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CRITICAL ANALYSIS OF EU POLICY AND ITS IMPACT ON BUSINESS OF E.ON SE

KRITICKÁ ANALÝZA POLITIKY EVROPSKÉ UNIE A JEJ DOPAD NA FIRMU E.ON SE

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AUTOR PRÁCE
AUTHOR
Bc. ANDREA STAROSTOVÁ

VEDOUCÍ PRÁCE
SUPERVISOR
doc. Ing. STANISLAV ŠKAPA, Ph.D.

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Bc. Andrea Starostová

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L.S.

doc. Ing. Tomáš Meluzín, Ph.D.
Director of the Institute

doc. Ing. et Ing. Stanislav Škapa, Ph.D.
Dean of the Faculty

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Abstract

The main aim of master's thesis is to critically analyse European Union policy and its impact on business of transnational firm E.ON. Taking into account the aims of the EU policy which are defined as streamlining the way business is being conducted within the Union as well as guaranteeing accountability of both consumers and suppliers on the market, the objective of the thesis is specified as the analysis of political influence of EU decision-making and its effect on subsequent strategic decisions within the company. The analytical part of the thesis is therefore focused on the analyses of European energy policy putting emphasis on E.ON's company profile, EU energy strategy, Renewable energy, Nuclear energy, Security of energy supply and the EU Emissions Trading System.

Abstrakt

Hlavným cieľom diplomovej práce je kriticky analyzovať politiku Európskej Únie a jej dopad na činnosť nadnárodnej spoločnosti E.ON. Keďže politika Európskej Únie má za cieľ zefektívniť spôsob podnikania vykonávaného v rámci Európskej Únie a okrem iného má predstavovať garanciu zodpovednosti jak spotrebiteľov, tak dodávateľov operujúcich na trhu, tak zámer práce bol definovaný na analýzu politického vplyvu rozhodnutí Európskej Únie a ich dopad na následné strategické rozhodnutia firmy. Analytická čas práce je preto zameraná na analýzu Európskej energetickej politiky s kladením dôrazu na profil spoločnosti E.ON, Európsku energetickú stratégiu, obnoviteľné zdroje, jadrovú energetiku, bezpečnosť energetickej dodávky a na Európsky systém obchodovania s emisiami.

Key words

European Union, European Commission, European energy policy, EU energy strategy, EU legislation, Renewable resources, Nuclear energy, EU ETS

Kľúčové slová

Európska Únia, Európska komisia, Európska energetická politika, Európska energetická stratégia. Európska legislatíva, Obnoviteľné zdroje, Jadrová energetika, EU ETS

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Declaration of originality

I hereby declare that this master´s thesis originated entirely from me. Information derived from the published work has been acknowledged in the text and references are given in the list of reference. I also declare that I did not breach of copyright in the sense of Act. No. 121/200 coll. on Copyright Law and Rights Related to Copyright and on the Amendment of Certain Legislative Acts.

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Bc. Andrea Starostová

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INTRODUCTION

As a matter of fact, the EU has been a key representative in development cooperation for many years by representing more than 50 per cent of global aid. However, with regard to EU policy issues, they are inherently complex and ambiguous. How to evaluate policy alternatives often remains moot point. The framing of policy issues influences the processing of political interests and ideas and their expression in policy choices.

What is the relative power of the European Commission, the Council of Ministers and the European Parliament in legislative decision-making in the European Union? What levels of resources do these actors possess that enable them to exert influence on each other and on the contents of legislation? The balance of power between these institutions matters, because it influences the contents of legislation, which in turn affects just about every aspect of economic, social and cultural life in the EU's Member States. Each of the three institutions has distinct roles in the legislative decision-making process.

Nevertheless, relative to energy policy, the political economy of energy is marked now by a number of doubts, which need to be analysed deeply. New environmental concerns, moreover, represent a significant factor impacting on the international political economy of energy. It is necessary to note that issues such as global climate change mitigation and the promotion of sustainable energy sources and of energy efficiency are obtaining a more fixed political dimension in many energy importing States apart from the EU.

In this regard, the master's thesis aimed at critical analysis of EU policy and its impact on business of E.ON is organized into three main parts as follows. The first part of the work presents the basis of theoretical background regarding European Union policy along with European policy that is vital for understanding of subsequent parts. The second part reflects deep analyses focusing on profile of E.ON's company, EU energy strategy, Renewable energy, Nuclear energy, Security of energy supply and the EU Emissions Trading System that provide background for last part of the thesis dedicated to summary of EU energy policy and its impact on the company E.ON and suggestion of potential proposals.

AIM OF THE THESIS

The main aim of master's thesis is to critically analyse European Union policy and its impact on business of transnational firm E.ON. To be more precise, the objective of the thesis is specified as the analysis of political influence of EU decision-making and its effect on subsequent strategic decisions within the company.

Nevertheless, the aim of the analytical part should be concentrated on the deep analysis of European policy directives with regard to EU energy policy and evaluation of this policy and its impact on the company E.ON. And finally, determine potential proposals for foreseeable future of energy market in European Union.

1 THEORETICAL BACKGROUND

1.1 European Union: power and policy-making

At a time when the European Union strives to assert itself as the collective actor of its member states, despite its struggle with the sovereign debt crisis, it has the potential to become a significant factor in shaping global development. As the configuration of the global arena has radically changed over the past few years, the EU's institutions, its policy procedures as well as its own normative claims for constituting a global actor have progressed. Furthermore, the EU is understood as a system of multiple institutional actors. It is an arena for member states, in which variances in mandates and competencies over policies provide space for bargains in decision- making processes.

In other words: it is a political arena in which actors will aspire to gain the equilibrium rather than 'just' striving for the optimal outcome on a single issue. How broadly or narrowly policy areas are defined therefore largely determines the judgement on whether they are in an acceptable equilibrium or whether a new deal has to be struck to respond to both content needs and to political log- rolling (Ganzle, Grimm and Makhan, 2012, p.2).

At Lisbon in 2000, the European Union set itself a new strategic aim for the next decade, namely: '…to become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion'. Thus, the vision is to become the world's leading economy in terms of competitiveness and economic growth (Svendsen, 2003, p.1).

Nevertheless, in case of understanding Commission involvement in the European policy process, it is necessary to come to terms with policy-making not just within the boundaries of the Commission, but also in other EU arenas, particularly, the EP and the Council of Ministers. The strategic position of the Commission within this policy process allows a special standpoint from which it can begin to survey the informal workings of the Union, whether on a day-to-day basis, or in regard to the grander projects developed and functions conducted. Yet to understand fully the character of European policy-making, such generalisations are merely a starting-point (Cini, 1996, p.143).

1.1.1 The European Commission

The Commission is central to the integration process because in most areas of EU policy-making it carries the sole responsibility for proposing new legislation. The monopoly of initiative with respect to most first-pillar matters has made the Commission a pivotal actor in the EU policy-process, placing it in a privileged position in relation to national governments, organised interests and the European Parliament. It has allowed the Commission a part in framing the issues, setting the agenda and, in a wider sense, shaping the evolution of the European Union (Richardson, 2001).

Beyond initiating EU legislation, the Commission's functions also include the mediation – even 'manipulation' – of member state positions during the decision-taking phase of the policy-process, and control over compliance with EU legislation once this has been passed. Furthermore, in a range of areas the Commission itself is either the decision-taker (for example in competition policy) or policy-manager (for example in managing pre-accession assistance to the countries of Central and Eastern Europe). Finally, the Commission also has a role in informing citizens about EU policies and representing the EU's trade interests in international fora (Richardson, 2001).

The variety of tasks it has to perform within the system of European governance make the Commission a complex institution. It has to possess technical expertise in almost every area of government activity as well as an astute awareness of the politics of these issues, if it wants to see its policy proposals and other initiatives succeed. The need to handle the often contradictory demands of administrative expertise and political preference within the same institution can exacerbate tensions within the Commission. And pressure to meet an expanding range of tasks with often limited resources can create problems with administrative 'overload', which in turn may damage the efficiency and legitimacy of Commission actions (Richardson, 2001).

Simultaneously, the Commission built up a body of "soft law": it oversaw the growth of frameworks of rules, recommendations, decisions and practices in novel policy sectors which were strong enough to structure social and economic interests – leading them to accept that 'Europe matters' – without having to seek explicit member state approval by sending proposals to the Council. This construction of soft law continued to be significant even when policy-making in the wide variety of sectors become codified later (Richardson, 2001).

It provided valuable experience in a novel system of administration and implementation – a system in which the Commission cannot rely on hierarchy, but where its power must be based on negotiation and persuasion (Richardson, 2001).

From another point of view, as a result of its increasing significance and high profile, the Commission has been facing a broad range of criticisms. It is castigated for being too bureaucratic or technocratic (intensive to the political priorities of the day) as well as for too much political activism (too involved in deciding political priorities). Such criticisms of the Commission are contradictory, but not necessarily wrong. The fact of the Commission, become *de facto* EU standards for the single market. Essentially, the Commission developed a policy of merely overseeing what became in many sectors market self-regulation (Richardson, 2001).

Nevertheless, to consider the Commission as a 'policy entrepreneur' is to make some connection between its role in the formulation of European-level policy, and its control over the ideas, knowledge and, indeed, the issues that underpin it. For the task which is often assumed by political parties at national level – the presentation of competing policy conceptualisations – is, within the EU, a task for the Commission (Cini, 1996, p.144).

So, as far as the Commission is dealt with, the agenda-setting phase is the most creative of all stages in the European policy process. Opportunities for the Commission to establish the parameters within which future discussion takes place, and hence to influence final outcomes, are substantial. This may involve attempts to upgrade the common interest, that is, to raise the stakes of European policy and to broaden the policy debate. It is clear, nonetheless, that the Commission is not the merely player in this policy formulation game. As such, even though it is the sole initiator of legislation, it would be misleading to overemphasize its unique role in establishing the EU policy agenda.

No one institution really has an exclusive monopoly on policy initiation. Policy ideas emerge from a variety of sources: from the formal requests of the European Council or the European Parliament; from national governments individually or jointly; from international organisations or interest groups; or from commitments made in existing legislation or treaties (Cini, 1996).

Hence, although there appears at first glance to be clear political domination by the Commission in the policy process of the Community, in reality there are multiple avenues of potential influence, even within the Commission. For outsiders, this makes the European policy agenda notoriously difficult to foresee, and poses a serious challenge for all actors who are in the business of trying to do just that. Indeed, the market for policy ideas within the EC policy process is much more dynamic than in any one national policy system (Cini, 1996).

This is no doubt beneficial with regard to policy innovation, but the ensuing process is more difficult for everyone – including groups – to manage. This 'agenda uncertainty' makes involvement in the EU policy process a risky and often unsatisfying business. There is no science of lobbying; each case is unique, involving a distinct set of inputs, influences and pressures upon the Commission. However, interests have consistently sought to influence the broader strands and substance of EU policy content, as well as focusing on more specific instances of legislative activity (Cini, 1996).

This situation is as uncertain for the Commission officials involved as it is for those attempting to influence European legislation from outside the institution. The process of agreeing legislation in the Community usually includes some degree of confusion on all sides as to the effect of various often contradictory pressures on those involved in key negotiating decisions (Cini, 1996, p.144).

1.1.2 The European Parliament

The European Parliament (EP) is directly elected and has considerable influence over policy-making. By these standards, the EP is a genuine parliament. It does not, however, have some of the powers that have traditionally been the prerogative of the parliaments in the EU member states. The proper role of the European Parliament and the nation-state parliaments within the EU is hotly debated (Richardson, 2001).

One of the two main camps in this debate argues in favour of transforming the EP into something of a 'national' (or federal) parliament, but at the level of the European Union. This would in their view help reduce the EU democratic deficit and address the lack of democratic legitimacy which has been demonstrated by decreasing turnout in European elections. For others, the main democratic link is and should be in which national parliaments control their governments, who, in turn, represent the member states in the Council (Richardson, 2001).

An important truism that sometimes gets lost in the debate over the EP's role and functions is that the Union's procedures for making policy vary considerably across policy areas. The member states have ceded decision-making authority to EU institutions in areas such as external trade, the internal market, and the Common Agricultural Policy (CAP). When the EU decides new legislation in these areas it is binding on the member states. EU legislation is also binding in other policy areas, such as environment, health policy and regional policies, but in these matters the member states also have legislation of their own. There are also policy areas such as education and culture, in which the Union primarily complements national legislation and tries to facilitate co-operation among member states. In yet other policy areas, for instance civil law, income tax, and social-moral issues such as religion and abortion, decision-making authority remains outside the scope of the Union institutions, including Parliament (Richardson, 2001).

There are many other differences between the roles and influence of the EP and the national parliaments of the member states. For one thing, almost all public spending and social transfers are controlled by the member states and their parliaments. The European Union spends less than 2% of the GDP of the whole EU area (Richardson, 2001).

Moreover, constitutional questions, such as those concerning the balance of power between Union institutions, must be approved by the parliaments of the member states,

but not by the EP. In several important policy areas within the EU, the EP is limited to indirect forms of influence. These include important parts of the Economic and Monetary Union, Common Foreign and Security Policy (the second pillar), and parts of Justice and Home Affairs (i.e. what is left of the third pillar) (Richardson, 2001).

In addition, with a few exceptions, such as rules governing the duties of Members of the European Parliament (MEPs) and the possible approval of a unified electoral system for electing its own members, the EP does not have the formal right to initiate legislation. Moreover, as regards executive accountability, there is no single executive (of the type that exists in the member states) that the Parliament can overthrow. Instead, the Commission, the Council and the European Council (the summits of the national leaders) share the role of 'executive' (Richardson, 2001).

The EP is also important in deciding how the Union will spend its money. If it can muster the necessary majorities, the EP can both change (amend) and block (veto) the Union's budget proposal. Its budgetary amendment rights are restricted to the so-called non-compulsory expenditure, which excludes the CAP and thus 45% of the budget in 1999. However, the Parliament has repeatedly challenged the distinction between the compulsory and non-compulsory parts of the budget and it has used its powers to add new budget lines within the non-compulsory part. For example, the Parliament has forced the Council to accept increases in funding for education, training, culture, and social and employment policies (Richardson, 2001).

The legislative influence of the Parliament is significant, but, again, its influence varies considerably between policy areas, which are themselves linked to four main decision-making procedures. One procedure applies only to a small but important number of issues such as the incorporation of new member states into the Union and certain other international agreements. This is the assent procedure under which the EP cannot change the proposal, but which requires that the EP must support the proposal for it to be adopted. The decision rule under the assent procedure is usually simple majority, but accession of new members, adoption of a uniform electoral system for EP elections and sanctions in the event of a breach of human rights must be approved by an absolute majority of all MEPs, currently 314 votes out of a total of 626 MEPs (Richardson, 2001).

Under this procedure, a major source of EP influence stems from its potential to act as a veto player. This means that even if it cannot propose anything on its own, it can block Commission and Council proposals, which does give it some leverage over the other two institutions. Nevertheless, adding to the complexity, there are three other main decision-making procedures that directly involve the EP. These are consultation, co-operation and co-decision procedures (Richardson, 2001).

1.1.3 The Council of Ministers

The Council is the main, formal point for the representation of national interests in the EU policy process. There are, of course, numerous ways in which member states influence EU business informally, whether this is through the lobbying of the Commission in the pre-proposal stage of the legislative process, the impact of domestic party hierarchies on voting in the European Parliament or the use of committees to oversee implementation of policies. But in formal, constitutional sense, the Council provides for the systematic involvement of member state representatives in almost any aspect of European integration (Richardson, 2001).

The Council of Ministers is at the centre of the decision-making stage. The Council is highly structured and meets in distinct compositions of ministers. Within the Council, directly under the ministerial level, there are the groups of the Committee of the Permanent Representatives of the Member States (COREPER I and II). These groups composed of the ambassadors in COREPER II, and deputies in COREPER I, representing each EU member state. These groups are accountable for arranging the ministerial meetings, and for brokering decisions that could not be met at lower levels. Below the level of the COREPER groups in the Council there is what basically amounts to a proliferation of working groups (Achen, Stokman and Thomson, 2006).

These groups composed of civil servants from the permanent representations of the member states in Brussels and are often specialists in national capitals holding specific expertise. It is at this level of the Council that political agreements on large proportions of legislative proposals are reached. One report states that as much as 70 per cent of the contents of legislative acts are decided on the level of working groups (Achen, Stokman and Thomson, 2006).

While this provides an indication of the significance of the working groups, it is difficult to quantify their real input in this way. Higher institutional levels often decide on issues that are more politically contentious, and instructions from committees higher in the Council hierarchy can be instrumental in reaching agreements at lower levels (Achen, Stokman and Thomson, 2006).

The Council Presidency coordinates and chairs discussions in the Council, with the Presidency, in the time period studied here, rotating every six months among the 15 Member states. The Presidency's most crucial tasks contain the facilitation of agreements on pending legislative proposals, and the representation of the Council in its dealings with EP. The Member state holding the Presidency allows Member states to gain decision outcomes closer to their preferences than would otherwise have been the case (Achen, Stokman and Thomson, 2006).

Facilitating progress on pending proposals is all the more of a challenge for the sake of the common practise of seeking broad consensus before the Council endorses a decision outcome. Thus, decision-making in the Council is characterised by deliberate attempts to obtain consensus. According to the formalities of the decision-making procedures, member states can be outvoted under the system of qualified majority voting (QMV) that applies to many policy areas. Under QMV, the distribution of votes between the member states bears a rough resemblance to the countries' population sizes (Achen, Stokman and Thomson, 2006).

1.1.4 Decision-making procedures

The two most significant decision-making procedures to which EU legislative proposals are subjects represent the consultation procedure and the co-decision procedure. These vary in regard to the power given to the European Parliament. Consultation is the simpler of the two procedures and requires less engagement of the EP. Under the co-decision procedure, in comparison, the EP essentially co-legislates with the Council. The procedure to which a Commission's proposal is subject depends on the particular policy area the proposal is dealt with (Achen, Stokman and Thomson, 2006).

Under the consultation procedure, the EP must give its opinion on the Commission's proposal before the Council decides on it. EP opinions vary substantially in terms of their level of detail. Some opinions consist of rather general statements of approval or disapproval of the Commission's legislative proposals, while other opinions composed of detailed proposals for revisions. Under consultation, the parliament has few means at its disposal to enforce its opinions, other than exercising political pressure. Commission proposals in the subject areas of agriculture, fisheries, and justice and home affairs are among those generally subject to the consultation procedure (Achen, Stokman and Thomson, 2006).

The co-decision procedure gives for a more extensive engagement of the EP. In contrast to the consultation procedure, the co-decision procedure is relatively complex and provides for at least two readings of a Commission proposal if the Council and the EP cannot reach an agreement earlier. In the face of protracted differences among the positions of the Council and the EP, the Conciliation Committee is convened, consisting of representatives of the Council and the EP. Nevertheless, since the Treaty of Amsterdam, the Council and the EP often negotiate an early agreement, thereby shortening the potentially lengthy co-decision procedure (Achen, Stokman and Thomson, 2006).

The Commission also participates in the Conciliation Committee, although it does so as an observer. For the legislative act to be adopted, the Commission's approval of the joint text drawn up in the Conciliation Committee is not formally needed. Though, the text must be approved by the Council and by the EP. Internal market is one of the policy domains to which the co-decision procedure usually applies. In the selection of

proposals involved in this volume, this policy area features quite remarkably (Achen, Stokman and Thomson, 2006).

Both, the consultation procedure and the co-decision procedure can be combined with either qualified majority voting or the unanimity requirement in the Council. The selection of qualified majority voting (QMV) or the unanimity also depends on the particular policy area with which the Commission's proposal is dealt with. Most proposals in the areas of agriculture and fisheries require consultation combined with QMV in the Council, while proposals in the area of justice and home affairs require consultation combined with unanimity. Co-decision is generally, however not always, combined with QMV in the Council (Achen, Stokman and Thomson, 2006).

Clearly, legislative decision-making in the EU involves daily interactions between the institutions and permanent representations of the member states in Brussels (Achen, Stokman and Thomson, 2006).

1.2 Treaties regarding energy market

1.2.1 The Energy Community Treaty

The Energy Community Treaty creates an integrated energy market in electricity and gas between the European Community[1] and the contracting parties. The members of the Energy Community are the European Community on the one hand and Albania, Bulgaria, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia, Montenegro, Romania, Serbia (hereafter referred to as the Adhering Parties) and the United Nations Interim Administration Mission in Kosovo pursuant to United Nations Security Council Resolution 1244 on the other hand. Moreover, one or more Member States of the EU may take part in the Energy Community at the request of the Ministerial Council. Third countries may be accepted as observers (European Union, 2007a; Energy Community, 2013).

The Treaty refers to the territory of the contracting parties and the territory under the jurisdiction of the United Nations Interim Administration Mission in Kosovo.

The Treaty came into force on 1 July 2006. It is concluded for a period of ten years. Its use may be extended either for all parties by uniform decision of the Ministerial Council, or for the parties who vote for extension (as long as they number at least two thirds of the number of Energy Community members) (European Union, 2007a; Energy Community, 2013).

Role of the Energy Community

- to form a stable legal and market framework competent to attract investment in order to secure a stable and continuous energy supply
- to form a single regulatory space for trade in network energy
- to improve security of supply in this space and develop cross-border relations
- to enhance energy efficiency and the environmental situation with regard to network energy and develop renewable energy sources
- to develop network energy market competition (European Union, 2007a)

[1] an economic and political association of European States that came into being in 1967, when the legislative and executive bodies of the European Economic Community merged with those of the European Coal and Steel Community and the European Atomic Energy Community: subsumed into the European Union in 1993 (The Free Dictionary, 2013).

Activities of the Energy Community

A significant part of the Energy Community's activities covers the putting into practice a part of Community legislation, or 'acquis communautaire'[2], in all the States parties to the Treaty, on energy, environment, competition and renewable energies, as well as compliance with certain general Community standards regarding technical systems, for instance on the subject of cross-border transportation or connection.

Furthermore, the Treaty defines a mechanism for operation of regional energy markets which involves the territory of the parties to the Treaty and the EU Member States included. This system sets a framework of measures concerning long-distance transportation of network energy, security of supply, procuration of energy to citizens, harmonisation, promotion of renewable energy sources and energy efficiency, as well as in case of unexpected crisis on the network energy market in the territory of an Energy Community member (European Union, 2007a).

In addition, the Treaty creates an energy market without internal borders between the parties, in which customs duties and quantitative energy import and export restraints, and any measures having comparable effect, are prohibited between the parties, unless exceptional circumstances concern (with regard to public order, public safety, protection of human and animal health, preservation of plants, protection of industrial and commercial property). The Treaty also includes procuration on relations with third countries and mutual assistance in the event of disturbance. The EU Commission acts as coordinator of these activities (European Union, 2007a).

Institutions and decision-making

The Ministerial Council, made up of one representative for each party to the Treaty, establishes general policy guidelines, takes measures to fulfil the Treaty's objectives and adopts procedural acts such as allocation of tasks, powers or obligations. The presidency is taken place in turn by each party for a period of six months and is assisted by one representative of the European Community and one representative of the

[2] Acquis communautaire ('acquis') includes all the EU's treaties and laws, declarations and resolutions, international agreements on EU affairs and the judgments given by the Court of Justice (European Union, 2013d).

incoming presidency. The Council submits an annual report to the European Parliament and to the parliaments of the contracting parties (European Union, 2007a).

The crucial mission of the Permanent High Level Group is to prepare the work of the Ministerial Council. It is composed of one representative of each party to the Treaty. The Regulatory Board's primary role is to advise the other institutions and issue recommendations in case of cross-border disputes. It consists of, for each party to the Treaty, one representative of the energy regulator, with the European Community being represented by the European Commission, assisted by one regulator from each participating Member State, and one representative of the European Regulators Group for Electricity and Gas (ERGEG) (European Union, 2007a; Energy Community, 2013).

Moreover, the Energy Community is advised by two consisted of representatives of all interested parties. The permanent Secretariat, based in Vienna, provides, amongst other things, administrative support to the other institutions of the Energy Community and examines appropriate execution by the parties of their obligations. The Energy Community makes decisions (binding) and recommendations (non-binding). These steps are taken, as appropriate, either on proposal from the European Commission (application of the acquis communautaire), or on proposal by a party to the Treaty (other activities), and are adopted either by a simple majority (application of the acquis communautaire), or by a two-thirds majority (mechanism for operation of markets), or by unanimity (internal energy market) (European Union, 2007a).

In case of serious and tenacious breach by a party of its obligations, the Ministerial Council may, acting by unanimity, suspend certain rights granted to this party by the Treaty (European Union, 2007a; Energy Community, 2013).

1.2.2 The Energy Charter Treaty

Background

At the Dublin European Council (June 1990), the Prime Minister of the Netherlands proposed establishing collaboration in the energy sector with the eastern European and former Soviet Union countries, with the goal of stimulating economic growth and enhancing the EU's security of supply. The Council invited the Commission to look into the best way of establishing cooperation, and in 1991 the Commission suggested the European Energy Charter. Negotiations on this Charter began in Brussels in July 1991 and culminated in the signature of a concluding document at The Hague on 17 December 1991 (European Union, 2007d).

The 51 signatories of the European Energy Charter undertook to pursue the objectives established in the Charter and to establish cooperation under a legally binding basic agreement, which became the Energy Charter Treaty. The purpose of this Treaty is to promote East-West industrial cooperation through legal guarantees regarding investments, transit and trade. The Energy Charter Treaty and the Energy Charter Protocol on energy efficiency and related environmental aspects were signed in Lisbon on 17 December 1994 by all signatories to the 1991 Charter except of the United States and Canada. The EU and its Member States are signatories to the Treaty and the Protocol (European Union, 2007d).

The Energy Charter Treaty and the Energy Charter Protocol on energy efficiency and associated environmental aspects were confirmed by this Decision on behalf of the European Coal and Steel Community the European Community (EC) and Euratom (European Atomic Energy Community). The Decision clarifies the methods for establishing the position which the EU may be required to take within the Energy Charter Conference. It also indicates the method for setting up the position to take on behalf of the ECSC and Euratom (European Union, 2007d).

Aim of Energy Charter Treaty

The goal of the Treaty is to institute a legal framework to promote long-term cooperation in the energy sector based on the principles enshrined in the European Energy Charter. The crucial provisions of the Treaty deal with the protection of investment, trade in energy materials and products, transit and dispute settlement.

Concerning completed investments, Contracting Parties must promote and create stable, appropriate and transparent conditions for foreign investors and apply the most-favoured nation principle or offer the same treatment that is given to national investors, whichever arrangement is the most appropriate. Nevertheless, for pre-investments the principle of national treatment will be applied in two stages (European Union, 2007d).

In line with the Treaty, the first stage is to apply the "best efforts" clause. Then, and subject to the conditions to be defined in a supplementary treaty (currently under negotiation), it will become legally binding to offer national treatment regarding investments. Trade in energy materials and products among Contracting Parties is governed by the GATT rules. This means that the signatories to the Treaty must apply the GATT rules on trading energy materials and products even if they are not members of the WTO or GATT (European Union, 2007d).

Related to transit, each party must take the vital steps to facilitate the transit of energy materials and products in line with the principle of free transit without distinction made on the origin, destination or ownership of such energy materials or products, nor discriminatory pricing on the basis of these distinctions, and without imposing delays, limits or unreasonable taxation (European Union, 2007d).

All parties undertake to ensure that the provisions on the transit of energy materials and products and the use of energy transit equipment treat energy materials and products in transit in a manner that is no less appropriate than that concerning materials and products originating in their area, save where otherwise provided in an international agreement. The transit of energy materials and products of energy materials and products may not be interrupted or declined in the case of a dispute on transit arrangements before the relevant dispute settlement procedures have been followed. Other provisions prevent countries through which energy materials and products transit from opposing the creation of new capacity (European Union, 2007d).

The Treaty provides for strict procedures for settling disputes either among countries or between private investors and the state in which the investment has been made. In the event of a dispute between an investor and a country, the investor may decide to submit the dispute to international arbitration. In the event of a dispute among countries, and if diplomacy is unsuccessful, an ad hoc arbitration tribunal may be establish. The settlement solutions provided by these mechanisms are binding.

The Treaty sets out the following provisions on competition, transparency, sovereignty, taxation and the environment. Relative to competition, all parties must take steps to combat market distortions and barriers to competition in economic activities in the energy sector. They must ensure that their legal framework contains provisions to deal with any unilateral or concerted anti-competitive behaviour in economic activities in the energy sector. Concerning transparency, Contracting Parties must nominate at least one inquiry point to which requests for information on laws, regulations, legal decisions and general administrative decisions concerning energy materials and products may be addressed. With regard to sovereignty, all Contracting Parties exercise sovereignty over their energy resources in compliance with and subject to international law (European Union, 2007d).

In regard to environment, the "polluter pays" principle is enshrined in the Treaty. This favours market-led pricing which fully reflects environmental costs and benefits. Contracting Parties must reduce, in an economically effective manner, any environmentally harmful impact caused by any operations in the energy cycle in their territory, in accordance with security standards. Regarding taxation, the Treaty does not establish new fiscal rights or obligations. Direct taxation remains a matter for the national legislation of each country or for applicable bilateral agreements.

State enterprises and privileged bodies: all State enterprises or bodies that are granted exclusive or special privileges by the Contracting Party must meet Treaty obligations. The Treaty has a protection clause to maintain the preferential treatment deriving from the treaties establishing the European communities. Thus under the clause on economic integration agreements (EIAs), a signatory that is party to an EIA has no obligation to extend to another Contracting Party that is not party to the EIA the preferential treatment afforded for in that EIA (European Union, 2007d).

Not all the provisions of the Treaty apply immediately to all signatories upon ratification and come into force of the Treaty. Countries with transition economies profit from some provisional arrangements. The Treaty sets out the organisation, structure, tasks and financial provisions for the Energy Charter Conference. Furthermore, the Treaty affords for the withdrawal of any Contracting Party, subject to accordance with a deadline (five years from the come into force of the Treaty) (European Union, 2007d).

1.2.3 The Euratom Treaty

Creation

The establishment of the European Coal and Steel Community, which entered into force in July 1952, was the first great achievement of the supranational Europe. For the first time, the six Member States of this organisation surrendered part of their national sovereignty, although in a limited field, to the Community. The limitations of this first attempt at integration were quickly revealed with the failure of the European Defence Community (EDC) in 1954 (European Union, 2007e).

While it might have been feared that the effort undertaken by the ECSC would not bear fruit, the Messina Conference of June 1955 attempted to relaunch the European process. The Conference was followed by a series of other meetings of ministers and experts. A preparatory committee was established at the beginning of 1956 with the task of preparing a communication on the creation of a European common market. This committee met in Brussels and was chaired by P.H. Spaak, the Belgian Foreign Minister at the time. In April 1956, the committee put forward a set of two projects which corresponded to the two options chosen by the States:

- the creation of a generalised common market
- the creation of an atomic energy community

These famous "Treaties of Rome" were signed in Rome in March 1957. The first treaty established a European Economic Community (EEC) and the second established a European Atomic Energy Community, better known as Euratom. Following unproblematic ratification in the various countries, the two treaties came into force on 1 January 1958. This summary sheet concerns only with the Euratom Treaty (European Union, 2007e).

Objectives

To cope with the general shortage of "conventional" energy in the 1950s, the six founding States (Belgium, France, Germany, Italy, Luxembourg and the Netherlands) looked to nuclear energy as a means of accomplishing energy independence. Since the costs of investing in nuclear energy could not be reached by individual States, the founding States joined together to form Euratom. The general aim of the Treaty is to contribute to the formation and development of Europe's nuclear industries, so that all

the Member States can profit from the development of atomic energy, and to ensure security of supply. At the same time, the Treaty guarantees high safety standards for the public and prevents nuclear materials intended mainly for civilian use from being diverted to military use. It is necessary to note that Euratom's powers are restricted to peaceful civil uses of nuclear energy (European Union, 2007e).

Structure

The Euratom Treaty consists of 234 articles which are set out under six titles and preceded by a preamble. The number of articles was decreased to 177 following the signature in December 2007 of the Treaty amending the Treaty on European Union (EU Treaty) and the Treaty instituting the European Community (European Union, 2007e).

- The first title sets out the seven tasks which the Treaty entrusts to the Community.
- The second title sets out provisions to encourage progress in the field of nuclear energy (promotion of research, dissemination of information, health and safety, investment, joint undertakings, supplies, safeguards, property ownership, the nuclear common market and external relations).
- The third title deals with the institutions of the Community and with general financial provisions. These provisions were adapted in line with the Treaty amending the EU Treaty and the EC Treaty signed in December 2007.
- The fourth title concerned with certain financial provisions.
- The fifth and sixth titles concern respectively with general provisions and provisions relating to the initial period (setting up the institutions, initial application provisions and transitional provisions).

Moreover, the Treaty also includes five annexes concerning with the fields of research regarding nuclear energy referred to in Article 4 of the Treaty, the industrial activities referred to in Article 41 of the Treaty, the advantages which may be conferred on joint undertakings under Article 48 of the Treaty, a list of goods and products subject to the provisions of Chapter 9 on the nuclear common market, and the initial research and training programme referred to in Article 215 of the Treaty. Lastly, two protocols are also appended to the Treaty. These are the Protocol on the application of the Treaty establishing the European Atomic Energy Community to the non-European parts of the

Kingdom of the Netherlands and the Protocol on the Statute of the Court of Justice of the European Atomic Energy Community (European Union, 2007e).

Tasks

- to promote research and ensure the dissemination of technical information
- to set up united safety standards to protect the health of workers and of the general public and ensure that they are applied
- to facilitate investment and ensure the establishment of the basic installations necessary for the development of nuclear energy in the EU
- to ensure that all users in the EU receive a regular and equitable supply of ores and nuclear fuels
- to make certain that civil nuclear materials are not diverted to other (particularly military) purposes
- to exercise the right of ownership conferred upon it with respect to special fissile materials
- to foster progress in the peaceful uses of nuclear energy by working with other countries and international organisations
- to set up joint undertakings (European Union, 2007e)

Institutions and Member States

The institutional structure of the Euratom Treaty is broadly similar to that of the EEC Treaty and is built around the same "institutional triangle" (Council, Commission and European Parliament). Therefore, the achievement of the tasks entrusted to the Community is guaranteed not only by the European Parliament, the Commission and the Council, but also by the Court of Justice and the Court of Auditors.

Each institution acts within the restraints of the powers conferred on it by the Treaty. The Council and the Commission are assisted by an Economic and Social Committee acting in an advisory capacity. The Community institutions are accountable for implementing the Treaty and for the two specific Euratom bodies: the Supply Agency and the Safeguards Office (which carries out physical and accounting checks in all nuclear installations in the Community) (European Union, 2007e).

However the Euratom Treaty gives the Community no strict, exclusive powers in certain fields, it retains real added value for its members on the basis of this Treaty, the Commission has adopted recommendations and decisions which, although not binding, set European standards. Moreover, it must be stressed that other Community policies, for example the environment and research policies, also have a marked impact on the nuclear industry) (European Union, 2007e).

The value added by Euratom and the EU can be seen notably clearly in the context of enlargement. As a result of Euratom, the EU pursues a harmonised Community approach to nuclear energy with which candidate countries must comply. The enlargements of the EU to the East put the spotlight on the nuclear sector, particularly nuclear safety issues. Nuclear power is a crucial energy source for many eastern European countries (candidates or new members of the EU) (European Union, 2007e).

Nevertheless, the safety standards in their nuclear power plants and the level of protection of the public and workers are not always sufficient. In this regard, the Commission has provided them with support to improve the situation via the Phare[3] programme. Since the collapse of the Soviet Union, many of the newly independent States are facing the same problems, and they too receive aid from the Commission (European Union, 2007e).

Over the years, other nuclear energy issues have grown in importance, too, especially operational safety of nuclear facilities, storage of radioactive waste, and nuclear non-proliferation (nuclear safeguards). However the Member States retain most powers in these fields, a degree of uniformity has been achieved at international level with the aid of a series of treaties, conventions and initiatives which, one by one, have pieced together an international regulatory framework governing activities in the nuclear sector (the Convention on Nuclear Safety) (European Union, 2007e).

[3] Phare (the Programme of Community aid to the countries of Central and Eastern Europe) is the main financial instrument of the pre-accession strategy for the Central and Eastern European countries (CEECs) which have applied for membership of the European Union (European Union, 2007c).

1.2.4 The ECSC Treaty

The ECSC (European Coal and Steel Community) Treaty was signed in Paris in 1951 and brought France, Germany, Italy and the Benelux countries together in a Community with the goal of organising free movement of coal and steel and free access to sources of production. Furthermore, a common High Authority supervised the market, respect for competition rules and price transparency (European Union, 2010).

Creation

The first Community organisation was created in the aftermath of the Second World War when reconstructing the economy of the European continent and securing a lasting peace appeared vital. Hence the idea of pooling Franco-German coal and steel production came about and the ECSC was formed. This choice was not only economic but also political, as these two raw materials were the basis of the industry and power of the two countries. The fundamental political objective was to strengthen Franco-German solidarity, banish the spectre of war and open the way to European integration. The French Foreign Minister, Robert Schuman, in his famous declaration of 9 May 1950, proposed that Franco-German coal and steel production be placed under a common High Authority within the framework of an organisation in which other European countries could take part.

France, Germany, Italy, Belgium, Luxembourg and the Netherlands accepted the challenge and began negotiating a treaty. This development went against the original wish of Jean Monnet, the senior French civil servant who had inspired the idea, whose original proposal had been for a simpler, more technocratic mechanism. However, the six founding States were not ready to accept a simple outline and agreed on around one hundred articles making up a complex whole. Finally, the Treaty establishing the European Coal and Steel Community was signed in Paris on 18 April 1951 and came into force on 23 July 1952, with a validity period limited to 50 years. The Treaty ran out on 23 July 2002. The common market advocated by the Treaty opened on 10 February 1953 for coal, iron ore and scrap and on 1 May 1953 for steel (European Union, 2010).

Objectives

The objective of the Treaty, as stated in Article 2, was to contribute, through the common market for coal and steel, to economic expansion, growth of employment and a increasing standard of living. Hence, the institutions had to ensure an orderly supply to the common market by ensuring equal access to the sources of production, the set up of the lowest prices and improved working conditions. All of this had to be accompanied by growth in international trade and modernisation of production.

In the light of the establishment of the common market, the Treaty introduced the free movement of products without customs duties or taxes. It prohibited discriminatory measures or practices, subsidies, aids granted by States or special charges imposed by States and restrictive practices (European Union, 2010).

Structure

The Treaty was split up into four titles. The first concerned with the European Coal and Steel Community, the second with the institutions of the Community, the third with economic and social provisions and the fourth with general provisions. It also contained two protocols, one on the Court of Justice and the other on relations of the ECSC with the Council of Europe, and a convention on the transitional provisions, which concerned with the implementation of the Treaty, relations with third countries and general safeguards (European Union, 2010).

Institutions

The ECSC Treaty is the origin of the institutions such as High Authority, an Assembly, a Council of Ministers and a Court of Justice. The Community had legal personality. The High Authority was the independent collegiate executive with the task of achieving the goals proposed by the Treaty and acting in the general interest of the Community. It was made up of nine members (of whom not more than two of any one nationality) appointed for six years. It was a truly supranational body with power of decision. It supervised the modernisation and improvement of production, the supply of products under identical conditions, the development of a common export policy and the enhancement of working conditions in the coal and steel industries (European Union, 2010).

The High Authority took decisions, made recommendations and delivered opinions. It was assisted by a Consultative Committee made up of representatives of producers, workers, consumers and dealers. The Assembly was made up of 78 deputies, who were representatives of the national Parliaments. There were 18 each for Germany, France and Italy, 10 for Belgium and the Netherlands and 4 for Luxembourg. The Treaty assigned supervisory power to this Assembly (European Union, 2010).

The Council consisted of six representatives of the national governments. The Presidency of the Council was held by each Member State in turn for a period of three months. The role of the Council was to harmonise the activities of the High Authority and the general economic policy of the governments. Its approval was required for important decisions taken by the High Authority. The Court of Justice composed of seven judges nominated for six years by common agreement between the governments of the Member States. It secured that the law was observed in the interpretation and implementation of the Treaty (European Union, 2010).

Tasks

The Treaty provided for action by the High Authority on the basis of information which undertakings were obliged to afford it and predictions of coal and steel production. In pursuance of its goal, the ECSC had means of information, powers of consultation and the power to make checks. In the event that undertakings did not respect these powers, the High Authority could impose punishments such as fines (maximum of 1 % of annual turnover) and penalty payments (5 % of the average daily turnover for each day's delay) (European Union, 2010).

On the basis of this information, predictions were made to guide the activities of those involved and set how the ECSC would act. To supplement the information received from undertakings and associations, the ECSC carried out its own studies on price trends and market behaviour. The ECSC was funded by levies on coal and steel production and by contracting loans. The levies were intended to cover administrative expenditure, non-repayable aid towards adaptation, and technical and economic research (which needed to be encouraged). The funds received from borrowing could only be used to grant loans (European Union, 2010).

With regard to *investment*, in addition to granting loans, the ECSC could guarantee loans contracted by undertakings with third parties. Furthermore, the ECSC had the power to provide guidance on investments which it did not fund.

In the field of *production*, the ECSC played a mainly indirect, subsidiary role through cooperation with governments and intervention with regard to prices and commercial policy. Nevertheless, in the case of any decline in demand or shortage, it could take direct action by imposing quotas with the aim of limiting production in an organised manner or, for shortages, by drawing up production programmes establishing consumption priorities, determining how resources should be allocated and setting export levels (European Union, 2010).

In relation to *price* fixing, the Treaty prohibited practices which discriminated according to price, unfair competitive practices and discriminatory practices involving the application of dissimilar conditions to comparable transactions. These rules also applied to transport. Moreover, in certain circumstances, such as a manifest crisis, the High Authority could fix maximum or minimum prices either within the Community or in relation to the export market.

So as to secure that free *competition* was respected, the High Authority had to be informed of any action by Member States which was liable to endanger it. In addition, the Treaty concerned specifically with the three cases which could distort competition: agreements, concentrations and the abuse of dominant positions. Agreements or associations among undertakings could be cancelled by the High Authority if they directly or indirectly prevented, restricted or distorted normal competition (European Union, 2010).

Another chapter of the Treaty addressed *wages and movement of workers***.** However wages remained within the jurisdiction of the Member States, the High Authority could intervene, under certain conditions set out in the Treaty, in the case of abnormally low wages and wage reductions. The High Authority could grant financial aid to programmes which had the aim of offsetting the possible negative effects of technological advances in the industry on the workforce (compensation, allowances and vocational retraining) (European Union, 2010).

As far as the movement of skilled workers was concerned, the Treaty provided for the removal by Member States of restrictions on employment based on nationality. For the other categories of workers, and in the case of shortages of that type of labour, Member States were called upon to make the necessary modifications to immigration rules to facilitate the employment of workers from other Member States (European Union, 2010).

The Treaty also addressed the *commercial policy* of the ECSC towards third countries. However the powers of national governments remained in place, the Community had a number of powers such as setting maximum and minimum rates for customs duties and supervising the granting of import and export licences, as well as the right to be kept informed of commercial agreements relating to coal and steel. Moreover, the power of the High Authority prevailed in the fields of dumping, the use by undertakings outside the jurisdiction of the Community of means of competition contrary to the Treaty and substantial increases in imports which could seriously threaten Community production (European Union, 2010).

Fifty years after coming into force, the Treaty expired as planned on 23 July 2002. Before its expiry, it had been amended on various occasions by the following treaties: Merger Treaty (Brussels 1965), Treaties amending certain financial provisions (1970 and 1975), Treaty on Greenland (1984), Treaty on European Union (TEU, Maastricht, 1992), Single European Act (1986), Treaty of Amsterdam (1997), Treaty of Nice (2001) and the Treaties of Accession (1972, 1979, 1985 and 1994).

Some decisions of February 2003 include the necessary measures for the implementation of the provisions of the protocol, the financial guidelines and the provisions concerning the research fund for coal and steel (European Union, 2010).

1.3 EU energy policy

1.3.1 Bringing Energy into International Political Economy

In the event of energy, the logic of energy markets is deeply interrelated with 'politics', whether in the form of formal, international law or organisations, or informal norms such as concern over climate change or best practices, institutions, or the activities of state or other non-market actors.

In just over a decade, energy efficiency has become a high priority of energy policies of many industrialised nations and has emerged as an objective in transition economies. Energy efficiency is associated with reducing energy input necessary for an economic output, or in other terms, to decrease energy intensity. Energy efficiency is closely related to the structural changes, which occur in a context of practices, norms and political values, which shape societal development. There is a need to define energy efficiency policies within the context of resource regimes at national levels (Kuzemko, Belyi, Goldthau and Keating, 2012, p.4).

In addition to that, the governance of energy has always needed to consider what balance and relationship there needs to be between governments and businesses. Should governments take a direct role in their domestic industry through state ownership or rely on privately held companies and the efficiency of international markets? Should governments set policies for the supply and consumption of energy or leave it to the process of companies and consumers operating in competitive markets? (Kuzemko, Belyi, Goldthau and Keating, 2012, p.243).

In nations where energy companies are state-owned enterprises, the links are strong and direct. Where the energy industry is privately owned, governments exert control and influence through the way companies are licensed or regulated. In energy terms, the period of the steady economic growth from the mid-1980s to mid-2000s known as the 'great moderation' coincided with a period where energy supply increased without a major increase in cost per unit ($/barrel in real terms, for example). Nevertheless, a longer, historical view shows that the balance and relationship has been more dynamic with swings to greater government control occurring in periods of crisis or challenging circumstances (Kuzemko, Belyi, Goldthau and Keating 2012).

However, a willingness to tackle issues together comes with a caveat from companies and the financial institutions that provide capital to the industry. The long-term and large-scale nature of many investments in the energy industry means that changes in policy need 'transparency, longevity and certainty/consistency.

There will inevitably be some points of disagreement between governments, competing strategies between companies and tensions between government and companies at national and international levels. However, it takes the perspective that business and government have a sense of the long-term challenges, opportunities, policies and investments needed but what is complex is seeing how this might evolve, where different policy paths might lead and what actions companies might take (Kuzemko, Belyi, Goldthau and Keating 2012).

A concern that current challenges, especially climate change, needed a revision of the working structures between companies and governments was also voiced by the business community at the same time. In that context, Van der Veer said when he was Shell's CEO: 'Systemic changes are needed in order to promote effective action to tackle carbon dioxide emissions. Society needs more energy as much as it needs better ways to reduce the negative environmental effects of its production and use. Governments have a crucial role in ensuring that consumers and industry respond effectively. In order for market forces to work it (paradoxically) need more regulations. Governments must urgently provide the rules that can foster lower carbon dioxide emissions. These regulations must encourage both investment in new technologies and energy conservation.' (see Kuzemko, Belyi, Goldthau and Keating, 2012, p.246).

Nevertheless, while individual countries will take decisions to change or focus the energy sources they use, global demand will be served by a mixture of fossil and renewable sources of energy for some considerable time. This is illustrated in Figure 1 with a view from the International Energy Agency where they compare 2008 energy use with three future policy scenarios: a Current Policies Scenario which considers policies in place by mid-2010, a New Policies Scenario that includes policy commitments made by that date and a 450 Scenario that assumes policies are enacted to keep increases in global temperatures within a 2◦C limit (Kuzemko, Belyi, Goldthau and Keating 2012, p.246).

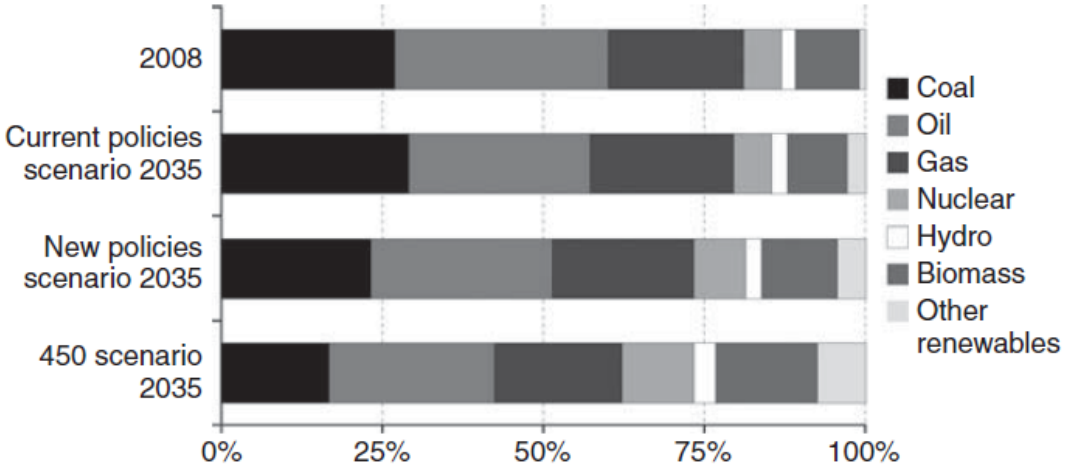

Figure 1 Share of energy sources in world primary energy demand by scenario

Adopted from Kuzemko, Belyi, Goldthau and Keating (2012, p. 246)

1.3.2 Early Commission Energy Policy

The context to recent Commission activism is that energy security has been an ever present concern for the Union, and The European Coal and Steel Community (ECSC) and European Atomic Energy Community Treaty (Euratom Treaty) afford examples of early supranational governance in the policy area. The ECSC (1951: Art.3) set out the concept of 'Security of Supply' in Community law, and as a main objective. The concentration of this was internal, given heavy dependence on coal, a common source within the founding members of the European Community (EC) (Maltby, 2013, p.437).

The Euratom Treaty (1957) established an internal market together with a Supply Agency (operational from 1960) that led to community policy in the field of nuclear energy; the potential for central intervention to 'ensure that all users in the Community receive a regular and equitable supply' and a 20 per cent maximum supply of uranium from a single non-EU state. The Supply Agency's competency extended to 'an exclusive right to conclude contracts' concerning supplies (though member states retained the right to appeal to the Commission). As such the ECSC and Euratom Treaties provided energy policy tools based on exclusive supranational powers vested in a central authority (Maltby, 2013, p.437).

In addition to that, the Commission's 1968 ‘Community Energy Policy’, set out dependency concerns, and a Community energy policy was a stated aim of the Council as early as 1964. In 1968, lack of integration in the energy sphere was regarded to be a ‘dangerous trend’ which could be changed only through a ‘Community energy policy which fully integrates the energy sector into the common market’, counterbalancing ‘risks deriving from the great dependence of the Member States on imports and from insufficient diversification of the sources of supply’ (Maltby, 2013, p.437).

The proposals in 1968 were broadly similar to those in 2012, that the EU should have a general framework for action and measures in place in the event of supply disruption, and that a common energy market should be implemented. In spite of awareness of the potential hazards of energy dependency, the period up to 1970 was characterised by a combination ‘relatively low prices’ and ‘ample availability’, until a restriction of oil supplies led to the prediction that the era of easy supply has little chance of being maintained. The 1973 ‘energy crisis’ highlighted both concerns about vulnerability to interruptions of energy supply, and the inadequacy of securing supplies for the EU whilst policy-making remained within an intergovernmental domain, though Member States instead opted for individual solutions; from indigenous nuclear, (North Sea) oil and gas, and diversified supplies (Maltby, 2013, p.437).

Commission recommendations were largely ignored by the Council and Member States until the 1990s. In 1981, the Commission predicted a substantial increase in energy demand, but recognising the heterogeneity of preferences between Member States did not propose any ‘significant centralization of energy policy instruments’ nor ‘uniformity in the diversification of supply’. The potential for Community action was exemplified by, but also limited to, the Union’s nuclear energy policy (Maltby, 2013).

The 1986 Single European Act introduced measures to establish an internal market by the end of 1992, providing the groundwork for legislation on the internal energy market implemented from the 1990s. An energy plan of action to 1995 aimed at putting the ‘concept of Community solidarity into practice’ with the objective of geographical diversification of the Community’s external sources of supply and ‘greater integration, free from barriers to trade, of the internal energy market. Energy external objectives lacked substantive legislation to achieve them, though the first internal energy market Directives were launched in 1996 and 1998 (Maltby, 2013, p.437).

1.3.3 European Commission Policy

Owing to an emphasis on output legitimacy in the EU, particularly the quality of policies in terms of 'rationality' and 'effectiveness', the Commission actively tries to develop European networks of experts and stakeholders; convening expert groups and attempting to increase expertise and support from stake- holders. Although, the development of recent EU energy policy has been made within the context of:

1. a trend of increasing energy import dependence (from 50 per cent of total EU energy consumption in 2007 to a forecast of 65 per cent in 2030)
2. increasing prices (quintupling of oil prices between 2002 and 2010)
3. EU enlargement and
    - historical relations with Russia/USSR
    - relatively higher energy import dependence
4. gas supply disruptions (Maltby, 2013)

The Commission is then able to propagate its policy recommendations and contribute towards the shift in norms and viewing of energy security through interaction with Council Working Groups and through acting as a useful partner to Member States. The Commission can then offer a channel of influence for Member States such as providing expertise, advocacy and leadership before and during negotiations. It has been claimed that there is predisposition of smaller EU Member States towards the EU; a mutually beneficial and reciprocal relationship which increases the Commission's power base and aids its policy initiatives, with regard to a more often confrontational relationship with the larger states, in return for offsetting more limited administrative capacity which could otherwise impede information-gathering ability, and comprehension of new and complex EU policies and policy-making rules and norms (Maltby, 2013, p.436).

The enlargement of the EU from 15 to 27 Member States between 2004 and 2007 is likely to have aided the Commission's energy policy entrepreneurship, particularly given newer member states (NMS) greater dependence on Russian gas imports and historically derived suspicion of Russian foreign and energy policy. The Commission's interaction will all Member States contributes towards a 'self-sustaining dynamic', entrenching an issue as a priority on the EU's agenda, and increasing EU activity and outputs in the policy area (Maltby, 2013, p.436).

For the Commission, building credibility, capacity and competence in energy policy has required the construction of a narrative about why the issue is European in scope, that the problem is a common European one, and by extension so is the solution. The agency of the Commission is in influencing Member State actors' interpretation and response to events, contributing towards the internalisation of socially constructed norms, which act as 'guiding device for the recognition and appreciation of extraordinary crises and indicators, as well as for the search for policy alternatives'. In this case, the indicators and 'crises' of rising fossil fuel prices, rising imports, enlargement and supply disruptions (Maltby, 2013, p.436).

The Commission, as a supranational policy entrepreneur, can effect policy change through:

- legitimacy through building on pre-existing norms of policy-making
- expertise and knowledge based authority
- continuous advocacy
- alliances and interaction with member states
- selling the solution during the policy window opened by the crisis
- contributing towards the social construction of a narrative regarding a problem

Besides that, since January 2006, the Commission has been notably active in 'coupling' the problem stream of contemporary energy security issues, to the 'policy stream' of its long-held solutions, contributing to a degree of consensus amongst Member States that whilst significant sovereignty of energy mix and source remains their sovereign right (Article 194(2)), it is the EU which is an appropriate level to take certain measures contributing to increasing energy security in terms of security of gas supplies (Maltby, 2013, p.436).

2 PROBLEM ANALYSIS AND CURRENT SITUATION

2.1 Company profile

E.ON SE is a global provider of specialized energy solutions that belongs to the world's largest power and gas groups. E.ON's diversified business consists of renewables, conventional and decentralized power generation, natural gas, energy trading, retail and distribution. The company supplies around 26 million customers with energy and owns almost 68 GW generation capacity. The Group Management having its headquarters in Düsseldorf oversees and coordinates the operations of the entire Group, which is segmented into global units and regional units. The tasks of Group Management include charting E.ON's strategic course and providing direction to the global and regional units. It also secures financing, manages risk, and continually optimizes the Group's business portfolio (E.ON, 2012a).

History

The company was set up in June 2000 when two large, long-standing industrial companies VEBA and VIAG merged together. However, roots go back to the 1920s (E.ON, 2012b). At the beginning VEBA and VIAG were active in the energy and chemical markets and then developed into an energy and gas company. During these years the focus was on achieving a shared culture and integrating all the companies in the Group under the E.ON umbrella (E.ON, 2012c). Following the merger, E.ON executed a far-reaching focus strategy and today is one of the world-wide largest investor-owned energy company (E.ON, 2012d).

Structure

The CEO of E.ON represents Dr. Johannes Teyssen. Company has expanded its businesses across Europe, Russia, and North America with more than 72,000 employees generated approximately EUR 132 billion in sales in 2012. The E.ON Group is split up into global units by function and regional units by country. Five global units are responsible for managing generation fleet, renewables business, trading with energy, new build and technology, and gas business. Twelve regional units manage company's national sales operations, regional energy networks, and distributed generation in

Europe with an additional special focus on Russia. Group-wide entitles deliver support functions like IT and procurement (E.ON, 2012a).

In 2012, E.ON was active in the following countries: Germany, the United Kingdom, Sweden, Italy, Spain, France, the Netherlands, Hungary, Czech Republic, Slovakia, Romania, and Bulgaria (end of June 2012). Russia is a special focus country, where business centres rely on power generation. This business is not integrated into the Generation global unit because of its geographic location and because Russia's power system is not part of Europe's integrated grid (E.ON, 2012e).

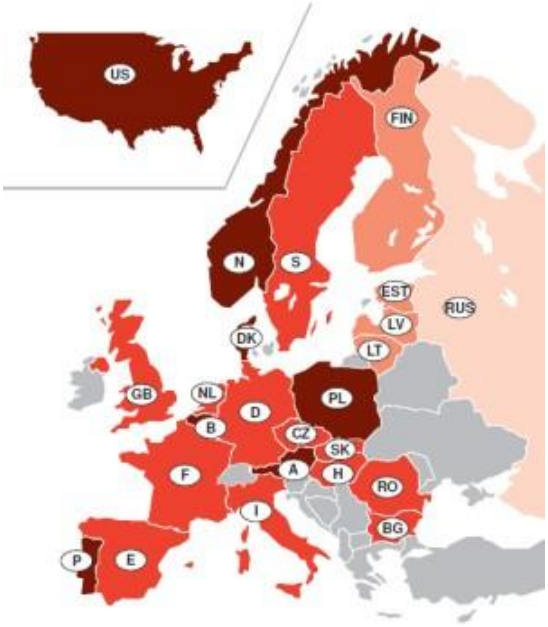

Figure 2 Twelve regional units Adopted from E.ON (2012e)

Strategy

Currently, the strategy is described by motto "cleaner & better energy" – in and outside Europe – transforming E.ON to provide specialized energy solutions. The company will transform itself from a primarily European energy utility into a global, specialized provider of energy solutions. New course states a clear commitment to provide answers not only to current challenges but also to long - term megatrends in the European and global energy world. Even in economically difficult times, affordability, security of supply, and climate protection can be mutually compatible elements of a successful business strategy. In a context of making "cleaner & better energy", E.ON states its commitment to improve energy systems in its markets. In this sense, products and services are cleaner if they substantially improve energy quality in terms of

environmental protection and efficiency. Energy is better when E.ON's performance and technology deployment are significantly better than their competitors', thereby enabling the company to design superior products and services for their customers (E.ON, 2012f).

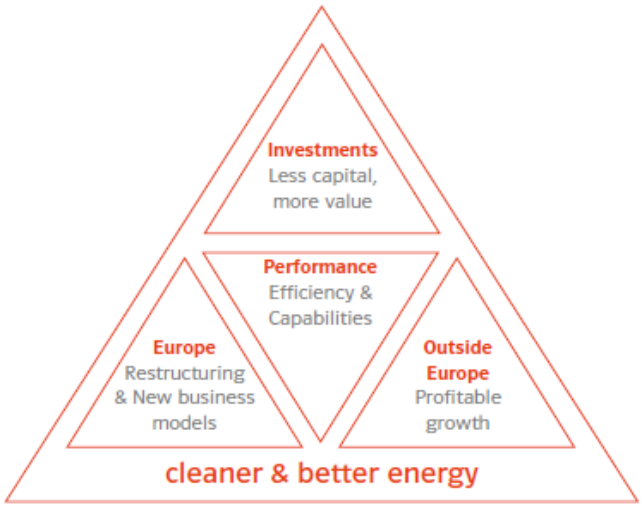

Figure 3 E.ON's focus strategy Adopted from E.ON (2012f, p.15)

Strategic focus areas

Nevertheless, Europe is and will remain home market for all business operations. The transformation of Europe's energy system offers for E.ON attractive growth opportunities. A key focus of growth in Europe is focused on renewables, primarily onshore and offshore wind but also solar and biomass. Alongside renewables, an important part of E.ON's business in Europe will remain competitive conventional generation assets.

Besides Europe, other parts of the world are experiencing strong demand growth and therefore need add a huge amount of technologically advanced generating capacity. The focus is not concentrated on developing existing business in Russia and North America but also expand into other attractive, fast – growing regions such Brazil, Turkey, and India. Drawing on capabilities, the company E.ON intend to work with local partners in these markets to build renewable and conventional (E.ON, 2011).

2.2 Current situation of E.ON

Electric power industry has been changed fundamentally. Complex environment has reflected weak energy demand and interrelating adverse impact on capacity utilization, prices, margin together with rapid competitive pressure in gas wholesale activities. Regarding this matter, decision to phase out several nuclear power stations in Germany, has the significant impact as well. Therefore, E.ON is currently operating in a difficult market environment that is deteriorating also due to tighter regulations (E.ON, 2011).

Financial situation

With regard to financial situation, E.ON finished the 2012 financial year with solid numbers. EBITDA increased by 16 per cent to €10.8 billion compared to previous year, which is just the upper half of forecast range (see Appendix 5). These solid results are satisfying, but however they can't hide the fact that energy industry is undergoing a radical transformation. Moreover, previous analysis showed that in the medium term business environment in Europe will remain difficult. The demand for power and gas decreased significantly in nearly all E.ON's core markets in 2012. At the same time, Europe's energy system is being flooded with ever-greater quantities of renewable-source electricity, which is reducing the value of conventional generation assets, particularly technologically advanced, climate-friendly gas-fired power plants. Furthermore, many of businesses in Europe face increasing instances of policy and regulatory interventions which applies in particular to company's conventional generation business, whose business model had been based on a liberalized EU-wide internal market for energy (E.ON, 2012f).

Core business

Nevertheless, renewables will remain a big part of future, and German giant continued to expand this business. Company have 4.8 GW of capacity, which ranks its business among the top players in onshore wind in the United States and offshore wind in Europe. Furthermore, E.ON specializes in very efficient project development, which has made the company a world leader in asset availability and cost reduction. This is one of the reasons why renewables fleet is already making a significant contribution to its earnings (E.ON, 2012f).

Expansion

As was already mentioned, a key focus of our growth in Europe is renewables, primarily onshore and offshore wind but also solar and biomass. At the end of 2012 E.ON had almost 2.1 GW (prior year: just under 2 GW) of installed capacity in these technologies in Europe. However, on the other hand, other parts outside Europe are experiencing strong demand growth and therefore need to add a huge amount of technologically advanced generating capacity. Therefore, E.ON is not only developing its existing businesses in Russia and North America but also expanding into other attractive, fast-growing regions (E.ON, 2012f).

With regard to planned activities outside Europe the main highlights were focused on the creation of a joint venture with Brazil's MPX. In April 2012, the energy subsidiary of Brazil's EBX Group and E.ON signed the contracts. E.ON and its Brazil partner each hold 50 percent of the joint venture, which they intend to become Brazil's largest privately owned energy company. The joint venture plans to develop conventional and renewable generation projects with a total capacity of around 20 GW (E.ON, 2012f).

In addition to that, E.ON has also penetrated the Turkish market. In late 2012 E.ON reached an agreement with the Sabanci Group, one of Turkey's largest financial and industrial conglomerates, to form an energy partnership for the fast-growing Turkish market. Enerjisa's current generation portfolio consists of approximately 1.7 GW of installed gas, hydro, and wind capacity, with 2 GW under construction and 1.5 GW in development (E.ON, 2012f).

In summary, main focus of German company will be on expanding its operations in renewables and distributed energy due to transformation of Europe's energy system, and power generation outside Europe. These are the areas in which are seen significant market opportunities and can capitalize on E.ON's own capabilities (E.ON, 2012f).

2.3 Critical analysis of European Energy Policy

The development of a European energy policy was at the heart of the European project, with the ECSC Treaty (establishing the European Coal and Steel Community) in 1951 and the Euratom Treaty (establishing the European Atomic Energy Community) in 1957. Despite economic and geopolitical changes, it remains essential today (European Commission, 2007).

Moreover, the Treaty of Lisbon puts energy at the heart of European activity. It effectively gives it a new legal basis which it lacked in the previous treaties (Article 194 of the Treaty on the Functioning of the European Union (TFEU)). The goals of the policy are supported by market-based tools (mainly taxes, subsidies and the CO_2 emissions trading scheme), by developing energy technologies (especially technologies for energy efficiency and renewable or low-carbon energy) and by Community financial instruments. In addition to that, in December 2008 the EU adopted a series of measures with the aim of reducing the EU's contribution to global warming and guaranteeing energy supply (European Union, 2013a).

Therefore, it is vital for the European Union (EU) to address the major energy challenges facing us today, i.e. climate change, increasing dependence on imports, the strain on energy resources and access for all users to affordable, secure energy. The EU is conducting an ambitious energy policy - covering the full range of energy sources from fossil fuels (oil, gas and coal) to nuclear energy and renewables (solar, wind, biomass, geothermal, hydro-electric and tidal) - in order to initiate a new industrial revolution that will deliver a low-energy economy. To do so, it has set itself several important energy objectives (European Union, 2013b).

Thus, a European Energy Policy will firmly commit the European Union (EU) to a low consumption economy based on more secure, more competitive and more sustainable energy. Priority energy objectives include securing the smooth functioning of the internal market in energy, security of strategic supply, concrete reductions in greenhouse gas emissions caused by the production or consumption of energy and the EU's ability to speak with a single voice on the international stage. A European Energy Policy is acknowledged as the most effective response to these challenges, which are faced by all Member States (European Commission, 2007).

Besides that, the European Commission is also responsible for ensuring EU law on energy matters. It has the power to take legal action against any EU country that fails to comply and can refer them to the European Court of Justice (European Commission, 2013a).

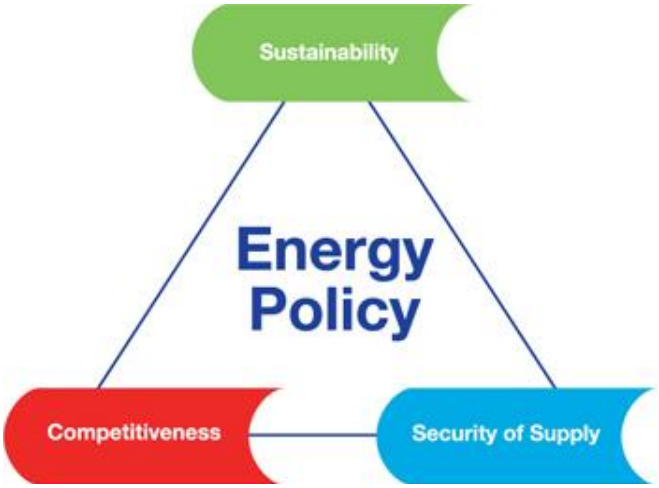

Figure 4 The three objectives of EC's Energy and Climate Change Policy proposal
Adopted from Europia (2008)

2.3.1 A strategy for competitive, sustainable and secure energy

The report regarding a strategy for competitive, sustainable and secure energy from the European Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions was issued on 10 November 2010. The objectives of this document are part of the European Union's (EU's) 2020 strategy and the "Resource Efficient Europe" initiative. The aim is to make far-reaching changes to the way in which Europe produces and consumes energy.

The report sets out the European Commission's energy strategy in the period to 2020 (European Commission, 2010a). The strategy is structured around 5 priorities:

1. Limiting energy use in Europe
2. Building a pan-European[4] integrated energy market
3. Ensuring energy security, safety and affordable energy for citizens and businesses

[4] Pan-European is related to all European countries or the advocacy of political or economic unity among European countries (The Free Dictionary, 2013).

4. Making the development of energy technology and innovation
5. Building strong international partnership (European Commission, 2010a)

1. Limiting energy use in Europe

Energy efficiency is one of the central objectives for 2020 as well as a key factor in achieving 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 year (European Commission, 2008).

Action 1: Tapping into the biggest energy-saving potential — buildings and transport, 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 (European Commission, 2008).

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 (European Commission, 2008).

Action 2: Reinforcing industrial competitiveness by making industry more efficient, the European 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 (European Commission, 2008).

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 (European Commission, 2008).

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 (European Commission, 2008).

Community legislation on energy efficiency has been designed to considerably improve energy efficiency in key energy-consuming sectors. However, current energy efficiency legislation alone will not deliver sufficient energy savings to meet the 20% saving objective. Main obstacles to energy efficiency improvements are the poor implementation of existing legislation, the lack of consumer awareness and the absence of adequate structures to trigger essential investments in and market uptake of energy efficient buildings, products and services. The assessment of national energy efficiency action plans shows that there is a gap between the Member States political commitment to energy efficiency and their actions. Member States need to implement more swiftly and effectively energy efficiency legislation. New instruments must be developed to further enhance energy efficiency (European Commission, 2008).

The Commission proposes to reinforce the key energy efficiency legislation on buildings and energy-using products. The provisions of the Energy Performance of Buildings Directive will be strengthened to apply to more buildings, and to enhance the role of energy performance certificates and inspection reports for heating and air-conditioning systems. The Energy Labelling Directive will be revised to be applied to additional energy-using and energy-related products, and not to household appliances alone. A Directive containing a new labelling scheme for tyres is proposed to promote the market take-up of fuel efficient tyres (European Commission, 2008).

For further improvements of energy efficiency in energy supply, the Commission proposes detailed guidelines to facilitate the uptake of electricity generation from high energy efficiency cogeneration installations. A Communication on cogeneration is presented. To address the lack of necessary investments, new financing initiatives for energy efficiency, such as an EU Sustainable Energy Financing Initiative, are already considered as they would also contribute to shield the EU economy against deteriorated financial conditions (European Commission, 2008).

In addition to that, recent studies indicate that the opportunities for energy savings still remain significant, as shown in Figure 1 (European Commission, 2008).

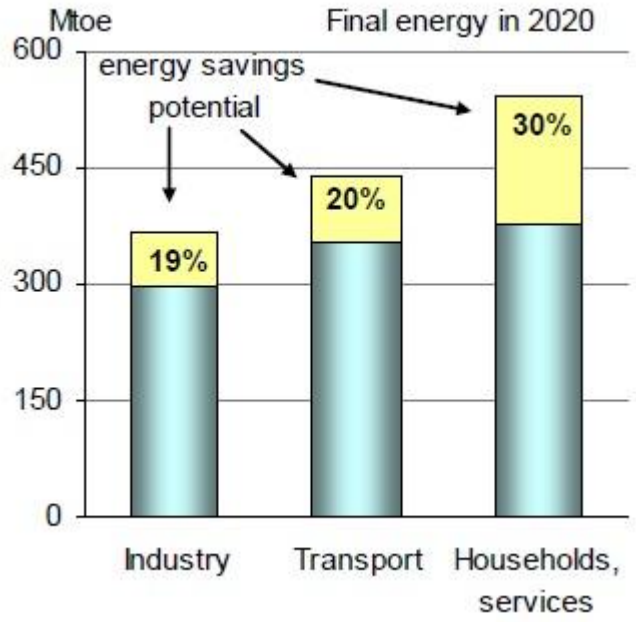

Figure 5 Estimated energy consumption reduction potential in 2020
Adopted from European Commission (2008)

There are also many barriers with regard to achieving energy efficiency. Appendix 1 gives an overview of the main drivers and barriers in relation to bringing about energy efficiency improvements. Cross-sectoral barriers include incomplete implementation of EU energy efficiency legislation, insufficient access to financing and low awareness of the benefits of energy saving. In transport, insufficient infrastructure facilitating energy efficiency and limited commitment from the sector need improvement. For the industry, low awareness of the potential benefits and high up-front costs present clear obstacles. The current state of the financial markets does not help to improve access to financing in the short term (European Commission, 2008).

2. Building a pan-European integrated energy 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 States. Given the remaining anti-competitive practice in the energy sector, 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 (European Commission, 2010b).

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 development 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 (European Commission, 2010c).

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 CO_2transportation infrastructure in the EU (European Commission, 2010c).

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 European Union as a whole in terms of competitive energy provision, environmental sustainability and access to renewables as well as security of supply (European Commission, 2010c).

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 (European Commission, 2010c).

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 (European Commission, 2010c).

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 (European Commission, 2010c).

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 (European Commission, 2010c).

3. Ensuring energy security, safety and affordable energy for citizens and businesses

A well functioning, integrated internal market benefits consumers with wider choice and lower prices. 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. 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. 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 (European Commission, 2010c).

Action 1: European Commission tries to make energy policy more consumer-friendly, therefore active competition policy enforcement at European and national levels remains indispensible 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 (European Commission, 2010c).

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 (European Commission, 2010c).

Action 2: In terms of 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 (European Commission, 2010c).

The same security and safety considerations will also be upheld in the development and deployment of new energy technologies (hydrogen safety, safety of CO_2 transportation network, CO_2 storage, etc…) (European Commission, 2010c).

4. Making the development of energy technology and innovation

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 (European Commission, 2010c).

Action 1: The priority is to implement the Strategic Energy Technology (SET) Plan without delay, therefore 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 Carbon Capture and Storage). 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 demonstration programmes such as under the New Entrants Reserve (NER300) programme. Available Community funding will be concentrated on the SET Plan initiatives (European Commission, 2010c).

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 (European Commission, 2010c).

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 Initiative 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 (European Commission, 2010c).

Action 3: Ensuring long-term EU technological competitiveness In order to lay the foundations of our future competitiveness in the face of strong international competition, the Commission will propose a € 1 billion-initiative 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 (European Commission, 2010c).

5. Building strong international partnership

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.

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 (European Commission, 2010c).

Action 1: Regarding energy markets integration and regulatory frameworks with our neighbours, 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 safeguard against the risk of carbon leakage through the power sector (European Commission, 2010c).

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, particularly

concerning the freedom of transit and investment security, would be covered (European Commission, 2010c).

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 (European Commission, 2010c).

Action 2: In terms of establishing privileged partnerships with key partners, 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 (European Commission, 2010c).

Action 3: With regard to 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 (European Commission, 2010c).

Action 4: The next step deals with the promoting of 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 (European Commission, 2010c).

2.3.2 Renewable energy

The use of renewable energies (wind power, hydro power, solar and photovoltaic energy, biomass and biofuels, geothermal energy and heat-pump systems) substantially contributes to limiting climate change. Moreover, thanks to the increase in the production and consumption of local energy, it plays a part in securing energy supply and creating employment in Europe. However, renewable energies remain on the fringe of the European energy mix as they still cost more than traditional energy sources (Bulusan Geothermal, 2013).

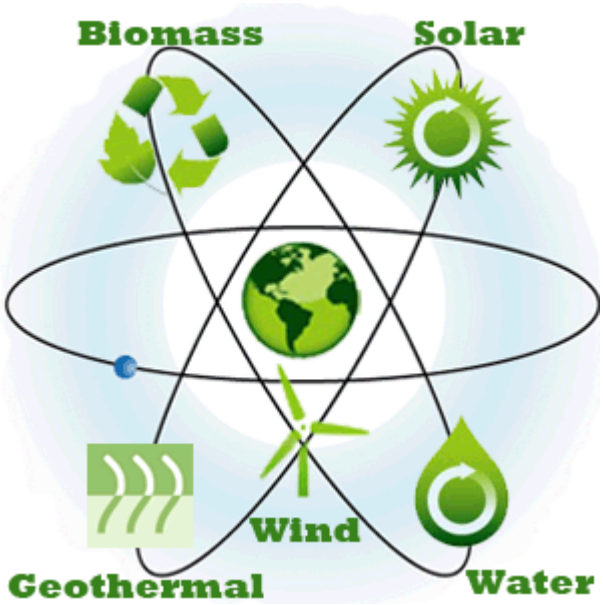

Figure 6 Renewable energy Adopted from Bulusan Geothermal (2013)

The EU has set itself the objective of increasing the proportion of renewable energies in its energy mix by 20 % by 2020 in order to increase the use of renewable energy sources, namely in its Renewable Energies Roadmap. This objective requires progress to be made in the three main sectors where renewable energies are used: electricity (increasing the production of electricity from renewable sources and allowing the sustainable production of electricity from fossil fuels, principally through the implementation of CO_2 capture and storage systems), biofuels, which should represent 10 % of vehicle fuels by 2020, and finally heating and cooling systems (European Commission, 2013b).

With regard to renewable energy, the European Commission published its first Renewable Energy Progress Report subject to the Renewable Energy Directive of 2009 on 27 March 2013. The report assesses Member States' progress in the promotion and use of renewable energy along the trajectory towards the 2020 targets. Most Member States experienced significant growth. Figures indicate that the EU as a whole is on its trajectory towards the 2020 RES targets with a renewable energy share of 12.7% in 2010 (E.ON, 2013d), (see Appendix 6).

The Renewable Energy Directive 2009/28/EC ("the Directive") established a European framework for the promotion of renewable energy, setting mandatory national renewable energy targets for achieving a 20% share of renewable energy in the final energy consumption and a 10% share of energy from renewable sources in transport by 2020. These goals are headline targets of the European 2020 strategy for growth, since they contribute to Europe's industrial innovation and technological leadership as well as reducing emissions, improving the security of our energy supply and reducing our energy import dependence (European Commission, 2013b).

The Directive also requires the simplification of the administrative regimes faced by renewable energy, together with improvements to the electricity grid, to improve access for electricity from renewable energy. It established a comprehensive sustainability scheme for biofuels and bioliquids with compulsory monitoring and reporting requirements. All biofuels used for compliance with the 10% target and that benefit from national support are required to comply with the scheme (European Commission, 2013b).

Moreover, the Directive requires the guarantee of origin of electricity, heating and cooling produced from renewable energy sources. For the purposes of proving to final customers the share or quantity of energy from renewable sources in an energy supplier’s energy mix in accordance with Article 3(6) of Directive 2003/54/EC, Member States shall ensure that the origin of electricity produced from renewable energy sources can be guaranteed as such within the meaning of this Directive, in accordance with objective, transparent and non-discriminatory criteria (European Commission, 2013b).

Relative to the adoption of the 2009 Renewable Energy Directive and the legally binding renewable energy targets, renewable energy grew considerably. The data and analysis for the renewable energy progress report indicates that while the EU as a whole is on its trajectory towards the 2020 targets, some Member States need to undertake additional efforts (see Appendix 6). Besides that, the analysis suggests there are reasons for concern about future progress.

The transposition of the Directive has been slower than desirable and the trajectory grows steeper in coming years so that in reality most of Member States' effort is needed towards the end. Whilst Member States have had seven years to achieve the first 20% of their target for 2012, thereafter they have only two years to achieve the next 10% for 2014, 15% for 2016 20% for 2018 and 35% for 2020 (European Commission, 2013b).

Furthermore, the outstanding change in economic circumstances in Europe will result, on the basis of analysis undertaken for the Commission, in current policies being insufficient to trigger the required renewable energy deployment in a majority of Member States (European Commission, 2013b).

2.3.3 Nuclear energy

The ground for nuclear energy in Europe was laid in 1957 by the European Atomic Energy Community (Euratom). Its main functions consisted of furthering cooperation in the field of research, protecting the public by establishing common safety standards, ensuring an adequate and equitable supply of ores and nuclear fuel, monitoring the peaceful use of nuclear material, and cooperating with other countries and international organisations. Specific measures adopted at EU level are geared to protecting the health of those working in the sector and of the public at large, and protecting the environment from the risks associated with the use of nuclear fuel and the resulting waste (European Union, 2013c).

Nuclear safety is of the utmost importance to the EU and its people. The consequences of a major nuclear accident are also potentially ruinous to national economies. It is therefore essential for European society and the economy to avoid the occurrence of any nuclear accidents in the European Union by ensuring the highest possible quality of regulatory oversight and standards of nuclear safety in each and every EU Member State. The aftermath of the Fukushima nuclear accident of March 2011 has renewed both the political and public concern regarding the measures needed to minimise risk and guarantee the most robust levels of nuclear safety (ENSREG 2012).

Taking into account the future of nuclear energy which is faced with increasing concerns in terms of security of supply and CO_2 emissions, nuclear energy has the benefit of being one of the low-carbon energy sources offering the most stable costs and supply. The decision whether or not to use nuclear energy is made by Member States. However, the illustrative nuclear programme puts emphasis on the need to have a common and coherent approach with regard to security, safety and non-proliferation as well as concerning the dismantling of installations and the management of waste (European Commission, 2007).

Nuclear power plants currently generate approximately a third of the all electricity in the European Union (EU) and 15% of the energy consumed in the EU. There are 132 nuclear power reactors (June 2013) in operation in the EU. Currently 14 EU Member States out of 27 use nuclear energy for power generation (see Appendix 4). Each EU country can decide whether it wants to include nuclear power in its energy mix[5].

Some reactors are being decommissioned, others are having their working lives extended, and several new units are planned or under construction. In addition to power reactors, a full range of fuel cycle[6] plants (from enrichment to waste storage and recycling) are in operation in Europe. The nuclear power sector represents a source of energy with low carbon levels and relatively stable costs, which makes it attractive from the point of view of security of supply and fighting climate change (ENSREG, 2012; European Union, 2013c).

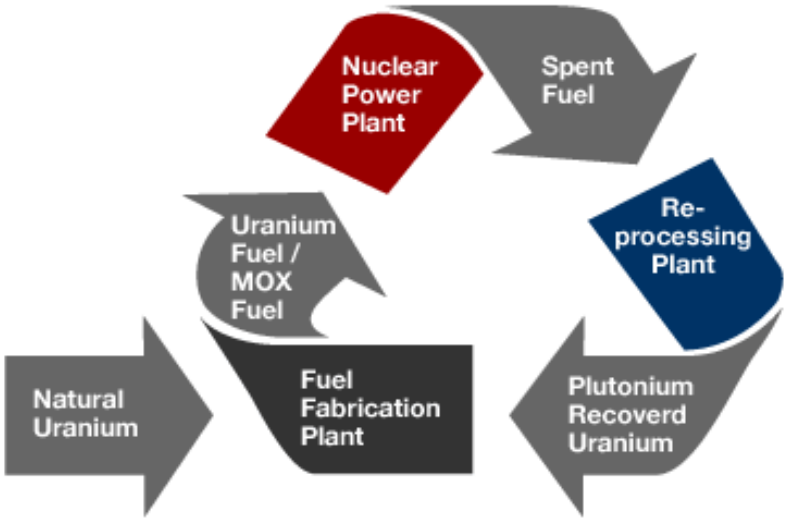

Figure 7 The nuclear fuel cycle Adopted from Stanford (2013)

[5] The energy mix refers to the distribution between different energy sources. Each country uses energy differently, defining its own energy mix (Planete-energies, 2013).

[6] The nuclear fuel cycle is an entire process of nuclear fuel and energy production, including scientific and research activities. The cycle consists of 4 stages (VAE, 2013).

The EU can ensure the safe and sustainable use of nuclear energy across Europe and help non-EU countries fulfil high standards of safety, security and non-proliferation through the Euratom Treaty (European Commission, 2013c).

The European Commission looks at nuclear activities from three angles:

- *Nuclear safety* is about the safe operation of nuclear installations. It is complemented by radiation protection and radioactive waste management.
- *Nuclear safeguards* are measures to ensure that nuclear materials are used only for the purposes declared by the users.
- *Nuclear security* relates to the physical protection of nuclear material and installations against malicious acts (European Commission, 2013c).

The EU promotes the highest safety standards for all types of civilian nuclear activities, including power generation and waste storage, research and medical uses. Primary responsibility for the safety of nuclear power plants lies with their operators who are supervised by the national independent regulators. For its part, the Commission plans to put in place more stringent EU-wide safety rules as a response to the Fukushima accident. The Commission has proposed to amend the 2009 nuclear safety directive in June 2013. The new safety proposal consists of:

- introduces new EU-wide safety objectives
- sets up a European system of peer reviews of nuclear installations
- establishes a mechanism for developing EU-wide harmonised nuclear safety guidelines
- strengthens the role and independence of national regulators
- increases transparency on nuclear safety matters
- includes new provisions for on-site emergency preparedness and response (European Commission, 2013d)

2.3.4 Security of energy supply in the EU

The report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions of 7 September 2011 on security of energy supply and international cooperation - "The EU Energy Policy: Engaging with Partners beyond Our Borders" establishes a strategy of collaboration beyond the borders of the EU for the purpose of ensuring its energy supply and to promote its objectives in the field of energy. The strategy is focused on four main objectives:

- extending the EU's internal energy market
- strengthening partnerships for secure, safe, sustainable and competitive energy
- better accession to sustainable energy for developing countries
- encouraging EU policies beyond its borders (European Union, 2011a)

Regarding first objective of the strategy to extend the EU's internal energy market, the European Commission wishes to establish an *information exchange mechanism* on intergovernmental agreements between Member States and third countries[7] in order to enhance coordination within the internal energy market. Agreements could also be adopted with third countries at EU level (European Union, 2011a).

It is necessary for the EU to diversify its sources and therefore EU seeks to set up following actions:

- ensure the continuity of the building of the infrastructure defined in the strategy *Energy infrastructure priorities for 2020 and beyond*
- encourage supply from the Southern Corridor
- secure a continuous supply of gas and oil from the East through cooperation with Russia and Ukraine, while supporting the rehabilitation of the Ukrainian transmission network
- develop renewable energy projects with the Southern Mediterranean countries

[7] The term 'third country' is used in the Treaties, where it means a country that is not a member of the Union (Eurofound, 2013).

Moreover, the Commission intends to develop privileged relations with Russia by reinforcing the implementation of the EU-Russia partnership and by preparing an EU 2050 Energy Roadmap, as the country is an important energy security partner for the EU. An agreement is going to be contracted between the EU, Russia and Belarus on the technical rules for the management of electricity networks in the Baltic region (European Union, 2011a).

Related to second objective of the strategy to strengthen partnerships for secure, safe, sustainable and competitive energy, the EU considers enhancing work on a comprehensive legal environment for EU relations with suppliers and transit countries as a necessity. Hence, the EU actively supports the Energy Charter, in particular, works on its core trade, transit and investment mandate (European Union, 2011a).

The Commission also wishes to promote nuclear safety and security standards globally. Hence, it seeks to extend the scope of the Euratom agreements and to advocate for international legally binding nuclear safety standards, notably at the level of the International Atomic Energy Agency. It also intends to deal with the safety of offshore operations, including with hydrocarbon producers within the Organization of Petroleum Exporting Countries (OPEC) (European Union, 2011a).

Concerning third objective of the strategy in relation to improving access to sustainable energy for developing countries, the Commission has set itself the aim of making sources of energy (particularly electricity) accessible to the regions with the fewest resources, while respecting environmental directives. To achieve these aims, the EC wishes to mainstream energy in all EU development policy instruments, and to facilitate access of least developed countries to climate financing (European Union, 2011a).

With regard to last objective of the strategy to encouraging EU policies beyond its borders, the Commission wants to focus on four various energy partners namely market integration partners, key energy suppliers and transit countries, key energy players worldwide and developing countries. It suggests the use of appropriate instruments selected from among the existing legal and political instruments, such as the Energy Community Treaty or the strategic energy dialogues for each of these partners (European Union, 2011a).

The Commission also wishes to enhance cooperation between Member States in order to speak with a single voice beyond its borders. It seeks therefore to set up a Strategic Group for International Energy Cooperation. To ensure the best possible follow-up of its projects, the Commission is going to institute a database of energy projects in partner countries funded by the EU, EU Member States, the European Investment Bank and the European Bank for Reconstruction and Development (European Union, 2011a).

Security of electricity supply

Relating security of supply of electricity, the Directive *2005/89/EC* of the European Parliament and of the Council of 18 January 2006 establishes measures aimed at safeguarding security of electricity supply so as to ensure the proper functioning of the EU internal market for electricity, a satisfactory level of interconnection between EU Member States, an satisfactory level of generation capacity and balance between supply and demand (European Union, 2007b)

Furthermore, Member States need to specify comprehensive, transparent and non-discriminatory policies on security of electricity supply in accordance with the requirements of a competitive single market for electricity. They must specify and publish the role and responsibilities of competent authorities and distinct players in the market In particular, Member States must take following specific rules in case of adopting policy implementation measures:

- ensure continuity of electricity supplies
- study the internal market and the possibilities for cross-border cooperation in relation to security of electricity supply
- reduce the long-term effects of growth of electricity demand
- introduce a degree of diversity in electricity generation in order to ensure a reasonable balance between different primary fuels
- promote energy efficiency and the use of new technologies
- continuously renew transmission and distribution networks to maintain performance (European Union, 2007b)

Member States or competent authorities, in cooperation with transmission network operators, must prepare a report on security of supply, as provided for in the Directive on the internal electricity market. This report must contain information on operational network security, projected balance of supply and demand, prospects for security of supply within the medium term and investment intentions of transmission system operators as regards provision of cross-border interconnection capacity (European Union, 2007b).

Security of gas supply

Moreover, the European Parliament and the Council has issued on 20 October 2010 the regulation (EU) No *994/2010* concerning measures to safeguard security of gas supply. Natural gas constitutes a crucial component of the energy mix of the EU representing one quarter of primary energy supply and contributing primarily to electricity generation, heating, feedstock for industry and fuel for transportation. Gas consumption in Europe has speedily increased during the last 10 years. With decreasing domestic production, gas imports have raised even more rapidly, therefore creating higher import dependence and the need to deal with security of gas supply aspects (European Union, 2011b).

The regulation strives to safeguard the security of gas supply by securing both prevention and a coordinated response in case of supply disruption and safeguard the security of gas supply also by securing the proper and continuous functioning of the internal gas market. The regulation provides a common framework where the security of supply is a shared responsibility of natural gas undertakings, European Union countries and the Commission. It also lays down transparent mechanism, in a spirit of solidarity, for a coordinated response to an emergency at national, regional and EU levels (European Union, 2011b).

The directive establishes common infrastructure and supply standards at EU level. With regard to infrastructure standard, EU countries must ensure that by 3 December 2014 at the latest, in the event of a disruption of the single largest infrastructure, they are able to satisfy total gas demand during a day of exceptional high gas demand. The regulation also requires reverse flows to be established in all cross border interconnections between EU countries by 3 December 2013 (European Union, 2011b).

2.3.5 The EU Emissions Trading System

The EU emissions trading system (EU ETS) is a cornerstone of the European Union's policy to combat climate change and its vital tool for curtailing industrial greenhouse gas emissions cost-effectively. The first - and still by far the biggest - international system for trading greenhouse gas emission allowances, the EU ETS includes more than 11,000 power stations and industrial plants in 31 countries, as well as airlines.

The EU ETS works on the 'cap and trade' principle. A 'cap', or limit, is set on the total amount of certain greenhouse gases that can be emitted by the factories, power plants and other installations in the system. The cap is curtailed over time so that total emissions fall. In 2020, emissions from sectors covered by the EU ETS will be 21% lower than in 2005 (European Commission, 2013g).

Within the cap, companies obtain or buy emission allowances which they can trade with one another as needed. They can also buy limited amounts of international credits from emission-saving projects around the world. The limit on the total number of allowances available secures that they have a value. After each year a company must surrender enough allowances to include all its emissions, otherwise heavy fines are imposed. If a company cuts down its emissions, it can keep the spare allowances to cover its future needs or else sell them to another company that is short of allowances. The flexibility that trading brings ensures that emissions are cut where it costs least to do so (European Commission, 2013g).

By putting a price on carbon and thereby giving a financial value to each tonne of emissions saved, the EU ETS has placed climate change on the agenda of company boards and their financial departments across Europe. A satisfactory high carbon price also promotes investment in clean, low-carbon technologies. In allowing companies to buy international credits, the EU ETS also acts as a major driver of investment in clean technologies and low-carbon solutions, notably in developing countries (European Commission, 2013g).

Launched in 2005, the EU ETS is now in its third phase, running from 2013 to 2020. A major revision approved in 2009 so as strengthen the system means the third phase is considerably distinct from phases one and two and is based on rules which are far more harmonised than before (European Commission, 2013g).

The main changes are:

- A single, EU-wide cap on emissions applies in place of the previous system of national caps
- Auctioning, not free allocation, is now the default method for allocating allowances. In 2013 more than 40% of allowances will be auctioned, and this share will rise progressively each year
- For those allowances still given away for free, harmonised allocation rules apply which are based on ambitious EU-wide benchmarks of emissions performance
- Some more sectors and gases are included (European Commission, 2013g)

The EU ETS has put a price on carbon and shown that it is possible to trade in greenhouse gas emissions. Emissions from installations in the scheme are falling as intended. The success of the EU ETS has inspired other countries and regions to launch cap and trade schemes of their own. The EU intends to link up the ETS with compatible systems around the world to form the backbone of an expanded international carbon market. The European Commission has agreed in principle to link the ETS with Australia's system in stages from mid-2015 (European Commission, 2013g).

Nevertheless, the ETS also faces a challenge in the form of a growing surplus of allowances, largely due to the economic crisis which has depressed emissions more than anticipated. In the short run this surplus risks undermining the orderly functioning of the carbon market; in the longer term it could affect the ability of the EU ETS to meet more demanding emission reduction targets cost-effectively.

The Commission has hence taken the initiative to postpone (or 'back-load') the auctioning of some allowances as an immediate measure, while also launching a debate on structural measures which could afford a sustainable solution to the surplus in the longer run (European Commission, 2013g).

2.4 Summary of EU energy market

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 consequence of liberalisation, ample supply and production capacities and adequate import possibilities. Nevertheless, dramatic changes are preparing. Energy prices will be affected by the huge need for energy sector investments, as well as carbon pricing and higher international energy prices (see Appendix 2; Appendix 3). 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 (European Commission, 2010c).

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 contains direct EU funding support towards public priorities that markets fail to fulfil and that bring the most European value (European Commission, 2010c).

The new EU energy strategy will require significant efforts in technical innovation and investment. It will encourage 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 (European Commission, 2010c).

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 (European Commission, 2010c).

Moreover, the global energy system is entering a phase of rapid transition with potentially far-reaching implications that will unfold in the next decades. 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 such as standards, rules, regulations, plans, projects, financial and human resources, technology markets, social expectations etc. – and prepare Europe's citizens for the challenges ahead (European Commission, 2010c).

Owning 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 the strategy covers. It is thus 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 run and consider further and complementary steps (European Commission, 2010c).

3 PROPOSALS AND CONTRIBUTION OF SUGGESTED SOLUTIONS

As was mentioned in previous chapter, the European Commission presented on 10 November, 2010 its EU's Energy 2020 strategy, which contains a set of measures to achieve the EU's 2020 target in 10 years and gives priority to energy efficiency and infrastructure development.

Looking at it from E.ON's point of view, EU's Energy 2020 strategy sets the right priorities. As a part of E.ON's new "cleaner & better energy" strategy to systematically improve the efficiency and carbon intensity of the power generation and to offer customers energy-efficient products and services, E.ON also commits to increase its efforts and deliver its 50 % CO_2 intensity reduction target for Europe already by 2020. Thus E.ON will aim to reduce the CO_2 intensity of its power generation portfolio in Europe by half compared to 1990 levels by 2020 by investing in renewable energy sources, efficient new fossil and nuclear plants.

With regard to European integrated energy market, the Commission strives to take another step towards a truly "Europeanised" energy policy. This statement is strongly supported by E.ON in view of its involvement in 30 countries. The EU's ambitious goals can only be attained if the single energy market works properly. Moreover, the major challenges posed by the transformation of energy supply can only be met in a European context.

Therefore it would be necessary a harmonisation of renewables support schemes, however also ensure the required harmonization between national schemes as the market for renewables is moving from a local to a cross-border supply.

From another point of view, the Commission also gives high priority to measures aimed at improving energy efficiency. E.ON welcomes these measures. Especially, on the heating market, the Commission – like the German government – gives priority to economic incentives over mandatory steps. Experience gained on the heating market shows that this is the right decision.

At the same time, supply companies are to be obliged to promote energy saving with their customers by using "white certificates[8]" or "smart meters". In this context, E.ON advocates European standards and extensive roll-out of those meters. The question of whether the so-called white certificates are more appropriate than other instruments should first be examined in a cost/benefit analysis, as should the possibility of integrating them into the Emissions Trading System (ETS).

Emission Trading System

Nevertheless, the existing European emissions trading system is urgently in need of reform because, especially due to the economic crisis, the massive surplus of allowances has caused their market price to collapse. The price per tonne of CO_2 has dropped in the last three years from €30 to below €5, reaching an all-time low of less than €2.70 today. At present, the surplus of carbon allowances is estimated at two billion (E.ON, 2012g). This price collapse has a tangible impact on power generation because the system no longer provides stimuli for low-carbon power generation.

In particular, it results in modern, highly efficient gas-fired power stations with low CO_2 emissions being forced off the market at the expense of carbon-intensive power plants, such as lignite power stations that benefit from the cheap carbon allowances. Those advocating a reform of the ETS, including E.ON from the outset have long urged that action be taken quickly and a structural reform implemented.

By contrast, political intervention serving to make carbon allowances can become insufficient and accordingly lead to price increase and therefore a heavy burden for European industry, which is thus placed at a competitive disadvantage in relation to China or the US, for example. However, the EU-wide ETS needs to be revitalized, since in its current state, it cannot help Europe reach its climate targets for the period after 2020.

[8] White certificates, also known as "Energy Efficiency Certificates", are tradable instruments giving proof of the achievement of end-use energy savings through energy efficiency improvement initiatives and projects (GSE, 2013).

There are seen some key factors which could contribute to a successful energy transformation:

- Establish a consistent policy framework with clear criteria and a revision of annual linear reduction targets
- Revitalize the ETS as an overarching policy mechanism supplemented by selective direct market interventions that don't undermine the overarching mechanism
- Distribute financial burdens fairly so that our industrial society remains cohesive
- Define structural measures to tackle the supply-demand imbalance and limitation of international credits and the introduction of price mechanisms
- Expand ETS to other sectors

Following that, the Commission is adhering to the proposed legislative amendment and now intends to arrive via the EU Council at a compromise on ETS reform, which will then be submitted to the European Parliament again for a vote.

With regard to E.ON, it will support back-loading to revitalize the ETS and will urge Commission to table structural measures soon. German energy giant has already highlighted the need for turning the ETS into the central instrument of European climate policy.

Renewable Energies (RES)

Regarding Renewable Energy Progress Report that the EU as a whole is on its trajectory towards the 2020 RES targets with a renewable energy share of 12.7%, more efforts will still be needed to reach these 2020 targets. Member States are urged to increase their efforts in addressing barriers to the uptake of renewable energy by reducing administrative burdens and delays.

Furthermore, electricity grids shall be developed to better integrate renewable energy into the market. Also support schemes are expected to be more stable and transparent, cost-effective and market-oriented. Regarding EU bio-fuels and bio-liquids sustainability criteria, Member States' implementation of the bio-fuels scheme is considered too slow.

From the point of E.ON, it would welcome the emphasis on better market integration of RES but regrets the rejection of an EU-wide quota system and ambitious targets (40-45%) for 2030.

However, infrastructure development is still seen as crucial element for RES growth. There are some barriers and risks that could influence impact on renewables. Considerable investments and technical development as a cost advantage would stand for limitations of renewable energy system. After all, apart from technological and investment barriers, there are also political and legislative limitations in conjunction with difficulties arising from deficit of grid capacity.

In terms of a Green Paper on the 2030 framework assessing the energy policy targets of competitiveness, sustainability and security of supply in a long-term context and considering an extension of 2020 climate policy targets to other sectors, the main focus lies on the question whether EU energy policy will continue to be led by climate-driven targets. Carbon signals via a structurally reformed ETS are considered as a necessary step.

On renewables, the Commission resumes the European Parliament rejection of binding RES targets for 2030, mainly in view of rising energy prices. A political conclusion of the Paper is the global context of EU policy. Therefore, to mitigate adverse competitive effects exploitation of shale gas and diversification of energy supply routes should be explored and state aid rules reformed to ensure undistorted markets.

E.ON will support more ambitious emission reduction targets according to the Roadmap 2050, immediate action and calls for better RES market integration. E.ON would actively engage in the consultation process.

On the other hand, the lack of visibility and regulatory uncertainty will inevitably lead to an absence of energy investments with negative effects on security of supply, employment and reactivation of the European economy. Therefore, it is necessary to revitalize EU approach to ensure competitive energy prices and a secure supply of energy for European citizens. Concurrently, this action would serve to restore the confidence of energy companies in the attractiveness of a European energy market. Furthermore, this revamped EU approach will not only support the fight against climate change but also following elements:

- A European carbon market will able to support climate-friendly technologies and in which a reliable perspective is provided, notably, by establishing ambitious but realistic and stable post-2020 greenhouse gas emissions targets.
- A more sustainable approach to the promotion of renewables so as to reduce costs for citizens and favour greater convergence between Member States.
- A strengthening of policy framework to trigger investments in promising technologies, such as energy storage, new renewables, shale gas[9] and smart grids.

With that regard, E.ON will remain committed to the EU's ambition for an energy policy based on the principles of competitiveness, security of supply and sustainable development, and also the need for liberalization of energy markets. In addition to that, E.ON will take forthcoming EU measures into consideration, especially EU political leaders thinking about the critical situation the energy sector is facing.

They must also define a new policy direction based on elements included in the joint statement which are focused on the contribution that investments in the energy sector make, not only in providing a secure and efficient product, but also through creating jobs and reactivating the economy in an efficient way.

Environment policy

According to a framework to guide environment policy until 2020, the European Parliament emphasizes focus on forestry, biodiversity, RES, waste and smart regulation. With this regard, E.ON will welcome the initiative to boost sustainable, low-carbon growth and wishes to enforce a coordinated surveillance and implementation approach as well as concrete objectives.

Nuclear energy

With regard to nuclear safety, a Communication regarding stress tests for nuclear power plants in the EU was tabled by COM on 4th October. The tests require most plants to improve safety measures.

[9] Shale gas refers to natural gas that is trapped within shale formations. Shales are fine-grained sedimentary rocks that can be rich sources of petroleum and natural gas (Eia, 2013).

In addition to the technical findings and recommendations, COM was reviewing the existing legal framework for nuclear safety and presented a revision of the nuclear safety directive on 14 March 2013. According to that directive, namely the resolution on risk and safety assessments of nuclear power plants in the European Union (‘stress test’), it calls for urgent improvements recommended by the stress tests' process. Member States have submitted national action plans end of 2012 which include time-tables and indicate how and when safety improvements will be carried out (E.ON, 2013a).

The European Parliament will welcome the pending revision of the Nuclear Safety Directive and the Commission should plan for "legislative and non-legislative instruments" for nuclear insurance and liability. The Commission wish to publish a revised Safety Directive Proposal and new legislation on nuclear insurance and liability by the end of 2013 and also should address the role and powers of nuclear regulatory authorities, transparency as well as monitoring.

Apart from that, it is also essential to reflect also on the German government’s statement to gradually phase out the country's nuclear power plants and replace them wherever possible with renewable energy sources. In that regard, E.ON has noted profit slump by €1.5 billion that was caused by a German government determination to shut down a couple of reactors as a consequence of Fukushima nuclear disaster in Japan and decision to totally phase out nuclear power by 2022 (E.ON, 2011).

However, it has begun a serious discussion over the costs of the nuclear phase-out as a result of growth of energy prices which has affected low-income consumers. Hence, it is vital to draw attention to the dangers of electricity supply shortfalls and rising prices in the foreseeable future. Moreover, Germany's decision to shut down all nuclear plants by 2022 will also impact on job cuts in the medium term.

Technology & Innovation

Innovation and leaps in technology are needed to reach the ambitious goals. The Commission states that the resources of member states are too limited for this purpose. As central instrument, COM intends to issue a comprehensive Communication on energy technology called Strategic Energy Technology Plan in 2013 which should

address six priority policy areas, namely energy efficiency, renewable energy, Internal Energy Market, infrastructure, external energy relations and nuclear.

It will also include another four sectors: smart grids, electricity storage, smart cities (see Appendix 7) and second-generation biofuels. All the new sectors are to promote the e-mobility market. E.ON welcomes the fact that, with its strategy, the Commission has constructively taken up and brought together the most important issues of future energy policy.

In terms of fossil fuels, the role of natural gas in the primary energy mix is seen as a 'no-regrets' policy to achieve the transition to a low carbon economy by offering cost-effective CO_2 emission reductions in all market segments, notably when using its innovation potential. COM will discuss next measures accordingly.

In relation to data protection, the EU Commission also proposed a comprehensive reform of the EU's 1995 data protection rules to strengthen online privacy rights and boost Europe's digital economy in January 2012 (E.ON, 2013b). The Regulation will have a significant and wide-ranging impact on businesses, imposing new compliance obligations and promising significant sanctions for non-compliance. The proposal seeks to harmonise data protection laws which could simplify E.ON's trading business. E.ON will support a proportionate penalty framework to avoid detrimental effects on companies.

Energy efficiency

With regard to energy efficiency, a draft regulation on implementing the Eco-Design directive 2009/125/EC addressing small distribution and power transformers was tabled by COM together with a stakeholder consultation on 9th November. The proposal aims at increasing transformer efficiency and proposes reduction of electric losses as benchmark instead of transformer efficiency. Adoption of the regulation is not expected before end of 2013 (E.ON, 2013c).

E.ON has raised concerns as regards the proportionality and cost-effectiveness of the measure. It would entail the construction of new and larger substations and make large parts of the current infrastructure redundant.

E.ON's performance in the foreseeable future

Owing to the significant deterioration of the business environment of Europe's energy industry, E.ON expects its 2013 EBITDA forecast to be between €9.2 and €9.8 billion (see Appendix 5). This forecast is already adjusted for the substantial earnings streams that E.ON will lose through its ongoing divestment program. The other main earnings factors will be the midstream gas business's return to a normal earnings level and the generation business's reduced profitability (E.ON, 2013e).

In addition to that, as was already mentioned, E.ON would implement its strategy even more swiftly and decisively and adjust part of it because of the radical changes in Europe's energy industry. The unmanaged growth of renewables and the resulting collapse of the EU emissions trading scheme are making in particular gas-fired power plants in Europe – which had already been hit by the recession – driven decline in power demand. There must be adequate compensation for maintaining this capacity, which ensures the reliability of the power supply.

E.ON would restructure its conventional generation business in ways that will swiftly improve the competitiveness of its generation fleet. Along with further costs reductions and efficiency improvements, E.ON is currently studying whether to close power plants in Europe.

Nevertheless, E.ON will focus on its investments during its transformation phase but even more strictly on its growth businesses, which on balance will decline going forward. These include, in particular, distributed generation, renewables, and market outside Europe, such as Russia and Turkey.

CONCLUSIONS

The main aim of master's thesis was to critically analyse European Union policy and its impact on transnational firm E.ON. In fact, the objective of the thesis was specified as the analysis of political influence of EU decision-making and its effect on subsequent strategic decisions within the company. To meet the objective, it was essential to divide structure of master's thesis into three main parts. The first part was dedicated to literature review which consisted of theoretical knowledge concerning prime institutions of European Union and treaties regarding energy market (Energy Community Treaty, Energy Charter Treaty, EURATOM Treaty and ECSC Treaty) necessary for right understanding of global governance in the policy area.

With regard to second part, focusing on deep critical analysis of European energy policy, the analysis indicated that power and gas markets remain oversupplied, government regulation and intervention continue to build up. Furthermore, the principles of market integration and competition are becoming gradually less prominent. While the most innovative countries have further improved their performance, others have shown a lack of progress. The overall ranking within the EU remains relatively stable, having Germany at the top with largest improvements.

Last but not least, the energy market is affected in a lasting way by Germany's decision to transform its energy system and to accelerate the phase-out of nuclear energy as well as by the euro zone and Europe's relapse into recession. It is also affected by technological developments, such as the significant decrease in the manufacturing costs of equipment for renewable-source power generation.

Basically, E.ON's transformation will not happen overnight. In spite of these adverse market trends, the energy giant E.ON will strive to focus mainly on renewables, distributed energy, and conventional power generation outside Europe. However, it is necessary to take into consideration the fact, that in the years ahead E.ON will continue to face significant business challenges resulting from public policy decisions and a significantly altered environment in European markets.

In addition to that, the new term of competition in Europe may more likely reinforce a trend of increasing risk premiums for long-run investment commitments, which besides that may lead to upward pressure on energy prices. The growing risk aversion of energy companies might lead to new mergers, which in turn may wipe out the expected market fragmentation in Europe.

Moreover, the European Union has laid stress on a new political ambition of developing towards a non-hydrocarbon economy, which is reflected in its '20-20-20' objectives. The EU's commitment to these ambitious new targets, aimed at changing the traditional landscape of long-term oil and gas usage, may negatively impact on oil and gas investment and development, which is arguably still much needed in Europe.

Arising from analyses conducted in the master's thesis, the key finding is that competitiveness of the energy sector is undermined by current market distortions and national interventions and thus, European energy policy is currently regarded as a 'hotch-potch'. Therefore, the first phase of direct market intervention should be focused on a revitalized ETS seen as the driving force of energy markets.

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LIST OF ABBREVIATIONS

CAP	Common Agricultural Policy
CEECs	Central and Eastern European countries
CNG	Compressed natural gas
EC	European Community
ECSC	European Coal and Steel Community
EDC	European Defence Community
ENSREG	European Nuclear Safety Regulators Group
EP	European Parliament
ETS	Emission Trading System
EU	European Union
EURATOM	European Atomic Energy Community
LNG	Liquefied natural gas
MEPs	Members of the European Parliament
NIS	Newly independent States
NMS	Newer Member States
NPP	Nuclear power plants
OPEC	Organization of Petroleum Exporting Countries
RES	Renewable energies
QMV	Qualified majority voting

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Appendix 1 – Energy saving potentials

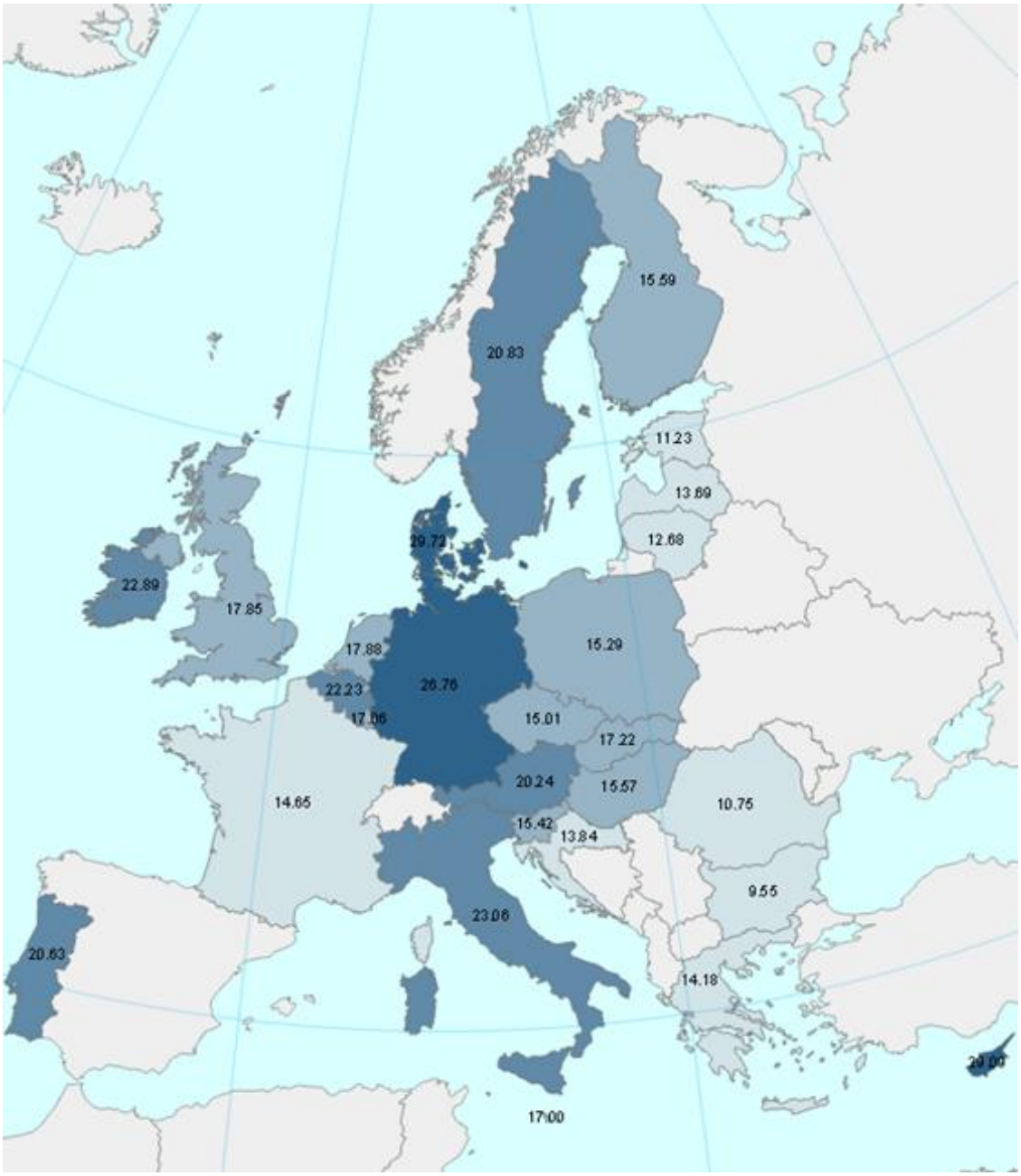
Table showing energy saving potentials by final energy consuming sector and key drivers, actors and barriers for energy efficiency improvements

Sector	Share in final energy cons. (2006)	Saving potential by 2020[38]	Key drivers for energy efficiency	Key barriers	Key actors
All sectors	100%	21%	• Energy policies • Market forces/ energy prices • Financing and taxation • Awareness • Technological development	• Incomplete implementation of energy efficiency legislation • Lack of awareness • Market failures	• Everybody
Households and commercial buildings	41%	30%	• EU and national/regional legal requirements • Technological developments • Financial and fiscal incentives • Energy services Companies • Information instruments (e.g. labelling, certificates, metering, campaigns) • Behaviour trends	• High up-front costs • Owner-tenant dilemma • Lack of awareness on the benefits • Overestimation of the investment needs • No access to attractive financing options • Energy efficiency not recognized as business opportunity	• Property owners and tenants • Construction business • Financial institutions • Consumer associations • National/local authorities • EU institutions
Transport	31%	20%	• EU and national/regional legal requirements • Consumer awareness • Information campaigns • Labelling • High energy prices	• Lack of information • Limited commitment from transport industry • Insufficient infrastructure (e.g. poor urban planning, limited public transport) • Behaviour patterns	• Transport companies • Associations • Citizens • National/local authorities • European institutions
Industry	28%	19%	• High energy and carbon prices • Voluntary and mandatory agreements • Improved energy efficiency of production processes	• High up-front costs • Limited commitment • Low awareness of the benefits • Overestimation of the investment needs • Lack of financing • Low share of energy in production costs	• Companies • Industry associations • National/local authorities • European institutions

Adopted from European Commission (2008)

Appendix 2 – Electricity prices for household consumers

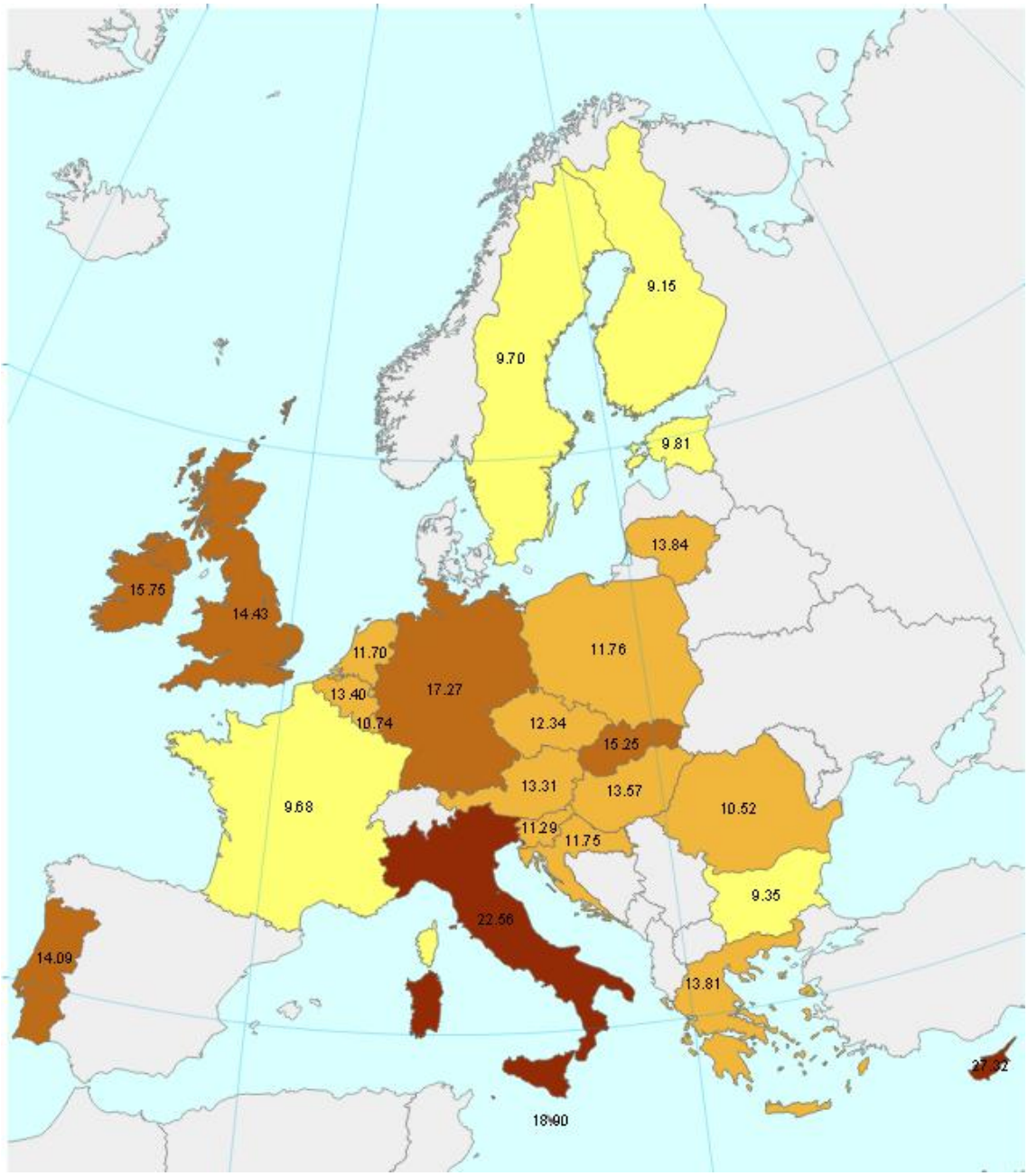
This figure shows retail electricity prices (inclusive of taxes) for household consumers during the second half of 2012. Prices per kWh (c€)



Adopted from European Commission (2013e)

Appendix 3 – Electricity prices for industrial consumers

This figure shows retail electricity prices (inclusive of taxes) for industrial consumers during the second half of 2012. Prices per kWh (c€)



Adopted from European Commission (2013e)

Appendix 4 – Nuclear power plants in the EU

There are **132 operating reactors in 14 EU Member States:**

- Belgium: 7 reactors (2 NPP)
- Bulgaria: 2 reactors (1 NPP)
- Czech Republic: 6 reactors (2 NPPs)
- Finland: 4 reactors (2 NPPs)
- France: 58 reactors (19 NPPs)
- Germany: 9 reactors (12 NPPs, 17 reactors, 8 were shut down after Fukushima)
- Hungary: 4 reactors (1 NPP)
- The Netherlands: 1 reactor (1 NPP)
- Romania: 2 reactors (1 NPP)
- Slovakia: 4 reactors (2 NPPs)
- Slovenia: 1 reactor (1 NPP)
- Spain: 8 reactors (6 NPPs)
- Sweden: 10 reactors (3 NPPs)
- United Kingdom: 16 reactors (10 NPPs)

Lithuania: 2 reactors under decommissioning (1 NPP)

Four reactors are **under construction:**

- Finland: 1
- France: 1
- Slovakia: 2

Planned reactors:

- Bulgaria: 1
- Czech Republic: 2
- Finland: 2
- France: 1
- Lithuania: 1
- The Netherlands: 1
- Poland: 2-3
- Romania: 2
- United Kingdom:

Adopted from European Commission (2013f)

Appendix 5 – E.ON Financial Highlights

E.ON Group Financial Highlights

€ in millions	2012	2011	+/- %
Electricity sales[1] (billion kWh)	740.4	733.7	+1
Gas sales[1] (billion kWh)	1,162.1	1,107.5	+5
Sales	132,093	112,954	+17
EBITDA[2]	10,786	9,293	+16
EBIT[2]	7,027	5,438	+29
Net income/Net loss	2,641	-1,861	-
Net income/Net loss attributable to shareholders of E.ON SE	2,217	-2,219	-
Underlying net income[2]	4,187	2,501	+67
Investments	6,997	6,524	+7
Cash provided by operating activities of continuing operations	8,808	6,610	+33
Economic net debt (at year-end)	-35,879	-36,385	+506[3]
Debt factor[4]	3.3	3.9	-0.6[3]
Equity	38,819	39,613	-2
Total assets	140,426	152,872	-8
ROACE (%)	11.1	8.4	+2.7[5]
Pretax cost of capital (%)	7.7	8.3	-0.6[5]
After-tax cost of capital (%)	5.6	6.1	-0.5[5]
Value added	2,156	90	-
Employees (at year-end)	72,083	78,889	-9
Earnings per share[6,7] (€)	1.16	-1.16	-
Equity per share[6,7] (€)	18.34	18.76	-2
Dividend per share[8] (€)	1.10	1.00	+10
Dividend payout	2,097	1,905	+10
Market capitalization[7] (€ in billions)	26.9	31.8	-15

[1]Includes trading sales volume.
[2]Adjusted for extraordinary effects (see Glossary).
[3]Change in absolute terms.
[4]Ratio of economic net debt and EBITDA.
[5]Change in percentage points.
[6]Attributable to shareholders of E.ON SE.
[7]Based on shares outstanding.
[8]For the respective financial year; the 2012 figure is management's proposed dividend.

Adopted from European Commission E.ON (2012f)

Appendix 6 - Overview of Member States' progress regarding RES

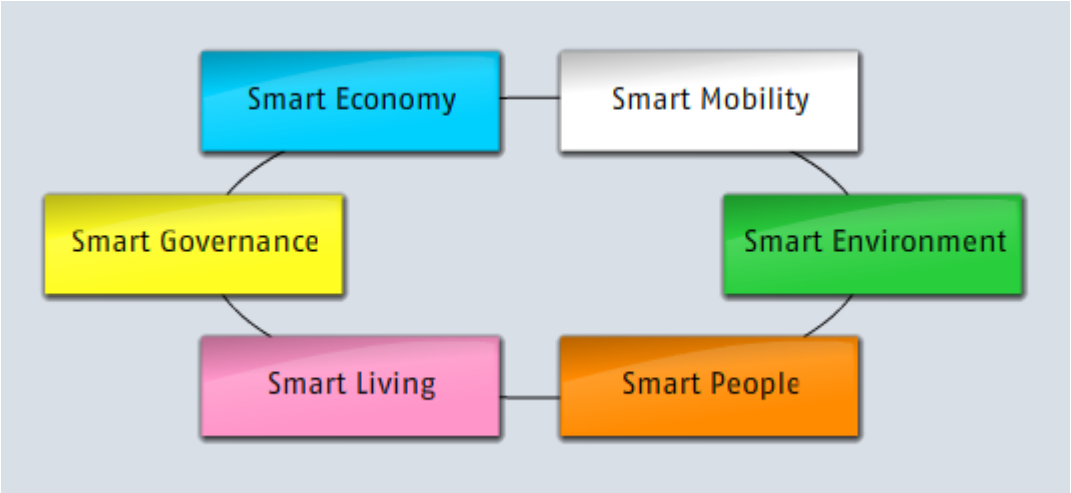
The most objective measure is to judge Member States against their first interim target, calculated as the average of their 2011/2012 shares. Whilst on average such progress to 2010 is good, this does not reflect the policy and economic uncertainties that renewable energy producers appear to face currently (European Commission, 2013b, p.15).

Member State	2005 RES share	2010 RES share	1. interim target	2020 RES target
Austria	23.3%	30.1%	25.4%	34%
Belgium	2.2%	5.4%	4.4%	13%
Bulgaria	9.4%	13.8%	10.7%	16%
Cyprus	2.9%	5.7%	4.9%	13%
Czech Republic	6.1%	9.4%	7.5%	13%
Germany	5.8%	11.0%	8.2%	18%
Denmark	17%	22.2%	19.6%	30%
Estonia	18%	24.3%	19.4%	25%
Greece	6.9%	9.7%	9.1%	18%
Spain	8.7%	13.8%	10.9%	20%
Finland	28.5%	33%	30.4%	38%
France	10.3%	13.5%	12.8%	23%
Hungary	4.3%	8.8%	6.0%	13%
Ireland	3.1%	5.8%	5.7%	16%
Italy	5.2%	10.4%	7.6%	17%
Lithuania	15%	19.7%	16.6%	23%
Luxembourg	0.9%	3%	2.9%	11%
Latvia	32.6%	32.6%	34%	40%
Malta	0%	0.4%	2.0%	10%
Netherlands	2.4%	3.8%	4.7%	14%
Poland	7.2%	9.5%	8.8%	15%
Portugal	20.5%	24.6%	22.6%	31%
Romania	17.8%	23.6%	19.0%	24%
Sweden	39.8%	49.1%	41.6%	49%
Slovenia	16.0%	19.9%	17.8%	25%
Slovakia	6.7%	9.8%	8.2%	14%
United Kingdom	1.3%	3.3%	4.0%	15%
EU	**8.5%**	**12.7%**	**10.7%**	**20%**

Adopted from European Commission (2013b)

Appendix 7 – The smart city model

A Smart City is a city well performing in 6 characteristics, built on the 'smart' combination of endowments and activities of self-decisive, independent and aware citizens (European smart cities, 2013).



Adopted from European smart cities (2013)