Renewable energy support mechanisms and environmental policy in the EU

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I hereby declare that the work submitted is mine and that where I have made use of another’s work, I have attributed the source(s) according to the Regulations set in the Student’s Handbook.

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Abstract

Before you lies the dissertation ‘Renewable energy support mechanisms and environmental policy in the EU’. It has been written to fulfill the requirements of the MSc in Energy Law, Business, Regulation and Policy at the International Hellenic University. I was engaged in writing this dissertation from October 2018 to February 2019.

Through our courses of the MSc program, we often came across with various Directives concerning aspects of commercial energy activities such as trade, transit, investments and also energy efficiency. Apart from this, some of us chose a coursework about renewable energy support schemes across Europe for the course “Energy Law II”. As a result, I was intrigued to delve into the legal framework about energy. In addition, as we have already entered to an era that renewable energy is crucial to the planet’s survival and the fact that my Bachelor’s degree is in Economics, I felt the need to study further the support schemes of renewable energy in the European Union.

Concerning the renewable energy support mechanisms, the following key points are going to be examined: Feed-in tariffs, Feed-in premiums, Quota obligations with tradable green certificates, Loan guarantees, Soft loans, Investment grants, and Tax incentives. Also, we are going to delve into the European Union’s 2020 target, i.e. a 20% share of energy from renewable energy sources in the final energy consumption in 2020, as set in the 2008 decided package of energy and climate change legislation.

Concerning the environmental policy in the European Union, the following key points are going to be examined: Framework, Climate change, Air and noise pollution, Green growth, Agriculture, Eco-innovation and the EU’s Environment Action Programme (EAP) until 2020. Since the European environmental law contains a steadily growing number of Directives and Regulations, the Commission seems to be focusing more and more on the Framework Directives, which integrate the more specific pieces of legislation from the past.

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Keywords: support schemes, support mechanisms, renewable energy, environmental policy, feed-in-tariffs

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Introduction

During the last few years, environmental policies at the global, national and local levels have undergone profound changes. There are many reasons for this. Firstly, there is a shift of concern from local pollution problems towards global long-term issues like climate change, depletion of freshwater reserves, etc. At the same time, environmental protection is being seen not only as an obligation but also as an opportunity. The European Union (EU) is trying to deal with the continuous challenges by introducing an innovative approach to environmental policy. This is achieved with the integration of environmental consideration into other policies and the variety of environmental instruments, in order to improve both the effectiveness and efficiency of environmental management. However, the biggest challenge has been to increase the competitiveness of European industry while protecting the environment.

Environmental policies can only be effective if there is a proper collaboration between the regulators and the regulated. For this interaction to be successful, it is vital to create the right environmental regulatory framework. Traditionally, the economic analysis of an environmental policy focuses on its effects. The whole process involves monitoring of the environmental regulations and how they affect technological changes, competition among companies, employment and economic growth. Most of the results lead to the implementation of instruments such as taxes and tradable permits.

Environmental policies include various stages. At first, there is a phase of dialogue and negotiations between public authorities, regulators and the interested parties. In this context, the Commission emphasizes on the collaboration and right interaction among the various actors (government, companies, consumers). In addition, EU member states promote the use of stakeholder consultation and intervention in the development of new environmental instruments. Also, a good relationship among all interested parties is substantial for the proper implementation of the policies.

Another factor that should be taken into consideration is that institutions and regulatory methods are constantly changing. The Act of Political Union signed in 1992 has been the first step towards an improved environmental law-making in the EU. Majority among member states is introduced for the decision making, instead of unanimity and the role of the European Parliament (EP) is strengthened. During the years, it is observed that the EU imitates the other OECD countries when it comes to new policy instruments. Moreover, environmental taxation is being adopted by many member states as well as the use of voluntary agreements between companies and governments.

Companies play a significant role in the regulatory process. Of course this is the result of endorsement and encouragement from various policy makers. Most of the information regarding the amount of pollution, abatements costs and technology is only known by companies. Consequently, the regulators have to collect the data before trying to reduce pollution. Also, it is often observed that firms undertake lobbying activities before any
proposals are drafted by the government.

It should be noted that sometimes regulations are subject to failure. Environmental economics is very marked with Pigou’s concept of externality, which is linked directly to market failure. This induces many environmental economists to seek public intervention. Even regulators can fail - willingly or unwillingly. This can be caused by lack of information, personal interests or false predictions. However, public intervention to fix the externalities is only meaningful when market failures exceed regulatory failures. Finally, the commonly considered market structure is the model of perfect competition. The introduction of new environmental regulations should not create disparities in competition among companies.

The 2030 legal framework for energy and climate sets new policy objectives and EU-wide targets for reaching to a more efficient and competitive energy system. Also, it paves the way for Europe’s goal of a low carbon economy. Together with the targets for greenhouse gas emissions reduction and energy savings increase, another aim of this policy framework is to achieve a minimum 27% of renewable energy in Europe’s final energy consumption. With the Renewable Energy Directive (RED) already into force (and its target for 2020), EU member states are now focusing towards the next decade and its objectives.

In this context, support mechanism for renewable energy sources (RES) are a key factor for the fulfillment of national and European renewables objectives. In order to prevent any mischiefs that may derive from public support granted to RES, the Commission has decreed specific Guidelines concerning state aid for environmental protection and energy. Due to this predicament, member states are now obliged to adopt their national schemes, stirring up a high level of interest when it comes to the various implementation approaches and the overall costs for RES deployment in the EU.

RES policies can influence consumers in many ways. The final cost of achieving the defined goals, will most likely burden the end-users, whether it has the form of electricity bills or higher electricity prices. So, it is essential for the consumers that RES are properly and efficiently exploited.
Environmental policy in the EU

Organisational structures

When the EU was created, a group of like-minded states tried to address their common problems more effectively by working together following two world wars. However, when some of them realized the benefits of this collaboration, they became hesitant about surrendering their sovereignty to a multinational entity. As a result, the EU is considered to be a combination of intergovernmentalism and supranationalism. In certain policy areas, EU operates as a pseudo-federal state using its Treaties, while in others, the different governments make the decisions through bargaining. Many have compared the EU as an ‘upside down confederacy’, in which the various members hold powers concerning the higher level bodies (for example, defence), while the EU deals with the lesser activities (for example, environmental policy). In addition, the EU’s authority is usually higher when it comes to adopting and setting the stages of a policy cycle, while the states are held back when it comes to their financial resources. Compared to states, the EU has a relatively small budget of its own, having no general powers of taxation. This leads to certain assumptions. Firstly, the EU has only a few resources of its own and practically none in the environmental sector. That means that, to get something done, it has to rely to a considerable degree on various regulations. Its ability to use new environmental policy instruments (NEPIs) to achieve environmental goals is extremely diluted. Second, the fact that the states dominate the implementation of EU regulation, makes the EU itself to try very hard to put into effect those policies that were adopted. Thirdly, even within a sector with paramount importance such as the environment, the vertical allocation of tasks can sometimes be irrational.

Given the fact that the motive for the development of EU environmental policies is to tackle pollution issues that concern the states, one might expect that most member states would deal with sub-national public goods and the EU would focus on cross-border public goods. However, some believe that the EU concentrates in imposing regulations concerning sub-national public goods like urban air quality and bathing water, while at the same time ignores its responsibility to regulate cross-border issues like energy policy. One of the main reasons for this situation is the open structure of the EU policy process, which makes it possible for different actors to introduce ideas from different directions.

The Treaties are the nearest to an EU constitution. The EU has been effectively engaged in a continual constitutional debate about its authorities, due to the fact that these Treaties have been improved through time. The Treaties offer a variety of principles and procedures which result in environmental policy development. Consecutive Treaty amendments have affected greatly the power of various environmental policy actors.

The EU environmental policy was already over 25 years old when the subject of the
environment was first mentioned in the Treaties. In fact, the closest things that the EU has to a draft for environmental policy are the Environmental Action Programmes (EAPs). However, any limitations that derive from the Treaties influence directly the selection of environmental policy instruments.

The fact that the four main EU institutions are implicated in the policy-making process, is another proof of the importance of the involvement of the Treaties. As expected, this creates a certain level of complexity: the Council of Ministers and the Commission share some executive powers and various implementation functions with the member states. Comparatively, the Council shares certain traditional functions of legislation as well as liabilities with the elected European Parliament (EP) and other national parliaments. The Commission, with its many Directorate Generals (DGs), exercises environmental policy and acts as the ‘guardian of the Treaties’, making sure that member states will comply with the obligations made in the Treaties. The Commission’s proposals can only be accepted if they are approved by the council of Ministers and the EP respectively. Finally, another major institution of the EU is the European Court of Justice (ECJ). Its role has become to decide the scope of the various environmental laws of the EU and how they have to be implemented by member states. Normally, the European Council doesn’t get involved in the law-making process although it represents the EU’s goals and strategies. Within the Commission, all the DGs (including the Environment) should cooperate in order to take proper decisions on environmental policy because the College of Commissions decides by common consent on Commission proposals.

Policy style

The European policy model contains the terms of regularized access, bargaining and consensus. Lately there have been many definitional problems concerning the application of the ‘policy style’ concept of the EU. Over the years, many authors developed theories in order to compare the different operating procedures of the member states for making and implementing policies, leaving out the various sectors. The authors also concluded that if they want to examine the ‘policy style’, they would have to rule out the cross-sectoral variation and deal with the differences of each nation instead. On the other hand, many debate that the operating procedures of the EU are not part of its own policy style but merely a mix of national policy styles. Another important fact is that the environment (whose policy we are going to explain) is involved in many other sectors (such as transport and energy) and it is in these sectors that environmental damage is usually met.

By examining thoroughly the EU’s environmental policy, many considerable points emerge. As far as the consensual-impositional part is concerned, the EU is often portrayed as a federation with diversity and a strong desire to achieve consensus. The EU’s wide range of actors (namely the Commission, EP, ECJ, etc) may sometimes object and produce a ‘veto point’.
In order to overcome these obstacles and getting the policies adopted, unanimity is required. This means that certain ‘veto actors’ have to compromise and as a result reveal their true motives. It is difficult to adopt EU policy by imposition-or at least consistent imposition. Nevertheless, imposition is sometimes the only way for actors to achieve their objectives. When it comes to reaction and anticipation of environmental problems, the EU (especially the EP and the Commission) has been a strong defender. Even in the first EAP in 1973 where they were integrated. Nowadays, the EU has a Treaty-based commitment to anticipate problems related to the environment, through certain precautionary standards. The most recent example is the EU’s attitude towards climate change.

Policy goals and strategies

Through the years, DG Environment has been trying to find a way for a contextual policy to be adopted. This would include concepts like ecological modernization and sustainable development. As a result, the various Treaties now contain a lot of policy principles like precaution, anticipation and environmental policy integration.

In 2001, the EU adopted a Sustainable Development Strategy. Before that, only a small number of laws concerned environmental and/or health issues. The first pieces of environmental regulation appeared at the early 70’s. These were mainly focused on radiation from the nuclear sector and the labeling of dangerous substances. The structure of EU legislation should be referred if the command-and-control regulations are to be established. More specifically, primary legislation consists of the Treaties and secondary legislation consists of Regulations, Directives and Decisions which are adopted by the EU to apply the provisions of the Treaties. The Directives have been a commonly used means of the EU’s environmental policy since the 70’s. They define the legally binding goals and commitments but the final choice of their implementation rests upon the member states.

During the 80’s, there has been a dispute over the efficacy and the economic efficiency of the EU environmental regulation. The various members of the industry introduced modern tools like voluntary agreements and eco-taxes in order to find cheaper forms of control. In the next decade, this argument started becoming part of a greater debate-the one concerning the level of authority of member states and the EU. This situation made way for the industry to claim new policy instruments. At the same time, certain member states pushed for the complete review and revaluation of past EU environmental laws but none of them was revised whatsoever.

A Commission’s 2001 Paper introduced a more efficient theory concerning new policy instruments. It acknowledged that EU legislation is sometimes too elaborated, thus consuming time to be reviewed and improved and also that it is seldom fully implemented due to the complexity of the negotiation processes. The Commission committed to make better the
quality, effectiveness and simplicity of regulatory acts. This regarded: i) the use of regulation as a last resort, ii) the increase of framework directives which include only the fundamental parts of a policy, excluding any technical details, iii) the introduction of co-regulation which concerned the link of regulation with other tools like the voluntary agreements; and iv) the extensive use of the open method of co-ordination (OMC), by which member states exchange information about the better management and evaluation of their activities.

Of course, there are certain boundaries to the application of these four issues. First, because the EU remains a regulatory state, it is not completely striking that new environmental policy instruments are used to a meager degree throughout the EU. In addition, EU environmental policy has become a rather significant section of EU activity and as a result it doesn’t fit with softer policy instruments such as the OMC (which primarily involves less important areas like employment and social policies).

**Informational means**

In this chapter, we are going to discuss the informational policy instruments and more specifically the eco-labels and the environmental management schemes (EMSs). Despite the fact that eco-labels and EMSs are considered as two separate schemes, they both share the ability to help the participants to revise and make public of their environmental performance. Apart from their informational role, both eco-labels and EMSs also act as voluntary policy instruments schemes that introduce a self-regulatory process in which the actors abide by certain environmental performance preconditions (especially when it comes to eco-label schemes) and environmental audits (especially when it comes to EMSs).

Informational policy instruments are sometimes characterized as ‘moral oppression instruments’ because they communicate to consumers standardised information concerning the effects on the environment of various products. Taking advantage of this situation, many corporations which are part of markets with public environmental awareness and ecological elements, are often motivated to adopt eco-label schemes and/or EMSs especially if their antagonists have already done so.

The first country which introduced an eco-label scheme was Germany. At the early 90’s many other countries along with the EU followed this example. However, the spread of eco-label schemes didn’t include all of the EU’s member states. In spite of the rise of eco-label schemes, the appropriation of EMSs in Europe was characterized by another follower-leader pattern. As a result, rivals took place among EU and international EMSs.

Eco-label schemes were mainly made to help the consumers to check the environmental sustainability of their products. Especially in markets with ‘green consenciousness’, many companies choose to adopt eco-labels in order to have a competitive advantage. On the contrary, in markets with a lower level of ‘green consenciousness’, eco-labels are often used as
a means to raise public environmental awareness.

The OECD splits the eco-label schemes into 3 sub-types: Type I – schemes verified by third-party institutions, Type II – semi-certified schemes by manufacturers and/or retailers and Type III – schemes with unique characteristics based on a specific product’s features. Type I eco-label schemes were first established in Europe (specifically in Germany) where they were welcomed counter to other member states which were not so receptive. Type II schemes are popular among companies although they are not so popular when it comes to implementation. Type III schemes are mainly directed towards goods with special features and for this reason are not broadly used. Because of these conditions, we are going to primarily focus on Type I eco-label schemes.

The first EU regulation that introduces eco-management and audit schemes (EMAS) was called EMAS I. It describes EMSs as ‘the part of the total management structure and other conditions regarding the implementation of environmental policy’. EMAS I started being in effect in 1995 and has since been revised twice. EMAS II did in 2001 and EMAS III in 2010.

EMSs define the environmental conditions in which companies can commercialize their products. The goal is to achieve a constant improvement: all corporations should revise the environmental impact of their products and try to meet the specifications of a third party environment verifier who will test them impartially. The concept of an EMS comes from the US, where certain companies adopted auditing practices in the early 70’s. A raise in industrial accidents was noted contrary to the fact that environmental regulation was increasing at the time. Because of this situation, the various corporations started auditing themselves to comply more easily with the rules. The International Chamber of Commerce issued a document in the late 80’s, concerning the environmental auditing. During that period many EU member states started welcoming auditing, supporting the ICC’s thesis.

EMSs like the EMAS and the International Standard Organisation’s (ISO) 14001 standard make corporations aware of their effect on the environment. Despite their differences, both schemes try to encourage auditing as well as monitoring and reduction of the environmental impact. However, not all companies can be subject to these schemes as they need to meet certain requirements. Even though these schemes aren’t obligatory, many companies adopt them to show corporal social responsibility.

**Eco-labels**

The course of the EU eco-label has been doubtful since its beginning. The Commission introduced the first label in 1991. There were conflicts about the matter of coordination and control of the EU eco-label by the Commission. The European Parliament was in favor of the
participation of various shareholders at all stages of the schemes, while at the same time promoting the coexistence of both the EU and national schemes.

The actual definition of the EU eco-label scheme is: a scheme that endorses products and services that are less harmful for the environment correlating with relevant products and services. It is granted for a period of up to 3 years, based on certain conditions concerning the kind of each product/service. All applications related to the EU eco-label must be submitted to each state’s Competent Body and then carried forward to an Advisory Committee. This Committee consists of members from the Competent Bodies which are moderated by the Commission. Also, the Committee defines the product groups and qualifications that member states should later break down and examine.

During the period between 1992 and 1995, the EU eco-label was granted only in two firms. In 2000, the number rose to 41 schemes across 15 countries. After a revision in 2000, there were approximately 184 EU eco-label schemes but their number was still relatively small.

A surprising fact concerning the EU eco-label is that many countries which don’t have a national eco-label, aren’t very eager to adopt an EU eco-label at all. On the other hand, member states which have adopted their own national eco-label schemes, tend to consider theirs to be more austere contrary to the EU eco-label which is more diverse. In addition, the lower consumer recognition makes companies skeptical about adopting the EU eco-label, as they consider it costly and difficult to use.

In early 2004, many corporations from various countries (Italy, France, Denmark) adopted a huge amount of EU eco-labels. This mainly concerned large companies while small or medium companies chose their nation’s eco-labels. The firms which are about to introduce an eco-label that isn’t EU’s, will have to face the issue of making the label known to the consumers. Simply the fact that a company uses an EU eco-label, can make it extremely competitive.

In 2001, most EU eco-label licences were granted to: i) tourist accommodation services, ii) all-purpose and sanitary cleaners, iii) indoor and outdoor paints. However, the majority of EU product groups wasn’t able to be awarded with an eco-label. Especially, the white goods (such as fridges) faced the most difficulties despite the fact that they already held energy efficiency labels. In addition to the competition with various national schemes, the EU eco-label also faced other issues. One of them was that many member states distrusted its decision-making process. Another was the difference regarding the fixed charges between the EU eco-label and the national schemes. Finally, there were hints that the EU eco-label violated certain WTO rules.

The Commission concluded that the EU eco-label suffered from: i) low public awareness, ii) a small number of product groups, iii) unwieldy procedures, iv) an uneven geographic dispersion. As a result, a revision was proposed.

The EU eco-label was revised in 2000 (instead of 1997 when it was initially planned)
because of discords between the European Parliament, the Commission and the Council. The Commission was in favor of the abolishment of national schemes while the Council was in favor of the co-existence of EU and member state schemes. The newly EU eco-label scheme was appointed an Eco-labeling Board which was made up of national Competent Bodies. It was characterized by higher consumer involvement and also associated the EU eco-label schemes with EMAS.

In 2006, the Commission suggested that the EU eco-label and the EMAS should merge in order to achieve growth. This didn’t happen and the Commission ultimately praised the EU eco-label. The companies that had adopted the scheme preferred it because of its performance and non-users treated it as a benchmark. The revision of the EU eco-label has a result the higher level of absorption by member states. Transparency, lower fees and the improvement of the decision-making process led to this admittance. The leading countries which adopted the EU eco-label were Germany, Spain, Italy and France. As far as product groups were concerned, there was a significant increase in the number of EU eco-label licences for sanitary cleaners, tourist accommodation services, textiles and paints. The leading product group was different in each country.

**Environmental Management Schemes (EMAS)**

The fact that certain countries started adopting their own national environmental management schemes had a negative impact on European industrial associations. Many considered the EMAS I to be much stricter than other standards (such as Germany’s and UK’s), as it constantly reduced the environmental impact and required a closer self-audit. Also, EMAS I contained frequent revisions of the environmental targets and let out further information about environmental performance.

In 1996, the ISO 14001 was adopted. It was much more lenient than the EMAS I as far as premises for environmental statement were concerned. As a result, many corporations (both European and international) chose to adopt this standard. In 2001, the EU revised EMAS I in order to: i) expand its application in other sectors (such as public authorities and NGOs), ii) highlight any secondary environmental effects, iii) focus in public reporting. This newly reformed EMAS II pointed out the intense ‘rivalry’ of the EMAS I and the ISO 14001. As a matter of fact, one of the targets of the revision, was to make EMAS II more similar to the ISO 14001 without, however, stripping it of its stricter elements.

The 2001 revision came into force in 2004. Public companies were now capable of taking part in EMAS (not only private) and the application of EMAS expanded in all economic sectors. The first organisation which achieved it was the Environment Agency in Germany. However, despite of the extension of EMAS, the fulfillment of requirements for industrial sites made the ISO 14001 even more popular among countries. Germany holds the dominant
The revision of EMAS II came across with a lot of controversy by certain European environmental and consumer groups. They pushed for a better evaluation system when it comes to the schemes and also for a more substantial revision overall. Consequently, the Commission started trying to improve EMAS in every possible way. Firstly, DG Environment came up with ways to link EMAS with the Integrated Pollution Prevention and Control (IPPC) Directive. In 2007, the idea of a new revision started growing. Three years later, EMAS III became operational. EMAS III required all eco-audited organisations to issue a report, ensuring that they weren’t breaching any environmental laws. Also, the new scheme introduced one single EMAS logo for all products.

In 2007, there were almost ten times more ISO 14001 registered organisations than EMAS-registered. This led the Commission to a search of ways to increase motivation, by allowing non-EU or EU-associated organisations to join.

**Voluntary means**

Voluntary agreements (Vas) are basically commitments from companies that they will follow a specific procedure. Although, these agreements are not applied by force, we sometimes have a certain degree of necessitation that governmental actors pass on societal actors. Vas started being used in the early 70’s, primarily by Germany and the Netherlands. It was only after decades that Vas became known among other EU member states. Over the years there have been definitions to describe the VAs. The European Environment Agency (EEA) defined them as ‘covering only those commitments undertaken by firms and sector associations, which are the result of negotiations with public authorities and/or explicitly recognized by the authorities’, while the Commission described them as ‘agreements between industry and public authorities on the achievement of environmental objectives’.

It was during the late 80’s that the EU decided to start adopting Vas. One reason for this decision of the environmental policy makers was the increasing competition (as a result of globalization). In addition, many new policy issues (such as climate change) started to emerge and they couldn’t be dealt with conventional regulatory processes, making Vas indispensable.

In 2002 there was a proposition for introducing 7 different types of EU-wide VAs. However, most of them were overreached as they suggested a Treaty amendment to impose a legal base for VAs, while other suggested cross-sectoral collaborations and other EMAS-like schemes. As a result, the Commission eventually rejected most of these options (after being advised to do so by the Legal Service) because it considered them to be too insubstantial.

During the same year, a Commission’s statement referred to the need of creating additional environmental agreements before 2004. These concerned 4 areas: Polyvinyl chloride (PVC) management, Integrated Product Policy, climate change and waste management.
However, there was still low acceptance of the VAs in the EU due to issues of legality and transparency. The EP was strongly against the Commission’s decision to increase the use of VAs in the EU, except for the PVC report. Also, there were many environmental groups which entertained doubts about the use of VAs. In the same way, European industry backed the expansion of EU-wide VAs but didn’t support openly the Commission’s efforts to promote them.

Competition grew among national VAs and the EU-wide VAs. Germany, Austria and the Netherlands were the most competitive countries when it came to these agreements. Also, the fact that certain free-riders surfaced, led the Commission to the increase of EU-wide VAs. Substantially, free-riders were parties who gained a competitive advantage in the market every time they couldn’t implement the VAs. This didn’t have any sanctions as the VAs aren’t legally binding. Moreover, the Commission noticed that not all industry sectors have their own associations, making it difficult to introduce new VAs. Notably, the majority of EU-wide VAs has been adopted by the automobile and the chemical industry. The first 4 EU-wide VAs were adopted in the late 80’s and they all concerned chemicals. Three of them contained reduction targets for Chlorofluorocarbons (CFCs) and the fourth regarded detergents.

In 1999, the Commission and the association of the European automobile industry (ACEA) arrived at a decision for a VA which would reduce carbon dioxide (CO2) emissions for passenger cars. Both the EP and the Council where monitoring the negotiations from the start, as they have set the reduction targets. The negotiation lasted for almost 5 years and in the end both the Commission and the ACEA characterized this agreement as ‘a great success’. The VA fixed the CO2 emission reduction at 140g/km by 2008 but some environmental groups considered it to be too scant.

In 2004, certain automobile corporations (especially in Germany) started having second thoughts about the effectiveness of VAs. They pointed out at the governments of member states the level of competition while pushing for less strict CO2 emission reduction targets. Two years later, ACEA held the consumers responsible for the failure of the CO2 emissions VA, by stating that they choose more fuel efficient vehicles. The Commission, in turn, expressed its discontent about the automobile industry’s slow progress and warned that it would substitute the VA for a legally binding legislation. In 2007, the Commission, realizing that the emissions target wouldn’t be reached by 2012 without extra interference, proposed a binding EU legislation. The legislation forced automobile companies to reduce their CO2 emissions from new vehicles to 120g/km by 2015. The OECD was also quite skeptical about the efficiency and effectiveness of VAs. However, despite the fact that most European companies were disappointed by the VAs, the industry in general was in favor of them instead of binding of EU legislation.

Between 1998 and 2004, only two EU-wide VAs were adopted in addition to the VA on CO2 emissions. The first concerned mercury and pesticides and the second biodegradable
plastic. Other areas which gained attention for adoption of VAs were: climate change (electrical engineering applications), batteries’ components and imaging equipment (such as photocopiers).

Through the years, VAs have remained an environmental policy option for member states. Since the late 90’s, most VAs have been considered as a secondary tool within a wider policy mix. VAs along with eco-label schemes, EMSs, eco-taxes and emissions trading constitute the main components of the EU strategy.

In order to motivate companies to adopt the VAs, the Commission created a supplementary framework: the eco-design Directive. This Directive sets certain preconditions for products that have an impact on energy consumption. The Commission is free to impose various requirements to companies that adopt the eco-design Directive.

By 2011 there were only 14 EU-wide VAs. Their number is extremely small if we take into consideration that there were hundreds of national VAs across the EU. This ‘unpopularity’ of the VAs continues due to various reasons. Some of them are: the lack of a Treaty-based character of the VAs, the dispute over their effectiveness by some EU institutions (such as the EP) and the overall institutional status of the EU.

Eco-taxes

When it comes to environmental governance, market-based instruments have a leading position. Certain European countries (especially in the North) have been using eco-taxes since the late 70’s, despite the fact that these eco-taxes were based on Pigou’s theoretical work back in the 1920’s. Economists throughout the world praise eco-taxes as they point out the costs of negative environmental externalities.

Energy taxes account for more than 50% of the eco-taxes in the EU, with Germany, France and Italy being the leading countries. At first, eco-taxes had the form of a charge on specific pollution. However, by the mid-1970’s, certain countries in the north as well as Germany, France and the Netherlands, have expanded the use of eco-taxes on water and air pollution.

By the late 90’s, there is an overall eco-tax reformation. The main reason was to increase the cost of the consumption of non-renewable resources or polluting activities while using the generated revenue to reduce labor cost. Germany and the Netherlands were once more the pioneers.

Between 1970 and 1990, merely the thought of using eco-taxes as a supplementary environmental policy instrument was absent. Despite the fact that certain member states adopted various eco-taxes, traditional regulation continued to be the main EU environmental policy tool. It was only during the end of the 80’s that eco-taxes for carbon dioxide were first introduced by the DG Environment. One of the main reasons was of course global warming and
the greenhouse effect. Public awareness within the member states led to the development of alternative environmental policy instruments.

In 1992 the members of the DG Environment concluded that they should emphasize on a common carbon dioxide/energy tax. The same year, in the UN Rio Earth Summit, it was stressed that eco-taxes would help the EU boost its global role and broaden the Commission’s scope of influence. While some countries (such as Germany and the Netherlands) backed EU’s decision for an eco-tax, there were many that opposed to the idea for their own speculative reasons. However, EU was still unable to create a proper eco-tax. As a result, a group of like-minded countries started discussing the characteristics of national eco-taxes and the requirements for a united carbon dioxide/energy tax.

In 1997, a Directive was introduced by the Commission in order to align member states’ taxation on energy products. Although there were reactions, in the end member states came to an agreement regarding certain basic principles. In 2003, the Finance Ministers finally agreed on a framework directive that included various economic sectors. The EP, having doubts about the effectiveness of the Directive, proposed a revision but the Commission rejected it. On 27 October 2003, the Economic and Finance Minister Council (ECOFIN) formally adopted the Energy Tax Directive (2003/96/EC). The Directive included tax measures for energy products such as coal, natural gas and electricity.

Having successfully introduced the Energy Tax Directive, the Commission tried to find ways to improve it. One of them was the suggestion of an eco-tax on passenger cars. Member states were bound that by 2010 at least 50% of passenger car taxes would be proportionate to the CO2 emissions. Moreover, the Commission tried to introduce a CO2 tax on imports from third party countries which couldn’t meet the requirements for greenhouse gas emissions, but most member states voted against it.

In 2009, a revision was planned by the DG for taxation, in order to conform the Directive with the EU’s climate and energy objectives. This revision would eventually concern fuels for cars and heating and electricity production.

**Emissions trading**

The principle idea behind emissions trading is relatively simple and universal to all emission trading schemes (ETS). States and/or corporations are provided with emission ‘allowances’ which can be traded in the market place. Naturally, all ETS have differences depending, for example, on their cost (some are free while other are sold through auctions). The cap-and-trade ETS sets the limit of the emission that states and/or corporations are allowed to release while the market sets the price of these ‘permits’. In theory, there is an
upper/lower limit for the price of emission allowances but in practice none of the existing ETS uses one.

The amount of the emission allowances that are granted (supply) affects directly their price through scarcity. As a result, states and/or companies are compelled to reduce their emissions. This way, new emission reduction technologies emerge as competition among parties increases.

The idea of emissions trading was first introduced in the 1997 Kyoto Protocol. The Commission, disappointed by its incompetence to introduce a proper carbon dioxide/energy tax without flaws, tried to introduce a more cost-efficient market-based instrument. Several DG Environment officials came up with the idea of endorsing emissions trading in order to tackle climate change. In 2000, the Commission published a Green Paper on Greenhouse Gas Emission Trading within the EU. After consulting various member governments, the Commission ultimately issued an EU ETS proposal in 2001. Two years later, both the EP and the Environmental Council adopted the proposal after laborious negotiations. At first, the EP proposed approximately 60 amendments to improve the efficiency of the scheme and later 14 more were added.

The focus of the EP and the Environmental Council shifted towards the structure of the scheme and not towards technicalities. Each member state has to implement its own rules regarding the function of schemes which were called national allocation plans (NAPs). As a result, the EU ETS became a highly decentralized scheme and many countries chose not to follow the Commission’s instructions. It was this situation that led to the quick adoption of the Commission’s proposal. Also, it was imperative to introduce a functioning EU ETS before the Kyoto Protocol entered into force in 2005 and thus the Environmental Council and the EP consented to it right away.

In 2003 the Commission proposed a so-called linking directive. It connected the EU ETS with certain mechanisms in the Kyoto Protocol, namely the clean development mechanism (CDM) and joint implementation (JI). The CDM grants developed countries the emission reduction units (ERUs), which can be traded within the EU ETS, for sponsoring certified greenhouse gas emission reduction projects in developing countries. JI allows developed countries (listed in Kyoto Protocol) to implement jointly greenhouse gas emission reduction projects.

In 2005, the EU ETS came into force. It was applied in approximately 10,000 sites in the energy and industrial sectors which account for almost 50% of Europe’s emissions of CO2. The EU ETS is divided into 2 trading phases: the first from 2005-2007 and the second from 2008-2012. During the first phase, the main pillars were set up and during the second, which was also Kyoto Protocol’s first trading phase, there was a refinement of the rules. A third trading phase (2013-2020) was added during the revision of the EU ETS.

Germany had the majority of its sites covered by the EU ETS, since it had the highest
levels of CO2 emissions in the EU. Almost 60% of these emissions were covered by the EU ETS. Also, almost 50% of its emission allowances were used by the 4 largest energy producers. Other countries with corporations which used emission allowances were Austria and the Netherlands.

During the two trading phases, countries had to implement NAPs which set limits regarding the CO2 emissions in order for them to converge with the Kyoto Protocol reduction target. Naturally, each member state had different reduction targets, depending on its capacity.

In the Netherlands, the government was getting ready for the introduction of the EU ETS with the Dutch Emissions Authority (NEA) being responsible for its implementation. NEA was in charge of monitoring the procedures and of making sure that everything would function by due process. Also, NEA issued annual emission monitoring reports and sanctioned firms’ protocols. In its first year (2005), NEA had already granted almost 200 allowances which accounted for 95% of the country’s industry. In the end, the EU ETS was implemented by the Environment and Economics Ministries. In addition, the Ministry of Finance dealt with issues of auctioning and the income that derived from it.

In Germany the NAP-I (NAP of the first trading phase) was introduced in 2004 and was approved by the Commission the same year. Because of the political instability of that time, many firms showed their opposition to the EU ETS by taking legal action against it. However, the courts largely backed the government’s position. The German NAP-I was extremely complex-it contained almost different provisions for distributing allowances. That was mainly because Germany had the largest number of sites (from a variety of industrial sectors) which used the EU ETS. In addition, Germany has always been an ambitious country when it came to reduction targets. The NAP-I was fully integrated as it blended successfully with all the previous laws and environmental policy instruments.

In 2004 there was a dispute between the Environment and Economics Ministries about the actual function of the NAP-I. However, after negotiations, all parties came to an agreement to set the cap at 503 million tons. Also, after the negotiations, the carbon dioxide coal industry was benefited with new allocation rules.

The price for emissions allowances was low during much of the first trading phase. In 2006, the results showed that the CO2 emissions which were released, were disproportionate compared to the number of allowances that were granted. As a result, the price of the allowances fell to about one third of the initial price. One year later, the price declined markedly (less than 1 euro/ton). In the end of the first phase, the Commission concluded that it was overall an educational period which taught many things to countries.

In 2007 the second trading phase was initiated and was marked by the implementation of the EU ETS. In Germany, the NAP-II was introduced and it contained an auctioning of 7% of the national CO2 emission allowances. After the elections in 2005 there was a slight dispute between the Economics and Environment Ministries concerning the emissions trading. Many government officials pushed for a 10% auctioning option but in the end, a compromise was
reached at 8,8 %.

The NAP-II in Germany set the limit at around 480 million tons for carbon dioxide emissions but the Commission refused to accept it because it deviated from the Kyoto Protocol reduction target. The Economics Ministry wanted to file a complaint to the Commission but eventually the government accepted it. This happened for two reasons. First, a legal challenge would have created uncertainty for German industry and second, Germany wanted to be a reliable and reputable member state of the EU.

In the Netherlands, there were difficulties in the implementation of the EU ETS. The Dutch Court of Audit considered that the NAP-II was not very effective when it came to CO2 emission reduction and that it would sabotage the government’s commitment to the Kyoto Protocol. As a result, the Commission urged the government to implement a stricter NAP-II cap. The same happened with 9 other member states-the Commission requested an average reduction of emissions of around 7%.

The European Environmental Agency detected many member states differences during the implementation of the EU ETS. Consequently, it pushed for an increased harmonization of the EU ETS by easing the demands of the Emission Trading Directive.

In 2008 the aviation sector was added to the EU ETS through a Directive (2008/101/EC) introduced by the Council and EP. Moreover, the Commission tried to establish a way to include the shipping industry. Despite the fact that there were objections for the use of the Directive by countries like China and USA, in the end the ECJ decided that it was in accordance with EU legislation.

During the third trading phase (2013-2020) the EU ETS was revised in order to fix certain flaws of the rules of the first two trading phases. Almost all member states faced the fact that the EU ETS should become more centralized with more coordinated procedures. The most important points of the revision were: i) the use of a single EU-wide cap, ii) the auctioning process will become the main allocation method for allowances, iii) benchmarking for industrial sectors will be introduced, iv) the rules for Joint Implementation and Clean Development Mechanism will be present in the new Directive.

Between 2009 and 2011, the EU ETS has fallen victim to several attacks by criminal hackers. In these years, many millions were stolen and the tax authorities were defrauded many times. In order to ensure the functioning of the market-based EU ETS, state authorities had to crack down on fraudsters.
Renewable energy support mechanisms

In recent years, renewable energy sources (RES) have gained a lot of importance around the globe. The technologies which are connected with RES are evolving rapidly and occupy a dominant position in energy generation. In fact, only in 2009, almost 60% of newly installed capacity in Europe came from RES. The Commission has already set certain targets for the use of RES. The Directive 2009/28/EC dictates mandatory national targets which account for a 20% of energy from renewable sources and a 10% of energy from renewable sources in transport by 2020.

RES are about to play an even more important role in the EU’s environmental policy. Many member states have already begun incorporating RES in their energy generation procedure. For example, Denmark announced in 2011 that more than half of its electricity production will come from RES while Germany has set a target of 35% for RES use concerning its electricity consumption.

However, the high cost of integrating RES technology has raised many concerns and has resulted in the need for regulatory intervention. Member states’ governments and regulatory agencies are trying to create the proper framework in order to control the integration of RES technologies into the larger generation mix. Naturally, there is a dispute for the use of RES support schemes and the existing industrial frameworks. In practice, the biggest challenge is to replace previous polluting technologies with RES technologies and of course their cost. These and some other issues pose the question of how the RES are going to be properly exploited and supported financially by states,
Price-based mechanisms

Feed-in-tariffs

Feed-in-tariffs (FITs) are increasingly becoming a very effective policy model for the better development of renewable energy sources. Nowadays, they are integrated in almost 70 legal frameworks in the EU as they offer a more efficient and cheaper supply of renewable energy than the traditional policy schemes.

The basic feature of FITs is to guarantee RES for electricity generators a fixed price per MWh for a specific period of time. Naturally, the prices vary depending on the size of installations, the location, the type of technology that is used and of course the quantity of the energy source. As there are so many factors that affect the price, there are also many ‘players’ that involve in the process. Homeowners, landowners as well as small business owners all have a role in the integration of new technologies regarding energy sources.

In countries where FITs have been applied successfully, the amount of schemes that finance certain projects is determined based on the generation costs. Such countries are Germany, Denmark, Spain and Portugal. In particular, FITs facilitate the cheaper development of renewable energy installations.

By guaranteeing to cover the costs for the development of renewable energy schemes and ensuring that the financing will last for the lifetime of the technology, FITs are definitely an effective way to avoid investment risks and therefore contribute to rapid market growth. This way there is a high level of security over cash flows which is important especially for projects with high operating costs. The assurance that the FIT financing will cover project costs is essential and still remains one of the biggest challenges of a successful FIT policy.

Apart from making sure that the FIT payments will be sufficient to cover the costs, this particular support mechanism contributes to the overall boost of investors’ confidence. As the issue of climate change gains high attention over the years, renewable energy is constantly developing to meet the challenges. Consequently, the various FIT policies will be broadly used as a policy option to drive RE development.

FITs have adopted certain rules regarding their function:

i) Sometimes the FIT acts as an add-on within an existing regulation

ii) The cost of RES development can differ based on each technology (solar power, wind power, biomass, etc) and on other factors such as location and scale. As a result, governments often offer ‘flat’ tariffs which vary depending on several conditions. The goal of ‘flat’ tariffs is to reduce the cost for consumers and distribute the financing more efficiently. However, despite their ‘fairness’, ‘flat’ tariffs appear to sabotage the
market – they distribute equally the financing to all technologies and as a result make it difficult for each technology to stand out.

iii) The payment through FITs can be constant or dwindling. In the second case, the payment stays constant for the first years of operation and then it is decreasing gradually.

Guaranteed financing from feed-in-tariffs actually reassures RES developers who are not endangered by risks related to the market prices anymore. Also, the developers are not involved in certificate trading (like in RPS), since the competition among the providers is eliminated at this area. The FIT mechanism is suitable for energy companies which have transcended the stage of Research&Development but they lack market maturity and a strong presence in the system. In many countries, the fact that energy technologies can be supported by FITs, had a reverse effect. The over-financing of one technology (for example, wind turbines), made it difficult for the technological innovations to stay on course with the regulatory framework.

Another major advantage of FITs is that they ease the administrative tasks of each regulatory authority. In addition, they diminish any limitation for every RES generator or investor who wishes to enter the market. In general, feed-in-tariffs decrease competition between conventional energy generators and RES generators by counterbalancing the ‘playing’ field.

The most obvious disadvantage of feed-in-tariffs is of course how to properly allocate the financing to RES generators. In reality, the regulator who authorizes the FIT, usually isn’t aware of the financial state of the generators. As a result, there is a risk that the FIT will be too high or too low and affect the energy production respectively. This happens especially to technologies which have similar deployment costs.

The fact that remuneration from FITs is guaranteed, makes some renewable energy generators less motivated when it comes to adapting to price changes in the system or when there are imbalances between demand and supply. All technologies are affected by this situation and only a few (such as hydro and biomass) are able to adapt to these price variations properly. Finally, another factor that should be taken into consideration is that the FIT mechanism is vulnerable to any regulatory risks. Unfortunately, feed-in-tariffs can be altered or even cancelled, depending on the political preferences of the time.
Tax incentives

Many EU member states choose tax exemption as a fiscal incentive to promote the use of renewable energy sources. This policy includes all stages of power generation—from the investment to the production and consumption of energy. In general, many policies like this have been introducing renewable energy sources use to the market, by applying tax credits. In addition, a tax policy contributes to the reduction of fossil fuels. The fact that certain governments impose such taxes for vehicles with a higher level of fossil fuels usage, may encourage many users to turn to ‘greener’ vehicles and renewable energy sources. More specifically, a carbon tax could affect the demand of RES energy.

Some member states use tax credits as a complementary RES support mechanism. In Germany, for example, conventional energy sources used to be more competitive than RES. However, with the imposition of the tax exemption for RES (such as biomass), their sales saw a dramatic increase. This plan was also used for electric vehicles (EVs), exempting them from the united vehicle tax for 5 years. An important advantage of this plan is that it makes cash available. As a result, it could be a useful benchmark for potential investors and also a way to make relatively small investments as it increases investor liquidity. It is generally believed that the imposition of a carbon emission tax is an effective way to control the level of emissions and their cost.

The fiscal incentives have a major drawback—they are mostly beneficial from an equity aspect. That means that tax credits and various other incentives usually advantage investors who have a substantial percentage of their turnover based on RES. Naturally, many RES developers choose to enter into tax-oriented partnerships and joint ventures with firms which benefit from these fiscal incentives.

In addition, investors should take into consideration that the facilitation of an investment through a fiscal incentive, doesn’t always mean an increase in production. Finally, it should be noted that like all mechanisms, the tax incentives can be subject to each government’s regulatory adjustments as well.
Quantity-based mechanisms

Renewable Portfolio Standards

The renewable portfolio standard (RPS) is one of the most common policies used with feed-in-tariffs. Contrary to the FIT policy, which is price-based, the RPS is quantity based. This mechanism obligates companies to increase the amount of power which is generated by RES. In particular, it binds them to generate a fixed share of electricity by renewable energy. As a reward, these companies receive tradable green certificates (TGCs) for every unit of power that they produce. Contrary to the feed-in-tariff scheme, in which the government participates in the whole process, the RPS mechanism concerns the private sector. As a result, there is a higher level of price competition among various types of renewable energy technologies. By 2010, RPS was implemented in around 50 countries (including more than half of US states). The RPS mechanism is often associated with the certificate trading mechanism. In some countries, a credit multiplier is used in order to endorse different types of renewable energy technology. This way, governments can monitor revenue, investment and job creation to a specific type of technology. Over the years, the EU had experience with both FIT and RPS support schemes. Nevertheless, the FIT policy has benefited more the expansion of renewable energy and thus has been used broadly. The fact that many RPS schemes were so successful and effective in the EU (especially in Germany) made them popular in the US as well.

Many policy makers disputed over the function of RPS. Some argued that the RPS should not be seen as a stand-alone scheme that would promote renewable energy. However, the effectiveness of the RPS makes it the perfect starting point for the introduction of an international trading system. Others have deduced that the RPS mostly addresses to generators instead of end users. Finally, some policy makers stated that even the fact that both FIT and RPS mechanisms can co-exist in a regulatory framework, they cannot be compared due to their different purposes. The FIT scheme is more suitable for the development of renewable energy and its industry, while the RPS concerns market competitiveness and ‘players’.

RPS is implemented by certain rules:

i) In some countries there is a penalty regarding the non-compliance to the rules of the policy. In order to ensure the compliance, a penalty is set (usually bigger than the actual certificate price) and its revenues pass on to RES generators.

ii) There is a distinction when it comes to the choice of RES technologies. The objective is to achieve a complete development of RES by providing higher levels of support for higher cost technologies while decreasing the support for lower cost technologies. Most of the times, the support has the form of tradable certificates. For example, geothermal energy projects will receive more certificates per MWh than wind.
iii) Certain states obligate companies to use the RPS mechanism for their RES through long-term contracts. Also, a minimum price is set for the certificates in order to ensure basic revenues for the RES electricity producers.

In addition, there are discussions about awarding renewable energy generating units with ‘clean energy certificates’ which will depend on their efficiency and levels of greenhouse gas emissions. For example, this could be implemented to wind generators which are ‘greener’ than their counterpart gas turbines and thus receive more certificates. This scheme could actually be similar to the emissions trading mechanism as it concerns the allocation of carbon emission certificates.

One of the major advantages of renewable portfolio standards and other similar quantity-based mechanisms is that if they function properly, they are extremely thrifty for RES power generation. The fact that a target percentage is decided for RES, improves the competition among renewable energy developers and the negotiation of the energy prices. Also, the awarding of certificates endorses overall efficiency and helps renewable energy generators to meet government targets. Trading can take place across different geographical areas and systems, thus increasing the transnational and transtate efficiencies. Finally, another benefit of RPS is that the cost of the financing is less observable, since it is a part of the final energy price.

One of the main disadvantages of RPS is that RES suppliers are exposed to 2 types of market risk. The first has to do with the variance of energy prices in the wholesale market; almost everyone is exposed to this risk. The second concerns trading and the quantity of certificates. If they are too many, their price falls while further exposing the market ‘players’. The only way to minimize this risk is if the investors commit to maintain their long-term contracts with the RES developers (while at the same time are bound by quotas).

In addition, for a scheme like this to be successful, it is necessary for the mechanism to ensure the state’s regulator about the transparency of the whole process. This should be applied especially to systems in which the retail market has not been completely defused.

Contrary to schemes such as ‘stepped’ tariffs, RPS are usually the same for all energy technologies. Consequently, most energy generators and investors will choose the less costly technologies of the market which meet the RPS targets. To cope with this situation, many countries have created motives for using a mix of energy technologies. Another solution is to define mandatory quotas for various RES technologies (for example, wind/biomass/solar).

RPS can motivate conventional energy generators to include RES into their agenda and thus achieve vertical integration. Naturally, this could result in obstruction in the admission of new participants and also in increased market power for large players.

In some countries, if conventional energy generators fail to meet the RPS targets which are set, a penalty is imposed. The revenue from these penalties are channeled to the existing
renewable energy generating units. In fact, the cost of the penalties eventually burdens the final users (energy consumers) and not the generators, thus making RPS similar to FITs.

Cross-national incentive policies

Cross-national incentive policies are related to various mechanisms such as the interchange of climate change mitigation technologies, emission trading (ET) and the clean development mechanism (CDM) which was introduced by the Kyoto Protocol. Since it is too difficult to eliminate GHG emissions permanently, member states are often unable to create their own environmentally friendly technologies. As a result, the World Bank and the OECD have been trying to eliminate any barriers concerning the trading of such technologies. Each country’s technology importers should adjust their policies in order to make the incorporation of the climate change mitigation technologies which come from OECD countries easier.

The Kyoto Protocol introduced 3 schemes to reduce greenhouse gas emissions: i) emissions trading (ET), ii) clean development mechanism (CDM) and iii) joint implementation (JI). The ET scheme is about the trading of emission allowances between countries. In fact, the European Union Emission Trading Scheme is an essential part of the EU environmental policy. In recent years, the EU has been trying to harmonize all of the RES support schemes in order to expedite the process of allowances trading across member states. When it comes to the CDM or the JI mechanism, revenues and carbon credits are the currency. Through carbon credits the host countries receive many foreign investments.
Conclusion

The various adoption patterns of eco-label schemes and EMAS that have been examined, showcase the EU environmental policy and its characteristics. The Netherlands which has always been a pioneer in environmental projects, has shown little interest for its own national eco-label scheme. Instead, Dutch companies preferred the ISO 14001 and not the EMAS. In Germany, despite the fact that EMAS I was not very popular at first, it is now adopted by most of the country’s companies. Also, since the 2000s, there has been an increase in the adoption of the ISO standard and a decrease of the EMAS. In Austria, there is the highest number of EMAS registrations per capita. However, many companies are still opposed to this scheme whereas they praise the ISO 14001. In general, both the Dutch and the Austrian national eco-labels have not achieved significant market presence and/or consumer recognition. The same can be said about the EU eco-label scheme too.

Both EMAS and ISO 14001 have a significant presence in European business management. In particular, the ISO’s 14001 registrations have exceeded EMAS registrations even in Germany and Austria where EMAS held a leading position. One reason of this disparity is Europe’s shift towards a more lenient environmental governance (from EMAS to ISO 14001). However, this shift doesn’t give a complete picture about the various environmental policy instruments which operate in the environmental sector. Eco-labels play an equally important role in countries such as Austria and the Netherlands. Even in Germany they sometimes replace the traditional national schemes. On the other hand, EMAS (I-III) certification increases in both Austria and Germany despite the popularity of the ISO 14001.

In the EU, where more environmentally concerned member states exist, the EMAS was introduced as a stricter policy. This was to some extent, based on the characteristics of the market and energy companies. Germany, which has always been a member state with ambitious environmental standards, was against the adoption of EMAS I while endorsing an EU eco-management scheme that better represented its own environmental priorities. This EU EMS represented a strong decision-making input of member states, hoping to make EMAS more suitable for companies.

Although Germany came up with the idea of a national eco-label scheme, Austria, the Netherlands and the EU all adopted the general principle of the eco-label for their own policies. This case of ‘policy transfer’ is also a case of policy learning. In particular, Austria tried to simulate Germany’s national eco-label scheme, ridding it from its weaknesses. This procedure of learning from positive and negative aspects of a policy, was very useful during the adoption phase of Austria’s national scheme. The EU eco-label on the other hand, was created by observing the market and the competition among national eco-label schemes. The Netherlands was actually on the same track as Austria. However, its eco-label was prioritizing on the environment and market presence (contrary to Germany’s scheme).
During the early 1990s, almost 60% of all VAs adopted in the EU were found in Germany and the Netherlands. In fact, the rest of the member states have only adopted 12. By 2002, Germany and the Netherlands increased the amount of their VAs while other countries started to adopt them too. However, the role of the VAs has not been the same everywhere. In the Netherlands, they were considered legally binding contracts between private and public entities, whereas in Austria and Germany, they were non-binding and seen as the final step before actual regulation.

The overall use of VAs across the EU raised certain doubts. Not all countries fully incorporated them to their environmental governance. In particular, many VAs usually co-existed along with other policy instruments as part of policy instrument mixes. For example, the replacement of the VA on carbon-dioxide emission from vehicles with a regulation and the 2020 energy package. Nevertheless, VAs cannot be said to substituting the conventional governments schemes both in the Netherlands and Germany. Certain companies chose to adopt them in order to avoid the severity of legislation. VAs have only some of the basic features of an environmental governance which rely on horizontal self-coordination tools. This is because they have a binding character and more directive too. We should have expected to see an increase in the adoption of VAs across the EU, if there have been a shift from conventional tools of government towards new soft policy instruments. Although governments expected to see a rise in these voluntary agreements, there have been certain obstacles which prevented this.

In some member states, constitutional constraints prevented the adoption of legally binding VAs. Despite the fact that the trend of a national policy had a dominant position, we would expect that VAs would be an attractive alternative to environmental regulation. However, empirical evidence suggests otherwise. To a considerable extent, institutional factors are affecting the adoption and use of VAs. In particular, the EU has an extremely unstable political environment upon which to build strong VAs. This lack of a clear constitutional basis as well as the uncertainty of who actually negotiates VAs in a legitimate manner, all act as a constraint on their adoption. An example of how government parties affect the adoption of VAs can be found in all three pioneers of environmental policy, namely Germany, Austria and the Netherlands. Center-right governments considered VAs a tool against globalization and competition while center-left parties were less receptive. Various changes in these coalitions have led the subject of the environment to become a priority, as it is related to VAs. In general, VAs have not replaced traditional mechanisms of member states but they have been an addition in the existing regulation.

In the Netherlands, climate change raised people’s awareness and initiated a state-society interaction concerning environmental governing. Dutch policy makers moved from minor agreements to more transparent sector-wide treaties. The increased level of VA adoption in Germany and the Netherlands may have inspired Austria and the EU to take VAs into
consideration. However, little policy instrument emulation has actually happened across jurisdictions. The pioneer countries may have helped the VAs to become more popular and under no circumstances this can be considered policy transfer.

Over the years there has been an increase in the use of eco-taxes (although it has taken place at different periods) in the leading countries (Germany, Austria and the Netherlands). It was in the 70s that the EU started adopting eco-taxes, almost 60 years after the UK. However, the EU failed to adopt effective EU-wide eco-taxes and at first national eco-taxes were used almost exclusively, with Germany and the Netherlands being in the dominant position. What has followed is a reformation of policy instruments. According to some experts, there have been indications of policy learning, especially in cases where full scale ecological tax reform took place. In the EU, the eco-taxes’ evolution has been relatively low as the obstacle of unanimity was not surpassed. Altogether, member states and the EU weren’t able to achieve a radical ecological reform although they tried.

During the 90’s, the Netherlands has been undoubtedly the most effective in adopting eco-taxes. Germany applied an eco-tax recalibration in the same decade as well as a number of additional eco-taxes some years later. On the other hand, Austria adopted more modest eco-taxes in a limited range of sectors.

There is wide variation in the type of eco-taxes that were adopted by member states. The Dutch eco-taxes transformed from being environmental charges to more general eco-taxes. German eco-taxes did not evolve so radically. In Austria, a Commission was created, responsible for a tax reformation but this never happened in practice. In addition, Germany and the Netherlands introduced eco-taxes which were linked to a reduction in labor costs (such as national insurance and pension contribution) but Austria failed to do the same.

The notion of policy learning in the case of eco-taxes derives from the shift towards general taxation as well as the use of environmental tax revenue to reduce labor costs. There is not much empirical evidence for direct policy transfer. The leading member states operated based their actions on their political status and each interest group, although international competition also greatly affected their environmental policy. In addition, many member states decided to follow the path set by the pioneers regarding eco-taxes. The OECD’s benchmarking process was used by organisations to push for the adoption of eco-taxes and by national Environment Agencies to defend eco-tax proposals. Finally, government changes played an important role in the reformation of eco-taxes. Government parties in the Netherlands and Germany actually applied the revisions. In Austria, the grand coalition didn’t follow. Due to the large number of parties across the EU, it is difficult to fully analyze the countries’ intentions of adopting eco-taxes.

Emissions trading have only been used as a policy instrument in Europe since the 1990s. Only a few countries chose to adopt emissions trading before the introduction of the EU ETS in
2005. Since 1997, with its ‘birth’ by the Kyoto Protocol, emission trading has become a useful instrument for EU member states. At first there has been a dispute about the process of emissions trading as policy transfer. This notion was based on the example of NEPIs, which were spread by pioneer countries through a global diffusion process. Nevertheless, the insertion of emissions trading into the Kyoto Protocol was somehow imposed by the US, according to some experts. Naturally, the rules of the EU ETS were very different compared to American schemes. The main cause of these differences is different institutional contexts.

The introduction of emissions trading in Europe faced many obstacles. Firstly, the preference for other environmental policy instruments, interests of societal actors and a lack of expertise amongst policy makers. Also, environmental NGOs and corporations were opposed to emissions trading at first. On the other hand, some of the endorsers were energy companies and the banking sector.

The Dutch were the first who have used concepts similar to emissions trading (such as tradable allowances) since the early 80’s. The first national ETSs had many defects and in the 1998 Dutch policy makers started designing a better ETS which was introduced the same year as the EU ETS. The Netherlands played a very important role in the early stages of the EU ETS despite the fact that it later faced difficulties with its implementation when the Commission considered the Dutch NAPs to be too soft.

The EU ETS became operational in 2005 and it was divided into 3 phases (2005-2007, 2008-1012, 2013-2020: revision). It was the result of the Commission’s inability to create a proper CO2/energy tax proposal. In its introduction in the 1997 Kyoto Protocol, the idea of ETS was supported by the majority of member states and the European Parliament. Germany, which was against its adoption at first, eventually supported it in 2002.

Nevertheless, despite the fact that the EU ETS is a market-based instrument, it needs traditional tools of government. This was observed especially during the setting up period when the need for EU and member state laws and institutional structure was obvious. It is often misconceived that market-based instruments reduce bureaucracy and legislation. However, the market needs government protection. The EU ETS is protected from fraud and corruption by top-down state authority. Another factor that played a significant role in the adoption of the EU ETS is the various corporations. Finally, due to the complexity of emissions trading, every country assigned stakeholders, advisors and policy consultants to discuss the different ETS designs.

Areas like investment risks and renewable energy employment are highly affected by the various structures of FIT payments. While fixed price policies can alleviate investment risks, premium price policies offer incentives to companies to produce energy when it is needed the most. This way, the supply pressure is reduced and at the same time the integration of renewable energy into the market is improved. Revenues from energy projects can also be
‘protected’ thanks to certain additional design options like inflation adjustment. As a result, investment security is guaranteed and there is a higher number of investors who are willing to participate in renewable energy projects. In addition, market-independent FIT schemes include a purchase obligation which facilitates the entry into the market and decreases the transaction costs. This fixed price option is usually preferred by smaller investors and community-based projects.

Finally, it should be noted that regardless of each regulatory design, RES support schemes play a significant role in the complete energy model and as a result they should involve an efficient approach to cost-sharing. Nowadays, all countries around the world are in need of renewable energy, not only for the transport and power industries but for the entire economy. This need, along with concerns about climate change and political sensitivity to increasing energy and fuel rates, has highlighted the importance of energy tariff design as a critical component of RES and energy system regulation. The better the methodology for distributing the costs from the schemes, the smaller is the risk of public dissatisfaction and hence the larger the amount of total RES that can be developed. The fact that RES targets address to all types of energy supplies, means that the cost of the grants will be allocated to final energy consumers in direct proportion to their energy consumption and regardless of the type of final energy consumed.
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