



CENTER FOR
THE STUDY OF
DEMOCRACY

THE GREEN ELEMENT IN THE SUSTAINABLE ENERGY POLICIES OF EUROPE

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1. Introduction

Since the definition of the term by the World Commission on Environment and Development (Brundtland Commission) in 1987, 'sustainability' has become one of the most prominent political terms in the international affairs to rule agendas for decades ahead. The series of relevant meetings on the issue of sustainable development and climate change in Rio (1992), Kyoto (1997) and Johannesburg (2002) and Copenhagen (2009), as well as the overwhelming proliferation of green organisations and advocacy groups in Europe, have predisposed the European Union to take the vanguard role in the global effort for more sustainable and greener development. One of the first expected steps to take in that direction was to devise a sound and comprehensive legislation structure governing the European and national energy and environment protection policies in the way that they follow the principles of sustainable development, or namely avoiding degradation of natural resources, protection of the environment, promotion of equitable sharing of the products and resources of prospering economy to all groups of society.

Main purpose of this study is to review and discuss the development of regulation at EU level to guide corresponding national legislation and policies designed to address the challenges of sustainable

development, notably those on the environment dimension and as regards to the most relevant economic sector – energy. The paper will briefly examine the development of the idea and strategy for sustainable development in Europe over time, the concrete EU legislation and instruments to facilitate national policies to support such development.

2. The Rules of the Game: The EU regulation towards green and sustainable energy

Although the initial impetus for sustainable development was supposed to follow the 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro (the Earth Summit), the dynamics of the European sustainable development did not unfold until the late 1990s when the environment issues were discussed during the negotiations of the *Amsterdam treaty* (1999). The treaty enshrined environment objectives as an EU common goal and an over-arching principle in its **Article 2**, and environment protection and the fight against climate change as part of the sustainable development became policy fields in which the EU



member states reached a relatively stable consensus.¹

The position of the Commission in the legislative arena had improved with the *Amsterdam Treaty*. This encouraged the Commission to bring forward these so-called acceleration directives, peaking up at the 2000 Lisbon Council that had elevated energy market liberalisation, sustainable development and environment to key projects in the drive for a more competitive union under the new *Lisbon Strategy* (2000).²

Soon after the Kyoto Protocol Meeting in December 1997, the Commission decided to bring the issue of sustainability forward on another higher supranational level and lead the new cause. In 1998, a *Communication*³ document was issued arguing over the need to integrate the environment into the Community energy policy. The production, transport and use of energy had proven its significant impact on the environment, and coping with such problems was a main challenge for the new enthusiasm for sustainable energy policy to follow⁴. The communication argued that the regulatory framework of the energy sector had to be amended to take account of environmental objectives, thus linking environmental concerns to the increasingly popular discussion of common European approach over energy policies.

¹ Kirsten Westphal, "Energy Policy between Multilateral Governance and Geopolitics: Whither Europe?", IPG, vol.4, 2006, pp.44.-62

² Burkard Eberlein, "The Making of the European Energy Market: The Interplay of Governance and Government," *International Public Policy*, no.28,vol. 1, pp.73-92.

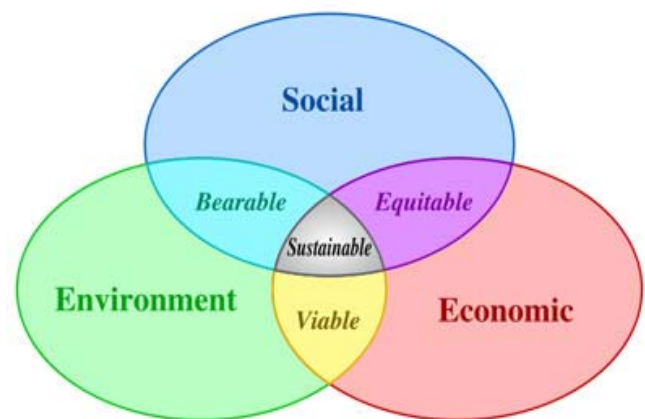
³ European Commission, *Strengthening Environmental Integration within Community Energy Policy*, COM (1998) 571, 14.10.1998.

⁴ Although the Community had already taken several measures, helping indirectly integration the environment into energy policy, such as the directive on large combustion plants, the communications on combined heat and power production (COM(97) 514 final), on the disposal of disused offshore oil and gas installations, as well as various steps taken under the SAVE, ALTENER and JOULE-THERMIE programmes and the framework programmes for research and technological development.

http://europa.eu/legislation_summaries/energy/european_energy_policy/l28071_en.htm (last access: 23/07/2009)

This "founding" green act, albeit not binding by itself, set the stage for overwhelming environmental legislation in the Union in the next few years. It reflected the latest trends in the increasingly green attitude of the citizens across Europe and the visible confluence of interest of the Member state to act on environmental issues.⁵ In 2001, the Commission launched a *White paper on European Governance*, which along with a number of follow-up *Communications* and policy processes considerably influenced the environment governance.

Figure 1. The Common Idea of Sustainable Development



Meanwhile, sustainable development had become a fundamental objective of the union when the European Council in Gothenburg (2001) adopted the first EU *Sustainable Development Strategy* (SDS), which was complemented by an external dimension in the 2002 Barcelona European Council in view of the World Summit on Sustainable Development in Johannesburg (2002)⁶. Industrial practices and consumer behaviour related to energy generation, transportation and consumption, notably causing

⁵ European Commission, *Strengthening environmental integration within Community energy policy*, COM (1998) 571, 14.10.1998.

⁶ For more information and key documents on the SDS part dealing with climate change, see: http://ec.europa.eu/sustainable/sds2001/init-priorities2001_en.htm#climate_changes (last access: 21/07/2009)

climate change, were listed as unsustainable trends⁷. The Community was also faced with the need of helping the stagnated Western economies and assisting the final development stage of the post-communist Eastern Europe on the lowest possible environmental and social price and taking into account the public well-being and health.

Key objectives concerning energy in the strategy included: meeting commitments under the Kyoto Protocol and enhancing international cooperation; reinforcing the greenhouse gas emission trading system by efforts on renewable energy and energy efficiency; limiting the adverse effects of transport by introducing infrastructure charging, promotion of alternatives to road transport and vehicles; promoting more sustainable modes of energy production and consumption by promoting green public procurement, defining environmental and social performance targets for products in cooperation with stakeholders, expanding the distribution of environmental innovations and technologies and producing information about and appropriate labelling of products and services; responsible management of natural resources.

Following the Gothenburg Summit's call for introducing an instrument for impact assessment of sustainability policies on EU and national levels, in 2002, the Commission presented a general approach of **regulatory impact assessment**, which would cover all the various implications of policies including business and environmental impact. These instruments were supposed to be used when major policy decisions had to be taken. Member states were further advised to undergo high quality **impact assessment (IA)**, assessing the social, environmental and economic costs and significance for the sustainable development when planning to allocate public funds or to develop strategies and programmes.

In 2004, the Commission launched a review of the 2001 EU SDS on the basis of the Commission Communication *On the Review of the Sustainable Development Strategy – A Platform for Action* from

⁷ Along with social exclusion and an ageing society (already covered by the Lisbon Strategy), transport, production and consumption, natural resources, health, and promotion of sustainable development globally.

December 2005 as well as of contributions from the Council, the European Parliament and the European Economic and Social Committee. The environment issues continued to be a central question of the strategy, calling for prevention and reduction of environmental pollution and promotion of sustainable consumption and production to break the link between economic growth and environmental degradation.⁸ The communication put a stronger focus on **six priorities** and identified key actions to be undertaken on these issues. This series of documents introduced the guiding principle of "**Polluter Pays**" for the damage they cause to human health and the environment.

Figure 2. Six Priorities on Sustainable Development

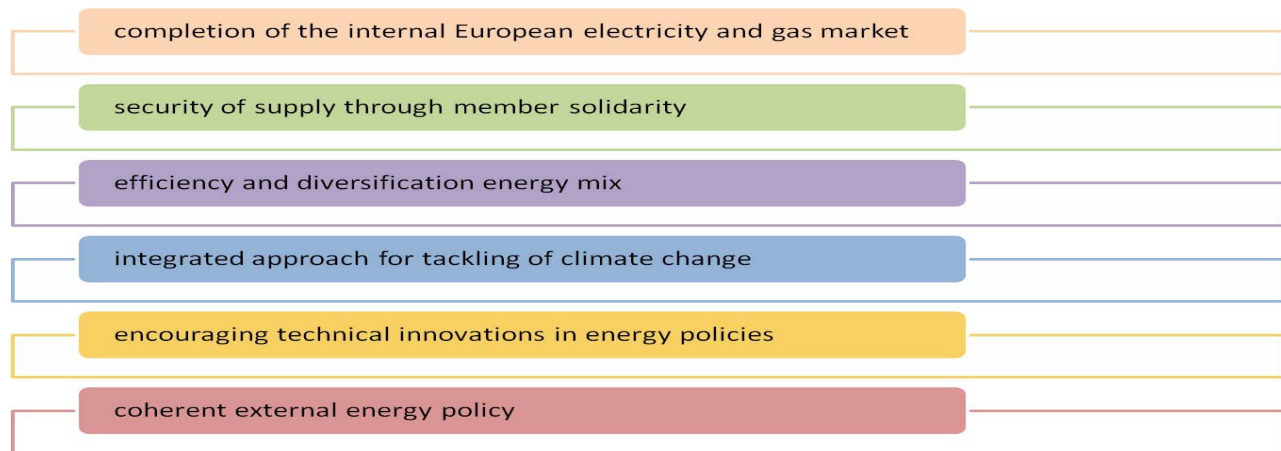


Source: Center for the Study of Democracy, 2009.

The new document on the European environment governance argued in 2006 that unsustainable trends in relation to climate change and energy use, management of natural resources, land use and transport still persisted in EU25 and new challenges were arising. A major one was how to shift gradually from the negative trend of unsustainable energy consumption and production and how to build more integrated approach to policy-making at

⁸ Council of the European Union, *Review of the EU Sustainable Development Strategy (EU SDS) – Renewed Strategy*, 10917/06, 26 June 2006.

Figure 3. Six Priorities for Secure, Competitive and sustainable Energy for Europe



Source: Center for the Study of Democracy, 2009.

all levels of EU governance.⁹ This negative evaluation led to the first comprehensive energy-climate package of EU, presented by the Commission in January 2007.¹⁰

The *Energy Policy for Europe* act, was a follow-up of the Commission's Green Paper *An European Strategy for Secure, Competitive and Sustainable Energy for Europe* and the EU Energy Summit in March 2006, and explored in details the inter-linkages between energy and environment. The green paper opened the topical debate about **three main objectives of the Europe's energy policy**, namely sustainability, competitiveness and security of supply, identifying six priority areas.

The communication on climate warned about the hefty economic and social costs of failing to take sufficient action to combat climate change, and thus further backing up the Green paper and '*Energy Policy for Europe*' with grim predictions about the costly environmental future of Europe. The communication called for more commitment,

investment and clearer targets in the fight against climate change.¹¹

One of the biggest achievements of the energy-climate package, however, was the agreement upon and introduction of binding targets on national green policies, which are to guide the union environment policies until 2020. The well-known 20-20-20 targets constituted obligations for overall EU emission cuts of 20%¹², for energy efficiency

⁹ Council of the European Union, *Review of the EU Sustainable Development Strategy (EU SDS) – Renewed Strategy*, 10917/06, 26 June 2006; "European Governance for the Environment", European Environment Advisory Councils, November 2003.

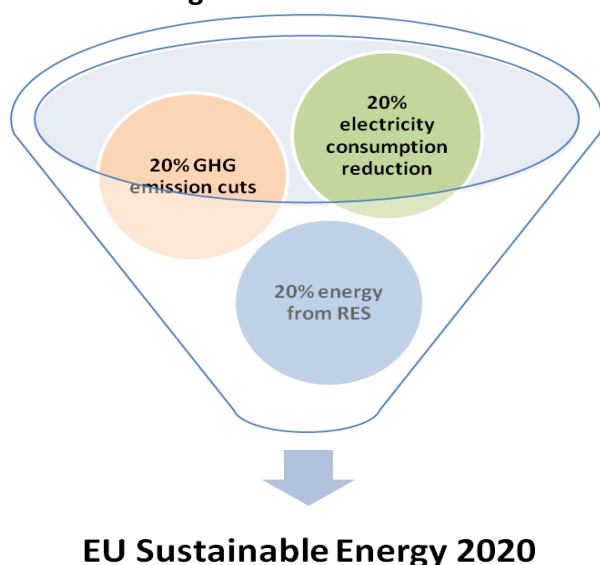
¹⁰ Communication from the Commission to the European Council and the European Parliament, *An Energy Policy for Europe*, COM(2007) 1, 10 January 2007.

¹¹ This communication follows up on the 2005 communication, which laid the basis for a future climate change strategy (see below under "Related acts"). The measures proposed in this strategy are closely linked to the "Energy package" published by the Commission in January 2007, which defines a new European energy policy and sets out clear, quantified targets. See "Limiting Global Climate Change to 2 degrees Celsius - The way ahead for 2020 and beyond" COM(2007) 2 final. http://europa.eu/legislation_summaries/energy/european_energy_policy/128188_en.htm (last access: 23/07/2009)

¹² Further to that goal, EU also calls for the conclusion of an international agreement which will oblige developed countries to reduce their greenhouse gas emissions by 30% by 2020. In the framework of this agreement, the EU would set itself a new objective of reducing its own emissions by 30% compared with 1990 levels. Communication from the Commission, of 10 January 2007, entitled: "Limiting Global Climate Change to 2 degrees Celsius - The way ahead for 2020 and beyond" <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0002:FIN:EN:PDF> (last access: 23/07/2009)

policies of 20% energy consumption reduction¹³ in the three major sectors like transport, industrial production, distribution of heating and electricity, and use of renewable energies expressed in 20% in the energy mix (measured in final energy consumption)¹⁴ in three major sectors electricity, biofuels and heating and cooling systems and lowering of prices. All targets are set to be achieved by 2020.

Figure 4. EU 20-20-20 targets as per the Energy-Climate Package



Source: Center for the Study of Democracy, 2009.

The spring European Councils of 2007¹⁵ and 2008 gave impetus for European common effort for sustainability, security and competitiveness. By 2007, almost all Member States had adopted national climate change strategies, either as a separate strategy or as a part of national energy policy packages¹⁶. Some had set up specific offices and

¹³ In accordance with the Action Plan for Energy Efficiency (2007-2012)

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2006:0545:FIN:EN:PDF> (last access: 23/07/2009)

¹⁴ In accordance with the *Renewable Energy Road Map* (COM (2006) 848):

¹⁵ See related acts at: http://europa.eu/legislation_summaries/energy/european_energy_policy/l28188_en.htm (last access: 23/07/2009)

¹⁶ In the transport sector as well, some Member States have adopted fiscal measures to stimulate the reduction in GHG emissions, promoting smaller, more fuel efficient

scientific councils to deal with climate change (UK, SE).¹⁷

In the late 2007, the Commission additionally presented an initiative - **strategic energy technology plan** (SET plan)¹⁸ to accelerate the development and deployment of cost-effective low carbon technologies. This plan comprised measures relating to planning, implementation, investment and international cooperation in the field of energy technology. Envisaged activities included: in the short term increasing research to reduce costs and to improve performance of existing technologies, and encouraging the commercial implementation of these technologies (second-generation biofuels, capture, transport and storage of carbon, integration of renewable energy sources into the electricity network and energy efficiency in construction, transport and industry); in the longer term supporting development of a new generation of low carbon technologies (competitiveness of new technologies relating to renewable energies, energy storage, sustainability of fission energy, fusion energy, and the development of Trans-European Energy networks).

3. Development of National Sustainable Development Strategies in Europe

Although development of European SDS provided for the promotion of more sustainable economic and civil behaviour, most of the postulates of the strategies remained non-binding and rather recommendatory. In fact, there was no concrete

vehicles (DK, BE), alternative fuels (RO) and bio-fuels (AT, BG), providing exemptions from excise duty (DK), tax subsidies (HU) and financial incentives (IT), European Commission, *2007 Progress Report on Sustainable Development Strategy*, COM (2007) 642, 22.10.2007, pp. 5-6.

¹⁷ Ibid.

¹⁸ Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, *A European strategic energy technology plan (SET Plan) - Towards a low carbon future*, COM(2007) 723, 22.11.2007

document obliging EU Member States to adopt national SDS, besides the call for such necessary step by the EU SDS and the Lisbon Strategy of 2000. In June 2001, the Gothenburg European Council, while announcing the EU SDS invited “Member States to draw up their own national sustainable development strategies”¹⁹. The “obligation” for such strategy again derived from political commitment to the text of Agenda 21 of the 1992 Rio de Janeiro’s Earth Summit, which “recommends that governments draw up national sustainable development strategies (NSDS).” The 1997 Special Session of the UN General Assembly added the target date of 2002 for elaboration of strategies.

The World Summit on Sustainable Development (WSSD) in Johannesburg urged again in the Johannesburg Plan of Implementation for countries to make progress in the formulation and elaboration of NSDS and to begin their implementation by 2005. In line with this recommendation, the Brussels 2003 spring summit of the European Council concluded that “in order to deliver the full set of reforms proposed in Gothenburg, it is crucial that EU institutions and the Member States take action to enhance the effectiveness and coherence of existing processes, strategies and instruments”.²⁰

The revised EU SDS of 2006 revealed some details as per implementation, monitoring and follow-up of strategies. Starting from September 2007, the Commission had to submit every two years a progress report on implementation of the SDS in the EU and the Member States. Member States elaborating first national NSDSs had to complete these by June 2007. Voluntary peer reviews of NSDSs had to be conducted in each member state in order to feed into the Commission’s progress reports.

The unclear conditions for adopting national SDS have led to largely voluntary and random preparation of such across EU. Nevertheless, up to 2010 most of the EU member states have developed own strategy, except for Bulgaria and Hungary.

¹⁹ Gothenburg European Council Presidency Conclusions, 15-16 June 2001.

²⁰ Brussels European Council Presidency Conclusions, 20-21 March 2003.

Table 1. Date of Adoption of National SDS in Relation to the Adoption of EU SDS in 2001²¹

Before 2001	After 2001	Under preparation / revision
The Netherlands (1), Sweden, Finland, United Kingdom (1) and (2), Luxembourg, Belgium (1) Poland	Austria, Denmark, Ireland, Germany, Sweden Italy, France, The Netherlands (2) Portugal Slovakia, Lithuania, Latvia, Cyprus Romania	Spain, Belgium (2) Hungary, Estonia, Czech republic, Slovenia, Malta Bulgaria

Table 2. Focus and Scope of National SDS²²

Environment	Three dimensions (social, economic, environment)	Three + additional
Italy, Hungary	Austria, Germany, Finland, Denmark, Greece, Ireland, Luxembourg, Portugal, Spain (draft), Sweden, UK, Cyprus (NDP), Estonia (Draft), Slovenia (NEDS)	France (cultural, regional, governance), Belgium (governance), the Netherlands (governance), Slovakia (cultural) Slovenia (cultural) Poland (cultural) Lithuania (regional) Czech Republic (cultural)

Source: European Commission Working Document *National Sustainable Development Strategies in the European Union*, April 2004.

²¹ European Commission Working Document, *National Sustainable Development Strategies in the European Union*, April 2004.

²² Ibid.

4. EU Green Energy Regulation

Due to the central role energy and corresponding policies play in social development, economic growth and environmental degradation and protection, a large volume of acts on greener and sustainable development was embedded in energy documents and legislation.²³ Operationally, energy legislation acts can be divided into three categories - **legal ones with binding power** such as **regulations and directives**, **advisory** ones such as **green papers, working papers** such as Commission **communications**, as well as **evaluations** such as **progress reports** on the application or implementation of certain policy. Apart from the operational categorization, these acts can be grouped into ones directly linked to the sustainable policy for “greener” Europe (documents and acts on energy efficiency, renewables, nuclear energy) and to the political and economic development of the region (internal energy market, security of supply and external dimension).

Table 3. Systemization of EU Legislation on Energy

EU Energy Legislation	General Policies	Energy Policy	
		Market-based Instruments	
		Financial Instruments	
		Research and Innovation	
	Green Policies	Energy Efficiency	Policy Orientations
			Delivering Energy Efficiency
		Renewables	Policy Orientation
			Electricity
			Heating and Cooling
			Biofuels
		Nuclear Energy	Euratom
	Nuclear Research and Development		
	Nuclear Safety		
Nuclear waste			
Market	Internal Energy Market	Competitive Internal Market	

²³ See Summary of Legislation on Energy:

http://europa.eu/legislation_summaries/energy/index_en.htm (last access: 20/07/2009)

		Interconnected Internal Market
		Public Procurement
		Taxation
	Security of supply / External Dimension	Security of Supply
		External Dimension
		Enlargement

Source: Center for the Study of Democracy, 2009.

The short overview below will try to give a gist of regulation over the European green and sustainability policies, notably those concerning environment protection. For the purposes of the study, selected areas of the EU legislation such as nuclear energy will not be examined and a particular attention will be paid to the green elements in general policies, renewables and energy efficiency.

Energy Efficiency Recommendations and Legislation

The energy efficiency has been a central elements inn the EU sustainable development. Already in 2005, a *Green Paper on energy efficiency*²⁴ called for increasing energy efficiency and 20% reduction in energy consumption by 2020. Such objective was later to become and integral part of the energy-climate package of 2007.²⁵

The *Green paper* invited a public discussion on how to make citizens and businesses more accountable by developing energy saving behaviour, with an accent on efforts to be made in the transport (1/3 of the energy consumption), power generation (40 to 60% of energy loss in the process) and building (heating and lighting buildings counting for nearly

²⁴ European Commission, *Green Paper on Energy Efficiency or Doing More With Less*, COM (2005) 265, 22.06.2005.

²⁵ Kirsten Westphal, “Energy Policy between Multilateral Governance and Geopolitics: Whither Europe?”, IPG, vol.4, 2006, pp.50-51.

40% of energy used) sectors in particular²⁶. The paper gave recommendations for using various market or financial instruments in order to curb the energy efficiency issues such as tax schemes favouring clean and economical vehicles or financing research and the development of alternative fuels in transport sector, encouragement of more economical technology and behaviour by industry and consumers in building sector, and finally investment in more efficient technology to produce more with less energy.

The Commission subsequently adopted a six-year *Action Plan (2007-2012)* aimed at achieving the goal of 20% by 2020. The Action Plan included measures to improve the energy performance of products, buildings and services, to improve the yield of energy production and distribution, to reduce the impact of transport on energy consumption, to facilitate financing and investments in the sector, to encourage and consolidate rational energy consumption behaviour and to step up international action on energy efficiency. In 2008, a *Communication*²⁷ of the Commission resolutely reiterated the key goals to guide the union in the following years, emphasizing that barriers to the implementation of efficiency measures still persisted.

The Action Plan, which continued many of the activities of the previous Action plan (2000-2006)²⁸, provided for the systematization and adoption of standards and rules already stipulated by existing and amended directives such as for Eco-Design minimum standards²⁹, household appliances rules on labelling³⁰,

²⁶ The *Green paper* was succession of previous efforts of the Commission expressed in the *Green Paper Towards a European Strategy for the Security of Energy Supply*, COM(2000) 769, 29.11.2000, and *Communication from the Commission Energy Efficiency in the European Community - Towards a Strategy for the Rational Use of Energy*, COM(1998) 246, 29.04.1998.

²⁷ European Commission, *Energy Efficiency: Delivering the 20% Target*, COM(2008) 772, 13.11.2008.

²⁸ Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions, *Action Plan to Improve Energy Efficiency in the European Community*, COM(2000) 247, 26.04.2000.

²⁹ *Directive 2005/32/EC of the European Parliament and of the Council of 6 July 2005* establishing a framework for the setting of ecodesign requirements for energy-using

directive on end-use energy efficiency and energy services³¹, *Energy Performance of Buildings Directive*³². Other directives related to the action plan and the energy efficiency in general were the directive on promotion of cogeneration³³, directive on energy efficiency requirements for ballasts for fluorescent lighting³⁴, directive on hot-water boilers³⁵ or the directive on energy efficiency requirements for household electric refrigerators and freezers³⁶.

products and amending Council Directive 92/42/EEC and Directives 96/57/EC and 2000/55/EC of the European Parliament and of the Council

³⁰ *Council Directive 92/75/EEC of 22 September 1992* on the indication by labelling and standard product information of the consumption of energy and other resources by household appliances

For a full list of amendment acts and implementing rules, see:

http://europa.eu/legislation_summaries/energy/energy_efficiency/l32004_en.htm

³¹ *Directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006* on energy end-use efficiency and energy services and repealing Council Directive 93/76/EEC.

³² *Directive 2002/91/EC of the European Parliament and of the Council of 16 December 2002* on the energy performance of buildings.

³³ *Directive 2004/8/EC of the European Parliament and of the Council of 11 February 2004* on the promotion of cogeneration based on a useful heat demand in the internal energy market and amending Directive 92/42/EEC.

³⁴ *European Parliament and Council Directive 2000/55/EC of the 18 September 2000* on energy efficiency requirements for ballasts for fluorescent lighting

³⁵ *Council Directive 92/42/EEC of 21 May 1992* on efficiency requirements for new hot-water boilers fired with liquid or gaseous fuels

³⁶ *Directive 96/57/EC of the European Parliament and of the Council of 3 September 1996* on energy efficiency requirements for household electric refrigerators, freezers and combinations thereof

Renewables Recommendations and Legislation

Since the *White Paper on Renewables* in 1997³⁷, finding alternative energy sources has been a central question in the EU energy policies. The White paper was the first to argue on a supranational level that renewable energy sources could help reduce dependence on imports and increase security of supply as well as contribute positively to cuts of CO₂ emissions. It set a goal of increasing the share of renewable energy sources (RES) in the European Union's gross internal energy consumption to 12% by 2010. A list of measures was proposed to compensate for the little importance attached to renewable energy sources in Community policies, programmes and the budget: non-discriminatory access to the electricity market; fiscal and financial incentives; new initiatives regarding bio-energy for transport, heat and electricity and, in particular, specific measures to increase the market share of bio-fuels, promote the use of biogas and develop markets for solid biomass; promotion of the use of renewable energy sources (such as solar energy) in the construction industry, both in retrofitting and for new buildings.

According to the evaluation *Communication of the Commission* in 2001³⁸, RES made little progress between 1997 and 2000. This prompted the first resolute action by the community adopting the first directive on RES³⁹, which was later supported with a concrete proposal for action by corresponding act in 2004. In order to promote progress, since 2000 the EU has, in a legislative framework, set two indicative targets for renewable energy - to increase the share of electricity produced by renewable energy to 22% by 2010, and the share of biofuels in diesel and petrol

³⁷ The White Paper followed on from the discussion stimulated by the Green Paper published by the Commission in November 1996. European Communication, *Energy for the Future: Renewable Sources of Energy - White Paper for a Community Strategy and Action Plan*

³⁸ Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions, *On the implementation of the Community Strategy and Action Plan on Renewable Energy Sources (1998 – 2000)*, COM(2001) 69, 16.02.2001.

³⁹ *Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market.*

used for transport to 5.75% in 2010. Pursuant to Directive 2001/77/EC, national specific targets were adopted for member states and applicant countries. In terms of different sources of renewable energy, the paper recommended concentration on developing wind, solar and biomass technologies.

Already in 2004, *Communication of the Commission*⁴⁰, reporting in accordance with Article 3 of *Directive 2001/77/EC*, mapped out some measures to be adopted as directives or communications later: Community plan for biomass and developing renewable energy in heating⁴¹, offshore wind policy⁴², electricity from renewable energy sources (wind, solar, geothermal, wave, tidal, hydroelectric, biomass, landfill gas, sewage treatment gas and biogas energies)⁴³, placing biofuels on the market.⁴⁴

⁴⁰ Communication from the Commission to the Council and the European Parliament, *The share of renewable energy in the EU - Commission Report in accordance with Article 3 of Directive 2001/77/EC, evaluation of the effect of legislative instruments and other Community policies on the development of the contribution of renewable energy sources in the EU and proposals for concrete actions*, COM(2004) 366, 26.5.2004.

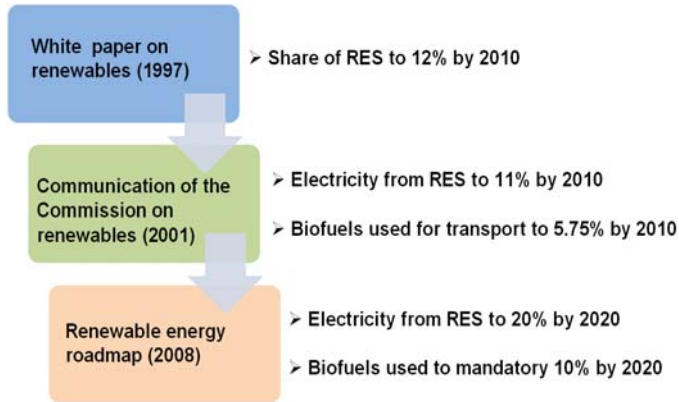
⁴¹ European Commission, *Biomass Action Plan*, COM(2005) 628, 7.12.2005

⁴² Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *Offshore Wind Energy: Action needed to deliver on the Energy Policy Objectives for 2020 and Beyond*, COM(2008) 768, 13.11.2008.

⁴³ *Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market.*

⁴⁴ European Commission Communication, *An EU Strategy for Biofuels*, COM(2006) 34, 8.02.2006

Figure 5. Development of RES Targets



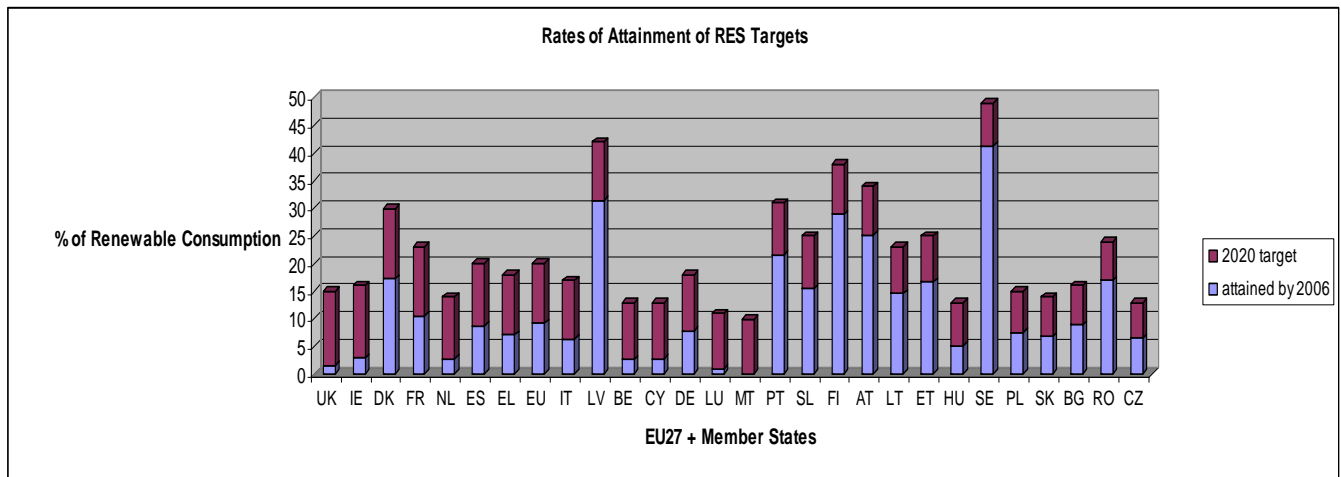
Source: Center for the Study of Democracy, 2009.

In 2008, a *Renewable Energy Road Map* was drawn to assess the share of renewable energy in the energy mix and the progress made in this area⁴⁵. It was the key document to set out the Commission's long-term strategy for renewable energy in the EU, including the target of producing 20% of total EU energy consumption from renewable energy sources by 2020 (a mandatory minimum target of 10% for biofuels) and the measures for promoting renewable energy sources in the electricity, biofuels and heating and cooling sectors (improvement of the internal market

and removal the barriers, support, encouragement and promotion, better integration of renewable energy sources into the power grid, exchange of best practices). The Road Map provided for each Member State to adopt mandatory targets and action plans in line with its potential in those three sectors. The later Directive 2009/28/EC arranges the regulatory basis for achievement of these goals.

Main problems of renewables introduction were also identified in the assessment: the high cost of renewable energy owing to the investment required, omission in calculation of the external cost of the different traditional energy sources, administrative problems resulting from installation procedures and the decentralised nature of most renewable energy applications, discriminatory rules governing grid access, inadequate information for suppliers, customers and installers. Furthermore, the progress made by the Member States was criticized of being patchy and highly uneven. This can be easily demonstrated by the following table of attainment of RES Targets (20% by 2020 for EU as entity).

Figure 6. EU Member States' Attainment of National RES Targets



Source: Data on Renewables by Europe's.

⁴⁵ Communication from the Commission to the Council and the European Parliament, *Renewable Energy Road Map - Renewable Energies in the 21st Century: Building a More Sustainable Future*, COM(2006) 848, 10.1.2007.

5. Instruments of the EU energy policies

In order to achieve its sustainable energy goals, the Union has prescribed and employed several types of instruments, which will be the focus of the following section.

partial exemptions or reductions in the level of taxation to: energy products used under fiscal control in the field of pilot projects for the technological development of more environmentally-friendly products or in relation to fuels from renewable sources; biofuels; forms of energy which are of solar, wind, tidal or geothermal origin, or from biomass or waste. In the course of 2008, the Commission was to review the *Energy Taxation Directive*⁴⁸ and start to examine how to

Figure 7. Characterisation of EU Instruments



Source: Center for the Study of Democracy, 2009.

Market Based Instruments

Although some mechanisms have been already in place through the years, it was not until 2007, when the Commission summarised the market-based mechanisms in a single *Green paper*⁴⁶. Two main types of market-based instrument are used at Community level. Firstly, these are **instruments influencing prices**, thus altering them, which applies principally to **taxes** (increasing the price of a product or service)⁴⁷ and **financial or fiscal incentives** (reducing the price). Under the principal *Council Directive 2003/96/EC*, for instance, the Council authorised Member States to grant tax advantages to businesses that take specific measures to reduce their emissions. Member States may also apply total or

identify and phase-out environmentally harmful subsidies.

Council Directive 2003/96/EC takes account of the competitiveness of businesses by providing for measures to alleviate the tax burden on businesses that undertake to achieve environmental protection objectives or improvements in energy efficiency. It also provides that Member States may refund, fully or in part, taxes paid by businesses that have invested in the rationalisation of their energy use.⁴⁹

Other **instruments influence quantities**, by which a maximum quantity is set, which is ultimately the case of **tradable permit schemes** such as the **greenhouse gas emissions trading scheme**. Under the latter mechanism a maximum quantity of a particular pollutant that may be emitted during a specified period is set, the quantity being divided up

⁴⁶ European Commission, *Green Paper on Market-based Instruments for Environment and Related Policy Purposes*, COM(2007) 140, 28.3.2007.

⁴⁷ *Council Directive 2003/96/EC of 27 October 2003* restructuring the Community framework for the taxation of energy products and electricity, and the 7 related acts.

⁴⁸ Ibid.

⁴⁹ This refund may be as much as 100% in the case of energy intensive businesses, and up to 50% for other businesses.

between economic operators⁵⁰ and traded by them on a market specifically set up for that purpose, according to their ability to comply with the emissions limits (those who emit fewer pollutants than they are allowed can sell their unused quotas while those who emit more can buy quotas to make up the shortfall)⁵¹.

Figure 8. Illustrative HGH Gas Trading Scheme



Source: Global Carbon.

Instruments influencing quantities offer greater certainty and visibility in terms of achieving specific objectives (emission limits, for example), while instruments influencing prices offer certainty as regards the cost of achieving the objective (taxes, for example) and are as a rule easier to implement.⁵² The advantages of market-based instruments compared with other instruments are that external costs are internalised, they allow businesses greater flexibility in meeting their objectives and thus lower compliance costs, they give firms an incentive to invest in

innovation to reduce their impact on the environment, they support employment when used in the context of green fiscal reform.⁵³

Financial Instruments

One of the key instruments of the Community in dealing with the environmental challenge in energy policies is the financing innovative thinking and technological progress in the field. Although sporadic initiatives existed since the very inception of the Union in the early 1990s, the first comprehensive one was the *Framework Programme for Actions in the Energy Sector* (1998-2002, €175 million), which helped in developing renewable sources (ALTENER programme, €77 million), increasing energy efficiency (SAVE programme, €66 million) and promoting combined heat and power production (co-generation)⁵⁴. The new framework programme - "*Intelligent Energy for Europe*" (2003-2006, €215 million), succeeded these efforts, proposing two additional programmes - international cooperation in line with these two priorities (*COOPENER*, €19 million) and measures on the energy aspects of transport (*STEER*, €35 million) (*ALTENER*, €86 million; *SAVE*, €75 million for the period 2003-2006).⁵⁵

After the end of the budget term, *Intelligent Energy for Europe* was incorporated in the new-generation *Competitiveness and Innovation Framework Programme (CIP)*⁵⁶, which was adopted for the period 2007-2013 under the objectives of the

⁵⁰ Oftentimes concerning activities in the energy sector, iron and steel production and processing, the mineral industry and the wood pulp, paper and board industry.

⁵¹ For more on the rules of emission trading, amending act and communications, see the main *Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003* establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC, and all the 16 related acts:

⁵² In addition, taxes are a source of revenue while tradable permit schemes only generate revenue where the quotas traded are first granted by public tender. Charges do not generate any revenue for public budgets because they only represent payment for services rendered. European Commission, *Green Paper on Market-based Instruments for Environment and Related Policy Purposes*, COM(2007) 140, 28.3.2007.

⁵³ Ibid.

⁵⁴ Along with four other parallel decisions: ETAP - forward studies and monitoring of the markets (€5 million), SYNERGY - international energy cooperation (€15 million), CARNOT - stimulation of technologies for the clean and efficiency use of solid fuels (€3 million), SURE - cooperation in the nuclear sector and in particular on safety, industrial cooperation with the NIS and the transport of radioactive material, including the combating of illicit traffic (€9 million).

⁵⁵ European Commission Press Release, *Intelligent Energy for Europe: the Commission Proposes a New Energy Action Programme*, IP/02/524, 09.04.2002.

⁵⁶ *Decision 1639/2006/EC of the European Parliament and of the Council of 24 October 2006* establishing a Competitiveness and Innovation Framework Programme (2007-2013).

revised *Lisbon Strategy*. It aimed to strengthen competitiveness and innovation capacity by encouraging the use of information and environmental technologies and renewable energy sources. The sustainable energy part in CIP was allotted 20% of the funding (€730 million). It supported improvements in energy efficiency, the adoption of new and renewable energy sources, greater market penetration for these energy sources, energy and fuel diversification, increase in the share of renewable energy and a reduction in final energy consumption. Eco element was included in various other programme decisions such as the *Entrepreneurship and Innovation Programme*, where one fifth of the total allocation of 430 million was again earmarked for promoting eco-innovation.

The *7th Framework Programme* is also an associated financial instrument to consolidate the European research in the energy field. Although most of the funding is envisaged for nuclear research, the *Cooperation* component, which aims to stimulate cooperation and improve links between industry and research within a transnational framework, has included energy and environment among its nine themes to be supported.⁵⁷ In this line, during the first year of implementation - 2007, 40% of the cooperative research actions called for were directly or indirectly related to the EU SDS challenges. Two Joint Technology Initiatives, *Clean Sky* and *Fuel cells and Hydrogen* have been proposed.⁵⁸

After months of protracted negotiations in context of the world financial crisis, the European Union Council of Ministers has agreed over and adopted the *Energy Stimulus Package* in June 2009 – an economic recovery regulation that aimed at granting Community financial assistance to projects in the field of energy (*EEPR* regulation)⁵⁹. The financial

instrument was designed to face the demands of economic recovery, energy security and reduce greenhouse gas emissions by increasing investments in defined strategic sectors. The package included €3.98 billion of investment in energy-related projects, to be implemented in 2009 and 2010, with €1.05 billion set aside for thirteen carbon capture and storage projects, and a further €565 million earmarked for five offshore wind-energy projects.⁶⁰

Technical instruments

The Community prepared a set of technical instrument for greener energy policies such as regular (annual, bi-annual) country self-assessments or Community evaluation of the member states' compliance with directives and guidelines. Good examples for such are evaluations of national targets and measures concerning introduction of RES as per *Directive 2001/77/EC*. Member States were required to publish in and after 2003, every two years subsequently, a report which included an analysis of success in meeting the national targets on renewables and their impact on the climate change. At Community level, the Commission was to publish a biannual report after 2004, based on the national reports assessing the extent to which the Member States have progressed towards achieving national indicative targets. The Commission was to present a report on the implementation of the Directive every five years.⁶¹

Another type of self-evaluation reports is that researching the barriers and difficulties when complying with administrative and planning procedures required for state institutions and the

taken by each member state in response to its specific circumstances, and also a number of actions to be taken at EU level.

⁶⁰ "EU Approves €3.98 Billion Energy Stimulus Package", *Green Economy Initiative*, 08.07.2009; See also *European Energy Programme for Recovery and EEPR Call for Proposals* at: http://ec.europa.eu/energy/grants/2009_07_15_en.htm (last access: 28/07/2009)

⁶¹ *Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market*

⁵⁷ *Decision No 1982/2006/EC of the European Parliament and of the Council of 18 December 2006 concerning the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007-13)*.

⁵⁸ European Commission, *2007 Progress Report on Sustainable Development Strategy*, COM (2007) 642, 22.10.2007, pp. 12-13.

⁵⁹ The regulation is part of the European economic recovery plan endorsed by the European Council in December 2008, and provides a framework for measures

energy generators themselves. With this in mind, Member States are required to review their existing legislative and regulatory frameworks concerning authorisation procedures in order to reduce regulatory and non-regulatory obstacles, to rationalise and speed up administrative procedures and to ensure that the rules are transparent and non-discriminatory. What is more, it is important for the rules to take account of the particular characteristics of the different technologies using renewable energy sources.

Supporting Schemes

The technical evaluations and assessments have paved the way for some various supporting schemes in different member states, which further help for meeting the goals of the community. *The Commission Communication of 2005*⁶², presented first evaluation on efforts for implementing *Directive 2001/77/EC*, and some of these alternative supporting schemes⁶³. One of these supporting schemes was the **feed-in tariffs**, which existed in most of the Member States and were characterised by a specific price, normally set for a period of around seven years that must be paid by electricity companies, usually distributors, to domestic producers of green electricity.

Another scheme was the **green certificate system**⁶⁴, which provided that in order to finance the additional cost of producing green electricity, and to ensure that it was generated in sufficient quantities, all consumers were obliged to purchase a certain number of green certificates from producers of electricity from renewable energy sources (RES-E) according to a fixed percentage (quota) of their total electricity consumption/generation.

Tendering systems existed in two Member States (Ireland and France), where the State issued a series of invitations to tender for the supply of RES-E, which will be sold at market price. The additional cost is passed on to the final consumer in the form of a

⁶² European Commission, *The support of electricity from renewable energy sources*, COM(2005) 627, 7.12.2005

⁶³ Some sixty support schemes for RES-E were already approved by the Commission during the period 2001 to 2004.

⁶⁴ Currently in force in Sweden, the United Kingdom, Italy, Belgium and Poland.

special tax. Tax incentives were used exclusively in Malta and Finland.

6. Conclusion

For the past two decades after the meeting in Rio, the EU has systematically developed a sophisticated and detailed regulatory framework for promoting and facilitating the sustainability of the energy sector in Europe. With its ambitious goals the union has spearheaded the global efforts for greener economy and the fight against climate change.

The self-imposed stringent measures, however, have found some of the EU countries, notably some of the Eastern European new members, not well equipped for fulfilling the demanding goals.. Although the adoption of regulations and the approximation to national laws have been comparatively easy for most of the EU Member States, the real challenge of effectively implementing those measures by means of special instruments still lies ahead. Some tensions between old and new members have also surfaced over the financial and technical capacity and resources of new member states to achieve equally demanding goals without harming their fragile economic development.

The use of green instruments, on the other hand, has showed varying success across countries, and has contributed not only to some positive trends, but also to some negative ones such as the increase of electricity prices for consumers or the creation of investment 'bubbles' in RES and influx of unregulated capital in the economy.

The global financial crisis and the failure of the climate change negotiations have introduced new variables in the complicated 'green' equation of the EU policy and regulation. As green measures take hold only slowly and the 2020 deadline looms large, European leaders seek to introduce new concepts such as "low carbon economy" for re-invigorating sustainable development within the framework of *Europe 2020*⁶⁵ strategy.

⁶⁵ European Commission, *Europe 2020: A strategy for smart, sustainable and inclusive growth*, COM(2010) 2020, 3.3.2010.