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The promotion of EU renewable energy policy, its impact on competition and comparison with US renewable energy policy

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Abstract

This dissertation was written as part of the LL.M in Transnational and European Commercial Law, Mediation, Arbitration and Energy Law at the International Hellenic University.

This paper focuses on the renewable energy policy EU follows, the support mechanisms that has introduced and implemented in order to support and promote RES. It is examined the relation between RES and other policies and especially towards the competition policy. Furthermore, the US renewable energy policy is cited and is compared with the EU RES policy.

Keywords: EU; RES policy; competition; support schemes; US

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Preface

George Orwell wrote that “our civilization is founded on coal more completely than one realizes until one stops to think about it.”¹ George Orwell’s observation mirrors completely our society. But the world and the environment pay a high price due to our dependency on fossil fuels. Global warming, acid rain and air pollution are just a few aftermaths due to excess use of fossil fuels.²

The environmental problem dates back, almost 11,000 years ago when humans started farming. Humans started interfering with the environment by not just taking what they needed in product’s primal form but processing them. They cut trees to create accommodation, tools etc. With the Industrial Revolution in the late 18th to early 19th century, humans started using fossil fuels extensively to cover their needs as they were proven quite effective. Moreover, the immense growth of earth’s population due to the evolution of technology and medicine increased the energy needs and therefore the energy consumption.³ Also, the immense growth of earth population dictates more demand of energy, higher costs, and a general rise of energy prices.⁴

The reckless use of fossil fuels created the most serious threat to the environment, the global warming. The greenhouse effect, described by Svante Arrhenius in 1896, is critical to sustaining life in earth. The greenhouse gases (GHGs) trap the sun’s radiation when reflected from earth and this results in a rise in the earth’s temperature. The increase of atmospheric carbon dioxide levels which produced by the burning of fossil fuels, tropical deforestation, and other activities⁵ led to an increase of earth’s temperature in a way that consist a great threat to the sustainability of life.⁶ In specific, our energy system was and is supported by fossil fuels, non – renewable sources. However due to the global warming as it was described above, decarbonization of it is needed.⁷

¹ George Orwell, *The Road to Wigan Pier*, chapter 2, (1937)

² Michael Brower, *Renewable Energy*, 16 EPA J. 20 (1990)

³ Nikhil R. Ullal, *A Successor for the Kyoto Protocol Challenges and Options*, 17 N.Z. J. Env'tl. L., p. 83 - 85 (2013)

⁴ Glen Wright, *The International Renewable Energy Agency: A Global Voice for the Renewable Energy Era*, 2 *Renewable Energy L. & Pol'y Rev.* 251 (2011)

⁵ PCC Fourth Assessment Report, Working Group I Report "The Physical Science Basis" Chapter 7

⁶ Nikhil R. Ullal, *A Successor for the Kyoto Protocol Challenges and Options*, 17 N.Z. J. Env'tl. L., p. 83 - 85 (2013)

⁷ Glen Wright, *The International Renewable Energy Agency: A Global Voice for the Renewable Energy Era*, 2 *Renewable Energy L. & Pol'y Rev.* 251 (2011)

The climate change and the global warming was firstly addressed in a political level in 1970 in the “United Nations Conference on the Human Environment” in Stockholm. The “Stockholm Conference”, as it is known, consisted a milestone in highlightening the need for international policies that would aim to the protection and preservation of the environment. Moreover, the Conference was important as although no legal action occurred, led to the foundation of the United Nations Environment Programme (UNEP) whose aim was to encourage the nations to act in order to protect the environment. Furthermore, UNEP in collaboration with another UN organization, the World Meteorological Organization (WMO) established the Intergovernmental Panel on Climate Change (IPCC) whose first report underlined the need of an international treaty recognizing the environmental problem. This treaty was the “United Nations Framework Convention on Climate Change (UNFCCC)”, a result of the United Nations Conference on Environment and Development (UNCED) in June 1992 in Rio de Janeiro, and in 1994 it entered into force. The UNFCCC main purpose was to “*stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system*”⁸ In 1997, the Kyoto protocol, an international treaty entered in force in 2005, extended and implemented the UNFCCC objective.⁹ Although the Kyoto Protocol didn’t address it, the need for an alternative energy source in order to replace fossil fuels in the future was evident. Thus, besides reducing CO₂ and GHG emissions, our society needed to find alternative sources of energy.¹⁰

Renewable energy sources (RES) appeared as an alternative having the potential to fulfill the humankind’s needs.¹¹ RES are non-fossil sources and can be used in providing electricity, transport and heating.¹² RES can potentially meet the energy needs of developing countries, especially when the needs of many areas aren’t met due to the lack of fossil fuel dominance.¹³ Contrary to the past that the means to exploit renewable energy were considered impractical and demanded high costs, nowadays, and since 1980s, the

⁸ The United Nations Framework Convention on Climate Change (UNFCCC), United Nations, FCCC/INFORMAL/84, art 2
GE.05-62220 (E) 200705 art. 2

⁹ Nikhil R. Ullal, A Successor for the Kyoto Protocol Challenges and Options, 17 N.Z. J. Env’tl. L., p. 83 - 85 (2013)

¹⁰ Ibid p. 92 - 93

¹¹ Richard L. Ottinger; Rebecca Williams, Renewable Energy Sources for Development, 32 Env’tl.(2002)

¹² H.M. Thomas, Renewable Energy Sources as Means of Electricity Generation in the United Kingdom, 11 Int’l Bus. Law. 14 (1983)

¹³ Richard L. Ottinger; Rebecca Williams, Renewable Energy Sources for Development, 32 Env’tl.(2002)

technologies used to exploit RES have been developed and continue to be developed whereas the costs have significantly declined. That development and cost decline plus a high demand can make RES competitive towards the more conventional energy sources. The advantages of RES are various. RES are limitless whereas fossil fuels are limited. That was proven by the oil crisis in 1970s when the need for being self-sufficient arose. Also, the decrease of fossil fuels results to an inflation in the economy. Moreover, RES pose no threat to the environment as they are ecofriendly. Another unexpected advantage is that the exploit of certain RES provides job opportunities in general and especially in rural areas as the exploit of RES, such as sun and wind, requires vast and secluded areas.¹⁴

Following the international mandate for the protection of the environment, European Union committed to the reduce of the CO₂ emissions and implemented a policy for the promotion of RES

¹⁴ Michael Brower, Renewable Energy, 16 EPA (1990)

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Introduction

Although EU aimed for the development of renewable energy since 2000, the results weren't the expected ones as in 1997 the percentage of renewable energy's share was 7.2 % and in 2006 it raised only to 9.25%. It is obvious that the expected target in 1997 the 2001 and 2003 Directives wasn't achieved.¹⁵

The main objectives of EU's energy policy are to promote RES, to achieve a functioning internal market and to secure the energy supply, as they are underlined in two communications of European Commission. Hence, EU, in order to achieve the above goals, has implemented numerous measures for the promotion of RES.

Furthermore, the above objectives are mirrored in art. 194 TFEU as in secondary legislation. Moreover, EU constantly aiming to achieve its goals concerning RES introduced the Energy Strategy 2020, the Energy Roadmap 2050 and the 2030 Framework that set new higher goals as far as the supply of energy deriving from RES is concerned. The EU legal framework concerning the promotion of RES, however, can potentially create conflict with the free movement of goods and the state aid provisions.

Specifically, according to EU legal framework, MS should enforce a national plan for the promotion of RES. The 20/20/20 target by 2020 includes 20 % decrease of GHG emissions, a 20 % improvement of energy efficiency, and most importantly a 20 % share of renewable energy in the EU. The above target is imposed to MS by 2009/28/EC Directive on the promotion of the use of energy from renewable sources¹⁶. The overall target for the energy supply of RES in EU is 20% but the percentages ranges from 10% for Malta to 49% for Sweden (72% for Iceland, although it is a member of European Free Trade Association (EFTA)), as it takes under consideration the different needs and infrastructure of each MS. In order for MS to achieve the imposed goal, they have to introduce national plans and policies that would allow the penetration and promotion of RES by an increase in the production and consumption of renewable energy.¹⁷

¹⁵ Citation: Philip Lowe, Regulating Renewable Energy in the European Union, 1 Renewable Energy L. & Pol'y Rev. 17 (2010)

¹⁶ Council Directive (EU) 2009/28/EC on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC [2009] OJ L 140/16

¹⁷ Marjan Peeters, Governing towards Renewable Energy in the EU: Competences, Instruments, and Procedures, 21 Maastricht J. Eur. & Comp. L. 40 (2014)

This paper focuses on the EU policy for renewable energy and the mechanisms EU utilizes and introduced for the promotion of RES in the energy sector. In the first chapter, the history and origins of the EU renewable energy policy are cited. Furthermore, the legal framework, mainly directives 2001/77/EC and 2009/28/EC governing the RES Policy, is analyzed. In the closing of chapter, the goals that EU has set for the future are examined. The second chapter includes an overview and analysis of the support mechanisms EU utilizes for the support and promotion of RES. Moreover, it is examined the impact of the RES Policy in competition and specifically the legal problems occurred between state aid provisions and the support mechanisms. Lastly, the third chapter covers a synoptic comparison among EU RES policy and the US RES policy.

CHAPTER 1: EU Renewable Energy Policy

1. History and origins of the EU Policy

The 1970 oil crises highlighted to the countries the need for energy independence. Moreover, as it is stated in the Commission's White Paper for a Community Strategy and Action Plan, "*development of renewable energy has for some time been a central aim of Community energy policy, and as early as 1986 the Council listed the promotion of renewable energy sources among its energy objectives*"¹⁸

The reasons and advantages for EU promoting RES are various. To name a few, one reason and an objective of EU's policy is to secure the energy supply. RES constitute an infinite source, they are unlimited, whereas fossil-based sources are finite. Security of supply is translated to an available and long-term supply, fewer energy accidents, and reduction in the dependence of imports.

Moreover, main principle in the EU's energy policy is the protection of the environment. Extent use of RES provides a reduction in CO₂ and GHG emissions and

¹⁸ Commission (EU), 'Energy for the Future: Renewable Sources of Energy' (White Paper) COM (97) 599 final, p. 6, 26 November 1997

therefore a less polluted air and a viable solution to climate change whereas the exploitation of RES creates employment opportunities especially in rural areas.¹⁹

The Kyoto Protocol led EU to open a discussion concerning the use of an energy that would be ecofriendly, hence it would not pollute the air and the environment in general as fossil fuels provenly did. A Commission's Communication²⁰ after the abovementioned White Paper on Renewable Energy Sources emphasized the need for the development of RES to reduce the pollution provoked by GHG in light of protecting the environment.

EU proclaimed itself as the leader against the climate change. In order to achieve that, EU should have introduced certain legal framework adopting the international mandate of the environmental protection and then implemented it. Therefore, besides introducing laws, EU should have aimed to integrate the environmental protection into its energy policy as it is underlined in the 1998 Communication. Furthermore, although the MS's cooperation is stated in the Communication, it is essential that RES integration in the internal market should have taken place in EU level, also for the EU to ensure that this aim is compatible with other EU's objectives. Thus, although the MS's cooperation for successfully accomplishing a sustainable development is essential but not sufficient, a shared competence is needed. EU should have ensured by implementing certain measures, a successful integration of sustainability.

In addition, it is included in the Communication that sustainability should have been a main priority in the EU's energy policy. The Communication continues stating that the environment should have integrated in the energy policy in respect of complementarity, realism, flexibility, competitiveness and security. In specific, as renewable energy is concerned, it is stated that special attention should have been given to RES in the domain of energy production, supply and consumption.²¹

¹⁹ Bilun Muller, EC Legislation concerning Renewable Energy Sources: Promotion at the Community Level and Implementation in Germany, 2 J. Eur. Env'tl. & Plan. L. 394 - 395 (2005)

²⁰ Communication from the Commission, Strengthening Environmental Integration within Community Energy Policy, Brussels, 14.10.1998, COM(1998)

²¹ Małgorzata Alicja Czeberkus, Renewable Energy Sources: EU policy and law in light of integration, Master's Thesis, p. 68 - 69 (2013)

In 1995, Commission underlined in its White Paper "An Energy Policy for the European Union"²² that in order for RES to be competitive towards other energy sources, the energy market must be legally regulated. Also, it is highlighted that a *Strategy for Renewable Energy Sources should be established*. Another important note was that RES should achieve *improved competitiveness, security of supply, and protection of the environment*, important aims of the EU's energy policy.

The Green Paper that followed a year later ²³, analyses the overall advantages of the extent use of RES, such as environmental protection, raise in employment, reduction in CO2 emission and more independence on energy by reducing the imports, and opened a discussion on the type of the measures that should have been taken.

The Green Paper led to the crucial for the renewable policy White Paper for Community Strategy and Action Plan in 1997²⁴. A new aim was set, an increase of 12% in the use of RES in EU by 2010, by making RES competitive in the energy market. Also, it is stated that the promotion of RES would have resulted in achieving security in the energy supply. To achieve the above goal EU should have aimed *to provide non-discriminatory access to electricity market, promote fiscal and financial measures* and in general implement measures suitable for the promotion of RES.

Moreover, Directive 96/92/EC, the Electricity Directive, stated how crucial RES are to the protection of environment and induced MS to ensure that system operators and distribution system operators would have prioritized the use of RES. However, the rules for the promotion of RES had no binding character. The same mandate concerning RES is also included in Directive 2003/54/EC, that repeals the Directive 96/92/EC.

Furthermore, in a 1998 report²⁵ the issue of the promotion of RES was discussed and particularly the need of RES support mechanisms' harmonization in order for the energy market not to be distorted. ²⁶

²² Commission (EU), 'An Energy Policy for the European Union' (White Paper) COM (95) December 1995

²³ Commission (EU), 'Energy for the Future: Renewable Sources of Energy' (Green Paper) COM(96) November 1996

²⁴ Commission (EU), 'Energy for the Future: Renewable Sources of Energy' (White Paper) COM (97), 26 November 1997

²⁵ Council (EU) 'On harmonization of requirements-Directive 96/92/EC concerning common rules for the internal market in electricity' (Report) COM(1998), March 1998

²⁶ Dilay Yesilyaprak, European Union renewable energy policy and its effects on competition, Queen Mary University of London, p. 6 – 8 (2010)

The need for the promotion of RES became increasingly urgent and EU realized that serious measures should be undertaken leading four years after the Kyoto Protocol to the first renewable energy directive, Directive 2001/77/EC.

2. Directive 2001/77/EC

Directive 2001/77/EC *on the promotion of electricity produced from renewable energy sources* and Directive 2003/30/EC *on the promotion of the use of biofuels or other renewable fuels for transport* consisted a milestone for the promotion of RES in EU. They were the result of an intense discussion concerning RES starting in 1986 and accelerated after the Kyoto Protocol with a series of Green and White Papers, Reports and Communications. The two directives set targets for MS concerning the production of RES by 2010. Although the targets were indicative, the Commission monitored the progress the MS made and if the targets weren't met, it could impose mandatory goals. The individual MS targets served to achieve the overall target of 12% consumption of RES by 2010 and 20% by 2020.²⁷

Directive 2001/77/EC, also known as the “Renewables Directive”, provided MS with the impetus to establish national action and support systems in favor of achieving the indicative targets. The Directive, however, required basic harmonization, prioritized grid access for RES and facilitated administrative barriers.²⁸

Directive 2001/77/EC provided the definition of RES in art 2 (a) gives the definition of RES and specifically it states that “*renewable energy sources shall mean renewable non-fossil energy sources (wind, solar, geothermal, wave, tidal, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases)*”²⁹ whereas in (c) it defines that “*electricity produced from renewable energy sources’ shall mean electricity produced by plants using only renewable energy sources, as well as the proportion of electricity produced from renewable energy sources in hybrid plants also using conventional energy sources and including renewable electricity used for filling storage systems, and*

²⁷ Council Directive (EC) 2001/77 on the promotion of electricity produced from renewable energy sources in the internal electricity market [2001] OJ L 283/33

²⁸ Andreas Gunst, Impact of European Law on the Validity and Tenure of National Support Schemes for Power Generation from Renewable Energy Sources, 23 J. Energy & Nat. Resources L. 95 - 96 (2005)

²⁹ Council Directive (EU) 2009/28/EC on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC [2009] OJ L 140/16 (a)

*excluding electricity produced as a result of storage systems*³⁰. It becomes obvious that the scope of the definition is quite wide. The legislator provided a wide scope of definition in order for MS to include or exclude RES.³¹

Furthermore, the Electricity Directive complements RES as it provided the same rights to RES generators towards accessing the grid.³²

The directives consisted secondary EU legislation and they were based their competence in art 175(1) and 174 of the Treaty establishing the European Economic Community (EEC) of 25 March 1957³³ concerning the EU's environmental policy

In art. 4 (4) of the 2001/77/EC Directive it is stated that *“the national indicative targets are consistent with the global indicative target of 12 % of gross national energy consumption by 2010 and in particular with the 22,1 % indicative share of electricity produced from renewable energy sources in total Community electricity consumption by 2010”*.

MS following the targets set by the above article should have decided and introduced certain measures towards achieving that goal as it is only provided in the Directive the indicative target. Thus, MS were given the liberty to choose and introduce any measures they considered suitable for achieving the abovementioned goal. Moreover, MS should have submitted annual reports concerning their progress to the Commission.

The MS used two main support schemes: feed – in tariffs³⁴ and quotas in combination with green certificates to achieve the promotion and penetration of RES to the energy market.

After an analysis of Commission in 2005, feed - in tariffs were proven cheaper and more effective than quotas' systems.

³⁰ Ibid (c)

³¹ Melvin Konings, State Aid for Renewable Energy Sources: A Practical State Aid Manual for Going Green, 2002 Eur. St. Aid L.Q. 19 - 20 (2002)

³² Andreas Gunst, Impact of European Law on the Validity and Tenure of National Support Schemes for Power Generation from Renewable Energy Sources, 23 J. Energy & Nat. Resources L. 97 - 99 (2005)

³³ Treaty establishing the European Economic Community (EEC) of 25 March 1957, consolidated version, OJ 2002 C 325/33.

³⁴ *“Permission to producers to feed electricity into the electricity grid at fixed tariffs. These tariffs are based on marginal production costs and are fixed at State level.”* - Francis X. Johnson, Regional-Global Linkages in the Energy-Climate-Development Policy Nexus: The Case of Biofuels in the EU Renewable Energy Directive, 2 Renewable Energy L. & Pol'y Rev. 91(2011)

However, the Commission observed that the conditions weren't mature enough for an overall harmonized system for the promotion of RES. Hence, it aimed at reinforcing the national plans and encouraging the cooperation among MS. Furthermore, the analysis showed that MS would achieve the goals for the promotion of RES set by the directive taking into consideration the support schemes they implemented.

Still, the obligation for the EU to comply with the principle of subsidiarity had set a limit to EU's actions by being restricted *to prescribing binding targets, to monitoring the achievement of these targets and to imposing sanctions upon failure to do so.*³⁵

3. Directive 2009/28/EC – EU Renewable Energy Directive (RED)

In 2007, European Commission introduced the Climate and Energy Package. The package aimed to create a competitive and ecofriendly energy market. Main pillar of this package was the promotion of renewable energy in EU as a viable solution to the climate change. The package is known as 20/20/20 package and it provides for 20% reduction of GHG emissions, 20% improvement on energy efficiency, a long-term goal of EU, and 20% share of renewable energy. Directive 2009/28/EC (Renewable Energy Directive, RED) is the legal instrument that mandates the last target, 20% share of renewable energy. The target set in the directive is an overall 20% share of renewable energy that is different for each MS from 10% for Malta to 49% for Sweden (72% for Iceland, although it is a member of European Free Trade Association (EFTA)). Also, a 10% share of renewable energy in the transport sector is provided for each MS. In addition, RED adopts the definitions of RES set by the repealed 2001/77/EC directive.

EU plays an important role in the international promotion of RES. Hence, RED consist a key point of forming assisting the global penetration of RES and forming a competitive RES energy market, fulfilling by this way the international mandate for environmental protection and sustainability

The main aims of EU's energy policy are sustainability, security of the energy supply and market competitiveness. In order to achieve these goals, EU underlines the need for harmonization of national energy markets and policies as national policies were

³⁵ Volker Oschmann, Renewable Energy Sources in European Law: An Overview, 3 J. Eur. Env'tl. & Plan. L. 482 - 484 (2006)

proven less effective *in addressing a global issue like climate change*. EU may not have been ready for a harmonized system when introducing the directive 2001/77/EC but in 2007 the conditions that favored harmonization had matured. Consequently, the need to tackle the climate change and to protect the environment passes the national borders and becomes an objective in Community level.

As far as competitiveness is concerned the goals dictated by RED are that the consumers and thus the economy would benefit by an open market by attracting investors for clean energy production and energy efficiency. Moreover, the international higher cost would be mitigated, and EU would “invest” in promoting and searching for new and more effective energy technology. Another goal is the achievement of an *eco-efficient economy*.

As far as the sustainability is concerned the goals dictated by RED are development of RES and low carbon energy sources especially in the transport sector, restraint of energy demand in EU and strong attempts to decelerate climate change and eventually reverse it and to enhance the air quality. The promotion of RES is particularly important to the transport sector as the GHG emissions are more prominent in transportation whereas in the electricity sector there a significant reduction.

Furthermore, decrease of energy demand, a key element of 20/20/20 target, can be achieve by the promotion of innovative technologies. Thus, EU should focus on attracting investments and introduce cutting edge plans and projects. With innovative technologies and significant efforts for the RES promotion, EU in its Strategic Energy Technology Plan (SET-Plan)³⁶ aims to overall decarbonization of the energy sector by 2050³⁷

The package included *an amendment of the EU Emissions Trading Directive to introduce a new and centralized allocation mechanism for the commitment period 2013-2020, and the Effort Sharing Decision that contains individual GHG emissions reduction targets for Member States*

³⁶ Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, European Commission, "A European Strategic Energy Technology Plan (SET-Plan): Towards a low-carbon future", COM(2007)

³⁷ Francis X. Johnson, Regional-Global Linkages in the Energy-Climate-Development Policy Nexus: The Case of Biofuels in the EU Renewable Energy Directive, 2 Renewable Energy L. & Pol'y Rev. 91 - 96 (2011)

The 2012 Energy Efficiency Directive³⁸ establishes that aims at the promotion of energy efficiency establishes mandatory measures so that the EU target of 20% energy efficiency could be achieved by 2020.

Article 192(1) TFEU consists the legal basis for EU energy policy towards the protection of the environment. The origin of this article goes back to the Single European Act of 1987 and makes EU competent to introduce environmental legislation.

The environmental competence included in the TFEU indicates expressly the climate change. This mirror the EU's effort to undertake measures in order to halt climate change internationally and regionally. The competence of art. 192 (2) RFEU is a shared-competence meaning that both EU and MS can take actions towards the protection of the environment. However, MS can take actions to the extent that EU hasn't. Moreover, in respect of the subsidiarity principle, EU can act if the results from the MS' actions are insufficient of achieving the proclaimed objectives and the objectives reach their goal efficiently in EU level. In addition, under the proportionality principle, EU cannot act further other than the necessary for achieving the objectives.³⁹

Lastly, RED is consisted by 29 operative articles and 97 recitals that are not legally binding. Recitals serve for the interpretation of articles as they explain the reasons for implement measures defined in the articles.⁴⁰

4. Interaction of Renewable Energy Policy and other EU Policies

The focus of EU on the promotion of RES lead to alterations to main EU policies. *“With the increasing importance of Renewable energy some of the policies have explicitly designed to promote renewable energy and some policies indirectly influence incentives and barriers for renewable energy.”*⁴¹ Renewable Energy Policy interacts mainly with three policies: the Energy Policy, the Environmental Policy and the Competition Policy.

4.1 Energy Policy

³⁸ Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, [2012] OJ L 315/1.

³⁹Marjan Peeters, *Governing towards Renewable Energy in the EU: Competences, Instruments, and Procedures*, 21 *Maastricht J. Eur. & Comp. L.* 41 - 42 (2014)

⁴⁰Małgorzata Alicja Czeberkus, *Renewable Energy Sources: EU policy and law in light of integration*, Master's Thesis, Faculty of Law School of Social Sciences Aðalheiður Jóhannsdóttir p. 74(2013)

⁴¹ Fredric Beck, Eric Martinot, *Renewable Energy Policies and Barriers*, *Encyclopedia of Energy* Vol. 5 (2004)

The EU Energy Policy aims to achieve competitiveness, security of energy supply, and protection of the environment by dealing with the climate change. The solution was provided by an alternative source of energy that could be competitive and highly efficient, the renewable energy. Hence, the aims of the Energy policy align with the renewable energy as a means to an end. Therefore, the aims to Energy policy are promotion of RES and energy efficiency in respect of the environment.

4.2 Environmental Policy

The environmental protection was always a core aim of EU. Article 191 (1) cited the objectives that EU may achieve: “*preserving, protecting and improving the quality of the environment, protecting human health, prudent and rational utilization of natural resources and promoting measures at international level to deal with regional or worldwide environmental problems, and in particular combating climate change.*”⁴²

Moreover, according to article 191 (2) TFEU “*Union policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Union. It shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay.*”⁴³

Therefore, it is obvious that the objectives of EU’s Environmental Policy are sustainability and the protection of the environment. The promotion of RES among their various advantages is an alternative of fossil fuels consisting a more sustainable and clean source. Thus, the objective of the two policies are similar. A question arose as the although the protection of environment is a core aim of EU, how it interacts and interferes with other EU core objectives.

4.3 Competition Policy

As far as the Competition policy is concerned, the objectives of the two policies collide. Competition Policy are one of the EU’s core policies since the Treaty of Rome. The free market and the liberation of it place competition as one of the most important aims of EU. EU Competition policy aims to promotion of economic efficiency by

⁴² Consolidated Version Of The Treaty On The Functioning Of The European Union, Official Journal of the European Union, C 326/47, art.191 (1), 26.10.2012

⁴³ Ibid art. 191 (2)

maintaining a competitive market. It also aims to the integration of EU market through various measures and incentives. Additionally, it attempts to create the perfect conditions for competition in the benefit of consumers to consequently provide the lowest costs especially in the electricity sector.

EU intends, whereas promoting RES, for them to be competitive and to succeed the better penetration of them in the energy market. Competition serves as an important means to promote sustainable development.

Commission underlines that the different policies and their objectives should be balance. In particular, a balance of competition and environmental protection may lead to the best possible results as through competition the environmental goals would be achieved. Hence, competition and the open market can boost and make more successful the measure undertaken for the protection of the environment

Thus, EU should take under consideration the Competition Policy when promoting RES. RES policy should fallen under the competition.

Furthermore, concerning the relation between Environmental and Competition policy, their objectives don't interact directly. However, they are interdependent as both aim to the single market. Their objectives collide when state aid is granted in favor of the protection of the environment under the competition law as it may lead to distortion of single market. Lastly, a conflict may be arisen with the free movement of goods.⁴⁴

5. Future goals – recent developments

A policy framework for climate and energy in the period from 2020 to 2030⁴⁵ in January 2014 setting new goals for RES supply and consumption in EU for the period 2020 - 2030. It provides for an overall 40% reduction of GHG emissions below 1990 levels, a 27% share in energy consumption⁴⁶ and *at least 27 %* energy savings. The proposed measures in order for EU to achieve these goals are:

A reformed EU emissions trading scheme (ETS), new indicators for the competitiveness and security of the energy system, such as price differences with major trading partners, diversification of supply, and

⁴⁴ Dilay Yesilyaprak, European Union renewable energy policy and its effects on competition, Queen Mary University of London, p. 11 - 14 (2010)

⁴⁵ A policy framework for climate and energy in the period from 2020 to 2030 [COM(2014) 15]

⁴⁶ Mortiz von Unger, Germany's Renewable Energy Law, State Aid and the Internal Market: An EU Perspective, 11 J. Eur. Env'tl. & Plan. L. 117 (2014)

interconnection capacity between EU countries and first ideas for a new governance system based on national plans for competitive, secure, and sustainable energy.

EU with its leading role in RES promotion aim to achieve sustainability, security and RES competitiveness and to successfully reduce GHG emissions to a full decarbonization. In addition, the measures will encourage and attract further investments whereas they will create an EU harmonized and transparent energy market.⁴⁷

The Energy Roadmap 2050 taking under consideration seven scenarios concerning the EU energy market aims to full decarbonisation by 2050.⁴⁸ as it could benefit EU as it would be the first to move towards a RES energy market, an instantly growing global market. Furthermore, it is stated in the Energy Roadmap 2050, the EU goal, since 1896, less dependence of imported fuel fossils sources whereas it is satisfied the aim for an environmental protection and a halt to climate change with better air quality. Nonetheless, energy efficiency remains among the primal goals of EU energy policy.⁴⁹

All scenarios analysed lead to the conclusion that RES would acquire the greatest share of energy supply by 2050. Hence, EU needs to implement more efficient measures and mechanisms that will augment RES energy share. By 2030, RES shares of energy consumption would be at least 30% in gross final energy consumption. RES will be in to the energy mix center of the energy mix.⁵⁰

Furthermore, EU he EU point to a GHG emissions reduction on the scale of 80-95%, comparing to 1990, by 2050 and the Energy Roadmap 2050 analyses the most efficient way of achieving it. It is also underlined the need for investments in the RES field that would lead to an improvement of grid infrastructures and innovative technologies. Moreover, decarbonization is proven more profitable in the long run than the current reality.⁵¹

⁴⁷ <https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/2030-energy-strategy>, accessed on 4 April 2018

⁴⁸ Communication From The Commission To The European Parliament, The Council, The European Economic And Social Committee And The Committee Of The Regions , Energy Roadmap 2050, Brussels, p. 2, 15.12.2011 COM(2011) 885 final

⁴⁹ Ibid p. 9

⁵⁰ Ibid p. 10

⁵¹ <https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/2050-energy-strategy>, accessed on 13 April 2018

Lastly, in November 2016, a proposal for a recast of the directive on the promotion of renewable energy sources (RES), as part of the broader 'Clean Energy for all Europeans' package was presented⁵². The primary objective of the above recast is a provision of increase on the scale of 27% RES share in the energy market by 2030 as it was stated in the Commission's policy framework for climate and energy in the period from 2020 to 2030 and as EU committed to these targets in the 2015 Paris Agreement.
53

In specific according to the Proposal, MS should be informed concerning the principles and measures that they will aid them to achieve 27% share of overall EU's energy consumption by 2030 profitably in the following sectors of *electricity (RES-E), heating and cooling (RES-H&C) and transport (RES-T)*. Also, MS should consider reducing uncertainty for investment in respect of decarbonization and aiming to a RES market integration by guaranteed a profitable entry. Furthermore, MS should guarantee the overall achievement of RES targets by 2030 by implementing the suitable legal framework and ensure the development of RES potential in heating and cooling⁵⁴

CHAPTER 2: EU support mechanisms for the promotion of RES and their impact on competition

1. EU support mechanisms

The support mechanisms entailed in RED for the achievements of its objectives are mandatory targets for MS by 2020, action plans by MS for the promotion of RES, flexibility of mechanisms aiming at facilitating cross-financing among MS, regulatory and administrative reforms and biofuels sustainability criteria.⁵⁵

1.1 Binding targets

⁵² Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the promotion of the use of energy from renewable sources (recast), COM (2016) 767 final of 30.11.2016

⁵³ Ibid p. 2

⁵⁴ Ibid p. 4

⁵⁵ Council Directive (EU) 2009/28/EC on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC [2009] OJ L 140/16

RED cites a mandatory target of 20% share of RES in energy consumption by 2020. The target is an overall target in EU and differs for each MS with 10% for Malta and 49% for Sweden. The mandatory target for each MS is determined by the MS energy infrastructure and the current share of RES in the MS with respect to flexibility and realism. Moreover, there is a fixed target of 10% share in transportation for all MS. There are no sanctions provided by RED in case that the MS fail to implement the necessary measures in order to achieve their goal, but Commission has the liberty to impose penalties in any way it may consider. However, Commission may act in respect of proportionality while imposing penalties and measures.⁵⁶

1.2 Monitoring the progress – national renewable action plans

In order to achieve their goal, MS should take action by adopting and implementing action plans. Other than certain prerequisites provided by RED, MS can decide on the measures needed for achieving their goal. Introducing an action plan would aid investors to feel secure, by setting clarified targets and mechanisms, in carrying out investments in the RES sector in a specific MS. Moreover, the action plans should include specific goals in electricity, transportation and heating as well as the measures to achieve them. Commission is notified about national action plans by each MS, and under RED MS should report their progress towards achieving their goal.⁵⁷

Additionally, every three years MS have the responsibility to prepare National Energy Efficiency Action Plans every three years and notify Commission, with the first to have been by 30 June 2010. Moreover, MS are divided in three groups and especially MS that have reached (A), may (B) or may not (C) reach their binding target.⁵⁸

Thus, the measures undertaken by MS for support and promotion of RES are not harmonized as RED allows MS to select them at will.

Moreover, MS have to abide by an “*indicative trajectory*”, a depiction of the progress MS oblige to achieve. If MS fall under this trajectory, they may present to Commission

⁵⁶ Małgorzata Alicja Czeberkus, Renewable Energy Sources: EU policy and law in light of integration, Master's Thesis, Faculty of Law School of Social Sciences Aðalheiður Jóhannsdóttir p. 77 - 79 (2013)

⁵⁷ Ibid p.79 - 80

⁵⁸C. Zeynep Zafir1 & Mohammad Keivanfar, Comparing Renewable Energy Policies in the European Union and Turkey, International Business Research, Vol. 10, No. 6, 2017 p. 114

an amended action plan with effective measures in the year that follows, that would allow them to fall back due time. If MS fail to present such amended plan, Commission should take legal action.⁵⁹

1.3 Flexible mechanisms

As a way for MS to achieving their goal, RED introduces flexible mechanisms in order to encourage MS and third countries to cooperate. This cooperation is considered profitable way for MS to achieve their goals. In this way not only the promotion of RES is succeeded but also the EU single market is reinforced. In specific, the flexible mechanisms are consisted of statistical transfers (a specific amount of energy is transferred) and joint support schemes and projects between MS' or an MS and a third country.⁶⁰

2. Barriers

2.1 Administrative and regulatory barriers

This category of barriers includes the problem of bureaucracy: when a lot of authorities are involved, where authorities fail to cooperate, when a long time of period is needed in order for a person to grand the mandatory permit and general the little knowledge local authorities have about the advantages of RES.⁶¹

EU aims with RED to simplify those barriers. In specific, *national rules concerning authorization, certification and licensing procedures* should comply with *the principles of objectivity, transparency, proportionality and non-discrimination*. Therefore, authorities would provide clear information, would be more aware about RES and they would cooperate more effectively among them.⁶²

2.2 Grid – related barriers

This category of barriers includes, firstly, a low availability of grid capacity for RES. Moreover, there is not transparency in the grid connection procedure and therefore

⁵⁹ Marjan Peeters, *Governing towards Renewable Energy in the EU: Competences, Instruments, and Procedures*, 21 Maastricht J. Eur. & Comp. L. 49 - 50 (2014)

⁶⁰ Małgorzata Alicja Czeberkus, *Renewable Energy Sources: EU policy and law in light of integration*, Master's Thesis, Faculty of Law School of Social Sciences Aðalheiður Jóhannsdóttir p. 80 -81 (2013)

⁶¹ *Assessment and optimization of renewable energy support schemes in the European electricity market*, Final report, ORTRES, p. 184 -185 (2007)

⁶² Małgorzata Alicja Czeberkus, *Renewable Energy Sources: EU policy and law in light of integration*, Master's Thesis, Faculty of Law School of Social Sciences Aðalheiður Jóhannsdóttir p. 82 (2013)

many potential investors are discouraged. In addition, the grid operator is not always objective as they may have strong affiliations with large RES companies and they may favor them. Furthermore, the high costs of RES power plants and generally the high costs as well as the long time needed for the producers to be authorized in grid connection discourage them further. However, potential investors should consider the long-term advantages of RES.

RED gives the solution to the problem of RES integration, by ensuring that the TSO and DSO would prioritize and secure the access to the grid system so that the overall amount of RES could enter in the market. Also, MS may initiate innovative projects towards grid infrastructure.⁶³

2.3 Social barriers

The social barriers can be translated to the denial of local authorities and communities towards RES. That is due to the fact that the majority of them are unaware of the RES potential and benefits. Furthermore, whereas they considered RES high cost, they haven't fully realized the costs fossil sources have not only financial wise but environmental wise as well. MS should initiate a campaign concerning the awareness of the public to be ensured and for abolishing misconceptions.⁶⁴

2.4 Financial barriers

A potential investor is often discouraged to invest in RES as they are not able to predict in a satisfied degree the capital subsidies and cash flows they will receive. On the other hand, they cannot predict satisfactorily the revenues they would have. Also, there is a lack of trust not only by investor but by banks as well. Where the last charge *high risk premiums, require long-term contracts and guaranteed minimum prices*. All the above lead to fewer investments and a halt in the promotion of RES.⁶⁵

⁶³ Małgorzata Alicja Czeberkus, Renewable Energy Sources: EU policy and law in light of integration, Master's Thesis, Faculty of Law School of Social Sciences Aðalheiður Jóhannsdóttir p. 83 (2013)

⁶⁴ Assessment and optimization of renewable energy support schemes in the European electricity market, Final report, ORTRES, p. 184 -187 (2007)

⁶⁵ Ibid p. 188 - 190

3. EU RES Support schemes and their effectiveness

MS implement five primary support schemes for support and promotion of RES: investment subsidies, fixed price and fixed premium systems, and quota systems based on auctions or tradable green certificates that point to render RES sufficiently competitive in the energy market. ⁶⁶Although there is a plethora of strategies that MS follow for the support of RES, these five support schemes are applied broadly in MS and there isn't dominance of one.⁶⁷

3.1 Fixed price systems

3.1.1 Investment subsidies and fiscal incentives

An investment subsidy is a benefit given to a potential investor by MS. It can be either a grant or fiscal incentives as a tax reduction or exemption. It aims to relieve the burden of installation of capacity. ⁶⁸ In particular in the production sector, producers may receive a direct grant. In the case of tax reduction, it is not only the producers that benefit but also the customers.⁶⁹ Moreover, an investor can benefit from fiscal incentives that act as compensation to the unfair competition between fuel fossils sources and RES.⁷⁰

3.1.2 Fixed feed-in tariffs (FIT)

Feed-in tariffs (FIT), a broadly adopted scheme in EU, where MS provide a long - term contract (typically 15 to 25 years) for an investor/producer with a fixed price (tied to production cost). A fixed price protects the producer from the inherent risks of RES

⁶⁶ COMMISSION STAFF WORKING DOCUMENT, European Commission guidance for the design of renewables support schemes, Accompanying the document Communication from the Commission Delivering the internal market in electricity and making the most of public intervention SWD(2013) 439 final, p. 27 Brussels, 5.11.2013

⁶⁷ Support Schemes for Renewable Energy: A Comparative Analysis of Payment Mechanisms in the EU, p.30
http://www.ewea.org/fileadmin/ewea_documents/documents/projects/rexpansion/050620_ewea_report.pdf, last accessed on 4 April 2018

⁶⁸ Ibid p. 30

⁶⁹ Melvin Konings, State Aid for Renewable Energy Sources: A Practical State Aid Manual for Going Green, 2002 Eur. St. Aid L.Q. 20 (2002)

⁷⁰ Dilay Yesilyaprak, European Union renewable energy policy and its effects on competition, Queen Mary University of London, p. 20 - 21 (2010)

production. The difference between the tariff and the price in the market usually burdens the consumers

If the tariff is stable, it would lead to a change in energy prices in favor of RES as they will be more competitive towards other energy sources and therefore a stable tariff would attract more investors. At the same time, MS should provide satisfactory grid access and a legal framework that provides access to distributed generation. As the tariff is set by MS, it can be altered whichever way and therefore there is always political risk.⁷¹

The result of the implementation of FIT systems is the protection to new investors from inherent risks and therefore facilitating private investment. As FIT works in a simple way, it is suitable for markets with many “*less commercial participants*”. Lastly, feed in premium systems are currently preferred than FIT systems.⁷²

3.1.3 Fixed feed in premium systems (FIP)

A definition of fixed feed in premium systems (FIP) is:

Premium-price FIT policies offer a premium above the average spot electricity market price, which distinguishes them from the fixed-price FIT payment structure. Fixed-price FIT payments are independent of market prices; however, for premium-price FIT payments, either the premium or the total payment is dependent on the market price for electricity.⁷³

FIX, also known as “*Fixed Premium*” or “*Environmental Bonus*”, is a version of fixed price system. MS don’t provide a tariff but a fixed premium. If that premium mirrors power generation’s external costs, it can lead to better and effective competition in the internal energy market. FIP systems can achieve better penetration of RES in the energy market when the premium surpasses the cost and the usual energy prices.⁷⁴

⁷¹ Support Schemes for Renewable Energy: A Comparative Analysis of Payment Mechanisms in the EU, p.32

http://www.ewea.org/fileadmin/ewea_documents/documents/projects/rexpansion/050620_ewea_report.pdf, last accessed on 4 April 2018

⁷² COMMISSION STAFF WORKING DOCUMENT, European Commission guidance for the design of renewables support schemes, Accompanying the document Communication from the Commission Delivering the internal market in electricity and making the most of public intervention SWD(2013) 439 final, p. 11 Brussels, 5.11.2013

⁷³ Toby D. Couture, Karlynn Cory, Claire Kreycik, Emily Williams, A Policymaker’s Guide to Feed-in Tariff Policy Design, Technical Report NREL/TP-6A2-44849, July 2010 p.50

⁷⁴ Support Schemes for Renewable Energy: A Comparative Analysis of Payment Mechanisms in the EU, p.32,

Basically, FIP systems consist the evolution of FIT systems, a more efficient step as they compel the producers to sell their production and come in touch with the RES operators.

Moreover, they provide more certainty to investors than other support schemes as in a not yet well-developed market (RES new technologies), investors can predict more safely the revenue.⁷⁵

3.2 Fixed quantity systems

3.2.1 Fixed quantity systems – Quotas systems

Fixed quantity systems or “Obligated Renewable Quota” systems are support mechanisms that focus on a specified percentage of produced quantity. MS would decide on a quota that determines a specified RES produced or traded amount in a defined time period, whereas the price is defined by the energy market. The needed capacity to satisfy the quota is regulated by two quota systems: tendering and tradable green certificates systems (GHC).⁷⁶ The result of these system is a secondary market where producers and suppliers can trade certificates and define the price of them.⁷⁷

3.2.2 Tendering systems

Tendering system, known also as competitive bidding is a support mechanism where MS set several tender to provide a specific amount of energy derived from a specific source in a defined period. Potential investors, then, bid for that amount resulting in

http://www.ewea.org/fileadmin/ewea_documents/documents/projects/rexpansion/050620_ewea_report.pdf, last accessed on 13 April 2018

⁷⁵ COMMISSION STAFF WORKING DOCUMENT, European Commission guidance for the design of renewables support schemes, Accompanying the document Communication from the Commission Delivering the internal market in electricity and making the most of public intervention SWD(2013) 439 final, p. 8 Brussels, 5.11.2013

⁷⁶ Support Schemes for Renewable Energy: A Comparative Analysis of Payment Mechanisms in the EU, p.33

http://www.ewea.org/fileadmin/ewea_documents/documents/projects/rexpansion/050620_ewea_report.pdf, last accessed on 4 April 2018

⁷⁷ COMMISSION STAFF WORKING DOCUMENT, European Commission guidance for the design of renewables support schemes, Accompanying the document Communication from the Commission Delivering the internal market in electricity and making the most of public intervention SWD(2013) 439 final, p. 10 Brussels, 5.11.2013

possible cheapest price of energy whereas the extra cost burdens the consumers. However, this system does not provide stability although it seems effective.⁷⁸

3.2.3 Tradable green certificate systems (TGC)

Tradable Green Certificate Systems (TGC) have a lot of similarities to the tendering systems. They differ, though, as the green certificate's (produced electricity derived from green energy) price is determined daily and there is a secondary market of TGC (contracts concerning TGH have 15 to 25 years duration). In order to reducing the risk of these systems the markets should be more efficient concerning TGH agreements. A TGH market is effective when a TGH price mirrors the difference between electricity market price and RES capacity costs.⁷⁹

2.3 Comparison of support schemes' effectiveness

FIT systems provided in the past a predetermined and sure profit to the producers and therefore they are successful by achieving better RES penetration and providing long-term stability. Nonetheless, this certainty of producers about their guaranteed profit led them to ignore market signal and consequently not to evolve and adapt their plans.⁸⁰

However, Commission seems to prefer TGH systems. The reason is that although FIT systems were proven highly effective for the promotion of RES especially to a new market, they created conflicts with provision and protection of customers welfare as well as state aid provisions. That occurred as Commission considered that FIT systems provide operating aid and not just an investor support. Notwithstanding, taking under consideration the inherent risks of market economy price fixed price systems are more effective than fixed in quantity systems.

In conclusion, there are advantages and disadvantages to all support schemes, but they are not all equally effective and efficient. Furthermore, the effectiveness of a

⁷⁸ Support Schemes for Renewable Energy: A Comparative Analysis of Payment Mechanisms in the EU, p.33

http://www.ewea.org/fileadmin/ewea_documents/documents/projects/rexpansion/050620_ewea_report.pdf, last accessed on 4 April 2018

⁷⁹ Ibid 34

⁸⁰ Marjan Peeters and Thomas Schomerus, Renewable Energy Law in the EU: Legal Perspectives on Bottom-up Approaches, *Environmental Law Review*. P. 77 – 78 (2015)

mechanism may differ from MS to MS as the conditions of each MS energy markets are not the same.⁸¹

3. State aid rules

State aid provisions are contained in Articles 107-109 of TFEU. According to art. Art 107/1 of TFEU:

“Save as otherwise provided in the Treaties, any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favoring certain undertakings or the production of certain goods shall, in so far as it affects trade between Member States, be incompatible with the internal market.”

Thus, according to the above article, state aid is a benefit granted by government to undertakings for selective reasons. Not all benefits fall under state rules provisions. In order for a grant to be considered state aid, the following should occur cumulatively. Firstly, the MS have to intervene no matter the form of the intervention (tax reduction, grants, provision of goods etc.). The recipient benefit on selective criteria and most importantly the intervention and the advantage the recipient has can or may distort competition. However, the legislator provides for cases when state aid is justified for specific reason.⁸² Also, such interventions that distort competition can affect trade between MS.⁸³ Moreover, state aid cannot comply with the rules of the common market.⁸⁴

As far as support schemes for the promotion of RES are concerned, state aid granted for the protection of the environment can be exempted as it represents fall the non-economic reasons regulated in Article 107(3c) TFEU and hence the intervention is justified. In specific, according to the above article:

⁸¹ Dilay Yesilyaprak, European Union renewable energy policy and its effects on competition, Queen Mary University of London, p. 24 - 25 (2010)

⁸² http://ec.europa.eu/competition/state_aid/overview/index_en.html, accessed on 4 April 2018

⁸³ EU Renewable Energy Law: Legal Challenges and New Perspectives, 2014 Scandinavian Inst. Mar. L. Y.B. 9(2014)

⁸⁴ Melvin Konings, State Aid for Renewable Energy Sources: A Practical State Aid Manual for Going Green, 2002 Eur. St. Aid L.Q. 20 (2002)

“The following may be considered to be compatible with the internal market: ... aid to facilitate the development of certain economic activities or of certain economic areas, where such aid does not adversely affect trading conditions to an extent contrary to the common interest”

Furthermore, when a MS grants a state aid should balance the expected goals for the protection of the environment and the fundamental principles of competition law that aim to great a competitive, flexible and effective single market. Moreover, MS should respect any other policy that can interact and collide while granting this aim.

Considering the challenges arisen between state aid and support schemes, Community should authorize ex ante the state aid that falls under 107(3c) TFEU after it will be informed by the MS.⁸⁵

The Commission's 2014 Energy and Environmental Aid Guidelines (EEAG) provides for certain criteria where a state aid granted for the promotion of RES in EU can be justified. EEAG underlines the importance of an overall cooperation between Competition and RES policies, as the competition law can promote RES and making them effective and efficient and therefore compatible. This is why EEAG have a *market-oriented approach*. However, it is also appeared in their text that allows State. Nonetheless, the benefit that may be granted by the MS and falls under state aid provision should respect proportionality and should be suitable for achieving the expected aim⁸⁶ When state aid for RES is concerned it is very important determining the meaning of eligible costs, investment and operating aid. Lastly, state aids for the promotion of RES should be transparent and modernized.⁸⁷

CHAPTER 3: US renewable energy policy

US is a major player in the energy sector. The US RES Policy has as primary objectives to secure the energy supply in the federal perspective, and financial activity and GHG emissions reduction.⁸⁸

⁸⁵ Dilay Yesilyaprak, European Union renewable energy policy and its effects on competition, Queen Mary University of London, p. 27 (2010)

⁸⁶ EU Renewable Energy Law: Legal Challenges and New Perspectives, 2014 Scandinavian Inst. Mar. L. Y.B. 1,p. 41 - 43 (2014)

⁸⁷ Melvin Konings, State Aid for Renewable Energy Sources: A Practical State Aid Manual for Going Green, 2002 Eur. St. Aid L.Q. 22 (2002)

⁸⁸ Remap 2030, A Renewably Energy Roadmap, IRENA, p. 28 - 29 (2015)

1 History and origins

The legal action of US towards energy security and especially RES can be separated in three phases

1.1 First phase - PURPA era

Before 1978, energy utilities weren't obliged buy energy from a third party and they weren't positive on investing RES that weren't hydrogenic.

Under the Public Utilities Regulatory Policy Act (PURPA) in 1978, that signalizes the first phase from 1978 to 1990, utilities were bound to buy energy from third certified parties at the “*avoided cost*”, a definition that varies among states, of the utility. That was the origins of feed – in mechanism, a mechanism applied broadly and currently in EU.

1.2 Second phase

In the second phase from 1990 and for approximately seven years, no significant progress has been made. Some of the reason for this pause was a time-consuming necessity for reconstruction in the energy sector, a retraction of incentives and a great fall on the prices of natural gas. This phase can be called a “*stagnation era*”.

1.3. Third phase

As things became more stable and the reform in the energy sector have been completed, a new prosperous era began for the promotion and support of RES in US, approximately in 1997. In US RES policies in a state level started to emerge. These policies that continue to be valid currently are:

The “*Renewables portfolio standards*” (RPS) that set a minimum obligatory amount to utilities derived either by a purchase or production. 18 states and Washington DC fell under RPS. In addition, 14 states fell under “Public benefit funds” (PBF) policy that in 2017 produced profits of \$4 billion that would be granted for the promotion of RES.

Furthermore, by 2004 “*Net metering*” policy was valid in 39 states between 1996 and 2004 and it provides for energy exchange between utilities and individuals or businesses. Moreover, US in an effort to encourage investment in favor of RES,

introduced a series of financial incentives such as tax credits, rebates, low-interest loans. However, besides the policies enacted in a state level, US government adopted a series of federal measures that support and aid RES to be developed.

One crucial policy was the Production Tax Credit (PTC) toward RES and especially in favor of wind whereas a 10% investment tax credit was applied for solar and geothermal energy. In addition, new policies were introduced for biofuels.

Moreover, PURPA contributed to today's radical development of RES not only in US but globally. Also, it was the ancestor of modern feed – in mechanism. The main difference is that the PURPA's tariff was determined on the overall price of fossil fuel energy in order to approach the avoided cost for the benefit of the utilities whereas modern EU tariff is set either by law or according to a specific percentage considering the conditions and the overall costs. Additionally, PURPA wasn't implemented until 1981 due to legal difficulties. However, that didn't contribute to the fail of the policy, Instead, PURPA forcefully gave the opportunity to RES produces to attract investments and have significant profits.

Before PURPA's implementation, the conditions were uncertain and there was no fertile environment for investments. The potential investors were reluctant and chose to await a legally and financially more stable environment for them to invest. However, even after the PURPA's implementation, investor waited for more stable regulations.⁸⁹

2. Federal Drivers for RES

US government aiming to energy security through promotion of RES as well as energy efficiency introduced and implemented several policies and measures valid in a federal level. The main tools US uses in the RES promotion are the Investment Tax Credit (ITC) and the Production Tax Credit (PTC). Furthermore, other significant measures but not as effective as the previous are Clean Power Plan, Modified Accelerated Cost Recovery System Depreciation Schedule (MACRS) and DOE Loan Program. Modified Accelerated Cost Recovery System Depreciation Schedule (MACRS) aims to reduce the taxes and give motive to potential investors to invest. Other federal policies are namely:

⁸⁹ Eric Martinot, Ryan Wiser, and Jan Hamrin, Renewable energy policies and markets in the united states, http://www.martinot.info/re_publications.htm last accessed on 13 April 2018

the production tax credit (created under the EPACT in 1992), investment tax credit, renewable portfolio standards (renewable energy targets for utilities for generation mix), feed-in tariffs, R&D subsidies, funding and guidelines for industrial co-gen, and a North American Smart Grid Interoperability Panel to coordinate and accelerate standards harmonization.

Moreover, the White House undertook several initiatives in favor of support and promotion of RES:

Staying on the Cutting Edge Through Clean Energy R&D, Promoting Renewable Electricity in Rural America, Siting Record-Breaking Renewable Projects on Public Lands, Opening a New Frontier for Atlantic Offshore Wind Development, Expanding and Modernising the Grid to Integrate Renewables and Increase Reliability, New Standard for Clean Energy, Double the Share of Clean Electricity over the Next 25 years from 40% to 80% in 2035, Investing in Smart Grid Innovation and deploying smart grids, Investing in DoE's Advanced Research Project Agency-Energy (ARPA-E), Syncing R&D Investments and Clean Energy Technology Deployment, Eliminating Fossil Fuel Subsidies to Help Support Clean Energy, Doubling the Number of Energy Innovation Hubs to Focus on Key Energy Challenges.⁹⁰

3. State Drivers for RES

In state level, the most important policy is the Renewable Portfolio Standards (RPS) that resembles the mandatory binding rules RED contains. Other mechanisms are the Renewable Energy Certificates (RECs) or Performance Based Incentives, that resemble TGC and Cos, (Virtual) Net Metering, Carbon Markets, State Tax Credit, Property Assessed Clean Energy (PACE) Programs, Property Tax Exemptions, State Sales Tax Exemptions, Grants, Clean Energy Financing Program, Subsidized Loans and On-Bill Financing.

Also, it is provided for the consumers of 18 states under PURPA and Energy Act too select the energy supplier at will. Also, PURPA enables independent energy producers to grid access and to act in utilities level.

Besides RPS, the Environmental Protection Act 2005 sets RES goals for Federal Agencies (*the 20% x 2020 energy efficiency gain target for Federal Agencies*)

⁹⁰Remap 2030, A Renewably Energy Roadmap, IRENA, p. 28 - 29 (2015)

(currently tracking towards 28% 2020). Furthermore, the majority of states fall into and abide with RPS, succeeding that US would achieve an overall 20% share of RES by 2020.⁹¹

4. Comparison between EU and US RES policies

While EU under RED have set an overall EU target of 27 % share in energy supply by 2020, in US every state set its own binding targets buy 20% without an overall US aim. Although EU and US differ legally and, in a way, financially, both by promoting RES aim to energy efficiency, energy security, less dependence on energy imports and a radical solution to the climate change (although US didn't gratify the Kyoto Protocol). Moreover, there is a strong resemblance to support mechanisms such as the binding targets and RPC. Financial incentives, grants and tax reduction or exemption are just a few examples of the above. With EU's leading role in RES promotion and US commitment to support RES, both will succeed in their goals providing a more sustainable and clean energy system.

CONCLUSION

The adverse global climate change affects every country in the world. The global warming consists the greatest threat humanity, environmentally wise, has faced. In order not to halt it but even to reverse the climate change actions should be taken by every state. The "United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol set the pace for the development of RES as an alternative to fossil fuels sources. The need for a sustainable and efficient energy system was therefore obvious. EU following the global mandate, self-proclaimed a leading role against climate changes and in favor of promotion and support of RES. Several White and Green papers showed the aim of EU for energy efficiency, less dependence on imports, sustainability and energy.

The next step is Directive 2001/77/EC *on the promotion of electricity produced from renewable energy sources* that although it doesn't entail binding target, it pushes MS

⁹¹ Ibid

to introduce and implement support schemes for better penetration of RES in the energy common market having to achieve the overall target of 12% consumption of RES by 2010 and 20% by 2020. The conditions have matured enough, and things are accelerated with the 2009/28/EC renewable energy directive (RED) entailed in the Climate and Energy Package with binding targets 20% reduction of GHG emissions, 20% improvement on energy efficiency and 20% share of renewable energy in energy consumption. MS have the liberty to choose whichever support schemes they consider suitable

In case of MS' failure or denial of comply to the support schemes in achieving the binding target, Commission can legally interfere, but the question is to what extent and under which circumstances? As it is not defined in RED the how of achieving the goal with which criteria is Commission going to examine each case?

Furthermore, EU has set even more ambitious targets to achieve by 2030 (a share of 27% in energy consumption) and aim to full decarbonization by 2050. MS with a series of support measures and mechanisms try the integration of RES in the energy sector and aiming to a clean and sustainable energy system.

US has the greatest import of oil and suffered significantly from the oil crisis in the 1970s with deflation and deficiency in its energy sector. In contrast with EU, US hasn't set an overall goal, states decided in their own binding targets. However, it provides federal support through a plethora of mechanisms. Even if it hasn't set an overall goal for RES share in consumption, it moves forward by the individual achievement of states' binding targets to an approximately 20% share of RES in energy consumption, the same as the overall EU target. Moreover, EU and US introduced and implement quite similar policies and support mechanisms, taking under consideration their overall differences.

To conclude, EU and US have both leading roles in the fight of climate change, the energy efficiency and security. With their cooperation, even if it is only by achieving the same targets, we move forward to a sustainable, efficient and clean energy system.

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