Economic progress or environmental disaster?

- The liberalisation of the European Electricity Market and its environmental implications.

A bachelor thesis written by Maja Dahlin

s012238

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Experts warn that we might only have another 13 years to save the world[1]. The threat of the global warning has been on the agenda for years, but now it is commonly accepted that we are the reason to the climate change, and if we will not change our behaviour will destroy our world.

The energy consumption of the industrial world is responsible for 80% of the greenhouse gas emissions causing the global warming; now it is our responsibility to control the pollution, to have a chance to reduce it to a level that will not warm up the world more than it can handle. Electricity use alone is responsible for 37% of the emission in the European Union, which makes it a key area for Pollution control. Through the market opening the European Union hopes to reduce emissions through increased efficiency and the introducing of the policy tool European Emission Trading Scheme.

The European Union is not only the largest industry region in the world; it is also the first over-regional organisation to put environmental protection equal to economic growth. Through legislation and regulation, the protection of the environment in all actions of the European Union should be secured. Will present environmental legislation and policy market intervention make sure that the liberalisation of the electricity market will not be an environmental disaster?

[1] Financial Times Germany - May 15, 2007

List of Acronymes

CEER	Council of European Energy Regulators
CHP	Combined Heat and Power
CO2	Carbon Dioxide
DG	Demand Generation
DSO	Distribution System Operator
EAP	European Action Programme
EC	European Community
ECJ	European Court of Justice
ESER	European System of Energy Regulation
ETSO	European Transmission System Operator
ERGEG	European Regulators Group for Electricity and Gas
EU	European Union
GHG	Greenhouse Gas
IPCC	Intergovernmental Panel on Climate Change
NGO	Non Governmental Organisation
NRA	National Regulatory Authority
OECD	Organisation for Economic Co-operation and Development
RES	Renewable Energy Sources
SEA	Single European Act
TEC	Treaty of the European Community
TSO	Transmission System Operators
UN	United Nations
UNCED	United Nations Conference on Environment and Development

1. Introduction

Global climate change, end of natural resources and other environmental problem sets limits to our economy and out future. Our economic system is dependent on natural resources, which is not a reciprocal relationship; the eco system would do better without the economic system. The eco system is a global concern and global solutions are needed to dispose threats to it.

The European Union is the only region in the world where combining economic growth, social development and environmental protection is a declared policy.[2] In the preamble of the treaty of the European Union, the Union admits itself to economical and social development under the consideration of sustainable development.

Global change and especially the global environmental crisis pose a serious challenge to available control systems, including the legal systems.[3] Recently development on the environmental area, especially the threatening climate change, challenges our present political structures. According to the Intergovernmental Panel on Climate Change (IPCC) the world has 13 years until 2020 to save the stop a climate catastrophe.[4] But political structures change slowly, the European Union is no different, where the present structure has emerged out of the last fifty years and the political structure itself is not build for fast changes.

Compared to other regions in the world, the European Union has a leading role in environmental protection, but the question is, will this be enough and can the European Union as it is today react to the new challenges that come upon it through the threat of a fast coming environmental crisis?

[2] Krämer, L, The EU: a regional model? In: Winter, Gerd, Multilevel Governance of Global Environmental Change, Perspectives from science, sociology and the law, 2006 p.348
[3] Decleris, Michael, The Law of Sustainable Development, General Principles, 2000 p.9
[4] Financial Times Germany - May 15, 2007

The first objective of the European Union is to promote economic growth through European integration. One important part is the implementation of a common European market. July 1 this year the internal electricity market was to be fully opened up, and every consumer throughout the European Union should by now be able to freely choose their electricity supplier. The task of the EU is to ensure that the market will not have increased negative effects on the environment.

During the work on the climate policy evaluation and related assessments it became clear to scientists how important a good understanding of the functioning of the electricity market is.[5] Many policy makers and the public at large tend to think the opposite that the long term security of supply by no means is certain, and liberalised electricity markets would not be favourable for energy efficiency promotion and carbon emission reduction.[6]

Although there are noticeable variations from one country to another (due to the difference in production facilitates) electricity generation accounts for a significant share of greenhouse gas emissions in the European Union with an average of 26 p.c of CO2 emissions in 2002.[7] The environmental policy setting and implementation must be integrated and have an important value within all policy areas, it cannot be efficient when operated separately.

In this bachelor thesis the focus is on the present European legal structure and its basis for environmental protection. The paper focuses on environmental threat in terms of global warming and environmental protection, firstly in terms of pollution control. The link between the present legal basis for environmental protection and the effectiveness of market intervention will be searched for.

[5] Perrels, A, Kemppi, H, Liberalised Electricity Markets, Strengths and Weakness in Finland and Nordpool, 2003 p.01
[6] Perrels, A, Kemppi, H, Liberalised Electricity Markets, Strengths and Weakness in Finland and Nordpool, , 2003 p. 01
[7] International Energy Agency (2004a) in: Coppens, F, Vivet, D, The single European electricity market: A long road to convergence, 2006 p.22

1.1 Questions

The following key questions have led to the frames of this paper;

Main: *Does the liberalisation of the European electricity market comply with the environmental policy of the EU?*

Sub: *How will environmental policies and law be enforced in a fully liberalized energy sector?*
Which environmental outcomes will the liberalisation of the market bring?

Environmental dilemmas as nuclear waste, and the impact on the environment due to the installation of new power plants and networks do not fit into the frames of this paper. Also the gas market and its regulation will not be handled, even though the intervention on the electricity market; for example, emission taxes have positive effects on the gas market. The paper focuses on the market opening from an environmental point of view. Economic matters will only be casually handled.

1.2 Method

This paper is a product of a literature analysis of law texts and official documents of the European Union and its institutions, together with secondary literature on the topic. Official documents here are decisions, directives, law documents, action programmes and green papers. Secondary literature on this topic is rather limited. It is a new policy field where much has happened during the last years and months. Climate change scientists are publishing new achievements every month. The political research has not kept up with this pace. The paper is structured in four main chapters regarded to the history of and the present structure of European environmental legislation and the link to energy, with the focus on the liberalisation of the electricity market.

2. Ecological Challenges for European Politics

The common European market structure is dependent is dependent on natural resources and climate change threatens not only our economic system, but the existence of the human being. The challenge to stop pollution causing global warming is one of the most important tasks of the industrial world today. A solution to keep pollution and environmental degradation at a bearable level must be found.

Sustainable means continuous or constant, "sustainability" first appeared among German forestry workers approximately 300 years ago. The concept has been developed over time and differently interpreted by organisations and people using the term. Elliot claims that already early 1990`s more than 70 definitions of sustainability were in circulation.[8] But the concept only recently became used worldwide as international environmentalists started using the term in the 1980`s.[9] Instead of former aim for economic progress only, the term "sustainable development" was the first term to include social and economic goals into a model of environmental protection and natural resources.[10] The term is often used in international and national agendas, but even though it is used very frequently during the last ten years, there are serious doubts whether this key word is universally understood.[11] The concept of sustainable development is, according to the political scientist and attorney Winkler, one of the most interesting features in present environmental politics and environmental law. Some call it a useless fashion concept while others refer to it in a euphoric way; saying it is a sign of a

[8]Holmberg, Sandbrook, 1992 in: Elliott, J, A, An introduction to sustainable development, 2006
[9] Weber-Blaschke,G, Mosandl, R, Faulstich,M, History and Mandate of Sustainability: From Local Forestry to Global Policy, 2005 p. 6
[10]Weber-Blaschke,G, Mosandl, R, Faulstich,M, History and Mandate of Sustainability: From Local Forestry to Global Policy, Wilderer, P.A, Schroeder, E.D, Kopp. H, Global Sustainability, The impact of Local Cultures, A New Perspectives for Science and Enginieering, Economics and Politics, 2005 p. 8
[11] Weber-Blaschke,G, Mosandl, R, Faulstich,M, History and Mandate of Sustainability: From Local Forestry to Global Policy, 2005 p.8

paradigm change.[12] The theory is new and still under construction, but the social problems that must be solved cannot afford to wait any longer.[13]

The *United Nations Conference on the Human Environment* in Stockholm, 1972 was the first big international environmental conference. Before the conference, economic growth was the only global goal. At this conference, the risk of environmental degradation for the first time was discussed in an international setting. The conference, was a start, but did not create any big impact on the international scene.

It would take another 20 years until the *United Nations Conference on Environment and Development* (UNCED) in Rio de Janeiro before the threat of an environmental crisis became an issue on the international politics agenda. In 1984, the UN established an independent group of 22 people from different member states, both from the developing and the developed world, and asked them to identify long-term environmental strategies for the international community. The Rio conference in 1992 emerged out of this work.

In 1987, the *World Commission on Environment and Development* published a report entitled "Our Common Future". This report is also known as the *Brundtland-report,* after the former Norwegian premier Gro Harlem Brundtland, who was the head of the commission. The report used the term "sustainable development" widely and defined it as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs.[14]" This definition of sustainable development is the most commonly used by policy-makers and academics.[15]

At the environmental world summit in Rio de Janeiro 1992, the word "sustainability" was spread around the world. Since the summit, "sustainability" has been the ideal for all political fields, not only environmental policy areas. At the summit the concept of *Agenda 21*[16] was developed, and it became a fix mandate for all UN- member states.[17] Alongside Agenda 21

[12] Winkler, M, Klimaschutzrecht, Völker,- europa- und Verfassungsrechtliche Grundlagen sowie instrumentelle Umsetzung der deutschen Klimaschutzpolitik unter der besonderer Berücksichtigung des Emissionshandels, 2005 p. 41
[13] Decleris, Michael, The Law of Sustainable Development, General Principles, Office for Official Publications, 2000 p.7
[14]Our Common Future rep. 43 in: Elliot, J, A, An Introduction to Sustainable Development, 3rd Edition, 2005 p.7
[15] McCormick, John, Environmental Policy in the European Union, 2001 p.77
[16] Agenda 21
[17]Weber-Blaschke,G, Mosandl, R, Faulstich,M, History and Mandate of Sustainability: From Local Forestry to Global Policy, 2005 p.6

also the Rio declaration was launched at the conference. The former president of the Commission, Jacques Santer, described the Rio declaration as the definition of sustainable development and Agenda 21 as the implementation plan.[18]

Since Rio, sustainable development has become a buzzword for attempts to link economic development with the maintenance of an ecologically determined carrying capacity. More than 300 pages of recommendations in reference to this concept were collected and published as Agenda 21. After the United Nations conference, many other national and international organizations have "jumped on the sustainability bandwagon".[19]

15 years after Rio, the recognition and inclusion into international documents there has been little indication to actually take the needed steps to fully implement Agenda 21. In all of these fields, the amount of technical expertise is limited compared to the problems at hand, so international institutions often borrow ideas from each other. [20]

The next important event, on the climate change agenda was the foundation of the Kyoto Protocol in 1997. The protocol is a commitment of industrialized countries to limit their greenhouse gas emissions. The agreement was signed by the EU as one party, and the EU area should reach a reduction of 8% by 2012 compared to the 1990´s level.[21] Through the Kyoto Protocol the European Union has promised to reduce their level of CO2 emissions by 8% by 2012 compared to the 1990`s level. EU wants to make this through increased efficiency on the one hand and an increased level of renewable energy sources on the other.

Throughout the world politics, an explicit aim of moving towards sustainable development has escalated since the 1980´s. However, the real challenges of sustainable development are those of reconciling the ambitions of various interest groups, of identifying basic versus extravagant needs and of balancing present and future development aspirations. Inevitably, the practice of sustainable development is proving more difficult than professing an intention..[22]

[18] Decleris, Michael, The Law of Sustainable Development, General Principles, Office for Official Publications, 2000 p.4
[19] Renn, O, Sustainable Development: Exploring the Cross- Cultural Dimensions, 2005 p. 22
[20]Zito, R, Anthony, Creating Environmental Policy in the European Union, Macmillan Press LTD, 2000 p.15
[21]Baylis, J, Smith, S, The Globalization of World Politics, An introduction to international relations, 2001 p. 408
[22]Elliott, J, A, An introduction to sustainable development, 2006 p.91

2.1 Sustainable development in the European Union

Sustainable development was first mentioned in the *Single European Act (1986)*. Since then, the concept has been developed further, in Maastricht (1992) and Amsterdam (1997).[23] The Amsterdam treaty lifts the sustainable development thinking to a new level within the European Union, and makes environmental protection a major task of the Union. The definition of sustainable development used and developed by the United Nations was implemented into European Union law.[24]

As mentioned above, the interpretation of sustainable development is often quite different. In the European Community and Union treaties, the concept in not clearly defined. The Rio declaration was signed by the European Community as a single party. The outcome of the conference has led to a wide range of policy documents and programmes within the European Union. The most important one was the outcome of the European initiative 5th action programme "Towards Sustainability".[25]

The next important step was taken by the Gothenburg European council 2001. The Commission responded to the council's request from the Helsinki summit of 1999, and made it clear that a proposal should be prepared for a long-term strategy to develop policies for economically, socially and ecologically sustainable development. The final document was called "A Sustainable Europe for a better world: A European Union Strategy for sustainable Development". The proposal called upon the Commission to present mechanism to ensure sustainability impact assessments on all major policy proposals[26] and is according to the Law-professor Heldeweg a promising perspective.[27]

In Gothenburg the relationship between the Union and the concept of sustainable development was defined. The Union's sustainable development strategy is based on the

[23]McCormick, John, Environmental Policy in the European Union, 2001 p.76
[24]Article 2 I:I TEU, Article 2,6 TEC in: Streinz, R, Europarecht, 2003 P.400
[25]Decision No 2179/98/EC of the European Parliament and of the Council of 24 September 1998 on the review of the European Community programme of policy and action in relation to the environment and sustainable development, Towards sustainability, 2007
[26]Heldeweg, M, Good Environmental Governance in the EU: Lessons from Work in Progress? 2006 p.8
[27]Heldeweg, M, Good Environmental Governance in the EU: Lessons from Work in Progress? 2006 p.7

principle that the economic, social and environmental effects of all policies should be examined in a coordinated way and taken into account in decision-making.[28]

Sustainable development is also mentioned in the primary law of the European community, for example in article 2 of the European Community Treaty;

"The Community shall have as its task, by establishing a common market and an economic and monetary union and by implementing common policies or activities referred to in Articles 3 and 4, to promote throughout the Community a harmonious balanced and sustainable development…. [..]….sustainable and non inflationary growth."

Here, the European Union is committed to consider the principles of sustainable development, to find that elusive balance between protecting the environment, ensuring economic progress and social development. Its overall aim is to improve the quality of life and at the same time protect the environment so that future generations, in all parts of the world can develop and prosper.[29]

It is generally assumed that the introduction of the concept of sustainability (and the reference in Article 2 EC to 'a high level of protection) makes it clear that there is no (longer a) hierarchy between the economic and the ecological objectives of the EU/EC.[30]

[28] Göteborg European Council, June 2001, Presidency's Conclusions, paragraph, 22
[29] http://ec.europa.eu/publications/booklets/move/32/txt_en.pdf 2006:10:10
[30] Deketelaere, K, Public Environmental Law in the European Union and the United States, A *Comparative Analysis*, The Hague, London, New York, Kluwer Law International, 2002, p.134

2.2 Sustainable development and energy in the EU

Sustainable development is sometimes a contradiction to our quest to increase economic growth and standard of living. For example, energy supply is extremely important for economic growth and to keep up our standard of living. At the same time, the energy sector is one of the areas that have the most impact on the environment, especially through CO2 emissions. This makes the energy sector play a key role in the context of sustainable development. Use of energy sources as oil or nuclear technique implies hazards for current and future generations, as no other human behaviour. If we do not manage to change our energy use, we will challenge the existence of following generations.[31]

Today few people or scientists claim that global warming is not a serious threat to the stability of the world climate and to economic prosperity throughout the world. Since most emissions stem from the use of fossil energy sources, the greenhouse topic made energy policy an important policy domain, even though, in the 80`s only some OECD countries took it on the agenda.[32] International organisations, such as the United Nations and the European Union, have the greatest possibilities to be leading the process to change the environmental behaviour to reduce CO2 emissions throughout the world.

Global warming is caused when greenhouse gases (GHG) stops the sunlight reflected by the earth to leave the atmosphere, a certain amount of greenhouse gases is normal but human action increases the level significant. About 75% of the GHGs in the atmosphere are caused by burning of fossil fuels. Mostly GHGs are referred to as CO^2, which is together with water vapour the most emitted of the gases. The high level of CO^2 emissions is the factor why the focus is set on CO^2 reduction. Other GHGs are; methane (CH^4), nitrous oxide (N^2O), chlorofluorocarbons (CFCs) and sulphur hexafluoride (SF^6).[33]

[31]Rogall, Holger, ökonomie der Nachhaltigkeit, Handlungsfelder für Politik und Wirtschaft, 2004. p.102
[32] Welfens, P, J, J, Meyer, B, Pfaffenberger, W, Jasinski, P, Jungmittag, A, Energy Policies in the European Union, Germany's Ecological Tax Reform, 2001 p.1
[33] Winkler, M, Klimaschutzrecht, Völker,- europa- und Verfassungsrechtliche Grundlagen sowie instrumentelle Umsetzung der deutschen Klimaschutzpolitik unter der besonderer Berücksichtigung des Emissionshandels, 2005 p. 17

The EU goal in the fight against global warming is to limit the forthcoming rise of global temperatures at the agreed target of maximum 2 degrees above pre-industrial levels, to be compared with the increase of 0.6 degrees that we have today. To be able to reduce the warming to 2 degrees, global greenhouse gas emissions should peak no later than 2025, and then be reduced by at least 15%, but perhaps as much as 50% compared to 1990 levels. This huge challenge means that Europe must act now, in particular on energy efficiency and renewable energy.[34]

In 2001, the EU agreed that the share of electricity from renewable energy sources in EU consumption should reach 21 % by 2010. At the spring summit 2007 the target for renewable energy was set to 20%. Environmental organisations claims that at least a 30% target will be needed to stop the global warming at 2 degrees[35], but under the current trend EU will not even make the 20% target. If EU is to meet its longer term climate change goals and reduce its dependence on fossil fuel imports, it will meet and go beyond these targets.[36]

2.3 Introduction to EU´s environmental policy

The European law system builds upon treaties. They are referred to as the primary legislation of the European Union, starting with the *European Coal and Steel* union, which created a supranational institution with the goal to control the, for the weapon production important coal and steel production and distribution in Europe in 1952. The *Rome treaties* five years later created a deeper European integration, it member 6 countries, and contained a completely new economical dimension. In Rome plans for a common European market was made and the removal of industrial tariffs on internal trade were decided.[37]

The main focus of the new European integration was to secure peace and to promote economic growth. Environmental protection policies were adopted later. What is sometimes regarded as the *European Community's* first environmental directive was passed in 1967. It

[34] Green Paper- A European Strategy for Sustainable Competitive and Secure Energy, SEC(2006)317 p.10
[35] Greenpeace pressrealese 5, March 2007
[36] Green Paper- A European Strategy for Sustainable Competitive and Secure Energy, SEC(2006)317 p.11
[37] Baylis, J, Smith, S, The Globalization of World Politics, An introduction to international relations, 2001 p.499

dealt with standards for classifying, packaging, and labelling dangerous substances, but its main focus was on the facilitation of trade. [38]

Twenty years later through the *Single European Act* (SEA) in 1987, the vision of an internal European market came closer as the removal of all non-tariff barriers to the mobility of persons, goods, service and capital - the four freedoms – became its legal basis.

After the Single European Act, the European integration moved faster. In 1992, through the *Maastricht treaty*, the European Community became the *European Union*. The *Monetary fond* was founded and a wide range of new areas such as justice and home affairs were included in the treaty. After Maastricht the treaties of Amsterdam in 1997 and Nice in 2000 included institutional reforms to fit its new shape with present (2007) 27 Member States instead of the original 6 in 1952.[39]

Built upon the treaties, the secondary law of the union makes the *Regulations, Decisions, Directives* and *Verdicts* of the European Court of Justice. *Primary* and *Secondary* law together is called the aqcuis commentaire.[40] In environmental law the directive is the main operational regulatory devise.[41] By the directives the Member States can decide how they want to implement the measure. The regulations on the other hand are immediately coming into force. Then there are the decisions. They are also binding and can be aimed at one or more Member States, at institutions or even at individuals.[42]

The decision-making system of the union is rather complex and shifts according to which area that is affected. But in most areas of EU policy-making, the *Commission* has the monopoly to initiate the legislative process.[43] After the Commission has initiated a policy proposal, there are different kinds of processes to reach an agreement, where the co-decision procedure is the most common.[44] This makes the policy making difficult and slow and there are indications that the institutions to overloaded with work, to function properly. For example, the professor of social science *Lenschow* claims that there is little coordination between the *Environment Council* and the various other councils. If the institutions would have more freedom to act it

[38] Grant, W, Matthews, D, Newell, P, The Effectiveness of European Union Environmental Policy, 2000 p.9
[39] Baylis, J, Smith, S, The Globalization of World Politics, An introduction to international relations, 2001 p.499
[40] euabc
[41] Heldeweg, M, Good Environmental Governance in the EU: Lessons from Work in Progress? 2006 p.8
[42] McCormick, John, Environmental Policy in the European Union, New York, 2001 p.73
[43] Baylis, J, Smith, S, The Globalization of World Politics, An introduction to international relations, 2001 p.501
[44] Hartley, T, European Union Law in a Global Context, Text, Cases and Materials, 2004 p.49

would give actors a better opportunity to fulfil their organizational mandate.[45] But given this complex EU structure, actors have numerous opportunities for pursuing their goals.[46]

2.4 European environmental law

As mentioned in earlier chapter the original objective of the European Union was to secure peace within Europe and to promote economic growth. Whereas energy was early an important part of the community, environmental protection found its way into the treaties later in the European Unions history. In a top-meeting in Paris 1972, the same year as the UN Stockholm conference, environmental protection was included as an objective of the European Community for the first time. The first *Environmental Action Programme* was a result of this meeting.[47] This included the implementation of minimum harmonization. In Single European Act, environmental protection became a legislative base as an objective of the European Community. And in the *Treaty of the European Union* 1992, environmental protection became an independent policy area.[48]

Environmental protection is included in the *Treaty of the European Community* (TEC) through several Articles. Article 3 TEC names the specific objectives of the European Community, such as the internal market, and the objective to create a European environmental policy; it does not however define such a policy. Article 6 TEC is to be the answer of Article 3 TEC.

Article 6 TEC names the requirements to integrate environmental policies into other policies, which is the key to promoting sustainable development:

[45] Cottam and Gallucci 1978 in Zito, R, Anthony, Creating Environmental Policy in the European Union, Macmillan Press LTD, 2000 p. 23
[46] Zito, R, Anthony, Creating Environmental Policy in the European Union, Macmillan Press LTD,2000 p.23
[47] Roth-Berend, D, Nowak, A, Die Umweltpolitik der Europäischen Union, 2004 p.306
[48] Roth-Berend, D, Nowak, A, Die Umweltpolitik der Europäischen Union in, 2004 p.306

"Environmental protection requirements must be integrated into the definition and implementation of the Community policies and activities referred to in Article 3, in particular with a view of promoting sustainable development."

Article 6 EC would require that the best environmental option is chosen, on all areas[49]
Article 6 also makes the environmental law and policies a part of all community politics, not only a single area. Particularly the concept Sustainable should be promoted.[50] This is a so called horizontal clause, which means the policy should be included in every other policy of the European Union.

The law of the European Union is monitored by the European Court of Justice (ECJ) and the Court of First Instance. Jurisdiction is important, not only to enforce legislation but to define and help the further development of the system. Like all the social institutions created by man so far, the institution of sustainable development will acquire its specific form via the science of law and its application by court decisions.[51]

The structure of the European Union standing being a multilevel body between a state and an organisation is a challenge for the European environmental law, making it as important as it is difficult. The European Union functions more as an organisation than a state, but with certain state-like characteristics.[52] Many factors are important to the policy settings.[53] The reputation of the Environment Directorate, which has the task to initiate new environmental legislation and over-view its implementation, as being peopled by individuals who are environmentalists first and Commission officials with wider interests second, does seem to have pervaded the Brussels administration.[54]

In the previous chapter, I discussed the problem of there being no clear definition of sustainable development. When it comes to "environmental policy", there are as few clear definitions in the aqcuis commentaries.[55] As long as a clear definition of environmental policy

[49] Heldeweg, M, Good Environmental Governance in the EU: Lessons from Work in Progress? 2006:09:29 p.7
[50] Streinz, R, Europarecht, 6rd Edition, Heidelberg, 2003; P. 400
[51] Decleris, Michael, The Law of Sustainable Development, General Principles, Office for Official Publications, 2000 p. 7
[52] Wurzel, R, K, W, Environmental policy- making in Britain, Germany and the European Union, The Europeanisation of air and water pollution control, 2002 p.6
[53] Wurzel, R, K, W, Environmental policy- making in Britain, Germany and the European Union, The Europeanisation of air and water pollution control, 2002 p.6
[54] Grant, W, Matthews, D, Newell, P, The Effectiveness of European Union Environmental Policy, 2000 p.21
[55] McCormick, John, Environmental Policy in the European Union, 2001 p.19

is missing, it will be hard to enforce environmental policies. Therefore court decisions are extremely important to the development of the juridical system and the enforceability of environmental rules.

To include environmental policy would be easier if there was a clear legal definition of environment and environmental protection. There is also no European Union environmental policy as such, and responses to environmental issues have developed incrementally rather than as a result of a blueprint of any kind. [56] This situation weakens the jurisdiction, whereas a strong jurisdiction with clear court decisions is essential to enable a good practice.

In the same year as the Brundtland report was published, environmental protection was integrated in the law of the European Community through the *SEA agreement*. The agreement named protection of the environment in three stages; first, the environment is to be protected, obtained and to amend the environmental quality. Secondly, natural resources should be used in an efficient and rational way. Third, the protection of the environment must be considered in every action of the community.

These policies were integrated in the Union as it was founded through the *Treaty of Amsterdam* in 1997. The European Community committed itself to follow the decisions on sustainable development taken in Rio the same year and on the Lisbon Conference in 2000. The decision was concluded by the Commission and contains a strategy for the reduction of greenhouse gas emission in the Community.[57]

Today, the European law documents contain more than 300 directives and recommendations on environmental policies. The preamble of the treaty of the European Union, the EU admits itself to economical and social development under the consideration of sustainable development. Further in the second Article of the treaty sustainable development is mentioned as one of the objectives of the European Union. The sustainable development objective is also mentioned in the treaty of the European community. EU also wants to make sustainable development an objective in all international organisations and bilateral cooperation. However, environmental organisations claim that economic growth is still more important to the Union, and that the environmental aspects will to easily be forgotten.

[56] McCormick, John, Environmental Policy in the European Union, 2001
[57] http://europa.eu.int/comm/environment/climat/eccpl.htm 2006-10-08, 21:13

This deficiency was remedied by the single European Act of 1987 which provided, in Articles 130(r-t), a new treaty basis for decisions about the environment. In the treaty the "polluter pays" principle was recognised and the SEA also stated that in harmonization national regulations the Community would take as a base high level of environmental protection. The SEA gave a considerable impetus to environmental legislation. Between 1989 and 1991, the TEC enacted more environmental legislation than in the previous twenty years.[58]

According to the Single European Act, "environmental protection requirements" have to be integrated into all the other activities of the EU. This cannot be done effectively unless it is understood just when and where the environment needs protecting, what kinds of activities have or do not have an environmental component, and where the responsibilities of the environmental policies lay.[59]

The *Amsterdam Treaty* (1997) has reinforced the principle of integrating environmental requirements into other policies since this is the key to promoting sustainable development which is now defined in Article 6 TEC. The Community must therefore seek a coherent approach enabling it to pursue the objectives of the treaty as regards both the single market and the environment, whilst also honouring its international obligations.[60]

On the environmental area Article 174, 175 and 176 TEC, contains the legal basis. Article 174 TEC contains preserving, protecting and improving the quality of the environment. Here are the objectives of the environmental policies written down. The *second* paragraph of Article 174 EC presents a number of principles of European environmental policy: 1) a high level of protection; 2) the precautionary principle; 3) the prevention principle; 4) the source principle; 5) the polluter pays principle; 6) the safeguard clause. The Council, acting in accordance with the procedure referred to in Article 251 and after consulting the Economic and Social Committee and the Committee of the Regions, shall decide what action is to be taken by the Community in order to achieve the objectives referred to in Article 174.

A directive that offers minimum rather than total harmonization is often recognized by the so-called 'minimum harmonization clause'. The clause is however increasingly less used as

[58] Grant, W, Matthews, D, Newell, P, the Effectiveness of European Union Environmental Policy, 2000 p.23
[59] McCormick, John, Environmental Policy in the European Union, New York, 2001 p.21
[60] http://europa.eu/scadplus/leg/en/lvb/l28090.htm 2006:10:10

Member States can always have recourse to Article 176 EC and unilaterally introduce or maintain more stringent protective measures if they are otherwise compatible with the treaty.[61]

The minimum standards are generally preferred, because it leaves room for the Member States to decide if they want to implement stricter rules.[62] Minimum harmonization, even when it is exhaustive, leaves room for Member States to introduce more stringent standards and is therefore more readily used where the internal market is less affected, as in the case of minimum standards for the quality of water and air, as well as for flora and fauna.[63]

Apart from the treaties themselves, the environmental action programmes, where implemented to fill the vacuum of EU environmental policy left out by the treaties. When environmental policy was invented there was no mandate by councillor Member States to tackle single aspect of protecting single parts of the environment. The a*ction programme* should fix objectives, principles and priorities for action at the EU-level. The first *European Action Programme* came 1973, presently the 6th *Our Future, Our Choice* runs until 2012, and provides 156 environmental actions at EU-level.[64]

The EAPs are flexible, which means that sometimes, compromises can be made and policies can be "exchanged" to include others instead.[65] Through the EAP, the environment was given a voice within the European legislative framework. For example the programmes created an environmental committee within the European parliament.

The 5th Environmental Action Programme (1993) defined sustainable development as "continued economic and social development without detriment to the environment and the natural resources on the quality of which continued human activity and further development depend".[66] The programme requires a closer and more 'positive' relationship between environmental policies and other policy areas. This also follows from the integration principle

[61] Heldeweg, M, Good Environmental Governance in the EU: Lessons from Work in Progress? P.6
[62] Heldeweg, M, Good Environmental Governance in the EU: *Lessons from Work in Progress?* 2006 p.8
[63] Heldeweg, M, *Good Environmental Governance in the EU: Lessons from Work in Progress?* 2006 p.8
[64]Krämer, L, The EU: a regional model? In: Winter, Gerd, Multilevel Governance of Global Environmental Change, Perspectives from science, sociology and the law, 2006 p.335
[65]Krämer, L, The EU: a regional model? In: Winter, Gerd, Multilevel Governance of Global Environmental Change, Perspectives from science, sociology and the law, 2006 p.336
[66]Calster, v, G, 'Public Environmental Law in the European Union', in R.J.G.H. Seerden, M.A. Heldeweg in, Heldeweg, M, Good Environmental Governance in the EU: Lessons from Work in Progress? P.10

of Article 6 EC (integrating environmental issues into all other political areas is the key to sustainable development).

The 6th EAP (2002) is called *Environment 2010: Our Future, Our Choice*, was the first EAP to be adopted under the co-decision procedure legal significant. The community shall aim for measures that respect national legal provisions to the greatest extent and leaves the highest degree of discretion to the Member States. In environmental legislation directives are preferred above regulations and framework directives are preferred above detailed legislation.[67]

As mentioned in previous chapters, the decision making of the Union is rather complicated and time consuming. Environmental proposals, which come out of the Commission, have at times come through bruising internal battles, particularly those which are linked to a single market. In the field of environmental law at present, ineffective application and enforcement remains a major problem in the environmental sector. Hardly one directive has been implemented and enforced by all Member States,[68] which makes the implementation and enforcement of legislation remain the weakest link in the EU environmental policy.[69]

The co-decision procedure, Article 251 EC provides for legislation to be adopted by the Council and the Parliament, the Commission makes a proposal, the Parliament is consulted and the measure comes back to the Council. If the Parliament does not propose any amendments, or if the Council accept the amendments, the measure will be adopted. If Parliament and Council does not agree, the Council will adopt "common position" the Parliament can then either kill the measure by rejecting it or adopt common position, or make amendments to the common position. If this is the case, the Council will either accept the amendments of the Parliament or conciliation committee is set up, existing out of equal members of Council and Parliament which job it is to find a solution, a time consuming procedure. The proposal of the future constitution of the European Union from 2003 sees no difference in competences on environmental areas different from the present.[70] It is likely to

[67] Heldeweg, M, Good Environmental Governance in the EU: Lessons from Work in Progress? 2006 p.12
[68] Demmke, C, Unfried, M, European Environmental Policy: The Administrative Challenge for the Member States, 2001 p.81
[69] Somsen 1996:198 in: Grant, W, Matthews, D, Newell, P, The Effectiveness of Euoropean Union Environmental Policy, 2006 p.8
[70] Roth-Berend, D, Nowak, A, Die Umweltpolitik der Europäischen Union in: Weidenfeld, W, Die Europäische Union, Politisches System und Politikbereiche, 2004 p.310

assume that the Commission is the engine of further policy integration,[71] which makes it and its environmental directorate important. The fundamental problem is that three different and often incompatible aspects of effectiveness are being pursued simultaneously: cost savings political legitimacy and environmental improvement.[72]

2.5 Enforceability of Environmental Policies and Law

The speciality about European law is that it is created by the ones affected by it, the Member States.[73] This makes the enforceability possibilities of the Union shown less efficiency. Even by the commissions own admission, there are serious weaknesses in the current state of implementation and enforcement of environmental law in most parts of the Union.[74]

The judicial branch of the Community, *European Court of Justice* is generally considered separately from the three main political institutions (the commission, the Council and the Parliament). Despite this formal distinction, it is widely recognised that the court has played an important part alongside the other institutions in shaping Community policy.[75]

The possibilities of implementation are anchored in Article 226,227,228TEC and Article 104 11 TEC.[76] Procedures of the Commission against Member States Article 226 TEC. Procedures of the Member States against Each Other Article 227. Compliance with Article 226 and 227 Judgments. Article 7 Sanctions for Cases of Serious and Persistent Breaches of the Common Principles, where fines are the worst punishment to be put on a Member State.

The Fifth Action Programme on the Environment identifies a number of reasons for these deviancies in the implementation and enforcement of EU environmental measures; First, there has been a lack of overall policy coherence, partly due to an evolving, sometimes shifting

[71] Zito, R, Anthony, Creating Environmental Policy in the European Union, 2000 p. 6
[72] Grant, W, Matthews, D, Newell, P, The Effectiveness of European Union Environmental Policy, 2000 p.12
[73] Nicolaysen, G, Die Europäische Union als Rechtsgemeinschaft in: Weidenfeld, W, Die Europäische Union, Politisches System und Politikbereiche, 2004 p.120
[74] European Commission 1996c. in Grant, W, Matthews, D, Newell, P, The Effectiveness of European Union Environmental Policy, 2000 p.67
[75] Craig and Burca 1998:78 in Grant, W, Matthews, D, Newell, P, The Effectiveness of European Union Environmental Policy, 2000 p.37.
[76] Nicolaysen, G, Die Europäische Union als Rechtsgemeinschaft, 2004 p.119

agenda as the scope of environmental policy grew, and partly because much of the environmental legislation grew in an ad hoc manner and will need a reformation. Second, there has been a narrow choice of policy instruments, which has tended to rely on regulation through "command and control" measures. Third, in the past there has been a need for unanimous agreement in the *Council of Ministers* before environmental legislation could be adopted. This often resulted in political compromises that were difficult to translate into practical environmental measures. Fourth, the type of legal instruments used, directives, have often given difficulties in their incorporation into national law. The complexity of the subject has given problems of interpreting exactly what is entailed by implementation of EU environmental policy objected through legal obligations placed on Member States. Fifth, differences in the practical application of environmental legislation by national, regional and local competent authorities have led to problems of enforcement.[77]

There is no real possibility of forcing a Member State to take action. It would theoretically mean that the state departs itself from the legal system of the Union and would no longer be apart of the treaties. However it is argued that the European Union has reached the "point of no return" which means that there are practically no way out of the Union. Therefore the coming constitution will clear out the competences to enable better implementation and enforcement possibilities of policies, not only on the environmental area.[78]

[77] Scott 1998:24 in: Grant, W, Matthews, D, Newell, P, The Effectiveness of European Union Environmental Policy, 2000 p.67
[78] Nicolaysen, G, Die Europäische Union als Rechtsgemeinschaft in: Weidenfeld, W, Die Europäische Union, Politisches System und Politikbereiche, 2004 p.121

3. Integration of electricity into the European single market system

The great importance of electricity supply and energy in general for our economic system makes the energy issues a major political issue. As described later in this chapter, the implementation of an electricity market was a different process than the opening of the single market. Cost efficient reliable supply of energy is a key premise for economic growth. The member states claims their right to choose their which kind of energy source they like, on the other hand there are positive effects on over regional trade and through cooperation it is possible to negotiate good import conditions. The political argumentation saw a complete liberalisation as the best option for security of supply. Through market opening EU follows its objectives of deeper economic integration. Further it hopes to achieve security of supply, efficient electricity supply and climate protection.[79] EU hopes that a lot of positive effects will come with the market opening.

This chapter describes the implementation of the electricity market and the European market intervention and policy instruments from an environmental point of view.

3.1 The market opening

On the first of July 2007, the European electricity market should be open to every single customer in the European Union to freely choose their electricity supplier and to all electricity companies to offer its electricity to every consumer throughout the European Union.

[79] Winkler, M, *Klimaschutzrecht, Völker,- europa- und Verfassungsrechtliche Grundlagen sowie instrumentelle Umsetzung der deutschen Klimaschutzpolitik unter der besonderer Berücksichtigung des Emissionshandels*, 2005 p.46

In this chapter the road into a single European market and the speciality about electricity markets is to be introduced. The focus is on the present status of the market and its regulation devices together policy pollution control system of the European Union.

As mentioned above there are many reasons to open up the national markets and create one single European market, Megginson and Netter (2001) provide empirical evidence that privatized firms are an average of 2% more efficient than state owned, since they need less employers, have cheaper production, and are less dependent on subsidies.[80]

Negative environmental impact due to electricity use and production is the major concern about the electricity use. Pollution is an inevitable by-product of any economic activity, a certain minimum amount of economic activity can be pursued without causing damage to the environment but the level is rather significant and further pollution can only be on the cost of reduced environmental quality.[81]

The dream of a fully open European internal market was developed at the EC top meeting in Rome 1957. And throughout the history of the European integration energy has been one of the most important issues, even two of its treaties are addressed completely to energy issues, the coal and steel and the Euratom treaty.

The internal market was defined in Maastricht (1992), but energy was firstly excluded from the single market process, most Member States, long argued for energy exclusion; since the rate of technical inventions is slow and the impact of globalisation low, it would not remunerate to open up the markets.[82] Its opening process was started by EC 96/92 and came into force in December 96.[83] The frames of the market were further developed in Lisbon (2000), where the key element of the Lisbon strategy is to secure energy supply to acceptable prices is the key to increased growth. This objective should be reached through gradually introducing competition.[84] In Lisbon the European council decided acceleration in the

[80] Huurman, C, Dealing with Electricity Prices, 2007 p.7
[81] Ahmend, H, Principles of Environmental economics 2nd edition, London, 2004 p.68
[82] Camero, P,D, Creating Internal Market in Energy, How Can the Tools Be More Effective, European University Institute 05/01, 2005
[83] Huurman, C, Dealing with Electricity Prices, 2007 p.7
[84] Implementing the internal energy market, Annual report 2005, European Commission, Directorate-General for Energy and Transport, 2006

liberalization of the internal market for gas and electricity.[85] After Lisbon, the directive EC/96/92 was updated in directive 03/54/EC.

The goal is that all parts of the economic unit should be integrated into the system. The environment is together with economically and social effects to be considered and coordinated in every decision taken by the EU. One of the targets set in the action plan for the single market was to deliver a single market for the benefit of all citizens, in which environmental protection would play an important role. Therefore pollution control should be an important part of the market mechanism. The uncertainty is aggravated by other events such as the internalisation of externalisations (the Kyoto protocol), uncertainty over prices of primary fuels etc.[86]

3.2 Energy integration

Most of the energy competences still lay within the Member States. In the future the competences need to be cleared out, to avoid regulatory and legislative gaps, which also will be one of the tasks of the constitution. Until then the energy competences is cooperation between Member States and the European level. On the European level the treaties are the legal basis and the directives mostly the development and implementation tools.

As on every other policy area, the aqcuis commentaire is the legal basis, and directives are the main implementation tool. Important for the gas and electricity market are the directives 2003/54/EC - concerning common rules for the internal market in electricity and repealing directive 96/92/EC - and 2001/77/EC - the promotion of electricity produced from renewable energy sources in the internal electricity market. Through directive 2001/77/EC for example the net access for electricity from renewable energy sources should be secured.

As mentioned in section 2.3, Article 175 II TEC contains rules for the energy supply and the right of the single Member States to choose their own source of energy supply. Since the

[85] Opilio, Antonius, Generierecht aus europäischer Sicht: Unter besonderer Berücksichtigung der nachhaltigen Entwicklung und des elektrischen Energieträgers, 2005 p. 101
[86] Coppens, F, Vivet, D, The single European electricity market: A long road to convergence, 2006 p.18

Article 3 TEC does not in detail define the art of electricity, energy (and electricity) is commonly and after use of the ECJ a good as defined in art 28,29,30 EC.[87] There should be no hindrance for import/export as long as the health of humans, animals and plants are protected.

The future of the energy politics develops in the direction into more competences for the European Union.[88] The proposed constitution is another step in this direction, which will hopefully better clear out competences and create a more efficient policymaking climate.

3.3 Energy-market mechanisms

Electricity (and energy) is in European law defined as a good, although there are some characteristics about electricity that makes it fare more complicated to trade than other goods. Electricity can be transferred but not easily and efficient be stored.[89] To be transferred, electricity needs a special kind of transportation infrastructure, the grid. Therefore the grid operator plays an extremely important role in the functioning of the electricity market.

One of the goals of the market integration is to achieve good economic performance. To achieve so, lower-cost generators should be used before higher-cost generators.[90] The speciality with energy is that its production has such a big (negative) impact on the environment and which energy source and technology is used at the production. Special for the grids are that they naturally create monopolies, it is the task of the state to ensure that they are used efficiently and that the competition on the production market will not be disturbed.[91]

A market is where the consumers that are interested in, and able to buy, a product can meet the firms offering these products. A well functioning market should support free and easy

[87] Opilio, Antonius, Energierecht aus europäischer Sicht: Unter besonderer Berücksichtigung der nachhaltigen Entwicklung und des elektrischen Energieträgers, 2005 p. 87
[88] Opilio, Antonius, Energierecht aus europäischer Sicht: Unter besonderer Berücksichtigung der nachhaltigen Entwicklung und des elektrischen Energieträgers, 2005 p.50
[89] Huurman, C, Dealing with Electricity Prices, 2007 p.1
[90] El-Agraa, A, M, Martin, S, Energy, Policy and energy markets, Gosport, 2004 p.56
[91] Bauknecht/ Späth/Leprich/Rohrbacher in Bauknecht/ Reicher 2006 p.258

access for consumers and producers. Free entry forces the producers to cost-efficiency.[92] The functioning of a market is dependent on the number of actors on the market, both on the consumer and the supply side, the number has to be so big that none of the actors can control the prices.[93]

Electricity demand is not constant, it varies over the day, the week, the year and is extremely dependent on season and current weather conditions. Also the price depends on demand. The production side depends on the weather situation, not only according to the demanded production amount, but electricity produced by certain energy sources as hydro and wind power are as well dependent on the current weather situation A sound energy mix the best and most cost efficient way to meet demand, since different energy sources are different depended on the weather. Thermal based electricity systems are not influenced by the weather, whereas the hydro and solar based electricity production varies.[94]

Generation and supply are opened up to competition, whereas transmission and distribution remain monopolistic,[95] which makes the unbundling, the legal division between production and distribution companies, extremely important. Otherwise there would be no equal access to the networks, and the companies, powerful enough to own networks could use this position to become even more powerful, with the consequence to complicate the market entrance for smaller companies.

Transmission might be the sticking point of the electricity market, but the transmission of electricity also has major advantages, electricity can, compared to others be transmitted noiseless, with low maintenance, without input of further energy and with a loss of only 5% cost, effectively transported also between the countries since most areas of the EU have the same voltage.[96]

The establishment of electricity markets has had major implications for network management. One aspect of this is the increasing need for exchanging information between the network operators, the power exchange and the market players. The transmission system operators, for

[92] Eklund, Klas, Vår Ekonomi, En introduktion till samhällsekonomi, 2001 p.85
[93] Eklund, Klas, Vår Ekonomi, En introduktion till samhällsekonomi, 2001 p.86
[94] Perrels, A, Kemppi, H, Liberalised Electricity Markets, Strengths and Weakness in Finland and Nordpool, Government Institute for Economic Research, 2003 p.5
[95] Coppens, F, Vivet, D, The single European electricity market: A long road to convergence, 2006 p.1
[96] Opilio, Antonius, Energierecht aus europäischer Sicht: Unter besonderer Berücksichtigung der nachhaltigen Entwicklung und des elektrischen Energieträgers, 2005 p. 96

example, must treat all players neutrally and in a non-discriminatory way. All the information given to one player must also be given to another player.[97]

3.4 Market intervention by the EU

Market failure occurs when the institutions of which the markets consist are missing or are not working properly. Then producers and consumers have to take responsibility for the consequences of their actions and not exploit the situation. This leads to a divergence of private and social costs and as a consequence private profit maximising decisions are not socially. The divergence between private and social costs causes problems for the society, the environment and in the long run for the economy.[98]

Mostly market intervention is necessary to enable a well functioning market. This section focus on the market intervention conducted by the European Union and its member states according to external effects of the electricity market that causes negative impact on the environment.

There are several factors that make market intervention of the electricity market especially important. Firstly the character of the technical structure of the market, the distribution part creates natural monopolies according to the *transport*. Electricity is a grid bound product and there is no parallel grid that can compete for better prices and services. If the distribution net access is not equal for everyone, the market is disturbed. Secondly, the production of electricity has a major negative impact on the environment. If the market can not manage to intercept the negative external effects of electricity production, pollution would fast exceed what the world will manage to absorb.

[97] Donkelaar, M, t, A survey of solutions and options for the integration of distributed generations into electricity supply systems published in Energy & Environment, volume 15, No 2 2004. pp 323
[98] Schaub, A, Europäische Energiebinnenmarktpolitik und Umweltpolitik, 1996 p.202

3.4.1 Regulation of the single European electricity market

Regulation of the European single electricity market is a mixture of policy instruments, European and national institutions and European and national law. This section focuses on the institution side of the implementation and the next section on the policy instrument of regulation.

The electricity supply chain contains: generation→transmission→distribution→supply.[99] On the electricity market the transmission part is, compared to other markets, very important. When all producers do not have the same access on the same premises to the grid, the market will not function.

The term "regulation" covers a wide range of areas, such as the task to assign the sectored regulatory authorities, the legislative packages the market design to the overall regulatory context.[100] It is the task of the Member States to design a regulation authority with the responsibility to make sure that there is no discrimination and that there is a legal unbundling between the electricity suppliers and the grid operators, where the companies earlier operated both.

The Electricity market regulation mainly lies on the national level. Through the directive 2003/54/EC is the regulation a matter of national regulation authorities, coordinated on the European level from the Commission and its auxiliary and advisory bodies. The two most important bodies are European Regulators Group for Electricity and Gas (ERGEG) and Council of European Energy Regulators (CEER). ERGEG is an advisory group of independent national regulatory authorities with the task to assist the commission. ERGEG is responsible for the legal implementation and for the stabilisation of the market. Member states shall designate one or more competent bodies with the function of regulatory authorities.[101] And the transmission system should be operated by an independent system operator.[102] European legislation requires network segments to be legally separated form competitive segments.[103] The transmission grid (for transport of large volumes of electricity across a

[99] El-Agraa, A, M, Martin, S, Energy, Policy and energy markets, 2004
[100] Coppens, F, Vivet, D, The single European electricity market: A long road to convergence, 2006 p.39

[101] directive 2003/54/EC Article 23 § 1

[102] Coppens, F, Vivet, D, The single European electricity market: A long road to convergence, 2006 p. 2
[103] C Coppens, F, Vivet, D, The single European electricity market: A long road to convergence, 2006 p. 5

country and across borders) is generally separated from distribution and generation, as it constitutes the most inherently natural monopoly of the whole system. It is usually managed by an independent authority that also takes care of the balancing of the system.[104]

The Council of European Energy Regulators is the direct link between national regulatory authorities (NRAs) and the Commission. NRAs have the important role on tariff's regulation and access conditions.[105] The NRAs that before only managed the national electricity market now have to develop a regulatory culture for Europe. In the fact sheet on European System of Energy Regulation Regulatory and EU network bodies are posing for a European System of Energy Regulation (ESER), which would operate similar to the European System of Central Banks.

Transmission system operators are coordinated through the European Transmission System Operators (ETSO) association for EU-wide harmonization of network access and national transmission system operators (TSOs). In most cases the TSOs are state owned in the case of DSOs the situation is more complicated since only half of the member states have legally unbundled DSOs.[106] TSOs are responsible for the maintenance and development of their transmission network as well as the interconnections with neighbouring networks, bur also for the operational management of their networks.[107]

The difficulties in the implementation of European legislation and regulation of the electricity market lay, as the national level the regulators differ widely, between the countries. And since many of the issues are of cross-border nature, there is something like a regulatory gap, where EU legislation is not always implemented.[108] In the event of cross-border disputes, the dispute settlement authority shall cover the system of the single buyer or the system operator which refuses use of, or access to, the system.[109] When distribution networks are planned or developed, energy efficiency and/or distributed generation that might provides upgrades or replace electricity capacity shall be considered by the distribution system operator.

[104] Perrels, A, Kemppi, H, Liberalised Electricity Markets, Strengths and Weakness in Finland and Nordpool, Government Institute for Economic Research, 2003 p.9
[105] Camero, P,D, Creating Internal Market in Energy, How Can the Tools Be More Effective, 2005 p. 9
[106] Coppens, F, Vivet, D, The single European electricity market: A long road to convergence, 2006 p.6
[107] Coppens, F, Vivet, D, The single European electricity market: A long road to convergence 2006 p.25
[108] Fact sheet on a European System of Energy Regulation: Regulatory and EU Network Bodies.
[109] 96/92/EC

Distribution network operators should in the future treat decentral establishment equally as more lucrative grid extensions, however it is not said in the2003/54/EC how he should be motivated to do so.[110] The directive to promote renewable energies 2001/77/EC also contains rules relevant to the cooperation between the producers and network operators.[111]

Member States shall put a legal framework into place or require transmission system operators and distribution system operators, to set up and publish their standard rules relating to the bearing of costs of technical adaptations. Such as grid connections and grid reinforcements, which are necessary in order to integrate new producers feeding electricity produced from renewable energy sources into the interconnected grid. [112]

Most Member States missed the deadline of 1 July 2004 for the transposition of the new electricity and gas directives. In most Member States, the legislation implementing the directives has been in force for less than a year and some Member States have not yet implemented the directives at all.[113]

3.4.2 Policy instruments for pollution control

Policy instruments are gaining importance in pollution control. Often policy instruments are hoped to fill the in the gaps not covered by regulation.[114] There are several possibilities for policy setters to intervene in the market system. One way is the use of taxes or subsides; another is also, as in the European Union the chosen system of emission trading. Important is the polluter pays principle on the one hand and the promotion of clean new technologies on the other. Unfortunately there is no European wide harmonisation for promotion of renewable energy sources; it must be on the initiative of the member states if they want to attain more environmental protection through promotion of renewable energy sources.[115] Implementation of carbon taxes and emission trade systems, makes the production (and use) of environmental

[110] Bechberger, M, Reiche, D, Ökologische Transformation der Energiewirtschaft, Erfolgsbedingungen und Restriktionen, 2006 p. 264.
[111] Schaub, A, Europäische Energiebinnenmarktpolitik und Umweltpolitik, 1996 p.196
[112] Art 7/2 2001/77/EC
[113] Implementing the internal energy market, Annual report 2005, European Commission, Directorate-General for Energy and Transport, 2006
[114] Jordan, A, Wurzel, R, Zito, A, Policy Instrument Innovation in the EU, 2006 p.480
[115] Opilio, Antonius, Energierecht aus europäischer Sicht: Unter besonderer Berücksichtigung der nachhaltigen Entwicklung und des elektrischen Energieträgers, 2005 p.113

unfriendly thermals as coal more expensive, and promotes through indirect the change into cleaner technology and renewable energies.[116]

Energy taxes make energy more expensive, which normally leads to a reduction in the quantity of energy demands and thus lower CO^2 emissions.[117] Environmental subsidies, promotes the production and use of cleaner energy resources and the change into cleaner technologies. But subsidies are in the EU also used to promote the use of the environmentally dirty coal, as energy source. Twelve billions Euro in subsidies for coal and steel in Polish, German and Hungarian coal industries are planned until 2010. And there is no European "phasing out" of coal power plants for electricity production. NGOs claim that this impacts the ability of renewable resources to compete.[118]

A carbon tax raises the production cost of fossil fuel based electricity production. Regardless of the fact that it constitutes a fairly efficient policy instrument as such, it changes the completive position of generators depending on their generation mix and it increases wholesale prices in general, unless there would be sufficient cheap non-carbon capacity.[119] In practice many EU countries apply an energy tax and not a genuine CO2 tax. The tax is often levied at the moment of delivery.[120] An initiative to a major environmental tax reform was taken in Lisbon.[121] Through the European Emission Trading Scheme, the judicial problems with EU wide eco- taxes could be avoided.[122]

The European Emission Trading Scheme is maybe the most important European policy instrument for pollution control. The emission trading scheme was formed in 2003 (directive 2003/87/EC) to be a help for the member states to reach the Kyoto targets and its first trading phase sets from 2005-7.[123] It covers power sector energy- intensive industrial sectors[124] of

[116] Coppens, F, Vivet, D, The single European electricity market: A long road to convergence, 2006 p.13
[117] Schaub, A, Europäische Energiebinnenmarktpolitik und Umweltpolitik, 1996 p.204
[118] Euractiv
[119] Perrels, A, Kemppi, H, Liberalised Electricity Markets, Strengths and Weakness in Finland and Nordpool, Government Institute for Economic Research, 2003 p. 36
[120] Perrels, A, Kemppi, H, Liberalised Electricity Markets, Strengths and Weakness in Finland and Nordpool, Government Institute for Economic Research, 2003 p.19
[121] Green Ten, Could try harder, A mid-term report on the European Commission's environmental record
[122] Jordan, A, Wurzel, R, Zito, A, Policy Instrument Innovation in the EU, 2006 p.479
[123] Reilly, J,M, Paltsev, S, An Analysis of the European Emission Trading Scheme, MIT Joint Program on the Science and Policy of Global Change, Report No. 127, October 2005 p.
[124] activities in the energy sector iron and steel production and processing, the mineral industry and the wood pulp, paper and card industry (directive 2003/87/EC)

around 46% of the European Emissions. In the first phase only carbon dioxide is included, but might be extended to include all greenhouse gas emission in the next period from 2008.[125]

The allowances are allocated by the member states and for the first period 95% must be free of charge.[126] The ETS can also be linked to other trading systems and other flexibility mechanisms, such as the ones of the Kyoto protocol, Clean Development Mechanism, and Joint Implementation.[127] Not used allowances are allowed to trade and institutions, individuals, and non-governmental organizations are also allowed to participate in the trading.[128] For example has it been a possibility in the Nordic countries for private persons to buy up allowances to prevent these from being used. When a company is using more CO^2 than they are allowed to they have to pay a penalty of 40€/tCO2.[129]

The ETS system is called a revolutionary step forward towards better pollution control, however, at the present only two of the presently participating 25 (15+10) member states will be below their Kyoto targets by 2010.[130] It will be the task of the second period, 2008 onwards to include all greenhouse gas emissions and include not only cover installations with large emissions, to make sure, pollution will be reduced below the Kyoto targets. The post Kyoto process will be negotiated on Bali, December 2001. The conference will show whether the global society is able to find long term solutions for pollution reduction commitments. The European Union, which already has long term goals, with or without a post Kyoto process, plays an important role in the process.

Even though the implementation of the climate policy and the emission trade directive pose an extra risk to the electricity sector, they also offer new possibilities to create commercial advantages over competition.[131] Generators from the electricity sector and the industry are to

[125] The EU Emission Trading Scheme, Making business sense of climate change
[126] The EU Emission Trading Scheme, Making business sense of climate change
[127] Reilly, J,M, Paltsev, S, An Analysis of the European Emission Trading Scheme, MIT Joint Program on the Science and Policy of Global Change, Report No. 127, October 2005 p. 4
[128] Reilly, J,M, Paltsev, S, An Analysis of the European Emission Trading Scheme, MIT Joint Program on the Science and Policy of Global Change, Report No. 127, October 2005 p.4
[129] Reilly, J,M, Paltsev, S, An Analysis of the European Emission Trading Scheme, MIT Joint Program on the Science and Policy of Global Change, Report No. 127, October 2005 p.6
[130] Reilly, J,M, Paltsev, S, An Analysis of the European Emission Trading Scheme, MIT Joint Program on the Science and Policy of Global Change, Report No. 127, October 2005 p.6
[131] Perrels, A, Kemppi, H, Liberalised Electricity Markets, Strengths and Weakness in Finland and Nordpool, Government Institute for Economic Research, 2003 p.51

be included in the European emission trade market, which makes it an important change in market condition.[132]

[132] Perrels, A, Kemppi, H, Liberalised Electricity Markets, Strengths and Weakness in Finland and Nordpool, Government Institute for Economic Research, 2003 p.47

4. Environmental outcome of electricity market opening

What effects the total market liberalization will have on the environment will be not be measurable for a long time. All possible consequences, both positive and negative, will have to be monitored for a number of years before we can give a definite thumb up or down to the opening of the energy-market. Therefore, only tendencies can and will be discussed in this paper. However, I will make references to markets that were opened earlier, as for example Nordpool in the Scandinavian countries..

In the Scandinavian countries, the electricity market was established in 1996 and is presently the most developed regional electricity market in the world.[133] Throughout Scandinavia, hydropower is the dominant power, covering 99% of the electricity demand in Norway and 45 % of the total electricity production in the region. Hydropower is a very competitive option and it is flexible as well and easily reacts on market changes.[134] Increase in demand on the Nordpool market has also led to increased demand in renewable energy sources, mainly because of the dominance of hydropower in the region. But also the development in wind energy in Denmark and increase in hydro import in Finland has played a role in the increase in renewable on the Nordpool market.[135]

Possibly the number of market players in the Nordic market with appropriate and ample spare capacity came small enough to enable bidders to put in extra margins. However it cannot be excluded that a coincidence of special circumstances has caused higher prices than expected.[136] At Nordpool, the higher prices are also due to a change in production, before the market was liberalised often overproduction occurred, during the circa ten years since the

[133] Nordic Electricity Trade, TED Case Studies Number 574, 2002
[134] Perrels, A, Kemppi, H, Liberalised Electricity Markets, Strengths and Weakness in Finland and Nordpool, Government Institute for Economic Research, 2003 p. 5
[135] Nordic Electricity Trade, TED Case Studies Number 574, 2002
[136] Perrels, A, Kemppi, H, Liberalised Electricity Markets, Strengths and Weakness in Finland and Nordpool, Government Institute for Economic Research, 2003 p.55

market opening the demand on electricity has raised at the same time as the production has decreased.[137]

The next sections focus on the predicted changes in the electricity sector which come with the market opening and their effect on the environment.

4.1 Market effects on environment

The implementation of the liberalized electricity-market creates a new landscape for environmental protection and pollution-control within the European Union. There are whole new regulation systems including new regulatory bodies to deal with this. The market-opening also creates a need for regional coordination and cooperation on environmental issues.

The creation of the market will according to the European Union bring positive effects on the environment in terms of efficiency and better pollution control. The market opening means that there is a new electricity system, and environmental protection must react to these changes. But these changes, handled in the next section should be arrange as green as possible.

4.1.1 Expected structural change

An ecological transformation of the electricity market needs changes both on the demand and on the supply side. Power plants should work on better efficiency, most important through the use of combined power and heat installations and through the increase in renewable

[137] Perrels, A, Kemppi, H, Liberalised Electricity Markets, Strengths and Weakness in Finland and Nordpool, Government Institute for Economic Research, 2003 p. 60

energies.[138] Instead of presently, where most of the EU countries have electricity systems that are typified as thermal, and running of cost-efficient fuels such as coal and uranium.[139]

One aspect of the structural change is the privatisation and deregulation of former structures where state based power generation (monopolies) was common. It is important to make a distinction between the change in market conditions and the change in ownership structures.[140] As mentioned in earlier chapter, the legal unbundling between generation and transmission companies is important to maintain a non discriminatory operation of the market.

At the Nordpool market the allocation of risk has changed. In the pre-liberalised electricity systems the final customers carried all the financial risks, as the supplier had the capability to pass on any extra cost to end-use prices. Now the supplier has to carry all the risk himself. [141] The opening of the internal market should make it possible for every consumer to use the company of their choice; it should also open the market for new companies. Also small companies should have the same possibility to enter the market and use the networks as the bigger ones. Throughout Europe, a market where a small number of companies are tending to increase their part of the market through taking over other companies. Will the opening of the market make it easier for smaller companies to enter the market in the future, or will we have a development, away from national monopolies but into a European oligopoly?

Oligopololy means that a few big companies are dominating the market and smaller companies are the price takers.[142] Before the reform, the power sectors in Norway, Sweden and Finland had an oligopoly structure with dominant state-owned enterprises that also controlled the national grids.[143] Nordpool is still the area in Europe with the highest diversification in Europe, however also here the tendency that a few big companies are gaining market power is visible.

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[138] Bauknecht, D, Späth, Philipp/Leprich, U, Rohracher, H, Transformation der Stromwirtschaft; Die Rolle der Netze und ihrer Regulierung, 2006 p.257

[139]Perrels, A, Kemppi, H, Liberalised Electricity Markets, Strengths and Weakness in Finland and Nordpool, 2003 p.6

[140] Perrels, A, Kemppi, H, Liberalised Electricity Markets, Strengths and Weakness in Finland and Nordpool, 2003 p.8

[141] Perrels, A, Kemppi, H, Liberalised Electricity Markets, Strengths and Weakness in Finland and Nordpool, 2003 p. 34

[142] Schumann, J, Meyer, U, Ströbele, W, Grundzüge der mikroökonomischen Theorie, 1999 p.331

The next aspect is to enable renewable technologies and the producers of these technologies to enter the market. Today the possibilities to use renewable electricity differ throughout Europe. Sweden and Finland have great possibilities to invest in smaller hydro power plants and wood based energy, whereas high population density countries such as the Benelux area more or less only have the possibility to develop renewable as wind/wave energy.[144]

But the increase in renewable energies on the market does not only depend on the renewable resources. Technical aspects and market structures are important to enable the market entrance. The electricity landscape in Europe is today dominated by less than ten companies.[145] At the Nordpool market, there have been the same tendencies as across the rest of Europe, instead of diversity, a few big companies are increasing their market share. What effects will this bring for the environment? First it makes it harder for smaller companies to become established on the market. This makes it more complicated for smaller producers for alternative energy, big companies base their supply on large power stations (over 500 MW) which often runs on cheap fuels such as coal and uranium.[146]

As already mentioned, network operators play an important role in enabling decentred power plants to operate, since they provide the grid, without their cooperation, the electric power product can not reach the electricity market. When demands on renewable energies and smaller power plant increases, the demands on the grids and its providers will also increase.[147] Renewable technologies often build on smaller installations. But a decental thinking has advantages also for conventional technology. Combined coal and heat power for example. The network construction also differs throughout the market. For example in France, the networks are not constructed to be able to connect smaller decentred power plants. In Sweden, similar issues prevent the development of wind-energy.[148]

The electricity supply system in Europe has been developed during the past 50 years into a pre-dominantly centralised system. Electricity is mainly produced in large power plants and is transported over a transmission network, sometimes over considerable distances, and passed

[144] Perrels, A, Kemppi, H, Liberalised Electricity Markets, Strengths and Weakness in Finland and Nordpool, 2003 p.55
[145] Coppens, F, Vivet, D, The single European electricity market: A long road to convergence, 2006 p.17
[146] Perrels, A, Kemppi, H, Liberalised Electricity Markets, Strengths and Weakness in Finland and Nordpool, p.6
[147] Bauknecht, D, Späth, Philipp/Leprich, U, Rohracher, H, Transformation der Stromwirtschaft; Die Rolle der Netze und ihrer Regulierung, 2006 p.257
[148] Reiche, D, Bechberger, M, Diffusion von Einspeisevergütungsmodellen in der EU-25 als instrumenteller Beitrag zur Verbreitung erneuerbarer Energien. p. 211

down through a distribution network for delivery to the customers. However, recently there has been a revival of interest in connecting small-scale power generation plants, mainly small-scale renewable energy sources and combined heat and power plants, to the distribution network or at the customer side of the network. This type of generation is also known as distributed or embedded generation the increased importance of energy supply and the liberalisation of the energy market, that competition trigs the market forces into a lower amount of, but huge power plants.

An increasing share of distributed generation influences the arrangement of the power system. This is especially the case for renewable energy sources that have a much lower energy density than fossil fuels and their generation plants often smaller and geographically wider spread.

New technologies have to be developed to keep the electricity network running in an equally reliable way. Contradictory actions of the European Union such as the promotion of coal industry also obstruct the development of alternative energies. The development of wind-energy in Denmark and Germany and the solar system development on Cyprus have shown that local initiative (bottom-up) can be successful.[149]

To meet future sustainability targets, it is expected that the share of DG, especially RES, in electricity supply, distribution system operators should take decentral installations as an equal option in the future. The directive 2003/54/EC does not make any suggestion how the network operation can be forced to act this way.[150]

Another problem is that the decentral energy production and the network regulation are so far two different operation areas, even though a higher increase in decentral installations puts pressure on the networks and can only bee successful when the networks will be changed to enable the structural change.[151] Even though the directive 2003/54/EC says that decentral installations must be considered when the networks are being extended.[152]

[149] Reiche, D, Bechberger, M, Diffusion von Einspeisevergütungsmodellen in der EU-25 als instrumenteller Beitrag zur Verbreitung erneuerbarer Energien. p. 211
[150] Reiche, D, Bechberger, M, Diffusion von Einspeisevergütungsmodellen in der EU-25 als instrumenteller Beitrag zur Verbreitung erneuerbarer Energien. p. 211
[151] Bauknecht, D, Späth, Philipp/Leprich, U, Rohracher, H, Transformation der Stromwirtschaft; Die Rolle der Netze und ihrer Regulierung. In Bechberger, M, Reiche, D, Ökologische Transformation der Energiewirtschaft, Erfolgsbedingungen und Restriktionen, 2006 p.258.
[152] Directive 2003/54/EC of the European Parliament and of the council of 26 June 2003

Decentral power generation would become a mature power generation source when technological adaptations of the electricity system as well as changes in economic regulation would take place. In some countries, the contribution of decentral generation in electricity supply has remarkably grown during the last decades. For example, in the Netherlands, approximately 27% and in Denmark approximately 35% of the power (on a yearly basis) is supplied by decentral generation. But these "hybrid supply systems" were in fact developed before the electricity markets were liberalised. Hopefully the use of decentral generations will be better supported in the future before this trend is broken.

4.1.2 Efficiency

All generation of electricity means some effect to the environment, efficiency of energy use and production to keep the electricity production on an "as less as possible" level is of major importance. Efficiency is also one of the main tools of the European Union to reach the pollution reduction goals, is through increased efficiency. According to the commission, energy- saving measures in buildings could cut energy consumption by 22 per cent.[153]

In a competitive market is it expected that prices should, over the long term, reflect the efficiently incurred costs of supplying the product, which is, in general the opening of the market should deliver greater efficiency and, over clouding both fixed and variable costs, and the costs of complying with environmental regulation. The opening of the market should deliver greater efficiency and, over the long term, prices should be lower than they otherwise would be.[154]

With conventional technology, between 25 and 60% of the fuel will be transformed into electricity. A great amount of energy can be saved when combined power plants as combined heat and power are used instead of old thermal power plants[155] a combined heat and power

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[153] Nello, S, The European union, economics policies and history, 2005 p.267
[154] Implementing the internal energy market, Annual report 2005, European Commission, Directorate-General for Energy and Transport, 2006
[155] Doing More With Less, Green Paper on energy efficiency, European Communities, 2005 p.25

unit reaches an efficiency of around 85%.[156] Also the investment in new technology can save a lot of losses according to better technology. During the next step also major savings could be done. Often the losses of the about 10% of the electricity that is lost through the transmission and distribution could be saved through network investments, however network operators seem less interested in doing such investment, even though they would not be very cost-effective. This is because the total amount of transferred energy would decrease and here through also the network fees.[157]

Increased efficiency, followed by expected decrease in prices for end-users, as referred to in chapter 4, often means a higher demand from the end user side. Increased efficiency can also cause other environmental effects. Prolonged periods of low prices usually also slow down (environmentally relevant) innovations in generation capacity.[158]

Nevertheless should efficiency should be strived for, at the same time policy makers have to make sure that technical innovations does not be disregarded.

4.2 Impact of environmental regulation

Market opening creates new climate for environmental regulation, where different actors play important roles. Vilka olika aktörer? Konsumenter, staten, företag, organisationer. Consumers have the possibility to take action to choose green supplier. To do so they need reliable information, this should be produced by objective institutions. Vilka institutioner är obejktiva och pålitliga? Några organisationer, typ Greenpeace? Här antar jag att du skriver om staten som aktör, skriv ut det. Also politically new dimensions for regulation, improvements, new political innovations to control the system, and promote technical innovation, and market access for green technology.

[156]Perrels, A, Kemppi, H, Liberalised Electricity Markets, Strengths and Weakness in Finland and Nordpool, 2003 p.6
[157] Doing More With Less, Green Paper on energy efficiency, European Communities, 2005 p.24
[158] Perrels, A, Kemppi, H, Liberalised Electricity Markets, Strengths and Weakness in Finland and Nordpool, 2003 p.03

The section deals with the changes and possibilities for environmental regulation that comes with the market opening in terms of political possibilities and the new position of the consumers.

4.2.1 Political Possibilities for Environmental Regulation

Politically, the market opening puts pressure on the present and development of new regulation structures, which enables the over viewing of environmental issues and the promotion of green alternatives.

The market opening puts the electricity issue to a new level, which also brings political possibilities for pollution control. The introduction of the ETS is one example for positive effects of the market opening. Other political instruments can as well play an important role in the pollution control. Harmonisation of taxes and subsidies is needed to enable a functioning market. ETS needs a good institutional wherewithal to function, EU has no experience on emission trading, but they have other needed criteria's as a political culture that should be able to create a monitoring system and enforcement measures. As important is an environmental conscious civil society which supports the implementation and further development of the emission trading system. Here the work of the European Environmental Agency (EEA) plays an important role in providing and spreading reliable information for the European public as well as its political institutions.

Harmonisations of taxes and subsidies, still no EU wide eco-taxes several states (initially the United Kingdom and more recently Spain) have consistently blocked the Commission's ability to innovate in this area.[159]

[159] Jordan, A, Wurzel, R, Zito, A, Policy Instrument Innovation in the EU, in; Winter, Gerd, *Multilevel Governance of Global Environmental Change, Perspectives from science, sociology and the law*, 2006 p.477

4.2.2 Consumers Position in the Liberalised Market

The market opening creates new possibilities for the consumer to choose greener alternatives for his electricity supply. When the control of what is produced is lessened, the awareness of what is bought, which energy source that is supported should increase. This gives more possibilities but also increased responsibility on the consumers. This section focuses on the changes the market opening has for the consumers and what possibilities he has to react to them.

Poor education and information creates a bad climate for new cleaner and more efficient technology, the investors are afraid of investing in new technology since it's expensive/ important that it works, and end-users tend not to change to companies investing in new technology. Often bad information is about how best practises, and care of the technology, make it live shorter and creates more pollution/less efficiency.[160] During the last years, there have been increases in interest in greener electricity choices in several EU countries as the Netherlands and Denmark.[161] Information campaigns can hopefully increase these trends.

One of the desired effects of the market opening is the decrease in prices for end-users. Often lower prices does not only bring better economy for the end-user, instead the lower prices gives the consumer the possibility to either save money or increase its consumption, this phenomena is called the rebound effect. "Rebound effect" generally acknowledge lowering predicted reductions in electricity demand by 10- 40%. Direct, indirect and macroeconomic effects follow installation of new equipment. The rebound effect is real but limited.[162] Consumers will probably increase their demand by decreased prices, however only to a certain extent.

In order to exploit the wider range of choices, lowest price and the best services, end- users now have to act, however indicators shows that they rarely do so.[163] From an environmental point of view, the consumers have a great possibility to support a green electricity change, through choosing an electricity supplier that is investing in green technology.

[160] Doing More With Less, Green Paper on energy efficiency, European Communities, 2005 p.12
[161] Nordic Electricity Trade, *TED Case Studies Number 574*, 2002
[162] Gottron, Frank, CRS Report for Congress, RS 20981: Energy Efficiency and the Rebound Effect: Does Increasing Efficiency Decrease Demand?, 2001
[163] Huurman, C, Dealing with Electricity Prices, 2007 p.1

However the consumers need information to be able to take an active part on the market. It must be clear which energy sources a supplier is using, and the consumer must also know how to handle this information. This fact is acknowledged by the commission which promised to increase the rights of the consumers and information available. For example is their now an EU-wide eco label; the flower, however the uptake of the European has remained low, maybe because of the wide range of other eco-labels throughout Europe. Eco labels are, as long as they are transparent, a good help for consumers to choose an environmental friendly option. In the flower and other European national eco-labels as the Nordic swan or the German blue angel energy saving products are included but not (yet) any electricity producers.

5. Conclusion

The present European civilization is directly dependent on the use of energy. As well as the civilization is dependent on the protection of the environment and natural resources. If the civilization shall not threaten its existence it must make sure that they are not conducting more harmful actions than the world can bear. Rules and regulations must be strong enough to enable the environmental security.

Energy and electricity are in these discussions key players because of their major negative impact on the environment. Through the electricity market opening, the responsibility of the monitoring of environmental impacts due to electricity production must be taken care of. If the monitoring fails, the environment has no protection on the market.

Through creating a European electricity market, the monitoring of electricity production is lift to a new level. Over regional monitoring of environmental issues, means possibilities, since the negative outcome of energy use is a global problem. Environmental monitoring is only efficient when there are clear definitions of competences, rules and legislation and its implementation and enforcement are determined. The monitoring must also cover all market players, and those affected by it. The enforcement of environmental policies bases of different pillars, with the ECJ on the latest instance, before that the implementation of the policies is on all levels in the European multilevel system. Presently, the political structure which should be the strength of the Union is it strongest weakness. Present political structure, with a mix of competences between national, European and sub national, which makes regulatory gaps an often occurring feature. Political compromises, which complicates the development of new policies and legal documents. However late development, for example the legal binding structure of the 6th EAP and the hopefully soon ratified treaty of establishing a constitution for Europe gives hope for a more efficient European Community in the future.

If environmental law shall have the possibility to really reach something, competences between Member States and European levels must be cleared out, to fill the regulatory gap

between the competence levels. Only when it is definitely clear who is responsible for what, the system can operate in an efficient way. The complicated law system should be reformed to enable to react faster on environmental demands, but also to create law of matters that are today only gentleman's agreement or non-enforceable policies. A common European policy on energy is not yet elaborated. Such a policy would help clear out the energy goal of the Union, which today consists of a non-transparent pattern of decisions, papers, documents and press releases.

Renewable electricity sources are the technology of the future, only a rapid structural change into green technology can secure electricity use and supply in the future. Investors willing to develop green technology should be supported not coal power plants. Research and installations on this area together with the market entrance of the power plants should be further supported. Also network operators should be obliged to update their networks to the cleanest and most efficient technology, and to enable decentral green power plants to enter the market on the same premises as large power plants. When environmentally friendly solutions presently can only compete on the market through supporting market intervention, it should be acted this way. Which environmental outcomes will the liberalisation bring depends largely on future regulatory, especially enforcement performance. When the frames of the market are functioning, the opening provides possibilities for the consumer to choose green electricity and it is easier for electricity producers, no matter share of market, using green technologies to enter the market. Coordination and cooperation means better use of resources and structural change will enable a more efficient energy production, transmission and use. Another important question is the harmonization of subsidies would reduce differences in competition between the countries. The market opening could be a possibility to create a more efficient pollution control, however much has to be done before this will happen. The present European Emission Trading Scheme is a test run, but also a symbolic gesture to the public where policy makers are trying to create a scheme, which is compatible with the industry and satisfies the public at the same time.

Presently the European Union is following a middle way, which will not bring pollution reduction below the Kyoto targets of 8% until 2010, not to mention the goal of the European Union to reduce beneath their own set goal of 20% until 2020. The European Emission Trading scheme could also be a pioneer task to find a new solution for pollution control in a global post Kyoto context. But also for the European level a revolution of the system is

needed, since presently the EU region is far from reaching their goal of 21% of renewable electricity sources by 2010.

To answer whether the liberalisation of the European electricity market does comply with the environmental policy of the EU it takes to see the electricity market as an policy instrument towards the legal documents and principles and objectives of the union concerning environmental pollution, not the judgement of the these policies. The implementation of the electricity market follows the general integration track of the European Union, the electricity sector was for the time being left out of the single market integration process, but stands now for the fully opening. Through the market opening the main instrument to reach pollution reduction goals, ETS can be a solution, which needs a further development of the instrument.

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