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Energy Efficiency Plan 2011

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Energy Efficiency Plan 2011

1. A NEW PLAN FOR ENERGY EFFICIENCY

Energy efficiency is at the heart of the EU's Europe 2020 Strategy for smart, sustainable and inclusive growth[1] and of the transition to a resource efficient economy. Energy efficiency[2] is one of the most cost effective ways to enhance security of energy supply, and to reduce emissions of greenhouse gases and other pollutants. In many ways, energy efficiency can be seen as Europe's biggest energy resource[3]. This is why the Union has set itself a target for 2020 of saving 20% of its primary energy consumption compared to projections[4], and why this objective was identified in the Commission's Communication on Energy 2020[5] as a key step towards achieving our long-term energy and climate goals.

Substantial steps have been taken towards this objective – notably in the appliances and buildings markets[6]. Nonetheless, recent Commission estimates suggest that the EU is on course to achieve only half of the 20% objective[7]. The EU needs to act now to get on track to achieve its target. Responding to the call of the European Council of 4 February 2011 to take 'determined action to tap the considerable potential for higher energy savings of buildings, transport and products and processes'[8], the Commission has therefore developed this comprehensive new Energy Efficiency Plan.

It will be pursued consistently with other policy actions under the Europe 2020 Strategy's Flagship Initiative for a Resource Efficient Europe[9], including the 2050 roadmap for a low-carbon economy[10], to ensure policy coherence, assess trade-offs between policy areas and

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1 COM(2010) 2020.

2 Technically, 'energy efficiency' means using less energy inputs while maintaining an equivalent level of economic activity or service; 'energy saving' is a broader concept that also includes consumption reduction through behaviour change or decreased economic activity. In practice the two are difficult to disentangle and – as in this Communication – the terms are often used interchangeably.

3 "Negajoules" are the energy consumption avoided through enhanced energy efficiency. For example, the 13% improvement in the energy efficiency of final consumers that took place in the EU27 between 1996 and 2007 was equivalent to energy savings of about 160 Mtoe over the period (Overall Energy Efficiency Trends and Policies in the EU27 - ADEME 2009).

4 7224/1/07 REV 1: Presidency Conclusions of the European Council of 8/9 March 2007. This objective translates into a saving of 368 million tons of oil equivalent (Mtoe) of primary energy (gross inland consumption minus non-energy uses) by 2020 compared to projected consumption in that year of 1842 Mtoe. This objective was reconfirmed by the June 2010 European Council (17/6/2010 Nr: EUCO 13/10).

5 COM(2010) 639.

6 These steps were taken in the framework of the 2006 Energy Efficiency Action Plan - COM(2006) 545; progress is assessed in the accompanying Staff working document SEC(2011) 275.

7 According to the most recent Commission estimates and taking into account energy efficiency measures implemented up to December 2009.

8 European Council Conclusions 4/2/2011 Nr: EUCO 2/11.

9 COM(2011) 21.

10 COM(2011) 112.

benefit from potential synergies. The energy efficiency measures will be implemented as part of the EU's wider resource efficiency goal encompassing efficient use of all natural resources and ensuring high standards of environmental protection.

The combined effects of full implementation of the existing and new measures will transform our daily life and have the potential to generate financial savings of up to € 1 000 per household[11] every year; improve Europe's industrial competitiveness; create up to 2 million jobs[12]; and reduce annual greenhouse gas emissions by 740 million tons[13].

The greatest energy saving potential lies in **buildings**. The plan focuses on instruments to trigger the renovation process in public and private buildings and to improve the energy performance of the components and appliances used in them. It promotes the exemplary role of the public sector, proposing to accelerate the refurbishment rate of public buildings through a binding target and to introduce energy efficiency criteria in public spending. It also foresees obligations for utilities to enable their customers to cut their energy consumption.

Transport has the second largest potential. This will be addressed by the upcoming White Paper on Transport.

Energy efficiency in **industry** will be tackled through energy efficiency requirements for industrial equipment, improved information provision for SMEs and measures to introduce energy audits and energy management systems. Improvements to the efficiency of power and heat generation are also proposed, ensuring that the plan includes energy efficiency measures across the whole energy supply chain.

Targets for energy efficiency are an effective way to trigger action and create political momentum. The "Europe 2020" process has created, with the application of the "European semester", a new governance context and additional tools for the EU to steer its efforts on energy efficiency. The Commission therefore proposes a two step approach to target setting. As a first stage, Member States are currently setting national energy efficiency targets and programmes. These indicative targets and the individual efforts of each Member State will be evaluated to assess likely achievement of the overall EU target and the extent to which the individual efforts meet the common goal. The Commission will support and provide tools for the Member States in the elaboration of their energy efficiency programmes and closely monitor their implementation through its revised legislative framework and within the new framework provided under the Europe 2020 process. In 2013, the Commission will provide an assessment of the results obtained and whether the programmes will, in combination, deliver the European 20% objective. If the 2013 review shows that the overall EU target is unlikely to be achieved, then as a second stage the Commission will propose legally binding national targets for 2020. As in the case of renewable energy, it would then be necessary to take into account the individual starting points of Member States, their economic performance and early action undertaken in the field.

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[11] COM(2008) 772: Communication from the Commission: Energy efficiency: delivering the 20% target

[12] Estimates based on data for the building sector. See SEC(2011) 277: Impact Assessment accompanying the Energy Efficiency Plan

[13] SEC(2011) 277: Impact Assessment accompanying the Energy Efficiency Plan.

This plan builds on the contributions of the European Parliament, notably the recent own-initiative report on energy efficiency[14], of many stakeholders, and on experience gained with the 2006 Energy Efficiency Action Plan. The Commission estimates that the measures already in place, combined with those newly presented in this plan, should ensure the full achievement of the 20% target. The leading principle of this plan is to propose stringent binding measures without binding national targets.

The Union's success in implementing this plan will depend on close cooperation between the EU institutions, Member States and all relevant stakeholders. The Commission counts on the involvement and commitment of all parties concerned in this ambitious endeavour.

2. PUBLIC SECTOR: LEADING BY EXAMPLE

Public spending accounts for 17%[15] of EU GDP. Publicly owned or occupied buildings represent about 12% by area of the EU building stock[16]. A stronger emphasis on energy efficiency in the public sector is crucial, covering public purchasing, the refurbishment of public buildings and the encouragement of high performance in cities and communities. The public sector can create new markets for energy efficient technologies, services and business models. Member States need to reform subsidies promoting energy use, for example by re-orienting them to improve energy efficiency and address energy poverty.

- **Energy efficiency in public spending**

Steering public spending towards energy efficient products, transport modes, buildings, works and services helps to reduce public authorities' expenditure on energy bills and offers improved value for money. The Commission's work on public procurement for a better environment has supported this by developing procurement criteria that take energy efficiency into account[17]. In addition, public bodies that are subject to the EU public procurement Directives are already required to take into account energy efficiency criteria in their procurement of vehicles[18] or office equipment[19]. From 2019 onwards, this will also be the case for the sector's new buildings, which will have to reach a "nearly zero-energy" performance level[20]. To deploy this approach on a wider scale, the Commission proposes that high standards of energy efficiency should systematically be applied when public authorities purchase goods (e.g. ICT equipment), services (e.g. energy) and works (e.g. refurbishment of buildings).

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14 2010/2107 (INI): European Parliament own initiative report on Revision of the Energy Efficiency Action Plan.

15 See footnote 13

16 Ecorys, Ecofys and BioIntelligence (2010): Study to Support the Impact Assessment for the EU Energy Saving Action Plan. The estimate is based on the assumption of 5 m² of public buildings per citizen, translating into a total floor area of public buildings (excluding social housing) in the EU of 2.5 billion m². The total floor area is 21 billion m².

17 COM(2008) 400: Communication from the Commission: Public procurement for a better environment.

18 Directive 2009/33/EC on the Promotion of Clean and Energy Efficient Road Transport Vehicles – see also the recently launched Clean Vehicle Portal, designed to help public authorities implement this Directive by providing them, as well as final users, with a comparative, life-cycle cost analysis of existing vehicles (http://www.cleanvehicle.eu/).

19 Under the European Energy Star Programme, which obliges central government authorities of Member States and EU institutions to procure equipment not less efficient than Energy Star ((EC) No 106/2008).

20 Directive 2010/31/EU on the Energy Performance of Buildings.

- **Renovation of public buildings**

Public bodies should take the lead in bringing their buildings up to high energy performance levels. In order to achieve this result it would be appropriate for public authorities at least to double the current renovation rate. The Commission will therefore present a legal instrument[21] under whose provisions public authorities will be required to refurbish at least 3% of their buildings (by floor area) each year – about twice the currently prevailing rate for the European building stock[22]. Each refurbishment should bring the building up to the level of the best 10% of the national building stock. And when public bodies rent or buy existing buildings, these should always be in the best available energy performance class.

- **Energy performance contracting**

Energy performance contracting is an important tool in the refurbishment of buildings. Under this performance-based form of purchasing, monetary savings from lower utility bills and maintenance costs that result from energy efficiency measures are used to cover part or all of the measures' investment costs. This model has been tried and proved cost-effective in a number of Member States[23]. Energy performance contracting is relevant for triggering renovation in public buildings and for upgrading the energy efficiency level of public infrastructure such as street lighting[24]. However, the deployment of energy performance contracting is hampered in many Member States by ambiguities in the legal framework and the lack of reliable energy consumption data to establish the baselines against which performance is measured. The Commission will bring forward legislative proposals to overcome these problems in 2011.

- **Implementing energy efficiency on the ground**

More than two thousand cities have volunteered to implement sustainable energy measures through the EU-supported Covenant of Mayors[25]. The Covenant is a formal commitment to reduce signatories' CO_2 emissions by more than 20% by 2020 through sustainable energy measures on their territories. It is made concrete through Sustainable Energy Action Plans, developed in line with the Covenant methodology and formally agreed by the city/regional council. The benefits go beyond energy saving: building retrofitting, urban mobility and urban renovation are employment-intensive economic activities, and the jobs created tend to be skilled, stable and not subject to delocalisation.

The Commission will continue to support the local approach to energy efficiency through the Covenant of Mayors and will seek to encourage partnerships with more like-minded cities including those from countries outside the EU. In 2011 it will also launch a new Smart Cities

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21 This legal instrument, like the other binding measures in this plan, will be subject to a thorough impact assessment. It will include an in-depth analysis of the proposed annual renovation rate and a verification of the best method for its implementing as well as monitoring mechanism.

22 This percentage applies at Member States level. The current rate of refurbishment lies between 1.2% and 1.5% per year for EU27. The upper end of the range reflects the retrofit rate of buildings above 1000 m², which is the case for most public buildings and explains why a doubling of the current rate leads to 3%. See footnote 13 and SEC(2008) 2865.

23 Including Denmark, France and Germany.

24 In 2005, street lighting consumed 36 TWh of electricity.
See http://ec.europa.eu/governance/impact/ia_carried_out/docs/ia_2009/sec_2009_0324_en.pdf

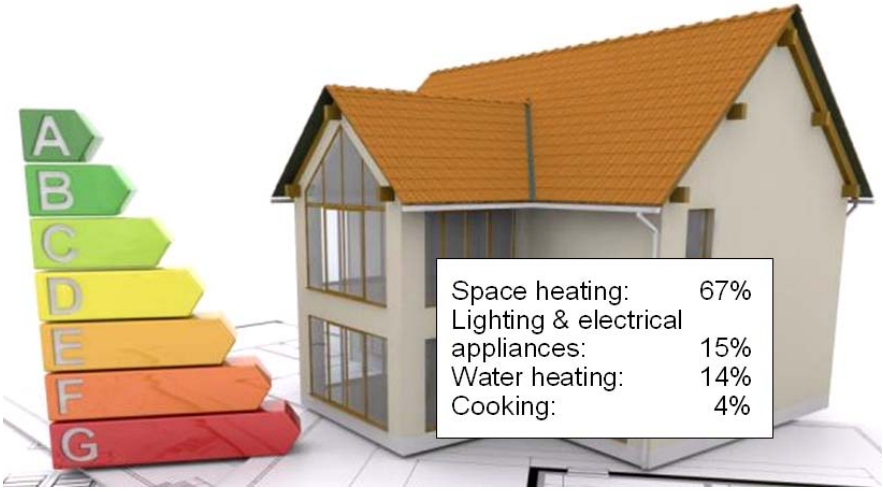
25 The Covenant procedure was launched in January 2008 and cities and regions started to adhere in October 2008 when the text of the Covenant was finalized. See http://www.eumayors.eu/home_en.htm

and Smart Communities initiative to develop the European framework for excellence in innovative low-carbon and efficient energy solutions at the municipal level. This initiative will focus on speeding up the translation of research results into real, practical innovations in selected cities and communities. In particular, the initiative will support large scale demonstration projects also including action on urban mobility, 'green' infrastructure[26] and the use of information and communication technologies.

3. PAVING THE WAY TOWARDS LOW ENERGY CONSUMING BUILDINGS

Nearly 40%[27] of final energy consumption is in houses, public and private offices, shops and other buildings. As the figure shows, in residential homes, two thirds of this is for space heating.

Figure: EU-27 households' energy consumption at home, %



Source: Odyssee indicators, www.buildup.eu

A large energy saving potential remains untapped. Techniques exist to cut existing buildings' consumption by half or three quarters[28] and to halve the energy consumption of typical appliances. But the renovation rate of buildings is too low, as is the uptake of the most efficient appliances. The barriers to energy efficiency buildings need to be overcome. The Commission invites Member States to establish promotion systems for private sector buildings.

- **Tackling heat use in buildings**

Addressing heat consumption in buildings will be of prime importance in the coming years. The Commission will further explore the range of available solutions, including possibilities to promote the use of district heating in the context of integrated urban planning.

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26 'Green' infrastructure includes use of trees and plants to cool urban temperatures, reducing energy needs for cooling – and is one adaptation to climate change. It can also mitigate flood risk and water, air and ecosystem quality. COM(2009) 147 final p.5, COM(2011) 17 final p.8

27 In 2008. See Eurostat, Energy, transport and environment indicators, 2010 edition.

28 Examples of refurbishment in the EU Green Building programme show cost-effective reductions up to 80%.

- **Legal obstacles**

One important barrier is "split incentives" for upgrading energy performance. This term describes the common situation in which owners and tenants are each reluctant to pay for improving the energy performance of a rented property because the benefits are shared between them. Several Member States have developed legal provisions that define the amount which can be recovered by investors from tenants. In public and commercial buildings Energy Service Companies (ESCOs) can also play a key role in overcoming the problem. The Commission will bring forward legislative provisions requiring Member States to introduce measures – in line with national property law - to address this problem.

- **Training**

Energy efficient building solutions are often technically demanding. There is a lack of appropriate training for architects, engineers, auditors, craftsmen, technicians and installers, notably for those involved in refurbishment. Today, about 1.1 million qualified workers are available, while it is estimated that 2.5 million will be needed by 2015[29]. The Commission is therefore launching the 'BUILD UP Skills: Sustainable Building Workforce Initiative' to support Member States in assessing training needs for the construction sector, developing strategies to meet them, and fostering effective training schemes. This may lead to recommendations for the certification, qualification or training of craftsmen. The Commission will also work with the Member States to adapt their professional and university training curricula to reflect the new qualification needs (in line with the European Qualification Framework). The Commission's Flagship Initiative "An Agenda for New Skills and Jobs"[30] calls for skills supply to be matched with labour market needs. Transition to energy-efficient technologies requires new skills, environment-conscious vocational education and training in construction and in many other sectors.

- **Energy Service Companies (ESCOs) as catalysts for renovation**

ESCOs deliver energy efficiency improvements, accepting financial risk by covering – or helping to finance - upfront investment costs and refinancing this through the savings achieved. They can help public authorities upgrade buildings by grouping them into scalable projects under energy performance contracts. Analysis suggests that the market for energy services in Europe is not developing to its full potential[31]. Potential clients in the private and public sector often lack systematic information on available ESCO services or have doubts about the quality of the services offered. In order to overcome these barriers and increase the transparency of the ESCO market, the Commission will propose that Member States provide market overviews, lists[32] of accredited energy service providers and model contracts. In this

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29 Ex-ante evaluation of the initiative on the building workforce training and qualification in the field of energy efficiency and renewable energy within the Intelligent Energy Europe Programme. See Ecorys, Ecofys and BioIntelligence (2010): Study to Support the Impact Assessment for the EU Energy Saving Action Plan, p. 34.

30 COM(2010) 682.

31 In the EU, there are an estimated 700-1040 active ESCOs, representing a market volume of EUR 6.7 to 8.5 billion EUR. The market potential is estimated at EUR 25 billion. See Bertoldi, Marino, Rezessy, Boza-Kiss (2010): Energy Service Companies market in Europe – JRC.

32 Such lists can be drawn up at national level and be open to any kind of energy service provider. They would serve only as an information tool. On the assumption that no accreditation or qualification would be demanded as an access criterion to feature on the list, it would be ensured that these listings would

context, emphasis will be placed on ensuring that when buildings are renovated that this is done in a comprehensive manner (i.e. deep renovation) to avoid repeated disruption of buildings. The European public private partnership expertise centre (EPEC) can also provide useful information.

For ESCOs to play their role, they need access to financial resources. Innovative financing with high leverage both on national and European level would be an appropriate way to catalyse the development of this market, for example, through the expansion of access to project-based financing via instruments that may include provision of liquidity and guarantees, credit lines and revolving funds.

4. ENERGY EFFICIENCY FOR COMPETITIVE EUROPEAN INDUSTRY

- **Efficient generation of heat and electricity**

About 30% of the EU's primary energy consumption is consumed by the energy sector, mainly for transforming energy into electricity and heat and for distributing it. New generation capacity and infrastructure need to be built to replace ageing equipment and meet demand[33]. It is important to ensure that energy efficiency is taken into account and that new capacity reflects the best available technology (BAT). The Emissions Trading Scheme[34] will encourage this, as will the new Industrial Emissions Directive[35]. The Commission will monitor the extent to which these measures lead to an improvement in the efficiency of new generation. Taking into account the results, and the need to achieve greater efficiency in a medium and longer term perspective, the Commission will consider introducing a legal provision requiring Member States to make the achievement of BAT levels applicable to new installations a mandatory condition for the authorisation of new capacity and to ensure that existing installations are upgraded to BAT levels applicable to existing capacity as part of their permit update.

Exploring ways to tackle the effective recovery of heat losses from electricity and industrial production processes will be another important task for the Commission, since unused energy saving potential is far from being exhausted and could cover a significant part of Europe's thermal energy needs e.g. for heating and cooling, boosting local resources and displacing imported energy in many instances. Harnessing this potential requires an integrated, cross-cutting approach that takes into account current thermal energy needs e.g. in buildings and businesses, the role of local and regional authorities in planning and implementing energy efficient and environmental friendly strategies, including the development of efficient infrastructures, and synergies with commercial solutions for cheap, clean and convenient thermal supply services using recovered waste heat.

Greater use of (high-efficiency) cogeneration, including from municipal waste treatment plants, and district heating and cooling can make an important contribution to energy efficiency. The Commission will therefore propose that, where there is a sufficient potential demand, for example where there is an appropriate concentration of buildings or industry

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not produce adverse effects such as foreclosing the market for services. The voluntary display of quality seals and references would be an additional way of increasing trust in the quality of the services offered.

33 COM(2010) 677/4: Communication from the Commission: Energy Infrastructure priorities for 2020 and beyond - A Blueprint for an integrated European energy network.

34 Directive 2003/87/EC as amended.

35 Directive 2010/75/EU.

nearby, authorisation for new thermal power generation should be conditional on its being combined with systems allowing the heat to be used – "combined heat and power" (CHP)[36] – and that district heating systems are combined with electricity generation wherever possible. To improve the energy-saving performance of CHP systems, the Commission also proposes that electricity distribution system operators provide priority access for electricity from CHP, and will propose reinforcing the obligations on transmission system operators concerning access and dispatching of this electricity.

- **Energy efficiency in electricity and gas networks**

The Commission will strengthen the basis for national grid regulators to take energy efficiency into account in their decisions and in monitoring the management and operation of gas and electricity grids and markets, including reflecting energy efficiency priorities in network regulations and tariffs, network and technical codes.

- **Energy efficiency as a business sector**

A prerequisite for an energy efficient Europe is creating value for energy savings through market mechanisms. Instruments are therefore needed to put a financial value on energy savings and link the profits of utilities (suppliers or distributors) to energy efficiency rather than the volume of energy delivered. Some Member States[37] have already established a system of national energy saving obligations for the energy industry with good results: savings of up to 6% of final energy consumption have been achieved[38]. In systems of this type, utilities are required to deliver a fixed amount of energy savings by implementing energy efficiency improvements among their customers (such as households, companies, municipalities or housing associations) or in other sectors such as energy generation or transport. As an alternative to delivering the savings themselves, some systems allow utilities to buy the energy savings from actors such as energy service companies (ESCOs). Energy saving obligations stimulate suppliers to change their business model from retailing energy commodities towards offering energy services.

The Commission will propose that all Member States establish a national energy saving obligation scheme appropriate for their circumstances. The impact could - depending on the scope and stringency of the requirement - yield savings of up to 100 million tons of oil equivalent (Mtoe) in 2020[39].

- **Increasing the competitiveness of European manufacturing industry**

About 20%[40] of the EU's primary energy consumption is accounted for by industry. This is the sector where progress in energy efficiency has been greatest (with a 30% improvement in energy intensity over 20 years). Nevertheless, worthwhile energy saving opportunities remain. The Emissions Trading Scheme and the Energy Taxation Directive (including its planned reform)[41] should encourage take-up of some of these opportunities. In addition, obstacles like

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

37 This is for example the case in the UK, Italy, France and Denmark, as well as the region of Flanders.

38 Ecorys, Ecofys and BioIntelligence (2010): Study to Support the Impact Assessment for the EU Energy Saving Action Plan.

39 SEC(2011) 277: Impact Assessment accompanying the Energy Efficiency Plan.

40 In 2008. See Eurostat, Energy, transport and environment indicators, 2010 edition.

41 Directive 2003/96/EC.

the lack of information, lack of access to capital, and short term pressures of the business environment should also be addressed. Overcoming these obstacles would reduce energy bills and improve competitiveness. At a time of increasingly scarce energy resources worldwide, expertise in energy efficient processes, technologies[42] and services can also be turned into a new export business, giving a competitive edge to European industries.

The obstacles to investment in energy efficient technologies are most acute for **small and medium sized enterprises** (SMEs)[43]. The Commission will therefore encourage Member States to provide them with information (for example about legislative requirements, criteria for subsidies to upgrade machinery, availability of training on energy management and of energy experts) and develop appropriate incentives[44] (such as tax rebates, financing for energy efficiency investments, or funding for energy audits). In association with the relevant industry associations, the Commission will support the exchange of best practices in energy efficiency and projects aimed at building capacity on energy management in micro and small companies. It will support the development of tools that SMEs can use to benchmark their energy use against comparable companies.

For large **companies** the Commission will propose to make regular energy audits mandatory. It will recommend that Member States should develop incentives for companies to introduce an energy management system (for example as set out in standard EN 16001) as a systematic framework for the rational use of energy[45].

Building on the success of ecodesign measures as an effective tool to stimulate innovation in energy efficient European technologies, the Commission is investigating whether and which **energy performance (ecodesign) requirements** would be suitable for standard industrial equipment such as industrial motors, large pumps, compressed air, drying, melting, casting, distillation and furnaces.

The Commission will continue to work with industry – including energy intensive industries[46] and the ICT industry[47], which has the potential to be a key enabler in achieving improvements in other sectors – to encourage **voluntary agreements** on implementing energy efficiency processes and systems. These should be based on clear targets, methodologies, measurement and monitoring schemes, notably via ecodesign requirements, and can include the dissemination of good practice.

- **Research and innovation as catalyst for cost-effective energy efficient technologies in industry**

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42 See ELECTRA Communication COM(2009) 594.

43 Eurochambres (2010): Energy efficiency in SMEs: Success Factors and Obstacles.

44 The Commission reminds that insofar as support measures involve State aid, Member States have to respect State aid rules as specified in Articles 107 and 108 of the Treaty on the Functioning of the European Union.

45 Where appropriate, including energy management as an integral part of an overarching environmental management system.

46 The approach will focus on (1) products, (2) power driven systems (e.g. electrical motor, variable speed drive, control equipment and pumps) and (3) installations (e.g. installation audits).

47 The ICT sector has been invited to develop and adopt common methodologies for measuring its energy performance and GHG emissions, and a harmonised way to quantify its enabling potential (COM (2010) 245, A Digital Agenda for Europe).

To support technological innovation, the Commission will continue to foster the **development, testing and deployment of new energy-efficient technologies**, e.g. through the Strategic Energy Technology Plan[48] (SET Plan), in order reduce the costs and improve the performance of energy efficient technologies, generating new solutions and facilitating wide-spread market take-up. This will help the EU become more energy-efficient and open new markets for EU industries.

5. APPROPRIATE NATIONAL AND EUROPEAN FINANCIAL SUPPORT

Many energy efficiency investments pay for themselves quickly, but are not realised due to market and regulatory barriers. Market incentives and price signals therefore need to be intensified through energy and carbon taxes and through national energy saving obligations for utilities (see chapter 4). This should be complemented by mechanisms to improve the availability of suitable financing products. Since investment costs represent a significant financial barrier to the use of energy efficient technologies, availability of funding plays an important role in accelerating investment.

Complementing national funding programmes, the EU is currently able to support energy efficiency through:

– **Cohesion Policy**: For the period 2007-2013, the planned support from Cohesion Policy Funds for investments related to energy efficiency, co-generation and energy management is approximately € 4.4 billion. Two key amendments[49] have been made to better reflect energy efficiency needs. Whereas regional policy has traditionally financed energy efficiency investments only in public and commercial buildings, it is now possible to use these funds in the residential sector in all Member States; and the use of financial engineering instruments has been extended to energy efficiency in buildings. In cooperation with the responsible programme managers, the Commission will seek ways to improve the use of the resources available for energy efficiency improvements.

– **The Intelligent Energy Europe Programme (2007-2013):** this € 730 million programme supports projects to overcome market failures, including activities to accelerate the renovation of the building stock. One of its newest tools is the ELENA (European Local Energy Assistance) facility. This provides grants to local and regional authorities for the technical assistance costs of developing bankable sustainable energy investments. The original facility was implemented by the European Investment Bank; two additional facilities are foreseen in 2011[50]. In just over a year of operation, ten ELENA projects have been approved which will provide approximately € 18 million in grants to final beneficiaries with a view to mobilizing about € 1.5 billion in investments over their three year lifetimes.

– **Intermediated finance:** Credit lines from International Financial Institutions (IFI) and other public sector banks have provided an important source of finance for energy efficiency projects through intermediated finance through local banks. Use is often made

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48 http://ec.europa.eu/energy/technology/set_plan/set_plan_en.htm

49 Regulations (EC) No 397/2009 and (EU) No 832/2010.

50 To be implemented by the Kreditanstalt für Wiederaufbau (KfW) and the Council of Europe Development Bank (CEB).

of EU funding to provide technical assistance, either to the participating bank for capacity building, or for measures such as energy audits for final beneficiaries.

– **The European Economic Recovery Programme:** This programme is funding the "Energy-efficient Buildings" public private partnership, providing € 1 billion research methods and technologies to reduce the energy consumption of new and renovated buildings. In addition, the Commission is currently working with the European Investment Bank to set up a dedicated investment fund using unspent funds from this programme to support energy efficiency and renewable energy projects. This will be launched later in 2011.

– **The Framework Programme for research, technological development and demonstration (2007-2013)**: this programme supports research and innovation in energy efficiency as a cross-cutting measure right across the Cooperation Programme, resulting so far in more than 200 projects being financed with an EU contribution of €1 billion.

In the process of preparing the next multi-annual financial framework, the Commission is examining the results achieved by EU support programmes and their European added value. It will analyse the scope for improvement of existing EU financial mechanisms as well as further options to trigger investments in energy efficiency at the scale necessary to attain the 2020 EU energy and climate objectives.

6. SAVINGS FOR CONSUMERS

Improvements to the energy performance of devices used by consumers – such as appliances and smart meters – should play a greater role in monitoring or optimizing their energy consumption, allowing for possible cost savings. To this end the Commission will ensure that consumer interests are properly taken into account in technical work on labelling, energy saving information, metering and the use of ICT. The Commission will therefore research consumer behaviour and purchasing attitudes and pre-test alternative policy solutions on consumers to identify those which are likely to bring about desired behavioural change. It will also consult consumer organisations at the early stage of the process. Consumers need clear, precise and up to date information on their energy consumption – something that is rarely available today. For example, only 47% of consumers are currently aware of how much energy they consume[51]. They also need trustworthy advice on the costs and benefits of energy efficiency investments. The Commission will address all of this in revising the legislative framework for energy efficiency policy.

- **Promoting energy and resource efficient appliances**

Improving the performance of buildings, and the products used to heat, cool, ventilate and light them, is one of the most tangible ways in which energy efficiency policy can benefit household budgets. Already-introduced ecodesign efficiency standards and energy labels for household appliances[52] have delivered substantial energy savings for consumers and business opportunities for European manufacturers of high quality goods. Under the current ecodesign

[51] SEC(2010) 1409: the functioning of retail electricity markets for consumers in the European Union.

[52] Fridges, freezers, televisions, dishwashers, washing machines, fans, some types of lighting, and decoders for digital television.

working plan[53], the Commission will continue this approach, setting stricter consumption standards for heating boilers, water heaters, computers, air conditioners, tumble driers, pumps, vacuum cleaners and further types of lighting. It will also bring forward a new working plan for 2012-2014.

Energy labels are an essential accompaniment to this approach. They are most effective when taking the way consumers choose as their starting point. The Commission will launch a survey on consumer understanding of energy labels. This will help to better accommodate consumer interests (e.g. reflecting on the perception of different labels and the influence of marketing) in forthcoming energy labelling measures and also support the dialogue with consumer organisations.

Today more than 40% of windows in the EU are still single-glazing, and another 40% are early uncoated double-glazing[54]. The Commission will work to facilitate the market uptake of more efficient building components, for example by applying the eco-design or labelling frameworks to windows.

In its future work on ecodesign and energy labelling the Commission will examine the option, where relevant, of covering systems as well as individual products. In order to enforce the effectiveness of these measures, the Commission will continue to analyse the life-cycle energy impact of products. It will strengthen market surveillance to ensure that product requirements are properly implemented and will support measures to help consumers, installers and retailers make best use of energy labels.

- **Empowering consumers with new technology**

Under current EU legislation[55], final consumers should already be informed frequently about their energy consumption at the time of use to enable them to regulate their consumption through individual meters for all important types of energy: electricity, gas, heating and cooling and hot water. They should also be provided with information through their bills and contracts about prices and energy costs. This should be presented in ways which help them improve their energy efficiency, for instance relating their consumption to benchmarks or available energy efficient solutions.

In practice, these consumer rights still need to be properly implemented. The information provided must be better targeted to consumer needs. The Commission will work with Member States to ensure the full implementation of these as well as other provisions of European energy efficiency legislation.

In future years the deployment of a European "smart grid" will bring about a step change in the scope for gathering and communicating information about energy supply and consumption. This information will allow consumers to save energy. Member States are obliged to roll out smart electricity meters for at least 80% of their final consumers by 2020 provided this is supported by a favourable national cost-benefit analysis[56]. It is important to ensure that intelligence can also develop in other networks, such as heat, cooling and gas[57],

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53 COM(2008) 660: Establishment of a working plan for 2009-2011 under the Ecodesign Directive.

54 Estimates prepared by TNO for Glass for Europe .

55 Directives 2006/32/EC, 2009/72/EC and 2009/73/EC.

56 Directive 2009/72/EC concerning common rules for the internal market in electricity.

57 According to Directive 2009/73/EC concerning common rules for the internal market in natural gas retail markets, smart metering should be achieved within a reasonable period of time.

and that these intelligent networks all contribute to build a well-functioning, interoperable market for energy efficiency services. Smart grids and smart meters will serve as a backbone for smart appliances, adding to the energy savings obtained by buying more energy efficient appliances. New services will emerge around the development of smart grids, permitting ESCOs and ICT providers to offer services to consumers for tracking their energy consumption at frequent intervals (through channels like the internet or mobile phones) and making it possible for energy bills to indicate consumption for individual appliances. Beyond the benefits for household consumers, the availability of exact consumption data through smart meters will stimulate the demand for energy services by companies and public authorities, allowing ESCOs to offer credible energy performance contracts to deliver reduced energy consumption. Smart grids, meters and appliances will allow consumers to choose to permit their appliances to be activated at moments when off peak cheaper energy supply or abundant wind and solar power are available – in exchange for financial incentives. Finally, they will offer consumers the convenience and energy saving potential of turning appliances on and off remotely.

Delivering on this potential requires appropriate standards for meters and appliances, and obligations for suppliers to provide consumers with appropriate information (e.g. clear billing) about their energy consumption including access to advice on how to make their consumption less energy intensive and thus reduce their costs. To this end, the Commission will propose adequate measures to ensure that technological innovation, including the roll-out of smart grids and smart meters fulfils this function. These measures will include minimum requirements on the content and format of information provision and services.

Further, the Commission needs to ensure that energy labels (energy performance certificates) and standards for buildings and appliances reflect, where appropriate, the incorporation of technology that makes appliances and buildings "smart grid ready" and capable of being seamlessly integrated into the smart grid and smart meter infrastructure. Appliances such as fridges, freezers and heat pumps could be the first to be tackled.

7. TRANSPORT

As well as the sectors covered in detail in this plan, transport – which accounts for 32%[58] of final energy consumption – is a key area for energy savings. It is the fastest growing sector in terms of energy use, with the strongest reliance on fossil fuel. The upcoming White Paper on Transport will define a strategy for improving the efficiency of the transport sector that includes the introduction of advanced traffic management systems in all modes; infrastructure investment and the creation of a Single European Transport Area to promote multimodal transport; smart pricing; and efficiency standards for all vehicles across all modes as well as other measures to promote vehicle innovation.

8. A FRAMEWORK FOR NATIONAL EFFORTS

Member States have the key role to play in introducing the energy efficiency policies and measures needed to achieve the 20% target. So far, National Energy Efficiency Action Plans (NEEAPs), introduced under the Energy Services Directive, have provided the national

[58] In 2008. See Eurostat, Energy, transport and environment indicators, 2010 edition.

framework for energy efficiency policy development in end-use sectors[59]. In the light of this new Energy Efficiency Plan covering all sectors from generation to end-use, it becomes evident that the scope of the national framework needs to be expanded to cover the whole energy chain, thus tapping into more energy saving potentials[60].

At the same time, the launch of the first European Semester of ex-ante policy co-ordination in the framework of the Europe 2020 strategy opens new opportunities for the Commission to follow and assess Member States' annual progress in energy efficiency.

As it is essential to monitor national achievements to assess progress made towards the European 20% target, the Commission will in the coming months analyse what the most appropriate monitoring framework should be.

9. CONCLUSION

The measures proposed in this Plan aim at closing the gap in reaching the EU's 20% energy saving target as well as at helping to realise our 2050 vision of a resource efficient and low carbon economy, as well as aiming at increased energy independence and security of supply. Fully implementing this plan should deliver important energy savings: it is estimated that the actions of the public sector and the new minimum efficiency requirements for appliances should yield savings of up to 100 Mtoe and that comparable savings can also be expected from measures in the transport sector and from energy savings for consumers from their energy suppliers[61].

The binding measures put forward in this plan will be implemented through appropriate legislative instruments, including a legislative proposal encompassing revision of the existing Energy Services and Combined Heat and Power Directives[62]. The next steps during 2011 will be the adoption of that proposal[63]; the adoption of new ecodesign and energy labelling measures; the launching of the Smart Cities and Smart Communities initiative; and proposals on financing tools which will be brought forward during the budgetary discussions of 2011.

The Commission calls on the EU institutions, Member States and all relevant stakeholders to endorse this new Energy Efficiency Plan, to actively engage in discussion concerning implementing measures and to cooperate closely in its implementation.

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59 See accompanying staff working document SEC(2011) 276: National Energy Efficiency Action Plans (NEEAPs): update on implementation.

60 The existing energy efficiency *acquis* is extended to the EU's neighbours in South-Eastern and Eastern Europe via the Energy Community treaty, ECT (or is in the process of this in the case of more recent *acquis*). The framework for promoting energy efficiency, including the 20% target, therefore applies to partners with a vocation to join the EU. New EU energy efficiency initiatives will automatically be added to the ECT *acquis*.

61 These are measure-specific energy savings estimates, subject to certain overlaps.

62 Directives 2006/32/EC and 2004/8/EC.

63 This proposal will include the measures in this plan dealing with public purchasing of goods, services and works; renovation of public buildings; energy performance contracting; split incentives to upgrade energy performance; energy service companies; efficiency of energy generation; grid access for electricity from combined heat and power; energy saving obligations; energy audits; information services for energy consumers; and energy efficiency in grid regulation.