INTELLIGENT ENERGY — EUROPE II

PERFORMANCE REPORT (2007-2011)

May 2012

This report has been drafted by Commission staff responsible for the management and implementation of the Intelligent Energy — Europe II programme (IEE II). It was written for the IEE Programme Committee but is also aimed at a wider audience interested in obtaining insights into the impact of the programme.

The report does not cover all the actions financed under the IEE II in the period 2007-2011, but gives an overview of the programme's performance. Some of the actions covered have already been completed and produced visible impacts, whereas others started being implemented at a later stage and their impact may therefore not yet be (fully) visible.

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EXECUTIVE SUMMARY

The European Union has committed to the '20-20-20' objectives: reducing greenhouse gas emissions by 20 %, increasing the share of renewables in energy consumption to 20 % and improving energy efficiency by 20 %, all by 2020. To put this into effect, the EU has proposed a comprehensive set of legislation and initiatives, in particular the **Intelligent Energy — Europe II Programme (IEE II)** which contributes to achieve these objectives by providing actions:

- to foster energy efficiency and the rational use of energy resources;
- to promote new and renewable energy sources and support energy diversification;
- to promote energy efficiency and the use of new and renewable energy sources in transport.

IEE II is the only EU funding instrument exclusively dedicated to sustainable energy. The total budget from 2007 to 2013 is about EUR 730 million, mostly disbursed in the form of grants and tenders to intelligent energy stakeholders, i.e. public and private organisations across Europe committed to collaborating towards a cleaner, more competitive and more secure energy future.

A wide range of technologies and methods exist to improve energy performance, supply renewable energy sources and reduce emissions. However, market conditions prevent them from reaching their full potential. The IEE II programme forms the link from R&D to mass deployment, by means of activities aimed at accelerating the market uptake of energy innovations.

The IEE II programme has supported actions which have obvious EU added-value, and which aim to develop, apply, share and replicate sustainable energy solutions with a high leverage factor in EU sustainable energy markets across disciplines and levels of governance. The priorities for such solutions have been to change behaviours, leverage investment and accelerate progress towards the 2020 energy targets, by implementing actions which:

- create favourable market conditions;
- shape policy development and implementation;
- prepare the ground for investments;
- build capacity and skills;
- inform stakeholders and foster commitment.

The final evaluation of the IEE II programme,[1] published in June 2011, found that the programme was **relevant and useful**, that it replied to the evolving needs, problems and barriers related to sustainable energy issues in Europe, and that overall its actions were of good quality. It concluded that the programme was a useful instrument that **should be continued**.

IEE II grants have supported two principal kinds of action: promotion and dissemination projects on one hand and Project Development Assistance facilities (so-called ELENA) on the other hand. The latter were introduced in 2009 and have been managed by international financial institutions.

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[1] IEE final evaluation: http://ec.europa.eu/cip/files/docs/2011_iee2_programme_en.pdf.

Up to now IEE II has supported more than 300 promotion and dissemination projects, representing more than EUR 300 million. The interest in these projects is very high and the programme is continuously oversubscribed, with less than one out of five projects funded each year.

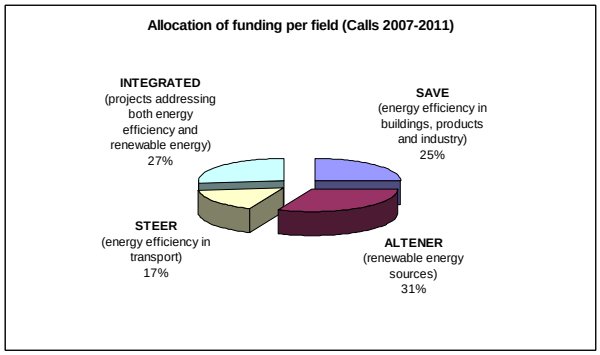

Figure: Allocation of funding for promotion and dissemination projects in IEE II (over 2007-2011)[2]

Overall, public bodies represent roughly a third of the IEE promotion and dissemination projects beneficiaries and the other two thirds are private entities including important European, national and regional multipliers and intermediaries as well as businesses. On average about 45 % of all beneficiaries are SMEs.

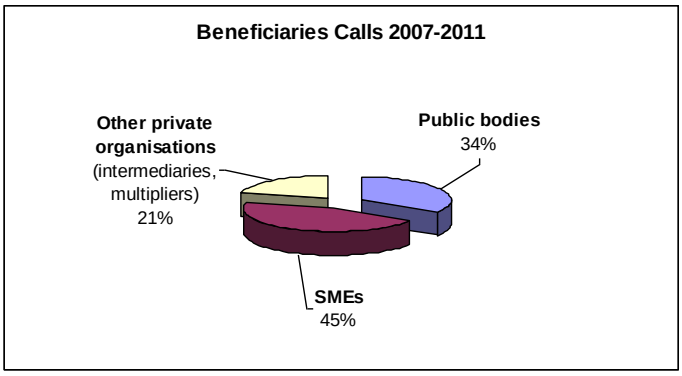

Figure: Beneficiaries in promotion and dissemination projects in IEE II (over 2007-2011)[3]

Starting in 2008, the first project results are becoming available since 2010. Some of the main achievements and concrete results of the programme at this half-way point in the programme are set out below.

Creating favourable market conditions

The **creation of more favourable market conditions** by helping to remove market barriers and introduce and further develop new market tools. For example in the building sector, which represents about 40 % of EU energy use and creates work for a large number of SMEs, 34 projects have received support. About a fourth of these have improved market conditions by delivering outputs that range from direct support to market associations to market penetration of passive house technologies. Several other projects have assisted in the implementation of the Directive on the energy performance of buildings (EPBD). Informing stakeholders, voluntary commitment schemes and energy management have formed the basis

2 Call 2011 data is preliminary as negotiations are not yet concluded.

3 Call 2011 data is preliminary as negotiations are not yet concluded.

of another set of actions. About a fifth of all the building projects have had a clear focus on promoting 'nearly zero energy buildings'. These recently selected projects illustrate the trend to address energy efficiency and renewable energies jointly.

*The **POWER HOUSE EUROPE project**[4] capitalised on the results of 20 previous IEE projects addressing renovation of social housing (financed in the period 2003-2006), via the creation of six national platforms, online toolkits incorporating guidance, and targeted dissemination to the 39000 CECODHAS-affiliated social housing operators. It has given impetus to public, cooperative and social housing operators which provide 12% of Europe's housing stock, strengthening their capacity for providing housing fit for the 21st century. In the CIP final evaluation, a specific assessment of POWER HOUSE EUROPE was conducted which concluded that this project 'represents an important model for promoting the adoption of best practice with lessons that go well beyond its immediate application'.*

Building capacity and skills

The programme has also **facilitated the launch of large-scale education and training schemes/activities** in the Member States to prepare the market for the implementation of the EPBD and the Renewable Energy Sources (RES) Directive. These projects are leading to the development of modern day curricula, particularly in establishments of higher education, which have been adapted to meet the market need for skilled building professionals.

*To address the specific requirements of the on-site construction work force, a new **BUILD UP Skills initiative** was launched in 2011 following its announcement in the new Energy Efficiency Plan. The response exceeded expectations with 21 countries (and as many projects) committing to developing a national roadmap for the qualification and training of their construction craftsmen within 18 months.*

*The **QUALICERT project** developed common success criteria for certification (or equivalent qualification) schemes for installers of biomass stoves and boilers, shallow geothermal energy systems, heat pumps, photovoltaic and solar thermal systems, with a view to achieving mutual recognition across the EU, in line with Article 14 of the Renewable Energy Sources (RES) Directive. The project has stimulated businesses and strengthened local entrepreneurship (notably in SMEs) by training and qualifying installers across the EU. It has also helped to ensure higher quality installations and eventually a more reliable and transparent market.*

Also, other actions have been undertaken to increase skills. Among energy consumers, young generations represent an important segment which has been targeted since 2007 through 13 actions on **intelligent energy education**. The aim of these actions was to provide new and innovative teaching concepts, launch awareness campaigns at schools and build competence among students and teachers for sustainable energy solutions. These projects have been mainly targeted at primary, secondary and vocational schools. Some of them had a massive outreach, e.g. the 'My Friend Boo' cartoon has been distributed in **19 countries in 18 languages and reached 25 million homes** via 10 leading broadcasters.

Shaping policies & converting priorities into action

Through the programme, **EU level priorities** in the field of sustainable energy have been **shaped and converted into concrete actions**, and **studies** financed by the IEE II programme help to develop, promote and implement EU policy on energy efficiency and renewable energy sources. Over the programme period, over 60 tenders received support, mainly serving as an input to the policy and legislative work in the field. As an example, the financing of **preparatory studies** and **impact assessments** has been indispensable in developing a total of

[4] POWER HOUSE EUROPE (IEE/07/779) — 'The big green housing and energy exchange', http://www.powerhouseeurope.eu/.

19 Ecodesign, Energy Labelling and Tyre Labelling implementing measures. **Three IEE Concerted Actions** have made it possible for the national implementing bodies in the Member states to meet regularly and share experiences with the transposition of the EU Directives on energy performance of buildings, renewable energy and energy services.

Furthermore, 21 projects have focused on a range of equipment and target groups selected for their large energy-saving potential. The intention of the projects was to directly support the Eco-design Directive and the Energy Labelling Directive, notably by **making market surveillance activities more effective**. From 2010, additional projects have been selected to focus on household behaviour, addressing specific segments such as vulnerable consumers.

*The **energy services industry** has been promoted through 12 specific projects. They have succeeded in moving the market forward by transferring best practices, developing model contracts, procurement guidelines and measurement protocols, raising confidence, supporting the development of new business models and pilot projects, analysing the market barriers and opportunities and providing direct training and capacity building. The results of these projects were used in the impact assessment of the new Energy Efficiency Directive proposal, which was adopted by the European Commission in June 2011.*

The Ecoheat4EU project[5] *contributed **to improve the legislative environment for district heating and cooling** (DHC) across Europe. The project surveyed and analysed support legislation for DHC and produced 14 national DHC roadmaps. Additionally, a 'DH Barometer' was set-up in order to measure and monitor the development of DH on national markets so that the success of support measures can be assessed. The project results were widely disseminated at EU and national level at a time when the proposed Energy Efficiency directive put a special emphasis on the important role of district heating and cooling.*

Bioenergy currently provides more than 2/3 of the renewable energy in the EU, and is expected to account for more than half of the EU's renewable energy in 2020, which corresponds to about 11 % of the total EU energy consumption. 36 projects in this sector have received support to **develop supply chains** for solid biomass, liquid biofuels and biogas, together with European, national and regional strategies for sustainable exploitation of bioresources, including forestry, agricultural, industrial and municipal wastes.

Both agricultural biogas and waste treatment are addressed by the Bio-methane Regions[6] *project, which started in 2011. Based on the successful predecessor project 'Biogas Regions',*[7] *which mobilised more than EUR 40 million of investment in new biogas plants in 7 regions, resulting in savings of 60 000 tonnes CO2eq/year, Bio-Methane Regions will accompany 20 new biogas and biomethane projects, from the initial concept to the realisation of the infrastructure. The quantifiable impact is expected to be a mobilised investment of more than EUR 50 million and a biogas production of more than 25 000 toe/year.*

Renewable electricity (RES-e) was the first renewable energy market sector to benefit from a Directive (2001), and has now moved into the mainstream as a rapidly growing source of electricity.

26 RES-e projects have received support, fourteen of which have been strategic in nature, contributing to policy implementation and addressing the challenging obligations of the 2009

5 Ecoheat4EU 'Ecoheat4EU', http://ecoheat4.eu.

6 Bio-methane Regions 'Promotion of Bio-Methane and its Market Development through Local and Regional Partnerships', http://www.bio-methaneregions.eu/.

7 Bio-methane Regions 'Promotion of Bio-Methane and its Market Development through Local and Regional Partnerships', http://www.bio-methaneregions.eu/.

renewable energy Directive. Amongst these projects, the OFFSHOREGRID PROJECT has developed designs and proposals for a regulatory framework as inputs to the Commission's 'Communication on Energy infrastructure priorities for 2020 and beyond'. Other projects have addressed the ***simplification of regulatory and administrative procedures and increasing social acceptance****, thereby helping to speed up project development and reduce project development costs.*

Fostering commitment of businesses

The programme has **fostered commitment among businesses.** The industry has been targeted by 16 projects, mainly **aimed at small and medium-sized enterprises (SMEs).** Some of them have focused on developing strategic resources for specific branches, e.g. the chemical industry, plastic converters and surface engineering. Others have been developing resources that are relevant across several industry sectors, e.g. training schemes for SMEs, or decision-making tools to improve the thermal energy demand of businesses. The involvement of industry associations has ensured a strong commitment from business leaders as well as the achievement of a critical mass or multiplier effect at industry level.

The CHANGE project[8] *established an extensive network of energy advisors at Chambers of Commerce and Industry, empowering employees of the chambers. The role of the advisors is to complement the services offered by the market, bridging the gap between business and existing information, services, and sources of specialised advice. The advisors first received training about energy efficiency issues and then actively promoted the information among SMEs. The project was coordinated by Eurochambres, the European Association of Chambers of Commerce, and had partners in 12 EU countries. Most of the national partners coordinated a network of regional offices. A total of 276 energy advisors were trained. Finally, concrete measures were either introduced or improved to assist SMEs in optimising their energy use.*

The CARE+ project[9] *developed a tool to enable SMEs in the chemical sector to carry out energy audits. Supported by a detailed user manual, the tool allows SMEs to identify energy-saving measures and calculate the return on investment. The tool was extensively tested in an audit campaign that identified considerable energy savings in the 77 SMEs involved. For instance, the 19 energy audits carried out in Bulgaria alone identified energy saving measures amounting to more than 1717 toe/year (or more than EUR 787000/year). Meanwhile, CARE+ has become part of the Responsible Care Initiative, the global initiative to improve health, safety and environmental performances in the chemical industry.*

Informing stakeholders

The programme has been instrumental in **raising awareness on sustainable energy and energy efficiency.** For instance, 43 projects were aimed at making transport more energy-efficient, covering both passenger and freight transport, and supporting more than 320 local and regional stakeholders in 28 countries.[10] Some of these projects have increased the number of cycled kilometres for a total estimated **energy saving of 20000 toe/year**. Others have focused on the promotion of public transport or car-sharing, **reaching more than a million citizens through their campaigns.**

The ***EU Sustainable Energy Week*** *(EUSEW), which forms part of the Sustainable Energy Europe Campaign, has stimulated investment in sustainable energy technologies, showcased best practices and project examples, and brought together stakeholders in public events,*

8 CHANGE ' Chambers promoting intelligent energy for SMEs', www.eurochambres.eu/change .

9 CARE+ Project 'Training chemical SMEs in responsible use of energy', www.cefic.org/Responsible-Care.

10 The results of these transport projects have been widely disseminated through ELTIS, the European Commission's on-line portal on urban mobility.

conferences and debates. At the Sustainable Energy Europe Awards Ceremony, winners are chosen from hundreds of projects submitted by public authorities, private companies, European associations, universities and NGOs committed to the promotion of energy efficiency, renewable energy, energy education and clean transport. Recent weeks featured more than 200 events in Brussels and more than 800 energy days across the EU, and attracted over 200 000 participants.

Preparing the ground for investments

The programme has been instrumental in **mobilising investments** in a wide range of sectors. The **ELENA technical assistance facility,** launched in December 2009, has to this date supported 16 projects with EUR 28 million, likely to trigger energy efficiency and renewable energy investments of around EUR 1.56 billion, on the regional and local level. The pipeline of a further 32 new projects could lead to mobilising investments EUR 2.7 billion. If the objectives foreseen by the 16 projects supported are fully achieved, the cumulative energy savings are estimated at 1 092 GWh/year and 597 GWh/year of energy generated by renewable sources. The projects are expected to avoid the production of around 570 000 tonnes of CO2 emissions over the ELENA project time. The number of direct and indirect jobs created during the implementation and life time of the investment projects, if the initial objectives are fully achieved, can be estimated at about 3 650 full time equivalent (FTE), with 2 400 FTE for the investments to be prepared by the 2009 projects and 1 250 FTE for the 2010 projects.

Complementing the ELENA facility, an integrated initiative, 'Mobilising Local Energy Investments' (MLEI), was introduced in 2011. It aims to support project development assistance for local or regional public authorities (either individual authorities or groupings of authorities) to work together with financial institutions and/or fund managers and/or ESCOs **to prepare, mobilise financing for and launch investments in sustainable energy projects**. The first Call attracted 25 proposals from seven countries, for a total investment of EUR 0.8 billion. The average size of the requested investments was EUR 32 million and the average size of the proposed project development assistance was EUR 1.4 million.

*The ELENA Facility provides grant support of EUR 1.3 million to the **city of Paris**, for the development and launch of a large-scale Energy Performance Contracting investment scheme targeting some 300 school buildings. The city of Paris aims to launch an overall investment programme of EUR 180 million financed by a third party, an Energy Service Company (ESCO). This project should lead to significant cost and energy savings (10.86 GWh/year) without a need for public finance as the investment is being repaid by reduced energy bills.*

So far, the project has resulted in implementing the first tranche of investments: internal procedures and preparation of the tender dossier; call for tenders and selection of the best bidder; contract signature and formal adoption by the city council; contract with external consultant for the follow-up of the works. Furthermore, an energy performance contract has been signed for carrying out work in the first 100 Parisian schools. The contract stipulates a minimum of 30 % energy savings and a bonus/malus system for the achievement of this objective. The contractual amount so far has been EUR 28 million.

The **ManagEnergy initiative** has also been instrumental in converting EU energy policy into action. It provides information on EU sustainable energy policies and their implementation for local and regional public authorities and energy agencies. It now consists of a website (www.managenergy.net) and capacity building events. Furthermore, **79 new local and regional energy agencies** have been established since the beginning of the IEE programme, of which 21 have been established during the IEE-II programme.

Energy policies are affecting the investment decisions made by citizens, businesses and public authorities at local and regional levels. The **local energy leadership** projects aim to ensure coherence of energy policies up and down the governance chain, from EU level to local and regional authority levels. In total, 29 projects have been supported **involving more than 1 000 cities and regions across the EU**, with a view to helping public authorities to draw up Sustainable Energy Action Plans (SEAPs) and to implement concrete measures and investments identified in those plans.

The projects have contributed to and built on the success of the **Covenant of Mayors (CoM) initiative,** bringing together committed European mayors in a sustainable network to exchange and apply good practices for improving energy efficiency and increasing the use of renewable energy in the urban environment. So far, more than 3 500 cities have joined the initiative and the Commission services have received more than 1 000 Sustainable Energy Action Plans from the signatories.

The sample analysed so far of 525 Sustainable Energy Action Plans produced under the Covenant of Mayors initiative represents:

- 49 249 256 inhabitants (34 % of CoM population) and 289 502 317 tonnes of CO2 (5.87 tonnes/capita);

- a commitment to reduce CO2 emissions by 86 million tonnes/year (29.8 % overall reduction);

- out of the 525 SEAPs, 441 SEAPs have information on planned cost/investment, for a total of EUR 33.6 billion;

- These 525 SEAPs contain 15 134 measures, 11 187 of which have quantified CO2 reduction estimation for an estimated total reduction of 43.3 million tonnes of CO2 (or CO2 eq) per annum in 2020. The estimated energy saving is 73 million MWh per annum in 2020. Some measures also concern local energy generation, with a planned amount of 23.7 million MWh per annum in 2020 (renewable energy, CHP, district heating).

1. INTRODUCTION

The European Union faces serious energy challenges relating to sustainability, greenhouse gas emissions, and energy security. It has committed itself to the '20-20-20' initiative: reducing greenhouse gas emissions by 20 %, increasing the share of renewables in energy consumption to 20 % (compared to 11.6 % in 2009), and improving energy efficiency by 20 %, all by 2020. To put this into effect, the EU adopted a comprehensive and clearly targeted energy and climate package.

The objective of the Intelligent Energy — Europe II Programme ('IEE II') is to contribute to secure, sustainable and competitively priced energy for Europe, by providing for action:[11]

- to foster energy efficiency and the rational use of energy resources;
- to promote new and renewable energy sources and support energy diversification;
- to promote energy efficiency and the use of new and renewable energy sources in transport.

IEE II runs from 2007 until 2013 and is the EU's main funding instrument for tackling non-technological barriers to the efficient use of energy and to the use of new and renewable energy sources in Europe.[12] A wide range of technologies and methods exist to improve energy efficiency, supply renewable energy sources and reduce emissions. However, market conditions prevent them from reaching their full potential. This is where the Intelligent Energy — Europe programme comes in. Based on an analysis of barriers, relevant actors and possible solutions, actions supported by the programme intervene in the following areas:

- shaping policy development and implementation;
- creating favourable market conditions;
- informing stakeholders and fostering commitment;
- building capacity and skills;
- preparing the ground for investments.

IEE II forms part of the overarching Competitiveness and Innovation Framework Programme (CIP)[13] with a view to achieving the EU energy policy objectives and to implementing the Lisbon Agenda.

The programme is implemented based on annual work programmes with varying priorities. The main means of implementation are grants, service contracts and cooperation with financing institutions. Most of IEE II is implemented by the competitive allocation of financial support to independent parties across Europe via annual calls for proposals.

Large parts of IEE II are managed by the Executive Agency for Competitiveness and Innovation (EACI)[14] on the basis of delegated powers. It works in close cooperation with its

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11 Decision No 1639/2006/EC of the European Parliament and of the Council of 24 October 2006 establishing a Competitiveness and Innovation Framework Programme (2007 to 2013), OJ L 310, 9.11.2006, p. 15, Article 37.

12 IEE II Eligible countries as of January 2012: EU27; Iceland; Norway; Lichtenstein; Croatia; and the Former Yugoslavian Republic of Macedonia.

13 Articles 37 to 45 of Decision No 1639/2006/EC of the European Parliament and of the Council of 24 October 2006 establishing a Competitiveness and Innovation Framework Programme (2007 to 2013).

parent European Commission departments, in particular the Directorate-General for Energy and the Directorate-General for Mobility and Transport.

The total budget allocated to the Intelligent Energy — Europe II Programme for 2007-2013 is EUR 727.3 million.[15]

This report presents some of the main results achieved by the programme, from its start until 2011.

The first chapter is dedicated to 'promotion and dissemination projects' which account for the largest share of the IEE II budget and have been granted through annual calls for proposals since 2007.

The second chapter presents the more recent project development assistance facilities established since 2009 in collaboration with financing institutions, in particular the European Investment Bank (EIB), to help public authorities in developing bankable investment projects.

The third chapter contains an overview of the studies that have received support from the IEE II programme to help shape and monitor energy policy measures and finance communication activities.

The fourth chapter details the three Concerted Actions helping Member States in the implementation of specific energy legislation.

Finally the last chapter presents miscellaneous activities not covered in previous chapters, such as the work on standardisation or the contribution of the programme to the operation of the International Partnership for Energy Efficiency Cooperation (IPEEC) and the International Renewable Energy Agency (IRENA).

2. PROMOTION AND DISSEMINATION PROJECTS

'Promotion and dissemination projects' have been financed since 2007 to unlock the potential for energy savings and to promote the market uptake of renewable energy sources in all sectors of the economy.

Nearly all these projects, which now amount to more than 300, are cross-national, gathering public and private stakeholders from on average 9 eligible countries. They receive a financial contribution which can go up to 75 % of the total eligible costs of the project. These costs are generally between one and two million euros and mainly cover the time invested by the beneficiaries to share knowledge and implement concrete solutions to overcome the non-technological barriers to a more sustainable use and production of energy.

Ultimately, in the long or short term, depending on the project, these solutions result in the adoption of more virtuous practices and in investments in efficient technologies, which lead to an increase in energy savings and renewable energies capacity.

Projects are categorised in four families as follows:

- energy efficiency and rational use of energy (SAVE);
- new and renewable energy resources (ALTENER);
- energy in transport (STEER);

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[14] Commission Decision 2004/20/EC of 23 December 2003, as amended by Commission Decision 2007/372/EC of 31 May 2007 (OJ L 140, 1.6.2007, p. 52).

[15] Not including contributions from third countries.

- integrated initiatives (covering one or more of the above fields).

Each family and sub-family of projects is described below including a description of the main activities, an indication of the budget committed,[16] and a summary of the main achievements. As most of these projects last between two and three years, the majority of them are still running at the time of writing. Furthermore, the projects continue to have an impact after their completion.

a. Energy efficiency and rational use of energy — SAVE

Energy efficiency is a cornerstone of European energy policy. It is by far the most effective way to improve the security of energy supply, to reduce carbon emissions and to foster competitiveness.

The EU has set itself the objective of achieving 20 % primary energy savings in 2020[17] and has made this objective one of the five headline targets of the Europe 2020 Strategy for smart, sustainable and inclusive growth.[18]

The Commission's latest estimations, which take into account the national energy efficiency targets for 2020 that Member States have set in the context of the Europe 2020 strategy, suggest that under present trends the EU will achieve only half of the 20 % target in 2020.[19] Both the European Council[20] and the European Parliament[21] urged the Commission to adopt a new ambitious strategy on energy efficiency for determined action to tap the considerable potential.

Activities funded under SAVE aim to tap the large potential for energy savings by improving energy efficiency and the rational use of energy resources, in particular in buildings, products and the industry. Activities to promote energy efficiency in transport are covered separately under STEER.

Activities under SAVE facilitate the implementation of the EU legislation relating to energy efficiency, support preparation of new legislative measures and influence energy behaviour, so that society uses less energy while enjoying the same or an even better quality of life.

Funding priorities have evolved to accompany the new policy developments; most recently the Energy Efficiency Plan 2011[22] and the proposal for a Directive on Energy Efficiency.[23]

i. Energy-efficient buildings

The Energy-efficient buildings key action which ran during the 2007-2010 period aimed at supporting policy implementation and the contribution of the building sector to the 2020 energy targets.

The main objectives of the key action were to:

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16 Figures include provisional budget of the Call 2011 proposals which are under negotiation at the time of writing this report. The final committed budget may vary for the latter.

17 7224/1/07, REV 1.

18 COM(2010) 2020.

19 SEC(2011) 277.

20 EUCO 2/1/11.

21 2010/2107(INI).

22 COM(2011) 109 final.

23 COM(2011) 370.

- improve the energy performance of new and existing buildings and promote the integration of renewable energy sources;
- foster the adoption of intelligent energy use patterns in buildings;
- improve the capacity of building professionals to offer intelligent energy solutions and to increase demand;
- facilitate the implementation and monitoring of Directive 2002/91/EC on the energy performance of buildings (EPBD) and support its recast 2010/31/EU;
- foster action beyond the EPBD requirements.

A total of 26 projects have been supported in both the domestic and the non-residential sectors**.** They are complemented by a wide range of activities under other key actions which support interventions in the building sector.

In the first three years (2007-2009), the projects built on mid-to-long term strategies. Their major impact was beyond the project lifetime (i.e. in the period 2010-2012 and beyond). In 2010, given the ongoing political discussions concerning the recast of the EPBD, the Call for Proposals was focused on short-to-mid term savings. Since 2011, reflecting the most recent policy developments and the market transformation needed in the period from now until 2020, the Energy-efficient buildings key action has been covered by a new integrated initiative on energy efficiency and renewable energies in buildings.

TOTAL BUDGET

The commitment appropriations related to this measure for the period 2007-2011 amount in total to EUR 34.3 million.

WHAT HAS BEEN ACHIEVED?

The IEE Energy-efficient key action delivers significant results by pioneering new ideas and promoting best practices in the building sector.

Creating favourable market conditions

The building sector is characterised by its conservative nature and the fragmented involvement of different actors through design, construction, commissioning and use. Specific sectors, technologies and processes have been targeted to assist the market transformation and 10 projects are currently delivering outputs that range from direct support to market associations (e.g. cool roof materials) to market penetration of passive house technologies in northern European climates. As an example of sector specific approach, one such project, POWER HOUSE EUROPE,[24] has capitalised on the results of 20 previous projects addressing the renovation of social housing (financed in the period 2003-2006), via the creation of 6 national platforms, online toolkits incorporating guidance, and targeted dissemination to the 39 000 CECODHAS affiliated social housing operators. It has fed the mobilisation of public, cooperative and social housing operators which provide 12 % of Europe's housing stock, strengthening their capacity for providing housing fit for the 21st century. In the same field,

[24] POWER HOUSE EUROPE (IEE/07/779) — 'The big green housing and energy exchange', www.powerhouseeurope.eu/.

the ongoing SHELTER[25] project analyses the design and construction of 20 completed construction projects, embeds integrated energy design in the daily working practices and future planning of 5 social housing operators by applying tailored cooperation models (with all actors along the value construction chain) on ongoing construction works. The participating social housing operators in SHELTER have a combined portfolio of 170 000 dwellings. By 2020, the impact directly related to the project SHELTER will have reached 34 000 toe/year in energy savings and will have triggered 6 700 toe/year in renewable energies production.

Shaping policy development and implementation

A total of 6 projects provide support in this field and contribute directly to the EPBD Concerted Action, the IEE policy support action which assists the EU-27 plus Norway and Croatia on practical issues for the transposition and implementation of the EPBD. For example, the ongoing REQUEST[26] project aims at enhancing the uptake of the recommendations on residential energy performance certificates. It involves 9 national agencies and has produced an inventory of incentive schemes, tools and best practices for encouraging renovation. These have been piloted in each country, tailored to national needs. In Germany, the pilots involved testing of the tools by tradesmen in 50-100 buildings, whilst in Poland the project looks for a direct approach with the residents of 100 family homes. After testing, the pilot actions are ready to be rolled out at national level and transferred to other countries. Similarly, the IDEAL-EPBD[27] project has carried out an evaluation of the impact of building certification in 43 000 homes in 10 countries, including studies on public response to the certificate through statistically representative samples and one-to-one interviews with home owners. Altogether, these projects have provided valuable input to the EC's proposal for a cost-optimal regulation on setting minimum energy performance requirements in national building codes. Specifically, the outputs of the TABULA[28] project were referenced in the Guidance document for cost-optimal methodology put forward by DG ENER.

Preparing the ground for investments

This topic is covered under two other initiatives: the IEE energy services initiative and the initiative on Mobilising Local Energy Investments (MLEI). See relevant section.

Informing stakeholders and fostering commitment

Awareness raising, voluntary commitment schemes and energy management form the basis of 14 projects (5 of them ongoing) which inform stakeholders and foster commitment to energy efficiency and renewables in the building sector. One such project is ECCC,[29] the European Citizen Climate Cup, which is a competition amongst householders to save energy thanks to an internet Energy Saving Account. It aims to involve 10 200 households across 10 countries, encouraging them to change their day-to-day behaviour and make small-scale energy investments. Launched in 2011, around 2 600 householders have already registered. The competition really took off in Greece, Malta and Germany with TV and radio broadcasts. By

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25 SHELTER (IEE/07/707), ' Social Housing organisations and European professionals Linked and acting together for Testing and promoting professionals coordination in Energy Renovation', www.shelterproject-iee.eu/.

26 REQUEST (IEE/09/870), ' Renovation through Quality supply chains and Energy Performance Certification Standards ', www.building-request.eu.

27 IDEAL-EPBD (IEE/07/600), ' Improving Dwellings by Enhancing Actions on Labelling for the EPBD ', www.ideal-epbd.eu.

28 TABULA (IEE/08/495), 'Typology Approach for Building Stock Energy Assessment', www.building-typoligy.eu.

29 ECCC (IEE/09/670), 'European Citizens Climate Cup', www.theclimatecup.eu.

the end of the project ECCC will have directly resulted in energy savings of about 460 toe/year and more than 1 000 toe/year by 2020.

Building capacity and skills

Aiming to facilitate the launch of large-scale education and training schemes/activities in the Member States to qualify the market for the implementation of the EPBD, 8 projects are developing agreements with universities, associations of installers, chambers of commerce, etc. to institutionalise the necessary education/training. They are presently resulting in modern day curricula, particularly in establishments of higher education, which have been adapted to meet the market need for skilled building professionals. For example, EDUCATE[30] gathers 7 European academic partners and is fostering the integration of sustainable environmental design in architectural education and practice across Europe in direct collaboration with the chambers and associations of architects in each country.

On the level of Continuous Professional Development, the CEPH[31] project developed an intensive training course for passive house designers across Europe. The main output is a 10-day training course with a comprehensive set of training material in 9 European countries where a first phase of 19 trainings has been rolled out. A total of 495 passive house designers have been trained and 317 certified. Seven other European countries have obtained the right to use the CEPH training material, 3 have enquired about the possibility to run CEPH courses, whilst 20 training providers are now accredited by the Passive House Institute to provide CEPH trainings.

To address the specific requirements of the on-site construction work force, an ex-ante impact assessment was carried out by DG ENER in 2009, resulting in the complementary BUILD UP Skills sustainable building workforce initiative.

OUTLOOK: What remains to be done?

Overcoming the barriers to energy efficiency and the use of renewable energies in the building sector remains a significant challenge in the coming years. A significant market transformation is required, since the recast of the Energy Performance of Buildings Directive adopted in 2010 requires that all new buildings be nearly zero-energy buildings by 2020 (by 2018 for buildings owned and occupied by the public sector). With the construction sector accounting for 8-9% of EU GDP, whilst being characterised by its fragmented and conservative nature, the challenges for this market transformation are considerable. These challenges are detailed under the IEE integrated initiative on energy efficiency and renewable energies in buildings (see relevant section).

ii. Products and consumer behaviour

The funding of priorities on energy-efficient products and consumer behaviour has addressed the main non-technological barriers to the rational use and purchase of energy-related equipment, including the lack of suitable information.

The main objectives have been to:

- increase the market share of the most efficient energy-related products (except vehicles which have been covered under STEER);

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30 EDUCATE (IEE/08/835) 'Environmental Design in University Curricula and Architectural Training in Europe', www.educate-sustainability.eu.

31 CEPH (IEE/07/712), 'Certified European Passive House Designers', www.passivehousedesigner.eu.

- foster gradual phasing-out of the less efficient products available on the market and accelerate the replacement of old, less efficient appliances in use;
- have buyers/salesmen consider energy efficiency in their purchases/sales;
- have energy-using products purchased, installed, used and disposed of in the best energy-conscious way;
- support the effective implementation of the growing EU product legislation.

A total of 16 projects were launched in the period 2007-2010 and five more were selected under the 2011 call. These projects are complemented by actions selected under the other IEE funding priorities supporting the take up of clean vehicles or addressing buildings and industry energy use as a whole, rather than through product-specific actions.

Until 2009, projects were mostly targeted to specific categories of energy-using products. Since 2010, further attention has been given to consumers, in particular households as they make up about 25 % of EU final energy needs. In line with the product legislation recast, the funding priorities were also adapted to encompass other energy-relevant products (e.g. windows or tyres) in addition to those using energy for their operation.

TOTAL BUDGET

The commitment appropriations related to this measure for the period 2007-2011 amount in total to EUR 24.3 million.

WHAT HAS BEEN ACHIEVED?

Projects have focused on a range of traded products and target groups selected for their energy saving potentials and for their complementariness with earlier actions.

Transforming the market of specific products

Some targeted projects were selected to complement the market transformation activities started under the IEE I programme and which focused on a variety of products including domestic appliances, boilers, servers, air conditioners, motors, pumps, lifts, distribution transformers, and construction products. Building on this basis, the IEE II projects have focused on cold storage equipment, outdoor and domestic lighting, and central IT equipment in data centres (a new subject).

In the PrimeEnergyIT[32] project, for instance, organisations from 7 countries are addressing energy efficiency in central IT equipment covering: servers, data storage, as well as network and cooling devices. Their activities include the development of energy efficiency criteria, the production and dissemination of technology and procurement guidelines, the implementation of green public procurement, and the training of IT managers and consultants. They found that a broad implementation of the existing energy-efficient technologies would allow a reduction of energy demand of about 60 % compared to the business-as-usual scenario. This represents a high potential considering that, already in 2007 in the EU, the energy

[32] PrimeEnergyIT project: 'Supporting the market for energy efficient central IT', www.efficient-datacenter.eu.

consumption of central IT hardware and infrastructure was estimated at 40 TWh/year, i.e. 1.5 % of the EU electricity consumption.

Significant savings are also expected from the ESOLi[33] project, which aims at promoting the installation of intelligent street lighting for instance by establishing innovative financing schemes, replicating best practices, and training practitioners. The project is expected to save more than 15 GWh of electricity per year.

Facilitating the implementation of EU products policies

A series of projects were closely related to the EU energy policy on products, mainly the Eco-design Directive[34] and the Energy Labelling Directive.[35] Complementing the various IEE tenders for the definition of legislation — in particular all the eco-design implementing measures — these projects were supporting actual policy implementation, notably by increasing the effectiveness of market surveillance activities. One such project was ATLETE[36], which used refrigerators and freezers as a test case. Among the main project outputs was a common methodology for carrying out surveillance regarding the Eco-design and Labelling Directives. The project partners engaged efficiently with industry by putting together a 'voluntary protocol' which was signed by 27 manufacturers. Eighty-two fridge models from 40 manufacturers (including appliances imported from Korea, Turkey, and China) were tested by independent laboratories. Eighty per cent of them passed the energy consumption tests, while less than half passed all five test parameters. All results of the compliance tests were made public and widely disseminated, e.g. via consumer associations.

Informing stakeholders and fostering commitment

Through their purchases and everyday habits, consumers have a key role to play in reducing energy use by their appliances. Since 2010, projects have been selected which focused on consumer behaviour. Market segmentation was encouraged to allow for the tailoring of activities to specific segments of a target group. In the EC-LINC[37] and ACHIEVE[38] projects, both involving Caritas, the target group has been low income people. EC-LINC aims at preparing tailored information and consultation approaches to assist them in saving energy. The consultation implies free-of-cost installation of low-cost devices to save energy, plus advice for energy saving behaviour. The project is expected to result in a reduction of more than 5 000 tonnes of CO_2 eq/year.

OUTLOOK: What remains to be done?

The funding priorities related to equipment need adaptation to the continuous development of eco-design and labelling legislation and, as there is still a high share of citizens who don't

33 ESOLi project: 'Energy saving outdoor lighting', www.esoli.org.

34 Directive 2009/125/EC of 21 October 2009 establishing a framework for the setting of eco-design requirements for energy-related products (recast).

35 Directive 2010/30/EU of the European Parliament and of the Council of 19 May 2010 on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products.

36 ATLETE project: 'Appliance testing for energy label evaluation', www.atlete.eu.

37 EC-LINC 'Energy checks for low-income households', www.berliner-e-agentur.de/projekte/ec-linc-energy-check-low-income-households .

38 ACHIEVE 'Actions in low income Households to Improve energy efficiency through Visits and Energy diagnosis', www.achieve-project.eu.

trust producers' claims about the environmental performance of their products,[39] market surveillance activities will continue to be relevant. In addition, and despite considerable improvement in consumers' awareness, there is still a long way to go to change the investment and habitual energy behaviour of citizens. This is confirmed by the recent evaluation of the IEE programme[40] which concluded that barriers have on the whole shifted from a lack of awareness of solutions to a lack of understanding of how to implement such solutions in practice. While it is clear that behaviour change initiatives are best developed at local, regional or national level, and not at the EU-level, the programme has a role to play in increasing the effectiveness of such tailored initiatives and to stimulate the adaptation and replication of successful schemes across Europe. It should also call for innovative and 'out-of-the-box' approaches which could be implemented for the first time as a pilot, e.g. using social innovations or new information technologies.

iii. Industrial excellence in energy

The 'Industrial excellence in energy' key action aims at empowering European industry, in particular SMEs, to become more energy-efficient and at the same time reduce costs, thus contributing to increasing the competitiveness of European Industry and to achieving the European energy and climate targets. More specifically the objectives of the key action are to:

- raise awareness among industrial decision-makers about the benefits of saving energy;
- promote energy services, energy management schemes, procurement guidelines and training for industry;
- develop well-targeted tools and information for industries to reduce their energy use;
- help improve energy conversion processes, including recuperation of waste heat, combined heat and power, and polygeneration.

A total of 9 projects have been supported in the period 2007-2010 and 7 more were selected under the 2011 call. They were mainly, but not exclusively, aimed at small and medium-sized enterprises (SMEs). They cover both sector-specific actions and cross-sectoral measures relevant to many industrial sectors. The key action was closed for two years (2009 and 2010) and reopened in 2011. More recent projects focus on achieving significant energy savings in the short and medium term (up to 2020).

TOTAL BUDGET

The commitment appropriations related to this measure for the period 2007-2011 amount in total to EUR 18.1 million.

WHAT HAS BEEN ACHIEVED?

The Industrial excellence in energy key action delivers significant results, developing critical resources for the industry in Europe.

Developing resources

[39] Europeans' attitudes towards the issue of sustainable consumption and production. Flash Eurobarometer 2009. http://ec.europa.eu/public_opinion/flash/fl_256_sum_en.pdf.

[40] Deloitte June 2011.

The majority of projects focus on developing strategic resources for a specific branch of industry. As an example, SURFENERGY[41] developed an online platform to promote energy efficiency in the surface engineering and printed circuit board industries. Via a user-friendly interface, SMEs can compare their energy consumption to the sector average, obtain information on how to reduce energy consumption and estimate the benefits of the energy saving measures. For the chemical industry, the CARE+ project[42] developed a tool to enable SMEs to carry out energy audits. Supported by a detailed user manual, the tool allows SMEs to identify energy saving measures and calculate the return on investment. The tool was extensively tested in an audit campaign that identified considerable energy savings in the 77 SMEs involved. For instance, the 19 energy audits carried out in Bulgaria alone identified energy saving measures adding up to more than 1 717 toe/year (or more than EUR 787 000/year). Meanwhile CARE+ has become part of the Responsible Care Initiative, the global initiative to improve health, safety and environmental performances in the chemical industry.

Capacity building and training

A second group of projects developed resources that are relevant across several sectors. The CHANGE project[43] established an extensive network of energy advisors at Chambers of Commerce and Industry, empowering employees of the chambers. The role of the advisors is to complement services offered by the market, bridging the gap between business and existing information, services, and sources of specialised advice. The advisors first received training about energy efficiency issues and then actively promoted the information among SMEs. The project was coordinated by Eurochambres, the European Association of Chambers of Commerce, and had partners in 12 EU countries. Most of the national partners coordinated a network of regional offices. Ultimately, a total of 276 energy advisors were trained. Finally, concrete measures were kick-started or enhanced to assist SMEs in optimising their energy use.

The EINSTEIN project[44] supports decision-making related to the thermal energy demand of businesses. A toolkit was developed as well as software that models the heat exchange in production processes, identifies possible improvements and calculates payback times of investments. The toolkit guides the user through the whole procedure from auditing (data acquisition) to data processing, to the elaboration, design and quantitative evaluation (energetic and economic) of alternative solutions, including cogeneration and the use of solar process heat. Once completed, the project will have trained 200 energy auditors across Europe in using the software and will have carried out an audit campaign in 72 SMEs.

Creating favourable market conditions

A small group of projects was addressing the change of market conditions. As an example, EuPlastVoltage[45] promoted a voluntary long-term agreement on energy efficiency for the European plastics converting industry, resulting in a firm commitment by the sector to achieve energy efficiency targets at the European level. The parties have aimed at an average

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41 SURFENERGY project 'Advanced Tools for SURFace Finishing Processes to Optimise ENERGY Efficiency', surfenergy.eu.

42 CARE+ Project 'Training chemical SMEs in responsible use of energy', www.cefic.org/Responsible-Care.

43 CHANGE ' Chambers promoting intelligent energy for SMEs', www.eurochambres.eu/change.

44 EINSTEIN project: ' Expert system for an Intelligent Supply of Thermal Energy in Industry', www.iee-einstein.org.

45 EuPlastVoltage project: 'European Plastics Converting Industry Voluntary Long-Term Agreement on Energy Efficiency', www.euplastvoltage.eu.

energy efficiency improvement by the joint companies of 20 % in the period from 2007 to 2020, to be achieved by changes in the production processes. This would amount to savings of more than 2 million toe of primary energy per year.[46]

IEE funding allowed the consortium to draft the voluntary agreement, set up the necessary monitoring and benchmarking activities and to negotiate ratification with the national plastics associations. The agreement was ratified in November 2011 by the National Plastic Converting Associations from European countries covering more than 60 % of the European production. It is the final objective to ultimately extend the agreement to all 27 Member States.

OUTLOOK: What remains to be done?

Continuous effort will be needed in order to exploit the significant energy saving potential[47] that still exists in industry. A survey among SMEs carried out by the CHANGE project[48] shows that while most companies perceive energy savings as beneficial, only 16 % of SMEs monitor their energy consumption via an energy management system. Only a quarter of the SMEs interviewed carried out an energy audit in the last three years. Knowing the importance of energy audits and energy management systems for a continuous cost-effective resource management, activities should focus on getting schemes in place that facilitate the access of SMEs to these important measures. In addition, access to financing remains a main barrier to investments in energy efficiency, and thus a key topic for further activities.

b. New and renewable energy resources — ALTENER

Renewable energy sources (RES) can provide a wide range of sustainable energy services; they can be produced locally within the EU, delivering secure supplies of electricity, heating and cooling and energy for transport without additional greenhouse gas emissions or negative effects on climate change. RES are becoming more competitive. Policies supporting the use of RES are making the manufacturing and supply of RE technologies and the production of bioenergy sources (solid, gaseous and liquid) more attractive as business opportunities.

The RES Directive (2009) sets an overall binding target of a 20 % share of renewable energy sources in energy consumption by 2020 with binding national targets in line with the overall EU target of 20 %, and a 10 % binding minimum target for renewable fuels in transport to be achieved by each Member State. Details of how these targets will be achieved in each Member State are given in National Renewable Energy Action Plans (NREAPs).

The RES Directive makes recommendations for specific actions to be taken by the public and private sectors across the EU and puts in place a number of legal obligations, which require the Member States to implement policies and support measures aiming to increase the use of renewable energy sources at national, regional and local levels.

Grid infrastructure development will be a key factor for further deployment of renewable energy plants in Europe, both small- and large-scale, onshore and offshore. Apart from a strong increase in small decentralised production, large-scale projects making use of renewable resources — wind energy in the northern seas, solar in the south, hydro in the

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46 www.euplastvoltage.eu/uploads/downloads/procedures-and-targets.pdf.

47 In the order of 10 % in the long term according to the database on energy saving potentials at www.eepotential.eu.

48 www.eurochambres.eu/content/default.asp?PageID=1&DocID=2852.

centre and the north — will be needed. The Commission Communication on the new energy infrastructure priorities for 2020 addresses the needs for future grid development options, and identifies many of the necessary actions.

ALTENER focuses on non-technological actions contributing to the implementation of the RES Directive and on accelerating the growth of renewable energy markets to meet the EU 2020 target.

ALTENER projects have covered the following Key Actions:

- electricity from renewable energy sources (RES-e);
- heating and cooling from renewable energy sources (RES-H/C);
- small-scale applications; and
- bioenergy.

These Key Actions are summarised below with a short description and a summary of their main results.

i. Electricity from renewable energy sources

The Renewable Electricity Key Action aims to support the implementation of the policy in the field (with emphasis on the RES Directive and on the Infrastructure Package) and sector-specific actions aiming to remove market barriers.

In this context, the following main priorities were defined:

Grid issues: non-technological actions aiming to deliver efficient and economic integration of large shares of renewable electricity in the European power system. Specifically, this priority supported actions on intelligent grid developments and schemes aiming to optimise the input from onshore and offshore wind, PV, hydro and marine energy, taking also into account the use of storage systems. Collaboration among the different market participants was a key factor for success.

Simplification of regulatory and administrative procedures, and increasing social acceptance: actions aiming to remove administrative barriers and to simplify construction authorisation and licensing procedures. By involving the relevant market actors, local communities and other interested parties, the aim of the supported actions was to remove non-cost barriers to the growth of renewable energy, and to make planning regimes more transparent and faster whilst fully respecting existing environmental legislation.

Strategic initiatives and support to policy implementation: actions aiming to analyse, monitor, plan and streamline regulatory and market frameworks, and helping the EU to achieve its priorities for 2020 and beyond. Actions to support the implementation of the National Renewable Energy Action Plans have been also addressed. In addition, *sectoral actions aiming to boost the deployment of specific renewable electricity* generating technologies have been also supported. Active participation and engagement of relevant market actors and authorities were key to the success of all renewable electricity actions.

TOTAL BUDGET

The commitment appropriations related to this measure for the period 2007-2011 amount in total to EUR 30.8 million.

WHAT HAS BEEN ACHIEVED?

Grid issues: The EU Energy 2020 Strategy highlighted how the rise of electricity produced from renewable sources has implications for the electricity market as a whole. Grid development is, therefore, a key factor for any further deployment of renewable energy production, both large- and small-scale. One of the greatest challenges regarding the grid infrastructure is to connect the offshore potentials, mainly wind, foreseen in the Northern Seas of Europe, developing the electricity network both offshore and onshore. From 2007 to 2011, seven projects have been supported under the 'grid issues' priority.

A 'flagship' project under this priority was OffshoreGrid[49] **(**2009 – 2011). This was a strategic project, which developed designs for the offshore grid in Northern Europe along with a regulatory framework which addressed technical, economic, policy and regulatory aspects. This project provided inputs to the preparation of the Commission's 'Communication on Energy infrastructure priorities for 2020 and beyond — A Blueprint for an integrated European energy network'- COM(2010) 677 final. OffshoreGrid is referred to both in the Communication itself and in the Impact Assessment, and the project's achievements have been commended by high level representatives of DG ENER and by the Commissioner for Energy, as well as by ENTSO-E, national TSOs and companies working in the sector.

Another IEE project aiming to develop a roadmap for the deployment of offshore wind energy in the Central and Southern North Sea, taking spatial marine interactions into account, was WINDSPEED:[50] This project also produced valuable results which were considered by policy makers during preparations for the Infrastructure package. Its most proactive offshore wind scenario presents a deployment potential of 135 GW in the central and southern North Sea basin by 2030. More than 265 stakeholders participated in two rounds of national workshops, thus demonstrating their interest in cooperating with the work. The ongoing project SEANERGY 2020[51] is focused on formulating and promoting policy recommendations on how to deal with maritime spatial planning obstacles to the deployment of offshore renewable power. Already, the project team has received 4 declarations from Member States confirming that they have taken the project recommendations into account when developing their national planning regimes. Options for promoting storage of renewable electricity are addressed under the STORE[52] project, which aims to facilitate a high penetration of intermittent renewable energy in the European grid by 2020 and beyond.

Simplification of regulatory and administrative procedures, and increasing social acceptance. Five projects have been supported with this priority. Windbarriers[53] assessed and quantified administrative and grid barriers for wind installations. Building on a large stakeholder consultation, an analysis of information from different Member States and regions helped the project to highlight best practices, as well as to identify potential bottlenecks. The project constituted the first attempt to systematically collect and quantify administrative and grid access data at EU level and highlighted the existence of national/local/regional specific conditions that can influence the development of wind farm projects.

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49 OffshoreGrid 'Regulatory Framework for Offshore Grids and Power Markets in Europe: Techno-economic Assessment of Different Design Options', http://www.offshoregrid.eu/.

50 WINDSPEED 'Spatial Deployment of offshore WIND Energy in Europe', http://www.windspeed.eu/.

51 SEANERGY 2020 ' Delivering offshore electricity to the EU: spatial planning of offshore renewable energies and electricity infrastructures in and integrated EU maritime policy', http://www.seanergy2020.eu.

52 STORE ' Facilitating energy storage to allow high penetration of intermittent renewable energy', http://www.store-project.eu.

53 Windbarriers ' Analysis of administrative and grid access barriers affecting wind energy development in the EU27 — A toolkit for policy makers', http://www.windbarriers.eu/.

Another example under this priority is GP WIND[54] which aims to address barriers to the development of onshore and offshore wind by developing good practices in reconciling objectives on renewable energy with environmental objectives and actively involving local and regional communities. The key European added value of this proposal is to demonstrate and disseminate good practices from individual countries to target audiences across Europe, providing tools which can be used by the industry, developers, European, national and local policy makers, regulatory authorities, environmental agencies and groups and local communities to improve the policy, guidance, process and practice of dealing with applications for new renewable energy projects. The project aims to deliver at least 5 official commitments from Member State stakeholders, confirming that they have adopted the best practices identified. It also aims to deliver a reduction of at least 20 % in the average time taken to process planning applications.

Strategic initiatives and support to policy implementation: fourteen projects addressing this priority have received support, including sector actions aiming to boost the development of renewable electricity. RE-SHAPING[55] assisted Member States in implementing the RES Directive through best practices, modelling policy scenarios and innovative instruments. The goal was to assess the effectiveness and efficiency of RES support schemes, to explore RES target flexibility, to study the compatibility of RES policies with the internal market, emission trading, innovation policy, and financial market practices.

The RE-DISS[56] project aims at improving the reliability and accuracy of Guarantees of Origin for electricity from renewable sources and from highly efficient cogeneration. This is important for the electricity disclosure information which must be provided to consumers across Europe. The project is designed to contribute to the implementation of the requirements for Member States set out in the RES Directive (2009/28/EC) as well as in the Cogeneration Directive and the Internal Energy Market Directive. In particular, the project aims to deliver substantial reductions in the double counting of energy in Guarantees of Origin across the EU, at least 10 Member States with a residual mix calculation in place for their disclosure scheme, and the adoption of the project's best practice recommendations in 15 Member States with the largest exports and imports of Guarantees of Origin. SHP STREAMMAP[57] aims at defining a clear and consistent future market strategy for the small hydropower sector in Europe. It is exploring the implications of the EU Energy and Climate Package regulations for the SHP sector, and will produce recommendations for the future.

OUTLOOK: What remains to be done?

Further efforts are needed to support the implementation of the RES Directive and of the Infrastructure Package, to review and improve the effectiveness of EU funding for renewable energy projects and to facilitate the convergence of national support schemes in order to ensure the best conditions for the development of renewable energy in Europe. Based on Member States' plans, renewable energy should constitute 37 % of Europe's electricity mix by 2020.

In this respect, a number of critical issues need to be further addressed in future projects:

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54 GP WIND 'Good practice in reconciling onshore and offshore wind with environmental objectives', http://www.project-gpwind.eu.

55 RE-SHAPING 'Shaping an effective and efficient European renewable energy market', http://www.reshaping-res-policy.eu/.

56 RE-DISS 'Reliable Disclosure Systems for Europe', http://www.reliable-disclosure.org.

57 SHP STREAMMAP 'Stream Map For Small Hydropower In The EU', http://www.streammap.esha.be.

Grid: Actions to support faster progress in developing the EU electricity grid to permit the efficient integration of higher shares of renewable energy. For offshore wind development, the need for an integrated strategy is imminent in order to connect wind power generated in the Northern seas of Europe.

Administrative procedures: to streamline infrastructure planning regimes while respecting existing EU environmental legislation, and conforming to best practice. The development of local public-private partnerships can also be an effective means of reducing the cost of projects and achieving greater public acceptance while contributing to local and regional socio-economic development.

Strategy/policy implementation: Measures contributing to the implementation of the National Renewable Energy Action Plans in the EU MS, based on exchanges of experience and best practices. Future actions need to ensure that any reforms of existing national support schemes will guarantee stability for investors, avoiding retroactive changes. Analyses towards a greater convergence of national support schemes to facilitate trade and move towards a more pan-European approach to development of renewable energy sources.

Beyond the current challenges, there is a need for medium- and long-term actions supporting the EU Strategy for 2050, in order to make the sector function more cost effectively.

ii. Heating and cooling from renewable energy sources

Renewable heating and cooling is expected to contribute almost half of the 2020 renewable energy target according to the National Renewable Energy Action Plans (NREAPs).[58] This represents an increase of around 65 % in RES H/C production relative to 2010.

The renewable heating and cooling (RES H/C) key action aims to accelerate the large-scale use of renewable energy for heating and cooling in new and existing buildings, and in commerce and industry (including CHP) either for renewable energy systems placed adjacent to demands or via district heating and cooling (DHC) systems. Projects are expected to support the implementation of the RES Directive 2009/28/EC and to contribute to the delivery of the 2020 renewable energy targets. This key action is complementary to those addressing small-scale renewable energy applications in buildings and energy efficiency and renewable energy in buildings.

The projects supported during the period 2007 – 2010 have covered a wide range of topics and technologies and have targeted a variety of stakeholders and decision-makers including actors from the industry, and policymakers from the public and building sectors. Initially, the projects were focused on developing policies and implementation tools, but since the adoption of the RES Directive in 2009, the focus is mainly on implementation.

In accordance with the NREAPs, the contribution of renewable heating and cooling technologies in 2020 will be as follows: the largest share from biomass (81.1 %), followed by renewable energy from heat pumps[59] (10.9 %), solar thermal (5.7 %) and deep geothermal heat (2.4 %).

Leaving aside biomass, which is covered separately under the Bio-energy priority, examples of IEE RES H/C projects can be found for heat pumps, solar thermal, geothermal energy and renewable energy applications of DHC. Project activities included support to policy development and implementation as well as capacity building via the use of targeted training

[58] The rest being renewable electricity and transport.

[59] This includes aerothermal, shallow geothermal and hydrothermal applications of heat pumps.

and dissemination activities for installers and local authorities. Other initiatives have contributed to accelerate the uptake of RES H/C technologies by addressing market and financial barriers as well as by promoting the use of commercially available technologies with a small market share.

TOTAL BUDGET

The commitment appropriations related to this measure for the period 2007-2011 amount in total to EUR 16.3 million.

WHAT HAS BEEN ACHIEVED?

Renewable heating and cooling projects have been supported at three levels. At the EU level, they have contributed to the development and implementation of EU-wide legislation. At the national level, they have assisted in addressing the non-technological barriers that impede the uptake of RES H/C technologies. At the local level, the programme has supported local actors by providing them with the knowledge that is required to enable the use of best practice RES H/C systems in towns and cities.

Shaping policy development and implementation

Several projects have supported the development and implementation of the RES directive. The RES-H Policy[60] project supported policy development for improving RES H/C penetration at EU level by assisting the governments of six Member States in setting RES H/C targets as required by the RES Directive. The project provided tailored recommendations for the development of supporting policies, including qualitative and quantitative assessments of these policies in the selected countries, and proposed options to harmonise national RES H/C policies, including an analysis of costs and benefits of such policy strategies.

District heating is a means for delivering heat to a multiple number of buildings. Schemes exist that supply entire cities and that are sourced by a variety of sources including renewables and recycled heat from industry and cogeneration plants. District heating is technology blind, and therefore it has the potential of shifting a large number of heat customers to renewable energy sources at once. District heating supplies over 9 % of the heat demand in Europe.

The Ecoheat4EU[61] project contributed to improve the legislative environment for DHC across Europe. The project surveyed and analysed support legislation for DHC and produced 14 national DHC roadmaps. Additionally, a 'DH Barometer' was set up in order to measure and monitor the development of DH on national markets so that the success of support measures can be assessed. The project results were widely disseminated at EU and national level at a time when the proposed Energy Efficiency directive put a special emphasis on the important role of district heating and cooling.

Creating favourable market conditions

Some projects have contributed to growth in the markets for certified, high-quality and more competitive Renewable Energy (RE) systems and businesses. These projects have strengthened entrepreneurship capacity through the promotion of 'plug-and-play' solutions using certified products, systems and services (including quality labelling) for the cost-

60 RES-H POLICY 'Policy development for improving RES-H/C penetration in European Member States', http://www.res-h-policy.eu.

61 Ecoheat4EU 'Ecoheat4EU', http://ecoheat4.eu.

effective integration of RE heating and cooling systems in buildings. For example, QAiST,[62] which built on a predecessor project, is a successful example of an initiative driven by Industry Associations aimed at creating a more favourable market for solar thermal products. These two projects have increased the share of recognised quality products in the solar thermal market, by improving the quality assurance framework so that ultimately the European solar thermal heating and cooling industry can sustainably contribute to the 2020 targets and become a technological world leader. Through the removal of trade barriers and the general acceptance of the Solar Keymark (the CEN Quality Label for Solar Thermal Products in Europe), the European industry and its SMEs (many installers are SMEs) benefit from a more uniform, reliable and transparent market, which in turn will increase the confidence and satisfaction of the customers. To date over 1400 models of solar thermal collectors and 150 solar thermal systems have been certified under the Solar Keymark Certification scheme.

Data on the field performance of certain types of RES H/C systems are scarce and the efficiencies of these systems under real operating conditions are not well known. This acts as a barrier to the wider acceptance of these systems. The SEPEMO-Build[63] project addresses this market barrier in the heat pump sector by providing and implementing a methodology for making field measurements of heat pump systems that will inform the development of European standards. As a result of the project it is expected that the number of certified heat pumps deployed in the market will increase by 25 %. Moreover, the project will result in an improved quality assurance of heat pumps hence stimulating a broader acceptance of heat pumps in the heating market.

Preparing the ground for investments

In 2010, solar thermal heat supplied around 0.4 % of the total heat demand in Europe. This was equivalent to circa 24 GWth or 34 million m^2 of solar collectors. Supporting this sector, the IEE programme has promoted the development of alternative markets for solar thermal energy. Following successful demonstration, solar district heating projects developed during the past few decades in Denmark, Germany and Austria, The SDH-Take off[64] project has prepared the way for a commercial solar district heating market in Europe. Since the project began, a total new capacity of 60 MWth has become operational and 200 MWth are planned. Moreover, the project has prepared the ground for the development of solar district heating projects in newcomer countries such Italy, where 2 feasibility studies for solar district heating plants have been triggered as a result of the project.

The GEOFAR[65] project addressed the financial barriers hindering the initial stages of geothermal energy projects. The project brought together energy companies, decision-makers, financing institutions and investors. By mobilising these stakeholders, the project produced 5 financing schemes and new financial instruments for the development of geothermal projects. This, in combination with targeted dissemination activities addressing decision-makers at national and regional level, stimulated the mobilisation of EUR 5 million in preparatory studies equivalent to an investment of EUR 80 million.

Building capacity and skills

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62 QAiST 'Quality assurance in solar thermal heating and cooling technology: keeping track with recent and upcoming developments', http://www.qaist.org.

63 SEPEMO-Build 'SEasonal PErformance factor and MOnitoring for heat pump systems in the building sector', http://www.sepemo.eu.

64 SDH-Take off 'Solar District Heating in Europe', http://www.solar-district-heating.eu.

65 GEOFAR 'Geothermal Finance and Awareness in European Regions', http://www.geofar.eu.

One important potential barrier to achieving the 2020 renewable energy targets is a lack of qualified labour and skills among the professionals in the sector and among decision-makers. The IEE programme has supported capacity building through a series of RES H/C projects in order to tackle this potential problem.

The GEOTRAINET[66] project developed and implemented a capacity building programme across a series of EU countries, comprising training courses for designers (geologists, geotechnical engineers, HVAC engineers) and drillers (including installers and maintenance personnel) on shallow geothermal systems. During the project period, twelve courses were delivered with a total of 380 professional participants from 22 EU countries. The approach and training materials developed during the project were put together by an international group of experts, and led to the definition of a European certification framework, in line with the requirements of the RES Directive.

Decision-makers at the local level are in a good position to tackle the large number of barriers that impede the uptake of RES H/C in towns and cities, for example by developing and adopting effective and coherent local energy plans, which put into place implementation mechanisms tailored to local needs. However, opportunities are often missed because of a lack of knowledge among responsible local actors. The IEE programme is supporting local authorities via the UP-RES[67] project, through which a total of 6 countries are developing and implementing energy related training programmes targeted at urban and regional planners and architects. It is the intention that the trainees will be nationally certified after having passed the programme successfully.

OUTLOOK: What remains to be done?

There is an enormous potential in the EU for renewable heating and cooling, but its share is still too limited and a lot remains to be done by national, regional and local stakeholders, for example through bottom-up activities of the type supported by the IEE programme, to increase the deployment of RES H/C systems by 2020.

Policies at EU and national levels are important for setting the framework for action and the objectives to be achieved. Based on the requirements of the RES Directive, new policies and initiatives at the national level are introducing new financial frameworks that are beginning to stimulate the uptake of RES H/C technologies. However, more work is needed to better understand how to optimise such frameworks and initiatives, and how to promote increases in their use at local and regional level, so that a more significant penetration of renewable energy in heating and cooling markets can be achieved in the future.

Further capacity building in local and regional public authorities is also needed because so many aspects of renewable heating and cooling systems depend on very specific local conditions. In contrast to electricity, which can be transported very long distances, heating and cooling must be generated relatively close to where they are required, and decisions about their use must be taken locally. Long-term energy planning by local and regional authorities is, therefore, also essential to the large-scale deployment of renewable energy sources for heating and cooling.

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66 GEOTRAINET 'Geo-Education for a sustainable geothermal heating and cooling market', http://www.geotrainet.eu.

67 UP-RES 'UP-RES Urban Planners with Renewable Energy Skills', http://aaltopro2.aalto.fi/projects/up-res/.

iii. Small-scale applications

The small-scale renewable applications key action aimed at accelerating the deployment of biomass, geothermal, and/or solar (thermal or PV) systems for heating, cooling and electricity in energy efficient buildings mainly by supporting policy implementation, and thereby contributing to the Renewable energy targets for 2020.

The main objectives of the key action were to:

- facilitate the implementation of Article 13 of the RES Directive in particular on the inclusion of appropriate measures in building regulations and codes to increase the share of renewable energy in the building sector or the introduction of minimum levels of energy from renewable sources in buildings;
- facilitate the implementation of Article 14 of the RES Directive by improving the skills and capacities of installers of small-scale renewable application in buildings;
- facilitate the removal of market barriers and simplify approval procedures for the introduction of small-scale RE systems in buildings;
- foster the introduction of renewable energy in buildings by providing the relevant market actors with information on support measures and on the benefits, costs, and efficiency of RES systems and equipment.

Most of the projects that have been supported in the period 2007-2010 involve small- to medium-sized enterprises tasked with promoting innovation in the sector. Householders, building owners and building managers have also been involved because they are the ones who take the final decisions on how their buildings are constructed and used. Finally, several of the activities have targeted local authorities, which are best placed to create favourable market conditions for the large-scale diffusion of small-scale renewable energy applications. Since 2011, this key action has been covered by a new integrated initiative on energy efficiency and renewable energies in buildings.

TOTAL BUDGET

The commitment appropriations related to this measure for the period 2007-2011 amount in total to EUR 14.8 million.

WHAT HAS BEEN ACHIEVED?

The IEE key action on small-scale renewable applications in buildings has delivered significant results by promoting best practices. The combined results of the IEE projects in this sub-sector have built up a critical mass of initiatives, which are now bringing about significant changes in the market.

<u>Building capacity and skills</u>

IEE projects are supporting the implementation of Article 14 of the RES Directive by facilitating the launching of large-scale training schemes/activities for installers of biomass boilers and stoves, solar heating and cooling and photovoltaic systems, and geothermal heat pumps in buildings, together with the development of common accreditation and certification

schemes for installers. For example *QUALICERT,*[68] *PVTRIN*[69] and *INSTALL+RES*[70] are addressing the key market barrier of lack of skilled workforce in the building sector, through the development of training courses and a transparent certification scheme.

The *PV-TRIN* team has implemented 8 training courses, in 6 countries with the aim of having 160 installers accredited. As an indication of the high demand, the pilot courses were oversubscribed by 100 % at the halfway stage. The team's main goal is to promote training and certification for PV installers incorporating the criteria laid down in both EU legislation and national legislation. With the push of the PV TRIN project, an installer certification scheme will be in place in Romania by the end of 2012. Through *INSTALL+RES*, eight 'train the trainer' courses were implemented in German, Slovenian and English, thus resulting in 78 trained trainers. These trainers will implement 15 training courses for installers of small-scale renewable energy systems in the respective national languages in Bulgaria, Greece, Italy, Poland and Slovenia, for a total of 240 certified installers in these countries.

While the PVTRIN and INSTALL+RES projects aim to develop training schemes, the main objective of QUALICERT (ended in December 2011) was to put in place appropriate policy conditions for the implementation of these schemes. QUALICERT mobilised the relevant stakeholders in five countries (Austria, Italy, Greece, France and Poland), and facilitated dialogue between them. The aim was to develop common success criteria for certification (or equivalent qualification) schemes for installers of biomass stoves and boilers, shallow geothermal energy systems, heat pumps, photovoltaics and solar thermal systems, with a view to achieving mutual recognition across the EU, in line with Article 14 of the RES Directive.

These projects have stimulated businesses and strengthened local entrepreneurship (notably in SMEs), by training and qualifying installers across the EU. They have also helped to ensure higher quality installations and eventually a more reliable and transparent market.

To address the specific requirements of craftsmen and other on-site workers and system installers, a complementary initiative, called BUILD UP Skills, was launched in 2011. BUILD UP Skills focuses on the continuing education and training of existing building workforce and aims to ensure that sufficient skills on energy efficiency and renewable energy sources in buildings are available to achieve the 2020 targets.

Shaping policy development and implementation

IEE projects are contributing to the implementation of Article 13 of the RES Directive by helping local and regional authorities to include renewable energy in the planning of city infrastructure, and in adding appropriate measures to their building regulations and codes.

PATRES[71] supports the heads of department and technical officers working in local authorities, public utilities and social housing bodies through customised training + coaching + field visits, which help them to introduce effective RES policies for the public and private buildings which are under their responsibility. In 2011 more than 160 participants (more than half from new Member States or candidate countries) have followed the PATRES training courses. In 2012 these participants will develop pilot actions in their municipalities with the

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68 QUALICERT 'Quality certification & accreditation for installers of small-scale renewable energy systems', http://www.qualicert-project.eu/.

69 PVTRIN 'Training of Photovoltaic Installers', http://pvtrin.gr/.

70 INSTALL+RES 'Training courses for installers of small-scale renewable energy systems in buildings', http://www.resinstaller.eu/.

71 PATRES 'Public Administration Training and Coaching on Renewable Energy in their building regulations and codes', http://www.patres.net.

support of experts selected by PATRES who will coach them on pilot action implementation. By the end of the project, it is expected that 40 new (or improved) regulations will have been introduced for supporting renewable energies in municipalities (e.g. via public procurement rules).

POLIS[72] is assisting local authorities to integrate renewables at a very early stage in the preparation of their city planning. In 2011, as part of this project, Paris, Lisbon, Munich, Lyon, Malmo and Vitoria have made long term commitments to strategies and action plans for integrating solar energy into their local urban planning. Although these cities have very different levels of solar energy resources, a common objective is shared, namely, to steer the future development of solar energy in their urban planning. The action plans have identified concrete pilot measures to be implemented within the project lifetime. In 2011, each city started to incorporate solar requirements into the urban planning of new development areas and into tendering procedures for city rehabilitation projects, so that solar energy is included from the very beginning of the planning process.

Creating favourable market conditions

Some projects have contributed to the growth of the RES market by helping to remove market barriers and to simplify approval procedures for the introduction of small-scale renewable systems in buildings. In *PV legal*[73], the time and costs of the various legal requirements (such as permits) for different PV installations in 12 European countries have been fed into a PV Legal database. Thanks to this database, it is now clear where the problems are and why development is faster in some countries than in others. Project partners have not only identified existing hurdles; they are also drawing up concrete policy recommendations with the active involvement of national policy makers, in order facilitate growth in the PV market. As a result, in several of the partner countries, bureaucracy has already been cut back.

Informing stakeholders and fostering commitment

Some projects are providing easy access to good quality information for end users, who need to be given objective and reliable information on the performance of systems before they can be expected to buy one. *EnergiZair*[74] is setting up Renewable Energy Weather Forecasts on TV, radio and in newspapers in 5 European countries, based on an initiative that is already running successfully in RTBF-Belgium (French speaking). Thanks to the innovative indicators, which are presented together with regular weather forecasts, households are easily able to understand how much energy can be supplied by RES installations. In 2011, they made agreements to start in 2012 with Renewable Energy Weather forecasts on TV, radio and in newspapers in Belgium, France, Slovenia, and Portugal. In Italy the project is running faster, and already in 2011 the renewable energy weather forecast is running on RAI 3 and Tele Granducato, Radio Toscana and Radio Capital. By the end of the project, Renewable Energy Weather Forecasts will run in at least 15 different media in 5 countries, reaching an audience of more than 4 million people. The methodology for transferring the concept to other countries is readily available for others to follow.

OUTLOOK: What remains to be done?

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72 POLIS 'Identification and Mobilisation of Solar Potentials via Local Strategies', http://www.polis-solar.eu/.

73 PV legal 'Reduction of legal-administrative barriers for PV system installations in Europe', http://www.pvlegal.eu/.

74 EnergiZair 'EnergizAIR — The sky is the limit', http://www.energizair.eu.

Overcoming the barriers to energy efficiency and the use of renewable energies in the building sector remains a significant challenge in the coming years. A significant market transformation is required, since the recast of the Energy Performance of Buildings Directive, adopted in 2010, requires that all new buildings be nearly zero-energy buildings by 2020 (by 2018 for buildings owned and occupied by the public sector), whilst the RES Directive stipulates minimum contributions from renewable energy sources to new and renovated buildings ahead of that time. With the construction sector accounting for 8-9% of EU GDP, whilst being characterised by its fragmented and conservative nature, the challenges for this market transformation are considerable, as detailed under the IEE integrated initiative on energy efficiency and renewable energies in buildings (please see the relevant section below).

iv. Bioenergy

Bioenergy will play a crucial role in the achievement of the 2020 targets: it currently provides more than 2/3 of the renewable energy in the EU, and is expected — based on the National Renewable Energy Action Plans — to account for more than half of the EU's renewable energy in 2020 and for about 11% of total EU energy consumption.

The Bioenergy key action aims at supporting the development of this key sector and ensuring its sustainability. It has helped the development of supply chains for solid biomass, liquid biofuels and biogas, and it has provided important inputs to the elaboration of European, national and regional strategies for the sustainable and effective exploitation of the available bioresources.

Its activities cover different aspects of the bioenergy sector:

- Solid biomass: facilitation of solid biomass trade across Member States, mobilisation of farmers and foresters, development of local and regional supply chains.
- Liquid biofuels: promotion of local and regional supply chains for the most sustainable biofuels for transport, support to the implementation of sustainability criteria for biofuels.
- Biogas: support for the development of new biogas plants, promotion of better administrative and financial conditions for biogas projects, promotion of biomethane injection into the natural gas grid and its use in transport.
- Strategic initiatives covering more than one area: contribution to the elaboration and implementation of consistent bioenergy strategies at the European, national and regional levels.

Some of these activities were initially covered by separate key actions. Since 2010, they were brought together under the Bioenergy key action to ensure consistency and synergies across the sector.

TOTAL BUDGET

The commitment appropriations related to this measure for the period 2007-2011 amount in total to EUR 36.1 million.

WHAT HAS BEEN ACHIEVED?

<u>Creating favourable market conditions</u>

Trade barriers are still a crucial issue to be solved for the development of a mature bioenergy market. In order to boost sustainable and transparent international biomass fuel trade, the

Eubionet III[75] project has helped Eurostat in the development of Combined Nomenclature codes for wood pellets and it has successfully contributed to the development of price indexes for industrial wood pellets and wood chips and of the CEN standards for solid biofuels. The implementation of these CEN standards will be supported by the SolidStandards[76] project through 35 training events organised in 11 countries, expected to involve 700 solid biofuel producers and other industry players, as well as through standards implementation in 7 selected companies, followed by at least 120 other companies. Another project, PellCert,[77] will support the development of a European certification system for pellets (ENplus) and its implementation in Austria, Germany, Spain, Italy and Finland. The project is expected to result in more than 20% of pellet production being certified in these countries, and in the development of procedures to certify the sustainability of pellet production and trade.

Shaping policy development and implementation

A number of IEE Bioenergy projects have contributed to the development of EU policies. The Biomass Futures[78] project has generated quantitative information on the role that sustainable biomass can play to meet the 2020 targets taking into account demand and supply dynamics, which is proving useful for EU policy makers. The projects SolidStandards and PellCert have also organised specific activities that have provided inputs to the debate at EU level on sustainability criteria for solid and gaseous biofuels.

Some projects have helped the elaboration and implementation of national policies. The Biograce[79] project is helping national governments across the EU to take a common approach in the calculation of GHG savings from biofuels, in line with the RES Directive; this will in turn ensure a level playing field and greater certainty for the biofuels sector. So far, Denmark, the Netherlands, UK and Spain have made reference to the BioGrace standard values in their respective legislation and/or technical guidance. Four other Member States are already committed to do the same, and more are expected to do so in the future.

The IEE programme has also contributed to shaping policy development and implementation at local and regional level. The projects BEn,[80] BioEnerGIS[81] and Make-It-Be[82] have gathered regional policy makers, municipalities, biomass producers, distributors and consumers in several regions and they have helped them — by identifying and locating potential biomass production and consumption — to elaborate Bioenergy action plans that have been endorsed by the respective regional and local governments. Additionally, the ongoing project BioRegions[83] has the aim of creating five 'BioRegions' which will define and implement

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75 Eubionet III 'Solutions for biomass fuel market barriers and raw material availability', http://www.eubionet.net.

76 SolidStandards ' Enhancing the Implementation of Quality and Sustainability Standards and Certification Schemes for Solid Biofuels', http://www.solidstandards.eu/.

77 PellCert 'European Pellet Quality Certification', http://www.pelletcouncil.eu.

78 Biomass Futures 'Biomass role in achieving the Climate Change & Renewables EU policy Targets. Demand and Supply dynamics under the perspective of Stakeholders', http://www.biomassfutures.eu/.

79 BIOGRACE 'Align biofuel GHG emission calculations in Europe', http://www.BioGrace.net.

80 Ben 'Biomass energy register for sustainable site development for European Regions', http://www.ben-project.eu.

81 BioEnerGIS 'GIS-based decision support system aimed at a sustainable energetic exploitation of biomass at regional level', http://www.bioenergis.eu/.

82 Make-It-Be 'Decision Making and Implementation Tools for Delivery of Local & Regional Bio-Energy Chains', http://www.makeitbe.eu.

83 BioRegions 'Regional Networks for the development of a Sustainable Market for Bioenergy in Europe', http://www.bioregions.eu/.

Action Plans with timelines and milestones to obtain at least 33 % of their energy (excluding transport) from bioenergy by 2020.

Preparing the ground for investments

Several of the Bioenergy projects are facilitating investments in local and regional supply chains for solid biomass, liquid biofuels and biogas. The UrbanBiogas[84] project, which started in 2011, will help the five cities of Zagreb (HR), Graz (AT), Abrantes (PT), Rzeszów (PL) and Valmiera (LV) to set up the separate collection of organic urban waste and its use for biomethane production. The project will accompany these cities through all the different phases of development of these Waste-to-Biomethane initiatives, which are expected to trigger a EUR 17 million investment and 90 000 tonnes of CO2eq/year savings.

Both agricultural biogas and waste treatment are addressed by the Bio-methane Regions[85] project, which also started in 2011. Based on the successful predecessor project, 'Biogas Regions', which mobilised an investment of more than EUR 40 million in new biogas plants in 7 regions, leading to savings of 60 000 tonnes of CO2eq/year, Bio-Methane Regions will accompany 20 new biogas and biomethane projects from the first project idea to the realisation of the infrastructure, the expected impact being the mobilisation of an investment of more than EUR 50 million and the production of more than 25 000 toe/year of biogas.

Investments in wood-based heat generation from undermanaged woodlands in the UK, Croatia and Slovenia have been facilitated by the Woodheat Solutions[86] project, which managed to involve more than 1 400 market players in workshops and training activities in these countries and organised study tours to Finland and Austria for 144 of them. As a result of the project activities, 1 900 ha of forests in the UK, 1 100 ha in Slovenia and 650 ha in Croatia are subject to negotiations for long-term heat supply and there are plans to install 12 MW of new woodheat capacity in the UK, 1 MW in Slovenia and 2.6 MW in Croatia. The sustainable management of these forests provides benefits for local biodiversity and landscape.

The project BiomassTradeCentre2,[87] which started in 2011, will help to trigger investments in new bioenergy businesses (at least 50 new business agreements expected) and new biomass trade and logistic centres (at least 18 expected); it will promote new supply contracts for solid biomass (at least 20 expected) by putting together foresters, farmers and other interested key actors in workshops, one-to-one meetings, study visits and open days. It will foster the creation of a network of biomass quality laboratories and promote the implementation of CEN quality standards in the above mentioned future investments. Overall, the project is expected to trigger a cumulative investment of EUR 11.6 million by European stakeholders throughout its duration.

Other projects have promoted the most sustainable local and regional supply chains for liquid biofuels: one of these projects, Sweethanol,[88] is promoting small-scale ethanol production

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84 UrbanBiogas 'Urban Waste for Biomethane Grid Injection and Transport in Urban Areas', http://www.urbanbiogas.eu/.

85 Bio-methane Regions 'Promotion of Bio-Methane and its Market Development through Local and Regional Partnerships', http://www.bio-methaneregions.eu/.

86 WHS 'Woodheat Solutions', http://www.woodheatsolutions.eu.

87 BiomassTradeCentre2 ' Development of Biomass Trade and Logistics Centres for Sustainable Mobilisation of Local Wood Biomass Resources', http://www.biomasstradecentre2.eu.

88 Sweethanol 'Diffusion of a sustainable EU model to produce 1st generation ethanol from sweet sorghum in decentralised plants', http://www.sweethanol.eu.

from sweet sorghum, while another, Oileco,[89] is helping in the creation of public-private partnerships for collecting used cooking oil and using it in biodiesel production.

Building capacity and skills

Building capacity of market actors and policy makers is crucial to speed up the uptake of biogas in the huge potential markets in Central and Eastern Europe. Thanks to the Farmagas[90] project, more than 300 farmers were trained on biogas production at farm level in Hungary, Poland and Romania; the courses were organised by national farmers' associations, which — thanks to the help of partners from countries with a more advanced biogas market — will be able to offer similar technical support and training to local farmers in the future; this is expected to help kick-starting biogas production in the agricultural sector in these countries, so that the huge available potential is exploited. When farmers decide to start biogas production, experience in these countries has shown that the main difficulties are found in completing the authorisation procedures and finding a suitable financing scheme. The BiogasIn[91] project is tackling these barriers, by training biogas developers, financial institutions and authorities responsible for authorising new biogas plants in seven Central and Eastern European countries.

OUTLOOK: What remains to be done?

As mentioned above, bioenergy will play an important role in achieving the 2020 renewable energy targets. However, there are many issues that have to be considered regarding sustainability, the interactions between different supply chains, and the promotion of the most efficient uses of available bioenergy resources. Strategic initiatives are needed to inform the debate up to 2020 and beyond, and to help to achieve the 2020 targets whilst taking into account the issues mentioned.

On the other hand, there is still need to continue fostering domestic bioenergy production through the mobilisation of the forest and agricultural sectors and through the revalorisation of wastes, overcoming existing barriers along the supply chains. The production and use of bioenergy for CHP, heating, transport (liquid biofuels and biogas) and grid injection (biomethane) still need to be encouraged.

c. Energy in transport — STEER

Transport is the fastest growing sector in terms of energy use. It is, therefore, essential to tap the potential for energy-efficiency gains in this sector. Transport plays a central role in the European economy and accounts for almost 20 % of total gross energy consumption in Europe. More than 95 % of the energy consumed in this sector is fossil fuel. Investments in the economically recovering new Member States in particular offer significant opportunities to promote a shift towards low-carbon transport and a new, more sustainable mobility culture.

The STEER — 'Energy in transport' pillar of the IEE programme aims at promoting energy-efficient modes and a more rational use of energy in transport as well as stimulating the demand for alternative fuels and clean and energy-efficient vehicles.

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89 Oileco 'OILECO VALUE CHAINS: Fostering Public-Private Partnerships for the Local Bio-Energy Market Value Chains of Used Cooking Oils'.

90 Farmagas 'Biogas Production from Agricultural Wastes in European Farms', http://www.farmagas.eu/.

91 BiogasIn 'Sustainable biogas market development in Central and Eastern Europe', http://www.biogasin.org.

STEER has supported projects which promote, build and/or implement the EU policy and legislative framework. They are classified under three key actions:

- energy-efficient transport;
- clean and energy-efficient vehicles;
- capacity building and learning on energy aspects of transport.

The main objectives of the STEER key actions have been to:

- improve the capacity of professionals to plan and implement energy efficient mobility solutions;
- optimise the use of (passenger and freight) vehicles though improved logistics, driving styles and attitudinal change;
- foster a modal shift towards more energy efficient modes;
- promote the uptake of clean and energy efficient vehicles;
- facilitate the implementation of Directive 2009/33/EC on the promotion of clean and energy-efficient road transport vehicles;
- promote the uptake of policy instruments, such as Sustainable Urban Mobility Plans and, in general, the integration between transport and other sectors (in particular urban planning) to meet the EU energy objectives for transport;
- support the initiatives of the Action Plan on Urban Mobility (COM(2009) 490).

A total of 34 projects have been supported in the 2007-2010 period and 7 more projects are currently under negotiation under the 2011 Call. They cover both the passenger and the freight sectors. They are complemented by initiatives, such as the Eltis portal[92] on urban mobility and the Clean Vehicle portal,[93] both funded under the IEE Programme.

The number of proposals submitted has more than doubled over the last years (more than 50 proposals per year in the last three Calls), which demonstrates a growing interest in this pillar of the IEE programme. Part of this increase results from EACI's efforts to reinforce communication in this field, targeting transport multipliers and improving tools like the Eltis portal.

TOTAL BUDGET

The commitment appropriations related to this measure for the period 2007-2011 amount in total to EUR 52.3 million.

WHAT HAS BEEN ACHIEVED?

STEER delivered tangible results by supporting more than 320 local and regional stakeholders in 28 countries to improve the mobility of their citizens and meet the challenges set by the 2011 White Paper[94] 'Roadmap to a Single European Transport Area — Towards a competitive and resource efficient transport system' in particular halving the use of

92 http://www.eltis.org/.
93 http://www.cleanvehicle.eu/.
94 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0144:FIN:EN:PDF.

'conventionally-fuelled' cars in urban transport by 2030; phasing them out in cities by 2050; and achieving essentially CO_2-free city logistics in major urban centres by 2030.

Fostering an energy-efficient modal shift through soft measures

Although they are often perceived as unattractive or insufficiently known, valid and competitive energy-efficient alternatives to the use of cars are available for many kinds of trips. For instance, indicatively half of all journeys in urban areas are less than 5 km long and a third are less than 3 km.[95] These distances are perfect for cycling, walking or using public transport.

A total of 7 projects have been supported in the field of cycling for a total estimated energy saving of 20 000 toe/year by their end. PRESTO[96] (2009-2012) is one of them. PRESTO has prepared a series of guides for transport practitioners that consolidate the state-of-the-art of fostering cycling covering: infrastructure, promotion, and electric bicycles. These guides, translated into several languages, have been used as reference by external stakeholders, such as the Lithuanian Ministry of Transport. In addition, this knowledge has been applied as part of concrete initiatives (such as black spots identification, parking plans, cycling events, etc.) in Bremen, Grenoble, Tczew, Venice and Zagreb.

Other projects, such as AD PERSONAM[97] (2008-2010) or BENEFIT[98] (2008-2011), have focused on the promotion of public transport reaching more than 600 000 citizens through their campaigns and achieving more than 8 000 new public transport users in the 14 partner cities, resulting in an estimated yearly reduction of more than 2 million litres of fuel (~1 500 toe/year; 4 400 tonnes of CO_2 saved/year).[99]

Car sharing has been supported by the Momo Car sharing[100] project (2008-2011). During the project, 31 new car-sharing sites and cooperation agreements with 60 organisations were established to incorporate car sharing in their service offerings. Nearly 25 000 people were interviewed about the attitudes toward and experience with car-sharing. Press, marketing and awareness activities were targeting around 9 million people, reaching an estimate of 135 000 people.

Managing transport demand and societal changes

Reducing unnecessary demand for transport is also an effective measure to reduce energy consumption. Around 10 STEER projects have been dealing with mobility management campaigns, some of them focusing on specific societal challenges.[101]

The EU-25 population aged 50+ is expected to increase from 35 % to 49 % between 2005 and 2050 (EUROSTAT). While in the past walking and public transport have been the most important modes among older people, increasingly there is a shift towards the use of private cars. The AENEAS project[102] (2008-2011) implemented targeted soft measures in five cities (e.g. guided tours or training sessions on consulting online public transport options). 2 700

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95 http://ec.europa.eu/environment/pubs/pdf/streets_people.pdf and other national statistics.

96 http://www.presto-cycling.eu/en/home.

97 http://marketingpublictransport.eu/.

98 http://eu-benefit.eu/.

99 Source: BENEFIT consortium's monitoring and evaluation report.

100 http://www.momo-cs.eu/.

101 TOGETHER (2010-2013; www.together-eu.org) focuses on the mobility of immigrants; BAMBINI (2009-2012; http://www.mobile-bambini.eu/) focuses on families with very young children; AENEAS (2008-2011; http://www.aeneas-project.eu/) focused on older people.

102 AENEAS ' Attaining Energy Efficient Mobility in an Ageing Society', www.aeneas-project.eu.

older persons were trained and 40 000 were involved through workshops, individualised marketing campaigns and events. In addition many more were reached via media advertisement. 17 % of the participants stated that they would use the car less, 30 % wanted to ride public transport more, 27 % planned to walk more, and 30 % intended to increase cycling, resulting in a saving of more than 1 000 tonnes of CO2eq/year, as estimated by the AENEAS consortium. In addition, AENEAS trained transport professionals (220 trainees from 18 countries) and 600 bus drivers on the needs of older people.

Building capacity and skills

Transport is the fastest growing sector in terms of energy use. It is, therefore, essential to tap the potential for energy-efficiency gains in this sector. Soft measures, such as solutions to mobility issues, are not always in the mindset of transport professionals, who traditionally have an engineering and infrastructure educational background. On the other hand energy or environment professionals do not traditionally operate on the mobility area. In order to promote an energy efficient mobility culture, STEER supported education and training initiatives. More than 10 STEER projects include elements of capacity building and training of professionals (including on-the-job training, seminars in national languages, and e-learning platforms). Two of those projects focus on capacity building: Mobile2020 and TRANSPORT LEARNING.

The project Mobile2020[103] (2011-2014) promotes cycling measures and policies and focuses on 11 countries in Central and Eastern Europe. By its end, professionals from 350 cities in those target countries will be trained by 11 national reference structures which will stay alive after the end of the project. TRANSPORT LEARNING[104] (2011-2014) is training municipalities and energy agencies of Europe's convergence regions. With a target of at least 650 trainees, TRANSPORT LEARNING also includes practical projects carried out by trainees resulting in at least 260 action plans and 170 projects successfully carried out throughout the duration of the project (expected savings exceeding 2 500 toe/year).

Optimising vehicles fleets and operations

A total of 9 STEER projects are concerned with optimising the delivery of goods and making private and public fleets cleaner (through the procurement of energy-efficient vehicles or through more energy-efficient driving style).

The BIOSIRE[105] project (2008-2011), for instance, aimed at establishing a shift towards biodiesel and electric propulsion for fleets, ships and special vehicles in tourist areas in 6 countries. Sustainable production processes for the production of alternative fuels based on the collection of cooking oils were set up in Crete, La Rochelle, Croatia and Mallorca, involving nearly 7 000 schools and restaurants. Favourable legal and market conditions for alternative fuels were stimulated, contributing to an increase of public filling stations for high blends of biodiesel from 2 to 470 in Crete alone. Awareness raising campaigns lead to decreases of the use of fossil fuels in tourist fleets in Crete (-180 000 litres/year) and La Rochelle (- 19 500 litres/year). Total annual reductions in greenhouse gases emissions exceeded 4 000 tCO_2e/year.

Road vehicles have not been the only means of transport targeted by IEE projects. The ECORAILS[106] project (2009-2011) for instance, aimed at elaborating and demonstrating

103 www.mobile2020.eu.
104 http://transportlearning.net.
105 www.biosire.eu.
106 www.ecorails.eu.

Europe-wide applicable, legally secure guidelines for administrations on how to integrate and evaluate energy-efficiency and environmental criteria in regional awarding of rolling stock. These guidelines were tested in four pilot sites (Berlin, Lombardy, Timisoara and Øresund). In addition, one real life awarding took place during the project's lifetime in Øresund. The implementation of the 'Guidelines for Public Transport Administrations in Europe' is expected to reduce energy consumption and CO_2 emissions by 8-12% in comparison to current awarding and by 10-15% with regard to the currently used rolling stock. An unexpected success was the fact that the Romanian partner was asked by national authorities to rewrite current procurement legislation to take into account environmental and energy-efficiency criteria.

OUTLOOK: What remains to be done?

EU transport still depends on oil and oil products for more than 95% of its energy needs and although vehicles might have become cleaner, increased volumes make it unsustainable.

To meet the very ambitious targets of the White Paper on Transport, more actions are needed at the local level:

- to promote non-fossil fuel mobility: significant market uptake of clean and energy-efficient vehicles, better access and attractiveness of alternative modes;
- for a better interface between long distance and last-mile, including freight consolidation centres and delivery points;
- for improved planning and integrated solutions to curb current transport trends.

d. Integrated Initiatives

Integrated initiatives are funding priorities covering more than one specific field (SAVE, ALTENER and STEER). Their increase within the IEE II programme reflects the growing importance given to the integration of energy efficiency and renewable energy issues.

These Initiatives have been the following:

- energy efficiency and renewable energies in buildings, including Build Up Skills;
- creation of local and regional energy agencies;
- local energy leadership;
- mobilising local energy investment;
- energy services;
- energy education.

They are summarised below with a short description and a summary of the main results.

i. Energy efficiency and renewable energies in buildings, including Build Up Skills

Overcoming the barriers to energy efficiency and the use of renewable energies in the building sector remains a significant challenge. Europe has adopted an ambitious vision for the energy performance of its buildings. By the end of 2020 (by the end of 2018 for public buildings) all new buildings must be nearly 'zero-energy buildings', with intermediate targets set by Member States by 2015. Member States must draw up national action plans for

increasing the number of 'nearly zero-energy buildings', including policies and measures to stimulate the refurbishment of the existing building stock into 'nearly zero-energy buildings'. In addition, by 2015 all new buildings and buildings undergoing major renovation must have minimum levels of energy from renewable energy sources. A major transformation must occur in the building sector during the next few years, in which the role of the public sector is reinforced by even earlier deadlines.

To address this challenge, two integrated initiatives on 'energy efficiency and renewable energies in buildings' and 'BUILD UP Skills, the Sustainable Building Workforce Initiative — Training and Qualification in the field of energy efficiency and renewable energy' were established under IEE for the period 2011-2013.

The integrated initiative on 'energy-efficiency and renewable energies in buildings' aims to support actions that pave the way for the transformation of the existing and future EU building stock into nearly-zero energy buildings. In particular, the objectives of the initiative will be manifold:

- widespread market adoption of integrated energy design of buildings;
- to increase the visibility of front-runners for Nearly-Zero Energy Buildings, including assistance to the public sector to play an exemplary role;
- to support the industry to offer a complementary range of energy efficiency and renewable energy solutions;
- to support step-by-step renovation and the uptake of energy performance certificates recommendations;
- to support the implementation of legislation by fostering quality insurance and compliance in buildings.

With the BUILD UP Skills integrated initiative, IEE II aims to unite forces to increase the number of qualified workers in the building workforce in Europe to make the major transformation towards Nearly-Zero Energy Buildings possible. BUILD UP Skills focuses on the continuing education and training of craftsmen and other on-site workers. It follows a phased approach. In a first phase, the initiative will help mobilising key stakeholders to develop national roadmaps for the qualification and training of workers. In a second phase, funding will be available for establishing or upgrading large-scale training schemes based on the established roadmaps.

TOTAL BUDGET

The commitment appropriations related to this measure for the period 2007-2011 amount in total to EUR 16.4 million.

Energy efficiency and renewable energies in buildings

WHAT HAS BEEN ACHIEVED?

Under the integrated initiative on energy efficiency and renewable energy in buildings, 9 projects were recommended for funding under the IEE 2011 Call with a focus on promoting Nearly-Zero Energy Buildings. These projects currently under negotiations will support all actors along the sector value chain in the transition towards Nearly-Zero Energy Buildings in

the coming years. Local authorities, developers, financiers, owners, users, designers, engineers, contractors and suppliers will all be either direct, or indirect, beneficiaries of these actions. Additionally, from stakeholder forums, networking activities and broad awareness resulting from the projects, the entire value chain will benefit, as will the regulatory authorities which are setting the framework for the market transformation. During the period 2012-2015, these projects are expected to accelerate the implementation of the national action plans towards nearly zero-energy buildings.

Creating favourable market conditions

The project MATRID, for instance, will promote the use of Integrated Energy Design (IED) in new and refurbished buildings. The project will focus on the practical changes required in the market to adapt to the use of IED. This includes changes at contractual and remuneration level.

Shaping policy development and implementation

The project ENTRANZE will support national governments in 9 countries covering 60 % of the EU building stock to prepare integrated policy packages and roadmaps for accelerated market penetration of nearly-zero energy buildings with renewable heating and cooling. Consolidated building stock data and policy scenarios will be prepared and discussed in a strategic dialogue cycle between policy makers and stakeholders.

Preparing the ground for investments

This topic is covered under two other initiatives: the IEE energy services initiative and the initiative on Mobilising Local Energy Investments (MLEI). See relevant sections.

Informing stakeholders and fostering commitment

The NZB2021 project will increase the visibility of front-runners by developing a widespread dissemination campaign. Replicating a successful Belgian initiative with open days in 10 countries, the project will engage a wide public (20 000 to 30 000) and provide hands-on experience with site visits of existing buildings that are similar to NZEB.

OUTLOOK: What remains to be done?

The integrated initiative on ‘energy efficiency and renewable energy in buildings’ should continue to facilitate the implementation of EU policies and foster the market transformation towards Nearly-Zero Energy Buildings.

Even if access to financing can be improved and the acceleration of the renovation rate significantly increased, it cannot be guaranteed that newly constructed or renovated buildings will actually meet the required energy performance levels.

Hence, in addition to:

- the continuing need to mobilise stakeholders;
- the provision of access to finance;
- the bolstering of knowledge capacities; and
- the effective —and ambitious— transposition and implementation at national level of the EPBD and RES Directives;

a number of further critical issues need to be addressed:

- Product availability with industry involvement along the building supply chain: can the materials, products and services be supplied in good time?
- A qualified workforce with the skills to deliver, from the design concept to construction: can the construction industry actually deliver sufficiently high-quality buildings in sufficient quantities?
- compliance checking for the quality of constructed buildings: can it be ensured that the design performance of buildings is met in practice?

BUILD UP Skills

Without a suitably qualified on-site workforce, it will be impossible to reap the energy saving potential of the building sector or to capitalise on the possibilities for distributed production of energy from renewable sources in our built environment: high-performance buildings will remain on the drawing board or planning permit. Build Up Skills aims to ensure that the construction sector has the capacity to deliver in the last — and highly critical for the building sector— stage of the supply chain for new and renovated buildings.

WHAT HAS BEEN ACHIEVED?

With the help of the IEE national contact points, the EACI intensively promoted the BUILD UP Skills initiative by attending meetings with stakeholders from the construction and education sector in 17 countries between February and May 2011. The result was outstanding with 41 proposals received from 27 countries, and 21 national projects selected, negotiated and contracted in less than 5 months. These projects all started in November 2011 and will last until April 2013 (18 months).

Twenty one national BUILD UP Skills projects started in November 2011 to develop national qualification platforms and roadmaps for the continuing education of craftsmen and other on-site workers. During the first 6 months, the projects will elaborate an analysis of the state-of-play of the building sector and its workforce. They will analyse skill needs and gaps for various professions both in quantitative and qualitative terms. All relevant stakeholders will be invited to join a discussion platform to establish a roadmap to train the building workforce by 2020. A first EU exchange meeting, organised in Brussels on 23-25 November 2011 by the EACI, gathered 120 participants including 70 representatives from the national projects and European associations. It allowed for exchanges on methodologies to assess skill needs and gaps, reflections on common barriers and on the added value of such an EU initiative.

OUTLOOK: What remains to be done?

For the BUILD UP Skills initiative, more countries are expected to join the initiative in June 2012. The second phase supporting large-scale training schemes has also been launched under the IEE Call 2012.

ii. Creation of local and regional energy agencies

The IEE programme has supported the establishment of new local and regional energy agencies in order to help public authorities, and the communities which they serve, to improve their energy efficiency and to make the most of their renewable energy resources.

Local and regional energy Agencies established with IEE support are independent organisations, operating on a 'not-for-profit' basis. They typically provide a wide range of public services, including:

- energy advice (information, assistance and awareness raising, training, etc.) to local decision-makers in both the public and private sectors, as well as to householders and individual citizens;
- technical assistance to local and regional authorities, SMEs and the industry to formulate energy plans and strategies, and to enable local decision-makers to take appropriate decisions in relation to the setting up and monitoring of energy projects;
- promotion of EU energy policies and targets (e.g. 20-20-20 by 2020) and support for the implementation of relevant EU legislation, such as the renewable energy directive, eco-design directives, energy efficiency action plan, etc.;
- technical advice to local authorities, helping to prepare them for signing the Covenant of Mayors, and afterwards helping them also to develop, finance, and implement their Sustainable Energy Action Plans (SEAPs);
- education materials and related practical support on energy & environmental issues for schools, and the organisation of short training courses for professionals and energy managers.

Local and regional energy agencies, which have been established with IEE support, make a long term commitment to providing a public service and to establishing a well trained team of staff that will continue for at least 5 years after the end of the IEE grant. Therefore, they work from the beginning to establish long-term collaboration with a broad range of local stakeholders, including businesses, universities, institutes, as well as leading local actors from the energy sector, such as utilities, renewable energy system installers and experts.

Support from the IEE programme is provided for the start-up costs of a new Agency, including a six-month period for completing the legal establishment of the Agency, followed by a three-year work programme. After this period of EU support, they are expected to have proven their added value to the local community, and consequently to have secured long term funding which will enable them to continue to provide their public service functions. In most cases, this funding comes from the local authority which established them, though in some cases other sources of funding are also involved. The IEE funding must be reimbursed to the Commission in case the agency stops its operations or is converted into an independent consultancy at the end of its period of IEE funding.

TOTAL BUDGET

The commitment appropriations related to this measure for the period 2007-2011 amount in total to EUR 5.2 million.

WHAT HAS BEEN ACHIEVED?

In total, 79 new local and regional energy agencies have been established since the beginning of the IEE programme, of which 21 have been established during the IEE-II programme (2007-2009). A study of local and regional agencies was launched in 2009, and at the same time the creation of new energy agencies was stopped pending the results of the study. Since 2009, no more IEE grants have been awarded for the creation of local and regional energy agencies. Nevertheless, more than 400 local and regional energy agencies exist in the EU today, and most have been created with EU support.

These agencies have each worked to deliver a public service to their local community and, at the same time, have performed activities also at an EU level by collaborating with other energy agencies across the EU. Many local and regional energy agencies have encouraged their local authorities to sign up to the Covenant of Mayors, and have contributed to the development of SEAPs. ManagEnergy provides information as well as technical and policy support to local energy agencies, and organises meetings to assist with their networking.

Since 2007, in response to EU policy developments and to the growing demands to mobilise investments in sustainable energy, the work of Energy Agencies has increasingly included initiatives aiming to boost the numbers of signatories to the Covenant of Mayors and the development and implementation of Sustainable Action Plans. In addition, some local energy agencies have provided technical assistance to public authorities with the submission of proposals to financing schemes, such as ELENA and MLEI. More information on local energy agencies is provided at http://www.managenergy.net/energyagencies.html.

A study on local and regional energy agencies was performed by Matrix Consultants in 2009/10. The final report of this study, which was funded by an IEE Tender and managed by the EACI, was published in 2010. Its main conclusions were:

- There is demand for more energy agencies from local authorities in several MS, but they should only be supported in areas where they will add value at the local level by addressing a specific local demand.
- Energy agencies offer three main services to a local or regional authority:
  - information / advice to energy users;
  - technical assistance and policy advice to public authorities;
  - market facilitation (creating new local markets and jobs in energy services).
- IEE funding should only be offered to establish a new local energy agency if it has a long-term mandate from the relevant local or regional authority, with an official commitment to support its operations for at least 5 years after the end of the IEE grant funding.
- Independence and not-for-profit status are important assets of energy agencies.

Creating favourable market conditions

Local / regional public authorities are often characterised by a lack of skills and competences in the energy sector, as well as by a lack of resources. Agencies assist with local market transformation and provide a 'demonstration effect' for potential private actors in the field of EE and RE. In areas where private sector markets in EE and RE are not very well developed, agencies bring forward new initiatives in order to foster private sector innovation, create a market and induce private actors to enter this market. The lack of local markets for energy services is an important justification for public investment in energy agencies.

As an example of Energy Agency activities, the Ios Aegean Energy Agency was created in 2008 and provides services to Greek islands, supporting them with sustainable energy planning and related activities. It employs 4 staff members, but has indirectly created more local jobs by triggering work for other local actors on activities, such as energy planning for municipalities in the network of Sustainable Islands DAFNI, and the preparation of SEAPs following signatures of the Covenant of Mayors. The Agency has provided technical assistance to municipalities and potential investors, which helped to create 1 municipal desalination company, 6 companies which construct platforms for PV tracking equipment, 10 SMEs for energy production, 3 hybrid RES projects (under construction), a call for tenders for

18 desalination plants, and licences for several wind projects. The agency participates in the Isle-Pact Project, which coordinates the Pact of Islands (similar to the Covenant of Mayors).

The agency is also involved in the 'ISLE-SMART' project, through which technical assistance to DAFNI is funded by ELENA-EIB for establishing smart grid infrastructure (including electric vehicle changing stations) in 5 autonomous islands of the Aegean Sea.

Shaping policy development and implementation

Local energy agencies are expected to help local authorities to implement EU energy policies and thereby to contribute to the achievement of the 2020 energy targets.

As an example of energy agency activities, the Agency of North West Croatia, REGEA, now employs 14 people and continues to work very closely with the city of Zagreb. In addition, it has worked to encourage the uptake of signatories to the Covenant of Mayors in Croatia and the development of SEAPs. The agency has also provided inputs to the Croatian Energy Strategy and is implementing projects for the large deployment of RES at national level. One of their successful projects has involved working with the regional authorities to provide financial assistance for the installation of solar systems in households. 130 solar systems were installed in 2009 with a further 125 systems in 2010. After this initial success, the city of Zagreb came into the project in 2011 adding 250 solar systems for households and 250 systems for small and medium-sized enterprises. The households concerned are expected to lower their energy costs for hot water by up to 65 %, and the total yearly energy savings are estimated to be around 1 080.000 kWh. At least 20 % of the solar systems are manufactured in Croatia, which gives a welcome boost to the local economy and the creation of local jobs.

Preparing the ground for investments

The Energy Agencies of Kaunas Lithuania, Tartu Estonia, and Zemgale Latvia have assisted their local authorities with the preparation of proposals to the EU Structural Funds for the renovation of building blocks. The co-financing provided by the government is a significant incentive for owners to launch such renovations. By 2020, the Zemgale Agency aims to provide technical assistance to renovate half of the multi-residential buildings in the region, which contains 22 municipalities. It is estimated that such an action would generate energy savings of 40 % and would reduce CO2 emissions by 12 800 tonnes.

Informing stakeholders and fostering commitment

Raising awareness among citizens, providing educational materials, organising energy competitions in schools, and training energy managers of public buildings, are some of the core activities of energy agencies. As an example of such activities, the Energy Agency in Cyprus plans, from April 2009 to 2012, to address over 2 000 teachers, to distribute over 70 000 documents, to encourage more than 1 500 pupils aged 6-12 to participate in its online quiz, and to carry out educational activities in over 150 schools.

Building capacity and skills

Most energy agencies launch education and training schemes and activities in their region to support their local stakeholders. They collaborate with universities and research institutes as well as chambers of commerce to develop appropriate curricula. At the same time, the staff of the agencies also benefit from training which permits them to contribute more effectively to local energy audits and/or energy planning activities.

As an example of Energy Agency activities, the Ios Aegean Energy Agency working together with the Technical University of Athens has established an Energy Academy, which offers an advanced training programme on energy issues targeting municipal staff in the Aegean

islands. The aim is to strengthen the capacity of the local authorities to meet their energy planning obligations and to improve their decision-making. The programme runs on an annual basis, and includes the use of an e-learning platform. The trainers come from universities and energy authorities, whilst the trainees are municipal employees with responsibilities for RES and energy efficiency or for the integration of new energy technologies and measures in the islands. The result has been 87 new energy inspectors registered, 74 students educated on energy management and RES, and 22 trained building managers from island municipalities.

OUTLOOK: What remains to be done?

Overcoming local market barriers to energy efficiency and to the large scale deployment of renewable energies can be expected to remain a significant challenge in the coming years. Market transformations, changes in consumer behaviour, and better access to financing will all be needed, and local energy agencies are well placed to address these important challenges.

Based on the conclusions from the study of energy agencies, the following points have still to be further addressed:

- future funding for the establishment of local and regional energy agencies where a new energy agency will add value at the local level by addressing a specific local demand for energy efficiency and renewable energy expertise and services;
- future work programmes of energy agencies should include the three main services (information / advice to energy users, technical assistance and policy advice to public authorities, and market facilitation) but should also give greater emphasis to SEAP implementation, local financing mobilisation, and market facilitation;
- long-term mandates are needed by energy agencies from the relevant local or regional authority confirming political and financial support for their future operations.

iii. Local energy leadership

Meeting the EU energy policy targets is a challenge that requires coherent and joint efforts from all governance levels. Local and regional authorities across Europe have a crucial role to play as they have the power to influence the energy choices of the citizens and key stakeholders within their territories.

The IEE programme supports these public authorities in their work, boosting their commitment towards sustainable energy and helping them to implement coherent energy strategies and concrete measures. The projects funded through the key actions *Sustainable Energy Communities* and *European Networking for Local Actions* (under the 2007 and 2009 Calls), as well as *Local Energy Leadership* (under the 2010 Call) support the development of sustainable energy action plans (SEAPs) by local and regional authorities with a participatory approach involving all stakeholders, as well as the implementation of measures in the fields of sustainable energy and mobility.

In the period 2007-2010 twenty-five projects were funded under this key action, supporting more than 1 000 cities and regions all over Europe. In addition, 4 more projects were selected under the 2011 Call. All projects clearly contribute to enforce sustainable energy aspects by:

- strengthening the technical and financial capacities of local and regional authorities in the field of sustainable energy planning and implementation though the elaboration of

SEAPs, the institutionalisation of sustainable energy policies into their daily operations, and the implementation of concrete measures;

- encouraging knowledge transfer among local actors through European partnerships, peer-to-peer activities and trainings;
- mobilising the civil society to endorse energy-related measures through events, campaigns or the creation of networks of actors, which in turn contribute to real behavioural changes in energy consumption;
- developing planning or management tools for calculating energy balances, estimating the current state-of-play and proposing appropriate actions to improve the situation.

TOTAL BUDGET

The commitment appropriations related to this measure for the period 2007-2011 amount in total to EUR 32.9 million.

WHAT HAS BEEN ACHIEVED?

The supported actions have contributed not only towards energy-related issues becoming part of everyday priorities for more than 1 000 local or regional public authorities, but also to their being dealt with in a holistic way. The establishment of such Sustainable Energy Communities clearly helps to overcome administrative, social and economic barriers to renewable energy sources and the rational use of energy, and contributes towards reaching, or even going beyond the targets set in key EU directives and the overarching 2020 energy and climate policy objectives. Through the development of a holistic strategic framework (SEAP), the projects supported in this key action have been instrumental in triggering off concrete measures and achievements in the energy efficiency, renewable energy and sustainable mobility fields at local and regional level.

Contributing to the Covenant of Mayors initiative

The European Commission launched the Covenant of Mayors initiative in February 2009 to bring together European mayors in a permanent network to exchange and apply good practices to significantly improve energy efficiency in their local territories. Signatories to the Covenant of Mayors commit themselves to going beyond the objectives set in the EU energy policy. The IEE Programme funded six projects, specifically aiming at supporting the Covenant of Mayors initiative and substantially complementing the work of the Covenant secretariat by:

- Mobilising local authorities and providing technical assistance for the development of SEAPs and Baseline Emission Inventories (BEI) as well as SEAP implementation: overall, projects are mobilising over 1000 local authorities to adhere to the Covenant of Mayors and become full and active members. Moreover, the projects provide technical assistance to help municipalities to develop their SEAPs and BEIs, thus complying with the Covenant requirements. For instance, the ENERGY FOR MAYORS project[107] so far supported 165 municipalities in their SEAP development. 105 municipalities signed the Covenant of Mayors as a direct result of the project activities and many more signatories are expected by the end of the project. The

[107] ENERGY FOR MAYORS 'A network of sustainable ENERGY supporting structures FOR the Covenant of MAYORS', http://www.energyformayors.eu.

CITY_SEC project[108] has mobilised 32 signatories in six countries, in particular nine out of the current 14 Hungarian signatories.

- Mobilising and offering supporting tools for Covenant Supporters and Coordinators: overall, the projects' activities are mobilising around 90 (out of the current 160) Covenant Coordinators and Supporters that are an essential part of the Covenant structure and ensure political buy-in into this EC initiative at regional and local levels. In addition, the projects are developing tools and facilitating interaction for Covenant Coordinators/Supporters to better support their local authorities in local sustainable energy planning. The ENERGY FOR MAYORS' Toolbox provides more than 500 resources guiding Covenant actors throughout the SEAP process; the ENNEREG Regions 202020 Platform[109], offering a discussion platform for regional actors, or COME2COM's analysis[110] on the barriers faced by local authorities for committing to the Covenant.
- Spearheading new developments: the ENERGY FOR MAYORS project looks into a possible integration of SEAPs and Energy Management Systems in eight municipalities, while the NETCOM project[111] is setting up national Covenant platforms in 12 countries.
- Informing stakeholders and fostering commitment: for example, COME2COM partners held more than 300 personal interviews with mayors to make them aware of the Covenant initiative and discuss the modalities for engaging themselves.

Building capacity and skills

Twinning approaches, enabling peer-to-peer exchange of knowledge and experience, are an effective way of transferring knowledge between public authorities at local/regional level. Five projects with twinning partnerships between learner and mentor authorities focus on improving their performance in the SEAP process. The LEAP,[112] CONURBANT[113] and ERENET[114] projects are establishing 20 twinning partnerships that are expected to lead to approved SEAPs and to the implementation of more than 100 sustainable energy measures as well as jointly developed peer-to-peer guidelines.

In addition to in-depth twinning approaches, three large-scale networking and capacity building projects boost the implementation and delivery of SEAPs in 32 countries.

Informing stakeholders and fostering commitment

Five projects especially showcase the launch of campaigns and competitions appealing to the general public to change behaviour in favour of intelligent energy solutions. For instance, the European ENGAGE[115] Campaign aims to spread the participatory approach and increase the

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108 CITY_SEC 'Regional Development and Energy Agencies supporting muniCIpaliTY_SEC to jointly become active energy actors in Europe', http://www.citysec.eu.

109 ENNEREG 'ENNEREG — regions paving way for a sustainable energy Europe', http://www.regions202020.eu/.

110 COME2COM 'Sharing urban sustainable energy strategies — promoting the Covenant of Mayors', http://www.swea.co.uk/proj_Come2CoM.shtml.

111 NET-COM 'NETworking the Covenant Of Mayors' , www.networkingcovenantofmayors.eu.

112 LEAP 'Leadership for Energy Action and Planning', http://leap-eu.org/.

113 CONURBANT 'An inclusive peer-to-peer approach to involve EU CONURBations and wide urban'.

114 ERENET 'Local Digital Energy Learning Network for Action', http://erenet.epu.ntua.gr/.

115 ENGAGE, 'Local authorities communicating to engage stakeholders and citizens', www.citiesengage.eu.

number of its climate ambassadors in at least 150 European local authorities across 12 European countries.

OUTLOOK: What remains to be done?

The number of local authorities that have signed the Covenant of Mayors initiative and are committed to meet and exceed the European Union 20 % CO_2 reduction objective by 2020 is increasing and now amounts to more than 3 000. Taking this critical mass into account, there is an increased need for exchange of experiences and information to profit from existing knowledge and to accelerate the delivery towards low carbon communities in Europe. Albeit the success of the Covenant of Mayors there remains a large number of local authorities in several countries that still need technical and financial support to become engaged. Thus, there is a continuing need to raise awareness and bolster knowledge in these countries. Constant barriers, such as access to reliable energy data and to financing, need to be addressed and models of collaboration with financing institutions and energy suppliers/utilities need to be found. The IEE programme needs to continue its successful support in stimulating and facilitating change at local and regional level through comprehensive sustainable energy action planning, which will help authorities to put their commitments into action.

iv. Mobilising Local Energy Investments

The integrated initiative 'Mobilising Local Energy Investments' (MLEI) was first introduced in the IEE 2011 Call. It aims to support project development assistance for local or regional public authorities (either individual authorities or groupings of authorities) to work together with financial institutions and/or fund managers and/or ESCOs to prepare, mobilise financing for and launch investments in sustainable energy projects.

The projects must be led by a public body and result from a local climate and energy action plan. The investments must represent a minimum of six million euros and achieve a minimum leverage factor of 15, i.e. every euro in technical assistance costs must generate an investment of EUR 15. A strict requirement is that at the end of the project, evidence must be provided that the investments have been launched unconditionally.

One of the ambitions of the initiative is to enable small-sized investments in energy efficiency and/or renewable energy projects to take place by bundling them into packages that will have a sufficient size to be considered 'bankable' by financing institutions.

TOTAL BUDGET

The commitment appropriations related to this measure for the period 2007-2011 amount in total to EUR 5.3 million.

WHAT HAS BEEN ACHIEVED?

The first MLEI Call attracted 25 proposals from 7 countries, for a total investment of EUR 0.8 billion. The average size of the requested investments was EUR 32 million and the average size of the proposed project development assistance was EUR 1.4 million.

As of January 2011, 8 projects were under negotiation, with one more project on the reserve list. The information provided hereunder is based on these 9 projects and, therefore, reflects what is likely to be achieved by MLEI projects running until 2014.

Even at this early stage, 3 main types of MLEI projects can be identified:

- *classical investment projects*, with innovative means of implementation, such as a biogas plant in Denmark, a district heating scheme in the Netherlands, or municipal buildings in Austria;
- *'bundling projects'*, in which a local or regional public authority will define packages of investments, organise joint procurement and prepare contracts for smaller local authorities. The projects under negotiation address municipal buildings in Norway, street lighting in Italy, and a combination of energy efficiency and renewable energy projects in Spain;
- *innovative investment schemes*: three projects in the UK plan to create investment schemes, some of which are based on the 'Pay-As-You-Save' model, in order to trigger investments addressing private housing, municipal buildings, district heating, and renewable energy production.

At this stage, the financing structures for these investments have not yet been defined but the main options are:

- direct investments financed through loans and equity;
- energy performance contracting (EPC), although in some cases EPC will not include financing because the local authorities have the required financial capacity;
- outsourced financing through the UK 'Pay-As-You-Save' model, in which a third party finances energy conservation measures which are then repaid through the energy bill.

Most projects will try to use European and national funding schemes, when eligible.

OUTLOOK: What remains to be done?

In the future, the MLEI initiative will include two types of projects:

- Project Development Assistance for local projects that focus on buildings, district heating/cooling, energy efficient street-lighting, and/or clean urban transport.
- Promotion and dissemination projects resulting in replication, across the EU, of successful innovative financing solutions, such as revolving funds, green loans, energy performance contracting, etc. for sustainable energy projects which have been implemented by leading public authorities. Actions are expected to catalyse and accelerate the uptake of innovative financing solutions by public authorities. The proposed actions should document and transfer innovative financing processes and methods used by leading public authorities to other EU public authorities together with the necessary practical support materials in the appropriate languages. Actions should lead to measurable replication and uptake by other public authorities.

The lessons learned from the projects in the 2011 and 2012 Calls will be of great value in the frame of the Commission's proposal to allocate a minimum of 20 % of Structural Funds for energy efficiency and renewable energy in the 2014-2020 cohesion policy. MLEI project results may provide managing authorities with ways to help local authorities to set up many small-sized projects, and with examples of financing schemes for mobilising more of the cohesion funds. It is the small size of many energy efficiency and distributed renewables investments that acts as a barrier to their uptake. Mechanisms on the scale of MLEI help to capture those investments.

v. Energy services[116]

The development of the energy services market in Europe is hindered by several barriers, such as the lack of awareness, the lack of trust towards the supply side, the lack of harmonised procedures, the difficulty to access financing or the inadequacy of some public procurement and budgeting rules.

In the period 2007-2011, the Intelligent Energy Europe (IEE) Programme has been active in addressing those specific barriers with the funding of 12 projects in this field. Through their activities, they succeeded in moving the market forward by transferring best practices, by developing model contracts, procurement guidelines and measurement protocols, by raising awareness and confidence, by supporting the development of new business models and pilot projects, by analysing the market barriers and opportunities, and by providing direct training and capacity building. Most market actors have been able to gain benefits from these various projects whether they supply, purchase or finance energy services.

TOTAL BUDGET

The commitment appropriations related to this measure for the period 2007-2011 amount in total to EUR 11.3 million.

WHAT HAS BEEN ACHIEVED?

In general, the IEE projects funded in this field have been promoting a certain type of energy service called Energy Performance Contracting (EPC), where the investments in energy efficiency are paid for in relation to a contractually agreed level of energy efficiency improvement. In 2011 for instance, the FRESH[117] project resulted in the signature of the first Energy Performance Contract (EPC) with third-party investment in social housing in France. It also resulted in the dissemination of 50 000 detailed EPC handbooks throughout 'Le Moniteur', the largest French construction industry magazine. Similarly, in 2011 again, the 40 partners of the ChangeBest[118] project have been developing 49 new Energy Efficiency Services products to realise energy savings in private households, industry, commerce and public buildings. Projects such as EESI[119] have also contributed to the market development of EPC by establishing EPC helpdesks in 10 Member States, by training decision makers in local authorities, by initiating new types of EPC projects or by organising the popular European Energy Service Award, which rewards each year the most outstanding EPC projects in Europe.

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116 According to the Directive (2006/32/EC) energy services are the physical benefit, utility or good derived from a combination of energy with energy efficient technology and/or with action, which may include the operations, maintenance and control necessary to deliver the service, which is delivered on the basis of a contract and in normal circumstances has proven to lead to verifiable and measurable or estimable energy efficiency improvement and/or primary energy savings.

117 FRESH 'Social Housing comprehEnsive Refurbishment through energy Performance contracting', http://www.fresh-project.eu.

118 ChangeBest ' Promoting the development of an energy efficiency service (EES) market — Good practice examples of changes in energy service business, strategies, and supportive policies and measures', http://www.changebest.eu.

119 EESI 'European Energy Service Initiative', http://www.european-energy-service-initiative.net.

Other projects were also focused on more specific market barriers such as the PERMANENT[120] project, which addressed one of the most important barriers to deployment of EPC by end users: the disbelief that planned project results will be achieved and able to pay back the investment in a sustainable manner. In order to tackle this issue, the PERMANENT project aimed at educating financiers, project developers and energy users from five emerging European economies on performance risk measurement and on management techniques in energy saving projects. This project has overall resulted in the development of five harmonised and integrated approaches to measure and verify energy savings and in the training of more than 2 000 market actors as well as 20 qualified trainers.

Although some of the IEE projects in that field have been targeting the residential sector, most of them were dedicated to the needs and underlining also the role model of the public sector. For instance, the MINUS 3%[121] project aimed at demonstrating how cities could contribute to the implementation of the energy end-use efficiency and energy services Directive (2006/32/EC) by reducing by 3% the city authority's consumption each year until 2020. As a result, the six cities involved in this project (Dublin, Derry, Graz, Maribor, Malacky, Maribor) achieved an aggregated saving of 5.6% in the first year, which corresponds to 21.7 GWh of energy savings and approximately EUR 1.9 million of cost savings. This achievement was made possible thanks to the successful cooperation between the municipal authorities and their local energy agency, which supported them in developing their baseline, creating their action plans and monitoring the impact of their energy saving actions. Overall, the MINUS 3% project succeeded in demonstrating 112 energy savings measures including the upgrade of public buildings, the development of new energy services and the carried out of behaviour and awareness campaigns.

Boosted by the interesting outputs delivered by these projects related to the 'Energy Services' key action, the EACI decided to organise in February 2011 a specific IEE contractors' meeting to establish synergies between the ongoing projects and feed back information to the European Commission on the main project findings and latest market developments. Thanks to the quality of the discussions and to the experiences and high-level know-how of the participants, this workshop elicited useful information and recommendations that were used by DG ENERGY for the preparation of the new Energy Efficiency Directive (EED) proposal adopted in June 2011. The fact that eight different IEE projects are referenced in the EED impact assessment study, underlines how IEE projects effectively support the policy making process by sharing their expertise and practical market experience.

OUTLOOK: What remains to be done?

A lot of expectations have been raised in the use of energy services for refurbishing buildings or for upgrading public infrastructure. However, if energy services are to be used for reaching the EU 20% energy efficiency objective, a major development of the supply and demand side for energy services must occur during the next years. It will be essential to continue tackling the non-technological barriers that still hinder the market development, such as the lack of reliable information, the lack of trust towards the supply side, the lack of model documents and procurement procedures, the lack of market and project facilitators, the lack of business

120 PERMANENT 'Performance Risk Management for Energy efficiency projects through Training: enhancing the credibility of the energy services industry in Poland, Czech Republic, Romania, Bulgaria and Croatia', http://www.permanent-project.eu.

121 MINUS 3% 'Shining Examples for the Implementation of the Energy End-use Efficiency & Energy Services Directive', http://www.minus3.org.

models customised for small customers, the difficulty to access financing or the inadequacy of some legal provisions and administrative practices in the public sector. The creation of favourable market conditions is a major challenge in all Member States where collaborative actions at EU level, e.g. through IEE projects, have also an important role to play in the future.

vi. Energy education, including U4energy

The intelligent energy education key action is a vital and strategic component of realising a long-tem change in European citizens' behaviour towards a smart and efficient use of energy resources, thus contributing to key EU policy objectives on climate change and sustainable, secure and affordable energy.

It has become evident that children and youngsters are a key target group to trigger behavioural changes in society for the rational use of energy. On one hand, young people have become more active energy users during the last decades. Particularly the use of communication devices, entertainment equipment and motorised vehicles has increased among this age group. On the other hand, concerns about the environmental impacts of our energy intensive lifestyles have grown, and youngsters are keen to actively contribute to curb those challenges which go along with the excessive use of energy sources.

The core objectives of the intelligent energy key action have been to:

- contribute to the development of intelligent energy education in primary, secondary and higher education;
- make young generations adopt intelligent energy behaviour;
- share and replicate good energy education practices across countries.

The intelligent energy education key action within the IEE II programme has supported 12 projects and one tender with the aim to provide new and innovative teaching concepts, launch awareness campaigns at schools and build competence among students and teachers for sustainable energy solutions. The projects were mainly targeted at primary, secondary and vocational schools.

TOTAL BUDGET:

The commitment appropriations related to this measure for the period 2007-2011 amount in total to EUR 12.1 million.

WHAT HAS BEEN ACHIEVED?

Innovative and interactive learning concepts

IEE projects have developed a range of interactive and innovative learning concepts. The project *Young Energy Savers (YES)*[122] has produced three animation cartoons bringing together award-winning animators and education and energy experts. The YES project pioneered an innovative methodology of '*edutainment*' (education and entertainment) targeted at 5 – 8 year old children. The series 'My Friend Boo' has been distributed in 19 countries in 18 languages and reached *25 million homes* via 10 leading broadcasters.

[122] YES — 'Young Energy Savers' — http://www.animate-eu.com/yes.

A similar success in terms of outreach and innovation was achieved by the project *ENERCITIES*[123] that developed an online simulation game for building a sustainable city which is based on successful concepts, such as SIMCITY played by millions of youngsters and adults. The game was awarded 'Best Learning Game 2010' and 'Best Online Game 2010' by the European platform Engage Quality Awards and the Dutch game industry respectively. The game has been translated beyond the project consortium into 14 languages (including Hebrew and Turkish) and was played by over 16 000 unique players from over 155 countries across the world.

The results demonstrate the success of suitable learning concepts that have appeal to and engage the target group in changing their behaviour through a fun and entertaining way.

Competence building for the future work force in sustainable energy fields

Several projects focused on building skills and competence amongst students.

The pedagogical concept of the project SIEU[124] is very valuable as it goes beyond simple awareness-raising and actively builds competences amongst the participating students and teachers. Through a hands-on approach students are tasked to come up with energy saving solutions for concrete case studies, e.g. company offices, shops or public buildings. In this way, theoretical knowledge is translated into a wide range of practical and technical skills, which are mutually beneficial for the students and the businesses involved. The *SIEU* project trained over 2 300 students from 9 Member States on energy saving and renewable energy and engaged with over 100 businesses and service providers.

The RES COMPASS[125] project helped to accelerate the uptake of professional careers in the renewable energy sector. RES Compass offers guidance to school pupils who may be interested in a career in the Renewable Energy Sector. The portal allows the use of a decision tool (the 'compass') to help direct students. The results of the brief questionnaire point students to the career categories they may be most suited for and find most interesting. The site has over 45 job profiles related to specific careers in the renewable energy sector and includes a searchable database of over 750 vocational and higher education courses related to renewable energy across Europe. Over 43 000 unique visitors have made use of the career advice facility.

Raising awareness on intelligent energy use

The programme has also supported a few campaigning projects to reach out to a wide number of young people with energy efficiency messages. Most prominently, the *FLICK THE SWITCH*[126] project launched an EU-wide energy efficiency awareness and behaviour changing campaign for primary and secondary schools. The dynamic and interactive campaign reached out to over 6 933 schools and 310 000 students across Europe engaging also over 300 education authorities/boards.

Spreading best practice

A core aim of the intelligent energy education key action has been to promote best practices on energy education across EU Members States. The projects *SIEU* and *EURONET 50/50*

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123 ENERCITIES 'Game-based Platform Energy-efficient Virtual Cities',http://www.enercities.eu.

124 SIEU 'Schools for Intelligent Energy Use', http://www.sieu.info.

125 RES COMPASS 'Renewable Energy Sources Compass', http://www.rescompass.org.

126 FLICK THE SWITCH 'Instigating Simple Energy Efficient Behavioural Practices in Schools, http://www.flicktheswitch.eu.

[127]have both disseminated existing good practices to other EU Member States. *SIEU* is based on a Dutch model (see above) and *EURONET 50/50* is using a German success story and replicates it in another 8 Member States.

Launching an EU-wide school competition

The u4energy[128] school competition aims to increase energy efficient behaviour amongst young generations in Europe through a highly visible initiative involving several thousands of primary and secondary schools from all EU-27 Members States, Norway, Croatia, Iceland and Liechtenstein.

It invites schools to enter the competition in the categories of:

a) energy efficiency measures at school;

b) best pedagogical actions to raise awareness on efficient energy use; and

c) best awareness-raising campaign on energy efficiency.

The competition runs in two cycles over the school years 2010/11 – 2011/12 and is implemented by European Schoolnet (EUN), a network of 31 Ministries of Education in Europe and beyond, on behalf of the European Commission, under a contract signed with the Executive Agency for Competitiveness and Innovation (EACI).

The first round of the competition was launched in Brussels in September 2010 by Mr G. Oettinger, the Commissioner for Energy. A total of 476 entries were received. Four regional award ceremonies clustering neighbouring Member States were organised in October 2011 in Lithuania, Italy, Bulgaria, and Spain, with the participation of Mr Delyan Dobrev, Deputy Minister, Bulgarian Ministry of Economy, Energy and Tourism, and Isidoro Tapia, General Secretary of the Institute for Diversification and Energy Saving (IDAE) of the Spanish Ministry of Industry as well as EC Representations.

The first generation of European U4energy winners originated from seven different countries — Croatia, Italy, Malta, Portugal, Romania, Slovenia, and Spain. They were selected among numerous national finalists by a Grand Jury chaired by Ms Ticau, MEP, and composed of pedagogical as well as energy experts. The winning schools were awarded during a high profile European Award Ceremony in the presence of Mr G. Oettinger, the Commissioner for Energy and Ms Ticau, MEP. The Ceremony took place on 22 November 2011 in Brussels.

The second round of competitions is ongoing and will be concluded with a European Award Ceremony in autumn 2012.

U4energy was launched in response to Priority Action 8 of the European Commission's former Energy Efficiency Action Plan (COM(2006) 545).

Other important impacts

Apart from working towards the core objective of making young generations adopt intelligent energy behaviour, the projects generated other important outcomes, such as equipping youngsters with job skills for a career in the energy efficiency and renewable energy sectors or strengthening links between schools, businesses and their wider community on tackling concrete sustainable energy issues or drafting joint action plans, like in the project *EGS.*[129]

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127 EURONET 50/50 '50/50 EUROPEAN NETWORK OF EDUCATION CENTRES', http://www.euronet50-50.eu.

128 u4energy, http://u4energy.eu .

129 EGS 'Energy, Education, Governance and Schools. A European school panel for involving local communities in energy efficiency programs', http://www.egs-project.eu.

Results from intelligent energy education projects have been taken up beyond the borders of the EU-27 Member States, which also underlines Europe's position at the forefront of providing innovative sustainable energy solutions also in the educational sector.

OUTLOOK: What remains to be done?

Europe aims for a transition towards a decarbonisation as expressed in the Energy 2020 goals and also the long-term Energy Roadmap 2050. Important attention will remain on increased energy efficiency over the next decades.

Consumers play a key role in achieving these targets by influencing markets to provide energy-efficient products, cars and homes. Moreover, their smart behaviour will be crucial to mobilise those significant energy savings that can be achieved with no costs, e.g. switching off stand-by and unused appliances and lights or switching to alternative modes of transport than the individual car.

The Intelligent Energy Europe programme should retain a strategic focus on supporting actions that are stimulating behavioural change among citizens, in particular young citizens as these are more prone to take up intelligent behaviours concerning the rational use of energy and as they are the consumers of tomorrow.

3. MARKET REPLICATION PROJECTS — ELENA Technical Assistance Facility

The ELENA Facility was launched in December 2009. It is being implemented by the EIB, KfW and the CEB according to a sub-delegation agreement between the European Commission's DG ENER and DG ECFIN, and consequent Contribution Agreement between DG ECFIN and the banks.

The ELENA Technical Assistance Facility provides grant co-financing to eligible final beneficiaries (local and regional public authorities and/or entities acting on their behalf) of up to 90 % of eligible costs related to technical assistance for the development of bankable sustainable energy investments**.** These eligible costs include personnel costs of additional staff hired by the beneficiary in order to prepare, launch and manage the investment programme in question, technical and economical studies related to the investment programme, preparation and management of the public tendering procedures associated with the investment programme, financial structuring costs of the investment programme, etc. Investment programme means an investment project or a bundle of investment projects prepared/launched by a final beneficiary targeting energy efficiency and/or renewable energy sources utilisation over the respective territory, in line with rules set up by the IEE Programme.

ELENA is implemented on a first-come, first-serve basis, with no deadlines for calls for proposals. The important task of the EIB, KfW and CEB staff in charge of the ELENA Facility is to provide support to local authorities in the preparation of their application and the submission of the subsequent Requests for Approval.

While during the first months of operation of the Facility a large proportion of inquiries focused on general or administrative information, requests from potential applicants progressively shifted towards more specific issues directly related to concrete investments. The dissemination of information regarding ELENA in information days, workshops and seminars, seems to have clarified the basic questions related to the scope and selection process within the facility. The facility is further promoted by the Covenant of Mayors Office and ManagEnergy initiative.

TOTAL BUDGET

So far, EUR 97 million has been allocated to the Facility from the IEE Programme's budget line (EUR 15 million in 2009, EUR 15 million in 2010, EUR 30 million in 2011 and EUR 37 million in 2012).

WHAT HAS BEEN ACHIEVED?

The rapid take-off of the ELENA Facility, as demonstrated by the number of inquiries and submission of proposals, can be explained by the fact that ELENA addresses one key non-financial barrier to the development of these types of projects by local and regional authorities (lack of technical and financial capacity). It is noted that ELENA support has contributed to accelerating investments in the ELENA priority areas and to the adoption of best practices.

So far, under the ELENA Facility, 16 projects were approved by the Commission's services for 15 of which a contract was signed. These projects correspond to an amount of ELENA contribution of EUR 28 million; the planned investments related to these signed and approved projects should reach around EUR 1.56 billion, according to applicants.

The ELENA contribution requests could amount to a further EUR 42 million for the pipeline of 32 potential new projects already identified. Should they be approved, investments related to the pipeline of prospective projects could reach EUR 2.7 billion, according to the figures supplied by applicants.

Although no concrete results can be observed yet, if the objectives foreseen by the projects supported (16 projects) are fully achieved, cumulated energy savings over the ELENA project duration are estimated at 1 092 GWh/y, and 597 GWh/y of energy should be generated from renewable sources. These projects are expected to avoid the production of around 570 000 tons of CO2 emissions over the ELENA project time.

The ELENA added value includes aspects such as:

- Scaling-up energy efficiency and renewable energy investments, realising economies of scale: this is clearly the case for most signed and approved projects, particularly for the 'regional' projects (i.e. Province of Barcelona, Province of Milan, Greater London Authority-RE-FIT), but also for the city of Paris, implementing a global approach to undertake energy savings in 300 schools.
- Higher investment levels can also be achieved by grouping several municipalities (e.g. Province of Barcelona, Province of Milan or Malmö).
- By encouraging local authorities, on the one hand, to plan and coordinate with other stakeholders, the facility provides support to increase their management capacities and develop further investments in the sector, including innovative and market replicable proposals. On the other hand, the facility facilitates the introduction, at local or regional levels, of models that were successfully experienced in other locations in Europe.
- Although it is early in the implementation stage of the facility to provide concrete data on the first side of market replication, it seems that local authorities are already discussing the replication of some approaches developed by the first ELENA applicants in other regions/municipalities (e.g. Italy, Spain, UK).
- Improvement of the bankability of such investments by focusing on technically and financially viable projects that are attractive to the banking sector and to Energy Service Companies (ESCOs). ELENA staff supported applicants in focusing on

bankable investment projects, bringing its expertise to strengthen the bankability of some projects, particularly in sectors relatively new to local authorities, such as the electric vehicle infrastructure submitted by Fundacion Movilidad in Madrid or Vila Nova de Gaia. The facility also supports initiatives making use of ESCOs, such as in the Provinces of Barcelona and Milan, the city of Paris and the Greater London authority. This support is in line with the recently published Energy Efficiency Plan.[130] In doing so, ELENA helps in creating the market for energy services.

- The ELENA Facility provides the financial and technical resources for local authorities to implement the projects and programmes included in the existing Sustainable Energy Action Plans supported by the Covenant of Mayors Initiative: these plans constitute a framework of action for local authorities that identify the potential for energy efficiency and renewable energy development, as well as the possible measures to transform this potential into actual savings and renewable energy generation in an urban environment. The use of these plans in the elaboration of ELENA proposals can be witnessed in many applications.

OUTLOOK: What remains to be done?

The main reasons for rejecting applications or postponing their assessment are often lack of maturity that would make the realisation of the foreseen investment unlikely in an ELENA project time frame, or projects for which technical assistance was not fully justified, where support from the facility would provide only limited added value.

Another problem is the limited capacity to fully absorb and serve the significant demand for technical assistance by only one EU TA facility. Experience so far shows that more TA facilities, even on the MS level, would be needed to facilitate the uptake of the market potential.

In order to address the challenge of smaller bundled investments, in particular in the EU New Member States, ELENA is being extended in the framework of the IEE Work programme 2012, with a complementary technical assistance compartment, to be implemented by the European Bank of Reconstruction and Development**.**

At the time of preparation of this report, the Commission services and respective financial institutions were negotiating the relevant IEE 2012 Contribution Agreements (CA), according to the IEE WP 2012.

4. TENDERS

Tenders financed by the IEE II programme are used to promote an efficient implementation of EU policy on energy efficiency and renewable energy sources. The main part of the tenders are launched by DG ENER and serve as an input to the policy and legislative work in the field of energy efficiency and renewable energy sources. Other tenders support more specific activities, such as ManagEnergy, the Covenant of Mayors or the Sustainable Energy Europe Campaign. The objectives of the tenders financed by the IEE II are:

- to obtain information needed for future policy making (studies);
- to obtain technical inputs for a report required by an EU Directive;
- to purchase services which will assist the Commission in the management and implementation of a special initiative at local, regional or national levels.

130 COM(2011) 109.

The tenders provide valuable input to the European Commission and are mainly intended to inform the European Commission itself, but those which produce information of wider public interest are published on DG ENER's website.

In total, over 70 tenders have been launched by DG ENER, DG MOVE and the EACI in 2007-2011 financed by the IEE II programme.[131] The total budget for tenders in the period 2007-2011 has been approximately EUR 50 million.

a. Tenders supporting policy development and implementation

The main group of tender activities financed by the IEE II are fulfilling the needs in DG ENER to obtain the relevant information for future policy making and technical inputs in the relevant policy areas. These tenders serve as support for actual policy development and implementation. This report covers information on the group of tenders supporting the Ecodesign Directive (2009/125/EU), the Energy Labelling Directive (2010/30/EU), the Renewable Energy Directive (2009/28/EC) and the recast Energy Performance of Buildings Directive (2010/31/EU). Although not covered here, the development and/or implementation of other directives, such as the Energy End-use Efficiency and Energy Services Directive (2006/32/EC), the CHP Directive (2004/08/EC) and the Directive on the promotion of clean and energy efficient road transport vehicles (2009/33/EC) have also been supported by tenders financed by the IEE II. The full list of tenders can be found in the annex to the report.

i. Tenders supporting the work on the Ecodesign and Energy Labelling Directives

The Ecodesign Directive and the Energy Labelling Directive constitute the main pillars of the EU's energy efficiency policy. Both Directives play a crucial role in achieving the 20% energy efficiency objective of the 2020 flagship initiative.

The Ecodesign Directive establishes a framework for setting minimum energy efficiency requirements for energy-related products placed on the EU market (regardless of their origin), and the Energy Labelling Directive establishes a framework for establishing mandatory energy labelling schemes for energy-related products. The benefits adopted under these two Directives are multiple:

- they make a significant contribution to energy saving;
- they provide European industry with a common and predictable regulatory framework;
- they allow the European industry to compete with low labour cost countries on high value added products by preventing the dumping of cheap and inefficient products, and creating business and return on investment for innovative top-performing products;
- they are cost-effective; the technical improvements on the products achieve lower energy consumption at the same time saving money for users.

The correct application of the framework of the Ecodesign and the Energy Labelling Directives, and in particular the adoption of new ecodesign and energy labelling

[131] Some of which are administrative arrangements with the Joint Research Centre (JRC).

implementing measures for specific product groups, has required the Commission to collect and to analyse a significant amount of market data and to run complex technical, environmental, economic, legal and social aspects. The Commission's legislative proposals in particular, must be based on reliable and up-to-date data and must meet all mandatory criteria specified in the Directives.

For these reasons, the Commission has financed studies and projects supporting its activities, and in particular legislative proposals, over the IEE programme. The most frequently run studies have been 'preparatory studies' which precede the legislative work and 'impact assessment studies', e.g. *'A framework contract on impact assessment studies of possible implementing measures under the Eco-design Directive of Energy-Using Products and the Framework Directive on Energy Labelling of Household Appliances*' or '*Work on preparatory studies for implementing measures of the Ecodesign directive (5 lots)*'.

The benefits of the studies and projects are multiple:

- they provide data and analyses that are needed for the Commission's legislative work;
- they allow stakeholders (notably the industry, NGOs) to present their views on the studied subjects;
- the provide the public, including other policy makers, with the background information and the justification of the Commission's actions, including legislative proposals.[132]

TOTAL BUDGET

The commitment appropriations related to this measure for the period 2007-2011 amount in total to EUR 9.9 million.

WHAT HAS BEEN ACHIEVED?

Projects and studies have played an important role in the Commission's activities and in particular in its legislative work. It should be stressed that the implementing measures adopted under the EU's Ecodesign and Energy Labelling Directives (and based on studies financed by the IEE WP) are considered by experts to be of good quality and to provide ambitious requirements.

Since 2005, the Commission has launched 37 preparatory studies and has adopted in total 17 implementing measures for specific product groups (12 ecodesign regulations and 5 energy labelling regulations). It is estimated that these 17 implemented measures will generate savings of 386 TWh, i.e. approx. 40 % of the overall EU energy saving objective by 2020.

Furthermore, on the basis of studies financed under the IEE WP, the Commission will, until 2014, adopt a further 31 implementing measures (22 ecodesign regulations and 9 energy labelling regulations) and will revise 11 existing measures.

It should be stressed that studies and projects financed under the IEE WP have significantly contributed to the results aiming at meeting the 20 % energy efficiency objective of the EU 2020 flagship initiative.

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[132] Final reports adopted in the framework of studies and projects run under the Ecodesign and Energy Labelling Directives are made available on DG ENER's website.

OUTLOOK: What remains to be done?

The Commission will continue financing new studies and new projects that will mainly aim at improving the application of the Ecodesign and Energy Labelling Directives at EU and Member State level.

In addition to typical preparatory and impact assessment studies (that have already been successfully carried out in the previous years), the Commission intends to launch studies that will aim at new activities including (the list is not exhaustive):

- Development and management of a database on energy efficiency and other environmental aspects of products placed on the EU market

The objective of the project is to develop and to manage an online database on energy efficiency and other environmental aspects (if relevant) of selected product groups placed on the EU market (most likely lighting, air conditioners, washing machines and tyres).
The database will be established mainly to support future reviews and revisions of ecodesign and energy labelling implementing measures. Collected and processed data will allow the Commission and stakeholders to observe and to assess changes of energy efficiency and other environmental aspects of selected product groups. Consequently, the data will complete future studies preceding reviews of ecodesign and energy labelling implementing measures, as well as it will be used to support enforcement activities of national authorities.

- Technical support for the standardisation work

The Commission plans to run two separate projects that will aim at improving the standardisation work.

The objective of the first project is to ensure that independent experts/specialists will provide technical assistance to the Commission during the standardisation work for the specific energy-related product groups covered by the Ecodesign and/or Labelling Directives. This assistance should result in a higher quality of the newly produced standards and their better compliance with the applicable requirements of the implementing measures.

The objective of the second project is to ensure the active participation of NGOs (environmental and consumer) in the standardisation work carried out under the Ecodesign and Labelling Directives. This project will allow for the more active participation of NGOs in the meetings of technical committees and working groups of European Standardisation Bodies. It will also allow NGOs to better monitor and to contribute to the development of standards as well as to identify new standardisation needs and/or updates of existing ones.

- Communication helpdesk

The objective of the contract is to provide technical assistance to the Commission in the implementation and communication of the implementing measures adopted under the Ecodesign, Energy Labelling Directives and the Tyre Labelling Regulations.

Within this project, a contractor will provide information, communication and guidance activities in the form of a multidisciplinary (policy/legal/technical/economic/communication) and multilingual ‘Help Desk’ to actors/stakeholders such as citizens, industry, consumers, NGOs and Member State market surveillance authorities. The communication activities will be mainly based on electronic communication, including the website, providing answers and guidance to inquiries from the above actors, drafting technical implementation guides as well as promotional and educational material. The task will also include the provision of

information on the forthcoming implementing measures and amendments, and reviews/revisions of existing measures on the basis of input from the Commission.

ii. Tenders supporting the work on the Renewable Energy Directive

DESCRIPTION

The Renewable Energy Directive adopted in 2009 established the legal framework for achieving the EU 2020 targets in the renewable energy field through binding national renewable energy targets for all Member States and a binding requirement to ensure that at least 10% of the final energy consumption in transport in all Member States is sourced from renewable energy. It also laid down the sustainability criteria for biofuels which apply to all biofuels produced or imported in the EU, and monitoring and reporting obligations to ensure compliance with these sustainability criteria.

The IEE II financed the preparatory and assessment studies supporting a number of implementation measures for the Renewable Energy Directive, including the establishment of assessment of the voluntary schemes certifying biofuel sustainability. It also financed studies contributing to the assessment of renewable energy policy measures and support systems in EU Member States, and regulatory practices related to renewable energy authorisation and licensing procedures and the integration of renewable electricity in the electricity grids.

On biofuels, it supported the implementation measures related to the EU sustainability scheme, including regular updates of the GHG emission saving value thresholds laid down in the RES Directive. It also financed the preparatory and follow-up studies on the EU biofuel market and the monitoring of compliance of EU biofuels with sustainability criteria.

TOTAL BUDGET

The commitment appropriations related to this measure for the period 2007-2011 amount in total to EUR 8.4 million.

WHAT HAS BEEN ACHIEVED?

The studies assessing the non-cost barriers to renewable energy, the implementation of the guarantee of origin systems and the financing of renewable energy contributed to the preparation of the Commission's Renewable Energy Progress report adopted in 2011 and the supporting Commission staff working documents.[133] It also contributed to the development of improved renewable energy modelling capability in cooperation with the Commission's Joint Research Centre. Furthermore, the study on the voluntary schemes for biofuels sustainability criteria contributed to the assessment and recognition of the first 7 voluntary schemes.[134]

A number of studies on biofuel sustainability and biomass use contributed to the adoption of the Commission's 2009 and 2011 Renewable energy progress reports and the supporting staff working documents addressing biofuel sustainability.[135] It furthermore contributed to the

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133 COM(2011) 31 and SEC(2011) 129, SEC(2011) 130 and SEC(2011) 131.

134 Full list of Commission approved voluntary schemes is available on http://ec.europa.eu/energy/renewables/biofuels/sustainability_schemes_en.htm.

135 COM(2009) 192, SEC(2009) 503 and COM(2011) 31, SEC(2011) 130.

adoption of the Commission's Communication on voluntary schemes and default values in the EU biofuels and bioliquids sustainability scheme, the Communication on the practical implementation of the EU biofuels and bioliquids sustainability scheme and on counting rules for biofuels, and the Commission Decision on certain types of information about biofuels and bioliquids to be submitted by economic operators to Member States,[136] and the establishment of baseline data and methodology for monitoring and reporting on the implementation of the biofuel sustainability criteria.[137]

OUTLOOK: **What remains to be done?**

A number of assessment studies, which started in 2010 and 2011, will continue in 2012 and beyond, namely the work on improving the renewable energy modelling capability, the work establishing an EU renewable energy database and the continuation of the assessment of the voluntary schemes for biofuel sustainability. The studies will also contribute to the 2012 Commission Renewable Energy Progress report and supporting staff working documents.

iii. Tenders supporting the work on the recast of the Energy Performance on Buildings Directive

DESCRIPTION

Buildings are responsible for 40 % of energy consumption and 36 % of CO2 emissions in the European Union. Energy performance of buildings is key to achieve the EU's Climate & Energy objectives, namely a 20 % reduction of greenhouse gas emissions by 2020, 20 % energy savings by 2020 and a 20 % share of renewables.

The Energy Performance of Buildings Directive (EPBD) 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.

With the recast of the Energy Performance of Buildings Directive in 2010 (recast EPBD), the legislative framework has been augmented, for example by ensuring that the Energy Performance Certificate (EPC) is included in all advertisements for sale or rental and by requiring that all existing buildings meet certain efficiency levels when they undergo a major renovation and not only those above 1 000 m2, as is the case with the current Directive.

Moreover, the Directive requires (under Article 9) that Member States ensure that by 31 December 2020, all new buildings are nearly zero-energy buildings and that after 31 December 2018 all new buildings occupied and owned by public authorities are nearly zero-energy.

To support the implementation of the recast EPBD, the Commission launched two tenders in 2011; one regarding the implementation of the nearly zero-energy buildings provisions and one regarding the impact of energy performance certificates and more energy efficient buildings on higher property values/higher rents for buildings in the EU.

TOTAL BUDGET

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136 2010/C 160/01, 2010/C 160/02, Commission Decision 2011/13/EU .

137 http://ec.europa.eu/energy/renewables/studies/doc/biofuels/2011_biofuels_baseline_2008.pdf.

The commitment appropriations related to this measure for the period 2007-2011 amount in total to EUR 0.5 million.

WHAT HAS BEEN ACHIEVED?

Both tenders were awarded only towards the end of 2011 and no concrete results have so far been delivered.

b. Tenders assisting in the management and implementation of a special initiative

Tenders assisting in the management and implementation of a special initiative have been launched and managed mainly by the EACI in close cooperation with DG ENER and DG MOVE. The tenders seek to inform and mobilise key stakeholders at local, regional and national levels.

They are divided into the following activities:

- Sustainable Energy Europe Campaign including EUSEW and other EACI's communication activities;
- ManagEnergy
- the portal on energy efficiency in buildings (Build Up);
- the portal on urban mobility (ELTIS);
- promotion of sustainable urban mobility plans;
- the Clean Vehicle Portal;
- Covenant of Mayors.

These activities are summarised below with a short description and a summary of the main results.

i. Sustainable Energy Europe Campaign incl. EUSEW and other EACI communication activities

Launched in 2005, the Sustainable Energy Europe Campaign (www.sustenergy.org) complements European legislation and associated support programmes by rallying a wide range of stakeholders around the EU 20/20/20 energy targets. The Campaign is designed to stimulate an increase of private investment in sustainable energy technologies, to showcase best practices and project examples, and to build alliances among sustainable energy stakeholders.

The key highlight of the campaign is the EU Sustainable Energy Week (www.eusew.eu), which every year brings together a wide range of stakeholders in a series of public events, conferences and debates around the topic of sustainable energy.

The Sustainable Energy Europe Awards Ceremony is the high point of the Week. Winners are chosen from hundreds of projects submitted by public authorities, private companies, European associations, universities and NGOs committed to the promotion of energy efficiency, renewable energy, energy education and clean transport across Europe.

Since 2007, the EACI has been producing a broad range of information and promotion tools to ensure information on funding opportunities as well as project results are widely known by beneficiaries, the relevant stakeholders and multipliers, and the public at large.

TOTAL BUDGET

The commitment appropriations related to this measure for the period 2007-2011 amount in total to EUR 6.5 million.

WHAT HAS BEEN ACHIEVED?

The latest two editions of the EU Sustainable Energy Week (2010-2011) were managed by the EACI. They featured 218 events in Brussels, 830 energy days across the EU and attracted over 200 000 participants, including some 10 000 in Brussels. They also triggered 383 media mentions in international and national media (print, radio, TV and online).

The high level of participation and the very positive media coverage are a testament to the public interest in the EU Sustainable Energy Week and its agenda.

With communication being a cornerstone of the promotion and dissemination projects co-financed under the IEE Programme between 2008[138] and 2011, the complementary EACI communication efforts related to the IEE programme resulted in:

- 9 videos watched by over 20 million people;
- 19 publications printed and distributed in 746 000 copies;
- 1 785 attendees at annual European info days;
- 18 260 subscribers to the electronic newsletter service; and
- 116 media clippings in both general and specialist press.

OUTLOOK: What remains to be done?

The first phase of the Sustainable Energy Europe Campaign came to an end on 31 December, 2011. The next edition (2012-2015) will re-focus the efforts around the EU Sustainable Energy Week, including the energy days and the award scheme, so as to maximise impact and visibility. The new contract is expected to be in place in April 2012.

Building on previous experiences, the EACI work plan foresees a series of communication activities in 2012 including events, publications, audiovisual products, websites, electronic communications and media relations with a total budget of EUR 600 000.

ii. ManagEnergy

The ManagEnergy initiative has been financed by the IEE Programme since 2009, following the publication of a tender. ManagEnergy is intended to provide advice and information on EU policies and their implementation in the field of sustainable energy to local and regional public authorities and Energy Agencies.

Local and regional authorities, with their staff and elected persons, together with their stakeholders, including energy professionals, energy producers, energy agencies and SMEs, as well as NGOs, consumer associations and local financial actors have key roles in the

[138] 2007 figures not available.

implementation of EU policy. However, most public authorities lack experienced staff with the required skills as well as the financial means needed to draw up sustainable energy action plans and/or to implement the projects which are identified in their plans and strategies.

ManagEnergy complements the work of the Covenant of Mayors initiative, which mobilises support at the political level, whilst the focus of the services provided by ManagEnergy is at the operational level.

TOTAL BUDGET

The commitment appropriations related to this measure amount in total to EUR 1.5 million.

WHAT HAS BEEN ACHIEVED?

The main services of the ManagEnergy initiative are outlined below:

The ManagEnergy *website* (www.managenergy.net) provides easy access to the latest information on EU sustainable energy policies and regulations, as well as good practices and experiences, which are relevant to local and regional actors. It also contains a partner search facility and an education corner with targeted information for kids, teachers and those involved in vocational training. The website currently comes among the top ten in search engines for 'energy at local level' or 'sustainable energy' and has more than 5 000 visitors weekly, resulting in more than 14 000 page views per week.

The monthly ManagEnergy *e-Newsletter* is opened by at least 4 000 readers per issue, and each year 500 new subscribers are entered into the ManagEnergy database. The newsletter focuses on promoting and explaining EU level policies, regulations and initiatives which are of potential interest to local and regional energy actors.

A new *interactive map* has been developed and launched on the website, which shows the locations and activities of those energy agencies and public authorities across the EU that are front runners in the energy sustainable sector. The interactive map is managed in collaboration with the Covenant of Mayors Office (CoMO), and includes layers which show also the locations of those cities and regions which have signed up to the Covenant (CoMO map).

A *partner search* facility is operated using the ManagEnergy website, through which organisations across the EU can identify potential partners who may be suitable to join them in making proposals to the IEE programme. This facility is particularly useful for newcomers to the IEE programme.

The website contains a *kids' corner*, which provides information and materials on sustainable energy for teachers, children and their parents. A specific section with games and quizzes is available on the site. Most of the games are available in 23 languages. Two of these games have been selected for inclusion on the Commission's DG Communications kid's corner website. Materials from the education corner are also made available at events, such as the awards ceremony for the schools energy competition 'U4 Energy'. The ManagEnergy service providers currently aim to increase the number of hits on their education pages to 5 000 per week and to expand their target group to more than 300 persons.

The website also contains a *vocational training corner*, which is addressed to professionals working in the sustainable energy sector, vocational training centres, schools and universities. IEE projects, which are supporting vocational training actions, such as UP-RES, RES

COMPASS, EUREM, PV-TRIN, QUALICERT, and INSTALL+RES, are promoted in this corner, and the target is to reach 30 000 visitors per year.

Another ManagEnergy activity is to run *capacity building workshops*. Approximately ten workshops were run per year for local and regional authorities during 2010 and 2011 in various locations across Europe. The workshop topics, locations and timing were coordinated with those of the Covenant of Mayors Office (CoMO). These workshops were organised on a regional basis, with topics focused on the most important needs and using local languages. Local elected representatives were among the targeted participants.

A *ManagEnergy conference* is organised annually with the aim of providing networking opportunities for local and regional energy actors and to facilitate the sharing of best practices. These conferences are typically attended by at least 400 participants and are held with interpretation into and from 6 languages. The events are web streamed so that many more local actors can follow the sessions without incurring travel costs.

A ManagEnergy *award ceremony* is also held annually for the best case studies of high quality sustainable energy solutions, which have high replicability at the local level. The Commissioner for Energy usually delivers the awards in a prestigious event. At least 40 case studies are submitted each year for the award.

Sustainable energy information for local actors is made available by the ManagEnergy service provider using an *exhibition stand* at events across the EU (e.g. Open Days, Green Week, IEE Info day, etc.), where *printed materials* are distributed (brochures, booklets, maps, leaflets, posters, etc.). Printed material can also be downloaded from the website.

OUTLOOK: What remains to be done?

A new tender for 2012-2015 will conclude to a new contract with the aim to further improve and diversify the services provided, including the ManagEnergy website and another 45 capacity building workshops, aiming to attract at least 1 350 participants.

In addition, the new service provider will be required to organise 18 networking workshops and 15 thematic workshops in those countries that are eligible to participate in the IEE Programme, with about 900 participants in total.

New features of the ManagEnergy website will include an *investment project financing corner*, which will provide information on EU and other funds for investment project financing for local and regional authorities, and those who work with them, such as energy agencies, SMEs, ESCOs and energy professionals. IEE funded investment schemes, such as ELENA (European Local ENergyAssistance) and MLEI (Mobilising Local Energy Investment), will also be promoted using this feature.

An *SMEs corner* will also be added to the website in order to provide targeted information which is of interest to small and medium enterprises, such as energy saving products and energy efficiency measures.

iii. The portal on energy efficiency in buildings (Build Up)

BUILD UP is the European Commission's online portal on energy efficiency in buildings. The main aim is to support the implementation of the Energy Performance of Building Directive (2002/91/EC) and its recast (Directive 2010/31/EU). In addition, BUILD UP also aims to support the contribution of the building sector to the 2020 energy targets.

BUILD UP was launched in 2006, and has since become a reference portal on energy efficiency in buildings. The current tender was launched in 2011 with the objective of further improving BUILD UP and reaching a larger audience.

TOTAL BUDGET

The commitment appropriations related to this measure amount in total to EUR 1.9 million.

WHAT HAS BEEN ACHIEVED?

The core of the BUILD UP portal was already developed in the previous tender. However, the need to make it more useful and relevant for users required the upgrade of several features and the introduction of new ones. The search engine was completely refurbished in order to make it more appropriate for users. The portal has also introduced sections on financing and training schemes, and a series of country fact sheets — fed through by the implementing bodies in the CA EPBD — with information on national legislation related to buildings and energy efficiency.

BUILD UP has become a popular site for searching the latest developments in policy, technology and practice. It is regularly visited by around 20 000 users per month, reaching almost 70 000 page visits. Because of its nature, the BUILD UP initiative is also an important element for the communication of results from the key action on Energy Efficiency and Renewable Energies in buildings. BUILD UP is also used as a space for communication between the different market actors of the building industry. Important associations of professionals or industrial sectors at EU level have signed up as BUILD UP Partners.

As part of the activities, BUILD UP is in close cooperation with the BUILD UP Skills initiative. Activities include the design of the website and the organisation of the BUILD UP Skills EU Exchange Meetings.

OUTLOOK: What remains to be done?

Although BUILD UP has become a reference site for supporting policy development, the challenge remains to reach professionals and individuals. The current edition is also aiming at an ambitious increase of audience (100 % growth by 2013).

In addition, one of the main objectives of BUILD UP is to increase the presence at national level, where the site is less visited mainly due to language barriers and the fact that most of the uploads make reference to EU level. This is being addressed through the sections on financial and training schemes and the country fact sheets, which are more relevant to national level. In addition, the role of BUILD UP in the BUILD UP Skills Initiative should provide more visibility amongst national players. www.buildup.eu

iv. The urban mobility portal (ELTIS)

Eltis is the European Commission's online portal on urban mobility. Eltis facilitates the exchange of information, knowledge and experiences in the field of urban mobility in Europe. It is aimed at individuals working in the field of transport and in related disciplines, including urban and regional development, health, energy as well as environmental sciences.

Eltis seeks to support the creation of urban transport systems, which use less energy and produce fewer emissions, while improving the competitiveness of urban areas and the mobility and quality of life of its citizens.

The European Commission established Eltis ten years ago. Since then, it has evolved into the leading European web portal on urban mobility. The Commission launched, in 2009, a new tender with the view to further improve Eltis, extend its services and broaden its user base.

TOTAL BUDGET

The commitment appropriations related to this measure amount in total to EUR 1.7 million.

WHAT HAS BEEN ACHIEVED?

Having recognised the need to substantially overhaul and improve Eltis, the web portal was comprehensively redesigned and restructured. In March 2011, Eltis was launched with a brand new look incorporating a number of new services. In addition to hundreds of good practice case studies and news items from across Europe, Eltis now also provides information on EU funding, regular updates on EU legislation and policy, downloadable video case studies, a free image library, a listing of training opportunities and a helpdesk. Eltis Mobility Update, a monthly e-newsletter, provides more than 20 000 recipients a summary of the latest developments in urban transport from across Europe.

All key web pages of Eltis can now be viewed in eleven Community languages, while Eltis Mobility Update is published in six language versions: English, French, German, Italian, Polish and Spanish.

The new page structure, the overhauled design and improvements in the overall service offering of Eltis had an immediate and significant impact on the market. Usage increased from around 160 000 page views per month prior to the launch to more than 250 000 page views per month in early 2012.

User feedback collated as part of ongoing monitoring, revealed that:

- Eltis has high overall user satisfaction levels;
- users normally visit the site once or twice a month;
- a significant proportion of users feel that the site has had an influence on making mobility in their area more sustainable.

OUTLOOK: What remains to be done?

Eltis services will be further expanded over the coming year with the aim of increasing usage of the portal to 350 000 page views per month. The focus will be on targeted marketing activities to increase awareness of Eltis so that more professionals use Eltis more often for information on all aspects of urban mobility. www.eltis.org

v. Promotion of sustainable urban mobility plans

The European Commission seeks to support local authorities in developing Sustainable Urban Mobility Plans in urban and peri-urban areas. The Action Plan on Urban Mobility makes a commitment to provide guidance materials, promote best practices exchange, identify benchmarks, and support educational activities for urban mobility professionals.

The Commission therefore sought to define what is to be understood by the term Sustainable Urban Mobility Plan, develop guidance to assist local authorities with the preparation of such plans and devise a pan-European training programme. These activities have been covered by the IEE II Programme.

TOTAL BUDGET

The commitment appropriations related to this measure amount in total to EUR 0.8 million.

WHAT HAS BEEN ACHIEVED?

In 2010, A Europe-wide knowledge consolidation exercise on Sustainable Urban Mobility Plans was carried out to take stock of current definitions, approaches and initiatives. This included an extensive desk research, four expert workshops and interviews.

The workshops were attended by 54 experts from 19 countries and 6 European networks to discuss and verify the initial findings of the desk research on the development and implementation of Sustainable Urban Mobility Plans in Europe. Interviews with 49 stakeholders and experts provided additional information on the context of Sustainable Urban Mobility Plans in the 26 European countries as well as on the information needs of implementers.

All of the above information was analysed and reported in 'The State-of-the-Art of Sustainable Urban Mobility Plans in Europe'. This provided the context and rationale that guided the preparation of a comprehensive set of guidelines on 'Developing and Implementing a Sustainable Urban Mobility Plan'.

With this guidance there is now a clear definition of Sustainable Urban Mobility Plans and a description of the steps involved in preparing such plans. Information in this guidance is supplemented with good practice examples, tools and references that further illustrate what the development and implementation of a Sustainable Urban Mobility Plan entails.

A training strategy was devised that identified different training formats depending on the national and regional requirements. A programme of 38 awareness raising workshops, technical seminars and experience exchange events will take place during 2012.

OUTLOOK: What remains to be done?

The idea of Sustainable Urban Mobility Plans and the guidance on Developing and Implementing a Sustainable Urban Mobility Plan are now being promoted at relevant events throughout Europe. The state-of-the-art report as well as the guidance will be reviewed and, where necessary, revised in 2013 to feed in the lessons learnt during the training events.

Beside that, there is a continuing need for action to:

- ensure there is a common understanding and agreement on what constitutes a Sustainable Urban Mobility Plan;
- provide assistance and support to local authorities to secure the uptake of Sustainable Urban Mobility Plans across Europe.
- facilitate experience exchanges and networking between local authorities and other relevant stakeholders nationally and across national boundaries, to learn the lessons from work already done elsewhere and to help establish the legal, procedural and structural conditions required for the widespread uptake of Sustainable Urban Mobility Plans.

vi. The Clean Vehicle Portal

The Directive on the promotion of clean and energy-efficient road transport vehicles was adopted in April 2009. The directive requires that the energy and environmental impacts linked to the operation of vehicles over their whole lifetime are taken into account in the public procurement of vehicles.

With this in mind, the EC wanted to establish and provide public access to detailed information on clean and energy efficient road transport vehicles in Europe.

TOTAL BUDGET

The commitment appropriations related to this measure amount in total to EUR 0.5 million.

WHAT HAS BEEN ACHIEVED?

In December 2010 the Clean Vehicle Portal was launched. The Clean Vehicle Portal is a web-based tool that helps institutions to procure vehicles in compliance with the Clean Vehicle Directive.

The portal provides reference data on vehicle life cycle cost, including the cost of environmental side effects, in a manufacturer-neutral way using internationally accepted vehicle test cycles. For each passenger and light goods vehicle the lifetime cost calculation methodology is based on standardised Community test procedures, providing representative data on energy consumption, CO2 emission, and pollutant emissions per kilometre.

In addition, the portal provides a short introduction to the various clean vehicle technologies currently available on the market. For each of the 27 Member States a brief introduction to the current market uptake of clean vehicles, a summary of the national legislative framework as well as financial instruments are also presented.

Portal users also have access to all public procurement notices for vehicle published in Tenders Electronic Daily (TED).

OUTLOOK: What remains to be done?

Obtaining data for individual heavy goods vehicles and buses has to date been a challenge. Instead, lifetime costs have been derived using test bench data for certain vehicle classes, which does not allow a differentiation of lifetime costs between individual vehicles.

The focus of the work to date has been to establish the Clean Vehicle Data and the underlying information and data. With the recent transposition of the Directive into national law, it is now necessary to target the various market players (including public procurement authorities, procurement bodies and vehicle manufacturers) with targeted communication activities to raise awareness of the directive, inform about its implementation and offer assistance in the form of the Clean Vehicle Portal with the procurement of clean and energy-efficient vehicles. www.cleanvehicle.eu

vii. Covenant of Mayors

The Covenant of Mayors is currently the only European policy framework for action at city level on sustainable energy and climate mitigation contributing to the EU's 2020 energy and climate objectives. Signatories of the Covenant commit to reduce their CO2 emissions on their territory by at least 20 % by 2020, by preparing and submitting a Sustainable Energy Action Plan (SEAP) and regularly reporting on its implementation.

The Covenant was an action set out in the Action Plan for Energy Efficiency [COM(2006) 545] and launched in 2008 by Commissioner Piebalgs. The initiative has been supported by a secretariat, the Covenant of Mayors Office (CoMO) since January 2009.

TOTAL BUDGET

The total budget spent on this initiative was EUR 5.8 million.

WHAT HAS BEEN ACHIEVED?

The Covenant of Mayors has become the European reference framework and largest platform for measurable local action on sustainable energy, supported by all EU institutions and involving over 3 400 local authorities and close to 100 regions and provinces, providing technical and financial support for signatories in Europe and even beyond its borders.

18 out of 20 European cities over 1 000 000 inhabitants and more than 65 % of European cities with over 100 000 inhabitants are signatories of the Covenant.

1 130 SEAPs have been submitted by cities and, after an eligibility and data consistency check by the JRC, published in the SEAP catalogue (http://www.eumayors.eu/actions/sustainable-energy-action-plans_en.html) of the Covenant's web portal. An initial evaluation of these SEAPs set out an investment need of over EUR 40 billion. EUR 1.9 billion of investments have been committed thanks to the ELENA technical assistance facility.

The Covenant's web portal (www.eumayors.eu) includes a brand new public website, launched on 8 April 2011, which receives a monthly average of 17 000 visitors and 566 websites pointing to it. A registration-only area, the Covenant Extranet, was launched during August 2011, allowing signatories, territorial coordinators and supporters to interact and update their profiles, submit their SEAPs and Benchmarks of Excellence, events and more. The extranet also allows CoMO and the JRC to monitor the implementation of commitments via a joint dashboard and interact with signatories directly. The Covenant is present on Wikipedia in the 23 EU languages and its popularity is growing on social media.

Media attention has been continuous, although most concentrated during the Covenant annual ceremony, which evidently generated the highest attention — with 70 journalists attending and over 200 press clippings gathered on the ceremony in traditional media.

The 2011 Covenant Annual Ceremony, held on 29 November 2011 gathered some 1 200 participants, with 400 mayors and deputy mayors and 100 participants representing regions and provinces as territorial coordinators (among which 25 presidents). Three European Commissioners, the Commissioners for Energy, Environment and Regional Policy, as well as the President of the European Parliament and the President of the Committee of Regions spoke at the event.

The Covenant has been presented in 57 decentralised, national and regional events throughout 2011 and over 40 bilateral meetings were held with various stakeholders. The CoMO provided technical expertise and support to 9 national or regional thematic workshops in 2011 held mostly in priority countries: Germany, Slovakia, Czech Republic, Croatia, Lithuania, as well as Turkey, upon invitation by local organisers. Over 100 local energy days (LEDs) were held linked to the Covenant in 2011 during the EUSEW week.

Beside the events, a broad range of promotional and support materials including methodological guidance, thematic leaflets, newsletters, brochures were available on the Covenant's website: www.eumayors.eu

OUTLOOK: What remains to be done?

The Covenant has become the major movement of local authorities committed to climate mitigation and sustainable energy, launched and supported by the European Commission since 2009. Although it is a voluntary commitment, committed cities expect *relevant support and feedback* from European institutions in return.

CoMO will continue to focus on enabling signatories and territorial coordinators to deliver on their commitments: a comprehensive e-learning training to be launched in spring 2012 along with a series of webinars on financing and methodological assistance ongoing.

After finalisation of the SEAP monitoring strategy, the Implementation Report must be tested by signatories and relevant experts, and finalised based on this feedback by the second half of 2012.

However, the backlog in SEAP evaluation and feedback to signatories remains key issue: out of the 1 130 SEAPs submitted, 812 are still on hold to be processed by the JRC. This needs to be resolved as soon as possible otherwise the credibility of the Covenant will be shaken in the eyes of the cities.

5. CONCERTED ACTIONS WITH MEMBER STATES FOR THE IMPLEMENTATION OF SPECIFIC DIRECTIVES

IEE Concerted Actions assist Member States to implement EU Directives cost-effectively. They help the implementing bodies in Member States to network and share experiences with the transposition of the EU Directives on Energy Performance of Buildings, Renewable Energy and Energy Services.

National authorities from EU countries (and beyond) meet informally to discuss and evaluate the most effective options for implementing these directives. The discussions also offer opportunities for the European Commission to work informally with Member States. The exchanges are often backed up with practical grassroots experience from IEE supported promotion and dissemination projects.

The Concerted Action fora are multi-faceted, with specialist workshops combined with high level discussions, allied to networking opportunities and web resources. Activities centre on sharing —and inspiring— smart solutions for the professional tools, skills and systems in all fields addressed by the legislation. These solutions are picked up by national bodies and applied across the EU, with the necessary tailoring to meet national requirements.

The Concerted Actions also attract attention from accession countries as well as countries such as China and the US, and have proven useful in the communication of a common EU approach towards these countries.

a. Energy Performance of Buildings Directive Concerted Action

Properly implemented, the EPBD (2002/91/EC) could result in as much as 96 million toe/year of energy savings in 2020, or 6.5 % of the EU's final energy demand, without even taking account of the impact of its recast.

To help make that a reality, the CA EPBD was launched in 2005 as a joint initiative of the EU Member States and the EC. Organised around meetings between national teams, regularly bringing together over 120 participants from 29 countries, experiences are shared amongst those preparing the technical, legal and administrative aspects for the EPBD in each country. Other accompanying measures, including a web platform and national update reports, are used to enhance communication.

With the launch of its third phase from 2011-2015, participation in the CA EPBD goes from strength-to-strength: in 2011, two cycles of collaborative work and two full meetings were carried out. Its continuation is an important step for maximising the impact of the EPBD recast, particularly regarding market transformation to nearly-zeroenergy buildings. It can help in reaching the additional estimated savings from the 2010 recast (2010/31/EU) which amount to 60-80 million toe/year by 2020, or 5-6 % of the EU's energy consumption.

TOTAL BUDGET

The commitment appropriations related to this measure amount to EUR 4.7 million.

WHAT HAS BEEN ACHIEVED?

Key outcomes of the CA EPBD were presented at its EUSEW 2011 stakeholder event in Brussels: 'Europe's Buildings: Energy Performance Today and Tomorrow'. The highlight of that event was the release of its book 'Implementing the Energy Performance of Buildings Directive (EPBD): Featuring Country Reports 2010', presented to the Director-General of DG Energy under the auspices of the Hungarian Presidency. The findings from the 112 technical sessions held in the period 2007-2010 are outlined, and it constitutes the definitive source of information on national implementation of the Directive. It has been widely distributed and is currently being translated into Chinese. The CA EPBD underpins the work programme for the implementation of the cooperation agreement between DG Energy and the Chinese Ministry of Housing, Urban and Rural Development. The first concrete outcome of which, a workshop on 'Certification Schemes for Energy Performance of Buildings in Europe and China', was held in Beijing in March 2011. The CA EPBD was the core contributor from the European side.

Participant surveys show a >90 % satisfaction rate in terms of the usefulness of the information for effective policy implementation at national level. Moreover, the conclusions and recommendations of the CA EPBD were largely taken into consideration and adopted when drafting the recast EPBD in the period 2009-2010. More recently, in 2011, the Commission's proposal for a cost-optimal regulation and the mandate to CEN for a second generation of EPBD standards also benefitted from CA contributions.

Selected Remarks from CA participants (2011 report)

- '… a very valuable forum to discuss different options raised in the final harmonisation process of the energy efficiency and heat retention part of the **Austrian** construction laws and to learn from other countries' experiences.' (Austrian Institute of Construction Engineering)
- - '… of high importance and was quite fruitful for Bulgaria. During its execution we have discussed a number of important issues, for which we have found decisions and solutions in the national legal system'. (Energy Efficiency Agency of Bulgaria)
- - '… contacts, in particular with members directly involved in the preparation of Croatia's national regulations or their implementation, has contributed to better consideration of potential problems and obstacles, contributing to the creation of our own implementation path.' (Ministry of Environmental Protection, Physical Planning and Construction)
- - '… especially useful to transpose articles 7, 8 and 9 of the EPBD in France, to have ideas for the development of different approaches (mainly for the energy performance certificate) and to create contacts with experts from other Member States' (General Directorate of Urban Development Housing and Buildings of the Ministry of Ecology, Environment, Sustainable Development and the Seas)
- - '… provided very interesting information on EU MS experiences with the implementation of EPBD, in several aspects the Slovenian national approach was built on these experiences.' (Building and Civil Engineering Institute ZRMK)
- - '… participation led to useful reviews of the approach that the United Kingdom had taken to implementation; the many ideas generated will be used in developing future regulations including those needed for the recast EPBD.' (FaberMaunsell Ltd)

These are typical comments made by the participants. However, no other comment illustrates this better than that of one participant on the CA Study Tour, who stated in her report *'we had often heard how to do it, but now we really understand how to do it'*. This is indeed the true added value of the CA EPBD.

OUTLOOK: What remains to be done?

The CA EPBD is expected to run until at least 2015, supporting the first years of implementation of the Energy Performance of Buildings Directive (recast).

b. Energy Services Directive Concerted Action

The implementation of the Directive on energy end-use efficiency and energy services (ESD) (2006/32/EC) offers considerable flexibility to Member States to choose those energy efficiency measures that best suit their national situation. This means that alongside the challenges posed, there are also significant opportunities for Member States to share

experiences with one another. To support the EU countries in this task, the European Commission launched in 2008 the Concerted Action for the Energy Services Directive (CA ESD), via the Intelligent Energy Europe programme. The CA ESD lasted three years and ended in June 2011. It provided a forum for immediate and informal exchange of experiences and involved all Member States' national authorities responsible for implementing the Directive, or those bodies appointed and entrusted by them to do so.

TOTAL BUDGET

The commitment appropriations related to this measure amount to EUR 3 million.

WHAT HAS BEEN ACHIEVED?

Overall, the CA ESD has proven to be a successful platform for the exchange of information, experiences and good practices. Thanks to this action, many participating Member States have gained a better understanding of the Energy Services Directive (2006/32/EC) and have been able to learn from other countries, avoid pitfalls and build on successful approaches when implementing the ESD in their country. The CA ESD has also succeeded in developing and animating a unique network of European experts on ESD, which has resulted in more long-term cooperation across Europe. There is clear evidence that Member States have benefited from and acted upon information received through the CA ESD, e.g.:

- 'In 2007 we prepared the 1st National Energy Efficiency Action Plan (NEEAP). As a result of CA ESD, we now decided we needed to do more. This resulted in new issues for our legislation; special provision on ESCOs, and Voluntary Agreements.' — Bulgarian representative
- 'We implemented a national study on energy efficiency thanks to the CA. It was important to know the details of energy efficiency programmes in France — the CA acted as a trigger for the focus. More resources are now dedicated to energy efficiency and the ESD in particular for the development of the 2nd NEEAP.' — French representative
- 'In light of the CA, we've reviewed ESD requirements compared with existing legislation. This resulted in a proposal to the ministry to change (secondary) legislation.' — Czech representative
- 'The network ensures access to more and new options and ideas. We now know where to go when there are questions.'– Portuguese representative

Furthermore, the CA ESD has helped the European Commission better understand the national barriers related to ESD implementation. Energy efficiency policy and the markets in the Member States are indeed continuously evolving and there are still areas that, despite the ESD, are slow to take off and require e.g. capacity building, clear financing solutions or measurement and verification.

Overall, thanks to the excellent collaborative working relationship between the Concerted Action's Management Team, DG ENER and the EACI and the committed participation and contribution of representatives from the Member States, the CA ESD has met all its main objectives and even surpassed its initial performance indicators.

OUTLOOK: What remains to be done?

Based on the positive outputs and on the fact that participants have made clear that the action provides added value and supports the decision-making process in national administrations, the CA ESD was prolonged for a further three years commencing in June 2011.

c. Renewable Energy Directive Concerted Action

Directive 2009/28/EC on the promotion of the use of energy from renewable energy sources (RES) was adopted on 23 April 2009. The aim of the RES Directive is to establish a common framework for the promotion of renewable energy in the European Union.

This Concerted Action on the Renewable Energy Directive (CARES)[139] aims at supporting the implementation of the RES Directive and the achievement of the national targets. It involves only the organisations in charge of the national transposition and implementation of this Directive. Generally, these are the responsible ministries and expert bodies nominated to work on them by those Ministries.

This Concerted Action provides a forum for confidential and structured discussions and cross learning between these organisations in all EU MS. This exchange of views, approaches and experiences concentrates on key requirements of the Directive according to the needs of Member States and the European Commission.

The main specific objectives of the CARES are as follows:

- to create a platform for structured and confidential dialogue, and exchange of experience and good practices among Member States regarding the implementation of the RES directive;
- to facilitate the process of cross learning at the EU level and provide support to an effective implementation of the RES Directive in the Member States;
- to encourage the dialogue between the Member States on common approaches for the effective implementation of particular parts of the RES Directive.

Therefore, the CARES is focused on topics where coordination of approaches would be beneficial. The CARES is addressing a number of aspects including cooperation mechanisms, implementation of the national renewable action plans (NREAPs), methodologies for the calculation of renewable energy shares, integration of RES supplies into electricity and gas grids, removal of administrative barriers and incorporation of RES into planning processes, reducing information and training gaps, sustainability of biofuels, and biomass mobilisation.

The CARES will run for 3 years. It started in July 2010 and is coordinated by the Austrian Energy Agency

TOTAL BUDGET

The commitment appropriations related to this measure for the period 2007-2011 amount in total to EUR 5.6 million.

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139 CARES 'Concerted Action on Renewable Energy Directive', http://www.ca-res.eu/.

WHAT HAS BEEN ACHIEVED?

After 1.5 years, this Concerted Action is achieving its initial objectives.

- It involves 30 partners (National Authorities responsible for the implementation of the Directive) from 27 EU Member States plus Norway, Croatia, and Iceland.
- Three successful three-day CARES meetings have been organised (in Austria, autumn 2010; Lisbon, spring 2011; and Madrid, autumn 2011). Each meeting attracted around 200 participants from those authorities in Member States which are responsible for the implementation of the RES Directive
- During these meetings, and in between meetings, these authorities work together to find the most effective ways to implement the EU Directive by identifying and disseminating good practices on RES policy implementation and by putting emphasis on topics that require common approaches and coordination between the MS. Ten working groups have been established covering implementation issues related to all of the articles of the Directive.
- CARES has become a major platform for structured confidential dialogue and exchange of experience and best practice among Member States on the implementation of the RES Directive. The confidentially of this platform is a clear added value that differentiates this activity from other fora or conferences.

OUTLOOK: What remains to be done?

The existing CARES activities will continue until June 2013. IEE committee members will be asked during 2012 whether they foresee a need for further CARES activities after June 2013 and, if so, to identify which activities should be included in the 2013 IEE work programme.

6. OTHER POLICY INITIATIVES

a. Standardisation initiative in biofuels

DESCRIPTION

Under the Renewable Energy Directive, renewable energy has a mandatory target of 10 % in transport, the majority of which will be met by biofuels. It is, therefore, important that standards are developed for the new types of biofuels (such as biomethane) and that existing standards are improved especially for higher blends of ethanol and biodiesel in petrol and diesel respectively.

The initiative has two objectives: a) to carry out engine emission tests for a 10 % ethanol blend in petrol; and b) to develop new standards for biomethane use in transport or injection in natural gas pipelines.

TOTAL BUDGET

The total budget spent on this initiative was EUR 0.75 million.

WHAT HAS BEEN ACHIEVED?

The engine emission tests for a 10 % ethanol blend in petrol will provide fresh information to car manufacturers and oil companies on the performance of their engines and fuels, and will facilitate the introduction of the E10 blend in the EU market.

Biomethane production is increasing across the EU and the standards will facilitate the use of biomethane in captive fleets or its injection in natural gas pipelines.

Both actions aim to assist towards the achievement of the renewable energy policy targets.

OUTLOOK

The work on the standards will continue. New standards are needed for pyrolysis oils, algal-based biofuels, and new blends such as B30 and E 20.

b. Standardisation initiative in buildings

DESCRIPTION

The Energy Performance of Buildings Directive (EPBD) requires Member States, among others, to establish minimum energy performance requirements for buildings, certain building elements, and technical building systems. Moreover, they have to ensure energy performance certification for buildings and inspection of heating and air-conditioning systems.

Based on a first mandate in 2003 (M/343), CEN developed a set of around 40 EPBD-related standards. Following the adoption of the recast EPBD, the Commission issued a new mandate to CEN/CENELEC (M/480) towards the end of 2010 with the aim to review and revise the existing set of standards.

The EPBD standards assist the Member States with the implementation of the Directive and increase the accessibility, transparency and objectivity of the energy performance assessment in the Member States, facilitate the comparison of best practices and support the internal market for construction products. A grant agreement with CEN has been signed to support the implementation of the work programme defined by CEN. This work programme consists of two phases; Phase I focuses on the development of an umbrella standard and the definition of technical principles; during Phase II the actual standards will be developed.

TOTAL BUDGET

The total budget spent on this initiative was EUR 1.88 million.

WHAT HAS BEEN ACHIEVED?

Phase I only started at the end of 2011and has thus far not delivered any concrete outputs.

c. IPEEC

The International Partnership for Energy Efficiency Cooperation (IPEEC) is a high-level forum ‘for enhancing and coordinating joint efforts to accelerate the adoption of sound energy efficiency improvement practices’, a multilateral Commission initiative in the G8 context, which focuses exclusively on energy efficiency. It was launched in 2009. The present 15 members are the G8, the EU and the emerging economies Brazil, China, India as well as Australia, Mexico and South Korea. The US currently holds the chair of IPEEC’s Policy Committee for a period of two years.

TOTAL BUDGET

The total budget spent on this initiative was EUR 0.92.

WHAT HAS BEEN ACHIEVED?

The IPEEC provides a forum for discussion, consultation and exchange of information, but will not develop standards or efficiency goals for its members. Dedicated Task Groups are dealing with specific issues, such as energy management, the development of energy efficiency indicators, and training and capacity building. Other issues are certification of office buildings and industrial facilities (GSEP) and super-efficient equipment and appliance deployment (SEAD). Each Task Group is managed by a 'lead country'; each of the 4 EU Member States that are also G8 members (Germany, France, Italy and the UK) presently leads a Task Group in IPEEC.

The EU supports IPEEC with an annual financial contribution, as the Partnership can play a key role in supporting member governments and the EU to improve their energy efficiency policies and programs through experience and knowledge exchange, and dialogue.

d. IRENA

The International Renewable Energy Agency (IRENA) was founded in Bonn on 26 January 2009 on the initiative of Denmark, Germany and Spain. Its Statute came into force in October 2010 and has by now been signed by 148 States and the EU, and ratified by 84 States and the EU. IRENA, therefore, has the potential to become one of the key international fora for the promotion of renewable energy. Its mission is to promote the widespread and increased adoption and the sustainable use of all forms of renewable energy. It will serve as a centre of excellence for renewable energy technology and act as a facilitator and catalyst, providing experience for practical applications and policies, offering support and helping countries to benefit from the efficient development and transfer of knowledge and technology.

TOTAL BUDGET

The total budget spent on this initiative was EUR 1.2 million.

WHAT HAS BEEN ACHIEVED?

The European Union is a member of IRENA and as such enjoys improved access to information about the activities of other members of the organisation in the field of renewable energies on a global level. Its membership increases the EU's ability to act in a coordinated way in this international cooperation framework, as envisaged in the Commission's communication on international cooperation in the field of energy.[140]

In its first year of operation after the coming into force of the founding Statute, IRENA has started to provide a range of services to its membership in its three fields of activity: policy

[140] COM(2011) 539 final, Communication on security of energy supply and international cooperation — 'The EU Energy Policy: Engaging with Partners beyond Our Borders', section 4.2.

advice and capacity building, innovation and technology, and knowledge management and technology cooperation. Activities include, inter alia:

- collecting and analysing data on scenarios and strategies, with the aim of transforming them into policy-relevant information for decision makers;
- developing, jointly with the World Intellectual Property Organisation, a website on patent search;
- developing renewable technology fact sheets on best practice uses of renewable energy technology;
- coordinating the development of a global solar and wind atlas providing information on energy potentials;
- developing a methodology for carrying out Renewables Readiness Assessments;
- mapping multilateral and bilateral initiatives in renewable energy technology cooperation and analysing key success factors;
- conducting an analysis of policies and measures to overcome barriers to rural electrification; and
- establishing a platform for exchange between renewable energy and education experts in support of education and training efforts.

In addition, the IRENA Innovation and Technology Centre has also begun work on technology road mapping with the aim of identifying prospects and technological barriers as well as financing, development and policy needs, and of developing a paper on success criteria for innovation policies.

The described organisation's activities are in line with and contributing to EU energy as well as development policy objectives. They are being funded by annual contributions of IRENA's members, including the EU's contribution.

ANNEX: TENDERS SUPPORTED BY THE IEE II[141]

SAVE

- Legal assistance for checking the compliance of transposition of the Ecodesign Framework Directive for EuPs (Directive 2005/32/EC) in the Member States

- Explanatory study on the cost and benefits associated with using tax incentives to promote the manufacturing of more and better energy-efficient appliances and equipment and the consumer purchasing of these products

- Work on preparatory studies for ecodesign requirements for energy-using products (third round)

- A framework contract on impact assessment studies of possible implementing measures under the Eco-design Directive of Energy-Using Products and the Framework Directive on Energy Labelling of Household Appliances

- Impact assessments of six draft measures implementing the Framework Directive on ecodesign for EuPs (Directive 2005/32/EC) and/or the Framework Directive on energy labelling for household appliances (Directive 92/75/EEC)

- Study to evaluate national systems for CHP guarantees of origin and to support the preparation of a proposal for a harmonised electronic CHP guarantee of origin, including an impact assessment

- Study to prepare a proposal for minimum efficiency requirements for district heating and cooling, including an impact assessment

- Study to prepare a proposal for minimum efficiency requirements for micro-cogeneration, including an impact assessment

- Competition for the most energy-efficient school

- Technical assistance for developing tools for ecodesign and energy labelling of space heating and water heating appliances

- Information campaign on the uptake of energy-efficient lighting (and possible ban of incandescent light bulbs)

- Development of a communication strategy for the introduction of a new energy label for efficient household equipment (Directive 92/75/EC)

- Technical assistance to the stakeholder representation of consumer organisations and environmental NGOs in preparatory work for implementing measures under the Ecodesign of Energy-using Products Directive (2005/32/EC) 2010-2013

- Support for impact assessments for possible implementing measures under the Ecodesign and the Energy labelling Directive

- Work on preparatory studies for implementing measures of the Ecodesign Directive (5 lots)

- Study on product labelling options and consumer understanding of these options and the energy label

- Information and fuel savings calculator on tyre labelling

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[141] More information on each tender can be found in the IEE Implementation Reports: http://ec.europa.eu/cip/documents/implementation-reports/index_en.htm.

- EU Energy Star Programme: Development and Maintenance of the Website (Lot 1) and Technical Support for the development of new Technical Specifications (Lot 2)

- Evaluation of the Energy Star Programme: Survey of the market penetration of energy efficient office equipment and compliance testing

- EU Energy Star Programme: Development and Maintenance of the Website (Lot 1) and Technical Support for the development of new Technical Specifications (Lot 2)

- Technical assistance, analysis and input to support the implementation of Directive 2006/32/EC on energy end-use efficiency and energy services as well as related elements of the EU Energy Efficiency Action Plan (Administrative arrangement with JRC)

- Technical assistance, analysis and input to support the implementation of Directive 2004/8/EC on the promotion of cogeneration based on a useful heat demand in the internal energy market as well as related elements of the EU Energy Efficiency Action Plan (Administrative arrangement with JRC)

- Energy Services Directive measurement methodology, further development and refinement (Administrative arrangement with JRC)

ALTENER

- Development of standard guarantees of origin for renewable electricity

- Assessment of non-cost barriers to renewable energy growth in EU Member States (three studies)

- Financing Renewable Energy in the European Energy Market

- Organisational models and best practice for facilitating local co-ownership and increasing social acceptance of renewable energy projects

- Assessment of renewable electricity grid issues in EU Member States: present situation, future planning and regulatory framework

- Modelling renewable energy (Administrative Arrangement with JRC)

- Renewable energy best practice and implementation of national action plans

- Assessment for recognition of voluntary sustainability schemes

- Renewable energy policy database and support

- Integration of renewable energy in Europe

- Activities to support the second biofuels progress report

- Activities to support the development of practical measures (to be taken at Community level) to facilitate implementation of the biofuels sustainability scheme

- Overview of international trade in biofuels/biomass

- Technical support in establishing the 2008 baseline data for reporting requirements under the biofuels sustainability scheme

- Assistance with drafting a report on the implementation of the EU Biomass Action Plan

- Real potential for changes in growth and use of EU forests

- Estimating the volatility parameters of ethanol-petrol blends

- Study on benchmarking biomass sustainability criteria for energy purposes

- Technical assistance in evaluating the GHG emissions from the cultivation of agricultural raw materials in third countries (Administrative Arrangement with JRC)

- Study on the operation of the system for the biofuels and bioliquids sustainability scheme

- Study on the blending of biofuels with fossil fuels and other ways to market biofuels

- Support activities for the assessment of progress in renewable energy and sustainability of biofuels, and the transposition of the RES Directive (2 Lots)

- Enhanced JRC modelling of renewable energy

- Technical assistance in updating the existing and calculating new biomass and biofuel pathways for GHG methodology in the Annex V of the RES Directive

STEER

- Information and database on clean and energy-efficient vehicles

- Dissemination and support initiative in the field of energy aspects of urban transport

- Europe-wide awareness campaign on sustainable urban mobility

- Study on methods and conditions for counting electricity, hydrogen and methane from renewable sources towards the 10 % renewable energy in transport

INTEGRATED INITIATIVES

- Continuation of the sustainable Energy Europe Campaign until 2011

- Covenant of Mayors

- Support work related to Campaign Associates

- ManagEnergy: Coordination tools for facilitating the implementation of EU energy efficiency policies at local level and for a network of local and regional energy management agencies in Europe

- Evaluation of ManagEnergy

- Support services for the Covenant of Mayors

- Evaluation of the relevance of Community funding of local and regional energy agencies

- Buildings platform project

- BUILD UP: the EU portal for energy efficiency in buildings

- Operation, maintenance, improvement and popularisation of the BUILD UP interactive web portal

- Energy performance certificates in buildings and their impact on transaction prices and rents in selected EU countries

- Towards Nearly-ZeroEnergy Buildings: definition of common principles under the EPBD

- Dissemination and promotion of the Intelligent Energy — Europe Programme (2008)

- Mid-term evaluation of the Intelligent Energy — Europe II programme within the Competitiveness and Innovation Framework Programme

- Dissemination and promotion of the Intelligent Energy — Europe Programme (2010)

- Final evaluation of the Intelligent Energy — Europe II Programme within the Competitiveness and Innovation Framework Programme

- Dissemination and promotion of the Intelligent Energy — Europe Programme (2011)

- IEE project performance indicators

- ManagEnergy: coordination and support for the implementation of EU energy efficiency policies by local authorities and energy agencies

- Sustainable Energy Europe Campaign 2012-2014, including European Sustainable Energy Week

- Technical and scientific assistance, analysis and input to support the implementation of the Covenant of Mayors