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**CREATING A MARKET - A CRITICAL REALIST APPROACH TO ECONOMICS AND
THE EUROPEAN UNION INTERNAL ENERGY MARKET**

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Abstract <p>The purpose of this study is to explore and understand the European Union internal energy market processes and how European Union constructs and justifies the markets. The idea is to understand where and how the internal energy market is created and what underlying of socio-political features effects this economic program. Growing exploitation of renewable energy and electricity, especially solar and wind, sources have created an impact on the economic policies. This study contributes to the discussion in market and energy market studies.</p> <p>To further the analysis is done by analysing the EU's formal legislation, politics and policies provided in the high-ranking European Commission documents. The study aims to understand and elaborate on the EU's internal energy market policies and means (which can be regarded as economic) and how the EU avails these policies. Due to the centrality of the thought of sustainable development within the European region for decades, the European Union has been the forerunner in this development and the single energy market is in many ways a model example of this interdependency. Energy questions centralise these policies and the internal energy market combines them in one form.</p> <p>The key topics of this study are renewable energy, the integrated market, harmonising regulation, the growing influence amongst consumers and public intervention as well as unbundling and transparency. I take critical realist stance on economics. Critical realism is a thought where reality exists outside of the human representation of it, but at the same time, it does not view social as a closed system. In this sense, economic agents are not isolated. In this study, the themes of energy and economics are deeply related to the thematics of environmental politics and their development. The nexus of environmental issues has been transforming towards the concepts of climate, energy, economy and even security.</p>			
Keywords critical realism, economics, energy policy, energy politics, electricity, environmental policy, European Union, internal energy market, renewable energy			
Additional information			

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1 INTRODUCTION

One cannot have a discussion about global development and the future without referring to questions of energy and electricity distribution, transmission, production, wholesale markets and selling. It should go without saying that it is essentially important for the global crisis of climate change to be tackled by every policy of today. In this study, I will examine the internal energy market (IEM) construction logics and policies within the European Union. This is done by analysing the EU's formal legislation, politics and policies provided in the high-ranking European Commission documents. The aim is to understand and elaborate on the EU's internal energy market policies and means (which can be regarded as economic) and how the EU avails these policies. This thesis contributes to the discussion in market and energy market studies, broadly called business and economics in the academic field.

Free movement of labour, people, goods, services and capital have been on the main agenda of the European Union since the Treaty of Rome (Cherchye et al. 2007; 753). As a good and being capital intensive in nature, energy does not make any exception to being on the agenda. Nonetheless, in its Directive 2009/28/EC on the promotion of the use of energy from renewable sources, the European Union established a legal framework for the development of renewable energies. This directive contains measures and a legal framework for targets to be reached by the year 2020. By 2020, the EU and its Member States should have developed a large-scale renewable energy industry and support systems around it (SWD(2013) 440 final: 2.)

Due to this, and global change, the exploitation of renewable forms of energy (as well as the *a priori* climate argument) and the electricity system are on the verge of complete change. The *primus motor* of change in the European Union is the growing usage of renewables, especially solar and wind power. This has been regarded as diversification and, as an example, forecasts for the increased usage of wind power are notable. (Kopsakangas-Savolainen and Svento 2012: 128). These changes in the ways of energy production, and their constant development, set different standards for the market as well. The market needs to support reliable, as well as affordable, energy and electricity. (European Commission - Fact Sheet, Energy: New market

design to pave the way for a new deal for consumers, 2016.) First, to understand and captivate the true purpose of the internal energy market, I will apply the critical realist approach to economics, providing a general starting point. Critical realist understanding functions as the framework and presents a philosophy of science perspective for analysis. Secondly, I feel that the field of economics has lacked meta-theoretical explanation ability and, when examining aspects relating to economics in societies, it is highly important to consider the nature of theory itself. Economic aspects are not independent of their examiners but are in constant relation to each other instead. Different actors (or examiners) can intentionally and unpredictably alter their behaviour in relation to understanding provided by theories. Indeed, the events and phenomena considered as economic are facts of this type. Carr (2001, 5) sums this up brilliantly: *the facts about capitalism are not, like facts about cancer, independent of the attitude of the people toward it.*

I will research and try to understand the single market construction logics through economic lenses. Secondly, I will provide discussion and understanding on the philosophical notions of critical realism and their applicability in environmental economics when examining socio-economic entities. My aim is to elaborate on the socio-economic understanding involved in the internal energy market (IEM) building in the European Union.

The European Commission's Internal Energy Market (IEM) Progress Report, adopted on the 13th of October in 2014, includes several trends and developments which the Union plans to achieve and complete (European Commission 2014, Single market for gas & electricity¹). A demand for more effective policies concerning the IEM and unified energy regulation can already be seen in the EU's documents regarding the first energy and climate regime adopted in 2008–2009. In the EU's energy regime, the concepts of climate and energy are inalienable. Underlying features of many of these changes and policies have economic drivers, and energy relates to economics more than ever.

¹ Available: http://ec.europa.eu/energy/gas_electricity/internal_market_en.htm.

According to Makkonen et al. (2002), European energy markets are undergoing a second transformation period after the liberalisation of national energy markets. The second wave aims to fully integrate national markets to a one common European electricity market. In the energy regime, the single market creation and regulatory integration is a complex but a most intriguing question. The EU did not adopt energy policies especially early in its history but the climate change regime, combined with the latest low economic development in the region, has altered their stance. The EU has started participating in the moulding of energy policies more intensively. The nature of environmental policies has transformed to include the conceptualisation of energy, climate, economy and security. They are more interrelated than ever, and one aspect cannot be discussed without the others. The key topics of this study are renewable energy, the integrated market, harmonising regulation, the growing influence amongst consumers and public intervention as well as unbundling and transparency.

In order to comprehend market mechanisms within the EU, and the internal energy market as a new market function, we need to adopt views that provide an understanding on policy development. This calls for an inspection of the socio-historical development of the theoretical political thought, which has moved from environmentalism towards climate change politics. Environmental economics apply various tools to understand the economic effects of national and/or local policies, in which the market needs to reallocate in a way that would allow scarce resources to generate maximum social welfare. In this study, I approach the market from a different perspective and aim to understand the ways in which market policies are depicted so that a certain image or outcome can be created. This means not only investigating the policies as such but, in addition, trying to understand the underlying political emphasis that supports the thought behind the EU's internal energy market. Therefore, the analysis is not based on the visible economic structures retrieved from the policies and their calculations but on the suggested and already developed policies of the EU instead.

The main argument of this study is focused on discovering how socio-political historical development has influenced the internal energy market (IEM) structuring. For example, we know that the EU has set emphasis on the use of renewable energy

sources and that shapes the form and the structure of the market itself but we need to argue on how, where and when market is, has and will be created. The emphasis is, thereby, on the interpretation of the codified and non-codified regulations of the EU. I will not aim to foresee the outcomes of these policies but only to understand how they are supported, justified and argued.

1.1 Research question and hypothesis

My intention is to understand the IEM's construction and suggest a theoretical framework for analysis in order to understand such economic phenomena. This research focuses on the European Union single market creation processes and the regulatory harmonisation and liberalisation of energy production. There is a general aim to be as holistic as possible and try to achieve an understanding of the creation of the internal energy market.

RQ: How does the European Union construct and justify its internal energy market?

In a broader context, while providing a comprehensive view on the internal market creation I will also be discussing which economic and socio-economic aspects relate to it. In this study, the internal market building is seen to happen on the European Union's formal legislation level, in supportive policies which are formulated by EU regulators in several documents. The European Commission has the largest and most influential role on the legislative level since the Commission has monopoly on initiative. The focus of the analysis is on the socio-economic² aspects.

As a hypothesis, the internal energy market is a relatively important feature in European Union policies. Economically, the importance has been evident while the

² E.g. Isoard and Soria (2001: 355) suggest the following socio-economic research on energy (in addition to the technologically oriented research):

- The development of so-called "new conventional" technologies, ie those which have a low greenhouse gas emission rate;
- The development and promotion of renewable energies;
- Modelling activities to forecast the evolution of energy markets and provide a quantitative basis for policymaking and
- A study of public willingness to pay for "green" electricity.

internal market has been constructed. Critical realism is able to provide a socio-economic understanding in the field of energy economies. It is important to provide discussion on economic thought as a human relation without exaggerating the relativistic thought. Although critical realism is the premise, its shortcomings as an explanation model are not overlooked.

1.2 Structure of the work

In the second chapter I will explain the relevant framework for analysis used in this study. Meaning the conceptualisation of the environmentalist development towards the economic thought. First, this study draws its structure from multiple factors, which have common nominators at their core, such as the environment, energy, climate and economy. Secondly, due to the presence of the political entity of the European Union, which provides the basis for policy and political arguments, I will seek to find the link between economics, political theory and thought. The environmental and climate politics have transformed towards a discussion about energy and, therefore, economics. In addition, the second chapter creates an understanding of this transformation in global environmental thought by considering its past and present. In addition, I will go through the European Union internal market mechanisms as they are understood in this study and the discussion related to them and their development (chapter 2).

The third chapter goes through the theoretical framework for this study. Current environmentalism is seen as ecological modernisation where the environment, economy, technology, and several risks such as economic recession and climate change, form a complex relation. Ecological modernisation is seen both as a theoretical tool used to interpret the current situation and as a policy that has its own impact on the environmental sphere. Again, this is connected to critical realist thought and its potential to provide an understanding on the social sphere of economics. Secondly, the chapter briefly introduces parts of the thought of environmental economy, which can be regarded as being in relation to social scientific thought rather than only plainly reproducing the complex relation between environmental economy and social sciences (chapter 3).

After this I will discuss the methodological stance and philosophy of science questions relevant for this study. The fourth chapter offers an understanding on the philosophy of science questions of critical realism as a social scientific approach and more specifically as a social ontology in economics. This is a chance to argue using critical realism in relation to an empirical problem setting (chapter 4). The following chapter introduces and divides the primary empirical material used for analysis. The division is based on European Union documentation, wherein; the first set is more focused on energy policies and the second deals more with the internal and single energy market (chapter 5).

The sixth chapter is the empirical part of the study. I have formed six typologies based on the European Union documentation mentioned above. The typologies are analysed through the frameworks and by using the critical realist stance as the methodology. This analysis is backed up with current relevant and supportive literature (chapter 6). In the final (chapter 7)

2 FRAMEWORK FOR ANALYSIS

It could be argued, to some extent, that European Union policy on energy regimes relies on the distribution of renewable energy sources. In addition, the development of the internal energy market has played a more crucial role in recent years. This does not mean that the creation of the internal energy market has not been one of the most central discussions in European energy politics. Therefore, the harmonisation of energy regulation within the EU-28 could have been seen to gain importance during the last decade. Especially the centrality of renewable energy has increased the discussion around the internal and harmonised markets. I will discuss the frameworks for this study in the following sections, and demonstrate the development in discussion from environmental politics and policies towards including energy and economy. There is a deep relationship and interconnectedness between energy and economy and, again, the internal energy market.

First, I will introduce the development of environmental politics. In addition, I will briefly discuss the dichotomy of politics and policies, which I believe is relevant for this study, showing the connection between economics and political science. Secondly, this chapter introduces and explains what is meant by energy regime in the context of the European Union and what is meant by the internal market in this study.

2.1 Politics and policy connected to economics

The first theme of this study is the dichotomy between politics and policy. Since this study focuses on the EU's internal energy market and single market programs, it has a high relevance in the field of political studies. The EU is a supra-national political entity, which promotes various goals through political means, for example through policy instruments. In this study, I claim that the single market is, as an economical program, also such a political structure. I will also adopt the views of Hovi et al. (2011) to formulate and understand the relation between political science and economics which I see intertwining in this study. Furthermore, these notions are relevant due to their direct relationship to political science and its relevance to

environmental economy which is understood as the theoretical framework for this study.

By definition, economic policy refers to government actions in the field of economics. The term politics refers to various discussions, themes and social phenomena. In everyday speech, politics often means the tradition and actions of political parties, and the etymology of the word comes from the Greek work *polis* meaning the affairs of the city. Politics has been defined to happen somewhere where something can be done differently. (Palonen 1998.) Politics is a defining struggle of intended actions and planning aiming to become policies. Again, policy is a measure aiming towards a certain decision, and it may include the parts of planning as well. (Ibid. 1998: 13.)

Political science argues on themes such as ideas, power and institutions which are seen to be at the core of its research focus (Hovi et al. 2011). Although rational choice has been critiqued, it remains a central thought in economic sciences. Methodologically this means that the dominant concern of economics is to determine which choices lead to efficient use of scarce resources. Political science has no similar consensus as its methodological essence, but according to Hovi et al. (2011: 394) political science has imported ideas from economics through rational choice approaches. Political scientists and economists frequently study the same phenomena. Due to the position of the European Union as a political socio-economic entity, I feel that, in this research, the interests of these fields are indeed very overlapping. Hovi et al. (2011: 395) suggest one major shift in policy where the new emphasis is on green infrastructural investments as a part of fiscal stimulus packages in response to the credit crunch recession of 2007–2008 and, due to this, the ideas of market based environmental regulations have spread. In this sense, the interrelation between economics and the political can be seen to deepen. Although there is nothing new in this as, for example, ecological modernisation theorists have argued that environmentalist development in the 1980s became to conceptualise environmental problems as technologically and economically solvable.

Energy has been a complex and subtle political issue during the European recovery process from the Second World War and energy resources between the Member

States are vastly different. Up to the late 1980s, the intention was to secure each state's own energy production and to control the surpluses and deficits. The 1980's fall of energy prices and economic slowdown centralised the market orientation and the initiative for a common market was launched in 1985 (Yeoh 2006: 496–497.) This study is interested in market-based environmental regulative development in the field of energy. Economists are less concerned with major policy shifts, in comparison to political scientists, but they are crucial in areas of primary concern to environmental economics (Hovi et al. 2011: 398). Environmental policy may be understood as 1) assessing the state of environmental pollution 2) evaluating this pollution in relation to threats it poses to either human welfare or the ecosystem; and 3) controlling polluting activities by means of regulations, economic incentives and/or training, moral persuasion, information campaigns and collaborative contractual arrangements. (Knoepflel 2002: 9.) Economist models with individual preferences and beliefs have proven useful, but their value is limited when explaining why the most efficient policies are not always adopted. Environmental economics literature argues that the best way to understand environmental regulations is to analyse how interest groups try to influence policy makers. In reality, policies are not socially efficient due to the reason that all groups (industry and environmental groups) fail to fully organise. (Hovi et al. 2011: 398.) Instead, policies tend to generate concentrated costs for producers and dispersed costs for citizens (Felder and Schleininger in Hovi et al. 2011: 398).

Economists have a habit of exaggerating the power of special interest over that of ideas. Political scientists would focus on ideas of how market-based regulations are spread by the OECD and the EU, and emphasise that the institutions delay environmental regulatory change. (Hovi et al 2011: 398). In addition, the transformation towards market-based regulation was largely due to the discourse of ecological modernisation. The ideological development of environmentalism moved to a direction where pollution was seen as systematic, and not as an incidental problem of industrialised societies that were economically inefficient. Therefore, sustainable growth becomes possible once the power of market-based environmental regulation is recognised. The rise of neo-liberal thought (the need to rely on the market to provide socially efficient outcomes) and the collapse of the Keynesian

paradigm, associated with the direct intervention of the state, gave space for market-based solutions. (Hajer 1995.)

2.2 Environmental policies: the transformation toward economics

In this study, the themes of energy and economics are deeply related to the thematics of environmental politics and their development. As has been said, the nexus of environmental issues has been transforming towards the concepts of climate, energy, economy and even security. The early publicly and popularly expressed environmental concerns can be seen in Rachel Carson's book *Silent Spring* (1962). The formation of modern environmental policies began when the Brundtland Commission released its report *Our Common Future* in 1987 and, due to the report, the concept of sustainable development was created (Heikkilä 2009: 15). The report acted as a catalysis for processes of multiple conventions under the United Nations (UN). The United Nations General Assembly decided to hold the UNCED-conference (United Nations Conference on Environment and Development) in Rio de Janeiro in 1992. In that conference, the United Nations Framework Convention on Climate Change (UNFCCC) was accepted. This again led to a meeting in Kyoto, which was more decisive regarding the climate regime due to the Kyoto Protocol. The Kyoto Protocol was based on three mechanisms; International Emission Trading (IET), the Clean Development Mechanism (CDM) and Joint Implementation (JI). (Heikkilä 2009: 25, 38.) According to Heikkilä (2009), these mechanisms did not directly result from the Kyoto convention but were more of a long-term development.

The mechanisms are flexible, meaning that the economic basis of a nation affects the marginal of expected reduced emissions. In the beginning, these conventions were themed around the discussion of environmental issues but, already at quite an early stage, the focus shifted towards climate change and greenhouse emissions. This was due to the growing climate concern among researchers in the 1980s. The climate change question moved away from being an environmental concern and then formed its own discussion, becoming the most notable one in the environmental regime (Heikkilä 2009: 18, 48).

The environmental discussion was more or less nationally centred at first, and local administrations had to deal with problems, such as pollution, on their own. However, later on the essentiality of environmental questions was largely recognised by political actors globally (Knoepfel 2007: 13). During the last three decades, the climate question has transformed from addressing local environmental problems to dealing with global climate concerns. This has altered the political influence of climate discussion from the time when it was mainly a scientific topic and problem. (Harris 2009.)

If we agree that the environmental discussion has been transformed towards a climate political discussion, then we need to discuss its relation to energy, which is one of the most crucial elements in the context of air pollution. Heikkilä (2009) argues that this has led to a more comprehensive climate discussion, which is a diplomatic and mutual dialogue between nation-states. In this study, the supra-national entity of the European Union functions as a forum for such political dialogue, where energy and economy form the central pair of discussion. In the next section, I will connect the energy political discussion with the European Union's energy political development and climate regimes. This is relevant since this study takes part in the discussion of energy as an economic argument that is examined through the EU's energy market.

2.3 European Union climate and energy regimes

Due to climate change policies and climate change, the way we produce and consume energy and electricity has become more important globally. The discussion around energy has increased on many levels, and the European Union is one of the largest spokesmen for renewable energy policies and the adaptation of renewables in the near future. The European Union has been on the frontline of energy and climate change discussion and has made environmental initiatives on a global level (Isoard and Soria 2001: 354). The interconnectedness of climate, energy and economy, proposed in the previous chapter, has centralised these topics. Climate discussion is inseparable from energy and the energy theme increases the economic aspects. Again, the centrality of the economy increases security political argumentation but this is outside the interests of this study. According to Flues et al. (2014: 92), climate

change regulation is only one of the many political goals of governments since, at the same time, they pursue to reduce emissions, consider security issues, create jobs and secure international competitiveness.

Energy policies have an important role in the climate change discussion, and they have centralised energy questions. According to Ilkka Ruostetsaari (2010: 25–27) energy policy includes both the official and unofficial energy policies. Unofficial energy policies are features that the nation-states have adopted, for one reason or other, which intentionally or unintentionally affect the demand and supply of energy in the energy sector. Alternatively, official policy entails practices intentionally formulated and developed by nation-states in order to direct and control the balance of demand and supply.

This study does not focus on energy policy as such but concentrates on the energy policy and political instruments that could be considered economic in their nature, and on how economic aspects appear in EU documentation related to the internal energy market. According to Ruostetsaari (2010: 27), energy policy is far from being a simple formulation produced by government officials. Multiple officials, companies, organisations and NGOs have their effect on energy policies instead. Energy policy has an important role in shaping many questions related to the actions and standings of nation-states. Energy is connected to a vast amount of international questions, and the EU, as an intergovernmental and supra-national entity, has been harmonising its energy policies. However, the nation-states and EU member countries have kept a distinctive amount of the regulation for themselves. (Ibid. 2010: 12.) This study focuses on energy and it goes without saying that one of the key aspects in the energy field is the production and distribution of electricity. Electricity being the main market that is harmonised and integrated.

The liberalisation process of electricity markets took place in the United Kingdom and New Zealand, becoming the first countries to open up their markets to free competition. Norway and other Nordic countries soon followed this development. In addition, the Nordic markets aimed to create an electricity market that would cover the whole of Europe. (Ibid. 2010: 14.) We need to note that although energy policy is well institutionalised, many other factors outside of political governance affect it.

The decisions made by institutional actors will not occur without the private sector. A nuclear plant may acquire and be given a construction permit but a private company, or other actor, must perform all the applications and construction (Säynässalo 2009: 144 in Ruotetsaari 2010: 29). The de-regulation and liberalisation processes diminish the role of the public sector even further. Especially the nation-states have given a large amount of their power to the European Union (Ruotetsaari 2010: 29).

Earlier, the nation-state, for example Finland, took care of all the production in the electricity sector until the electricity market was liberalised and companies became public. In addition, the problems that are energy and electricity related have now become global. There are many reasons why the EU has centralised energy questions. The EU has a long history that is mostly energy related. The very basis of the European Union was constructed around the European Coal and Steel Community (ECSC), the purpose of which was to serve the unity of the European countries after the Second World War. Furthermore, the European Atomic Energy Community (EAEC)³ was founded in 1957 with the purpose to build a special energy market for nuclear power in Europe. All of these mechanisms and cooperation were indented to protect the self-sufficiency of the European nations. After the liberalisation and unbundling processes, competition is seen to be fostered by the single energy market, where more interconnections are supported within the EU and bordering nations and all of them are guaranteed *fair price access to the distribution grid and EU pipeline networks* (Yeoh 2006: 497).

The First Environmental Action Plan (EAP) was initiated in 1972 by the European Community (EC) and the aim was to harmonise the environmental policies of the member countries in order to remove obstacles from trade. By the mid 1980s the EU had implemented multiple regulations including the regulations for emissions, water systems and climate policies. Still and all, many of the member countries were not eager to develop common environmental policies and the interest for promoting both

³ EAEC is legally distinct from the EU, but it is governed by EU institutions.

the environment and economy was seen as contradictory (Barnes and Barnes 1999: 1–6.)

Already in the first United Nations Climate Change Conference (UNFCCC), the Conference of Parties (COP 1) held in Berlin in 1995, the EU made it politically clear that it was aiming to become a leading force in global environmental discussion. At this time, the environmental debate had already shifted towards a discussion on climate. (Kerkkäinen 2010: 33.) In Kyoto (COP 3) in 1997, the European Union's 15 oldest member countries were obliged to emission reductions of 8 % below the levels of 1990. This led to a development of increased reduction goals and in 2000, the EU launched the European Climate Change Program (ECCP). The second program (EECP II) was launched in 2005. During the same year, the European Union Emission Trading Scheme was adopted. (Ibid. 2010: 34–36.) This movement from environmental concerns towards climate concern and climate change related discussion, as well as policies, has meant that energy production and distribution has become more important. As has been stated, the climate question was politically intertwined with economical instruments, mainly the emission trading mechanism.

All emission trading is somewhat an outcome of the Kyoto mechanisms (Heikkilä 2009: 40), and the EU defined its own carbon credit systems in the Emission Trading Directive (EU Directive 2003/87/EC), which was launched in the beginning of 2005. According to the EU, the system covers over 10 000 facilities and almost 50 % of all greenhouse emissions (COM(2013) 169 final: 4, Wettestad 2009: 393.) The EU ETS (Emission Trading System) works on the cap and trade principle, where the cap is the total amount of greenhouse gases that can be emitted by factories and other installations in the system. Within the cap, companies receive or buy emission allowances or perform trading with one another. Again, the limit ensures that the emission allowances have value. (European Commission, Climate Action, The EU Emissions Trading System 2015.) According to Heikkilä (2009: 40), the system is based on the distribution of scarcity and the market should define the price for emissions over time. The price will support and stimulate cleaner production. Emission trading has not been as effective, and it has not been able to support

investments on low carbon technologies in the long run. This has been due to the economic recession and low prices of coal (COM(2013) 169 final: 4).

The European Union is a constellation of multiple countries and multiple policies that have led to very different outcomes. Although the EU forcefully integrated its environmental policies, in the spirit of the Brundtland Commission report during the 1990s, it was not until 2005 when the EU started to regulate its energy policies. In 2005, the European Council decided on pan-European energy politics and in 2007 the European Parliament adopted a non-binding resolution which led to the Strategic Energy Technology Plan (SET-Plan) programs. The goal of SET-Plans was to create a common European energy policy by coordinating national and European research and development. Hervas and Mulatero (2011: 3584–3585) remind that technological investments and innovations do not produce outcomes without political goals and guidance.

By definition *the internal market of the European Union (EU) is a single market in which the free movement of goods, services, capital and persons is assured, and in which citizens are free to live, work, study and do business* (EUR-Lex 2015, Access to European Union law, Summaries of the EU Legislation, Internal Market). The market was created in 1993 and the Single Market Act, put forward in 2011 and 2012, has increased the development of further exploitation of opportunities that the single market might provide. As mentioned, energy is one of the many goods, which are meant to flow freely across the European Union. Energy is good for production and consumption also. In addition, energy production is somewhat capital intensive and, therefore, different support mechanisms and capital flows are essential for it. In addition to the free movement of energy as a good itself, the free and right movement of capital has its effect on energy markets.

Now that environmentalism has moved towards a discussion on climate and energy, the relation between energy and economics has become intertwined. The climate regime has been trying to resolve climate change related problems through economic means such as emission trading systems. As mentioned, governments have multiple economically connected goals, such as economic growth and job creation, to solve the climate change problem. This is due to ecological modernisation themes, which

have a centralised logic: seeing environmental problems as economically solvable and economic growth in harmony with nature. I will return to these notions of ecological modernisation later in this study.

At the same time when the EU has adopted internal market mechanisms, energy and electricity markets have been liberalised worldwide, not least in the European area. During this time, climate change and economic recession have boosted the importance of energy and electricity related questions. Liberalisation of energy production and free internal markets have created a fertile ground for the development of the internal energy market as well.

3 ECOLOGICAL MODERNISATION AND ENVIRONMENTAL ECONOMY

In this chapter I will introduce the theoretical frameworks for this paper. There are two theoretical frameworks that provide relevant information to the topic at hand and help us to analyse and understand the context of the European union market oriented energy regime. Ecological modernisation is an umbrella theory or a belief system which cannot be neglected when discussing the themes of environmentalist policies and politics. Since the 1980s, when environmental themes gained more room in the political debate, ecological modernisation has been one of the most central theoretical discussions. Consequently, the development and birth of environmental economy goes hand in hand with the wider thought and debate of political environmentalism. According to Järviskoski (2009: 98–99), ecological modernisation is a tempting model when explaining environmentally related issues because it rejects the strong juxtaposition of the environment and economy. Ecological modernisation has tried to interpret the institutional changes and environmental issues within the modes of production and consumption.

The other relevant theoretical framework for this paper is to understand the environmental economy. Modern environmentalism and ecological modernisation go hand in hand. Environmental economy, as an umbrella term, is a large theoretical compilation of several frameworks. The economic theories used in economic and political sciences are often based on rational actor models, wherein actors collectively produce institutions by pursuing their own interests. Although rational actor models are seen to remain inadequate in their explanation ability, the theories of sociology have been considered less important by agents and in politics. (Fligstein and Mara-Drita 1996: 2.) Markets, as economic systems, are formed around supposedly rational agents acting in a complex political environment. The outcome of this interrelation and behaviour is a market, which again produces its own laws and realities. That makes the market a particularly interesting phenomenon. To understand how it works, we need combine socio-political and economic sciences. I will mainly concentrate on a few theoretical understandings of environmental economy (behavioural and new institutional views) and connect these to the themes of policy and critical realism. In addition, this is a brief insight into two approaches

within environmental economics, which apply views that do not simply rely on the rational actor models as such and are relevant forms of theories seen through critical realistic ontology and epistemology.

3.1 Ecological modernisation

It could be argued that there are two ways in which to conceptualise ecological modernisation; it can be regarded as a belief system and as a planned political reform or a social theory. Consequently, ecological modernisation is a political program and, again, a theory that describes social change. (Spaargaren 2000: 52.) In a way, ecological modernisation is a paradigm that tries to understand environmental policies. In the 1980s, the thought of ecological modernisation grew and it gained a foothold through the Brundtland Commission report. The Brundtland Commission report altered our understanding of the environmental risks towards sustainable development and it sparked a discourse of environment and nature not being in contradiction to societies and economic growth (Hajer 1996: 249.)

Following the thought of Huber (1993), Spaargaren (2000: 50–51) claims that it is a fertile starting point to analyse major changes in the organisation of production and consumption which are directly related to environmental issues and, secondly, it is possible that we can exclude cultural critique from modernity and instead centralise on the institutions of technology and economy which are the most important in bringing the change that allows more sustainable production and consumption. The process of internalising the externalities, or external costs, can be regarded as *ecologizing the economy*. The other side of this can be seen as the *economizing of ecology* where ecology develops into a hard science in order to make an impact in the rational world of business and industry. (Spaargaren 2000: 50–51.) For example, energy security in economic analysis may be to consider energy as an externality (social improvements justify the interference of the states) and in to maintain security, states internalise some of the external costs. Unlikely events may cause uncertainties in energy security and this is taken into consideration in order to minimise social costs. Such regulations can be security standards or regulations for the amounts of imports. (Francés 2011: 40.)

Lash et al. (1996: 4) argue that sustainable development altered the thought that we could only achieve environmental protection on the expense of economic and social development of humanity. The concept of sustainable development insisted that notions of global equity, justice and human rights are fundamental aspects of environmental issues. Again, this meant that the environmental issue should have fundamentally become an issue of human relation and, therefore, cultural and political. Instead, the conclusion was to harness social sciences as one of the managerial resources veiled with a similar epistemology as natural sciences. Consequently, this led to the behaviouristic stimulus-response mechanism and into the use of instruments of prediction and control. Ibid. (1996: 4) continues that many organs, set to advice states were built around natural scientific climate models assuming that equally deterministic predictions could be made of human impacts on climate change. In addition, the representation of *environmental factors in decision by economic monetary valuation* further intensified the stimulus-response mechanism rather than environmental issues being culturally and politically resolved.

The ecological rationale should not only be explained in relation to the economic rationale. There is an independent sphere of ecological rationale where ecological concerns are being developed into an autonomous factor. Therefore, in the Western industrial world, the environment is taken into consideration when restructuring production and consumption. Consequently, it is not necessary to counterposition society with nature but analytically separate the ecological sphere. Institutions involved with production can be analysed through this independent sphere and they cannot entirely be reduced or deduced from economic criteria. For example, rather than greening the GNP we would need to develop a green GNP as an independent indicator of environmental performance. (Spaargaren: 2000: 53–54.)

Especially in the European Union, environmental policy concerns could have been seen to technologise, for example, by translating the social challenges of energy efficiency into the technological programs of new energy sources. Sociological critique argues that the individualistic, instrumental and non-relational models framing the economistic social science paradigm have created the foundations of the EU's environmental policies. Social and cultural homogeneity of Europe has been ignored in the process of standardisation. The European Union is pressed between

the dominant instrumentalist managerial standardisation program and anti-dominant cultural defences. The barriers of culture/nature and modernist/antimodernist dichotomy calls us to re-examine the co-construction of nature and culture and again, by doing so, may help us to renew and identify all environmentally related public policies. (Lash et al. 1996 5–6.) Consequently, there is a possibility to argue on behalf of critical realist thought. As Ibid. (1996: 6) argues, the previous realist understanding separates the scientific observer from its objects, and the complex cultural and social changes that have brought the environmental threat have been overlooked.

According to Ulrich Beck, in his argument of risk society, there are several systemic problems within law, politics, administration and economics when these come across with uncertainty, power relations and conflicts. Even when environmental and, therefore, climate aspects become mutually understood issues, many social and political questions remain (Sairinen 2009: 131.) Therefore, we must examine these social and political questions in economic sciences too. Risk society, during the time of reflexive modernisation, means that there are sovereign states that are unable to solve problems and become the source of the problems instead. This change took place in the founding of modern industrial societies (Beck 1996; Beck 1992: 10.) When a state becomes weaker, other parties such as private commercial actors gain their foothold. In the neoliberal world, this leads into a state where market forces have greater influence and, therefore, more power over nation-states. In the fields of environment, climate, economic and security policies this has been seen as the liberalisation of energy producers. Again, the internal market mechanism makes no exception to this. Later on we will see how the EU supports the IEM and this internal (free) market within its territory.

3.2 Environmental economy

Environmental economy (also economics of the environment) refers to all the economic theory and academic practice, which concentrate on human living space. The field is concerned with the interdependencies between the economy and the environment and the potential possibilities or impact that the economic use of environment may offer or create (Folmer and Johansson-Stenham 2011: 339).

Environmental economy can include discussions such as optimal allocation of goods, optimal exploitation of natural resources, production, the scarcity of environmental goods, optimal taxation in the environmental sphere and economic growth. (see e.g. Siebert 1987.)

If seen as an eclectic multidisciplinary approach, environmental economy combines many sciences together. It can include and it deals with many questions such as economics, geography, ecology, political science, thermodynamics, ethics and many other natural and social scientific approaches (Van de Berg 2007: 524.) Due to the social scientific and political science stance, this eclectic view provides fruitful theoretical implications for this study. Connections are made between the thought of political scientific ecological modernisation and critical realist social ontology as well as the naturalistic and social scientific reasoning.

3.2.1 New institutional and behavioural views in environmental economics

New institutional and behavioural branches represent more recent forms of environmental economics. First, behavioural economics is a form of economic science that discusses the elements of a person's choice when they do not seem to be explained by classical economic models. The economic theory is unable to explain some anomalies due to remaining a simplification of reality. Behavioural economy follows the neo-classical tradition but applies multidisciplinary approaches – most importantly psychology. Behavioural economics acknowledges that there are multiple human attributes such as emotions, perceptions and habits that influence economic behaviour. These anomalies pose problems for both economic theory and policy when real people do not always appear and act as fully rational utility maximisers. Economic models are simplifications and do not provide a perfect description of reality (Hepburn et al. 2010: 190–191.)

Due to the stress that externalities can be internalised through the creation of new markets or other financial incentives, Hepburn et al. (2010: 191) argue that context-dependency of human behaviour is at the heart of the interest of environmental economy. However, the assumption of rationality becomes problematic with environmental goods and services since people have not been socialised to make

rational choices when in the natural environment. In addition, the environmental markets often do not exist at all.

Public choice approach theorists argue that the application of incentive based instruments in environmental policy are neither in the interests of industries nor political decision makers. If some policies on environmental regulations are used, it is based on bureaucratic measures rather than policy instruments based on monetary incentives. Market based environmental instruments struggle to have opportunities to become a part of environmental policy programs (Kirchgässner and Schneider 2002: 370.)

Ibid. (2002: 371) argues that the need for intrinsic motivation (the need for externalities to be internalised) is not exactly convincing. They add that in the 1980s environmental activists used such arguments and worked against commercialisation of the environment and demanded bureaucratic measures. Nevertheless, today many argue on behalf of such bureaucratic instruments as taxes. It seems that in large-scale important production and consumption decisions the moral arguments referring to intrinsic motivation do not work. Consequently, where moral arguments can play a role, economic instruments are hardly applicable.

The actors of environmental policy in the public sector and in the relevant fields of industry have much stronger interests to apply traditional bureaucratic measures (Kirchgässner and Schneider 2002: 370–371.) Especially institutional stakeholders favour bureaucratic measures. Command and control systems benefit from their existence and growth more efficiently than from taxes and tradable permits, which can function on their own without extensive labour and budgetary costs. (Ibid. 2002: 380–381.) However, there are some changes to this in sight. In addition to the Kyoto protocol instruments, new instruments referred to as economic and voluntary are becoming more popular. Even though there is hardly any evidence of their efficiency (Ibid. 2002: 372).

One of the most important notions here is on the policy intervention that aims to design commitment devices in the field of the environment. In the context of this study, there are several attributes in the European Union single energy market

design that aim to provide and support public interventions. Human behaviour is context-dependent and policies aimed at achieving consistent preferences would need more planning on commitment mechanisms. The missing markets in environmental issues make this rather challenging and, due to this, the social context becomes particularly important. (Ibid. 2010: 203.) Policy interventions require proper commitment mechanisms especially in the field of renewable resource and climate-change policy⁴ (Ibid. 2010: 203) which are in essence a part of the European Union internal energy market, as I will point out later in this paper.

Command and control are preferred to market based instruments but there have been changes to this especially in the US (Kirchgässner and Schneider 2002: 389). There is a need to identify the means which could increase market based environmental investments. New institutional views, departing from the traditional neo-classical thought, use institutional frameworks in order to understand environmentalism from an institutional perspective. Generally speaking, new institutionalism in economics extends the understanding of institutionalism into the social and legal norms that have their influence on economic activities.

Here we have seen two different ways to comprehend the interrelation between the public and private spheres. Social and legal norms have effects on the economic behaviour and, therefore, they tend to produce different outcomes in order to support environmental and climate change goals and targets. Then again, ecological modernisation argues on behalf of technological and economic solutions, which could provide alternatives and results in order to tackle the current crises. When risk societies are unable to produce those solutions, market forces and private actors gain more influence. Still, these societies and social entities, such as the European Union, create policies that have their effect on markets and relevant actors. The EU and nation-states aim to support economic actors for multiple reasons. In this study, I will introduce some of these reasons when discussing the IEM of the European Union.

⁴ E.g. behavioural failures can lead, even without any other market failures, into a resource collapse.

4 METHODOLOGY: CRITICAL REALIST APPROACH

The previous chapters presented how the environmental socio-political argument and thought moved towards climate, energy, economy and security discussions, intertwining them more closely together. Due to the centrality of the thought of sustainable development within the European region for decades, the European Union has been the forerunner in this development and, as I will show, the single energy market is in many ways a model example of this interdependency. Energy questions centralise these policies and the internal energy market combines them in one form. Critical views in economics argue that the global system of production and consumption is in crisis, and it is on an unsustainable path in comparison to the political thought of sustainable development. The argument based on rational actors in neoclassical economics does not seem to fully explain why and how markets are created in the light of the environmental nexus presented above. By definition, a market is a place where several parties engage in exchange but it is also a process where prices of services and goods are established. In addition, a market is seen to appear spontaneously or as being created deliberately in order to enable rights and obligations in the exchange of services and goods. *Laissez-faire* policies of economics do not necessarily explain the European Union single electricity and gas market. In order to understand the environmentally related market mechanisms in the light of socio-political sustainable development of the European Union, I will try to research market creation and market logics by utilising the thought of critical realism.

In this chapter I will go through the important philosophy of science questions that I see to be relevant for this study. The questions I am trying to answer on behalf of this study are; what is the nature of being (Ontology); what is the nature of knowledge or justified beliefs (Epistemology); and how to retrieve knowledge, and what is the best way to do it (Methodology)?

Huckle (1993) argues that realism is based on our capability of understanding on three levels. First, *the level of structures and processes* contains the elements of the natural and social world, arranged in a certain order. Due to these orders, causal powers and processes are possible. These structures cannot be observed directly, but

are underlying structures. Secondly, on *the level of events* these underlying structures and events are realised and/or put into action. These actions take place in the natural and social realms. Thirdly, on *the level of experience* it is possible to experience the events in their Actual domain, which has been caused by the processes in the Real domain. I will return to this notion of Actual and Real later on (Huckle 1993.)

Again, Huckle (1993) returns to the idea of critical theory. Relying on Jürgen Habermas, he develops a theory on the differences between the empirical and interpretive social sciences (trying to interpret the world as it is) and critical theory (trying to understand why the world is as it is). Habermasian thought includes possibilities for individuals to shape the social world and thereby understand the way it should be, not merely how it is. Processes of reflection and action release the potential of enlightenment and again emancipate the *a priori* condition to take action and change social systems.

Fleetwood (2004: 3–4) describes four possible ways of understanding critical realism. First, critical realism can deal with many conceptual problems such as *how to treat the subject matter, what the objectives of analysis are, what is an effective and/or adequate explanation using such subject matter*. Secondly, critical realism can function as a meta-theory and as a tool for developing theoretical frameworks. Thirdly, a new theory can be used with the support of critical realism to revise empirical work. Lastly, critical realism supports synthetic understanding and making connections across multiple subjects.

In critical realism, ontologically, there are dimensions of structures, events, experiences and so on. This domain could be considered the Real. These structures have causal powers that are connected to one another, which may lead to the occurrence (or absence) of certain events. Again, this is the Actual. These structures may be physical, social or conceptual, and we cannot always observe them except through their effects. People observe some of these events and, therefore, they become empirical. Secondly, the epistemology suggests that our knowledge is always historically and culturally relative and we do not possess an independent access to the world. However, this does not mean that all the theories could be equally valid. Science is not about discovering universal laws and providing

predictions but rather it is concerned with explanation, understating and interpretation (Bhaskar 1994: 109 in Mingers 2004: 165–166.)

This study applies critical realism when answering questions about knowledge and knowing. First I will go through critical realism as a scientific ontology (3.1.) and secondly its application in economics (3.2.). It is notable that these are partially overlapping. I see the European Union as a unit, which could be regarded as a socio-economic reality but, in addition, it is a socio-economic, social constructionist entity of human beings, and it cannot purely be regarded as a realist concept of subject matter.

4.1 Critical realism as a scientific ontology

Critical realism is a philosophy of science though originally developed and argued by the British philosopher of science, Roy Bhaskar. Critical realism is a combining argument of two schools of social sciences. Historically the dispute in social sciences has been dominated by two traditions: the naturalistic tradition, based on the Humean notion of law, which has followed positivist thinking. Opposing it is its hermeneutic rival, the anti-naturalist tradition. A radical distinction has been expressed between their subject matter. (Bhaskar 1989: 66; Bhaskar 1979/2005.) Critical realism is a thought where reality exists outside of the human representation of it, but at the same time, it does not view social as a closed system. If we accept the argument of reality existing outside of the social domain, the main question of the thought is to what extent the social world could be studied in the same way as nature? (Bhaskar 1979.) To investigate the limits of naturalism is practically an investigation of the conditions which make social sciences possible (Bhaskar 1979/2005: 4).

Realism is a theory where its objects act and exist independent of their examiners and their actions. But to determine whether natural science is realist or not, we would need to argue that theoretical entities are real objects independent of their theorising. This is something that Bhaskar calls metaphysical reality – how the world is before theory or research. It means that one must elaborate on what the world must be prior to any scientific inquiry of it. Hence, a realist position on the philosophy of science is a theory on the nature of being and not on the knowledge of objects and the fact that

they exist and act independently of human activity. This is called epistemic fallacy – meaning that an ontological question can always be reparsed to an epistemological form. This is to say that critical realism allows positivism and its empirical realist ontology to be abandoned without the need for us to apply intense forms of relativism and social constructionist ontology (Fleetwood and Ackroyd 2004: 3).

Therefore, every theory of scientific knowledge must presuppose a theory of what the world is like for knowledge. (Bhaskar 1989: 11–12.) For the objects to become observable they need to be produced by an experimental and theoretical work of science, and we need to know what kind of things, for example, societies are in the first place before we can consider whether it is possible to investigate them scientifically. The specification of the object is necessary or any discussion on method becomes arbitrary (Bhaskar 1989: 68–69.) Society pre-exists the individual, and its objects can be material or ideas. According to Bhaskar (1989: 78), this applies to discursive practises as well as to non-discursive ones.

Fleetwood (2004: 29–30) explains this by using the concept of tacit knowledge. For example, when performing some tasks people may know how to do them but cannot necessarily explain it. It cannot be said that tacitly known tasks exist independently of our knowledge of them, but they exist independently of articulable knowledge. A social entity can exist independently of its identification.

The critical realist argument shows the limitations of methodological individualism. Merely stating that human beings are rational does not explain what they do but only how they do it at best. For Bhaskar, neo-classical theory in economics is one of the most sophisticated practices of social sciences that could be regarded as normative theory of efficient action generating a set of techniques for achieving given ends, rather than being an explanatory theory capable of casting light on actual empirical episodes. (Bhaskar 1989: 71–72.)

Economic theories used in economics and political sciences are often based on these rational actor models. In this sense, conventional environmental economy sees that demands made on the environment can be expressed through market orientation. This means that parties such as companies have rational preferences which are

resolute outside of the economic process. The outcome of this is a theory that presumes situations where the optimal use of environment is gained through a wide range of different economic policy instruments (Huckle 1993: 15.)

The development of environmental economy has been in line with the development of economics in general, wherein the emphasis of tradition is on the analysis of optimal behaviour. The conventional, and now contested, neo-classical model assumes customers who are rational and behave in accordance to their preferences. In addition, a producer is assumed to maximise their profits in the market places of supply and demand. (Folmer and Johansson-Stenman 2011: 339, 341.) On an institutional level, this presumption allows us to think that actors collectively produce institutions by pursuing their own interests. (Fligstein and Mara-Drita 1996: 2.) Environmental economy is thereby attracted to support mathematical explanation models. However, for instance, new modern environmental economies apply more behavioural and new institutional frameworks. In environmental economics, the increasing role of new institutional economics is reflected in the development of alternative policy instruments. (Folmer and Johansson-Stenman 2011.)

4.2 Critical realism in economics

Critical realism, put forward in economics, pursues to understand not whether social entities are real but how they are real (Zembylas 2006: 667). Sayer (1992: 5–6) claims that critical realism as a philosophy of science argues on the existence of the world without the pre-emphasis of our understanding. Socio-economic phenomena, texts and actions are contextual and our job, and the job of a scientist, is merely to present interpretations and suggestions. The first thought of social ontology within modern economics could have been seen to evolve at the University of Cambridge when an informal group, later on called the Cambridge Realist Workshop, was formed. Eventually more sustained discussions on topics of social ontology were created around the Cambridge Social Ontology Group in 2002. (Prattern 2015: 1–3.) It is becoming a significant approach in economics, especially in the field of organisational and management studies (Fleetwood and Ackroyd 2004: 1).

Early economists such as Adam Smith, David Ricardo, Vilfredo Pareto, Thomas Robert Malthus and Karl Marx in the early 1900s, were not namely economists but analysed economic problems from a social scientific perspective. In many respects, they analysed economics in various embedded frameworks that we call political science, psychology, law and so on (Folmer and Johansson-Stenman 2011: 338.) They did not discuss along the narrow scope that economics today might be accused of but around something that we might see as macroeconomics instead. It could be said that the quest in macroeconomics is to research the behaviour of a system as a whole (Smithin 2004). In this light, critical realism might provide a fruitful starting point.

Despite the previous historical epoch, there has been a commitment to methodological individualism especially in the neo-classical thought. Methodological individualism in macroeconomics means that aggregates (such as total consumption or concepts of social classes) are not legitimate subjects of research since they do not have an independent existence apart from their individual members (Smithin 2004: 58). Ibid. (2004: 57) argues that *the insistence that an explanation of macroeconomic phenomena should be based on the logic of the interaction of individual decisions by atomistic agents behaving in a uniform way, without reference to higher-level social structures or grouping*. Consequently, the ontology of critical realism allows the existence of the Real and the importance of socially constructed structures as continually reproduced inter-dependencies (Lawson 1997: 159 in Smithin 2004: 60). Again, it is important that we are able to take the middle way of the two extremes in the structure-agency discussion (Ibid 2004: 60.)

In addition, often another methodological demand is that all theories should be rigorous. By using representative agents, who are mythical characters whose choices supposedly reflect those of the society as a whole, these theories try to solve the research questions. (Smithin: 2004: 56–57.)

The methodological arguments above may lead to the reasoning of deductive methods of analysis. The reliance on deduction requires certain closures in the system, which again suggests that a whole must always be reducible to its parts (Smithin 2004: 58.) Stable event regularities such as “Whenever an event or state of

affairs x, then ever state of affairs y” takes place in open or closed systems. Critical realists argue that econometric studies have inabilities in explaining endurance and sharp event regularities due to the openness of socio-economic systems. (Lewis 2004: 3). In this light of critical realism, a person’s actions are chosen. Therefore, human actions are, to some extent, intentional. The openness of the socio-economic world suggests that the subjects of such knowledge are hardly event regularities. (Lewis 2004: 3–4.) The European union is a system constructed by humans, and we may assume that it is not an event regularity but a socio-economic structure.

The idea is to research the macro foundations of microeconomics which again seem to relate to the idea of transcendentalism of critical realism in their social ontology (Ibid. 2004: 61). Therefore, the question to be asked is what must social structure be like for human choice to be possible? Lawson (1997: 24) argues that the right method to answer that is abduction or retroduction.

In economics, Tony Lawson’s writings (see e.g. 1997, 2003), echoing the work of Quine, form some of the most notable critical works that use social ontology. In addition, the dictum that theories should presuppose an ontology, Lawson argues that methods should presuppose one too. In order for methods to work and generate knowledge, they need to include certain views of the world and, again, they carry a worldview similarly as theories do. Since methods are the way to produce scientific knowledge, they only fit onto a certain type of world. Often economists do not confess that their method includes views of the world, which causes a *systemic lack of fit between economic theories and the social world* (Latsis 2015: 56–57.)

In the views of economists, individuals and other units of analysis are independent and their actions are activated through external forces and stimuli. This means that actions take place in a certain model only. In Lawson’s view, economic agents are not isolated. In his alternative ontology, the social world is an open system where intentional agents have their own goals, desires and aims. Agents, who form large networks, which in turn have social positions. These networks and their agents are affected by different conventions, rules and norms. Networks and their agents are a part of a historic continuum and a complex environment of constantly developing social structures. (Ibid. 2015: 57–58)

4.3 Empirical methodology

This research is constructed around one research question. The empirical research on the European Union documentation is done by using qualitative content analysis. Empirical methods of this study are qualitative and the analysis is done by using a critical realist understanding. Critical realism aims to identify the mechanisms and how they work and to provide knowledge on whether or not they have been activated, examining everything within the system and, at the same time, acknowledging both the influences of the environment and the social sphere. Therefore, social phenomena are meaningful and since these meanings cannot be measured or counted as in natural sciences, this calls for interpretive research methods (Paloniemi 2010: 87.)

The European union is a socio-economic structure, which must be identified and formulated before there is a possibility to examine it. In this case, the European Union is a societal construction where economic events take place and are in interrelation with one another. Bhaskar (1989: 69) claims that objects of scientific inquiry are neither empirically given nor “real” artefacts of the world but structures whose actual presence must be produced by the experimental and theoretical work of science. We must first determine what kind of socio-economic structure, for example, the EU is before there is a possibility to examine it scientifically.

Sayer (2000: 18) argues that actions presuppose shared meanings, resources and structures; in this study I see the European Union as such structure. I have analysed the documentation in a constructionist manner but, in the light of critical realism, applied a possibility to abandon extreme constructionist methods. The analysis is based on both the conceptualisation of the European Union’s current structures, and how different market mechanisms based on energy are presented in its sphere. This study is based on a linguistic approach.

As Paloniemi (2010: 76) argues

To focus on the social reality, it [is] possible to claim that underlying structures and mechanisms of the socially constructed reality determine social arrangements and our understandings of them. (sic.)

Again, content analysis is a method where the subject matter is treated by doing differentiations and searching differences and, in addition, by summarising. The analysis is done on the text of EU documents. The aim of the content analysis is to connect the results into larger phenomena (Tuomi and Sarajärvi 2002: 105.) The analysis is based on the documentation and the typologies that it has provided. Since the study aims to understand the social constructions that provide economic policy results and actions, it is based on language and the existence their reality produces.

Paloniemi (2010) argues on a retroductive methodological understanding. As Lisle (2000) and Chiasson (2001), he claims that retroductive social inquiry involves all the induction, deduction and abduction approaches that a critical realist view would demand. Following the thought of Chiasson (2001) Paloniemi (2010: 89–90) explains retroduction as an abductive-deductive-inductive cycle, first bringing new ideas up from literature by means of abduction and then, by using deduction, explicating and demonstrating aspects of these ideas and finally evaluating and securing the ideas by using induction. This means

that it is possible to make hypotheses from observed experiences and connections, and then to test them by using induction and deduction (Lisle 2000 in Paloniemi 2010: 89)

There are several ways to retrieve knowledge by using the critical realist stance. Paloniemi (2010: 90) argues that in the light of critical realism, researches need to reveal the causal powers of the domain called the Real. Since structures and causal powers are not directly available for their examiner, it is difficult to achieve plausibility. Retroduction is many times seen to provide the solution for this. As explained here before, the domains of Actual and Real are the ones to be examined. These domains include the underlying structures and relations over the empirical.

This means that when some agent performs an act, it is about the nature of the agent. The reasons of the acts cannot be separated from social implications. As the European Union is perceived as an agent, we need to consider the nature of the

European Union and its historical development affected by norms, values and motives. This allows the researcher to study the structures and generative mechanisms, needing to accept the social world as such, including the complex relation between agency and structure. (Ibid 2010: 91–92.)

In practical research methodology, European Union documentation provides and gives multiple meanings and roles for the energy market in its decision-making bodies. I have developed the following four typologies: the increasing role of renewable energy, the aim towards an integrated network, regulatory harmonising of energy policies and supposed positive economic impacts. These typologies come directly from the documents of the European Union and they largely guide the internal energy market discussion within the Union. In the next chapter I will catalogue the used documents and explain their selection process.

Critical realism is a feasible perspective when studying such phenomenon and entity as the European Union. It allows picturing the phenomenon (in this case the internal energy market) as emerging and existing. The aim is to study *whether or not things are as described, and what it is that makes them appear as such* (Patomäki and Wight 2000: 218). The choice to use critical realism is justified when examining the choices made by the European Union and what has produced those choices. As Paloniemi (2010: 100– 101) sums up, critical realism allows us to understand why we are in trouble if only drawing from an empirical level.

While it is acknowledged that the Actual level contains all the possible events and experiences from which the observable events and experiences will (or won't) be perceived at the Empirical level. However, the events at the Actual level may escape people's attention in their daily routine. The roles of underlying social, political, technological, economic and so on structures and mechanisms related to the level of the Real are even more difficult to disclose without thorough analysis of research material and its findings. (Paloniemi 2010: 101.)

5 PRIMARY SOURCES AND MATERIAL

The empirical part of this study consists of European Union documents, which could be seen to be at the top of the hierarchy in the EU's legislation and politics. Supposedly, the documents are considered as highly important within the EU's decision-making bodies. The material provides answers to the research hypothesis and it can be seen as well selected with respect to the research question. The EU, indeed, emphasises the economic factors of its energy regime. All of the documents include environmental economic policies and are, therefore, energy related.

The selected documents are from the time period of 2007 to 2014. In 2008, the EU Commission released its communication where it stated the 20-20-20 targets. I have divided the selected documents in a way that they form two larger entities, where the first ones concentrate on the larger energy policies and targets of the European Union in long time period extending to the year 2050. In addition, the second set includes policies aimed towards the single energy market.

5.1 Division of the documents

The documents are a part of European Union energy policy strategies where the EU builds the energy nexus and internal market logics. The documents are closely related to energy markets and climate policies. Again, the materials are legislations,

communications, green papers and accompanying documents⁵. The documents that mostly relate to energy policies are the following⁶:

- COM(2013) 169 final, GREEN PAPER: A 2030 framework for climate and energy policies.
- COM (2011) 885/2 Energy Roadmap 2050
- COM(2011) 31 final Renewable Energy: Progressing towards the 2020 target
- COM(2011) 21 A resource-efficient Europe – Flagship initiative under the Europe 2020 Strategy.
- COM(2010) 667/4 Energy infrastructure priorities for 2020 and beyond - A Blueprint for and integrated European energy network
- COM(2010) 639 final Energy 2020 A strategy for competitive, sustainable and secure energy
- SEC(2010) 1346 final State of play in the EU Energy policy. Accompanying document to the Energy 2020 A strategy for competitive, sustainable and secure energy
- SEC(2010) Accompanying document to the Energy infrastructure priorities for 2020 and beyond - A Blueprint for and integrated European energy network
- COM(2010) 191 final REPORT FROM COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT on the implementation of the European Energy Programme for Recovery
- COM(2009) The Renewable Energy Progress Report: Commission Report in accordance with Article 3 of Directive 2001/77/EC, Article 4(2) of Directive 2003/30/EC and on the implementation of the EU Biomass Action Plan, COM(2005)628
- COM(2008) 768 final/2 Offshore Wind Energy: Action needed to deliver on the Energy Policy Objectives for 2020 and beyond
- COM(2008) 782 final GREEN PAPER: TOWARDS A SECURE, SUSTAINABLE AND COMPETITIVE EUROPEAN ENERGY NETWORK
- COM(2007) COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN COUNCIL AND THE EUROPEAN PARLIAMENT: AN ENERGY POLICY FOR EUROPE

⁵ The European Union Commission document types that are used in this paper are:

- SEC Documents which cannot be classified in any of the other series.
- COM Proposed legislation and other Commission communications to the Council and/or the other institutions, and their preparatory papers. Commission documents for other institutions (legislative proposals, communications, reports, etc.).
- SWD Commission staff working document
- Green Papers are documents published by the European Commission to stimulate discussion on given topics at the European level. They invite the relevant parties (bodies or individuals) to participate in a consultation process and debate based on the proposals they put forward. (European Commission, 2015a, 2015b)

⁶ The presentation of the documents is in a chronological order.

The documents that directly concentrate on the single and internal energy markets are the following:

- COM(2014) Progress towards completing the Internal Energy Market
- COM(2013) Delivering the internal electricity market and masking the most of public intervention
- SWD(2013) 442 final Incorporating demand side flexibility, in particular demand response, in electricity markets *Accompanying the document* COMMUNICATION FROM THE COMMISSION: Delivering the internal electricity market and masking the most of public intervention
- SWD(2013) 439 final European Commission guidance for design of renewables support schemes *Accompanying the document* COMMUNICATION FROM THE COMMISSION: Delivering the internal electricity market and masking the most of public intervention
- SWD(2013) 440 final Guidance on the use of renewable energy cooperation mechanism *Accompanying the document* COMMUNICATION FROM THE COMMISSION: Delivering the internal electricity market and masking the most of public intervention
- SWD(2013) 438 final Generating Adequacy in the internal electricity market - guidance on public intervention *Accompanying the document* COMMUNICATION FROM THE COMMISSION: Delivering the internal electricity market and masking the most of public intervention
- COM(2012) 663 final COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMICS AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS: Making the internal energy market work
- COMMISSION STAFF WORKING DOCUMENT 9 June 2011: 2009–2010 Report on progress in creating the internal gas and electricity market
- COM(2010) 84 final Report on progress in creating the internal gas and electricity market
- COM(2009) 115 final Report on progress in creating the internal gas and electricity market
- COM(2006) 841 final Prospect for the internal gas and electricity market

6 EUROPEAN UNION AND INTERNAL ENERGY MARKET

If we fail to make major changes to the way the energy market functions, we will be faced with a less reliable and more costly European energy system, declining EU competitiveness and wealth, and slow progress towards decarbonisation (COM(2012) 663 final: 2).

In the above citation by the EU Commission, the possible consequences of what the failure in achieving an integrated energy market could cause are described. The European Union sets great emphasis on the internal energy market and energy market functions. The context of market is given multiple meanings and the necessity of it is justified in many ways – not the least in economic and business administratives. As the Commission states, the market is not an end in itself but an instrument of bringing economic growth, security, jobs, competitive prices and sustainability. This is highlighted in a competitive and integrated internal energy market. (COM(2012) 663 final: 2.) In this part, I will provide an analysis and interpretation of the European Union internal energy market and argumentation used in EU policies. As has been said earlier, the European Union primary sources have been analysed by reading the material and creating typologies from it. The main typologies are renewable energy, integrated network, regulatory harmonisation and laws, transparency of the pricing, consumer influence and public intervention and the unbundling of the transmission and distribution system operators (TSO and DSO). Climate actions have been given great economic importance and it is estimated by the EU that achieving climate change objectives will cover 20% of EU spending in 2014–2020 (COM(2013) 169 final 9).

It is assumed that there are non-observable powers and observable causal mechanisms of the Real that will cause processes on the level of Actual reality. In this paper, those are understood as the European Union Commission policy prerequisites, regulating and aiming to improve the modern electricity market. As the Commission (COM(2014) 634 final: 2) itself states, these prerequisites are affordable, competitively priced and environmentally sustainable and secure energy. The integrated internal energy market is a mean to an end in achieving the above policies.

The European Union is the key generator of the environmental socio-economical process, trying to provide economical practices, models and planning. Economic activities are closely tied together with the consumption and production of energy.

The Maastricht treaty (1992) defined the structural forms of the European Community, and one of the defining elements of the EU was the launch of the economic and monetary union. At the same time period, the Sutherland Report (1992) launched ideas and initiatives towards an Action Plan for the Single Market for the European Commission (Yeoh 2006: 497). This was a structural, historical, stance for the EU and defined the environment where the European Union operates today. There is a twofold concept of economic factors and energy as well. Several structural, causal and observable elements produce the market Real within the EU. Competition, defined by the EU, is a structure that forms the basis of the Union's endeavour towards an internal energy market. This can clearly be seen in the EC principle of free movement of capital, and the EU tries to achieve this in the electricity and energy sectors as well. The EU makes an effort to enhance the competition in the energy regime's wholesale market (COM(2009) 115 final: 12).

As a part of the deepening environmental crisis during the 1980s, the underlying thought in environmental economics, the modern wave of environmentalism, was to seek for technocratic approaches to sustain economic growth through environmentally friendlier technologies (Huckle 1993.) Green capitalists argue that markets can be made more sensitive to their neglect of environmental costs. It argues on behalf of the optimal use of environment, where households and firm express their rational demands on nature. Prices, taxes, subsidies and legislation are methods that lead to the optimal use of environment in the most effective way as possible. (Elkington 1987 in Huckle 1993.) In the field of the energy market, the EU claims that the market is the only realistic and healthy tool of an efficient energy sector. The economic benefits of this are seen to be as large as 16–40 billion euros per year. (COM(2014) 643 final: 3–4.) The EU perceives and suggest market integration as the answer to the economic and climate crises within the European area. Consequently, there have been many similarities in EU policies and green capitalist thought as well as environmental economy from the 1980s onward. Diaz-Rainey (et al. 2011: 358)

argues that techno-market approaches, the alliance and interaction of technologies such as smart appliances and smart grids, dominate the discussion.

Since the dawn of the European Union, energy has been a crucial but delicate issue. Yeoh (2006: 497) points out that when the EU started playing a bigger part in the energy *no go zone*, it had to be done incrementally, starting from the Directive (1990) on price transparency and transit through a transmission grid. Since then the development has been gradual and the focus has shifted over time. The EU material examined here can be roughly divided into time periods of prior and after the economic and financial crisis of the late 2008 and early 2009. The crisis had an impact on the demand for energy and the fall of oil prices in the international market (COM(2010) 84 final: 2) had its impact on the endeavour for the integrated market. The Commission stated in 2010 that a *truly single energy market is far from complete*. (Commission Staff Working Document 2011: 3) The financial crisis has put pressure on planned investment due to the financing difficulties of the supply side and, on the other hand, has caused a fall in demand (Ibid. 2010: 13). The stance of the EU has changed to a more forcing direction and energy packages and their faster implementation is pursued more clearly (Ibid. 2010). The Commission's Energy Roadmap 2050 (COM(2011) 885) underlines the importance of the full integration of Europe's energy networks and the openness of energy markets. Emphasis is on the low-carbon economy and security of supply, and in 2012 the Commission was committed to achieving the completion of the energy market in 2014 but it was not on track to meet the deadline (COM(2012) 663 final: 2).

There is a clear argument from the EU (An Energy policy for Europe 2007: 6) which states that only a real energy market is able to meet all of the European energy challenges that are competitiveness, sustainability and security of supply. In 2007, the EU identified two means to achieve answers to the previous questions through the promotion of the European Gas and Electricity Grid and a truly competitive European-wide energy market (COM(2007), 1 final: 6–7). The Commission argues that competition among market players is distorted due to the poor levels of unbundling in some Member States and because of incumbent electricity and gas companies maintaining their dominant positions on national levels (COM(2006), 841 final: 8). There are several aspects that the Commission brought up in 2007, such as

TSOs and DSOs, which were not functioning as they should (see. Ibid. 2007). I will return to the notion of TSOs and DSOs during the years 2007–2014 later in this paper.

A Competitive market for electricity had been implemented across Europe since the years 1999–2000. Although there had been development, there was no meaningful competition in member states which meant that there was no real confidence in the internal market. (COM(2006) 841 final: 2.) The European Commission states in its communication *Prospects for the internal gas and electricity market* (2007) that competition providing customers price reductions is one of the key benefits of market liberalisation. In addition, the Commission mentions issues in the security of supply and sustainability that could be resolved by competitive markets. The aim is to encourage diversification and provide a more powerful bargaining position for European energy companies in global markets.

Consequently, competition eliminates undue monopoly profits and provides more efficient means to produce energy. (Ibid. 2006: 3–5.) Already at this stage, the EU described many of the elements of its upcoming policies in order to boost market integration. The main problems within the market are in the transportation of Directives⁷ and several obstacles to competition. This would lead to a situation where every EU consumer could quite effectively and easily exercise the right to choose one's electricity supplier. In order to advance the above scenario, infrastructure is seen to play an important role (Ibid. 2006: 7.)

The internal energy market is based on liberalisation. This means that the EU increases its involvement in national markets in a way that prevents pre-liberalisation monopolies remaining in a dominant position and the market would be less

⁷ Regulated prices preventing entry from new market players; insufficient unbundling of transmission and distribution system operators which cannot guarantee their independence; discriminatory third party access to the network, particularly regarding preferential access being granted to incumbents for historical long term contracts; insufficient competences of the regulators; no information given to the Commission on public service obligations, especially regarding regulated supply tariffs and insufficient indication of the origin of electricity, which is essential in particular for the promotion of renewable energy (COM(2006), 841 final: 6).

concentrated (COM(2006), 841 final: 15). Individuals and households have an essential role in the European Union's political goals. Energy and electricity market liberalisation is argued to benefit the citizens of the European Union and this is considered to be a public service of the highest standard (Ibid. 2007: 20). Public intervention is examined more closely in section 6.5. The building blocks of the integrated energy market are set in the Second and the Third Energy Package. As has been stated by the Commission, these are not the only mechanisms and there is a comprehensive legislation on the internal energy market for electricity and natural gas. These objectives cannot be achieved without grid connections and, therefore, the infrastructure is key to ensuring true interconnectedness of energy sources and, thereby, support for the market (COM(2013) 169 final: 6.)

In addition, there are elements that have their effect on the internal energy market endeavour which can be seen to advance its development. Most clearly, renewable energy is one of them. While affordable energy is crucial, the amount of fossil fuels is seen as the main cause of greenhouse gas emission (Gafakos et al. 2009: 434). Renewable energy is thereby connected to the climate paradigm. So that renewables can function and serve decarbonisation properly, they are seen to demand better market logic and better networks. Renewable energy is many ways a *primus motor* condition for the internal energy market, where the climate change takes an *a priori* structural form.

Green (2008: 98) argues that in order for the energy market to be successful it must follow the same logic as any market. The energy wholesale markets shift the focus from transmission to generation⁸ where the markets should

- *ensure the efficiency day-to-day operation of the generation sector;*
- *signal the need to investment in generation and demand-side management;*
- *promote efficient locational choices for these investments;*
- *compensate (sufficiently) the owners of existing generation assets; and*

⁸ This may be because of what e.g. Meyer (2012: 161) notes on transmission and distribution networks: having long remained regulated when generation and supply have been opened up to competition. Although this is changing constantly.

- *be politically implementable* (Green 2008: 98.)

In the following sections, we will see many of these elements within the European Union energy markets and examine them more closely. I will return to these useful notions from Richard Green when seen appropriate.

6.1 Why renewable energy matters

Renewable energy is named as one of the most crucial elements when any move towards a low carbon economy is made. It is a key component of the EU's energy strategy in order to achieve 20-20-20 goals. Renewable energy should constitute 37 % of the whole electricity mix by 2020. (COM(2011) 31 final: 2, 5.) The European Union Green Paper (2013) addresses the issues of climate and energy policies. All of the themes described in the previous section have their origin in an integration of several policies under the climate umbrella. This includes the economic aspects such as supporting the growth, competitiveness and creation of jobs throughout Europe (COM(2013) 169 final: 2.) The European Union makes an extensive connection between climate and energy policies on many levels. The starting point of the EU's energy policies are policy challenges, which are interconnected with climate, economic and security policies. Tackling climate change and energy distribution can be seen as the most prominent sustainability problems of our time. A noteworthy amount of economic actions are closely related to the consumption and production of energy (Gafakos et al. 2009: 434).

Green (2008: 96) has argued that to promote the low-carbon electricity system there is a centralized way to do so *based on nuclear power and fossil-fuelled stations with carbon capture and sequestration*. The alternative way is de-centralisation with the use of renewables. Again, he argues that in the future we will combine both of these ways. Economically, energy politics are seen as a challenge but as a great opportunity as well. Take for example, wind power. The economically feasible amounts of wind power resources are vast. Lehtovaara et al. (2014: 253) point out that the potential for offshore wind is *six to seven times as big as the predicted electricity demand of Europe in 2020*. Energy prices are seen to rise but, at the same time, the growing amount of green energy and renewable energy provides new

markets, especially for the renewables. Political development supports the route of de-centralisation. The energy policy for Europe is defined in the Commission communication *An Energy Policy for Europe*. The defining elements are sustainability and reduction of greenhouse gas emissions, the security of supply in regards to the reduction of energy dependency from imported sources, competitiveness in relation to the internal energy market and price volatility and the restraints on price rises, boosting of investments and creating jobs in the energy efficiency and renewable energy sectors (COM(2007), final: 3–4). As stated in the Green Paper (2013: 9) there is a close relation between the 2020 targets and the internal energy market.

Renewable energy is integrated into every goal that the internal energy market is aiming to achieve. As renewable energy is seen to play an important role in the achievement of 20-20-20 goals, it becomes economically important. The Commission's Energy 2020 Strategy argues that EU infrastructure and innovation policies are supporting the energy sector's development which means ensuring the economic competitiveness of renewables (COM(2010) 639/3). In addition, the EU Commission argues that more investments are needed in order to achieve the goals (more than one trillion euros) (COM(2011), 31 final: 7). This means that priority should be given to renewable energy investments and several benefitting instruments (e.g. grants, loans, quota schemes, fiscal incentives, tenders). For example, due to the merit order effect mechanism, wind production operating costs have declined by 20% over the 6 years (in 2011) and solar power by 57%, which has led to the falling of market prices. (Ibid. 2011: 8–9.) The need to phase out financial support for renewables is evident but the EU claims that it can only be achieved when *renewable energy costs are further declined, market failures have been corrected and they can operate in a competitive market* (Ibid. 2011: 9).

Renewable energy is mostly a technological advancement. The advancement of low carbon technologies was presented in the Strategic Energy Technology Plan (SET-plan) in 2007 and in this sense the EU combines the financing of the technological programmes into the 20-20-20 goals (SEC(2010), 1346 final: 19–20). The EU has adopted the possibility of ecological modernisation, which proposes the intertwining

of technological and economic issues into climate questions. In this sense, ecological modernisation is a political project in the premise of internal market structuring.

Rather than being only socio-economically structured, the EU's internal energy market remains a technologically oriented system. For example, Stankeviciute and Criqui (2008: 253) argue that the Commission did not specify the economic instruments for achieving the targets of renewables generating 20 % out of the total energy consumption. The EU has adopted a market-based approach where the accepted costs are known initially but not the quantities that could be achieved. This means that the markets are the mean to minimize the costs and at the same time provide incentives for the adoption and innovation of new clean technologies. (Ibid. 2008: 254.) This green capitalism raises a question whether it is theoretically feasible to think that businesses and consumers pursue environmental objectives because it is in their best interest to do so? Secondly, the problem with the process of environmentally encouraged incentives towards the modernisation of production and consumption is related to technology and science. A vast amount of technological advancements have been the source of contemporary environmental problems in the phase of industrialisation. (Spaargaren 2000: 51–52.)

The ability to reach the climate related 20-20-20 goals, alongside with the goals for renewables, is dependent on financing. The plan of the Commission is to achieve the goals at the lowest possible cost (as stated above, the minimum costs for society) which requires the efficient delivery of renewable energy from European nations and its integration into the single market. In this regard, member states must act on behalf of investor certainty and pursue a genuine European market. (Ibid. 2011: 14.) The EU argues strongly that renewable energy cannot become cost-competitive until it is integrated to the fully liberalised and integrated energy market (COM(2013) 167 final: 7). In addition, Stankeviciute and Criqui (2008: 257) argue on energy saving principles and targets for the EU and they assume that markets are an *a priori* condition for the effective use of energy and energy saving potential. The climate and energy package of 2009 is not the only document regarding climate and energy policies but, in addition, the EU adopted a comprehensive legislation in 2009 and 2010 on the internal energy market for electricity and natural gas. According to the EU, there are no other ways to achieve this than through the integration of the grid

and adequate grid connection. (COM(2013) 167 final: 6.) Next, I will consider the importance of the grid and network arguments in the light of the internal energy market.

6.2 Integrated network as a primus motor

One could argue that there is seemingly a chronological elaboration from the greenhouse gas reduction scheme to the integration of the networks, which again means the further development of the electricity markets. A Prerequisite for the integrated market is that the market is widely connected and the connections are actively used (COM(2009) 115 final: 3). In addition, network development would mean energy security. Integration of the network would secure the utilisation of the energy supply whenever a timely response is needed to a gas or energy supply crisis (COM(2009) 115 final: 12). Energy security in economics is regarded as the security of the energy supply (e.g. Francés 2011). The scarcity of the commodity in the market would then mean that consumers would be able to pay higher prices and, therefore, purchase the commodity in desired levels. Then again, *energy security includes a price element, meaning that security of supply is achieved when price increase or its economic impacts are minimized*. On the other hand, insecurity leads to a *result of rising prices and the impact of price volatility on consumer country economies*. (Francés 2011: 39.) Energy security is contextualised through a country's dependence, vulnerability and connectivity. Energy dependence of the physical and economic type are posing a threat to the EU, and as Francés (2011: 41) proposes, the answer is in diversification. Even though it does not resolve the problem of dependence, it diminishes physical vulnerability.

Creating an infrastructure would mean securing both the EU climate objectives and also creating a certainty for investors in the near future (COM(2013) 169 final: 2). Massive investments are needed on energy networks, especially to accompany renewable energy (Ibid. 2013: 5). The EEPR (The European Energy Programme for Recovery) of 2010 is money invested in energy programs, targeted for a rise from recession. This has accelerated the construction of many infrastructure projects and means that the positive outcomes of the interconnections in economics benefit the

situation and energy network development is seen as evident (COM(2014) 634 final: 8.)

As a consequence, the European Union Green Paper acknowledges that the large-scale integration of renewables into the EU's electricity system poses a challenge. The document shows that the coupling of the upcoming wholesale electricity markets will help to integrate renewable energy into the electricity systems. This requires massive investments and improvements in transmission and distribution grids. (COM(2013) 167 final: 5.) Consequently, grid access is also important and suppliers and users should gain easier access to infrastructure. In the light of these new technical rules, constructions such as cross-border balancing markets, liquid intra-day markets and smart grids benefit the large-scale integration goal. (COM(2012) 663 final: 7.) This will especially help renewables energy producers participate in a fully competitive market. One example of increased interconnectedness in practice is the partnership in the Nordic power market which has launched price coupling regions in 2014–15. An algorithm calculates day-ahead electricity prices, allowing the transmission from cheaper areas to more expensive areas. In Germany, interconnectedness has raised issues with reserve capacity, higher price volatility and greater power balancing requirements. Different areas will potentially affect each other more likely in the future. (Zakeri et al. 2015: 1–2.)

In the same argument, the EU claims that it did not address the issue of markets offering necessary incentives to invest in generation, distribution and transmission. In addition, network improvement creates opportunities for several operators to access the network. This is related to the question of unbundling of the TSOs and DSOs in order to create better third party access (TPA) (COM(2006) 841 final: 10). The Commission's policy demands that more volume is invested into the infrastructure renewal. This means that much of the money needed does not come from public funding but from private sources. These projects are capital intensive and, therefore, the EU must promise the investors a regulatory framework where they can safely operate and lower risks.

Renewable energy is an important element in the internal energy market argument and, therefore, the Commission highlights network development as well. Renewable

energy needs, more than the conventional, integration of networks. Again, networks are very important for the integration of the market across the nations in the European Union. These could be seen as *a priori* conditions for the internal market. In the following sections, I will discuss what mechanisms the EU uses in its process of market construction and how the market has been created on a more isolated level.

Most of the grid infrastructure and wholesale markets *were designed to accommodate centralised and dispatchable national power output from conventional thermal and hydro-electric plants* (SWD(2013) 439 final: 14). Today, renewable energy sources (wind and solar) represent a vast majority of the new online capacity. By creating this contradiction, the EU argues on behalf of a renewed grid infrastructure. One cannot discuss the infrastructure without referring to energy security. Security has been mentioned earlier in this chapter and the shift in environmental policies towards an energy discussion has increased the interest in energy security. In geopolitical terms, interconnection is an important aspect of energy security. The more connected the energy network is, the more security it provides, and the number of connections increase its value (Francés 2011: 41.)

6.3 Promises of regulatory harmonisation

The member States are very different in how they are able to integrate energy policies and meet targets. Therefore, the answer to resolve this is to harmonise. Aside from liberalisation of the energy markets, harmonisation has been one of the main goals of the EU. Yeoh (2006: 497) argues that harmonisation was, and has been, a way to achieve a simplifications process for multiple sources of regulation. The burden is set on the wealthier states. Some states are possibly working against the objectives of the internal energy market but the Commission highlights fairness and encourages using the mechanisms, such as trading, in order to allow cost efficient achievement of differentiated targets. (COM(2013) 169 final: 12.) Regulatory measures are more clearly taking place after the financial crisis. The EU argues that nationally inspired policies prevent the internal market from working effectively (COM(2012) 663 final: 2–3) and historic incumbents hold most of the power generation (80% in 2012) (Ibid. 2012: 3). The Commission argues that energy regulators must be strengthened on a national level and be given a lot of power on

issues such as third party access networks, access to gas storage, balancing mechanisms, market surveillance, compliance with functional and account unbundling for DSOs, cross border issues, consumer protection including end-user price control, information gathering and sanctions for non-compliance (COM(2006), 841 final: 13). This calls for changes in the regulatory framework. The internal market needs harmonisation measures and different segmentation such as local tariff structures and balancing areas that again act against the development of the internal market.

Due to the fact that the legal foundations of the internal energy market have been set in the energy packages, especially in the Third Energy Package and the complementary legislation, the rest is up to more enforced and improved implementation. The main argument is that the development of the internal energy market should not be held back by regulation and regulatory oversights that are nationally focused only (COM(2014) 634 final: 10). As has been pointed out in the previous section, this is to encourage financiers to invest in infrastructure building by harmonising the legal framework.

Diaz-Rainey et al. (2011) have studied the financial regulation of energy and the environmental markets. They point out that there are three main reasons to be interested in the regulation of financial risks. First, liberalised energy production and market instruments created to resolve environmental issues have developed new energy, environmental (European Union Emission Trading Scheme, ETS) and commodity markets. In addition, these markets have characteristics of financial innovation and are, therefore, targeted by increasing regulations for example on their transparency. As an example, the REMIT regulation (Regulation (EU) No 1227/2011 on wholesale energy market integrity and transparency, OJ L 326/1.) from the Commission has tightened the regulations and made central information in the electricity market more transparent through the ENTSO-E based platform. (COM(2014) 634 final: 11). Secondly, financial investors in the commodity markets may affect price formation. Thirdly, they argue that most of the academia have addressed market design and not financial regulation, which is one of the interrelations between energy and environmental markets. (Diaz-Rainey et al. 2011: 356.)

There have been several policy problems slowing down the desired advancement of the true market. In 2009, the necessary infrastructure was not defined and the harmfulness of national support schemes for renewables was underestimated, as national measures should not lead to the fragmentation of the internal market. (COM(2013) 169 final: 6, 9.) The necessary incentives to invest in the generation, distribution and transmission of energy were overlooked. The cost competitiveness of renewables has a crucial role in energy market integration. Interestingly, the EU Commission binds these together. Until renewables become cost competitive, the solution is to fully integrate and liberalise the market in order to allocate and mobilise investments more efficiently (COM(2013) 169 final, 6–7.)

The internal energy market will not be completed if this remains a purely national matter, where cross-border impact is not fully taken on board. (COM(2014) 634 final: 12)

In addition, tariff structures are important for the fairness of competition. As national borders do not have that much of an effect on energy flows anymore, tariff compositions are to be built based on common rules. This is a one more necessity argument from the EU. (COM(2014) 634 final: 12).

6.4 Ideal of transparency

The EU is targeting stable and low electricity prices through market integration as it claims that differing electricity prices for households is a sign of insufficiency (COM(2009) 115 final: 7). In order for the market to have a decent take off and progress, the EU claims that one of the main elements in its development is pricing. Pricing, as well as infrastructure are seen as prerequisites. (COM(2014) 634 final: 10). Secondly, the transparency ideal should cover the regulatory framework of the EU and national legislations.

Transparency is one of the major themes that the EU regards as important for a more liberalised market structure. This means that dominant companies would need to reveal market information and, thereby, smaller companies would be able to track the underlying causes of changes in market prices (COM(2006) 841 final: 15). In many Member States, open energy markets and regulated energy prices coexist

(COM(2010) 84 final: 12). In addition, affordable energy supply appears to be one of the major concerns of the European Union (COM(2012) 663 final: 2) and, therefore, consumer prices are seen to be important. The Commission (2014 634 final: 3) tries to achieve stability and predictability of energy prices for both household and business practices.

Competitive pricing increases with the opening of the market, cross-border trade and market integration and stronger competition. *Forcefully enforced* competition is seen to keep prices at a level benefitting the consumer and helping to keep manufacturing jobs in the EU. The visibility of price components is important in order to track price development and understand the effect of prices (COM(2012) 663 final: 4.) Again, the entire wholesale market needs more competition. Increased competition has had a significant effect on wholesale prices. According to the Commission (2014: 3), the prices have fallen between 35 % and 45% in the years 2008-2012 and have remained stable for gas. Again, the price factor helps to adjust power generation as well by providing *important information on the value of the traded commodity* (COM(2014) 364 final: 6). Investment needs can be analysed by using this information and it helps to invest more sensibly economically.

From the perspective of demand, participation like this requires for national legislation where tariffs are fair, transparent and cost-effective. This is especially important when it comes to the side of demand, where the electricity customer matches the demand of power supply better. This again, is connected to smart grid technologies. The market needs to adapt to the concept of demand response. The EU claims that this can be done by creating market-based, transparent incentives for the demand response that reward participation through dynamic prices without constraints and, therefore, by removing blanket price regulation and moving towards a possibility to time-optimize and get rewarded for doing so (SWD(2013) 442 final: 9). Secondly, the EU claims (SWD(2013) 442 final: 11) that the market needs to be opened in order to fully exploit the potential of demand response and ensure market transparency. Notably, transparency needs to be tackled in the markets controlled by TSOs and DSOs. Thirdly, a smart metering roll-out system is the provider of a technical solution to measure real-time consumption. As a result of this development,

75% of EU households should benefit from smart metering by 2020 (SWD(2013) 442 final: 12).

The idea in the Directive 2009/28/EC on the support for renewables included cooperation mechanisms to increase cross-border support for renewables. Those Member States that produce more energy than their targets require could sell the energy and benefit from it. In addition, it would create jobs, increase security and support technological innovations indirectly (SWD(2013) final 440 2–3.) Yet again, the EU supports its economic policies by using the arguments of security and jobs, which are related to energy. Cooperation mechanisms have not worked properly and the Commission claims that the reasons are (Ibid.,2014; 4):

- *Perceived technical complexity of designing the most appropriate cooperation model and reluctance to take associated "first mover risk";*
- *Domestic policy considerations – in particular communicating to the national electorate the benefits of cooperation over reliance on domestic resources (with their various perceived economic benefits);*
- *Concerns that cooperation might interfere with the effectiveness or efficiency of domestic policy measures and in consequence security of supply and other energy policy goals;*
- *Perceived uncertainty and complexity of assumptions underlying any appropriate cost and benefit sharing arrangements between Member States.*

The cooperation will begin only after defining that political risks are lower than the perceived economic and non-economic benefits. Diaz-Rainey et al. (2011: 357) argue that the so-called *techno-markets* demand price signals as a crucial part of altering the energy system and creating change. This approach is not only altering the energy mix and moving demand from conventional fuels to renewables but also creating more demand responsive customers. This statement is non-arguably something we can relate to after the previous analysis of EU documents.

6.5 Growing influences

In the following sections, I will introduce and elaborate on the EU's Commission policies aiming to increase the amount of renewables in the European Union energy market. I have divided them into two measures, which are similar but also different to each other. First (6.5.1.) will discuss the roles of consumers in the market reform. Household and industry consumers are in an important position when aiming to boost certain forms of energy. The EU approaches consumers by defining policies where consumers have a large freedom of choice and ability to monitor their use of energy and, thereby, have an increasingly important and effective role in the electricity and energy market.

Secondly, as stated many times, the reform of renewable energy and electricity demands that the EU create a stable and balanced, truly competitive market. Due to the reality that energy has always been subjected to some form of regulation, the EU needs to promote such means of public intervention, which support the use of renewables. Therefore, increasing fairness and competition in the renewable sector and with nuclear energy and other subsidised fuels.

6.5.1 Consumer roles

The EU Commission (COM(2006), 841 final: 20) clearly argues that *without energy people cannot live in today's economy and social environment*. Due to the deregulation of energy markets worldwide, one of the main themes has been increased participation from the demand side (Makkonen et al. 2012: 431). Electricity is highly essential for households and industries all across the European Union. The money spent on energy within the EU is not equal due to the fact that lower income households and rural areas use more energy proportionately than higher income and urban areas (Ibid. 2007: 20). The EU applies policies and measures that aim to empower the consumer to take on a more active role and helps them to fully exercise their rights (COM(2012) 663 final: 2) when selecting their energy supplier and affordable prices. The aim is to achieve more choice and flexibility (COM(2012) 663 final: 3). A form of justification for infrastructure investments is created through the consumer-level. The grid progress and smart grids

able the consumers to adjust their behaviour and save energy (COM(2014) 634 final: 3).

The climate argument is, without a doubt, at the very core of EU energy policies. The internal market leads to networks gaining access to an increased amount of wind and solar power. The second largest argument is more or less efficiency. By this the EU means the benefits for the consumers and customers to be able to react on price signals. Thirdly, reading consumer behaviour leads into the ability to optimise the use of power generation, transmission and distribution infrastructure. (SWD(2013) 442 final: 2.) The consumer side is relatively important.

The EU intertwines all of the typologies used in this study together. Also, market and grid integration has its connection to the customer argument, and the EU sees that increasing cross-border trade creates a more competitive market and, again, more competitive prices and services (COM(2009) 115 final: 3). Progress made in energy market integration in the customer dimension is measured through switching and pricing. In 2009 only a few member countries were able to provide information for switching (COM(2009) 115 final: 10–11.) Switching is an energy policy indicator of the success of market deregulation (see e.g. Yingkui 2014). Studies show that there is a low switching activity in the residential electricity markets but smart grid implementation is seen to alter this significantly (Annala et al. 2013: 460). The retail market shows that switching has been active in some markets (e.g. in Australia) while customers in other areas remain highly passive and rely on former monopoly companies (Ibid. 2013: 461). The EU sees households and SME's (Small and medium-sized enterprises) as too passive. The Commission points out a couple of possible reasons for passiveness such as the lack of transparency, inefficient customer protection and lack of consumer-friendly information. This means that value-added services are not developing. (COM(2012) 663 final: 9.) Switching might become more feasible through smart meter technologies and consumers might be able to control their consumption behaviour in the changing price circumstances by avoiding energy consumption in peak periods and vice versa (Ibid. 2012: 10).

According to the EU, electricity is a high elasticity product, which means that consumers do not easily change their consumption behaviour even in a situation with

relatively high prices (COM(2006), 841 final: 15). Regulated prices are mentioned to be negative for the consumer, and regulated prices are seen as harmful for the proper functioning of the internal energy market. This again refers to the premise of competition, where price regulation creates a distortion. Therefore, the Commission argues that price regulation is not compatible with EU law. (COM(2009) 115 final: 11–12.) Although, we must remember that price regulation is regarded as a necessity in some event regularities as seen in chapter 6.4.

Consumer behaviour is linked to the powerful incumbents that prevent the entry of newcomers into the market with attractive services and more dynamic pricing. On the other hand, in some cases, prices are regulated by the Member States in a way that they remain below market cost for some or all consumer groups. This is a serious obstacle for the competitive market and it is called *economically unsustainable* (COM(2012) 663 final: 10.)

The EU argues on behalf of the economically weaker consumers and admits that subsidies used as social policy are not as cost-effective means for consumers as for supporting their energy efficiency measures (Ibid. 2012: 11). This is tackled by planning other measures (which are not specified more than stating *further assistance of non-financial character*) for weaker consumers in order for them to be able to take advantage of their rights and participate in the market more efficiently (Ibid. 2012: 11). In this sense, the EU is not using social policy measures but rather tries to solve socio-political factors through market means, trying to assist the customers in a way that would more or less benefit them but, at the same time, advance market progress.

The demand side of participation calls for the consumers to take and have an active role in responding to energy consumption (SWD(2013) 442 final: 5). As consumers are planned to have more influence on energy consumption and, thereby, on production as well, they need to experience more benefits. A growing part of the energy bill is taxes and surcharges, which create more expenses. The main benefit for the consumer is the lowering price. Wholesale market prices need to be shown to the consumers. De-centralisation of production through competition in the single market means that consumers might be able to control their energy bill. (COM(2014) 634 final: 7.) As consumption becomes more visible to the consumers, they are able to

act based on feedback and save energy. In order for the demand side response to happen, the EU needs internal energy markets. (SWD(2013) 442 final: 6–7.) For the consumer, both household and industry, the key is in the development of technologies that break down the barriers of wholesale and retail markets. Then a consumer would be able to adjust their behaviour and benefit from price signals from the wholesale markets. Freedom of choice is inseparably connected to the previous statement (COM(2014) 634 final: 12.)

6.5.2 Public intervention

Despite of the presented progress in the creation of the internal market, historical operators are holding most of the market share within the EU and act as barriers for the entry of new operators. (COM(2012) 663 final: 8). Therefore, the Commission is enforcing competition rules, which ensure that actions of public authorities do not lead to market distortions (Ibid. 2012: 8). The key role of the Member States is to create support mechanisms for the energy sector to secure investments there and in the European region. The premise of this is, again, to support the renewable energy sector. Secondly, the aim is to minimise the costs for individuals and the industry by supporting willingness for private investments. Most commonly used instruments to support renewables are feed-in tariffs, feed-in premiums, quota obligations, tax exemptions, tenders and investment aids (SWD(2013) 439 final: 5). Liberalisation of the market creates many uncertainties. Generators, consumers and suppliers buy and sell electricity on the market freely and the EU as a regulator must ensure that the market is functioning.

As (Ruostetsaari 2010) has explained, the energy markets have shifted from regulated government control to de-regulation and liberalisation processes and the role of the public sector has diminished. Electricity market deregulation has been trending during the past three decades and, in the EU, it has been advanced in the processes of market directives and regulations (Makkonen et al. 2012: 431). The nation-states especially have given a large amount of their power to the European Union. This process has reduced, and aims to reduce, the governments' role in the sector and advance competition (Ibid. 2012: 431). The Commission calls for more market exposure for the renewables. The Commission argues that competitive energy

markets should be drivers for energy production and decisions to invest in it. This should be done more efficiently through market orientation. In order to achieve these goals, the Commission argues on reducing costs now. One of the elements it highlights is the avoidance of territorial constraints on the use of technologies and equipment feedstock. Support schemes need to address both the short-term goals (20-20-20 targets) and long-term goals highlighted in the EU Energy Roadmap 2050. (SWD(2013) 438 final: 8). This requires for various support scheme designs to build up as well, technological innovations, economies of scale, cost-reductions etc. to reach the 2020 targets but, in addition, achieve decarbonisation. (Ibid. (2013): 8).

The commission wants to support feed in premiums as the more sophisticated form of feed-in tariffs. By allowing renewable energy to be sold in different market places, the premium mechanism makes and forces renewable energy generators to become more active market participants (Ibid., 2013: 9).

Communication from the Commission (COM(2013)) explains and introduces the measures of public intervention. The Commission outlines the importance of a holistic approach to intervention and the need to estimate how these measures would impact on CO₂ emission reduction targets and RES (renewable energy sources) (SWD(2013) 438 final: 18). Again, the policy includes secure and competitive energy, including the climate targets. Fair and open competition is at the heart of EU free market ideology. In order to achieve this, the EU includes public intervention to its policy instruments. The market does not provide an optimal level of renewables without public intervention (SWD(2013) 439 final: 3). As stated in this paper, regulations have always existed in modern energy production. Energy has a long history of public intervention, which has an impact on how the market works and how investors contribute to the market (SWD(2013) 439 final: 3).

Again, the EU has a premise on the increasing amount of renewable energy. In order for the market to provide an optimal amount of renewable energy, the EU needs public intervention. First, renewables need more competition in the IEM. Secondly, there is an unfair competition with other forms of energy (fossil fuels and nuclear) due to the subsidies they receive. Change needs to be implemented without

discouraging investors, and then there is a possibility to support more market-oriented design features (SWD(2013) 439 final: 4).

It is not necessary to go through each intervention method one by one here, but it is worth mentioning that the only form of intervention the EU has a negative stance on is feed in tariffs. The Commission recommends that member countries would give up on feed in tariffs and replace them, for example, with feed in premiums. This way renewable energy producers would be more exposed to market price signals (SWD(2013) 439 final: 12). Feed in tariffs are seen as one of the easiest support schemes since they insulate market entrants from price risks, but they also *exclude producers from actively participating in the market* (Ibid.(2013): 12.)

The Commission highlights that support schemes alone are not enough to guarantee success in terms of renewable production. In addition, member states and the EU need to implement the schemes into long-term predictable policies and strategic frameworks (Ibid.(2013): 13). The market and electricity system needs to absorb wind and solar power better, so that market players will be able to operate more freely across borders.

Renewable energy has been granted priority dispatch rights. This means that under the Directive 2009/28/EC, the EU helps new entrants of renewable energy to the market, which is dominated by centralised power incumbents. As time goes by, this priority may become unnecessary. The amount of the use of renewables needs to increase but for now they suffer from volume risks. (SWD(2013) 439 final: 16.) Normally, cheap price in the generation of energy would rank the available sources of energy based on ascending costs. Due to the current price of renewables, they are not put forward in the merit order. However, since renewables have low operating costs they may be able to benefit from this and rise in the order. Merit order is seen imbalanced due to the neutrality of grid operations. The grid unbundling of TSOs and DSOs is introduced in the next section.

National public intervention measures could lead to a situation where investors would choose the best markets from different countries. Again, in the EU, the Commission's policy on the internal market would include a similar condition all

over. Firstly, there are convergent support schemes where the systems are more comparable and compatible. Secondly, the Commission highlights the need to move renewable energies into the integrated electricity market. The EU highlights that market integration is the only way to increase the amount of the use of renewables in a cost-effective manner. (SWD(2013) 439 final; 22.) Therefore, the EU claims that the Member States should open up their support schemes to each other. Different natural resources and varying investment mechanism lead to differences in cost structures. A properly functioning market is the cheapest way to support the growth of the use of renewables (Ibid(2013) 439 final: 23.)

Liberalisation poses threats, since no single entity would no longer be responsible for the reliability of the system. As has been stated, the role of public authority would be diminished to monitoring and ensuring the energy supply. According to the EU (SWD(2013) 438 final; 4), this role has become more important. Growing roles of monitoring is another form of intervention. Generation adequacy, meaning the security of supply, is more difficult to assess in the current and upcoming fully integrated market of low carbon technologies. Therefore, the EU addresses the issue by suggesting more public service obligations on generators, suppliers and TSOs. These measures must be *necessary, proportionate and transitional in nature*. The Commission limits public intervention to means that have *limited distortive impact on competition and trade*. (SDW(2013) 438 final: 3.) Public intervention should be limited to measures that support decarbonisation transition, and encourage a move towards it.

Generation adequacy should not be assessed purely on a national basis. The coupled electricity markets and increasing integration create situations where energy flows across borders. When prices on the other side of the border are higher, it means that energy flows out and vice versa (SDW(2013) 438 final: 5–6.). As mentioned, market coupling is a step towards the integration but it makes it difficult to assess generation adequacy. In addition, electricity sources such as the wind and the sun create their own difficulties for prognosis. Public intervention is important in ensuring generation adequacy. The EU addresses the importance of liberalised markets, where investments are not guaranteed by the state.

Only where there is a real threat to generation adequacy and security of supply as a result of closure or mothballing does the financial viability of existing plant become a matter of public concern. It is very important that there should not be state support to compensate operators for lost income or bad investment decisions. (SWD(2013) 438 final: 10.)

Public intervention means a states' interference in a market based, basically capitalist economy (Douglas 2011: 10–11). This means that states are seen to correct market failures. The EU sees that there are market failures and regulatory failures in generation adequacy. EU documents mostly refer to a careful regulatory regime. Regulations should not create uncertainty amongst investors, even though the lack of a stable regulatory environment is evident. Consequently, according to the EU, public interventions on generation adequacy should be done carefully and based on steep analysis (SWD(2013) 438 final: 12–13.)

In addition to potential new interferences, many support systems exist already. Especially the ones targeted for renewables (as shown earlier in this chapter). Since the advancement of the use of renewable energy is seen as an important policy goal, the EU wants to assure that incentives for investments for RES are stable and predictable, especially in the situation when fossil generators exit the market distorting price signals. (SWD(2013) 438 final: 14–15.) Besides the above support mechanisms, the Commission argues on behalf of removing environmentally harmful subsidies especially for fossil fuels. This may help to reduce the number of interventions. Subsidies interfere with the accuracy of market signals. The Commission argues that these subsidies harm the security of supply, and subsidised generators are incapable of reacting to the changed environment with RES and changes within the supply and demand. (Ibid. 2013; 15–16.)

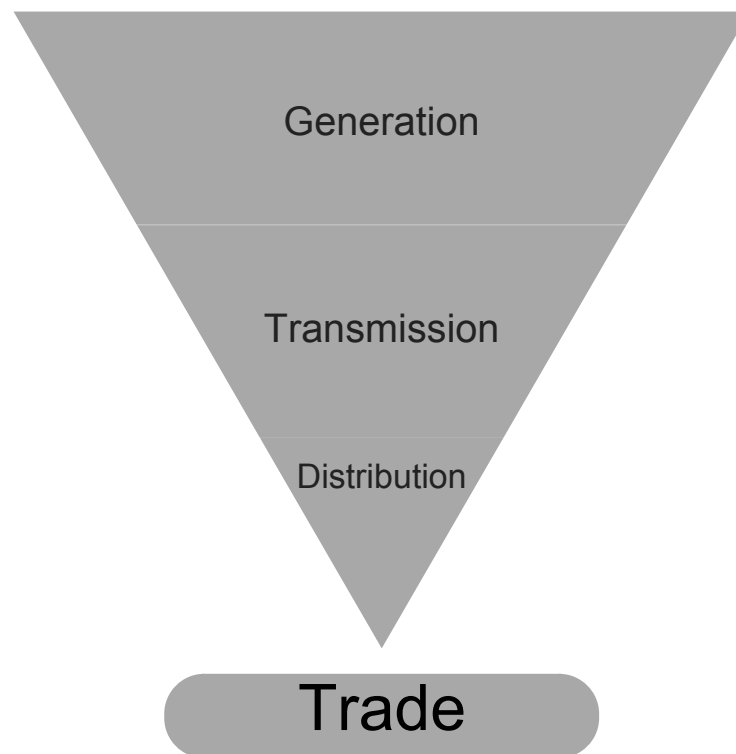
Due to the changing conditions with RES and other politically selected targets, securing the adequacy of generation is important. Public intervention and other means stated above are used mainly to ensure this adequacy. The ability to deliver electricity must be maintained until the market mechanisms functions properly. It could be said that public intervention is needed for two reasons. First, to support rightful measures in order to achieve goals for integrated markets with the increased

use of RES. Secondly, intervention helps to tackle inadequacies while the internal market is seen to be imperfect and functioning poorly. The next section will briefly discuss the importance of TSOs and DSOs for a market-based approach on energy.

6.6 Measures of unbundling – roles of TSOs and DSOs

The whole energy paradigm has undergone great changes during the past decades, many of which have been explained here before, not the least due to the actions taken by the European Union. Especially in the field of electricity and gas, the system has been shaped by the increased amount of privatisation, and the market has been restructured in many ways. As I have discussed previously, the change towards liberalisation started in the UK and rapidly advanced in the 1990s. Srivastava et al. (2011: 170) argue that the motivation for restructuring has not always been the same in every country. They point out that in some countries the main reasons have been *privatisation, corporatisation and functional separation of the pre-existing supply authorities*. In addition, reasons have included *decentralizing government control and increased privatization of electrical industries*. They continue that the most common feature of all of the restructuring has been the unbundling of generation, in both the transmission and distribution sectors (Ibid. 2011: 171). In the field of electricity, the EU has mainly targeted ownership unbundling.

Without the unbundling, the Union-wide network had to be balanced against the respect of public service requirements and public security in the Member States and, therefore, the EU needs to control ownership within the internal energy market by separating supply and generation from network operations (Charalambous 2014: 71). Transmission and Distribution System Operators (TSOs and DSOs) are relevant actors in a market-based approach on energy. Ownership separation in network industries is influenced by the nature of economics. In the EU, the unbundling process dates back to the 96/92/CE Directive of separating TSOs and DSOs from generation and trade (Soares and Sarmiento 2012: 159, 175.)



**FIGURE 1. ELECTRICITY INDUSTRY VALUE CHAIN
(SOARES AND SARMENTO 2012: 174)**

According to the EU, their role is balancing the grid and opening it to new players (SWD(2013) 442 final: 8). Again, renewables are the elemental argument of the TSO and DSO unbundling motivators. Therefore, notions of unbundling are one the main arguments by the European Union when progressing the IEM. Traditionally, the electricity value chain was build up from generation to transmission and again to distribution (local transport at lower voltages) to the end user, including retailing activities such as selling the electricity (Soares and Sarmento 2012: 174). In the new paradigm, these functions are separate and generation and trading businesses are competitive with vertical and horizontal separation (Ibid. 2012: 176).

For the EU, the mutual co-operative role of the TSOs and DSOs is a key element in the modern development of electricity grids and the way to assure the access for renewables without inadequacies. For example, when the amount of wind and solar electricity increases and national markets integrate into regional markets, TSOs can

make use of backup and storage options in other Member States (SWD(2013) 439 final: 14). The real-time balancing of production and consumption of electricity is a difficult technical task. After the financial crisis, the Commission has argued for the provision of incentives to invest and implement more active transmission and distribution systems, for example, in the form of smart meters and smart grids, which are seen central for the internal market for energy (COM(2010) 84 final: 13). The reason for this is to prevent *discriminatory behaviour of network owners and to enhance market entry and competition* (Meyer 2011: 96).

Within the EU, networks are seen as strategic assets serving the interests of an integrated entity, not the overall interest of the customers (COM(2006) 841 final: 10). Still, for example, Shiravastava et al. (2011: 170) note that more choice for customers and the selection of reliable service have been *a priori* reasons for the restructuring of the energy and electricity industry. Through competition, the final result should be lower prices for end users (Soares and Saramento 2012: 175). In unbundled markets, the electricity price for industrial consumers decreased by 3% and, in the markets without unbundling, prices increased by 6%. Unbundling seems to play an important role in the competitive nature of the market. (Ibid. 2012: 177.)

There are mainly two unbundling types that the EU discusses in the internal energy market context – legal unbundling and ownership unbundling. All of the three legislative energy packages include actions for legal unbundling (Meyer 2011: 96). The Third Energy Package includes unbundling rules and mandates the establishment to a ten-year energy network development (COM(2014) 634 final: 8). The EU has altered its focus towards network development by changing the Member States' National Renewable Actions Plans into network development plans. Networks have become more important in EU policies. This means that there are business opportunities arising in that sector as well. New practices evolve and financing regimes are built around networks as in the process of unbundling. The markets are unbundled in a way. It could be said that the support for the entry of renewables to the energy field has created some problematic constructions. First with infrastructures, both physical such as grids and non-physical such as tariffs, and other support mechanisms. Secondly, with the markets, which actually entail the operators behind infrastructure. By unbundling TSOs and DSOs, and supporting competition in

the operator sectors, the actual markets are finally created. The playfield for energy is open for distributors and producers to compete in.

Ownership unbundling creates competition in the electricity markets but may lead to a concentration through mergers (Soares and Sarmento 2012: 159). Unbundling is seen important since the grid transmits energy from various sources, which are very different from each other in nature. As has been explained in the previous section, the EU uses multiple means to ensure the access of renewable sources to the network. The EU wants to assure that renewables are not penalised because of the non-competitive behaviour of imperfectly unbundled TSOs which could harm the renewables by causing inadequacies (SWD(2013) 439 final: 16). Network industries are utility industries which produce activities that are supplements and separate from the final good or service. In addition, these industries have common features of being vertical in their nature, having strong economies of scale and the need to assure incentive to invest in network upgrades through the expected return of investments. Again, vertical integration has required strong regulation in order to avoid anti-competitive behaviour that could have negative effects to the willingness to invest. (Soares and Saremento 2012: 160–161.) Vertical economies exist regardless of whether there are benefits to be involved in more than one function only. The electricity sector is a very good example of this and the benefits are evident (Meyer 2011: 97.)

Meyer (2011: 97–98) argues on behalf of vertical integration and shows three dimensions that could be distinguished from the vertical economies of electricity. First, coordination economies are the result of balancing the supply and demand of power generation in real-time and where the information flow and synergies can be achieved more efficiently than in separate companies. Electricity generation and network assets are risky and long-lasting investments and other market players may behave opportunistically with opposing interests. Therefore, market risks can be adjusted vertically in the investment intensive environment. In addition, when the retailers are not integrated, the supply must be bought from independent generators when customers may face price volatility. Lastly, many studies have shown the cost-efficiency of vertical scope economies. The EU's approach to unbundling does not follow the same assessment. Somewhat against Meyer's argument, the European

Union concentrates on the European perspective rather than being company-centred (COM(2012) 663 final: 6–7.) Properly working internal energy market functions are more important than the economies of scope for companies and, for example, without the unbundling of transmission and supply, new business entrants are unable to compete fairly in the market.

The unbundling of TSOs and DSOs has been seen to lead to better third-party access to the networks. The EU claims that this will lead and has led into tariff structures that encourage competition and remove cross-subsidies (COM(2006) 841 final: 10.) In the meantime, when TSOs are not perfectly unbundled, the EU has, in addition to the priority dispatch rules, introduced *interdiction of significant curtailment rules of renewable energy contained in the Directive 2009/28/EC*. This is a way to improve the status of renewable energies while the infrastructure contains inadequacies. The particular inadequacy here is the imperfect unbundling of the TSO. The electricity infrastructure is looked after to keep in pace with the growing infrastructure mix, especially coming from the sources of renewable energies (COM(2013) 439 final:16.)

Legal unbundling is considered better since it *requires that the grid should be owned and operated by a firm whose exclusive activity is network business* (Soares and Sarmento 2012: 176). In addition, ownership unbundling is believed to be the most effective way to ensure the choice of energy consumers and encourage investment. The Commission strongly argues that any measures, which would lead to inconsistencies between the national dimensions and the dimensions of the single energy market, must be found an imperative cause for implementing public intervention. This means that the above is the only reason to conflict with the freedom of capital movement and the right of establishment. (COM(2006) 841 final: 12.) In this sense, the social realm of the EU, that comes from its pillars and structures, restricts and guides the way in conducting the internal energy market.

Unbundling is one of the core restructuring elements of energy markets we have seen over the years (Joskow 2008). In addition, the EU does not make any exception to this. The EU has been a forefront supporter of unbundling instead. Over time, the EU has introduced measures of legal unbundling of TSOs and DSOs in energy packages

and in Directives. Liberalisation has not been an easy task for the Union and the IEM has proved out to be a difficult process. Most of the wholesale markets are dominated by a few generation companies only (Böckers and Heimeshoff 2014: 103). The traditional vertical integration of a transmission and distribution system in the economies of scope has been seen harmful for the liberalisation of the energy market and for European Union policy goals especially. Although unbundling has not always been proved as beneficiary and non-problematic, it is one of the main ways to support IEM goals and other policies, such as the promotion of renewable energy forms.

7 CONCLUSION

I was raised in Finland in a town called Kemi, located in the Bay of Bothnia in the Baltic Sea. Kemi had a harbour area with three windmills. Together these windmills provided power of 900 kW (VTT 2013, Wind Power Statistics in Finland). Little did I know that someday I was going to write a thesis where wind power has a grander role. This paper participates in the conversation of energy policies on the supra-national level, in the field of international business. In this conclusive discussion, I will explain the results of the analysis and provide business and policy suggestions when needed.

Energy is a sum of many factors. Retroductive reasoning requires us to maintain the basic hypothesis until it is proven or disqualified. As I have explained in this thesis, energy is related to multiple forms of politics and policies - including the economic spheres. This paper has concentrated on the European Union internal energy market and, hypothetically, the policies formed around the market were seen economically important for the EU. Frequently, in the context of a market, the idea of energy revolves around competitiveness, even though we cannot avoid discussing many other aspects related to it such as security, the environment, climate and so on. Despite of and due to the economic recession, which began in 2008, energy policies remain and have remained at the core of European Union decision-making. The price and availability of energy and electricity is seen as the answer to many of our economic problems, and the European Union joins in by arguing with a strong belief in their policies. The European Union justifies its policies by problematising energy and providing answers to solve those problems. The liberalisation of energy and electricity production continues as market integration evolves.

Public interventions are good examples of mechanisms which the EU must undertake to ensure the efficiency and functioning of the market. Despite market mechanisms, the market entity itself is still incapable of ensuring that the demand of electricity is met properly at all times. Particular concerns are raised on the subsidies provided to fossil fuels with high CO₂ emissions. I have pointed out many justifications for intervening in free market ideology. The Commission is not hiding these justifications but instead underlines the importance of demonstrating these

justifications in Member States when they decide to intervene accordingly. Energy and electricity still remain important “national” assets.

Energy also deals with security due to its social nature, and the EU enhances that through its discourse. Energy is seen as a security matter and interconnections will make it even more so. The interconnection between neighbouring countries is one of the key elements in enhancing the security of supply. Due to these policies, an increased number of interconnections will follow, decreasing the vulnerability of European nations. The European Union supports diverging energy mixes only, which again leads to the need to connect. Economically, this means that it will be more expensive to stay locked in to weakly interconnected national systems. As stated in the Commission Staff Working Document (SWD(2013) 438 final: 20–21), purely national markets are not as flexible and do not recover as easily from peaking electricity demands. After all, bringing the demand side into the market, and supporting the improvement of infrastructure with increased integration, would decrease the need to intervene in order to ensure generation adequacy. Grid integration is one of the main concerns of the EU and serves the purposes of market creation perfectly.

Honestly speaking, there is relatively nothing too new in European Union policies on energy. The European Union has been on the frontline to support and justify deregulation, restructuring and liberalisation of the electricity markets. In this thesis, I have shown that it has followed a certain political path through climate, technological and economic discussions and trends. Despite the slight changes in policy after the economic crisis in 2008, the basic stance has not altered much during the last decade. Isoard and Soria (2001) have raised questions relating to socio-economic aspects in the energy policies rather than focusing on their technological aspects. This paper has participated in that discussion as well.

After all, it is difficult to separate the political from the economic, as has been stated many times in this study. This thesis followed the philosophy of science understanding of critical realism which, to simplify extremely, sets itself between the anti-naturalistic and positivistic traditions. In addition, critical realism in economics has made a stand against pure econometrics. I have analysed the written material of

codified and non-codified orders from the European Union. In the realm of the Real, by producing reality through its texts, the European Union creates systemic processes which take place in a socio-political world and historic continuum.

These actions are causally followed in the realm of the Actual, in a market orientation called the internal energy market. Again, this market derives from a socio-political process of modernisation. This political stance is often called the theory of ecological modernisation. A part of ecological modernisation is depicted especially in the techno-market orientation of the internal energy market. Networks and other techno-economic solutions are the aspects that truly create markets for electricity. Environmentalism and climate change solutions are a part of market-based incentives introduced to increase the relation between EU institutions and the internal energy market process.

Many measures such as priority dispatch rights and regulations are not ideologically free market oriented. Despite unbundling and liberalisation, the EU's internal energy markets cannot be regarded as a single market yet. For example, Böckers and Heimeshoff (2014) note that energy prices are mainly driven by similarities in the regional markets and, therefore, actual market integration, antitrust markets and wholesale markets are not necessarily the same. It could be argued that this would not be the case even if the EU market would be perfectly integrated by now. Internal energy markets are markets of institutionalism taking place in a historical continuum of modernisation. Environmental and energy regulation have proved to be difficult milestones for not only the European Union but many others as well. Maybe that proves that a market is quite a good example of a social relation that is difficult to regulate and to give a certain form.

Due to ecological modernisation being a political program, the EU supports economic and technological private actors by providing an internal market. When policies are formulated, they have their effect on the economy by providing certain solutions for modern problems such as climate change. The latter is a limitation of this study and requires more research. Upcoming studies could analyse the different strategic responses to uncertainties in the energy and electricity sectors. This could be done by using relevant theories of environmental economy. Not only quantitative

analysis but a qualitative understating of the global and regional varying strategic ways to tackle energy security, climate change and other issues through the context of a market is needed. In addition, we would need to consider the networks within the EU more carefully and provide discussion on the economic networks in the field of energy. Many constructions are types of networks and form certain interrelations. Economic science analysis on networks would be able to argue on the functionalities of the EU energy and electricity relations.

The following thoughts are not meant to be a prediction but rather a narrative to summarise and suggest what may happen in the future, based on the previous analysis. In abductive reasoning, these are the best possible explanations based on the analysed data. First, energy and electricity deregulation discussion will continue and the European Union will pursue markets. As Keohane and Hoffman (1991) argue, the EU is a federation that centralises bargaining while decentralising enforcement. When the EU promotes economic policies for the development of the IEM, it provides opportunities for companies. Since electricity has already been widely privatised, the EU promotes more competition in the field. Such mechanism as unbundling will open up opportunities for new actors. Investments made for networks will continue to be good ones in the future.

Secondly, the most important factor for market integration will remain to be the super grid development and the technological improvements within the pricing and transmission systems with a special emphasis on the transmission system. Transmission investments answer to two main arguments of the security of supply, integration of renewable sources and, eventually, the full completion of the internal energy market (Soares and Sarmento 2012: 185). All in all, energy related policies have embedded long-term goals and planning. Markets are described as liberal and open systems but energy has qualities which make it an externality. For example, social interventions are necessary to maintain energy security.

We are seeing many changes and constant development within the energy and electricity paradigm, and economics are explaining these changes. The main intention of this paper has not been to explain how the energy market has altered but rather to point out the underlying nominators, which have led toward certain policies.

The markets and the changes in energy and electricity systems do not appear solely by themselves. If we trust that the EU has been the forerunner in promoting these developments, we need to understand why it has been so and where it could possibly lead us. Otherwise we are trying to understand and adjust the internal energy market, and the future of electricity and energy, without reflecting on it as a socially embedded belief system.

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