

Energy: Commission presents its new strategy towards 2020

The Commission today presented its new strategy for a competitive, sustainable and secure energy. The Communication "Energy 2020" defines the energy priorities for the next ten years and sets the actions to be taken in order to tackle the challenges of saving energy, achieving a market with competitive prizes and secure supplies, boosting technological leadership, and effectively negotiate with our international partners.

Energy Commissioner Günther Oettinger said: "The energy challenge is one of the greatest tests for us all. Putting our energy system onto a new, more sustainable and secure path may take time but ambitious decisions need to be taken now. To have an efficient, competitive and low-carbon economy we have to europeanise our energy policy and focus on a few but pressing priorities."

In the Communication adopted today, the Commission identifies five top priorities. On the basis of these priorities and the action presented, the Commission will come forward with concrete legislative initiatives and proposals within the next 18 months. This communication also sets the agenda for the discussion by Heads of States and Governments at the very first EU Summit on Energy on 4 February 2011.

Energy savings

The Commission proposes to focus its initiatives on the two sectors with the biggest energy saving potential: transport and buildings. To help house owners and local entities to finance renovation and energy saving measures, the Commission will propose investment incentives and innovative financial instruments by mid 2011. The public sector should take energy efficiency into consideration when buying works, services or products. In the industrial sector, energy efficiency certificates could be an incentive for companies to invest in technology which uses less energy.

Pan-European integrated energy market with infrastructures

The Commission sets a target date for completing the internal energy market. By 2015 no Member State should be isolated. Over the next ten years, overall energy infrastructure investments in the EU of Euro 1 trillion are needed. To speed up essential EU strategic projects, the Commission proposes simplified and shorter building permits, setting a maximum time frame until final authorisation and EU funding. A "one-stop shop" should coordinate all the permit requests needed to realize a project.

27 States, one voice on energy in the world

It is proposed that the EU coordinates its energy policy vis-à-vis third countries, especially in its relation with key partners. Within the neighbourhood policy, the Commission proposes to extend and deepen the Energy Community Treaty to further integrate countries willing to participate in the EU's energy market. A major cooperation with Africa is also announced, which aims at providing sustainable energy to all citizens of this continent

Europe's leadership in energy technology and innovation

Four major projects in key areas for Europe's competitiveness will be launched, such as new technologies for intelligent networks and electricity storage, research on second-generation biofuels and the 'smart cities' partnership to promote energy savings in urban areas.

Safe, secure and affordable energy through active consumers

The Commission proposes new measures on price comparison, switching suppliers, clear and transparent billing.

Background:

EU energy goals have been incorporated into the "Europe 2020 Strategy for smart, sustainable and inclusive growth", as adopted by the European Council in June 2010. In particular, the EU aims at achieving ambitious energy and climate-change objectives for 2020: reduce the greenhouse gas emissions by 20 %, increase the share of renewable energy to 20 % and make a 20 % improvement in energy efficiency.

Further information:

For more information on Energy strategy 2020 please see:

http://ec.europa.eu/energy/strategies/2010/2020_en.htm

More information on the public consultation towards an energy strategy 2020 here:

http://ec.europa.eu/energy/strategies/consultations/2010_07_02_energy_strategy_en.htm



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**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL
COMMITTEE AND THE COMMITTEE OF THE REGIONS**

**Energy 2020
A strategy for competitive, sustainable and secure energy**

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INTRODUCTION

The price of failure is too high.

Energy is the life blood of our society. The well-being of our people, industry and economy depends on safe, secure, sustainable and affordable energy. At the same time, energy related emissions account for almost 80% of the EU's total greenhouse gas emissions. The energy challenge is thus one of the greatest tests which Europe has to face. It will take decades to steer our energy systems onto a more secure and sustainable path. Yet the decisions to set us on the right path are needed urgently as failing to achieve a well-functioning European energy market will only increase the costs for consumers and put Europe's competitiveness at risk.

Over the next ten years, energy investments in the order of €1 trillion are needed, both to diversify existing resources and replace equipment and to cater for challenging and changing energy requirements. Structural changes in energy supply, partly resulting from changes in indigenous production, oblige European economies to choose among energy products and infrastructures. These choices will be felt over the next 30 years and more. To enable these decisions to be taken urgently calls for an ambitious policy framework. Postponing these decisions will have immeasurable repercussions on society as regards both longer-term costs and security.

A common EU energy policy has evolved around the common objective to ensure the uninterrupted physical availability of energy products and services on the market, at a price which is affordable for all consumers (private and industrial), while contributing to the EU's wider social and climate goals. The central goals for energy policy (security of supply, competitiveness, and sustainability) are now laid down in the Lisbon Treaty¹. This spells out clearly what is expected from Europe in the energy area. While some progress has been made towards these goals, Europe's energy systems are adapting too slowly, while the scale of the challenges grows. Forthcoming enlargements of the EU will make this challenge even greater as the Union takes in countries with outdated infrastructure and less competitive energy economies.

The European Council adopted in 2007 ambitious energy and climate change objectives for 2020 – to reduce greenhouse gas emissions by 20%, rising to 30% if the conditions are right², to increase the share of renewable energy to 20% and to make a 20% improvement in energy

¹ Article 194 of the Treaty on the functioning of the European Union (TFUE).

² The European Council specified: "provided that other developed countries commit themselves to comparable emission reductions and economically more advanced developing countries to contributing adequately according to their responsibilities and respective capabilities"

efficiency. The European Parliament has continuously supported these goals. The European Council has also given a long term commitment to the decarbonisation path with a target for the EU and other industrialised countries of 80 to 95% cuts in emissions by 2050.

Nevertheless, the existing strategy is currently unlikely to achieve all the 2020 targets, and it is wholly inadequate to the longer term challenges. EU energy and climate goals have been incorporated into the Europe 2020 Strategy for smart, sustainable and inclusive growth³, adopted by the European Council in June 2010, and into its flagship initiative 'Resource efficient Europe'. The urgent task for the EU is to agree the tools which will make the necessary shift possible and thus ensure that Europe can emerge from recession on a more competitive, secure and sustainable path.

Despite the importance of energy policy aims, there are serious gaps in delivery.

The internal energy market is still fragmented and has not achieved its potential for transparency, accessibility and choice. Companies have grown beyond national borders, but their development is still hampered by a host of different national rules and practices. There are still many barriers to open and fair competition⁴. A recent study into consumer conditions in retail electricity markets indicates sub-optimal consumer choice⁵. Implementation of internal market legislation is disappointing, with over 40 infringement procedures underway on the second internal energy market package from 2003 alone.

The security of internal energy supplies is undermined by delays in investments and technological progress⁶. Currently, nearly 45% of European electricity generation is based on low-carbon energy sources, mainly nuclear and hydropower. Parts of the EU could lose more than a third of their generation capacity by 2020 because of the limited life-time of these installations. This means replacing and expanding existing capacities, finding secure non-fossil fuel alternatives, adapting networks to renewable energy sources and achieving a truly integrated internal energy market. At the same time Member States still need to phase out environmentally harmful subsidies.

The quality of National Energy Efficiency Action Plans, developed by Member States since 2008, is disappointing, leaving vast potential untapped. The move towards renewable energy use and greater energy efficiency in transport is happening too slowly. While we are broadly on track for the 20% target for renewable, we are a long way from achieving the objective set for energy efficiency.

At an international level, little heed is paid to warnings about tight oil supply in the future⁷. Despite serious gas supply crises that have acted as a wake-up call, exposing Europe's vulnerability, there is still no common approach towards partner, supplier or transit countries.

³ Communication from the Commission (doc. 7110/10 of 5 March 2010).

⁴ As evidenced by the Commission's Energy Sector Inquiry, Communication from the Commission of 1 January 2007 *Inquiry pursuant to Article 17 of Regulation (EC) No 1/2003 into the European gas and electricity sectors* - COM(2006) 851 - and the high number of investigations into anti-competitive behaviour in the sector (e.g. IP/10/494 of 4 May 2010).

⁵ Study of the functioning of retail electricity markets for consumers in the European Union, November 2010.

⁶ ENTSO-Electricity has estimated that the EU needs to build or renew 30000 km of network cables in the next ten years.

⁷ E.g. IEA World Energy Outlooks 2009 and 2010.

The potential for further development of EU indigenous fossil fuel resources, including unconventional gas, exists and the role they will play must be assessed in all objectivity.

Member States' energy interdependence requires more European action.

The EU is the level at which energy policy should be developed. Decisions on energy policy taken by one Member State inevitably have an impact on other Member States. The optimum energy mix, including the swift development of renewables, needs a continental market at least. Energy is the market sector where the greatest economic efficiencies can be made on a pan-European scale. Fragmented markets not only undermine security of supply, they also limit the benefits which energy market competition can bring. The time has come for energy policy to become truly European.

The EU must remain an attractive market for companies at a time of increasing competition on energy resources worldwide. The new European energy strategy must support the integrated industrial approach just presented by the European Commission⁸, in particular since energy remains an important cost factor for industry⁹. The EU must also consolidate its competitiveness in energy technology markets. The share of renewable energy in the EU energy mix has risen steadily to some 10% of the gross final energy consumption in 2008. In 2009, 62% of newly installed electricity generation capacity in the EU was from renewable sources, mainly wind and solar. However, Europe's lead is challenged. The independent 2010 Renewable Energy Attractiveness Index¹⁰ now cites the US and China as the best investment opportunities for renewable energy. New stimulus is needed; more than ever is EU leadership called to address these challenges.

In international energy affairs, the EU could be much stronger and effective if it took charge of its common interest and ambition. Despite accounting for one fifth of the world's energy use, the EU continues to have less influence on international energy markets than its economic weight would suggest. Global energy markets are becoming tighter, with developing Asian countries and the Middle East accounting for most of the growth in global demand¹¹. As the world's largest energy importer, the EU is likely to be more vulnerable to supply risks as a result.

The inclusion of energy policy in the EU Treaty calls for a new outlook.

We must build on what we have achieved, and be bold in our ambition.

The EU cannot afford to fail in its energy ambitions. Therefore the Commission proposes a new energy strategy towards 2020. This will consolidate the measures which have been taken so far and step up activity in areas where new challenges are emerging. It is the result of extensive debates within the EU institutions and wide-ranging public consultations.

The focus here is not on a comparative analysis of different energy sources, rather the steps which are required to deliver Europe's medium term policy objectives. Various scenarios in terms of energy mix will be presented in the forthcoming energy roadmap 2050, which will

⁸ Communication on an "integrated industrial policy for the globalisation era" (COM 2010) 619

⁹ For example, it is estimated that electricity prices in Europe is 21% more expensive than in the United States or 197% more expensive than in China.

¹⁰ Issue 26, August 2010.

¹¹ International Energy Agency World Energy Outlook 2010.

describe ways of achieving Europe's long-term decarbonisation goal and their implications for energy policy decisions. This strategy sets out initial policy decisions which will be needed to meet our 2020 energy objectives as they currently stand. The 2050 low carbon economy and energy roadmaps will further inform and guide this programme of action and its implementation by offering a long term vision.

We urgently need far-reaching changes in energy production, use and supply.

First and foremost, the strategy underlines the need to rebalance energy actions in favour of a demand-driven policy, empowering consumers and decoupling economic growth from energy use. In particular, the transport and construction industries must pursue an active energy savings policy and diversify towards non-polluting energy sources. Beyond the Emissions Trading Scheme (ETS), the strategy should help create market conditions which stimulate higher energy savings and more low carbon investments, to exploit a wide range of centralised and distributed renewable energy as well as key technologies for energy storage and electro-mobility (notably electric vehicles and public transport).

Energy policy is a key contribution for achieving the objective of the new strategy for smart, sustainable and inclusive growth in support of a strong, diversified and competitive industrial base. In this context, Europe has to acknowledge that its industrial base is in need of all sectors across the entire value chain.

Public authorities have to lead by example. Each year, 16% of EU GDP, around €1,500 billion, is spent by public authorities. Public procurement rules should insist on efficiency conditions to increase energy savings and spread innovative solutions, notably in buildings and transport. The potential of market-based and other policy instruments, including taxation, to enhance energy efficiency should be fully exploited.

On the supply side, the priority must continue to be the development of secure and competitive sources of energy. In the field of electricity generation, investments should lead to nearly two thirds of the electricity coming from low carbon sources by the early 2020's, the current level being 45%. In this context, priority should be given to renewable energies. The strategy must provide a framework at EU level which, while respecting national differences, would not only allow Member States to outperform their respective targets, but also ensure that the renewable energy sources and technologies are economically competitive by 2020.

The contribution of nuclear energy, which currently generates around one third of EU electricity and two thirds of its carbon-free electricity, must be assessed openly and objectively. The full provisions of the Euratom Treaty must be applied rigorously, in particular in terms of safety. Given the renewed interest in this form of generation in Europe and worldwide, research must be pursued on radioactive waste management technologies and their safe implementation, as well as preparing the longer term future through development of next generation fission systems, for increased sustainability and cogeneration of heat and electricity, and nuclear fusion (ITER).

For oil and gas, rising import requirements and increasing demand from emerging and developing countries call for stronger mechanisms to secure new, diversified and safe supply routes. As well as crude oil access, refining infrastructure is a crucial part of the supply chain. The EU is a strong geopolitical partner in energy markets and must have the ability to act accordingly.

The new energy strategy focuses on five priorities:

1. Achieving an energy efficient Europe;
2. Building a truly pan-European integrated energy market;
3. Empowering consumers and achieving the highest level of safety and security;
4. Extending Europe's leadership in energy technology and innovation;
5. Strengthening the external dimension of the EU energy market.

1. AN EFFICIENT USE OF ENERGY THAT TRANSLATES INTO 20% SAVINGS BY 2020

Europe cannot afford to waste energy. Energy efficiency is one of the central objectives for 2020 as well as a key factor in achieving our long-term energy and climate goals. The EU needs to develop a new energy efficiency strategy which will enable all Member States to further decouple their energy use from economic growth. This strategy will take into account the diversity between Member States in terms of energy needs. Energy efficiency is the most cost effective way to reduce emissions, improve energy security and competitiveness, make energy consumption more affordable for consumers as well as create employment, including in export industries. Above all, it provides tangible benefits to citizens: average energy savings for a household can amount to €1 000 per year¹².

It is necessary to address the paradox whereby demand for more energy-intensive or new products outstrips gains in energy efficiency. It is high time that we move from words to actions. Thus, energy efficiency needs to be mainstreamed into all relevant policy areas, including education and training, to change current behavioural patterns. Energy efficiency criteria must be imposed in all spheres, including the allocation of public funds.

Efforts should be concentrated on the whole energy chain, from energy production, via transmission and distribution, to final consumption. Effective compliance monitoring, adequate market surveillance, widespread usage of energy services and audits, as well as material efficiency and recycling are all musts.

We are a long way from achieving the 20% energy savings objective. The new strategy therefore calls for reinforced political commitment to achieving it through a clear definition of the objective to be reached and strong compliance monitoring. Member States and regional and local authorities are called to intensify their work to implement adequate policies and to make full use of the available tools, objectives and indicators, with comprehensive National Energy Efficiency Action Plans.

Special attention should be given to the sectors with the largest potential to make energy efficiency gains, namely the existing building stock and transport sector. Member States have agreed to legally binding climate targets for these and other non-ETS sectors but still need to implement appropriate measures¹³. The revision of the energy taxation directive could provide steering effects with the potential of long-term efficiency gains. Measures need to be

¹² COM(2008) 772.

¹³ Effort Sharing Decision No. 406/2009/EC.

developed to speed up significantly the rate of refurbishment using energy-efficient products and technologies. In the residential sector, the issue of divided incentives between owners and tenants needs to be addressed. Regarding the substantial stock of public buildings, the authorities need to exploit all available opportunities, including those offered by EU Regional Policy, to improve the energy efficiency and autonomy of the buildings. In the transport sector, significant potentials for example in multimodal solutions, efficient vehicles and efficient driving should be tapped.

The information and communication technologies have an important role to play in improving the efficiency of major emitting sectors. These technologies offer potential for a structural shift to less resource-intensive products and services, for energy savings in buildings and electricity networks as well as for more efficient and less energy consuming intelligent transport systems¹⁴.

The industry sector needs to incorporate energy-efficiency objectives and energy technology innovation into its business model. The ETS contributes significantly to do so for larger companies, but there is need for a wider use of other instruments, including energy audits and energy management systems in smaller companies and supporting mechanisms for SMEs. Efficiency benchmarking can give indication to companies where they stand in efficiency terms in comparison with their competitors. Efficiency, including in electricity use, must become a profitable business in itself, leading to a robust internal market for energy-saving techniques and practices and commercial opportunities internationally. A framework for wide resource efficiency would increase such savings.

The public sector needs to lead by example. Ambitious objectives ought to be set for public sector consumption. Public procurement should support energy efficient outcomes. Innovative integrated energy solutions at local level contributing towards transition to so-called 'smart cities' should be supported. Municipalities represent a major actor of the required change, thus their initiatives like the Covenant of Mayors should be further strengthened. Cities and urban areas, which consume up to 80% of the energy, are at the same time part of the problem and part of the solution to greater energy efficiency.

Resource-efficiency policies, including energy-efficiency investments, often have short-term, up-front costs before the medium- and longer-term benefits are felt. Tools are needed to encourage new investments in energy-efficient technologies and practices. EU financing can have a high leverage factor and innovative solutions must be developed. Innovative and carefully considered¹⁵ uses of taxation and pricing should also be explored as tools to encourage behavioural changes or to fund investments.

The Energy Efficiency Plan to be presented in early 2011 will be followed by concrete regulatory proposals in the course of that year. It will also address the issue of financing in terms of access to finance, the availability of innovative financing products, incentives to induce energy-efficiency investments as well as the role of EU funding, in particular the structural funds, further building on existing successful examples.

Priority 1: Achieving an energy-efficient Europe

¹⁴ Specific actions have been set out in the Digital Agenda for Europe, COM(2010)245.

¹⁵ Notably with regard to the possible cumulative effects of different market based measures

Action 1: Tapping into the biggest energy-saving potential — buildings and transport

- The energy-efficiency renovation rate should be accelerated by investment incentives, wider use of energy service companies, innovative financial instruments with high leverage factors and financial engineering at European, national and local levels. In this context, division of investment incentives between owners and tenants and energy labelling of buildings (certificates used in the real estate market and public support policies) will be addressed in forthcoming proposals by the Commission.
- Public authorities need to lead by example. Energy criteria (regarding efficiency, renewables and smart networking) should be used in all public procurement of works, services or products. Programmes and technical assistance facilities are needed that build the capacities of energy services market participants to develop and structure finance for projects that target both public authorities and private actors. EU financial programmes will target energy savings projects and make energy efficiency a strong condition for allocating financial support.
- The forthcoming White Paper on future transport policy will present a menu of measures to improve transport sustainability and reduce oil dependence. This will include initiatives aimed at increasing the energy efficiency of the transport system, including support for clean urban mobility as well as multimodal transport solutions, intelligent traffic management and energy efficiency-standards for all vehicles, adequate economic signals and the promotion of sustainable behaviour. In this context, more efficient car-labelling systems should be explored.

Action 2: Reinforcing industrial competitiveness by making industry more efficient

- The Commission will seek to support European industries' competitiveness through energy efficiency by widening the Ecodesign requirements for energy and resource-intensive products complemented by system level requirements where relevant. The potential effect of voluntary agreements with energy and resource-intensive industry branches should be explored. More extensive energy labelling should be introduced to ensure more comprehensive comparison between products.
- Energy-management schemes (e.g. audits, plans, energy managers) should be implemented in industry and in the services sector. A particular emphasis on SMEs through dedicated support mechanisms should be established.

Action 3: Reinforcing efficiency in energy supply

- Energy efficiency, in the production as well as in the distribution, should become an essential criterion for the authorisation of generation capacities and efforts are needed to substantially increase the uptake of high efficiency cogeneration, district heating and cooling.
- Distribution and supply companies (retailers) should be required to secure documented energy savings among their customers, using means such as third party energy services, dedicated instruments such as 'white certificates', public benefit charges or equivalent and speeding up the introduction of innovative tools such as 'smart meters' which should be consumer-oriented and user-friendly so that they

provide real benefits for consumers.

Action 4: Making the most of National Energy Efficiency Action Plans

- The National Energy Efficiency Action Plans provide comprehensive benchmarking on energy efficiency, including measurable objectives and indicators to monitor progress, taking into account the relative starting positions and national circumstances. An annual review mechanism should feed into the Europe 2020 objective for energy efficiency.

2. ENSURING THE FREE MOVEMENT OF ENERGY

Europe's energy markets have been opened up to enable citizens to benefit from more reliable, competitive prices as well as more sustainable energy. This potential will not be fully realised unless robust efforts are made to create a more integrated, interconnected and competitive market.

Electricity and gas markets are not yet working as a single market. The market is still largely fragmented into national markets with numerous barriers to open and fair competition. Most energy markets remain national in scope and are highly concentrated, often with incumbent companies having a *de facto* monopoly position. Regulated energy prices further reduce competition in many Member States¹⁶. Given the remaining anti-competitive practice in the energy sector¹⁷, pro-active competition enforcement, not only by the Commission, but also by Member States, is needed. Improving competition in the energy markets will contribute to setting the right incentives for the investments required and reducing their cost to what is necessary.

By introducing a legislative framework designed to promote the achievement of the 20% target for renewable energy in 2020, Europe has just taken the first step in this area. It is necessary to ensure that the legislation is fully implemented and to pave the way for large scale use of renewable energy in the decades beyond 2020. The legal framework must be properly enforced to give investors the confidence to invest in new production, transport and storage options for renewable sources. The effects of the Renewable Energy Directive will be assessed as from 2011 with a view to strengthening or extending it where and when needed.

The further development of renewable energy will continue to rely for some time on support schemes. The Commission must play its part in ensuring that these are sustainable, consistent with technological progress and not hindering innovation or competition. It must however also ensure the required degree of convergence or harmonization between national schemes as the market for renewables is moving from a local to a cross-border supply. In this context, the necessary requirements for a pan-European trade in renewable energy should be defined on the basis of best practice. Greater use of balanced, cost-effective and predictable feed-in premiums, more technology-specific support and financing instruments should be mobilized in accordance with state aid rules when applicable. In particular, retroactive changes to support schemes should be avoided given the negative effect such changes have on investors' confidence.

¹⁶ Report on progress in creating the internal gas and electricity market - COM(2010) 84.

¹⁷ After the Energy Sector Inquiry revealed manifold competition problems in the energy sector, which led to the adoption of nine major antitrust decisions, the Commission continues assessing the competitive landscape in European energy markets.

As the Monti Report outlined, the new challenge to 2020 is to provide the backbone for electricity and gas to flow where it is needed. Without a proper infrastructure across Europe, comparable to the means of transport of other strategic sectors such as telecommunications or transport, the market will however never deliver on its promises. Further efforts need to be made to upgrade energy infrastructure particularly in Member States that joined as of 2004 as well as in less developed regions.

Most important, Europe is still lacking the grid infrastructure which will enable renewables to develop and compete on an equal footing with traditional sources. Current projects of large-scale wind parks in the North and solar facilities in the South need corresponding power lines capable of transmitting this green power to the areas of high consumption. Today's grid will struggle to absorb the volumes of renewable power which the 2020 targets entail (33% of gross electricity generation).

Smart meters and power grids are the keys to full exploitation of the potential for renewable energy and energy savings as well as improvements in energy services. A clear policy and common standards on smart metering and smart grids¹⁸ are needed well before 2020 to ensure interoperability across the network.

Finally, the obligation of solidarity among Member States will be null and void without a sufficient internal infrastructure and interconnectors across external borders and maritime areas. As a major energy importer, the EU is directly affected by the evolution of networks in neighbouring countries. The construction of new interconnections at our borders should receive the same attention and policies as intra-EU projects. Such links are essential not only for our neighbours but to ensure the EU's stability and security of supply. There will be specific emphasis on the Southern corridor and the effective start of projects of European interest, in particular Nabucco and ITGI.

Investment of around €1 trillion will be needed by 2020 to replace obsolete capacity, modernise and adapt infrastructures and cater for increasing and changing demand for low carbon energy. While investment decisions lie mainly with market players (energy companies, system operators and consumers), public policy is decisive in creating a stable and transparent framework for investment decisions. The new tools created by the third Internal Energy Market Package, including an Agency for the Cooperation of Energy Regulators (ACER) and the new Networks of Transmission System Operators for Electricity and Gas (ENTSO-E and ENTSO-G) should be fully utilised in the coming years for the further integration of energy markets. Regional initiatives¹⁹ should serve as stepping stones towards a European market.

Infrastructure investments will continue to be financed mainly from tariffs paid by the users. However, given the scale of the investments, their nature and their strategic character, it cannot be assumed that all the necessary investments will be delivered by the market alone. The Commission will adopt a new strategy on energy infrastructure development to encourage adequate grid investments in electricity, gas, oil and other energy sectors. Provided the supply is stable, natural gas will continue to play a key role in the EU's energy mix in the coming years and gas can gain importance as the back-up fuel for variable electricity

¹⁸ The European Commission has set up a smart grid task force to discuss the implementation of smart grids at the European level: http://ec.europa.eu/energy/gas_electricity/smartgrids/taskforce_en.htm.

¹⁹ E.g. Baltic Energy Market, Mediterranean Ring.

generation. This calls for diversified imports, both pipeline gas and Liquefied Natural Gas terminals, while domestic gas networks are required to be increasingly interconnected.

Beyond the financing issue, complex and lengthy administrative procedures can be a major bottleneck. Existing rules and procedures for projects of European interest (e.g. serving security of supply, solidarity or renewables integration purposes) will need to be improved and streamlined significantly, while respecting the principles of public acceptance and existing environmental legislation. Communities at local, regional and national levels will engage more constructively in facilitating projects of European interest if these also bring concrete, shorter term benefits for them through, for example, privileged access to public funds.

Priority 2: Building a pan-European integrated energy market

Action 1: Timely and accurate implementation of the internal market legislation

- The Commission will continue to ensure correct and timely implementation of the existing internal energy market and a forceful competition policy. For further integration of the energy market, the regulatory framework needs to be consolidated (e.g. network codes), complemented by other actions such as market coupling, target model development²⁰ and a robust framework for traded markets through effective transparency and oversight. If these measures prove not to be sufficient or ACER's remit too narrow, further legislative measures will be envisaged.

Action 2: Establishing a blueprint of the European infrastructure for 2020-2030

- The Commission's forthcoming infrastructure communication will allow Europe to identify priority infrastructure to be deployed in order to have a functioning internal market, ensure integration of large-scale production of renewables and guarantee security of supply, in line with the vision for a sustainable European energy system by 2050. By 2015, no Member States should be isolated from the European internal market. Cross-border corridors will also be covered. The 10-year network development plans of ENTSO-E and ENTSO-G will be taken forward with the help of ACER, together with all other relevant stakeholders. This exercise will build on successful regional initiatives such as the one in the Baltic region and will also include an assessment of the necessary storage facilities and climate adaptation measures, including possible future needs for CO₂ transportation infrastructure in the EU.
- The Commission's proposal also aims at preparing the grid for the inevitable changes in demand which will ensue from energy and transport policies, such as electro mobility and an increase in decentralised as well as large scale renewable power generation.
- A set of policy tools will be proposed by the Commission next year to implement strategic infrastructure priorities in the next two decades. They will include a new method for defining the strategic infrastructures which will be essential for the

²⁰ An electricity target model has been developed in the context of Florence forum, in the so called Ad-Hoc Advisory Group. The guidelines and codes to implement this target model are being prepared. A target model for gas is being developed in the framework of the Madrid Forum.

European Union as a whole in terms of competitive energy provision, environmental sustainability and access to renewables as well as security of supply. These vital sections will be clearly identified in the overall mapping exercise and awarded a label of 'European interest' so that they can benefit from an improved permitting procedure and concentrated funding if necessary. Selectivity will be of the essence in this work. Network connections with third countries will be duly taken into account.

- ACER, ENTSO-E and ENTSO-G will be given a mandate to develop the blueprint of European electricity and gas grids on the horizon of 2020-2030. This should be followed by a longer-term vision on the basis of the energy 2050 roadmap to be presented in 2011.

Action 3: Streamlining permit procedures and market rules for infrastructure developments

- The Commission will propose to introduce a permitting scheme applying to projects of "European interest" to improve the current process through, for example, the nomination of a single authority at national level, while respecting safety and security standards and ensuring full compliance with the EU environmental legislation. The streamlined and improved procedures will provide for more transparency and ensure open and transparent debates at local, regional and national level to enhance public trust in and acceptance of the installations. In addition, ways of positively rewarding, through enhanced access to public fund regions and Member States that constructively engage and succeed in facilitating the timely construction of projects of European interest will be explored.
- To establish market coupling by 2014, ACER will, within the scope of its mandate, ensure the definition and implementation of all necessary technical (harmonisation, standardisation, etc.) and regulatory issues linked to the interconnection of networks across borders; access to renewables; and the integration of new technologies. A detailed programme of action will be presented accordingly to assist the Member States in the process of rolling out smart metering/smart grids (including the issue of display of information for consumers) and encouraging new energy services.

Action 4: Providing the right financing framework

- Acknowledging the fact that most of the infrastructure development is of a commercial nature, a methodology will be defined by the Commission to analyse the optimum balance between public and private financing (on the following principles to be applied across the Union: 'user pays', 'beneficiary pays' - in terms of cross-border cost-benefit allocation, and 'tax payer pays' - burden-sharing for commercially non-viable and 'EU-wide benefit' infrastructure). This will be defined in accordance with applicable state aid rules. For projects of 'European interest' which have no or poor commercial viability, innovative funding mechanisms will be proposed for maximum leverage of public support to improve the investment climate for the coverage of main risks or to speed up project implementation. The development of proper energy infrastructure is critical and urgent; it requires a broader view of new funding instruments (both public and private) as well as the mobilisation of additional resources under the next multi-annual financial framework.

3. SECURE, SAFE AND AFFORDABLE ENERGY FOR CITIZENS AND BUSINESSES

A well functioning, integrated internal market benefits consumers with wider choice and lower prices. Yet, many consumers do not perceive that they are better off as a result of market opening and competition among different suppliers. Individual consumers must be aware of, and exercise, their rights under EU legislation. They should be able to take advantage of the opportunities which market opening creates and feel confident that they have access to the energy services they need in the quality and emission profile they want. The opening of markets can deliver the best prices, choice, innovation and service for consumers if it goes hand in hand with measures to guarantee trust, protect consumers and to support them to play the active role expected of them by liberalisation.

However citizens appear to be unaware of their rights under EU legislation, or reluctant to exercise them. Far greater efforts are needed to inform consumers about their rights and involve them in the internal market. Likewise, the potential for reducing energy bills through energy savings needs to be better articulated. The Citizens' (London) Forum and the Sustainable Energy (Bucharest) Forum were established with a view to improving the energy situation of household consumers and ways should be explored to make them more responsive to consumers' needs.

The competitive position of important sectors of the European economy also depends on the availability of secure energy at affordable prices. Energy, in particular electricity, constitutes a substantial part of the total production costs of key European industries, including large and small and medium enterprises.

The international market for oil supplies could become very tight before 2020, which means that it is important for EU consumers to step up their efforts to reduce oil demand. This is not happening at the moment. Consumers need to be made more aware of the necessity to reduce their consumption of fossil fuels and they need to know how they can reduce their bills at a time of rising prices. "User-friendly" smart grids, smart meters and billing can help in this respect. But consumers also need to become more pro-active. To help consumers participate in the market, measures should be put in place to raise awareness of opportunities, enhance price comparison, and facilitate the switching and improve complaint handling procedures.

Providing affordable but cost-reflective and reliable supplies to consumers is mainly the task of the internal market. A functioning internal market on the basis of sufficient transmission and storage infrastructure is the best guarantee for security of supply, as energy will follow market mechanisms and flow to where it is needed. However, safety nets are necessary, in the case of vulnerable consumers for example, or at the time of a supply crisis which market mechanisms cannot sufficiently address. The internal market is also hampered when Member States are not fully interlinked, such as in the Baltic States. The Gas Security Regulation is important in that it ensures that markets are fully prepared to cope in a crisis and that domestic consumers are protected. Furthering of interconnection amongst Member States as well as active competition enforcement by the Commission and Member States can contribute to a further diversification of supply sources particularly in those Member States which currently depend on only one or few supply sources.

Energy policy is also responsible for protecting European citizens from the risks of energy production and transport. The EU must continue to be a world leader in developing systems for safe nuclear power, the transport of radioactive substances, as well as the management of nuclear waste. International collaboration on nuclear safeguards plays a major role in ensuring

nuclear security and establishing a solid and robust non-proliferation regime. In the oil and gas exploitation and conversion sector, the EU legislative framework should guarantee the highest level of safety and an unequivocal liability regime for oil and gas installations.

Priority 3: Empowering consumers and achieving the highest level of safety and security

Action 1: Making energy policy more consumer-friendly

- Active competition policy enforcement at European and national levels remains indispensable to foster competition and guarantee that consumers have access to energy at affordable prices.
- The Commission will propose measures to help consumers better participate in the energy market in line with the third energy package. These measures will include the development of guidance based on best practice in the area of switching suppliers, the further implementation and monitoring of the billing and complaint-handling recommendations, and the identification of best practices in alternative dispute resolution schemes. A price comparison tool based on a methodology to be developed by energy regulators and other competent bodies should be available to all consumers, and all suppliers should provide updated information on their tariffs and offers. Finally, further efforts should be aimed at moving focus from energy prices to energy costs by developing the market for energy services.
- The Commission will publish regular benchmark reports assessing the level of implementation of the regulatory provisions relating to consumers and the overall level of protection across the internal market. Particular emphasis will be given to vulnerable customers and to practices which enable consumers to reduce energy use.
- Efforts to improve the functioning of the retail market should be stepped up by regulatory authorities with the help of the London Citizens' and the Sustainability (Bucharest) Fora.

Action 2: Continuous improvement in safety and security

- The safety conditions of offshore oil and gas extraction are being reviewed by the Commission in the light of the Deepwater Horizon accident, with the aim of introducing stringent measures from prevention to response and liability issues which will guarantee the highest level of protection throughout the EU and the rest of the world.
- The legal framework for nuclear safety and security will be further enhanced through the mid-term review of the Nuclear Safety Directive, the implementation of the Nuclear Waste Directive, the redefinition of the basic safety standards for the protection of workers and the population and a proposal for a European approach on nuclear liability regimes. Greater harmonisation of plant design and certification at the international level should also be actively pursued. All these measures should allow the EU to keep its leadership in safe nuclear energy and contribute to responsible use of nuclear energy worldwide.

- The same security and safety considerations will also be upheld in the development and deployment of new energy technologies (hydrogen safety, safety of CO₂ transportation network, CO₂ storage, etc...).

4. MAKING A TECHNOLOGICAL SHIFT

Without a technological shift, the EU will fail on its 2050 ambitions to decarbonise the electricity and transport sectors. Given the time scale for the development and dissemination of energy technology, the urgency of bringing new high performance low-carbon technologies to the European markets is more acute than ever. The EU ETS is an important demand side driver supporting the deployment of innovative low carbon technologies. However, new technologies will reach markets more quickly and more economically if they are developed through collaboration at the EU level.

Europe-wide planning and management is paramount for investment stability, business confidence and policy coherence. The Strategic Energy Technology (SET) Plan sets out a medium term strategy valid across all sectors. Yet development and demonstration projects for the main technologies (second generation biofuels, smart grids, smart cities and intelligent networks, Carbon Capture and Storage, electricity storage and electro-mobility, next generation nuclear, renewable heating and cooling) must be speeded up. Similarly, the crucial nature of innovation was highlighted in the Europe 2020 flagship on ‘Innovation Union’²¹.

The resources required in the next two decades for the development of these technologies are very significant, especially when seen in the context of the current economic climate. Major projects, such as the ones over 140 GW of offshore wind power currently being planned by European utilities, developers and governments, mostly in the North Sea or the Desertec and Medring initiatives, affect several Member States. Europe-wide coordination and collaboration should include the pooling of different funding sources. All stakeholders will be expected to contribute. The Commission will seek to leverage the EU budget to raise further the overall level of funding.

The EU is facing fierce competition in international technology markets. Countries such as China, Japan, South Korea and the USA are pursuing an ambitious industrial strategy in solar, wind and nuclear markets. EU researchers and companies need to increase their efforts to remain at the forefront of the booming international market for energy technology and, where it is mutually beneficial, they should step up cooperation with third countries in specific technologies.

Priority 4: Extending Europe’s leadership in energy technology and innovation

Action 1: Implementing the SET Plan without delay

- The Commission will reinforce the implementation of the SET Plan, in particular the Joint Programmes of the European Energy Research Alliance (EERA) and the six European Industrial Initiatives (wind; solar; bio energy; smart grids; nuclear fission; and CCS). Work will intensify with Member States to finance the activities of the Technology Roadmaps for 2010-2020 and to ensure the success of related large scale

²¹ SEC(2010)1161, 6 October 2010.

demonstration programmes such as under the New Entrants Reserve (NER300) programme²². Available Community funding²³ will be concentrated on the SET Plan initiatives.

- The Technology Roadmaps of the European Industrial Initiatives for 2010-2020 are being implemented from this year on and will be given additional support. They will be the cornerstone for the preparation of the next financial framework as regards a consolidated, regularly assessed, more efficient and focused energy research programme. In this context, the Commission will promote the development of strategic energy research infrastructures in Europe as they strongly contribute to the shortening of the distance between research and technological development. It will also pursue other avenues with great potential, such as marine renewable energy and renewable heating and cooling.

Action 2: The Commission will be launching four new large-scale European projects

- 1. The Commission will take forward a major European initiative on smart grids to link the whole electricity grid system, from the off-shore wind farms in the North Sea, solar plants in the South and existing hydro-electric dams, to individual households, while making power networks more intelligent, efficient and reliable.
- 2. Re-establishing Europe's leadership on electricity storage (both large-scale and for vehicles). Ambitious projects will be developed in the fields of hydro capacity, compressed air storage, battery storage, and other innovative storage technologies such as hydrogen. These will prepare the electricity grid at all voltage levels for the massive uptake of small-scale decentralised and large-scale centralised renewable electricity.
- 3. Implementing large-scale sustainable biofuel production, including in the light of the ongoing review concerning the impact of indirect land use change. The €9 billion European Industrial Bioenergy Initiative²⁴ will be launched shortly to ensure quick market uptake of sustainable second-generation biofuels.
- 4. Providing cities, urban and rural areas with ways of making greater energy savings. The 'Smart Cities' innovation partnership to be launched early 2011 will bring together the best from the areas of renewable energies, energy efficiency, smart electricity grids, clean urban transport such as electro mobility, smart heating and cooling grids, combined with highly innovative intelligence and ICT tools. EU Regional Policy can play an important role in unlocking local potentials. Rural areas also have a significant potential in this respect and could make use of the EARDF that provides financial means to support such innovation projects.

Action 3: Ensuring long-term EU technological competitiveness

²² The revised ETS directive (2009/29/EC) foresees that 300 m ETS allowances from the New Entrants Reserve (NER) shall be available to support commercial-scale CCS and innovative RES demonstration projects in the territory of the Union.

²³ Funding available under the current Financial Perspectives.

²⁴ See footnote 23.

²⁵ See footnote 23.

- In order to lay the foundations of our future competitiveness in the face of strong international competition, the Commission will propose a €1 billion-initiative²⁵ to support the frontier research needed to deliver science necessary for low-carbon energy breakthroughs.
- EU leadership must also be maintained in the global flagship research project ITER. The Commission will ensure effective governance (including cost containment) and industrial value creation from ITER and the European fusion programme.
- The Commission will develop an EU research programme for energy materials, allowing the EU energy sector to stay competitive despite dwindling rare earth resources.

5. STRONG INTERNATIONAL PARTNERSHIP, NOTABLY WITH OUR NEIGHBOURS

The European energy market is the world's largest regional market (over 500 million consumers) and largest energy importer. However, the same collaboration and common purpose that has led to the adoption of the EU's headline energy and climate targets is not yet evident in external energy policy. Several of the challenges facing the EU — climate change, access to oil and gas, technology development, energy efficiency — are common to most countries and rely on international collaboration. Member States have repeatedly called for the EU to speak with a common voice in third countries. In practice, national initiatives do not leverage the strength of the size of the EU market and could better express the EU interest.

International energy policy must pursue the common goals of security of supply, competitiveness and sustainability. While relations with producing and transit countries are important, relations with large energy-consuming nations and particularly emerging and developing countries are of growing significance. To lift people out of poverty will require access to energy since achieving the goal of eradicating extreme poverty by 2015 cannot be met unless substantial progress is made on improving access. In order to ensure that this does not harm other policy goals, sustainable development needs to be at the core of both energy and development policy, such as proposed in the Green Paper on Development Policy²⁶.

New patterns of supply and demand in global energy markets and increasing competition for energy resources make it essential for the EU to be able to throw its combined market weight effectively in relations with key third-country energy partners. Europe should be in a position to rely on significant additional energy supply sources and routes by 2020.

The need for international solutions obliges us to push our agenda for decarbonisation and energy efficiency with our main partners and in international negotiations and frameworks. The ETS is a driver of international carbon markets, and further action should build on ongoing action to further develop these markets. As a frontrunner in policy development, the EU has more scope to influence standard-setting environmental issues, and to promote respect for transparent and competitive markets.

²⁶ Non-OECD countries could account for all the projected growth in CO₂ emissions by 2030; however, ensuring universal access to modern energy services for all only mean a rise of 0.8% of CO₂ emissions, IEA World Energy Outlook 2009 and special early excerpt of the IEA WEO 2010 for the Millenium Development Goals Summit.

The EU already has a series of complementary and targeted frameworks ranging from specific energy provisions in bilateral agreements with third countries (Free Trade Agreements, Partnership and Cooperation Agreements, Association Agreements, etc.) and Memoranda of Understanding on energy cooperation, through to multilateral Treaties such as the Energy Community Treaty²⁷ and participation in the Energy Charter Treaty. It is currently negotiating with several countries new agreements including important energy provisions.

The EU must now formalise the principle whereby Member States act in the benefit of the EU as a whole in bilateral energy relations with key partners and in global discussions. Building on the legal basis in the Lisbon Treaty, which clarifies and strengthens the external dimension, the EU's external energy policy must ensure effective solidarity, responsibility and transparency among all Member States, reflecting the EU interest and ensuring the security of the EU's internal energy market. More effective coordination at EU and Member State level need to be put in place.

In the nuclear field, international cooperation has produced good results. This is particularly relevant since various neighbouring countries operate or, plan to operate nuclear power plants. The EU must now encourage partner States to make all existing international nuclear safety and security standards and procedures legally binding and effectively implemented worldwide. The EU is particularly well placed, as it is the first to have taken such action both in the field of safety and security and has specific cooperation instruments for this purpose.

As well as being vital for the EU's security of supply, the external dimension of EU energy policy must be consistent and mutually reinforcing with other external activities of the EU (development, trade, climate and biodiversity, enlargement, Common Foreign and Security Policy and others). There must be synergies between energy objectives and other policies and instruments including trade, bilateral agreements, and development cooperation instruments and vice-versa.

Energy security is closely intertwined with EU's foreign and security priorities²⁸. Diversification of fuels, sources of supply and transit routes is essential for EU security as are good governance, respect for the rule of law and protection of EU and foreign investments in energy producing and transit countries. Moreover, EU policy will pay particular attention to safety and security of oil, natural gas pipelines and related production and transport infrastructure by combining energy policy and CFSP instruments.

In 2011 the Commission will present concrete proposals to reinforce the overall consistency and efficiency of our external energy policy, involving Member States, various external policies of the European Union and external support programmes.

Priority 5: Strengthening the external dimension of the EU energy market

Action 1: Integrating energy markets and regulatory frameworks with our neighbours

²⁷ The Energy Community Treaty is promoting market integration but also *acquis* transposition and implementation in the Western Balkans and is extending the EU internal energy market to South East Europe. This is not only a framework of cooperation but a legally binding instrument to prepare accession to the EU. Other parties are joining the Energy Community Treaty: Moldova is already a member; Ukraine and Turkey are in the process of joining.

²⁸ European Security Strategy adopted by the European Council in December 2003.

- The Energy Community Treaty should be implemented and extended to all those EU neighbours who are willing to adopt the EU market model. In this context, market integration and regulatory convergence should be pursued through comprehensive EU agreements based on the EU rules in the countries covered by the European Neighbourhood Policy and the Enlargement process, in particular in the Mediterranean region and with transit countries such as Ukraine and Turkey. Moreover, the Energy Community Treaty should be deepened by extending new *acquis* to the signatories to the Treaty. This approach would strengthen the participation of neighbouring countries in the internal market, while providing a level playing field and a safeguards against the risk of carbon leakage through the power sector.
- Mechanisms will be proposed by the Commission to align existing international agreements (notably in the gas sector) with the internal market rules and to strengthen cooperation between Member States for the conclusion of new ones. Proposals will also be made to set the required regulatory framework between the EU and third countries to develop strategic routes from new suppliers, notably around the Southern corridor and the Southern Mediterranean. Supply issues, including network development and possibly grouped supply arrangements as well as regulatory aspects, notably concerning the freedom of transit and investment security, would be covered.
- EU technical assistance will be mobilised for the effective implementation of the internal market *acquis* and the modernisation of the energy sector in neighbouring countries, while improving the coordination of support schemes provided by the EU, its Member States and the international community.

Action 2: Establishing privileged partnerships with key partners

- While pursuing diversification of import sources and routes, reinforced energy partnerships will be established by the EU with key suppliers and transit countries. They will aim at promoting key principles such as those contained in the Energy Charter Treaty (for example the freedom of transit, transparency, safety, investment opportunities as well as compliance with international law).

Action 3: Promoting the global role of the EU for a future of low-carbon energy

- Energy efficiency, clean technologies and safe and sustainable low-carbon energy should be integrated into EU and bilateral cooperation activities, particularly with major consumer and emerging economies and with global partnerships.
- The Commission will launch a major cooperation with Africa on energy initiatives in order to progressively provide sustainable energy to all citizens, in line with the Green Paper on Development Policy.

Action 4: Promoting legally binding nuclear-safety, security and non-proliferation standards worldwide

- The Commission will develop initiatives aiming at encouraging partner States to make international nuclear safety, security and non-proliferation standards and procedures legally binding and effectively implemented around the globe, in

particular through reinforced cooperation with the International Atomic Energy Agency and the conclusion of Euratom agreements with key nuclear suppliers and user countries.

CONCLUSIONS

The EU is on the threshold of an unprecedented period for energy policy. Energy markets have been largely cushioned from the effects of global market turbulence in recent years as a result of liberalisation, ample supply and production capacities and adequate import possibilities. However, dramatic changes are afoot. Energy prices will be affected by the huge need for energy sector investments, as well as carbon pricing and higher international energy prices. Competitiveness, supply security and climate objectives will be undermined unless electricity grids are upgraded, obsolete plants are replaced by competitive and cleaner alternatives and energy is used more efficiently throughout the whole energy chain.

Member States and industry have recognised the scale of the challenges. Secure energy supplies, an efficient use of resources, affordable prices and innovative solutions are crucial to our long-term sustainable growth, job creation and quality of life. Member States have agreed that these challenges will be tackled most effectively by policies and action at EU level, by 'Europeanising' energy policy. This includes directing EU funding support towards public priorities that markets fail to meet and that bring the most European value.

The new EU energy strategy will require significant efforts in technical innovation and investment. It will foster a dynamic and competitive market and will lead to a major strengthening of institutional arrangements to monitor and guide these developments. It will improve the security and the sustainability of energy systems, grid management, and energy market regulation. It will include extensive efforts to inform and empower domestic and business consumers, to involve them in the switch to a sustainable energy future, for example by saving energy, reducing wastage and switching to low-carbon technologies and fuels. Investments in low-carbon energy production will be further encouraged by market-based instruments such as emissions trading and taxation. The new strategy will take the first steps to prepare the EU for the greater challenges which it may well have to face already by 2020. Above all, it will ensure better leadership and coordination at the European level, both for internal action and in relations with external partners.

The global energy system is entering a phase of rapid transition with potentially far-reaching implications that will unfold in the next decades. Europe has to act before the window of opportunity closes. Time is short. Thus, the Commission will present most of the proposals to achieve the 2020 goals in the coming 18 months. Discussion, adoption and implementation will be needed quickly. In this way, the EU will be better able to put in place the building blocks for the 2020 outcome – standards, rules, regulations, plans, projects, financial and human resources, technology markets, social expectations etc. – and prepare Europe's citizens for the challenges ahead.

Due to the long lead in times for energy system changes, taking action today does not guarantee that the structural changes needed for the low-carbon transition will be completed in the period to 2020, which this strategy covers. It is therefore necessary to look beyond the timescale of the present strategy to ensure that the EU is well prepared for the 2050 objective of a secure, competitive and low-carbon energy system. The Commission will therefore

follow up this strategy with a complete roadmap for 2050 which will set the measures covered in this paper in a longer term and consider further and complementary steps.



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COMMISSION STAFF WORKING DOCUMENT

State of play in the EU energy policy

Accompanying document to the

**COMMUNICATION FROM THE COMMISSION TO THE COUNCIL, THE
EUROPEAN PARLIAMENT, THE EUROPEAN ECONOMIC AND SOCIAL
COMMITTEE AND THE COMMITTEE OF THE REGIONS**

**Energy 2020
A strategy for competitive, sustainable and secure energy**

{COM(2010) 639}

EN

Recent milestone developments:

The past five years have significantly accelerated the construction of a comprehensive EU energy policy based on mutually complementing pillars of competitiveness, sustainability and security of supply. These developments go back to October 2005 when the European Council, gathered at the Informal Summit in Hampton Court, concerned by the pressing need to address the climate change challenge and to react to oil price increase which approached \$70 per barrel, requested the Commission to develop a *long term and coherent energy policy*.

The first step in this process was the Commission's Green Paper "A European Strategy for Sustainable, Competitive and Secure Energy"¹.

Next, in October 2006, the Commission adopted a comprehensive Energy Efficiency Action Plan to create a coherent framework of legislation, policies and measures for achieving the 20% energy efficiency objective compared to what was expected to happen under business as usual scenario.

In January 2007, the Commission issued the first EU Energy Action Plan² which was endorsed by the European Council in March 2007. At present, most of the Action Plan measures have been largely executed through new legislation and ongoing proposals that will soon be agreed.

In September 2007, in order to complete the integration of the EU gas and electricity market, the Commission proposed further energy market liberalisation measures, the so called 'third package'. This legislation was agreed by the Council and the Parliament in July 2009³.

The Strategic Energy Technology (SET) Plan⁴, presented by the Commission in November 2007 and agreed in March 2008, introduced priorities for future energy technologies.

In January 2008, the Commission proposed the Energy and Climate package with "20-20-20 by 2020" goals: reduction in greenhouse gas emissions to 20% below 1990 levels, 30% in the context of a global agreement on climate; 20% share of renewables in the final energy consumption; reduction in primary energy use to 20% below the baseline projection for 2020, which were subsequently translated into legally-binding frameworks for greenhouse gas emissions and renewable energy⁵. As part of the Energy and Climate package, the legal framework for CO₂ capture and storage (CCS) technology was also created⁶.

In 2008, an action plan to strengthen EU energy security was put forward in the Second Strategic Energy Review⁷. It emphasized the importance of infrastructure links needed to strengthen energy security and solidarity between Member States, as well as introduced the perspective of low carbon economy to be achieved by 2050, which will necessitate a major shift towards low carbon energy technologies.

¹ COM(2006) 105.

² COM(2007) 1.

³ Directive 2009/72/EC, Directive 2009/73/EC, Regulation (EC) No 714/2009, Regulation (EC) No 715/2009, Regulation (EC) No 713/2009.

⁴ COM(2007) 723.

⁵ Directive on the Promotion of the use of energy from renewable sources (2009/28/EC), Emission Trading Scheme Directive (2009/29/EC) and the Effort Sharing Decision (406/2009/EC) covering non-ETS sectors

⁶ Directive on the geological storage of carbon dioxide (2009/31/EC).

⁷ COM(2008) 781.

To speed up and secure investments in infrastructure and technology projects in the energy sector, the European Energy Programme for Recovery⁸ was agreed in July 2009 allocating €3.98 billion to finance mature energy infrastructure and technology - CCS and offshore wind - projects during 2010 and 2011. This unprecedented financing stimulus package was added to the various existing energy financing instruments.

Also in the framework of the European Economic Recovery Plan⁹, the European Regional Development Fund (ERDF) Regulation was amended in May 2009¹⁰, expanding the scope for sustainable energy investments in buildings. Whereas Regional Policy has traditionally financed energy efficiency investments only in public and commercial buildings, it is now possible to use these funds to improve resource efficiency in the residential sector in all Member States. Up to 4% of the national ERDF allocations are now available for energy investments in housing, thus adding a potential EUR 8 billion total throughout the EU. In addition, to encourage greater use of market instruments, another regulatory amendment was approved in June 2010¹¹, extending the use of financial engineering instruments to investments in energy efficiency and renewable energy in buildings, including existing housing.

Further measures to strengthen EU internal energy supply security have been adopted. A legally binding framework for nuclear safety was agreed in June 2009.

Finally, the aim of a resource efficient and low-carbon economy that is efficient in the way it uses all resources and the aim to decouple EU economic growth from resource and energy use, reduce CO₂ emissions, enhance competitiveness and promote greater energy security are integral parts of the Europe 2020 Strategy for smart, sustainable and inclusive growth¹², and notably the Flagship Initiative 'Resource efficient Europe'.

This evaluation report aims to present in a comprehensive manner main achievements under the above mentioned EU energy policy initiatives, structured around four sectors: (i) energy efficiency and savings; (ii) internal energy market, including consumers' rights, and infrastructures' development; (iii) actions for a sustainable, secure and competitive energy supply within the EU; and (iv) external supply security and promotion of sustainable use of energy worldwide. For each of the sector, an overview is given for already achieved results as well as for identified shortcomings which require further action during the Energy 2020¹³ period to achieve the 2020 EU binding targets and to prepare transition towards low carbon economy by 2050.

⁸ Regulation (EC) No 663/2009 of the European Parliament and of the Council establishing a programme to aid economic recovery by granting Community financial assistance to projects in the field of energy.

⁹ COM(2008) 800 , 26.11.2008.

¹⁰ REGULATION (EC) No 397/2009 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 6 May 2009 amending Regulation (EC) No 1080/2006 on the European Regional Development Fund as regards the eligibility of energy efficiency and renewable energy investments in housing.

¹¹ REGULATION (EU) No 539/2010 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 June 2010 amending Council Regulation (EC) No 1083/2006 laying down general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund as regards simplification of certain requirements and as regards certain provisions relating to financial management.

¹² COM(2010) 2020.

¹³ COM(2010) 639 ["A strategy for competitive, sustainable and secure energy"].

I - Reducing energy demand and promoting energy savings

Energy efficiency and savings is the most immediate and cost-effective way of addressing the EU's strategic energy and climate policy objectives of fighting climate change, ensuring security of energy supply and establishing competitive and resource efficient economies, while creating jobs and making citizens benefit from lower energy bills and better living conditions. It is widely recognized¹⁴ that at least 20% of EU's primary energy demand (or 368 Mtoe) can be reduced by 2020 compared to business-as-usual PRIMES scenario of 2007 with cost-effective measures.

Though a number of initiatives were undertaken at EU level since the mid-1990s, the European Energy Efficiency Action Plan (EEAP)¹⁵ adopted by the Commission in October 2006 created a coherent framework of legislation, policies and measures on energy efficiency and savings with a view to intensify the process of realising the 20% energy efficiency and saving objective. It identified six key areas with the highest potential for energy saving and proposed 85 actions and measures to be taken at EU, national and local level. EU Heads of States and of Governments endorsed, at the Spring 2007 Council, the EEAP and the 20% EU objective¹⁶.

After years of growth, the EU primary energy consumption has stabilized in 2005 and 2006 around 1 825 Mtoe and slightly decreased in 2007 and 2008¹⁷ to reach around 1 800 Mtoe. Although the economic crisis contributed to this decrease in energy consumption in the EU, the recorded stabilisation provides a certain confirmation of the decoupling of energy consumption and economic growth¹⁸. In addition, EU-27 energy intensity, measured as the ratio of gross inland energy consumption and the gross domestic product, has kept improving, decreasing from 187.3 in 2003 to 167.4 in 2008 kgoe / EUR 1000 (see Annex I: EU-27 energy intensity in kgoe/EUR 1000, 2000 – 2008).

The latest business-as-usual scenario projections (PRIMES 2009) for the first time show a break in the trend of ever increasing energy demand¹⁹.

However, EU is far from reaching its 20% objective. The projections indicate that with the rates of implementation of the current energy efficiency policies in Member States (until December 2009), a bit more than 8.9% primary energy consumption reduction will be achieved in 2020.

¹⁴ For example SEC(2006) 1174 and Fraunhofer *et al.* 2009. Study for the ESD.

¹⁵ COM(2006) 545.

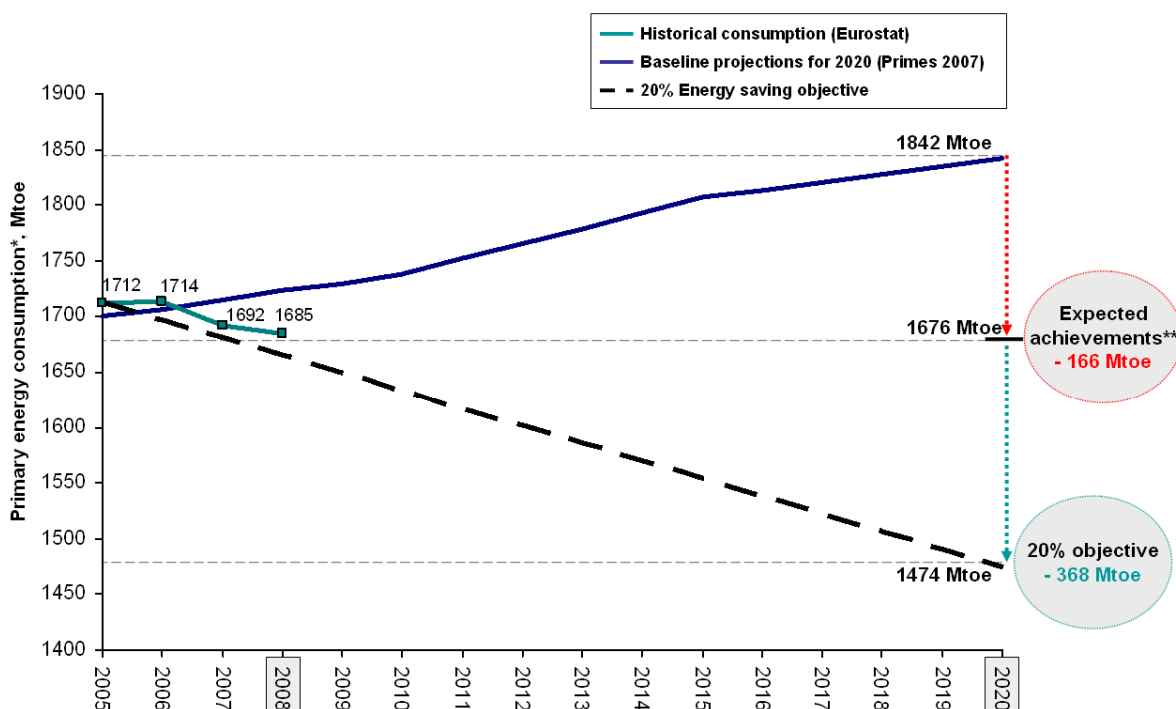
¹⁶ 7224/1/07 REV 1.

¹⁷ 2008 Eurostat data are the latest official data.

¹⁸ See SEC(2008) 2871 and SEC(2009) 1734, Annual reports of the Market Observatory of the European Commission.

¹⁹ The scenarios of the "Energy trends 2030" (update 2009) are accessible at the following address: http://ec.europa.eu/energy/observatory/trends_2030/doc/trends_to_2030_update_2009.pdf

**20% energy saving objective
vs. expected achievements of some major EEAP energy efficiency policies
adopted until 2009 as projected by the energy model PRIMES**



* Gross inland consumption minus non-energy uses

** Reflecting the impact of some major EEAP energy efficiency policies implemented until December 2009 as projected by the Energy Model PRIMES

The above projections do not take fully into account policies in the pipeline, especially the forthcoming Eco-design implementing measures and the recast Energy Performance of Buildings Directive, which could provide further decrease in the consumption. Nevertheless, these projections give a good indication of the probable gap in reaching the EU's energy saving objective. Furthermore, while the economic crisis contributed to this decrease in energy consumption, it has also negatively impacted energy efficiency investment decisions at all levels - public, commercial and private.

The European EEAP has given a considerable impetus to the adoption of a number of legislative and soft-law tools to capture energy savings potential. To date, progress has been achieved on most measures, with only a very limited number seeing little progress or facing delays (see Annex II: Main achievements for the six EEAP key areas). Due to the overlapping effects and the early stages of the EEAP's implementation it is not possible to make concrete quantitative evaluation of its' overall impact. However, individual ex-ante quantitative impact assessments of some already adopted measures are available²⁰ and Commission is currently preparing a progress report on the current implementation status of the EEAP. Considering the insufficient uptake of the energy savings potential, it is clear that more actions in this area are needed. In fact, EEAP was conceived as a first step towards reaching the 20% objective and its revision was foreseen for 2009.

Despite the measures taken at EU and national levels, the existing cost-effective opportunities for energy savings and the related social, geopolitical and environmental benefits are yet not fully used in all economic sectors. This can be explained by the prevailing market failures, such as asymmetric

²⁰ Impact assessment reports: http://ec.europa.eu/governance/impact/ia_carried_out/cia_2010_en.htm

information, split incentives, missing or incomplete markets, as well as regulatory failures, including missing norms or poor implementation of the existing ones that in many cases do not allow for the legislation to have the expected impact. Therefore, in addition to full implementation of the current policy framework as set out in the EEAP of 2006, further concerted action is needed to eliminate the barriers in each sector. New action should take into account what has been achieved so far and the needs of particular sectors in order to establish a coherent policy mix, keeping in mind that many studies indicate that best results in energy savings are reached only via a set of parallel policy measures. Priorities should focus on energy performance requirements for products, buildings and services, on strengthening energy efficiency in the utility and transport sectors, on reviewing financing mechanisms and addressing pricing aspects, as well as on changing energy use behaviour.

II – Deepening the internal energy market integration, strengthening consumers' rights and developing infrastructures

• Integrating the EU internal energy market

The competitive, integrated and fluid internal energy market is a strategic instrument in order to secure energy supply, give EU consumers a choice between different companies supplying gas and electricity at reasonable prices, and to make the market accessible for all suppliers, especially the smallest and those investing in renewable forms of energy. The integrated internal market is also crucial for the proper functioning of CO₂ emission trading mechanism. Over the coming two decades, the EU - like other parts of the world - has to address the need for major investments in all types of energy infrastructure which will be crucial to overcome the longstanding fragmentation of EU energy markets²¹. However, only a properly functioning internal electricity and gas market can send the right price signals to encourage investments. The integration of the EU energy market is set to continue but it may take some time because the planning and building of relevant infrastructure requires long time-horizons.

The process of opening the EU energy markets to competition started ten years ago. It has allowed EU citizens and industries to gain many benefits, such as more choice, more competition for better service and improved security of supply. Since July 2004, small-business customers in all EU countries have been free to switch their supplier for gas and electricity. In July 2007 all remaining consumers gained the same freedom (see Annex III on market opening for gas and electricity).

Independent national regulatory authorities have been established in each EU country to ensure that suppliers and network companies operate correctly and actually provide the services promised to their customers. Since 2003, heads of the national energy regulatory authorities meet in the European Regulators Group for electricity and gas (EREG) set up by the Commission. EREG acts as an advisory group, assisting the Commission in consolidating the internal market for electricity and gas. Based on yearly reports by the national regulators, the European Commission is monitoring the market closely, identifying obstacles and shortcomings. In 2008, the Market Observatory for Energy of the European Commission started its activities aimed at better monitoring developments on energy markets, in particular gas and electricity markets, and further increasing transparency.

A comprehensive inquiry into the electricity and gas sectors published in January 2007²² revealed that too many barriers to competition and too many differences across the Member States remain. The Commission subsequently came forward with the third internal energy market liberalisation package, which foresees, among others, the effective separation of supply and production activities to make the market accessible for all suppliers, harmonization of the powers of national regulators, better cross-border regulation to promote new investments and cross-border trade, effective transparency, as well as assuring that EU and third country companies compete in the EU on an equal footing. These proposals were agreed by the Council and the Parliament in July 2009 and should be implemented by 2011²³.

²¹ As for electricity for e.g., according to ENTSO for Electricity, investment costs of transmission projects of European significance to be completed (in order to reach the objectives of the further integration of the internal market, RES integration and Security of supply) within the period 2010-2014 range between EUR 23 to 28 billion. See ENTSO-E's pilot Ten-Year Network Development Plan.

²² COM(2006) 851.

²³ Some provisions will have to be implemented by 2012 and 2013.

In parallel, the Commission adopted in March 2009 the Benchmarking Report²⁴ assessing the implementation of the then existing internal energy market legislation. It revealed a mixed picture of the accomplishment of the internal market. Besides the incomplete implementation of the legislation by the Member States that the Commission will continue addressing through infringement procedures, the Benchmarking Report highlighted the impact of the financial and economic crisis on the internal energy market²⁵. Reduced economic activity resulted in a significant fall in the consumption of gas and electricity²⁶. This lower consumption has had an important impact on the international oil prices, which in turn influenced gas and electricity prices²⁷. However, the fall witnessed in international oil prices has not been entirely reflected in end user gas and electricity prices. The Report also indicated that there are still high levels of concentration on the retail and wholesale market (see Annex IV on Electricity and Gas market indicators).

The current work of national regulatory authorities is shifting the focus towards the consumer, including the roll-out of smart meters as the key component to introduction of smart grids in the internal energy market. This is a welcome trend that can lead to a more active participation by customers in the internal energy market, increased energy efficiency and large-scale integration of renewables, as well as additional energy services, increased market transparency and easier supplier switching. Additionally, cooperation between European power exchanges and the increasing levels of trade are a promising sign of functioning markets. This has resulted in spreading the efficient methods for cross-border trade, namely implicit auctions, in particular in the Northern and Western parts of Europe. A further challenge is to spread this method to areas, which are not yet applying it.

In 2007 and 2008 a great deal of effort was put into enhancing competition on the wholesale market; significant progress was made through the regional initiatives such as Baltic, Central-East, Central-South, Central-West, North, South-West and the France-UK-Ireland regions for electricity and North-West, South and South-South East regions for gas. With respect to market concentration, progress has generally been slow. A number of wholesale markets, in particular, still suffer from limited competition and the lack of liquidity. There are signs that the situation on the retail market is about to improve. Member States should put even more effort into providing comprehensive data for supplier switching.

While short-term solutions, such as regulated prices, might appear to be advantageous in the light of rapidly increasing energy prices, the likely consequences of such measures are that investor confidence is undermined, market entry is deterred and the full benefits of the internal energy market are placed at risk.

- **Actions to strengthen consumers' rights in a liberalised energy market**

Since the 1990's, opening up retail markets to competition has aimed to improve the services available to consumers and to allow free choice of supplier for consumers. Under EU legislation,

²⁴ COM(2010) 84.

²⁵ For detailed analyses, see the Quarterly reports on electricity and gas markets of the Market Observatory for Energy of the European Commission, accessible at the following address:
http://ec.europa.eu/energy/observatory/index_en.htm

²⁶ The consumption of electricity was down by more than 5 % in the first semester of 2009 compared to the same period in 2008. In this period of time, the consumption of natural gas declined by 10%. Gross inland consumption for oil fell by 1.5% in 2008 compared to 2007 and by almost 6% in the first semester of 2009 compared to the same period in 2008.

²⁷ The crude oil price (Dated Brent) fell from approximately US\$ 140 per barrel in mid July 2008 to around \$70 per barrel by the end of June 2009. Between January 2008 and June 2009, the gas price decreased by 57% on the NBP spot market and by 25% on the year-ahead NBP forward market while the electricity price decreased by 45% on the spot market (Platts PEP) and by 6% on the forward market (DE Y+2).

customers have clear rights to choose their supplier, receive clear, detailed contracts and energy bills.

In 2003, the Electricity and Gas Directives for an internal energy market recognised electricity provision as a universal public service, thus establishing the right to be supplied with electricity and gas (subject to network provision) at reasonable, easily and clearly comparable and transparent prices. This legislation introduced the concept of protection of customers in general, and of vulnerable customers in particular, by Member States.

The 2003 internal market legislation placed obligations on energy suppliers requiring them to achieve levels of supply quality and network security performance. In 2008, the European regulators carried out a benchmarking exercise on the quality of electricity supply²⁸. The survey noted that overall the continuity of electricity supply in Europe is improving with customer minutes lost per year decreasing almost continually since 2002.

In order to effectively benefit from offers available on the market, the limit on switching supplier has been reduced to six weeks. Switching levels vary considerably across Member States, with some mature markets experiencing relatively high rates and a number of others showing little or no activity²⁹.

The third package on the internal market³⁰ of 2009 increases the levels of protection for consumers and improves the operation of the retail energy market. The legislation provides additional protection for vulnerable groups which have to be defined as well as redress mechanisms. It also places new duties on energy companies, for example, to inform consumers about such issues as the provenance of their electricity, or ways of saving energy. Member States are required to ensure that there are adequate safeguards to protect vulnerable customers, including the non-disconnection of electricity in "critical times". It is important to note that any mechanism adopted to protect vulnerable consumers must not interfere with the operation of the market and must take into account other social policy measures in the Member State. It is in the interest of governments to help vulnerable consumers by improving their energy efficiency, and not only subsidizing their energy bills.

National energy regulators have the task of ensuring that consumers get the best prices, the widest choice of supplier and the best quality of service possible. The creation of a European Agency for the Cooperation of Energy Regulators will help strengthen regulators.

To inform consumers about their rights and how to use them, the 2009 legislation introduces a European Energy Consumer Checklist³¹. The EU has also brought together national consumers groups, European umbrella groups, such as BEUC (the European Consumers' organisation), and representatives of the energy industry to help raise awareness of consumers' rights within the energy industry and vice-versa.

Issues of concern to consumers, such as transparency, clear billing, fair contracts and a fair dispute settlements procedure, are discussed and monitored at the Citizens' Energy Forum (London Forum), launched in 2008. The Forum brings together the national and European consumer associations,

²⁸ 4th Benchmarking Report on Electricity Quality of Supply Ref. C08-EQS-24-04, 10 December 2008.

²⁹ Report on retail electricity markets being prepared by Commission (SANCO) in 2010.

³⁰ Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity.

Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas.

³¹ This Checklist is established to have practical answers to questions such as: who are the active suppliers in my area?, or where should I go if I have a complaint about my supplier?, etc.

representatives of the Member States, national energy regulators and representatives of the electricity and gas industry to discuss ways of improving consumer service.

One of the main complaints from consumers is inaccurate or incomplete billing; the introduction of communication technology will significantly remove this as an issue for consumers. The introduction of bi-directional communication will allow the consumer to get a fair value for electricity that they generate as well, thus facilitating the use of micro and renewable generation. Member States are to have an active role in any rollout by ensuring that the systems that are implemented are interoperable and adhere to the relevant international standards and best practice.

In addition, new provisions on the introduction of Smart Metering is a key advance in the operation of retail markets that will result in improved retail market competition. The new devices have the potential to improve information for consumers and therefore provide for tariff innovation. Consumers will be able to respond to the price signals that are provided to them, which may be to decrease consumption, but it may also be to increase consumption (for example by electric vehicles) depending on network conditions. Consumers can therefore become a more active player in the market with the use of smart meters featuring the right functionalities to provide them with the services they need, want and understand, for their own benefit.

Nevertheless, there are still gaps between the intention of the EU legislation, to improve services to energy consumers, and its delivery. Poor implementation or ineffective regulation reduces the benefits to consumers. The Commission is pursuing a number of Member States for not fully implementing EU rules for consumers. It will also produce its first Benchmarking report on energy consumers in November 2010.

- **Developing infrastructures**

In the EU internal energy market, a key tool to promote interconnections is the trans-European energy networks (TEN-E) programme. Following a review in 2006, the current objectives of the TEN-E policy³² are to: (1) support the completion of the EU internal energy market, (2) reduce the isolation of less-favoured and island regions, (3) secure and diversify the EU's energy supplies also through co-operation with third countries, (4) contribute to sustainable development and protection of the environment.

Over the past years, the TEN-E programme has positively contributed to the development and operation of the internal energy market³³. In particular, the eleven completed cross-border electricity projects³⁴ accelerated by the TEN-E policy framework have permitted increased energy trade and more competition, contributing to the convergence of average energy prices and stimulating market integration and thus the development of a true internal energy market.

Security of supply has also been reinforced through increased transmission capacity between as well as within Member States, both for electricity and gas, as well as the three LNG terminal and gas storage projects. In this respect, TEN-E has contributed to greater diversity in gas supplies.

Progress has been more mitigated as regards the objectives to reduce the isolation of peripheral regions and islands. Four out of nine projects are under construction. The uncertainty over the future electricity generation mix (imported gas versus renewables) is a brake on infrastructure developments in isolated markets.

³² Decision No 1364/2006/EC.

³³ SEC(2010) 505.

³⁴ Identified as being of common interest in the TEN-E framework.

TEN-E contribution on sustainable development and the protection of the environment, a relatively new addition to TEN-E, has thus far been limited. There are a number of projects adapting the networks to increased availability of renewable energy, in the electricity as well as in the gas sector.

In terms of political impact, TEN-E has been most effective in those projects that were selected for first priority funding, namely projects of European interests, and that had considerable political support as well as commercial potential. It has made a positive contribution to selected projects by giving them political visibility and helping leverage funds from the financial market. The "TEN-E label" given to projects with the highest European interest and the creation of European Coordinators in 2006 have been conducive in delivering results. In view of these objectives some progress has been achieved in the implementation of the TEN-E during the past years (see Annex V presenting a statistical overview of the TEN-E implementation programme).

The Second Strategic Energy Review in 2008 already streamlined several infrastructure initiatives as energy security priorities for the EU: the Baltic Interconnections Plan, a Southern Gas corridor for gas supply from Caspian and the Middle – Eastern sources, LNG capacity expansion, a Mediterranean energy ring, North – South gas and electricity interconnections within Central and South-East Europe, a North Sea offshore grid. In relation to the first, in June 2009, the Baltic Sea Region States reached an agreement on the Baltic Energy Market Interconnections Plan identifying a number of steps to improve energy security in the region.

Despite the progress achieved, the dramatic changes the EU energy policy framework has undergone in the recent years call for a thorough review of both the concept and rationale of the TEN-E framework. The programme has responded too slowly to the major energy and climate goals of today, and is poorly equipped to deal with the growing challenges that will arise from the 2020 and 2050 ambitions. As examined in the November 2008 reflection exercise about a possible new EU Energy Security and Infrastructure Instrument (EESII)³⁵ and identified in the TEN-E Implementation report³⁶, the major shortcomings of the current TEN-E framework include the lack of focus and definition of European priorities, lack of coordination between TEN-E and other energy infrastructure activities and instruments (such as structural funds, EIB interventions, as well as IPA and ENPI/NIF instruments for third countries), the challenge of lengthy authorisation procedures, lack of coordination and cooperation on trans-border projects, as well as limited TEN-E budget (i.e., EUR 155 million for the period 2007-2013, mainly awarding grants for studies and only to a minor extent for works).

Some of the shortcomings have already been tackled, paving the way for the forthcoming EESII. In 2009, as the financial and economic crisis unfolded, public expenditure interventions to facilitate investments in energy networks became necessary. EU institutions agreed on the creation of the European Energy Programme for Recovery (EEPR)³⁷. The EEPR is a financial instrument whose overall objective is to stimulate recovery from the downturn affecting the EU economy while enhancing the achievement of the EU's energy and climate policy objectives.

The EEPR was endowed with a €3,980 million financial envelope in support of three sub-programmes. For gas and electricity interconnection projects, the Regulation allocated respectively €2,365 million; and additional €65 million to offshore wind electricity projects; as well as €1,050 million to carbon capture and storage projects (CCS).

³⁵ COM(2008) 782.

³⁶ COM(2010) 203.

³⁷ Regulation (EC) No 663/2009 of the European Parliament and of the Council of 13 July 2009 establishing a programme to aid economic recovery by granting Community financial assistance to projects in the field of energy.

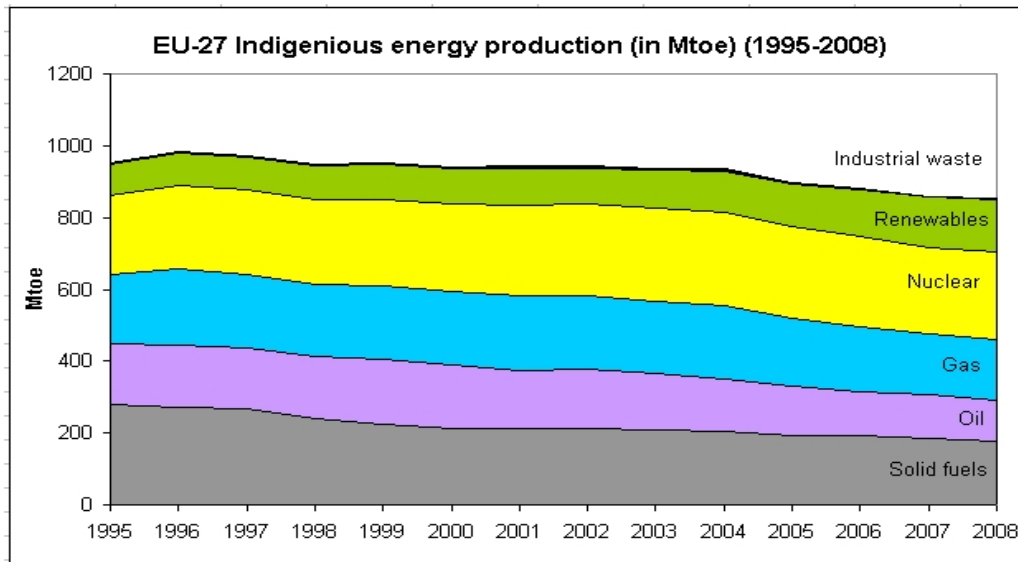
In order to maximise the impact in terms of both energy policy and economic recovery objectives, the EEPR focuses on a relatively small number of highly strategic projects³⁸. The identification of the projects was driven by the EU energy policy orientations set out in the Second Strategic Energy Review, taking into account progress made in the implementation of the TEN-E programme and an adequate geographical balance, and consultations with stakeholders in the areas covered by the programme. Other key award criteria were the extent to which lack of access to finance was delaying the implementation of the action; the extent to which the Community grant would stimulate public and private investments; and the social, economic and environmental impact.

The EEPR has been from the beginning an accelerator of infrastructure investments. Indeed, the selected projects although they were technically mature, however, the perspective of the Community financial support for capital expenditure has proven to be decisive in enhancing the actual realisation of the projects. In particular, EEPR funding has proven to have a catalytic effect in attracting co-financers and encouraging them to make investment commitments. This has made possible the setting in motion of projects that otherwise could be delayed or abandoned due to funding constraints, particularly severe under the current economic circumstances. The EU contribution will have an important leverage effect. The expectation is that the €2.3 billion EEPR grants will help to lever up to €22 billion of private sector investment over the next 3 to 5 years.

³⁸ COM(2010)191, Annex to the Report from the Commission to the Council and the European Parliament on the implementation of the European Energy Programme for Recovery.

III – Acting for a sustainable, secure and competitive energy supply within the EU

The EU primary energy consumption represents 1800 Mtoe (2008 data). EU indigenous energy production covered 850 Mtoe.



Source: Eurostat

Therefore, energy imports, representing 1015 Mtoe, made the EU dependent on external energy supplies to the level of 54.8% all fuels taken together (see Annex VI on EU-27 energy demand developments and total final energy consumption by sectors; Annex VII on EU-27 energy imports dependency).

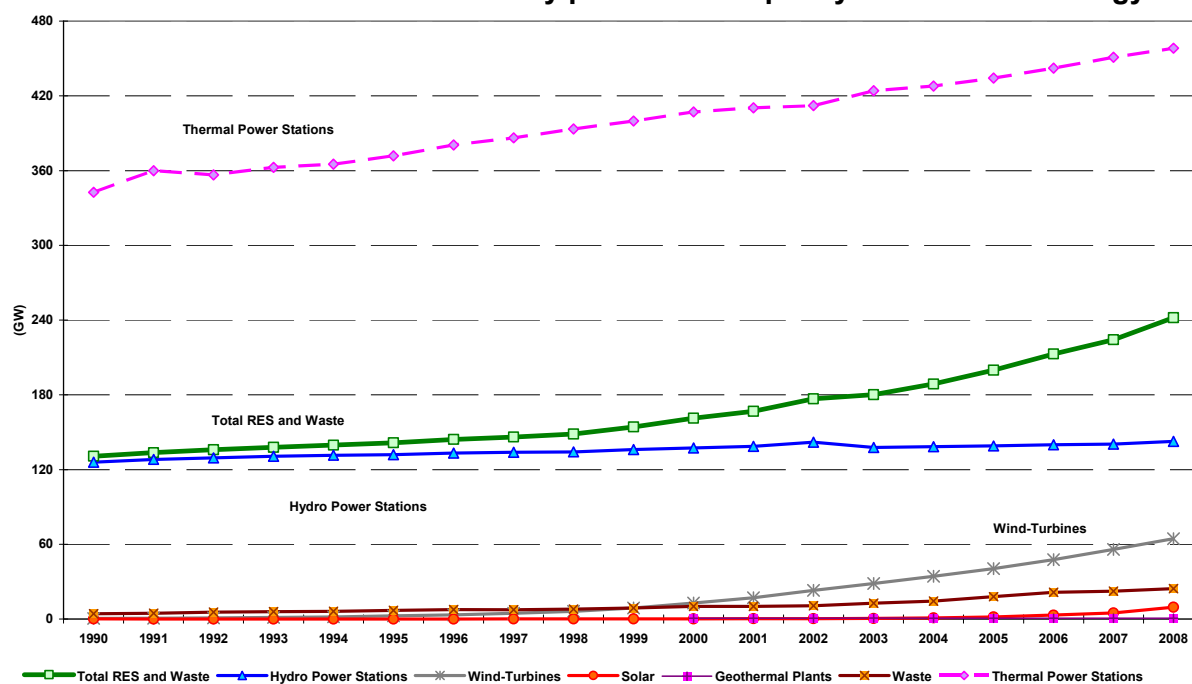
- **Promoting renewable energy**

Renewable energy sources (RES) have an important role to play in securing diversified, mainly indigenous, energy supplies and in combating climate change. Moreover, further deployment of renewable energy technologies has a potential to create hundreds of thousands of jobs in the EU.

Renewable energy production has grown rapidly in the last ten years, especially in a few key Member States with stable supportive policies. Over 1997 - 2007 the RES and waste generation park³⁹ grew by around 80 GW whereas over 1990 – 1997 developments in this area represented just 15 GW. The RES and waste additionally installed capacity amounted to 64.4 GW over 2000-2007 while it was only 41.9 GW for thermal power plants. Wind power now forms the highest share of new production capacity and in 2007, it accounted for 25% of the net RES installed capacities.

³⁹ Classification category used by ESTAT.

EU-27 - Net installed electricity production capacity of renewable energy



Source: Eurostat

(See Annex VIII for further details on renewable energy sources developments.)

EU level initiatives such as the so called "Green electricity Directive" (2001/77) and the "Biofuels Directive" (2003/30) have tried to stimulate an increase in the consumption of renewable energy. The first one established an overall EU target of 21% and individual national indicative targets for the RES shares in the final electricity consumption to be realised by 2010. The second required that all Member States ensure at least 5.75% of their total transport fuel consumption comes from biofuels and other renewable fuels. Despite the significant growth achieved in the use of renewable energy over the last couple of years, the latest EUROSTAT data on RES shares available for 2008 (16,6% for green electricity and 3,5% for renewable fuels) indicate that 2010 targets will not be met. A few Member States were close to reaching their renewable electricity targets and a handful of them had already met their biofuels targets ahead of 2010 reference date. Most EU countries however were lagging behind in their efforts to increase the share of renewables⁴⁰. Next assessment of the Member States' progress will be issued before the end of 2010.

The new legal framework established by the Renewable Energy Directive⁴¹ agreed in December 2008 for the first time sets out binding targets for all Member State in order to achieve the overall 20% renewable energy target for the EU by 2020. In addition, the directive also includes a mandatory 10% target for the share of renewable energy in transport for all Member States and requires establishment of National Renewable Energy Action Plans for the fulfilment of these targets. The new EU framework legislation for renewable energy also addresses the problems of administrative hindrances to the development of renewables and their integration in the grids, as well as sustainability requirements for biofuels. By setting a longer term regulatory framework, it can be expected to deliver a significantly higher rate of increase in the consumption of renewable energy and create investor confidence over the period of the Energy Action Plan 2011-2020.

The table below gives an insight in renewable energy developments and defined targets.

⁴⁰ COM(2009) 192, The renewable energy progress report.
⁴¹ 2009/28.

<i>share of renewable energy in...</i>	2001	most recent data	target 2010 (indicative)	target 2020 (binding)
<i>electricity generation</i>	13.4% (36 Mtoe)	16.1% (47 Mtoe - 2007)	21%	no sectoral target
<i>road transport</i>	0.3% (1 Mtoe)	3.4% (10 Mtoe - 2008)	5.75%	10% ⁴²
<i>heating</i> ⁴³	9.1% (52 Mtoe)	11.5% (63 Mtoe - 2007)	no target	no sectoral target
<i>final energy consumption</i>	7.6% (89 Mtoe)	9.8% (118 Mtoe - 2007)	no target ⁴⁴	20%

Key issues for a further successful progress with renewable energy are related to cost-effectiveness, technological development and sustainability.

The use of renewable energy still generally costs more than conventional energy, although cost differences are falling⁴⁵. To achieve the targets, support systems are therefore needed. Responsibility for support falls mainly on Member States.

The so called "cooperation mechanisms", set up by the Directive, will contribute to cost-effectiveness by allowing cheaper renewable energy that is produced and consumed in one Member State, perhaps with high potential, to contribute to the target of another – perhaps with less potential, more expensive resources but a higher target⁴⁶. The functioning of the cooperation mechanisms will have to be evaluated by 2014.

National support schemes for the renewable energy currently do not cover projects with a strong cross-border component, such as electricity grid development and offshore wind. Even at national level, more work is needed to improve the integration of renewable energy (electricity, biogas and biofuels) in energy distribution networks. Such integration and the increase in the number of market players will increase competition in all three energy sectors. In the electricity sector it should also reduce balancing costs. Overall, it should result in cost savings from increased trade in energy.

The EU framework also includes guarantees of origin as a tool to help stimulate the retail market for renewable energy products. As the Commission turns to improving the cost effectiveness and efficiency of the retail market for all elements of the energy sector, this framework will also need attention.

Most of today's renewable energy is supplied by a few technologies: large hydropower, onshore wind, biomass and first-generation biofuels. Progress towards energy decarbonisation after 2020 will be easier and cheaper if more advanced technologies, such as offshore wind, solar power, renewable electricity use in transport, second-generation biofuels and biomass can also make a significant contribution. These promising technologies have been known for some time. Some, such as offshore wind and second-generation biofuels, are beginning to show signs of good progress. Others, such as electric cars, are developing more slowly.

⁴² The 2020 target can be fulfilled through the use of renewable energy in all types of transport. Energy use in maritime and air transport counts only for the numerator, not the denominator.

⁴³ "Heating" is a catch-all term for energy consumption that is neither for transport nor in the form of electricity.

⁴⁴ A 1997 White Paper established an indicative target of 12% of primary energy consumption in 2020, but this was not translated into legislation.

⁴⁵ JRC analysis and IEA analysis "Projected costs of generating electricity: 2010 edition".

⁴⁶ The Directive's targets are based on a flat-rate element and an element related to GDP per capita. They do not take into account potential.

The Commission's renewable energy policy during 2011-2020 needs to lay the foundation for new technologies to make a major contribution in the decades that follow. On the research and development side, arrangements are being put in place in the framework of the SET Plan. On the implementation side, technological development is encouraged by a possibility to differentiate the support systems in favour of more promising technologies. The use of advanced technologies such as renewable electricity in transport and second generation biofuels also broadens the diversity of our energy supply and helps prepare our energy sector for evolving into a low carbon sector. It remains to be seen whether more will need to be done to increase the pace of development of new technologies.

Sustainability scheme for biofuels and bioliquids set up by Renewable Energy Directive was the first of its type in the world and is still the most stringent. The criteria it lays down apply to all biofuels whether domestically produced or imported. Voluntary certification schemes, recognised by the Commission and subject to independent auditing, will play an important role.

For other types of biomass (solid and gaseous biomass in heating and electricity), a review in early 2010⁴⁷ concluded that sustainability performance is presently sufficient to avoid the need for the introduction of a binding European sustainability scheme. The Commission recommended that Member States choosing to introduce such a scheme at national level should use an approach that is consistent with each other and with the approach for biofuels. This issue will be further examined at the end of 2011.

- **Demonstrating CO₂ capture and storage on an industrial scale**

CO₂ capture and storage (CCS) has become an integral part of European Union (EU) energy policy in recent years. In most future scenarios the deployment of CCS is deemed to be a necessity for achieving GHG reduction targets. Analysis by the International Energy Agency suggests that without CCS, overall costs to reduce emissions to 2005 levels by 2050 increase globally by 70%. However, CCS is not currently an economically viable climate change mitigation option and some de-risking of the technology is required to enable commercial deployment before CCS can contribute to these climate goals. Consequently, the European Commission has identified the need for a Europe-wide programme of CCS demonstration projects.

The first Communication from the Commission regarding CCS, entitled "Sustainable power generation from fossil fuels: aiming for near-zero emissions from coal after 2020", was published in January 2007. The Commission undertook to determine the most suitable way to support the design, construction and operation by 2015 of up to 12 large-scale demonstrations of sustainable fossil fuel technologies in commercial power generation. Since then, all actions related to CCS and designed by the Commission take this objective into account. The second CCS communication entitled "Supporting early demonstration of sustainable power generation from fossil fuels" confirmed the Commission's commitment to make the technology commercially viable by 2020.

A CCS Directive was adopted in April 2009 as part of the Energy and Climate Package and entered into force in June 2009. It establishes a comprehensive legal framework to manage the environmental risks of capture, transport and the geological storage of CO₂ and at the same time removes existing legal barriers in EU legislation. Whilst the Directive itself focuses on the regulation of storage, risks related to capture and transport of CO₂ are dealt with through amendments of related EU legislation.

⁴⁷ COM(2010) 11, Report from the Commission on sustainability requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling.

A CCS Project Network was established in 2010 to facilitate knowledge sharing, assist with public engagement to raise awareness of the potential of CCS and international co-operation in knowledge sharing. It additionally provides participating members - large-scale demonstration projects - with a common European identity.

CCS was also included in the scope of the revised ETS Directive. It ensures that stored CO₂ is not regarded as emitted and provides therefore a financial incentive for CCS. In addition 300 m allowances from the New Entrants Reserve (NER) shall be available to support commercial-scale CCS and innovative RES demonstration projects in the territory of the Union. The projects to be supported under the NER300 programme will be selected in a competitive procedure to be launched in 2010.

Six large-scale CCS demonstration projects have already secured some funding from the European Energy Programme for Recovery (EEPR). A total of €1 billion has been allocated to projects in the UK, Germany, the Netherlands, Poland, Spain and Italy. The NER300 funding mechanism will provide complementary financing for CCS demonstration project. The opening of a call for proposals is expected in autumn 2010.

Key issues for successful CCS progress are related to timely deployment of the demonstration plants, implementation of the legal framework by Member States, and addressing the issues of optimal infrastructure deployment and the current low levels of public awareness. The European Infrastructure Package, scheduled for the end of 2010, will consider future needs of CO₂ infrastructure.

The most urgent priority remains the deployment of large-scale CCS demonstration projects by 2015 to prove the technology can be economically and environmentally viable around 2020. Both EEPR and NER 300 support schemes constitute a solid base but in order to deploy a successful demonstration exercise in Europe more is needed. The CCS Industrial Initiative under the SET Plan referred to below shall be a driver for addressing the outstanding needs of industry and governments with respect to refinement of the technologies.

- **Completing the Community safety, security and non-proliferation framework for nuclear energy**

Alongside renewable energy sources, nuclear energy contributes to combating climate change and strengthening security of supply, by reducing EU's external dependence on oil and gas. As one of the cheapest low carbon energy sources, nuclear energy also contributes to the EU competitiveness. Over the last years, there has been a renewed and growing interest in nuclear energy which is not only visible at global level, but also in EU Member States. A majority of Member States have chosen to use nuclear energy for power generation. The EU-27 has the largest number of commercial nuclear power stations in the world: some 150 nuclear reactors are in operation, providing around one third of EU's electricity and two thirds of low carbon electricity.

Based on the broad set of competences entrusted to the Community by the Euratom treaty, a wide range of initiatives have been launched over the last years with the objective to develop the most advanced framework for nuclear safety, security and non-proliferation.

Nuclear safety is and will remain one of the absolute priorities of the EU. In this field, the Commission – with the support of the European Council – brought together all national nuclear regulators in a European High Level Group on nuclear safety and waste management. A fundamental step was the adoption in June 2009 of a Directive establishing the basic framework for

nuclear safety⁴⁸. This new common EU framework provides binding legal force to the main international nuclear safety standards (IAEA fundamental safety principles and Nuclear Safety Convention - CNS - obligations) and reinforces the independence and resources of the nuclear energy regulatory bodies in all EU Member States. When this Directive will be implemented the EU will be the first major nuclear player having common binding nuclear safety rules. Since the Euratom Community is a Contracting Party to the CNS, the Commission presents the Euratom Report on behalf of Euratom and takes part in the CNS Review Meetings, alongside the EU Member States.

In the context of enlargement of the EU, the Commission monitored and helped with the safe decommissioning of nuclear power plants in Bulgaria, Lithuania and Slovakia, with substantial financing being provided, in cooperation with the EBRD. In 2006, the Commission published recommendation on the management of financial resources for the decommissioning of nuclear installations, spent fuel and radioactive waste⁴⁹.

The Commission also made full use of all key Community instruments under the Euratom Treaty, in particular in the field of nuclear investments by providing Commission opinions on new build, radiation protection, research and technology, nuclear safeguards and international relations. The framework for nuclear safeguards has also been strengthened through the introduction of integrated safeguards in all EU non-nuclear weapons states with significant nuclear installations.

Taking into account the importance that public acceptance and transparency play in relation to nuclear energy, the Commission launched in 2007 the European Nuclear Energy Forum (ENEF) to debate risks, opportunities and transparency of nuclear energy.

In parallel, Commission's activities were focusing on investment aspects and technological developments. Nuclear Illustrative Programme, the so called 'PINC report', giving a factual overview of investment projects was adopted and revised respectively in 2007⁵⁰ and 2008⁵¹.

In relation to technologies, in 2007, the Sustainable Nuclear Energy Technology Platform (SNETP; www.snetp.eu) was launched with the endorsement of the EC. Its objective is to develop and implement a Strategic Research Agenda covering continued safe operation of current and new-build light water reactors (Generation II & III), the cogeneration of electricity and heat for industrial processes using High / Very High Temperature Reactors, and the development of Generation IV Fast Neutron Reactors (FNR) and closed fuel cycles for greatly increased sustainability. In particular, SNETP has established a Task Force of key industrial and research players to implement the European Sustainable Nuclear Industrial Initiative (ESNII) under the SET Plan. ESNII will design and construct Gen-IV FNR prototypes and demonstrators in order to demonstrate the technical, industrial and economic feasibility, increased sustainability through more efficient use of uranium resources⁵², and reduction of waste volumes and lifetimes. Then, in November 2009, the Technology Platform for Implementing Geological Disposal of nuclear waste (IGDTP; www.igdtp.eu) was launched with the objective of coordinating the remaining R&D in the lead up to the construction and operation by 2025 of Europe's (and the world's) first deep geological repositories for high-level and long-lived radioactive waste.

48 Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations.

49 2006/851/Euratom.

50 COM(2007) 565.

51 COM(2008) 776.

52 FNRs can produce 50-100 more energy than current nuclear reactors from a given quantity of uranium.

Furthermore, Statutes of the Euratom Supply Agency (ESA)⁵³ were reviewed in 2008⁵⁴. In addition to its traditional role of ensuring supply security of nuclear materials to users in the Community by diversifying supply sources, the Agency has now been required to monitor nuclear market developments and issues regular publications.

In the current context of renewed development of nuclear energy in the EU, the need for stronger EU nuclear policy actions is becoming even more evident. The EU should – in the interest of all Member States – complete the legal framework for nuclear energy. This should cover in particular the area of nuclear waste management: a proposal for a directive has been adopted on 3 November 2010. A more harmonized approach could be introduced towards design certification and licensing, as well as in relation to civil liability and education and training aspects. Moving towards harmonization in pre-licensing of nuclear power plants and nuclear liability regimes would bring benefits in terms of increased nuclear safety, better protection and equal treatment of EU citizens, and a level playing field for the industry with more legal and regulatory certainty.

- **Guiding investments into smart and low carbon energy technologies**

To accelerate the development of low carbon technologies, in November 2007 the Commission presented the Strategic Energy Technology Plan (SET Plan). Endorsed by the Council in March 2008, the SET Plan proposes to launch six European Industrial Initiatives (EIIs) in the areas of wind energy, solar energy, CO₂ capture and storage, advanced nuclear fission, electricity grid as well as bio-energy. More Industrial Initiatives are actually in the development phase. The objective of the Industrial Initiatives is to pool together all stakeholders to define and implement ambitious technology programmes with the aim to support the reaching of the 20-20-20 targets. In addition, the SET Plan also proposed the setting up of the European Energy Research Alliance (EERA), pooling together major European research organisations and asking them to perform Joint Programming in areas related to energy technologies.

During 2008-2009, extensive work has been undertaken by stakeholders, in particular the European Technology Platforms (ETPs), to draft technology roadmaps for the European Industrial Initiatives, describing the scope of actions and defining an overall budget. This work has served as the basis for the Communication on Investing in Low Carbon Technology issued by the Commission in October 2009, with EP Resolution and Council Conclusions in March 2010. The overall required budget for the six initial Industrial Initiatives, now complemented by a few others (i.e., Smart cities) has been evaluated at €80 billion over ten years which roughly means a three fold increase from the current level of investment (see Annex IX for Estimation of the financing needs for key technology and actions proposed in the SET-Plan, 2010 – 2020). The financing will have to come from different coordinated sources and combining diverse funding mechanisms: national/EU/corporate sources, public/private, and grants/loans/other financing engineering tools. The EIB will certainly be a major player to ensure the success of this endeavour and specific dedicated tools might have to be designed. In June 2010, four European Industrial Initiatives on Wind, Solar, CCS and Grid have been officially launched in Madrid. At the same time as the launch of the four first Industrial Initiatives, four Joint Programmes under EERA have also been launched on Wind, Solar, Grid and Geothermal energy. Two other Industrial Initiatives on Advanced Nuclear Fission and Bioenergy are expected to be launched in November 2010 in Brussels. The preparation of the Initiative on Smart Cities has also started.

⁵³ Established by the Euratom Treaty, Art. 52.

⁵⁴ 2008/114/EC, Euratom, Council decision of 12 February 2008, establishing Statutes for the Euratom Supply Agency.

Moreover, the energy demonstration part of the 7th research Framework Programme was radically changed. All new demonstration projects have to fulfil very severe conditions which are derived from the SET plan. Now all projects have to focus on the SET plan priorities; they have to have a very significant impact on energy efficiency and low carbon energy technologies; industry has to commit itself to deploy the demonstrated technologies at large scale before 2020; all projects have to be clearly linked to the energy and climate change policy; about one third of the budget is spent on the electricity grid in order to solve bottlenecks for rapid deployment of renewables. In 2010 projects are on average about 10 times larger in budget and about 50 to 100 times larger in impact than in 2006.

Now that the research, development and technology innovation agenda of the EU energy policy is well defined, the key challenge is related to the urgency to increase investments in research, technology development and demonstration in all SET-Plan initiatives.

- **Taking specific measures to strengthen supply security within the EU:**

Gas supply interruptions that the EU witnessed in early 2006, 2008, 2009 and 2010, as well as EU's strong dependence on imports of petroleum products and the geopolitical uncertainty in many producer regions, accelerated the revision of security of supply related legislation.

Since 1968, EU legislation imposes an obligation on Member States to maintain minimum stocks of crude oil and/or petroleum products that can be used in the event of a supply crisis to replace all or part of the shortfall. In order to strengthen the Community's capacity to face a supply disruption, the Commission initiated in November 2008 the revision of the oil stockholding system. Adopted in September 2009, the new directive⁵⁵ aligns the stockholding obligation and the calculation methodology with those of the International Energy Agency (IEA), enables the EU – both IEA and non-IEA Member States – to contribute better to an IEA action and improves the availability of stocks. Member States have to transpose the new directive into national legislation by the end of 2012. A new reporting system is under development to satisfy the requirements of the directive.

Security of gas supply is addressed in several legal acts. The Gas Directive (2009/73/EC) recognizes the right of Member States to regard security of supply as a public service obligation. This Directive has established common rules for the internal market in natural gas that enable Member States to take the requisite measures to safeguard supply in the event of a sudden crisis in the energy market. The Directive 2004/67/EC established a Gas Coordination Group to facilitate coordination of security of supply measures by the Community in the event of a major supply disruption. This group could also assist Member States in coordinating measures taken at national level.

In 2009, the Commission came forward with a proposal for a Regulation concerning measures to safeguard security of gas supply with the objective to guarantee the permanent functioning of the internal market for gas and to establish a common legal and technical framework for tackling the effects of supply disruptions⁵⁶. This proposal defines the responsibilities of all relevant actors, for instance natural gas undertakings, competent authorities of the Member States and the European Commission in the area of security of supply. The competent authority designated by each Member State is responsible for carrying out a Risk Assessment and establishing a Preventive Action Plan with the measures to reduce the high risks identified. This Plan lays down national measures how

⁵⁵ Council Directive 2009/119/EC of 14 September 2009 imposing an obligation on Member States to maintain minimum stocks of crude oil and / or petroleum products.

⁵⁶ COM(2009) 363 repealing the Directive 2004/67/EC; the Regulation is expected to be adopted in autumn 2010.

the Member State plans to fulfill the commonly defined infrastructure and supply standards, evaluates the risks, draws up preventive measures and provides information on public service obligations. The competent authority is also required to establish an Emergency Plan defining the measures to be taken in a crisis situation to mitigate the impact of a gas supply disruption. If the Plans are inconsistent, or national measures endanger the security of supply in another Member State, the Commission will have the opportunity to require the modification of the Plans or measures. The infrastructure standard shall contribute to infrastructure development through the so-called N-1 standard, which ensures that the network is capable of compensating the loss of the single largest gas supply infrastructure, and the obligation to establish gas flows in both directions on interconnections. The supply standard shall provide a common level of minimum obligations for the market to enable gas flows to protected customers even in extreme climatic conditions. These, and other additional public service obligations shall be made public thus further enhancing the level of transparency on the gas market. Cooperation among Member States and the Commission is strengthened both in the preventive and in the crisis management stage. Declaration of Union or regional emergency shall be made by the Commission.

Electricity blackouts in the EU in November 2006 have highlighted the need to define clear operational standards for transmission networks and for correct maintenance and development of the network. Therefore, in order to ensure the functioning of the internal energy market, the EU established obligations for the Member States to safeguard security of electricity supply and undertake significant investment in electricity networks⁵⁷. These requirements define the adequate level of interconnection between Member States, an adequate level of generation capacity and balance between supply and demand.

Given the massive investments in all types of energy infrastructure needed in the EU in order to meet the security of supply as well as the climate challenges of the EU energy policy, the Commission proposed in 2009 a monitoring of investment projects. In June 2010, the Council adopted a new Regulation which lays down the framework for a regular monitoring of investment projects in energy infrastructure within the EU⁵⁸. This should increase transparency on the structural evolution of the EU energy system and enhance the ability of EU institutions to anticipate problems.

In addition, a network of energy security correspondents (NESCO) of the EU Member States was created in 2007 to serve as a system for an early exchange of information in case of signals of potential supply disruptions.

⁵⁷ Directive 2005/89/EC of the EP and of the Council of 18 January 2006 concerning measures to safeguard security of electricity supply and infrastructure investment.

⁵⁸ Council Regulation (EC, Euratom) Nr 617/2010 concerning the notification to the Commission of Investment projects in energy infrastructure within the EU and repealing Regulation (EC) No 736/1996.

IV - Acting for EU's external supply security and sustainable use of energy worldwide

Given global challenges of energy security, slow progress globally on combating climate change, EU's rising external supply dependence, the emergence of large new energy consumers, volatile energy prices and other factors, external dimension has become an integral part of the EU's developing energy policy.

Over the years, successive European Councils, echoed by the European Parliament, stressed the need for a common approach to external energy policy. The Energy Action Plan of 2007 called for enhancing relations with EU's main supplier, consumer and transit countries, identifying main partners as well as areas for action. The second Strategic Energy Review of November 2008 called for incorporating energy in the EU's international relations and its agreements and external assistance programmes. It pointed particularly to the need for more robust international legal frameworks based on balance of commitments and benefits and highlighted the role of energy infrastructure, including that from third countries, in the EU's efforts to enhance energy security.

In line with these orientations, the Commission over the last several years has established or enhanced cooperation dialogues with the world's major energy players, mainly in the forms of Memoranda of Understanding or energy dialogues. Often, energy cooperation takes place within the context of a broader multi-sector bilateral agreements and instruments, for example, in the energy chapters of the European Neighbourhood Policy (ENP) Action Plans, Partnership and Cooperation agreements, Energy Partnership with Africa, and the Euromed cooperation. Moreover, energy cooperation with EU's partners is typically comprehensive in scope, encompassing issues from regulatory cooperation, infrastructure development, and promotion of sustainable policies to joint projects.

Where possible, the attempt is being made to underpin these relations with solid legal provisions. For example, it is foreseen that the bilateral agreements currently under negotiation (such as the new EU-Russia Agreement, and Free Trade Agreement and Partnership and Cooperation Agreement with Ukraine) will include specific energy provisions, based on the EU energy *acquis* and the principles of the Energy Charter Treaty, as well as other existing international commitments on energy such as in the framework of the WTO.

The EU coordination in international organizations such as the International Energy Agency, the Energy Charter and the G8/G20 has strengthened, allowing for a greater input into global energy discussions.

Out of the notable achievements over the last several years are the efforts to extend the Energy Community Treaty beyond Southeast Europe. Moldova became a full member in May 2010. The recent adoption of a new gas law in Ukraine paved the way for the signature in September 2010 of a Protocol on the accession of Ukraine to the Energy Community. Negotiations with Turkey are ongoing.

Efforts are also progressing to diversify the EU's suppliers and supply routes. EU cooperation with the Central Asia/Caspian region is pursued through regional cooperation (Baku Initiative) and the implementation of bilateral Memoranda of Understanding (Azerbaijan – November 2006, Kazakhstan – December 2006, Turkmenistan – May 2008). At the same time, the Commission has been engaging the countries in the region on establishing a Southern Gas Corridor, including a trans-Caspian gas link, the importance of which was underlined in the Second Strategic Energy Review. An important milestone was set in 2009 with the signature of an Intergovernmental

Agreement on the Nabucco gas pipeline project. The Commission, European Investment Bank and the World Bank are currently investigating the feasibility and possible structure of a mechanism for the purchase of Caspian gas, a "Caspian Development Corporation" (CDC), which would also examine infrastructure aspects (across the Caspian).

The gas supply disruption in January 2009 was unprecedented event in the EU energy history. The EU response, including mediation efforts between Russia and Ukraine and facilitating a monitoring mission, showed the benefit of coordinated European action. Following the crisis, the Commission worked closely with Russia and Ukraine on bilateral basis to take steps that could help prevent a similar supply interruption in the future. This included, for example, bringing together a number of international financial institutions with the aim of supporting Ukraine in modernising the gas transit system and the agreement on an Early Warning Mechanism with Russia, with objective to set up operational procedures for notification, consultation and implementation of solutions in case of potential or actual oil, gas or electricity supply interruptions.

A high priority in the EU's external relations is given to the objective of promoting sustainable and safe energy use, the uptake of energy efficiency and low carbon technologies worldwide.

Having identified the need for global action on energy efficiency, the Commission has proposed and worked closely with the G8 partners on the establishment of the International Partnership on Energy Efficiency Cooperation (IPEEC). Agreed by the G8 countries, China, India and South Korea in 2008, IPEEC is a high level forum to facilitate actions that yield high energy efficiency gains and improvements.

The Commission has supported the efforts to advance the uptake of renewable energy worldwide, including through the efforts of the new international organization in this field – the International Renewable Energy Agency (IRENE), which will promote the widespread and increased adoption and sustainable use of all forms of renewable energy.

In the nuclear field, international cooperation has been strengthened through Euratom agreements with key partners (revised agreements are being negotiated with major EU suppliers of nuclear materials – Australia and Canada, while an agreement with the Russian Federation is under preparation), as well as with the International Atomic Energy Agency (IAEA). The right of scrutiny of the Commission⁵⁹ to any draft agreement concluded by a Member State and a third Country ensures coordination of national and EU level approaches in this area. Moreover, the achieved results in terms of nuclear safety and security at the EU level make a good case for the EU to encourage and convince third countries to make international nuclear safety, security and non-proliferation standards legally binding. In the area of nuclear research, two major multilateral frameworks - the International Thermonuclear Experimental Reactor (ITER) for fusion technologies and the Generation IV International Forum for advanced fission technologies – contribute to the international dimension of the nuclear component of the EU SET-plan.

Despite these developments and improved channels of cooperation, the EU still does not leverage an influence commensurate with its size as a regional player, particularly vis-à-vis supplier countries, even if it is often seen by external partners as a frontrunner in energy policy development and an attractive partner due to its size and the degree of market integration.

There is thus both a need and an opportunity for the EU to assert itself more effectively in bilateral relations with key partners and in global discussions, pursuing its diversification objectives and contributing to global debate in a way that promotes understanding of key supply and demand

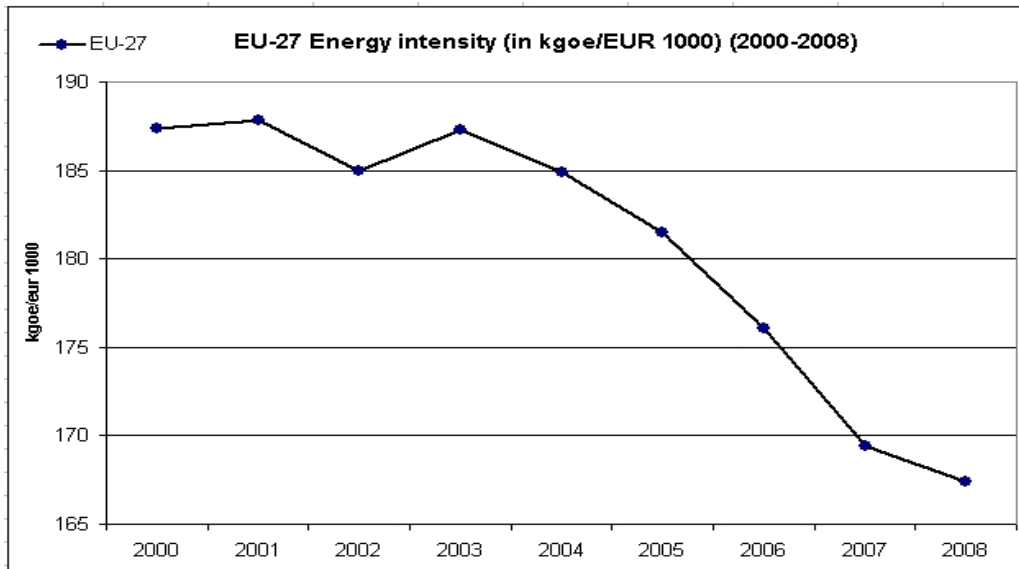
⁵⁹ Article 103 of the Euratom treaty.

drivers, well-functioning, open, transparent and competitive energy markets, good governance, and comprehensive and sustainable energy policies.

Effective planning and coordination at the Community and Member State level, which is necessary to harness the EU collective weight and to avoid situations of multiple dialogues and contradicting messages with the same cooperation partner, is not yet in place. Further work is required to reinforce synergies between the external dimension of the EU energy policy, as newly defined in Article 194 TFEU, and other EU policies (trade, development, climate change, etc.) and their instruments. Finally, there is still a need to fine-tune priorities and strategies for cooperation with EU's main partners as well as to focus the efforts on a limited number of concrete cooperation areas to maximise mutual interest and benefit.

- ANNEXES -

Annex I



Source: Eurostat

Main achievements for the six key areas of the Energy Efficiency Action Plan (EEAP):

(1) Energy performance requirements for products, buildings and services:

Among the biggest successes of the current EEAP is the setting of an ambitious legal framework for buildings and products. The existing Energy Performance of Buildings Directive (2002/91/EC) and its recast⁶⁰ go a long way for introducing ambitious but realizable energy performance requirements for buildings and increase consumers' awareness.

The Eco-Design (2005/32/EC) and Energy Labelling (92/75/EEC) framework Directives and their recasts are significant steps with regard to product policy. The adopted nine implementing measures in 2008 (e.g. for electric motors, TVs and domestic, street and office lighting) and the forthcoming 15 (e.g. water heaters, air-conditioning and ventilation) will bring very important savings.

The Energy End-Use Efficiency and Energy Services Directive (ESD)⁶¹ has set the general framework for many saving actions, including national, indicative, quantitative energy saving targets and National Energy Efficiency Action Plans (NEEAPs). However, its soft wording led to unsatisfactory progress as regards some of its provisions.

(2) Energy efficiency in the utility sector:

This has not been sufficiently tackled, and the progress in the sector will mainly result from the implementation of the CHP Directive. Certain improvements due to the inclusion of energy generation in the ETS are also to be noted but the full potential is not achieved.

(3) Transport:

Energy consumption in the sector is still increasing. Nevertheless, a number of measures and initiatives were adopted tackling the CO₂ emissions from new passenger cars and light commercial vehicles, increased fuel efficiency and improved sustainability, especially in the urban areas, of the sector. Aviation was included in the ETS and a Sesar Joint Undertaking was established in 2007 to promote energy efficiency in this sector.

(4) Financing and pricing:

Some progress has been made but there are still failures that prevent the investments in energy efficiency. Innovative financing instruments are being developed by EIB, EBRD, national promotional banks and private banks. Investments in energy efficiency in the residential sector were made eligible for support in all Member States under Cohesion Policy in May 2009 (at the outset of the 2007-2013 period, they were eligible only in EU-12) and the thematic scope of Financial Engineering Instruments was extended in June 2010, now offering an additional opportunity to support also repayable investments in energy efficiency in buildings, including in existing housing. In order to mobilize the sustainable energy investments in cities and regions, 'ELENA' technical assistance facility has been launched by the Commission and EIB in late 2009. Investments in excess of €1 billion have been enabled by the facility so far.

(5) Changing energy behaviour:

Some progress has been made to implement the EEAP 2006 measures but user behaviour still a challenge. A number of projects to study and address this aspect were supported under the Intelligent Energy Europe Programme. Another initiative that stemmed out of the current EEAP is the 'Covenant of Mayors' which has been a major success with more than 1900 cities, covering

⁶⁰ COM(2008) 780.

⁶¹ 2006/32/EC.

more than 120 million EU citizens, committing to go beyond the 20% greenhouse gas reduction target through development and implementation of their Sustainable Energy Action Plans (SEAPs). More than 85 regions, provinces and networks have joined the initiative so far as supporting structures. The Commission has developed and implemented a methodology for development and monitoring of the SEAPs, including GHG baseline emission inventories of participating cities. Further, the extension of the Covenant of Mayors concept towards the EU Neighbourhood countries has been launched by the Commission.

(6) International Partnership:

Some progress achieved with the launching of the International Partnership for Energy Efficiency (IPEEC) and a number of bilateral discussions.

Market opening gas & electricity: Proportion of market open to competition

Eligible consumption TWh/ GWh by annual consumption in the country

Source: SEC(2010)251 final

% Market opening				
	Electricity		Gas	
	2007	2008	2007	2008
Austria	100	100	100	100
Belgium	100	100	100	100
Bulgaria	100	100	100	100
Cyprus ⁶²	31,8	31,8	0	0
Czech Republic	100	100	100	100
Denmark	100	100	100	100
Estonia	13	13 ⁶³	100	100
Finland	100	100	0	0
France	100	100	100	100
Germany	100	100	100	100
Great Britain	100	100	100	100
Greece	90,1	90,1 ⁶⁴	73	90
Hungary	22,29	64,4	24,96	34,04
Ireland	100	100	100	100
Italy	100	100	100	100
Latvia	100	100	NAP	NAP ⁶⁵
Lithuania ⁶⁶	74	100	100	100
Luxembourg	100	100	100	100
Malta ⁶⁷	NA	NA	NA	NA
Northern Ireland	NA	100	NA	100
Norway	100	100	:	:
Poland	100	100	100	100
Portugal	100	100	42,9	42,9 ⁶⁸
Romania	100	100	100	100
Slovak Republic	100	100	100	100
Slovenia	100	100	100	100
Spain	100	100	100	100
Sweden	100	100	100	100
The Netherlands	100	100	100	100

⁶² No developed gas market.

⁶³ Transitional period, for 2009: 35%, 2013: 100%.

⁶⁴ All customers eligible except for micro-systems on all interconnected islands.

⁶⁵ Derogation until 2010.

⁶⁶ Derogation until 2010.

⁶⁷ No natural gas supply. In view of its small and isolated energy system Malta has been granted a permanent unconditional and nominative derogation through Commission Decision 2006/859/EC, also featuring in the electricity internal market Directive 2009/72/EC. In view of this derogation, Malta does not have a rate of market opening

⁶⁸ Derogation until 2010.

Electricity market indicators: degree of concentration

	Electricity (generation)
Very highly concentrated [HHI above 5000]	BE, FR, EL, LV, LU, SK, CY
Highly concentrated [HHI 1800-5000]	CZ, DE, LT, PT, SI, RO, HU, DK, NO
Moderately concentrated [HHI 750-1800]	FI, PL, UK, ES, IT, NL, AT

Source: Regulators' submissions, DG TREN calculations, SEC(2010)251 final

(HHI by capacity – sum of squared shares of individual companies)

Wholesale Market Position Electricity – 2007/2008

ELECTRICITY	Number of companies with more than 5 % share of generation capacity (%)			Share of 3 biggest companies (by capacity) (%)			HHI (by capacity)		
	2007	2008	Δ	2007	2008	Δ	2007	2008	Δ
Austria	5	6	1	51,2	50	-1,2	NA	NA	
Belgium	2	2	0	99,9	97,5	-2,4	8390	7206	-1184
Bulgaria	6	6	0	56,4	56,4	0	NA	NA	
Cyprus	1	1	0	100	100	0	1	1	0
Czech Republic	1	1	0	76,85	75,31	-1,54	NA	NA	
Denmark	2	2	0	75	75	0	NA	NA	
Estonia	1	1	0	99	99	0	NA	NA	
Finland	4	4	0	68	68	0	NA	NA	
France	1	1	0	93	93	0	6960	NA	
Germany	4	4	0	85,4	84,7	-0,7	NA	2008	
Great Britain	8	8	0	41	42	1	986	901	-85
Greece	1	1	0	NA	NA		10000	10000	0
Hungary	5	5	0	67	67,9	0,9	2119	1911	-208
Ireland	5	4	-1	71	86	15	NA	NA	
Italy	5	5	0	61,2	57,6	-3,6	2126	1351	-775
Latvia	1	1	0	93	94	1	8110	8110	0
Lithuania	3	3	0	84	85	1	3160	3095	-65
Luxembourg	3	3	0	80	79	-1	5843	5682	-161
Malta	1	1	0	NA	NA	0	NA	NA	
Northern Ireland	NA	4		NA	86		NA	4096	
Norway	6	6	0	40	43	3	NA	1826	
Poland	5	5	0	50,9	52,5	1,6	1312,7	1363,3	50,6
Portugal	2	2	0	72,5	72,2	-0,3	4472	4521	49
Romania	5	5	0	63,7	70,98	7,28	1813	2116	303
Slovak Republic	1	1	0	85,2	83,9	-1,3	6930	5019,922	-1910,08
Slovenia	3	3	0	92,7	92,5	-0,2	7208	4369	-2839
Spain	5	5	0	76	72,9	-3,1	1827	1716	-111
Sweden	3	3	0	78	74,7	-3,3	NA	NA	
The Netherlands	6	4	-2	61	69,9	8,9	1592	1551	-41

Source: Regulators data, Δ calculations DG TREN, SEC(2010)251 final

Retail Market position Electricity – 2007/2008

ELECTRICITY	Number of nationwide suppliers	Companies with market share over 5% in the whole retail market (%)			Market share of three largest companies in whole retail market (%)		
		2008	2007	2008	Δ	2007	2008
Austria	10	7	6	-1	64	62	-2
Belgium	12	4	NA	1	NA	NA	NA
Bulgaria	1	3	3	0	97,5	97,5	0
Cyprus	1	1	1	0	100	100	0
Czech Republic	310	3	3	0	99	99	0
Denmark	16	7	7	0	NA	NA	
Estonia	3	1	1	0	99	99	0
Finland	25	4	4	0	40	40	0
France	17	1	1	0	94	97	3
Germany	17	3	3	0	46,1	52	5,9
Great Britain	17	NA	NA		NA	NA	
Greece	37	1	1	0	100	100	0
Hungary	78	4	4	0	87,18	80,73	-6,45
Ireland	9	4	4	0	85	84	-1
Italy	23	3	3	0	60	59	-1
Latvia	2	1	1	0	100	100	0
Lithuania	2	1	1	0	100	100	0
Luxembourg	7	3	4	1	93	94	1
Malta	1	1	1	0	NA	NA	
Northern Ireland	18	NA	4		NA	90	
Norway	26	5	5	0	31,2	36	4,8
Poland	19	6	6	0	44,9	44,3	-0,6
Portugal	4	2	2	0	99,6	99,6	0
Romania	138	5	5	0	44	48	4
Slovak Republic	176	3	3	0	35	60	25
Slovenia	13	7	7	0	68	58	-10
Spain	75	4	4	0	83,9	84,8	0,9
Sweden	104	3	3	0	NA	NA	
The Netherlands	21	4	4	0	NA	NA	

Source: Regulators data, Δ calculations DG TREN, SEC(2010)251 final

Market Structure in Import and Production of Gas

GAS	Number of companies with more than 5 % share of available gas (%) ⁶⁹			Share of 3 biggest companies by available gas (%)			HHI
	2006	2008	Δ	2007	2008	Δ	2008
Austria	4	4	0	80	86	6	4290
Belgium	2	4	2	99,4	92	-7,4	5438
Bulgaria	1	1	0	32,47	89	56,53	NA
Cyprus	NA	NA		NA	NA		NA
Czech Republic	1	2	1	NA	NA		NA
Denmark	3	3	0	NA	NA		NA
Estonia	2	2	0	99	99	0	NA
Finland	1	1	0	100	100	0	NA
France	2	2	0	88,97	88	-0,97	6324
Germany	NA	7		58,65	61,82	3,17	1706
Great Britain	NA	NA		28	NA		NA
Greece	1	1	0	100	100	0	10000
Hungary	4	4	0	92,8	86,9	-5,9	3066
Ireland	NA	5		NA	81,64		2499
Italy	3	3	0	86,7	85,2	-1,5	4336
Latvia	1	1	0	100	100	0	10000
Lithuania	2	2	0	100	100	0	5800
Luxembourg	1	2	1	100	100	0	9057
Malta	NA	NA		NA	NA		NA
Northern Ireland	NA	5		NA	82,7		10000
Norway							
Poland	1	1	0	100	100	0	9624
Portugal	0	0	0	0	0	0	NA
Romania	4	3	-1	74	83,19	9,19	NA
Slovak Republic	1	1	0	100	100	0	10000
Slovenia	1	2	1	100	100	0	8981
Spain	4	4	0	75	66	-9	1887
Sweden	5	NA		NA	NA		NA
The Netherlands	4	1	-3	NA	87,8		6841,24

Source: Regulators data, Δ calculations DG TREN, SEC(2010)251 final

⁶⁹ Note: No answer to this question was required in 2007.

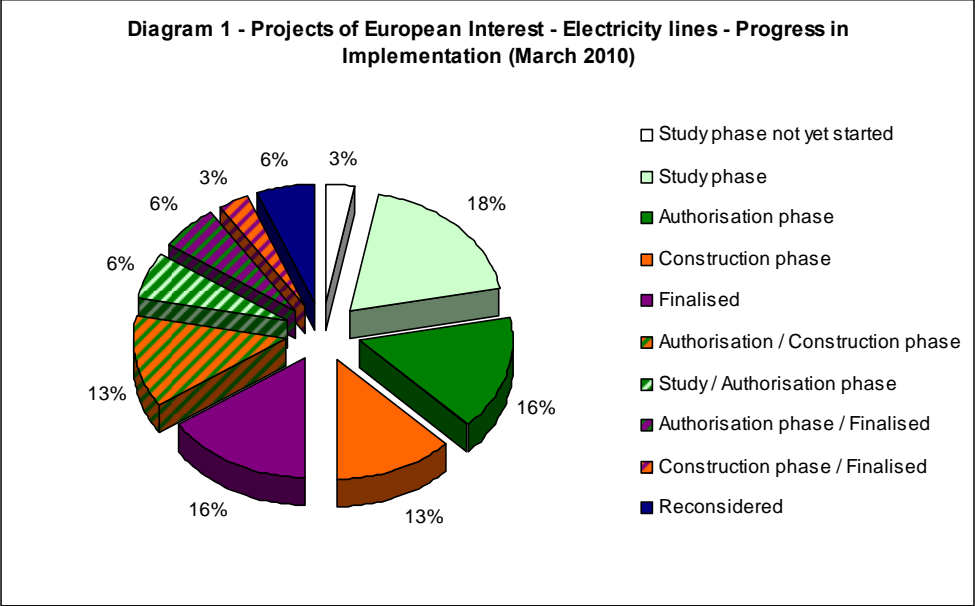
Structure of Gas retail market

GAS	Number of nationwide suppliers	Companies with market share over 5% in the whole retail market (%)			Market share of three largest companies in whole retail market (%)		
	2008	2007	2008	Δ	2007	2008	Δ
Austria	5	5	5	0	NA	80	
Belgium	8	NA	NA	0	92,3	NA	
Bulgaria	32	5	4	-1	32,47	12,87	-19,6
Cyprus	1	NA	NA		NA	NA	
Czech Republic	14	7	8	1	NA	47,35	
Denmark	2	4	4	0	NA	NA	
Estonia	0	1	1	0	99	99	0
Finland	1	6	6	0	NA	NA	
France	13	3	2	-1	98,5	NA	
Germany	NA	4	4	0	26,3	35,2	8,9
Great Britain	24	NA	NA		72	72	0
Greece	1	1	1	0	100	100	0
Hungary	14	7	7	0	75	72,6	-2,4
Ireland	5	2	2	0	100	100	0
Italy	4	3	4	1	66,5	63,4	-3,1
Latvia	2	1	1	0	100	100	0
Lithuania	2	2	2	0	100	100	0
Luxembourg		4			88,5		
Malta	NA	NA	NA		NA	NA	
Northern Ireland	0	NA	4		NA	86	
Norway							
Poland	1	1	1	0	100	100	0
Portugal	0	0	0	0	0	0	0
Romania	24	4	6	2	83	59,11	-23,89
Slovak Republic	1	1	1	0	100	100	0
Slovenia	3	2	4	2	86	82	-4
Spain	34	5	5	0	74	71	-3
Sweden	0	5	5	0	NA	NA	
The Netherlands	14	4	3	-1	NA	NA	

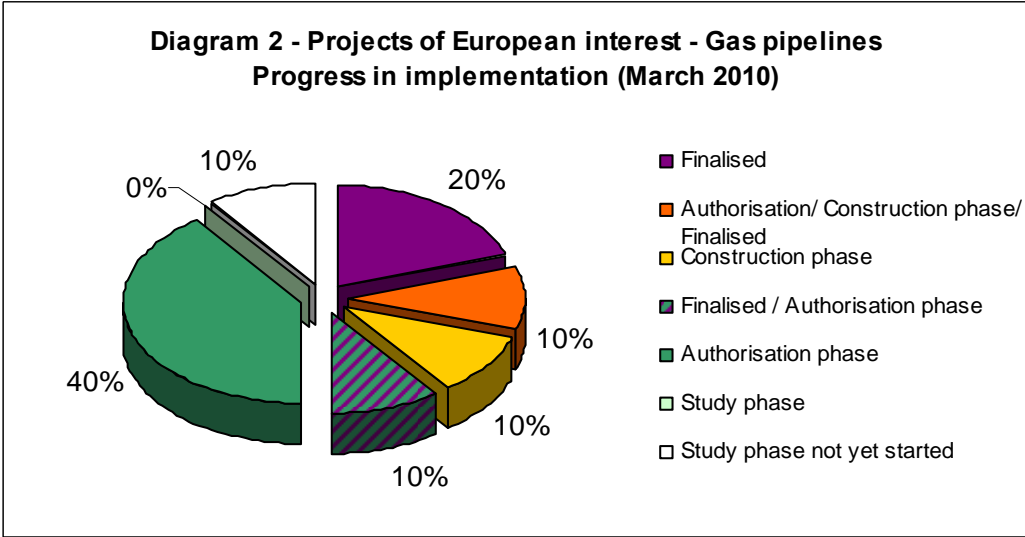
Source: Regulators data, Δ calculations DG TREN, SEC(2010)251 final

Statistical overview of TEN-E programme achievements according to project classification⁷⁰

Progress with the implementation of projects of European interest, electricity lines (32 projects)

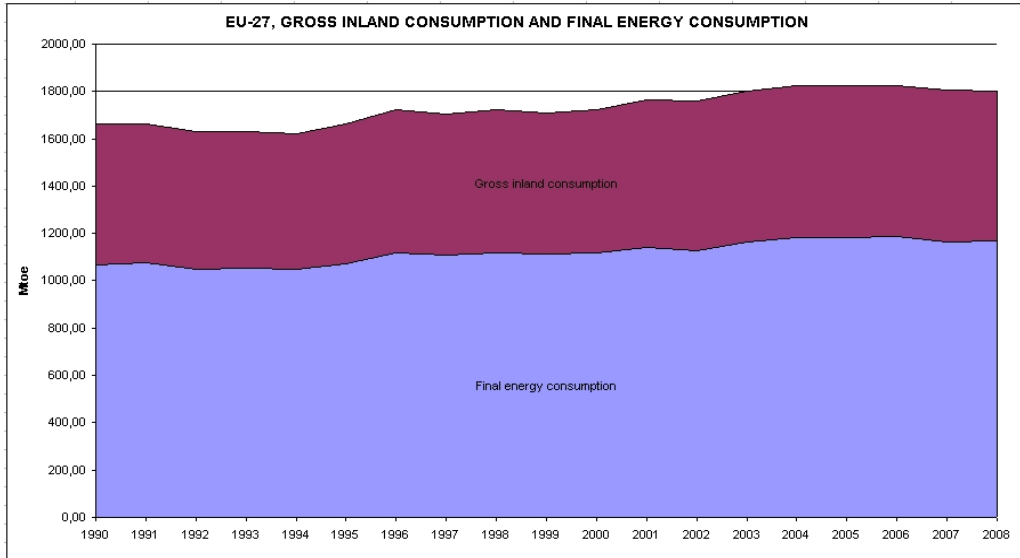


Progress with the implementation of projects of European interest, gas pipelines (10 projects)

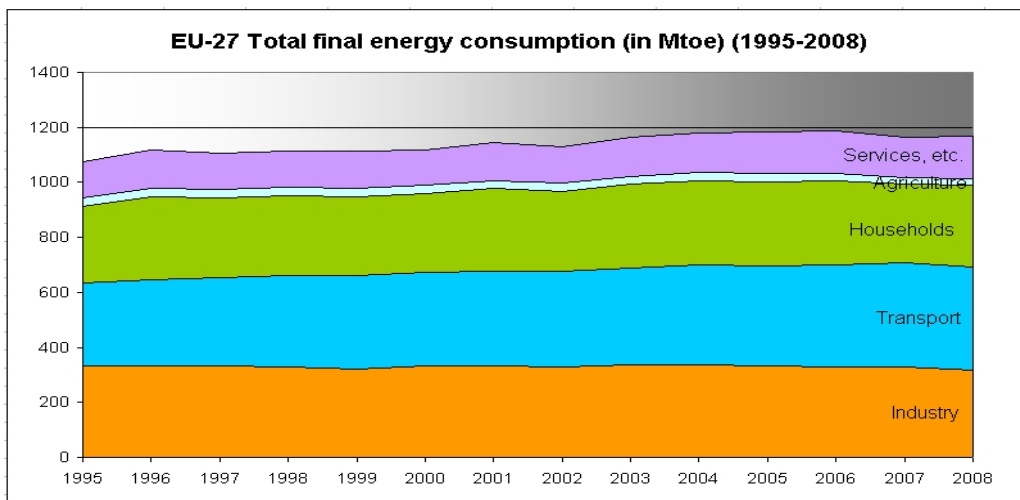


⁷⁰ Numbers include only those projects for which feedback was provided in the context of the TEN-E Survey 2010, previous stakeholder consultations and data provided by project promoters.

EU-27 energy demand developments and final energy consumption by sectors

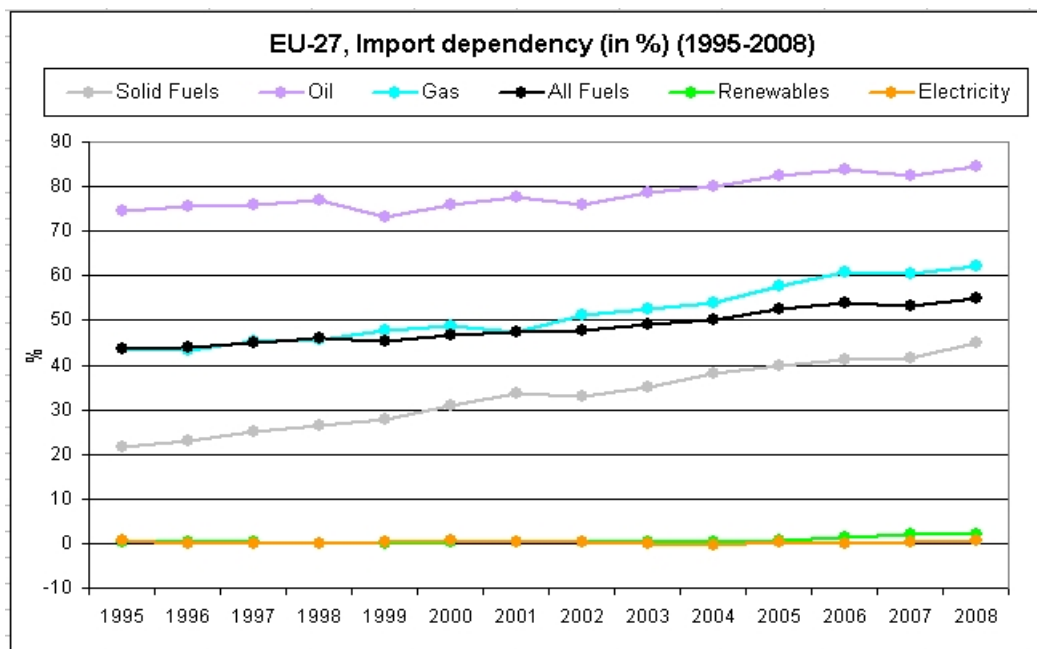


Source: Eurostat



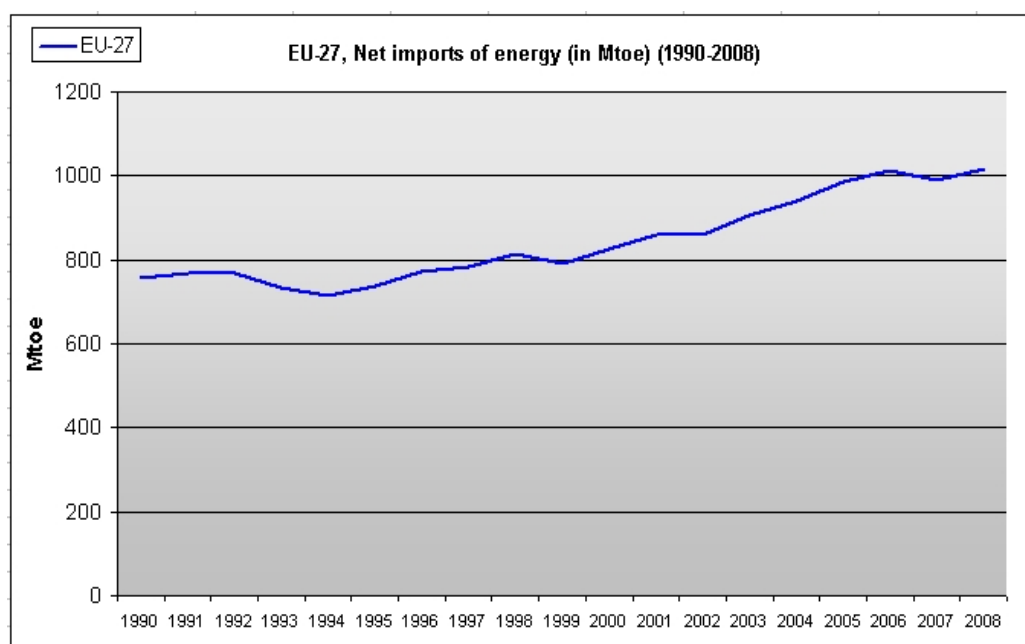
Source: Eurostat

EU-27 energy imports dependency



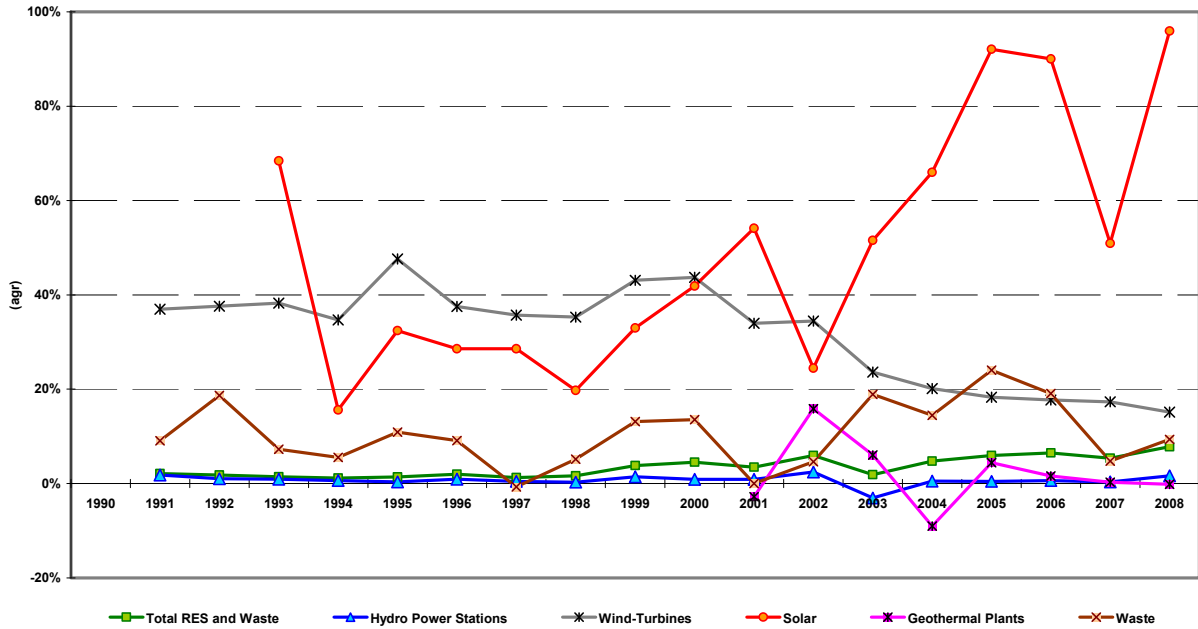
Source: Eurostat

EU-27 net imports of energy

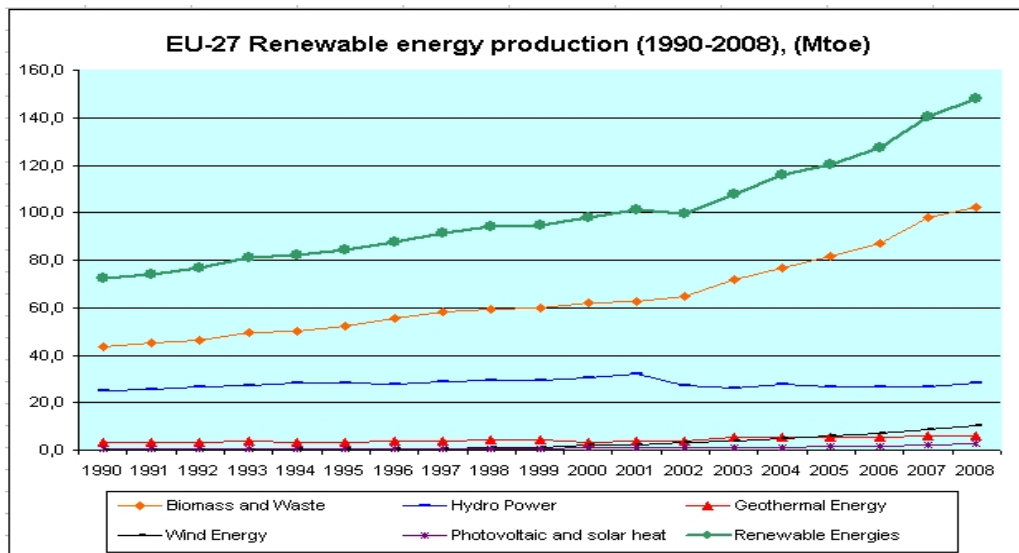


Source: Eurostat

EU-27 - Annual growth rate of the net installed electricity production capacity of renewable energy



Source: Eurostat



Source: Eurostat

Estimation of the financing needs for key technology and actions proposed in the SET-Plan (2010-2020)

Sector	Estimated investment needed for the next 10 years (B€)	Justification for the estimation
Hydrogen and fuel cells	5	Updated estimation of resources needed made by stakeholders – 'Implementation Plan' of the hydrogen and fuel cell technology platform (Study by the JRC)
Wind	5.5	Estimation of resources needed made by stakeholders – Costing of the Wind Industrial Initiative
Solar	16	Estimation of resources needed made by stakeholders – Costing of the Solar Industrial Initiative
CCS	10.5 - 16.5	Estimation of resources needed made by stakeholders – Costing of the CCS EII (including the 7-12 B€CCS demonstration projects - Study by McKinsey)
Bio-energy	8.5	Estimation of resources needed made by stakeholders– Costing of the Bio-fuels Industrial Initiative
Smart Grids	2	Estimation of resources needed made by stakeholders for transmission and by Commission for distribution – Costing of the Smart Grid Industrial Initiative
Nuclear Fission	5 - 10	Estimation of resources needed made by stakeholders – Costing of the Nuclear fission Industrial Initiative
Smart Cities	10 - 12	Estimation based on experience from CIVITAS and CONCERTO initiatives and reviewed by the JRC
European Energy Research Alliance (EERA)	5	Estimation of resources needed made by the Commission in consultation with EERA – Based on input from EERA assuming that 30% of their future activities are jointly planned and implemented.
Total	67.5 - 80.5	
Current investment contributing to these objectives	14 - 20	The Commission estimates that 50 to 70% of the current investment can be directed to these objectives.
Additional financial needs	47.5 – 60.5	