at low level, should be increased.	Present and anticipated in all strategic documents but lack of capacity and funds hinders the wider spread of the benefits from EE measures.	In EE action plan and in defined objectives of financial sources and EE projects	One of the duties of the established Energy Efficiency Agency Agency (was merged from 07 October 2012 with the newly formed Ministry of Energy, Development and Environmental Protection)	Present in law, regulations and strategy

Table 9. Continued

EE application/measure	ALBANIA	BOSNIA HERZEGOVINA	MACEDONIA	MONTENEGRO	SERBIA	TURKEY
Energy efficiency projects and application	Three demonstration project and a fund for 25 other buildings	Governments financed demonstration projects of EE improvements in buildings covering 100% of the investment costs especially Ministry of spatial planning of FBH and Ministry of residential policy of Sarajevo Canton etc.	Many small scale EE projects especially on municipal level International donors have financed few demonstration projects in dwellings, schools, kindergartens,	Obligation for big energy consumers	Different projects are the case	Present for industry but not for buildings
Renewable energy integration	Draft RE law	BH committed to implement the EU Directive regarding RE according to the time schedule determined by the Contract Exemption from EPC for a building which covers more than 70% of energy needs from RE. There is Decision on RE containing procedure for access to grid and feed in tariffs.	Strategy for Utilization of Renewable Energy Sources till 2020. The aim is to enable the RES energy production of up to 21% till 2020.	Regarded as a measure in EE Defined in the Energy Law Innovated Strategy for energy development until 2030 is being prepared	Decision of the ministerial council of the energy community 2009 on the implementation of certain Directives on EE and RES; National Renewable Action plan for period of 10 years (under construction - by the end of 2012)	RE Law (2005) and feed-in tariffs as an incentive
Eco-design and labelling	Not yet and it is part of secondary legislation of Draft EE Law	No	Strategy for Sustainable Development of the Republic of Macedonia (2010) Part I / II (2009 - 2030)	Article in EE law as eco-design of energy using products and labelling of energy related products	Law on the Rational Use of Energy (draft) is introducing in regulation eco-design of energy using products and labelling of buildings and appliances	Specific regulations for lighting and household appliances

When the building energy performance evaluation and certification is analysed, in Bosnia-Herzegovina, Serbia and Turkey, there are mandatory applications (while taking operation/construction) for the new buildings (for the existing buildings apart from Turkey, the application was started, as well) with the defined energy classes, while in Albania, Macedonia and Montenegro, there exist provisions in the legislation but the applications are not getting started, yet. For the determination of energy classes, building stock information is very crucial together with EE audit

results. In addition, the energy performance evaluation methodology/program should be up to date, easy to use, has flexibilities, to be monitored and evaluated for the standardization. After that certificate shall have a meaning to show the real energy class of buildings to evaluate EE improvements opportunities, implicitly.

Energy Service Companies (ESCOs), which are dealing with EE auditing, energy saving potential/possible EE measures evaluation and implementations of EE measures, are other important actors to be able to have an active EE market, i.e. widespread applications in the country. Only Turkey has a developed ESCO market activity, whereas in Serbia, Montenegro and Albania, related legislation is present but not the activity. In Macedonia, in the past there were attempts to establish public and private ESCOs but they failed. At present there are few companies that try to work on project based financing and enter into direct agreement with the municipalities but most of them report problems in the money pay back due to the low municipality financial viability. Therefore, in all partner countries, in order to act as an ESCO, requirements should be set clearly for guaranteeing the project development with reasonable financing methods to implement EE measures and also with good monitoring, inspection and verification systems to have sustainability.

Not only in the field of EE but also in all other vital activities, the consciousness level and the involvement of the all public groups as a consumer, representatives of financial sector specialists, NGOs, public sector, academicians, private sector (producers, contractors) and energy managers, etc. should be improved for the sake of successful implementations. And in the building sector, especially, EE awareness campaigns, good demonstration projects and examples should be supported by the central and local governments with an effective roadmap.

While mentioning the alternative strategies for security of energy supply and demand, EE and RE strategies are considered together, since their total effects are higher than expected. This is mainly due to economical saving through EE and using this for investing RE. For this reason, domestic RE usage for diversification of the energy resources alternative to fossil fuels, mostly as an import, increases the efficiency in the production, less money spends for importing conventional energy sources and decrease in GHG emissions. One of the way to support RE utilization is to have feed-in tariffs as a guarantee for the purchasing the produced electricity by the government. To have effective RE utilization as well as to be certain about what is realized in after EE applications as a saving to be comparable with the what is targeted as the potential saving, standardization, labelling and eco-design applications to all materials, systems and technologies should be stated in related legislation and turned to applications in the market.

5.5.Current Financing Mechanisms for EE in the Building Sector

Table 10 represents basic financing mechanisms, currently applied/evaluated by the partner countries in order to foster EE in the building sector.

Table 10. Comparison of current financing mechanisms for EE in the building sector (Acuner, 2012)

Financial mech.	ALBANIA	BOSNIA HERZEGOVINA	MACEDONIA	MONTENEGRO	SERBIA	TURKEY
Tax reduction, exemption	Poor in application	There is no such mechanism, recently. NEEAP has proposed tax rebates, provided by state /entities/ cantons (13% in total financial instruments)	Fiscal mechanism in the country represents a 5% VAT (regular is 18%) for import of systems for exploitation of renewable energy.	For solar collectors and in EE law defined for entrepreneurs and legal entities, using and implementing technologies, produce and trade in products that promote EE	Present but none for buildings	None for buildings
Feed-in tariffs	YES since 1999	There is feed in tariffs in place since 2004	There are feed-in tariffs just for electricity production from RES, and highly efficient cogeneration power plants.	Regulation on simulative feed in tariffs for solar generators, wind, wood waste, biogas	Regulation of tariff for electricity generation using renewable energy and combined heat and power (valid until December 31, 2012). Feed - in tariff system	Present for solar, wind, biomass, hydroelectric, geothermal energies for producing electricity
Credits	Yes, Pro Credit with soft loan programme since 1999	EU IPA fund, UNDP, USAID, EBRD, UNEP, GEF Few commercial banks have offered by purpose loans for EE	Donor schemes: WeBSEFF (EBRD/ EU), Green for Growth Fund (KfW), Macedonian Bank for Development promotion (The World Bank), trough set of local banks.	World Bank and KfW Funds for EE in public buildings.	International Development Association, EBRD, World bank, KfW, UNDP, local banks in Serbia	TURSEFF (EBRD, World Bank), KfW, GEF, UNDP, France Development Agency, either separate or together with the local banks
Grants	KfW has done up to now three demonstration project and a fund of 5.5 Million Euro will be for 25 other buildings	UNDP, USAID, GIZ for demonstration projects Some local government (cantonal) 100% of the project	WB - Sustainable Energy Project, EBRD/EU WeBSEFF, USAID Habitat for Humanity, UNDP, GIZ for demo projects.	GIZ, Kingdom of Norway.	EBRD, Fund for Energy Efficiency, Government of Spain for solar energy, Kingdom of Norway for financial engineering and EMS	None
Public-private partnership	Yes – legal base already exists since 2008	Legal framework has established	New law on public private partnership, but only in the sector of public lighting.	Low level within the scope of EE	Law on Public-Private Partnerships and Concessions in 2011	Not yet developed

Table 10. Continued

Financial mech.	ALBANIA	BOSNIA HERZEGOVINA	MACEDONIA	MONTENEGRO	SERBIA	TURKEY
Third party financing	This will be part of secondary legislation under ESCO	Not yet developed	In emerging stage, but only in the private sector	Not yet developed	Law on Public-Private Partnerships and Concessions in 2011	Not yet developed
R and D budgets for efficient technologies	Present through Ministry of Education and Science	Very small amount from ministries responsible for education	The National program for R&D of the Republic of Macedonia 2012 -2016 anticipates a track on low carbon societies including RES, EE, clean transportation and other clean technologies on both the production and consumption side.	Renewable Energies and Energy Efficiency in Montenegro 2006-2009 Fund for energy efficiency is recognized by EE Law but not implemented	Promotion of the usage of energy efficient equipment	Present by mainly TUBITAK
White certificate	Not yet and it is part of secondary legislation of Draft EE Law	Not yet developed	Not yet developed	Not yet developed	Not yet developed	Not yet developed
Emission trading	Not applicable	No	No, the country building sector is too small and bundle type of projects is the only possible method for ET projects. But bundle projects are too difficult to arrange and prepare.	No	Voluntary emission trading market but not registered projects yet	Present voluntarily mostly for RE projects

For the promotion of EE and RE activities, from the government side, among the important mechanisms, tax reduction/exemption, feed-in-tariffs and grants can be listed. It can be concluded from Table 10 that almost all partner countries tax reduction/exemption are not favoured for EE and the building sector. In case of feed-in tariffs, apart from Montenegro and Serbia, others have this financial mechanism for the electricity production form different RE sources.

And as not stated in this table, 'grants from the Government side are not considered for the building sector in all countries.'

It should be stated that government should be a sample financier for EE and RE in the building sector for good demonstration projects to attract the public interest starting from their building and giving tax reduction/exemption for EE and RE products and technologies as well as some grants through either mandatory or voluntary energy saving targets, expected from EE/RE implementation projects.

On the other hand, from different international organizations/financial institutions (the World Bank, EBRD – European Bank for Reconstruction, EIB – European Investment Bank, GEF – Global Environmental Facility, KfW - Reconstruction Credit Institute of Germany, AFD – French Development Agency, etc.), there exist various credit lines and grants (no grant in Turkey). This is a good base for financing EE and RE activities in the building sector to be able to take the national financial institutions' attention. Some of these credits are from WEBSEFF or TURSEFF – Western Balkans (Bosnia, Macedonia, Serbia) or Turkish Energy Financing Facility like structures as an umbrella institutions acting between international donors and national banks. The second way, they can give directly to the costumers or separate cooperation with one or more national banks.

As mentioned in the above section, ESCOs are essential for the widespread EE and RE implementation projects realization. ESCOs use different contract for their projects, namely "energy performance contract – EPC." The base of EPC is to guarantee the how much energy can be saved after the project implementation. The financing can be from either self-financial sources of ESCOs or costumers or third party, such as financial institutions and banks. As listed in Table 10, public-private partnership (PPP) and third party financing (TPF) can be regarded as related financing mechanisms for ESCOs. PPP is denoted for central or local government involved project, implying that a private ESCO can work with the government by using either its financing sources or TPF within the framework of EE and RE implementation project. This requires some revisions on the public procurement legislation in order to able to ESCOs can enter these procurements offered by the governments, especially for their building auditing and renovation. Other than Montenegro and Turkey, the other countries have already related legislation. It should be kept in mind that successful implementation projects are required based on applicable legislation to apply more TPF in other projects like between ESCO and the costumer, directly.

In the more developed world, energy-economy-environment goes hand by hand in the concept of "low carbon society or economy", which can be defined reducing GHG emissions of a country as much as possible by efficient and feasible measures. (i.e. EE and RE) To be able to take a part in such a kind of activity, the first thing is to have EE and RE technology database and development according to national requirements, and opportunities. Then, involvements of environmental or green funding mechanisms, like white certificate, emission trading, etc. in EE and RE applications are needed.

5.6. Future Prospects on other Possible Financing Mechanisms for EE in the Building Sector

When future prospects of other financing mechanisms for EE in the building sector were asked to the partner countries' representatives, their opinions were listed in Table 11.

Table 11. Future prospects of EUbuild EE partner countries on financing mechanisms for EE in the building sector (Acuner, 2012)

COUNTRY	FUTURE PROSPECTS
ALBANIA	» Soft Loans; Energy Efficiency Fund; Tax Reduction
BOSNIA HERZEGOVINA	» Soft loans, budget grants, international technical assistance
MACEDONIA	» Direct Subsidies with controlling mechanism » Taxation policy (Amortization, Energy consumption tax, Tax benefits (for investors and fund users), Green mortgage – lower tax or no tax on energy efficient equipment and household appliances, White certificates or similar » Favourable customs duties for energy efficient equipment » Mobilizing capital for creation of investment funds (National Fund for Energy Efficiency) » Guarantees for commercial banks » Low-income family energy efficiency financing programs given the rate of people with low income in the country » Development of secondary legislation for ESCO's, and promotion of ESCO's
MONTENEGRO	» Enhanced and greater involvement of relevant addresses - stakeholders, (local governments, public companies, financial organizations – banks, energy supplying company, public sector, private sector NGO's…) towards establishing new and innovative mechanisms for supporting EE, eg tax relief, low interest loans, easier fund access…
SERBIA	» Third-party financing, energy performance contracting, guarantee of energy savings contracts... » Preferential loans and credits with low interest rate » Minor part of the population and consumers of energy has own economic potential to self -invest in Energy efficiency and they are preferably interested for tax and duties reduction/exemption on the constructing material, equipment, etc., » Government should continually improving instructions and awareness for citizens and other stakeholders according the latest regulations, how to apply energy efficiency measures in the households and invest in increasing energy efficiency, especially in the building sector.
TURKEY	» Governmental financing mechanisms (EE projects and Voluntary Agreements types of incentives) for building sector » Public-private partnership, energy performance contracting with third party financing » Preferential loans and credits with low interest rate together with the involvement of more national financing institutions » Taxation and tariff policy arrangements in favour of EE in buildings

As can be driven from Table 11, the following items can be driven as common remarks:

- For all countries, government support with national EE fund formulation, different project support mechanisms and arranging taxes (for EE/RE equipment, technologies and systems support) /tariffs (electricity tariffs for the building and electricity form RE sources) in favour of EE are emphasized.
- In addition, for the credit lines, decreasing the interest rates with long payback period is needed, especially for the low-income public. Moreover, more involvement of national banks shall be crucial for these targets.
- The other common point is to develop/increase the ESCO activities with PPP and EPC/TPF arrangements and applications.

5.7.Recommendations for Further Improvements on EE and Financing in the Building Sector

Thinking not only the financial part but also the whole EE concept, recommendations for each partner country were detailed in Table 12.

Table 12. Recommendations for the future improvements of EE and financing in the building sector (Acuner, 2012)

COUNTRY	RECOMMENDATION
ALBANIA	» Awareness Energy Efficiency Campaign; Technical Assistance for preparation of Energy Performance into buildings considering cost benefit analysis under Albanian/country conditions;
BOSNIA HERZEGOVINA	» Soft loans from domestic development banks, tax discount rate for EE equipment, implementation of public private partnership regulation
MACEDONIA	» Building certification » Energy Performance Contracting » Requirements to purchase equipment based on lists of energy-efficient product specifications of different categories of equipment, as well as establishing of accredited laboratories for certification of EE equipment » Introduction of mandatory certificates for sites, public or municipal property in operation, with a total useful area of over 1000 sq. m., preceded by energy audits prescribing energy savings measures. » Higher involvement of energy engineers in the financing institutions (banks) » Implementation of wide awareness campaigns » Future incentives for the banks (guarantee funds) to develop financial products for EE

COUNTRY	RECOMMENDATION
MONTENEGRO	» ESCO might be able to deliver in short time; introduction of targeted EE credit lines with lower interest rates and grace period; reduced taxes on EE equipment and services » It should be noted that EE equipment/materials prices are still too high (most of it, if not all, come from the import and there is limited impact Regional governments can do, except to find common approach.
SERBIA	» Energy efficiency is one of the most cost effective ways to enhance security of energy supply, and to reduce emissions of greenhouse gases and other pollutants and thus contribute to sustainable development. » Building sector is the most energy-demanding sector in Serbia and energy efficiency can be seen as biggest energy resource especially as potential opportunities in renovation of the existing building stock. » Cost-effective energy saving activities in buildings sector have a great potential for stimulating direct and indirect employment in the construction and related industries from the materials supply chain.
TURKEY	» More R&D studies for the technological improvements in EE and RE concerning climate change i.e. reduction of GHG and related financing mechanisms application like white certification » Datacentre formation for the determination of reference values and the maximum saving potentials for the energy performance certification » More demonstration projects especially by public-private partnerships for the standardization » Eco-design concerns for energy consuming equipment and systems

By analysing Table 12, the below stated recommendations can be identified as crucial for all partner countries.

- Mandatory energy management/manager/auditor applications
- Development of building stock inventory and reconstruction/renovation road map
- Mandatory application of energy certification of buildings (for the new and the existing)
- Determination of energy saving potentials of the buildings by mandatory EE auditing
- Development of EPC scheme and more demonstration for ESCOs
- International technical assistance for ESCO market and EE/RE technologies improvements
- Accredited laboratories for the verification / testing EE equipment, systems efficiencies
- Awareness raising campaigns for all stakeholders
- Environmental / green financing opportunities in the country

For sustainability of EE and RE activities together with the governments, 'properly developed and acting "agency" like institutions are crucial for implementing EE in whole country by continuous controlling, monitoring and verification.'

‘the crucial point, which should be kept in mind, that we, public, are the consumer; we are the producer, hence, we have the power to realize what is expected and what is need to be improved on energy efficiency and financing in the building sector for security of supply and demand, sustainability and competitiveness’



6

CONCLUSION and RECOMMENDATION for FINANCIAL SUPPORT for EE in BUILDINGS

What are expected; realized and need to be improved?

When the objectives and expected results of EUbuild EE project are investigated, the following crucial expectations, realization levels and related issues that are needed to be improved can be concluded:

Table 13. What are expected; realized and need to be improved for EUbuild EE Project (Acuner, 2012)

EXPECTATION	REALIZED	NEED TO BE IMPROVED
To create a database/document about energy efficiency regulations, incentives and financial mechanisms	EUbuild web page Guidebook	To provide regular flow of information and knowledge sharing among project partners
To provide coordination and regular flow of information among all stakeholders about energy efficiency and financial instruments	Round-table meetings Country Reports Guidebook	To continue round-table structured meetings for all stakeholders To take part in national conferences, seminars, etc. To change production in favour of energy efficient materials and systems To effect end-users' consumption behaviour in a positive manner
To share best practices and to develop opportunities for forming strategic collaborations	Study-visits to Macedonia, Berlin and Brussels Workshops in Istanbul and Brussels International Conferences in Istanbul and Brussels	To develop further projects by partner countries as well as with EU To participate in international meetings, conferences, etc.
To develop new financial methods on energy efficiency in the building sector	Country Reports Declaration (Appendix 1) Manifesto (Appendix 2) Guidebook	To perform more on awareness raising activities in line with increasing knowledge about the new financial instruments and incentives especially for national financing market To develop new projects to structure suitable new financing mechanism(s) inside the country

From EU side, "Energy Efficiency Directive" on 11 September 2012 is the last piece of legislation out of a suite of three which came as a result of the March 2007 EU summit, when member states had struck an agreement on a 20% energy efficiency target by 2020, together with a 20% renewable energy target and a 20% CO_2 reduction target. Member states are required to implement a set of binding, flexible measures and set a national energy efficiency target - which would have to be 20% energy savings for the EU as a whole by 2020.

The main changes the directive brings to existing legislation are:

- Each member state requires establishing a strategy for renovation of the building stock.
- Energy companies are requested to reduce their energy sales to industrial and household clients by at least 1.5% each year;
  - Requires delivering accurate billing information based on actual consumption to the customer
  - A 3% renovation rate for public buildings which are "central government-owned and occupied"; in a cost

effective manner towards "nearly zero energy levels";

- ✶ Requires that each year 3% of floor area of buildings occupied by central government is renovated each year and solicitation be made to regional and local bodies to draft energy efficiency plans and use energy performance contracting.

» An obligation on each EU member state to draw up a roadmap to make the entire buildings sector more energy efficient by 2050 (commercial, public and private households included) i.e. establishing a national financing and technical assistance infrastructure for renovation of buildings;

- ✶ Requires member state to evaluate and possibly take measures to alleviate the split of incentives between the owner and the tenant of a building or among owners, with a view to ensuring that these parties are not deterred from making efficiency-improving investments.

» The new directive also includes additional measures on energy audits (will start in 3 years and perform in every 4 years) and energy management for large firms, cost-benefit analysis for the deployment of combined heat and power generation (CHP) and public procurement (obligatory use of EE as a criterion in public procurement, voluntary/obligatory actions to promote energy service companies (ESCOs)).

- ✶ Requires the Availability of qualification, accreditation and certification schemes.
- ✶ Requires central governments to purchase only products and buildings with high energy-efficiency performance.
- ✶ Supports a general provision of individual meters.

Additionally, from the EU perspective, "Energy-efficient Buildings PPP beyond 2013" draft report by European Construction Technology Platform (ECTP) and Energy Efficient Building European Initiative (E2B) in July 2012, explained unique opportunities to shape the research and Innovation roadmap towards Horizon 2020 as follows:

The building sector will be one of the key enablers of 20/20/20 targets for 2020 and also the 2050 decarbonisation goal for the European economy. These goals link two European policies:

» **The energy policy:** long term scenarios by 2050 show that a 40% to 50% reduction of the building "sector "energy consumption is mandatory by 2050 to decrease the amount of fossil fuels used.

» **The climate policy:** long term scenarios by 2050 show that the building "sector" must target a reduction of about 90% of its CO_2 emissions, since accounting for about 1.4 gigatons of CO_2 per year.

In line with the ambitious 2050 targets, the long-term strategic objectives comprise:

» Most buildings and districts will become energy neutral, and have a zero $C0_2$ emissions. A significant number of buildings would then be energy positive, by integrating renewable energy sources, clean distributed generation technologies and smart grids at district/national level.

» Public Private Partnerships will indeed cover the entire innovation chain; fostering performance based contracting and innovation friendly procurement practices. This will be achieved with sustainable financial incentives schemes on the demand side. On the supply side, systemic technical solutions will be integrated locally.

» Urban planning and smart cities implementations will leverage on these novel solutions at building and district scale, creating the basis for intelligent connections between buildings and districts and all urban resources.

- The implementation of the 2050-decarbonisation goals raises new grand challenges for the building sector and the entire value chain (technology manufacturers, construction companies, energy service companies, etc.):
- How to make the routes to reach the 2050 goals realistic when complying with intermediate targets by 2020 (20/20/20)?
- How to reduce the risk of potential market failures ahead?

It can be stated that the above policy strategies are implemented with very little public funds. They are first supposed to drive the behaviour of market players in the expected directions. Yet, there is evidence that market players do not implement the expected behavioural changes. Energy or greenhouse gas emission savings are rarely the main drivers. Typical drivers may include the improvement of the living quality and comfort of the building, or even the improvement of the building appearance and economic value.

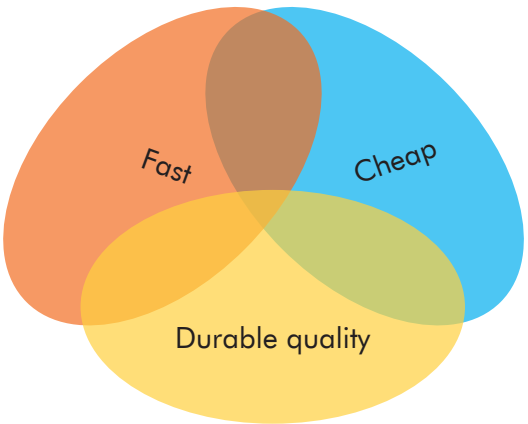


Figure 34. The speed/quality/cost trilemma (ECTP-E2B, 2012)

The probability of a market failure is therefore rising under these conditions. Mandatory applications by related legislation recasting will be the case whereas the building sector will be unable to transform them into opportunities, either because the supply is not adequate (too expensive) or the demand is not ready (too high upfront investment costs). Reducing the probability of a major market failure requires that all the stakeholders of the building sector (manufacturers, constructors, energy service companies, etc.) accelerate and deepen refurbishment, while keeping investment costs under control. Increased technological, social and business innovation is therefore needed now and in parallel to address several issues:

- Most technology solutions are too expensive.
- Construction processes lack productivity and quality (i.e. existing gaps between performance by design and performance at commissioning)
- Renewable energy sources have not yet reached mature integration into existing or new buildings (to provide users with heat and/or electricity that are independent from fossil fuel uses, innovation is still needed to optimize renewable energy impacts and uses at building and district level).

Managing the above stated issues requires meeting three constraints, like in any technology development (Figure 34):

- **The time required** to deliver innovative technologies and/or construction processes **(fast)**,
- **The quality** of the technologies and/or construction processes **(durable energy efficiency)**,
- **The total costs** required for developing and implementing the product or construction process **(cheap-affordable)**.

Affordability means the arrival of a demand-driven market whereas durable quality and fast delivery of innovative technologies guarantee that energy savings will last long after new or refurbished buildings have been commissioned. Thus, the 2050 deadline to reach full decarbonisation remains under question.

As a conclusion derived from EU experience, SWOT analyses of the EUbuild EE project partner countries and the future prospects of these countries together with the EU can be summarized in Table 14.

Table 14. Summary of key performance indicators and expected outcomes for selected strategies (Acuner, 2012)

STRATEGY	KEY PERFORMANCE INDICATORS	EXPECTED OUTCOMES
DESIGN	The gap between building performance by design and built performance	More reliable design tools Higher quality in the construction process Fast and cheaper commissioning is narrowed down to a value consistent with energy performance contracts
STRUCTURE	The embodied CO_2 content per m^2 of useful floor area due to construction materials in building structures	New standards for suitable construction materials
ENERGY EQUIPMENT	Financially attractive zero energy and CO_2 neutral energy buildings/districts Widespread uses of energy labelling for all major energy equipment Supply of energy after refurbishment ensured from renewable or waste energy sources Reduction of difference between peak power demand and minimum night time demand Real time optimization of energy demand and supply using intelligent energy management systems	Zero energy building as a standard for new buildings (office, housing) Refurbishment strategies for existing buildings/ districts that are attractive financially Standards for interoperability of equipment that facilitate their seamless integration within building energy management Innovative high efficient systems dedicated to energy consuming systems
PERFORMANCE MONITORING AND MANAGEMENT	Percentage of performance guaranteed contracts Percentage of building energy performance systems (BEMS) applications	Durable energy performance for new and refurbished buildings, leading to improved control of building ownership costs and CO_2 footprints Multi-scale BEMS allow improving the level of users' awareness and optimizing energy demand

STRATEGY	KEY PERFORMANCE INDICATORS	EXPECTED OUTCOMES
FINANCING	Increased investment in the efficiency improvement Purchase of efficient energy-using materials, equipment and systems Increase in public-private partnership and energy performance contract	To convert the initial down-payment into a payments stream that coincides in time with the savings stream. Intervention by the government apart from realistic pricing, to promote energy savings by creating standards and regulations for those appliances (boilers, furnaces, pumps, lights, etc.) Government decision for improving ESCO market for pursuing least-cost planning
LIFE CYCLE ASSESSMENT	Reusable/recycled building components usage New certification and insurance systems Demonstrations as examples of good practices in recycling and reuse Innovative financial support schemes.	Recyclability / reusability criteria defined to launch business models on reliable sound grounds Development of procedures for the assessment of the durability and long-term performance of recycled materials, Development of specific design rules and construction procedures based on recycled and/or reused components.
INTEGRATION	The systemic integration of components and sub-systems (e.g. structure, envelope, energy equipment) Cross-cutting innovation topics (research, procurement management, standardization, energy labelling, etc.)	To contribute to the energy performance of buildings (more than technology and markets) To gain public (including all stakeholders) acceptance and engagement

To say the last words, the crucial point, which should be kept in mind, that we, public, are the consumer; we are the producer, hence, we have the power to realize what is expected and what is need to be improved on energy efficiency and financing in the building sector for security of supply and demand, sustainability and competitiveness.



“energy efficiency should be understood as a “culture” for all countries and these intensive and joint works should not be ended by the end of this project but should be continued with more progress”



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9. ACKNOWLEDGMENT

by Ebru Acuner – EUbuild EE Project Technical Consultant of IMSAD

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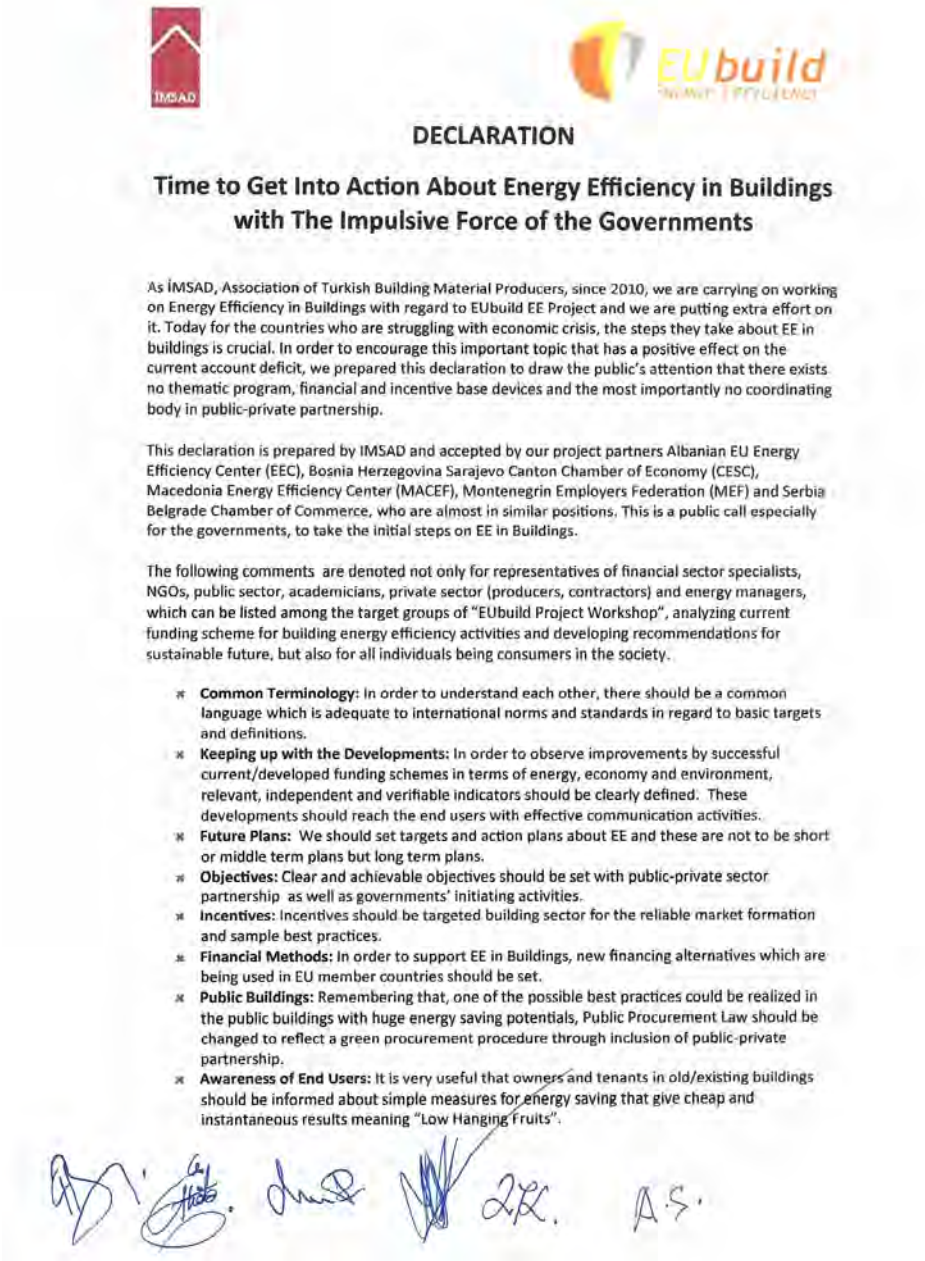
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- Montenegro – Nikola Vujosevic, Technical Consultant of Montenegrin Employers Federation (MEF)
- Serbia – Dimitrije Lilic, Technical Consultant of Belgrade Chamber of Commerce (BCC)

CEPMC Council of European Producers of Materials for Construction, Researchers:

- Christophe SYKES – General Coordinator
- Chloe Fayole – Public Affairs Manager
- Oscar Nieto – Sustainable Construction Manager

10.1. EUbuild EE Project Declaration



DECLARATION

Time to Get Into Action About Energy Efficiency in Buildings with The Impulsive Force of the Governments

As İMSAD, Association of Turkish Building Material Producers, since 2010, we are carrying on working on Energy Efficiency in Buildings with regard to EUbuild EE Project and we are putting extra effort on it. Today for the countries who are struggling with economic crisis, the steps they take about EE in buildings is crucial. In order to encourage this important topic that has a positive effect on the current account deficit, we prepared this declaration to draw the public's attention that there exists no thematic program, financial and incentive base devices and the most importantly no coordinating body in public-private partnership.

This declaration is prepared by IMSAD and accepted by our project partners Albanian EU Energy Efficiency Center (EEC), Bosnia Herzegovina Sarajevo Canton Chamber of Economy (CESC), Macedonia Energy Efficiency Center (MACEF), Montenegrin Employers Federation (MEF) and Serbia Belgrade Chamber of Commerce, who are almost in similar positions. This is a public call especially for the governments, to take the initial steps on EE in Buildings.

The following comments are denoted not only for representatives of financial sector specialists, NGOs, public sector, academicians, private sector (producers, contractors) and energy managers, which can be listed among the target groups of "EUbuild Project Workshop", analyzing current funding scheme for building energy efficiency activities and developing recommendations for sustainable future, but also for all individuals being consumers in the society.

- **Common Terminology:** In order to understand each other, there should be a common language which is adequate to international norms and standards in regard to basic targets and definitions.
- **Keeping up with the Developments:** In order to observe improvements by successful current/developed funding schemes in terms of energy, economy and environment, relevant, independent and verifiable indicators should be clearly defined. These developments should reach the end users with effective communication activities.
- **Future Plans:** We should set targets and action plans about EE and these are not to be short or middle term plans but long term plans.
- **Objectives:** Clear and achievable objectives should be set with public-private sector partnership as well as governments' initiating activities.
- **Incentives:** Incentives should be targeted building sector for the reliable market formation and sample best practices.
- **Financial Methods:** In order to support EE in Buildings, new financing alternatives which are being used in EU member countries should be set.
- **Public Buildings:** Remembering that, one of the possible best practices could be realized in the public buildings with huge energy saving potentials, Public Procurement Law should be changed to reflect a green procurement procedure through inclusion of public-private partnership.
- **Awareness of End Users:** It is very useful that owners and tenants in old/existing buildings should be informed about simple measures for energy saving that give cheap and instantaneous results meaning "Low Hanging Fruits".

- **A way out of Economical Crises:** The step that is taken today is a way to cope with economic crises. And also acting as an earthquake safety measure which Turkey is extremely suffering.
- **Data:** Establishing integrated information system (IMIS)/network among all stakeholders with the main goal to support sustainable development by enhancing information integration, data management and monitoring should be established.
- **Media:** Prime time is not just for the serials also for creating awareness in the society so does the newspapers, remembering actually each of us is a consumer in any kinds of building.
- **Conclusion:** Last but not least, a powerful and independent Agency-Energy Efficiency Center should be established for the sake of all listed crucial activities.

This declaration could be accepted as a SWOT analysis in financing energy efficiency in building sectors. Keeping in mind that "every toe of energy you saved can result in a bulk of money in your pocket towards low carbon society", the discussion is already over and this is the time for not thinking but acting.

We, as the organizations with signatures below, are determined and ready to cooperate with public, finance and private sector, NGOs and BROs, universities and media as well as the end users on EE in Buildings.

This declaration is an invitation, in the short run, an indicator for the success of EUbuild Project but in the long run it is an indicator of our unity and solidarity for a sustainable future.

IMSAD, Ass.of Turkish Building Material Producers
Hüseyin Bilmaç (Turkey)

EEC, EU Energy Efficiency Center
Edmond Hido (Albania)

CESC, Sarajevo Canton Chamber of Economy
Rusmira Mandic (Bosnia Herzegovina)

MACEF, Macedonian Energy Efficiency Center
Makedonka Dimitrova (Macedonia)

MEF, Montenegrin Employers Federation
Drazen Karadaglic (Montenegro)

BCC, Belgrade Chamber of Commerce
Andjela Sofic (Serbia)

10.2. EUbuild EE Project Manifesto

MANIFESTO

Here is the Primary 5 Actions in Financing Energy Efficiency in Buildings:

Design-Experience-Learn-Operate-Monitore and Finally Gain More than What You Invest

The Declaration, announced by IMSAD, Association of Turkish Building Material Producers and partners, within the framework of "EUbuild EE – Financing Energy Efficiency in Buildings" project in November 2011, mainly pointed out general requirements for providing energy efficiency concerns and actions in the building sector by emphasizing the need of an impulsive force of the Governments. After analysing the SWOT analyses of the project partner countries, **Albanian** EU Energy Efficiency Center (EEC), **Bosnia Herzegovina** Sarajevo Canton Chamber of Economy (CESC), **Macedonia** Energy Efficiency Center (MACEF), **Montenegrin** Employers Federation (MEF) and **Serbia** Belgrade Chamber of Commerce, it has been derived what is in common on financing issues with regards to energy efficiency in the building sector.

It should be noted that the **Manifesto** comprises basic primary actions on financing energy efficiency in buildings and there should be detailed interpretations of these actions, stated below, on the basis of each and every country's specific conditions.

1. **Governmental policies are the base for the EE implementations** especially while differentiating voluntary/mandatory energy efficiency applications in favour of being more mandatory together with **incentives and punishments**.

2. **Integrated building stock information, measurement and monitoring system** should be developed in order to determine reference and maximum available energy saving potentials within the specific building types (residential, commercial with their sub-sectors) for true application of energy performance certification and contracting.

3. In order to lead market formation with regard to financing energy efficiency, the starting point should be by **learning from others' experiences** but also learning by doing with more implementation projects have utmost importance.

4. Investments on energy efficiency are the type of investment that **gain more than what you invested** which is bearing 3E-energy-economy-environment management.

Investment on energy efficiency (EE) and renewable energy (RE) applications= Direct impact (gain only by EE/RE measure itself) + Indirect Impact (environmental i.e. reducing GHG; lower energy dependence i.e. high energy security) + Induced Impact (Social i.e. more employment, increased comfort levels, improved health and productivity)

5. In order to reduce the differences between what is targeted and what is realized for the sake of the investment on energy efficiency, performances from material to energy consuming systems should be **designed, installed, operated and monitored properly**.

We, as the organizations with signatures below, continue to study to realise these primary actions explained above. We believe that these actions will the fundamental steps towards our sustainable future.

IMSAD, Ass.of Turkish Building Material Producers
Hüseyin Bilmaç (Turkey)

EEC, EU Energy Efficiency Center
Edmond Hido (Albania)

CESC, Sarajevo Canton Chamber of Economy
Rusmira Mandic (Bosnia Herzegovina)

MACEF, Macedonian Energy Efficiency Center
Igor Petrusevski (Macedonia)

MEF, Montenegrin Employers Federation
Drazen Karadaglic (Montenegro)

BCC, Belgrade Chamber of Commerce
Andjela Sofic (Serbia)

10.3. EUbuild EE Project Associate Partners

PUBLIC:

Albania Ministry of Economy Trade and Energy - Power Policies Directorate-AL
Albania Ministry of Housing Politics Bosnia Herzegovina - BIH
Economic Institute Sarajevo - BIH
Picardie Regional Council – FR
Republic of Serbia Energy Efficiency Agency - RS
Ministry of Environment and Urbanisation Energy Efficiency in Buildings Unit - TR
Turkish Ministry of Energy and Natural Resources - TR

PUBLIC-PRIVATE:

ADEME- French Environment an Energy Management Agency- FR

PRIVATE:

Austrian Energy Agency - AU
Energy Institute - MK
ALEANT - MK
Rehau Dooel Skopje - MK
ZIGMA a.d. Nikšić – ME
ENSI – Energy Saving International AS – NO
Şekerbank – TR
İstanbul Enerji San.ve Tic.A.Ş.-TR

MUNICIPALITIES:

Municipality of Aerodrom - MK
Municipality of Chashka - MK
Union of Municipalities of Marmara – TR

UNIVERSITY:

Polytechnic University of Tirana - Faculty of Mechanical Eng. - AL
Polytechnic University of Tirana - Faculty of Electrical Eng. - AL
Istanbul Technical University – TR
Yalova University - TR

CIVIL SOCIETY ORGANISATIONS (CSO):

Novi Grad Municipality Sarajevo - BIH

Association of Architects of Republic Of Sırpska - BIH

HUMANOPOLIS - MK

Economic Chamber of Macedonia - MK

Analytica Macedonia - MK

Engineers Chamber of Montenegro - ME

Association European Block - RS

Association for E-Business - RS

Chamber of Commerce of Srem - RS

WWF Turkey - TR

BSEC (Black Sea Economic Cooperation) Business Council - TR

AGID - Lighting Luminaries Manufacturers Association - TR

ALÇIDER - Turkish Gypsum Producers Association - TR

ÇATIDER - Association of Roofing Industrialists and Businessmen - TR

DOSIDER - Natural Gas Equipment Producers and Businessman Association - TR

İSKİD - Air Conditioning & Refrigeration Manufacturers' Association - TR

İZODER - Association of Thermal Insulation, Waterproofing, Sound Insulation and Fireproofing Material Producers, Suppliers and Applicators - TR

PUKAD - Plastic Profile Manufacturers "Quality Union" Association - TR

TUCSA - Turkish Structural Steel Association - TR

TALSAD - Turkish Aluminium Producers Association - TR

TGUB - Turkish Aerated Concrete Producers Union - TR

TCA - Turkish Contractors Association - TR

XPS Heat Insulation Producers Association - TR

EUbuild
ENERGY EFFICIENCY

FINANCING ENERGY EFFICIENCY IN BUILDINGS PROJECT



This project is funded by European Union

IMSAD
Lead Applicant

Project Partners

EEC - Albania - EU Energy Efficiency Centre

CEPMC

CHAMBER OF ECONOMY OF SARAJEVO CANTON

MACEF

BELGRADE CHAMBER OF COMMERCE

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