



## Sustainability and energy efficiency in engineering services

### BACKGROUND

Monitoring of the European policy and legislative developments

### I. EUROPE 2020 - A strategy for smart, sustainable and inclusive growth

["Europe 2020: a strategy for smart, sustainable and inclusive growth"](#)

The European Commission launched a new 10-year economic strategy, called Europe 2020, to boost European economy and promote a smart, sustainable and inclusive growth, based on a greater coordination of national and European economic policy. The initiative wants to overcome the weaknesses of the Lisbon strategy and paving the way for the creation on new jobs and a better quality of life. Europe 2020 sets out a vision of Europe's social market economy for the 21st century.

There are three proposed priorities for action:

- **Smart growth** - fostering knowledge, innovation, education and digital society
- **Sustainable growth** - making our production more resource efficient while boosting our competitiveness
- **Inclusive growth** - raising participation in the labour market, the acquisition of skills and the fight against poverty

#### Headline Targets

- Raise the employment rate of the population aged 20-64 from the current 69% to at least 75%.

– Achieve the target of investing 3% of GDP in R&D in particular by improving the conditions for R&D investment by the private sector, and develop a new indicator to track innovation.

– Reduce greenhouse gas emissions by at least 20% compared to 1990 levels or by 30% if the conditions are right, increase the share of renewable energy in our final energy consumption to 20%, and achieve a 20% increase in energy efficiency.

– Reduce the share of early school leavers to 10% from the current 15% and increase the share of the population aged 30-34 having completed tertiary education from 31% to at least 40%.

– Reduce the number of Europeans living below national poverty lines by 25%, lifting 20 million people out of poverty.

In order to meet the targets, the Commission proposes a Europe 2020 agenda consisting of a series of **flagship initiatives**. Implementing these initiatives is a shared priority, and action will be required at all levels: EU-level organisations, Member States, local and regional authorities.

#### Flagship Initiatives - Smart Growth:

##### INNOVATION

EU flagship initiative "**Innovation Union**" to improve framework conditions and access to finance for research and innovation so as to strengthen the innovation chain and boost levels of investment throughout the Union.

#### EDUCATION

EU flagship initiative "**Youth on the move**" to enhance the performance of education systems and to reinforce the international attractiveness of Europe's higher education.

#### DIGITAL SOCIETY

EU flagship initiative "**A digital agenda for Europe**" to speed up the roll-out of high-speed internet and reap the benefits of a digital single market for households and firms.

#### **Flagship Initiatives - Sustainable Growth:**

#### CLIMATE, ENERGY AND MOBILITY

EU flagship initiative "**Resource efficient Europe**" to help decouple economic growth from the use of resources, by decarbonising our economy, increasing the use of renewable sources, modernising our transport sector and promoting energy efficiency, re-focussing R&D and innovation policy on major challenges, while closing the gap between science and market to turn inventions into products

#### COMPETITIVENESS

EU flagship initiative "**An industrial policy for the globalisation era**" to improve the business environment, especially for SMEs, and to support the development of a strong and sustainable industrial base able to compete globally.

#### **Flagship Initiatives - Inclusive Growth:**

#### EMPLOYMENT AND SKILLS

EU flagship initiative "**An agenda for new skills and jobs**" to modernise labour markets by facilitating labour mobility and the development of skills throughout the lifecycle with a view to increase labour participation and better match labour supply and demand.

#### FIGHTING POVERTY

EU flagship initiative "European platform against poverty" to ensure social and territorial cohesion such that the benefits of growth and jobs are widely shared and people experiencing poverty and social exclusion are enabled to live in dignity and take an active part in society.

## **II. Sustainable Development Strategy of the European Union (EU SDS) is a framework for a long-term vision of sustainability.**

In simple terms sustainability is living forever from nature without hurting it. Long-term, our chosen energy options must be sustainable, because energy is essential for services such as warmth (in buildings), mobility (transport) and mechanical power, lighting and electronics (from electricity). It is also essential for obtaining materials, by mining and refining, synthesis, and recycling.

Sustainable Development stands for meeting the needs of present generations without compromising the ability of future generations to meet their own needs – in other words, a better quality of life for everyone, now and for generations to come. It is an overarching objective of the European Union set out in the Treaty, governing all the Union's policies and activities. It is about safeguarding the earth's capacity to support life in all its diversity and is based on the principles of democracy, gender equality, solidarity, the rule of law and respect for fundamental rights, including freedom and equal opportunities for all. It aims at the continuous improvement of the quality of life and well-being on Earth for present and future generations. To that end it promotes a dynamic economy with full employment and a high level of education, health protection, social and territorial cohesion and environmental

In July 2009 the Commission adopted the [2009 Review of EU SDS](#). It underlines that in recent years the **EU has mainstreamed sustainable development into a broad range of its policies**. In particular, the EU has taken the lead in the fight against climate change and the promotion of a low-carbon economy.

#### **EU SDS key objectives:**

##### *Environmental protection*

Safeguard the earth's capacity to support life in all its diversity, respect the limits of the planet's natural resources and ensure a high level of protection and improvement of the quality of the environment. Prevent and reduce environmental pollution and promote sustainable production and consumption to break the link between economic growth and environmental degradation.

##### *Social equity and cohesion*

Promote a democratic, socially inclusive, cohesive, healthy, safe and just society with respect for fundamental rights and cultural diversity that creates equal opportunities and combats discrimination in all its forms.

##### *Economic prosperity*

Promote a prosperous, innovative, knowledge-rich, competitive and eco-efficient economy which provides high living standards and full and high-quality employment throughout the European Union.

##### *Meeting international responsibilities*

Encourage the establishment and defend the stability of democratic institutions across the world, based on peace, security and freedom. Actively promote sustainable development worldwide and ensure that the European Union's internal and external policies are consistent with global sustainable development and its international commitments.

The EU's integrated climate and energy policy and an integrated approach to the sustainable management of natural resources, the protection of biodiversity and ecosystem services and sustainable production and consumption are among the drivers for achieving objectives under both the SDS and the Lisbon strategy.

### **III. Lead Market Initiative for Europe /LMI/**

The Commission adopted in Dec. 2007 the communication on the "[Lead Market Initiative](#)" concerning a coordinated and concerted action to facilitate the **emergence of innovative products and services** in six areas (eHealth, protective textiles, sustainable construction, recycling, bio-based products and renewable energies).

#### [Sustainable » construction has been chosen as one of the six.](#)

- [Lead Market Initiative for Europe](#)

The Lead Market Initiative is the first comprehensive effort at EU level for a coordinated demand-side innovation policy approach. It uses a number of policy instruments to facilitate the uptake of new innovative products and services in the market.

A proposed roadmap (action plan) contain a mix of policy measures (in public procurement, standartization/certification, legislation and complementary activities

- [Life-cycle Assessment in Construction](#)
- [Life-cycle Costing in Construction](#)
- [Energy Efficiency in Buildings](#)
- [Green Public Procurement](#)

### An integrated life-cycle-oriented approach

Sustainable construction is one of the six markets in the Lead Market Initiative. It involves environmental concerns, health aspects and issues of convenience. Buildings account for the largest share of the total EU final energy consumption (42%) and produce about 35% of all greenhouse emissions.

### The Sustainable construction sector

Sustainable solutions in residential and non-residential buildings as well as in infrastructure constructions are included in this market area. It involves for example efficient heating installations, in-door air quality systems and issues related to elderly persons' independence. The construction market accounts for 10% of GDP and 7% of the workforce. More than 50% of all materials extracted from earth are transformed into construction materials and products.

The construction sector exercises a wide influence on the rest of society, playing a central role in the major challenges currently facing us, including the economic crisis, energy efficiency, the need to find a more sustainable development and consumption path, health and safety, etc. This influence is also reflected in the wide variety of actions undertaken by the Commission that impact, directly or indirectly, on the construction sector.

The construction market is currently facing significant challenges, not only in terms of its influence on energy and climate change, but also in terms of its impact on natural resources (energy, water and materials) and users' convenience and welfare (accessibility, safety & security, indoor air quality, etc.). This is particularly relevant for the existing building stock which has a significant socio-cultural value for the society and at the same time accounts for by far the most carbon emissions and the greatest energy saving potential.

**Sustainable construction can be defined** as a dynamic for developing new solutions involving investors, construction industry, professional services, industry suppliers and other relevant parties towards achieving sustainable development, taking into consideration environmental, energy, socio-economic and cultural issues. It embraces a number of aspects such as design and management of buildings and constructed assets, choice of materials, energy use the physical and functional performances of building as well as interaction with urban and economic development and management.

Although, insufficiently coordinated regulations, coupled with a predominantly local business structure, has lead to a considerable administrative burden and a high fragmentation of the sustainable construction market. There is also a lack of knowledge on possibilities within the existing legal framework for using public procurement to facilitate demand for innovation-oriented solutions and the use of a life cycle costs approach which is critical for measuring and assessing the real transformation of the sector toward sustainability. Therefore, this raises a concern about how to better integrate the competencies of specialists' contractors and suppliers into project teams and risk management.

The new Renewable Energy Directive came in to force in June 2009. Among other measures, it requires Member States to introduce in their building regulations and codes appropriate measures and minimum use requirements to increase the share of all kinds of energy from renewable sources in the building sector.

### Challenges

The plethora and mismatch of building regulations at EU and national levels leads to considerable administrative burdens and - given that the business structure is predominantly local - to a very fragmented sustainable construction market. Many technical solutions are already available, but demand is highly fragmented. 40% of demand for construction works comes from the public sector, but decision-makers are unaware of the scope for adopting innovation-oriented solutions. There is a lack of knowledge on possibilities for public

procurement that could facilitate demand for innovation-oriented solutions. The introduction of life-cycle and cost-benefit assessments could facilitate the public procurement of sustainable construction.

## Roadmap

Besides applying its better regulation policy, the Community may further render the regulatory framework more efficient by accompanying measures and awareness campaigns, in order to provide a common reference model on sustainability in the market area. Standardisation measures can improve the situation and introduce concepts relevant for sustainability. The Action Plan for sustainable construction presents a comprehensive list of measures to further stimulate a market for products and services in sustainable construction in Europe. These measures endeavor to build a coherent basis for progressive step changes to regulation, standardisation and public procurement practices fostering innovation and sustainability in construction. It is expected through this framework to raise awareness and acceptance about the need to transform the way the customer decides and the supply chain operates. The LMI could considerably speed up the access of citizens and business to new buildings features with enhanced quality of life and working conditions.

The roadmap (action plan) presented in the LMI Communication (Annex 1) outlined 11 actions

Actions 1 and 3: Screening of national building regulations - Industrial leader panel on cumulative administrative costs/benefits

Action 2: Recasting of the Energy Performances of Building Directive

Action 4: Guidance and pilot schemes on award criterion and Life Cycle Costing (LCC)

Action 5: Establish a network between public authorities in charge of procuring sustainable construction

Action 6: Framework, assessment method and benchmarks for the assessment of sustainability performances

Action 7: Widening the scope of European codes for construction design (Eurocodes 2nd generation)  
construction sector

Action 9: SMEs guide on collaborative working schemes in construction projects

Action 10: Alternative warranty/label schemes related to construction insurance

Action 11: EU-wide strategy to facilitate the up-grading of skills and competencies in the

Action 8: Construction Products Regulation and sustainability requirements

The Actions are articulated around **3 core objectives**:

- Making the regulatory and standardisation framework for sustainable construction more coherent
- Developing a culture for innovation and Life Cycle Costing in Public Procurement
- Improving the functioning of the supply and the collaborative environment with customers

## Further information:

- [2nd generation Eurocodes](#)

The Commission will identify, in cooperation with CEN/CENELEC (European Committee for electrotechnical Standardisation) and Joint Rresearch Centre Ispra, the main steps forward for developing Eurocodes encompassing sustainability aspects.

- [Screening of national building regulations](#)

- [Network Contracting Authorities](#)



The Competitiveness and Innovation Framework Programme (CIP) call for proposals envisaged actions to establish networks of public procurement authorities. The aim of these networks is to enable public procurers to improve their knowledge about available innovative solutions, to allow a better coordinated

dialogue with suppliers about the future needs and to realise the benefits of European cooperation in exchanging experience in procurement practices. As a result of the call for proposals, two networks of public procurers in the area of sustainable construction will be funded with a contribution of one million € each for a period of 3 years. The networks will start their activities around 09. 2009

- [Upgrading of skills of construction workers](#)

An appraisal of existing training systems in the Member States and their ability to respond to changing needs has been undertaken. Following the identification and an assessment of a large number of innovative approaches and good practices in the EU, an outline strategy has been developed. To goal is to provide an assessment of future needs for skills and competencies in construction enterprises according to plausible scenarios for the development of the sector in the medium term (10-12 years) and the likely effects of the main anticipated technological, economic, environmental and social developments

#### Documents

- [Mid-term progress report of Sustainable Construction](#)  [405 KB] (published in September 2009)
- [Action plan for sustainable construction](#)  [20 KB]
- [Sustainable construction taskforce report](#)  [211 KB] (composed in preparation for the Lead Market Initiative )

## IV. Energy efficiency

Reducing energy consumption and eliminating energy wastage are among the main goals of the European Union (EU). EU support for improving energy efficiency will prove decisive for competitiveness, security of supply and for meeting the commitments on climate change made under the Kyoto Protocol. There is significant potential for reducing consumption, especially in energy-intensive sectors such as buildings, manufacturing, energy conversion and transport. At the end of 2006, the EU pledged to cut its annual consumption of primary energy by 20% by 2020. To achieve this goal, it is working to mobilize public opinion, decision-makers and market operators and to set minimum energy efficiency standards and rules on labeling for products, services and infrastructure.

The need to increase energy efficiency is part of the **triple goal of the '20-20-20' initiative** for 2020, which means a saving of 20% of the Union's primary energy consumption and greenhouse gas emissions, as well as the inclusion of 20% of renewable energies in energy consumption.

### 1. Policy orientations

- [Energy efficiency for the 2020 goal](#)  
Member States have made a commitment to reduce consumption of primary energy by 20% by 2020. There are still many barriers to the implementation of effective measures. This Communication describes the current position of future projects aiming to reach the '20-20-20' goal.

Energy efficiency represents a solution to:

[tackle climate change](#);

Improve [energy security](#);

Achieve the [Lisbon objectives](#);

Reduce costs within the European Union.

### Measure for energy efficiency in the building sector

Energy consumption in residential and commercial buildings represents around 40% of total final energy use. It is responsible for 36% of the European Union's total CO<sub>2</sub> emissions.

To reduce this type of consumption, steps should be taken to simplify [Directive 2002/91/EC on the energy performance of buildings](#), which constitutes the current legal framework, whilst leaving some autonomy to Member States to act in this area.

The European Commission proposes that the 1000 m<sup>2</sup> threshold for existing buildings when they undergo major renovation is eliminated and that the requirements concerning energy performance be applied to a larger number of buildings.

The launch of innovative, sustainable and energy-efficient actions was also planned in 2009 in this sector.

### **Measure for the energy efficiency of products**

The Commission has presented a [Proposal for a Directive establishing a framework for the setting of ecodesign requirements for energy related products](#) aimed at extending the scope of the **Ecodesign Directive**. A proposal to revise the Energy Labelling Directive, [Directive 92/75/EEC](#), is also planned. Another proposal for a labelling scheme for tyres is also part of this policy package.

Ecodesign measures will be adopted for lighting (bulbs, electrical appliances, external power supplies, etc).

### **Financing**

More and more urban development and renewal projects are related to energy efficiency. In order to encourage this type of project, a well-coordinated financing framework should be implemented.

In this regard, the Commission is collaborating with the European Investment Bank (EIB) and the European Bank for Reconstruction and Development (EBRD) in order to create an EU financing initiative for sustainable energy.

As part of the renewed Lisbon strategy, the Commission will also ensure that more public funds are devoted to projects aimed at combating climate change.

In this economic context of crisis that the Member States are currently experiencing, the Commission is working in close collaboration with the latter to develop new opportunities for the economy with a view to boosting technologies related in particular to energy efficiency and green technologies in buildings and clean cars. Reduced taxation with regard to energy is being considered.

#### ○ [Action Plan for Energy Efficiency \(2007-12\)](#)

The Commission has adopted an Action Plan aimed at achieving a 20% reduction in energy consumption by 2020. The Action Plan includes measures to improve the energy performance of products, buildings and services, to improve the yield of energy production and distribution, to reduce the impact of transport on energy consumption, to facilitate financing and investments in the sector, to encourage and consolidate rational energy consumption behaviour and to step up international action on energy efficiency.

### **Measures proposed by the action plan**

The Commission included in the Action Plan all measures presenting the best cost-efficiency ratio, i.e. those with the lowest environmental cost over the life cycle, which do not overrun the budget given for investments in the energy sector.

### **Improving energy performance**

Effective action on energy-consuming equipment and appliances requires steps on two fronts: standards for the energy yield of appliances and an appropriate, consumer-focused system to label and evaluate energy performance.

To this end, the Action Plan provides for the adoption of [Eco-Design](#) minimum standards to improve the energy yield of 14 groups of products (including boilers, televisions and light fittings) and to extend it to other products in the long-term. In

addition, the Commission hopes to strengthen the [rules on labelling](#), in particular by regularly updating classifications and extending these rules to other equipment.

On the basis of [Directive 2006/32/EC on end-use energy efficiency](#) and energy services, the Commission plans to draft guidelines, a code of conduct and a certification procedure applicable to all sectors.

To substantially reduce heat loss in buildings, the Action Plan plans to extend the scope of the [Energy Performance of Buildings Directive](#) to cover small buildings, to develop minimum performance standards applicable to new and renovated buildings and to promote so-called "passive" houses.

#### **Limiting the costs linked to transport**

With almost 20% of total primary energy consumption and the fastest growth in consumption, the transport sector represents both a major environmental risk (greenhouse gas emissions) and one of the main factors of dependency on fossil fuels. To solve these problems, it is vital to take action on car use and on promoting cleaner alternative transport.

Reducing the energy consumption of other forms of transport – rail, air and water-based – will also be studied. Accordingly, the Action Plan includes an initiative to extend the greenhouse gas emissions trading scheme to the air transport sector, to improve air traffic control ([SESAR](#)), to implement the third rail package, and to connect ships to the electricity network when in harbour.

#### **Financing, incentives and fares**

The Action Plan includes several types of measures to facilitate investments designed to boost energy efficiency.

The Commission also calls on the banking sector to offer financing opportunities tailored to small and medium enterprises (SMEs) and enterprises providing energy efficiency solutions (businesses providing energy services). In addition, the private banking sector, the European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB) and other international financial institutions will facilitate the establishment of public-private partnerships.

The Commission also plans to remove, where possible, the national legal barriers to shared savings, third-party financing, energy performance contracting and recourse to businesses providing energy services.

Using the [Structural and Cohesion Funds](#) will also help provide support to regions in need, especially in the new Member States, including support for habitats.

Taxation is also a powerful tool for providing incentives. Here the Commission notes that it would draft a Green Paper on indirect taxation, revise the [Energy Tax Directive](#), and encourage the [taxation of private cars](#) according to their pollution levels. It also highlights the potential for using tax credits as incentives for both companies and households.

#### **Changing behaviour**

Consumers' purchasing decisions will determine the success of the results. The Commission plans a number of educational measures to raise public awareness of the importance of energy efficiency, including education and training programmes on energy and climate change issues. It also proposes to organise a competition to reward the most energy-efficient school.

- [Green Paper on energy efficiency](#)
- [Competitiveness and Innovation Framework Programme \(CIP\) \(2007-2013\)](#)
- [The Global Energy Efficiency and Renewable Energy Fund](#)
- ["Intelligent Energy for Europe" programme \(2003-2006\)Archives](#)
- [Action Plan for energy efficiency \(2000-2006\)Archives](#)

## **2. Delivering energy efficiency**

- [Energy end-use efficiency and energy services](#)



- [Cogeneration](#)
- [Energy efficiency: energy performance of buildings](#)
- **Energy efficiency of products**
- [Clean and energy-efficient road transport vehicles](#)
- [Tyre labelling](#)
- [Household appliances: energy consumption labeling](#)
- [Energy efficiency of office equipment: The Energy Star Program \(EU - US\)](#)
- [Energy efficiency: energy efficiency requirements for ballasts for fluorescent lighting](#)
- [Hot-water boilers](#)

### 3. Energy Efficiency in Buildings

On 18 May 2010 a **recast of The Directive on energy performance of buildings (2002/91/EC)** was adopted in order to strengthen the energy performance requirements and to clarify and streamline some of its provisions.

Buildings are responsible for 40% of energy consumption and 36% of EU CO<sub>2</sub> emissions. Energy performance of buildings is key to achieve the EU Climate & Energy objectives, namely the reduction of a 20% of the Greenhouse gases emissions by 2020 and a 20% energy savings by 2020. Improving the energy performance of buildings is a cost-effective way of fighting against climate change and improving energy security, while also creating job opportunities, particularly in the building sector.

The Directive on energy performance of buildings (2002/91/EC) is the main legislative instrument at EU level to achieve energy performance in buildings. Under this Directive, the Member States must apply minimum requirements as regards the energy performance of new and existing buildings, ensure the certification of their energy performance and require the regular inspection of boilers and air conditioning systems in buildings.

#### **Remove planning and certification barriers to the uptake of renewable energy, incorporate renewable energy in building codes**

These actions are covered by the Renewable Energy Directive, COM (2009) 30 which was adopted in 2009. These actions are also related to the Intelligent Energy Programme. For Actions 4 and 7, the adoption was with the RES Directive. For Action 6, which refers to the integration of renewable energy in buildings, a common call is envisaged to be set up within the lead market on sustainable construction. This cross-sectoral approach might create a wider application perspective for the LMI of RES and could speed up actual implementation of new technologies in the market.

- **Summaries of Legislation**

- [Energy performance of buildings](#)

- **Initiatives and Projects**


- [BUILD UP](#) : The European portal for Energy Efficiency in Buildings

- [Commission's Info-Note on "Low Energy Buildings"](#)  [241 KB]

[CEN](#) : European Committee for Standardisation

[Intelligent Energy projects database](#)

[Sustainable Energy Week 2010](#)

[Buildings: Flagship on Energy Efficiency - Let's make the new EU legislation deliver, February 10th 2009, Brussels](#)  [150 KB]

<http://www.ecobuildings.info/> - Ecobuildings initiative

[www.sustenergy.org](http://www.sustenergy.org) Sustainable Energy Europe Campaign

- **Eco-Buildings demonstration projects**

[BUILD HEALTH](#): Holistic Energy Conscious and Sustainable Strategies in the Health Care Building Sector (2006)

[EcoBuildings](#) : Common website for four Eco-buildings Demonstration projects: SARA, Eco-Culture, Demohouse and BRITA in Pubs

[BRITA in PuBS](#) : Bringing Retrofit Innovation to Application in Public Buildings - BRITA in PuBs (2003)

[DEMOHOUSE](#) : Design and Management Options for improving the energy performances of Housing (2003)

[ECO-CULTURE](#) : Demonstration and dissemination of ECO-concepts for high-performing European cultural buildings (2003)

[SARA](#) : Sustainable Architecture Applied to Replicable Public-Access Buildings (2003)

- **End-use Efficiency & Energy Services**

The European Union (EU) has adopted a framework for energy end-use efficiency and energy services. Among other things, this includes an indicative energy savings target for the Member States, obligations on national public authorities as regards energy savings and energy efficient procurement, and measures to promote energy efficiency and energy services: [Directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006 on energy end-use efficiency and energy services and repealing Council Directive 93/76/EEC](#).

## Related documents

### Summaries of Legislation

[Energy end-use Efficiency and Energy Services](#)

- **Projects**

[ESMA](#)

Defining and spreading best practices in smart metering across Member States and maximising the energy savings. [www.esma-home.eu](http://www.esma-home.eu)

### EU LTA Uptake

A project helping sector associations and governments drawing up Long-Term Voluntary Agreements (LTAs) on energy efficiency. [www.ltauptake.eu](http://www.ltauptake.eu)

### SMART SPP

Innovation through sustainable procurement for public authority procurers. [www.smart-spp.eu](http://www.smart-spp.eu)

### BESS

Benchmarking and Energy Management Schemes for SMEs. [www.bess-project.info](http://www.bess-project.info)