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Ecological Modernisation in the case of Carbon Trading in the European Union

A case study of the European Unions Emission Trading
System

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Abstract

In environmental discourse there is a special interest in the relationship between the environment and the economy. The theory of Ecological Modernisation examines this relationship.

In order to understand the theory better I have analytically tested three aspects of the theory in the case of carbon trading in the European Union (EU ETS). I first examined what I consider are five important characteristics of the theory and then used those to build a analytical framework in which to test in my case study. In my case study I specifically looked at the role of market mechanisms in creating incentives that lead to the reduction of carbon dioxide being released into the environment and then the role of policy and institutions in implementing and regulating these mechanisms.

The study found that the market mechanisms used in the EU ETS were ineffective in creating strong market incentives to reduce carbon levels. This was partly due to the weak policies that were created in which to implement these incentives. On the other hand the EU as a supra institution was found to be an appropriate place in which to deal to tackle environmental problems.

Key words: ecological modernisation, carbon trading, European Union Emissions Trading Scheme, reflexive modernisation, globalization

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1 Introduction

The environmental issues that we are faced with in the twenty first century have to be dealt with and can no longer be ignored. A problem that often arises is that the destruction of our environment is a direct result of the booming growth that has come about from industrialization. The economy plays such a crucial role the functioning of not only our daily lives but on society as a whole, that is why it is so important to understand the dynamic relationship between the environment and our economy. The theory of ecological modernisation looks specifically at this relationship thus making it both an appropriate and interesting theory in which to carry out a case study that examines and tries to understand the role of market mechanisms in environmental regulation.

The economic mechanisms used in carbon trading and its goal of using an administrative approach to control pollution by creating economic incentives that encourages a reduction in the release of pollutants makes it an appropriate case in which to apply the theory of ecological modernisation. With the recent Kyoto Conference in Bali and the looming impacts of climate change the world is starting to take notice and pay more attention to the possibilities found in carbon trading. Carbon trading (or emissions trading) is a very real and very live debate today and understanding the basic premises behind the theory that environmental protection and economic growth can go hand in hand makes the theory of ecological modernisation very important to our understanding of the future dynamics of our environment and the global economy.

1.1 Purpose of the Study

The purpose of this study is to test the theory of ecological modernisation in the case of carbon trading in the European Union Emissions Trading System (EU ETS).

Both the theory of ecological modernisation and carbon trading are very large, complex, and still developing thus in order to under and this very large issue I have chosen to narrow down my study to examine the dynamics of the environment and the economy in the EU ETS.

The theoretical framework that I will use to test in the case of carbon trading will be one that looks specifically at the role of market mechanisms, and the role of policy in institutions in implementing market mechanisms in the context of the globalization.

I have chosen to analyse specifically these three aspects because of both their relevance for the theoretical framework that EM finds itself in today and because these aspects are also very central to the success of carbon trading as a means in being able to combat climate change.

In choosing to do a case study I am aware that my results will be rather specific to the case at hand but I hope that the results can still make a contribution to ongoing development of this theory.

1.2 Method

In order to test the theory of ecological modernisation in the case of carbon trading I had to begin by submerging myself in books and articles explaining the theories. I began by first reading all my main books and articles and summarizing their main points that were most relevant to my study.

When examine ecological modernisation I had to begin by understanding the historical context of the theory. As I was reading I noticed which authors were the heavyweights and experts in the area by the simple fact that there were a few main authors that were referred to constantly. Once I established which authors I was going to use to help build my framework I then looked for and read their main works. The three authors I choose to focus on were Maarten Hajer, Peter Christoff and Arthur P. J Mol. I chose them not only because of their expertise in the area but also because their works highlighted the aspects of ecological modernisation that interested me the most. The aspect that interested me was the relationship between the environment and economy in the context of globalization.

In examining theory of ecological modernisation I was careful to make sure I understood the differences in how I examined the theory from different perspectives of normative, descriptive and analytical.

One concept that I used to help me organize and understand the theory of ecological modernisation was Robert Keohane and Joseph Nye's key term interdependence. In their article "Power and Interdependence" they defines it as: an analytical concept that is not only mutual dependence but in world politic it is also situations that are characterised by reciprocal effects among countries or among actors.

I choose to use this keyword because of the complexity that surrounded the theory of ecological modernisation. By approaching it with the attitude of interdependence I was able to pick out the reoccurring terms and characteristics within the theory and mind map them. This helped me to look out for the relationships between different words and to simplify the complexity of the theory. I was then able to systematically go through these terms and pick out the ones that were most relevant to my case study. I then built my own analytical framework in of ecological modernisation that I tested in the case of the European Union Emission Trading System.

1.3 Material

All the material used in the study was second hand material. I focused on finding articles and books that dealt primarily with either the theory or ecological modernisation or the carbon trading. I began by reading articles in scientific and environmental journals that summarised the theories and I looked out for a pattern in the theorists that seemed to be the most influential and dominant within the study of the theory.

I relied on six main books (three in carbon trading and three ecological modernisation) as my prime references with in my study. I then branched out the study to include material that talked about broader topics such as environmental economics, ecological consumption, and climate change. I also relied on European Unions website for its trading scheme and the online version of the Financial Times to follow the news on carbon trading.

2 Theory

The basic tenet of the theory of ecological modernisation (EM) is that economic growth and environmental degradation do not have to go hand in hand. The theory illustrates the greening of capitalism and sheds light on the possibility of restructuring the production process in a way that business can profit from protecting the environment. This is achieved by reforming economic, political and social institutions (Carter 2007: 227) in a way that environmental policy becomes a higher central priority and at the same time changing the attitude that environment protection means a slowing down of growth.

Although that is the basis on which the theory is built upon the debate is still on going and developing regarding the many different aspects, core themes and preconditions that clarify and strengthen the theory and the situations in which the theory is applicable. I have chosen to focus primarily on the works of Maarten A. Hajer, Peter Christoff, and Arthur P.J Mol in order to create a solid foundation in which to understand EM that I can then use when examining the case of carbon trading in the European Union Emissions Trading System. I will begin with a short historical context of how the theory evolved before going into its main characteristics, and end with what aspects of the theory I will be testing when looking at the case of carbon trading.

2.1 The Emergence of Ecological Modernisation

Important changes took place around environmental discourse and politics in the 1970s. The concern that arose from the influential *Limits to Growth* written by the Club of Rome who first portrayed the environmental issue as a global crisis (Hajer 1997: 83) began to take a more optimistic turn. National governments began to prioritize the environmental issue, which had now become a political topic in Western societies, and set up separate departments to specifically handle these environmental issues. As society changed the environmental movement also changed and began to focus on presenting practical alternatives and solutions within society (Hajer 1997: 93). The Ecological Modernisation Theory is one of the alternatives that arose from this period.

There are three distinct stages in the development and maturation of this school of thought. The first contributions to EM theory were made by Joseph Huber and were dominated by an emphasis on technological innovations in environmental reform especially in the sphere of industrial production (Mol and Sonnerfeld 2000: 2). Huber's analysis was orientated towards a focus on the level of the nation state and the role of market actors in environmental reforms. He

believed that both the new social movements and the government had a limited role to play in bringing about a shift in reform and saw economic players and entrepreneurs and as the most important actors in EM. According to the Huber, EM is an inevitable phase that follows industrialisation (Murphy 2000:1).

The second period that took place in the late 1980s to mid 1990s had a more balanced view on the role of the state and the market dynamics in ecological transformation. Institutional and cultural dynamics were given more emphasis in the analysis as well as were the role of individuals in making choices that improved the environment in their society (Mol 2003: 56). The works of Udo Simonis and Martin Janicke emphasised that a central aspect of EM was its' role in the restructuring of national economies. In order to see if there was potential for structural change to solve environmental problems at the national level they examined the growth domestic product of certain national economies (Germany, Japan, Czechoslovakia). They then compared it to variables (crude steel consumption, energy consumption) that had environmental impacts. Their results found that growth of GNP had decoupled itself from these variables thus resulting in positive effects on the environment (Murphy 2000: 2) This indication of increased economic output with decreased energy and material consumption per unit GNP has brought about a displacement of these environmentally unfriendly industries to newly industrialised countries (NIC) and lesser developed countries. Thus the continuing increase in total consumption in both industrialising and industrialised countries suggests that the pace of reform is still too slow (Christoff 1996: 479). The critic that arose from this period focused on the Euro centrism of the Ecological Modernisation Theory since it had been developed primarily within the context of a few Western European countries. It also pointed out the limited definition of the environment in EM (Mol 2003: 58).

In the last period and current period the theory of EM has broadened both theoretically and geographically. It includes innovations in three fields. First studies were expanded to include work on the ecological transformations related to consumption processes. Secondly case studies expanded to include non- EU, NIC and transitional economies in Central and Eastern Europe. These studies led to mixed conclusions regarding the theoretical framework for understanding the processes of environmental reform. Finally more attention was focused on the global dynamics of ecological modernisation. It is in this third and last phase of study that we will find the analytical framework in which to examine the case study of carbon trading.

2.2 Characteristics of Ecological Modernisation

There are many different frameworks used to outline the Ecological Modernisation Theory. The use of the term ecological modernisation has varied in scope and meaning among different theorists in their policy analysis, sociological analysis or political theoretical discussion. The problem with this according to Peter Christoff is that it makes it unclear whether the term is used descriptively,

analytically or normatively (Christoff 1996: 480).). In his work Christoff maps out a normative typology where he looks at EM from three aspects: as a technological adjustment, a policy discourse and as a belief system. Maarten Hajer tackles this same obstacle by defining EM in a similar manner. Hajer formulates three interpretations of EM: as institutional learning, technocratic project and as cultural politics.

The basic premises of ecological modernisation according to Arthur P.J Mol is that: the central force of the theory is based on the movement of ecological interests, ideas and considerations involved in social practices and institutional developments that lead to the constant ecological restructuring of modern societies” (Mol 2003: 59).

In order to give a better understanding of the theory I will map out a descriptive examination of five reoccurring aspects that are crucial in understanding this very complex theory. As this study is part of the third trend in the historical context of the theory of EM, I will look at these five aspects in the context of the global dynamics of ecological modernisation.

2.2.1 Positive Sum Game

The concept of EM as a positive sum game was born out of the necessity to show that environmental policy was not contradictory to economic policy. It even goes as far to say that environmental policy can be a potential instrument of economic recovery (Hajer 1997:99). It is debatable whether this claim in fact holds true.

The Organization for Economic Cooperation’s and Development (OECD) played a crucial role on emphasising this special relationship between the economy and the environment. It was this organization that set the example by incorporating environmental considerations at an early stage of the decision making process and incorporating the use of environmental fiscal instruments into its policy making (Hajer 1997: 98). This brought about the conclusion that if properly managed ”the environment and the economy could be mutually reinforcing” and called for the need for multilateral cooperation’s (Hajer 1997: 99).

2.2.2 Culture and Civil Society

Albert Weale sees EM as a belief system that expresses environmental protection as a precondition for long-term economic development. This claim is important because of the role of belief systems in organizing and legitimizing public policy (Christoff 1996: 484). Weale also sees EM as reshaping the relationship between environmental regulations and economic growth. Thus EM has the potential to bring about systematic change and even the possibility of a transformation in social relations through changing the relationship between the state, its civil society and private corporations (Christoff 1996: 485).

From another perspective Hajer sees EM as a set of claims about what the problem really is. In this interpretation of EM as cultural politics there is no coherent ecological crisis, rather it is only a compilation of story lines problematising different aspects of our changing physical and political reality (Hajer 1996: 256). Story lines are our socially constructed understandings (specific symbols and metaphors) of the ecological problem at hand. It is one of the discursive mechanisms that show the variety of ways that discourse influences the process of social change (Hajer 1997: 268).

The discursive mechanisms, such as storylines, that shape our discourse have a tendency to differ between countries and therefore clarify why EM is an international policy discourse that has to allow for national and cultural adjustments.

In his book Hajer strives to show that social constructivism and discourse analysis add essential insights to the understanding of environmental politics. Discourse analysis, according to Hajer, is meant to shed light on a different way of looking at how institutions function, their power structure and how political change comes about. Thus developments in environmental politics depend on the social construction of environmental politics (Hajer 1996: 264).

The result of this internalization and prioritization of ecological consequences by society is brought about by the discourse coalition built up around eco modernist story lines (Hajer 1996: 261). The positive sum game format is also incorporated into environmental policymaking as a result of storylines (Hajer 1996: 269).

Hajer's storylines have indirectly generated institutional change by helping to mobilize civil society and new social movements into taking more action and participating more on the outcomes of policy regarding environmental reform.

2.2.3 Institutions and Policy Making

According to the central thesis of Hajer's book, ecological modernisation is the dominant way of conceptualizing environmental matters in terms of policy making. So in the global context of our study the more we know about the environment the more we become aware of its global interconnectedness of environmental problems. Due to this global dimension we should restructure our policy-making institutions to be able to meet the global ecological challenges (Hajer 1997: 277)

One of the core beliefs of ecological modernisation is that pollution prevention pays. This is an efficiency-oriented attitude towards approaching the environment using the language of business, cost effectiveness and bureaucratic efficiency (Christoff 1996: 482).

Mol refers to ecological restructuring as the "ecology inspired and environment-induced processes of transformation and reform occurring at the central institutions of modern society". This institutional restructuring is not a new phenomenon but rather a continuous process that is labelled late, reflexive or global modernity (Mol 2003: 59). As a result of this the ecological processes of

production and consumption are now being analysed from both a economical and ecological point of view. This shift in perspective has brought about huge changes specifically in environmental management and the articulation of environmental considerations in economic supply and demand. This has activated institutional transformations and opened up the doors to a new Grand narrative in which environmental considerations have become the core structuring principle in the formation of policy.

2.2.4 Modernity and Reflexive Modernisation

In order to grasp this theory it is important to break down the term ecological modernisation into two separate components in order to understand their interaction more closely. According to Christoff, the term modernity is “fraught with tensions that it generates its own contradictions” and this is evident in its relationship to the environment. Thus creating a paradoxical relationship between the environment and modernity (Christoff 1996: 491).

Modernity has swept aside traditional forms of order and certainty and brought about the reflexive ordering and reordering of social relations. In the context of our study it is important to understand the globalizing tendency of modernity. Its global influence is partly a result of the imperial and colonising tendencies that come about as a result of capital accumulation. Capital accumulation is the search for markets and resources that encourage merchandising (Christoff 1996: 492).

The extension of the modernity process leads us into a phase of reflexive modernisation. In this phase modernisation has become more reflexive in the narrow sense of improving environmental efficiency. But it has still yet to achieve the broad reflective manner of ecological critique, which actually questions the foundations of industrial modernity (Christoff 1996: 496). The definition of reflexivity is the constant re-examining of social practices due to the continuous influx of new information regarding those practices (Mol 2003: 27).

Globalization is a not a result of modernity but a general condition that has facilitated modernity. The connection between reflexive modernisation and globalization are particularly strong (Mol 2003: 27)

Reflexive ecological modernisation, as defined by Hajer, is a process of deliberate social choice out of alternative scenarios of development. It strives to stimulate debate on the norms and values that should act as the vehicles for the modernisation process. The challenge for reflexive ecological modernisation is found in its striving to find new institutional arrangements in which discourses can be meaningfully related to one another (Hajer 1997: 280-281).

2.2.5 Globalization

The new environmental challenges we are faced with today reframe the environmental problems in terms of global change. We can no longer look exclusively at the discursive changes emphasised by Albert Weale and Maarten

Hajer but must take into consideration "the actual transformations in social practices and institutional developments" (Mol 2003: 53-54).

It was Anthony Giddens who linked globalization processes to the environment. The ecological problems we are faced with highlight the interdependence of our global systems. Giddens looks at the transformation of modern society and the relationship between globalization and modernity. (Mol 2003: 23).

Like Mol I agree that it is too simple to accept the critic that globalization is simply Westernization. Globalization is a consequence of modernity and with reference to the economic sphere it challenges this critic by the need to diversify, individualize and localize the economic processes of global capitalism (Mol 2003: 35).

Globalization is not merely a theoretical concept. It plays a significant role in actual transformations in the social practices and institutional forms of modern societies and daily politics. Features of reflexive or global modernity are fully understood once we begin to understand how society deals with global change.

2.3 Analytical Framework used to examine Carbon Trading

The significant differences and varying interpretations of the theory of Ecological Modernisation have led me to agree with Fred Buttel when he argues that EM needs to be more connected to theories of historical development and social change. There is a need for the theoretical development of the theory to be carried out in collaboration with empirical testing and case studies (Fisher 2001: 704). It is quite clear the EM cannot be considered universal due to the increasingly important influence of local and cultural influences on the development of the theory in different parts of the world. My task is to expand on the theory by analytically applying it to the case study of carbon trading in the European Union (EU). The broad overview of the five aspects of EM above illustrates the importance of the relationship between market mechanisms and the policy and institutions that implement and regulate them.

I will analytically apply EM to the case study to specifically look at the role of market mechanisms in creating incentives that lead to effective reduction of carbon dioxide in the atmosphere and the role of policies and institutions in achieving and implementing market mechanisms. I have chosen to ground my study in the context and view of globalization described by Arthur P.J. Mol. The case I have chosen to examine is a unique because the EU is the both the only existing supra national institution to date and the only one to implement environmental policy thus making it an interesting and case study in which to look at the theory of EM.

3 Empirical Case Study: Carbon Trading

The overwhelming scientific evidence alerts us that climate change is a serious threat and it demands an urgent global response. The effects of climate change threatens living species all over the world through the melting of glaciers, declining crop yields, ocean acidification, extrication of ecosystems and deaths from malnutrition and heat stress (Lohmann 2006: 10). The Stern Review written by Nicholas Stern has concluded, "that the benefits of strong and early action far outweigh the economic costs of not acting" in combating climate change (Stern 2007: xv). Stern's report estimates that the overall costs and risks of climate change is equivalent to losing at least 5% of GDP each year, these costs could even rise up to 20%. On the other hand the costs of reducing greenhouse gas emissions if immediate action is take could be limited to around 1% of the total global GDP per year (Stern 2007: 4).

Cutting greenhouse gas levels in the atmosphere through economic instruments and international policy can reduce these risks. According to Stern three elements of policy are required for an effective global response. The first is the pricing of carbon through taxes, trading or regulation. The second is to support low carbon technologies and the last is to educate individuals about what they can do to combat climate change (Stern 2007: 18).

I will examine the effectiveness and possibility of cutting emissions through carbon trading (also known as emissions trading) in the European Unions Emissions Trading Scheme (ETS). The allure of carbon trading is based on the central tenet in ecological modernisation, that environmental regulation can be a source of economic growth.

3.1 Carbon Trading

Carbon trading is an administrative approach used to control pollution by creating economic incentives in order to achieve reductions in the emissions of pollutants (Emissions 2007: 1). Trading is used to create an explicit price for carbon and regulations create an implicit price (Stern 2007: 368). This "market fix" approach to combating climate change contains the political threats while at the same time allows new opportunities for economic profit. In this strategy the earth's carbon space is made economically scarce by states imposing limitations on how much carbon dioxide can be released into the atmosphere (Lohmann 2006: 46).

By using market theory to both frame the problem and provide a solution society is creating a demand in the market for cleaner technologies and putting a price on pollution. This price monetarily punishes those who emit more than their allowed quota and monetarily rewards those who emit less. The theoretical basis is that carbon markets can be used as a vehicle to channel resources towards the most cost effective means of reducing the release of heat-trapping greenhouse gases into our atmosphere (Bayon 2007: 2-5).

Another benefit of this market approach is that it turns units of pollution into units of property thus making a unit of pollution in Singapore tradable with one in Sweden and allowing trade to cross over geographical borders. This discussion of seeing pollution as units of property opens up doors for critics about who owns these "rights to pollute" and how they should be allocated to different industries and individuals. Some critics, like Larry Lohmann think that this approach is based on inaccurate carbon accounting and is actually slowing down innovation and turning attention away from the core of the problem (Bayon 2007: 4).

The carbon market refers to the buying and selling of emission permits that have been issued by either a regulatory body or generated by greenhouse gas (GHG)¹ projects. There are two types of carbon markets: the voluntary and the compliance markets. GHG emission reductions in these markets are traded in carbon credits. One carbon credit is equal to one metric ton of CO₂ (Bayon 2007:4). These credits can be traded through two types of transactions: project-based transactions and allowance-based transactions.

The Kyoto Protocol is an example of a compliance market. It is a legally binding treaty that calls for its signatories to reduce their collective GHGs by 5.4 per cent below 1990 levels by 2012. There are three flexibility mechanisms which are based on the compliance carbon market that help the members reach those targets: emissions trading², joint implementation (JI)³ and clean development mechanisms (CDM)⁴ (Bayon 2007:6).

3.2 European Union Emissions Trading Scheme

The European Union's Emission Trading Scheme (ETS) is a compliance carbon market and is the first international trading scheme of its kind. It is the European

¹ The six GHGs that are usually included in the carbon markets are: CO₂, methane, nitrous oxide, sulfur hexafluoride, hydro fluorocarbons and perfluorocarbons (Bayon 2007: 4).

² Emissions trading: An allowance based transaction that allows countries with emission targets to purchase carbon credits from one another.

³ JI: A project based transaction system that allows developed countries to purchase carbon credits from greenhouse gas reduction projects implemented in another developed country or a country with an economy in transition. Emissions in these projects are referred to as Emission Reduction Units (ERU).

⁴ CDM: Also a project based transaction system through which industrialised countries offset carbon credits by financing carbon reduction projects in developing countries. These are referred to as Certified Emissions Reductions (CER).

Union's response to the Kyoto Protocol and offers a cost-effective way for EU member states to meet their Kyoto targets. The scheme creates a uniform price of carbon for GHGs in specific industrial sectors⁵ in the member states. Phase One of the scheme began on January 1, 2005 and ended in 2007. Phase Two will run from 2008-2012 with more phases following thereafter.

The trading of allowances in this market occurs under a cap-and-trade regime where the allowances act as the trading currency. Through their National Allocation Plans (NAPs) member states decide on the total allocation of allowances for each phase within their country and how these are distributed among companies. The European Commission approves the NAPs if they demonstrate that allocation levels will not exceed the cap on emission levels within those sectors. Once allowances are issued to companies they must provide an annual report on their emission levels. (Stern 2007: 372)

The operators within the ETS can trade privately, over the counter or on the spot market of one of Europe's climate exchanges. The EU member states trade with the three Kyoto mechanisms described above. They can trade among themselves with allowances known as EUAs (EU Allowance Unit of one tonne of CO₂) or by buying and selling carbon credits known as Certified Emission Reductions (CER) or Emission Reduction Units (ERU). A CER and a ERU are produced by carbon projects generated by JI or CDM projects (Bayon 2007:7).

The trading mechanism is designed to create scarcity so that the price of carbon goes up and forces industries dependent on emissions to seek cleaner technologies. Companies that manage to keep their emissions below the level of their allowances have the opportunity to sell their excess allowances at the price determined by the supply and demand at that point in time. Companies that have trouble remaining within their emissions limit have a few options (EU 2005: 9). They can invest in more efficient technology, use a less carbon intensive energy source, buy extra allowances or do a combination that will offer them the cheapest alternative.

There has been a lot of enthusiasm in the developments of this market but unfortunately it has been very volatile. In its first year 362 million tons of CO₂ was traded for a sum of €7.2 billion (Stern 2007: 372). The price of allowances increased steadily until they crashed in April/May 2006 as result of too many allowances being allocated and loopholes in the method in which they were distributed (CTCC 2007: 3).

⁵ The current industries are energy generation, metal production, cement, bricks and pulp and paper.

4 Analysis

One way to further understand and develop the Ecological Modernisation Theory is to apply it to an empirical case study. The context in which the theory was descriptively presented has provided us with the analytical tools in which to test the theory in this case study.

The five characteristics: positive sum game, culture and civil society, institutions and policy making, modernity and reflexive modernisation, and globalisation all function as building blocks which have given us an understanding of how to analytically apply this theory into the case of carbon trading

This third phase in the emergence of the theory of EM has brought about a new context in which to apply and further our understanding of the theory. The process of globalization has changed the dynamics between economics, politics and society within the theory of ecological modernisation. It is in this context that I will test the if the role of market mechanisms in creating incentives has lead to the effective reduction of carbon dioxide in the atmosphere, as well as the role of policies and institutions in achieving and implementing these mechanisms.

4.1 Market Mechanisms

The market mechanisms in the ETS are the driving forces behind the construction of the trading scheme. The question that arises is if the ETS leads to the positive sum game situation that the theory of EM suggests is possible?

When looking at the empirical evidence from Phase One of the EU ETS it is clear that this is not the case of a positive sum game. This market price eventually crashed in April 2006 as a result of the EU distributing too many emissions permits due to corporate pressure. These emission permits flooded the market and the price crashed 60% within a week from a high of 30 Euros per tonne of carbon dioxide to 11 Euros. This made the permits almost worthless and took away the market incentive that was created to encourage companies to clean up their act (Lohmann 2007: 87). In Phase Two the cap will be corrected but the problem will still remain if regulators cannot figure out the estimates needed to keep the carbon prices from fluctuating between being too high or too low. According to climate economist Michael Grubb, the prices will remain volatile until a European government chooses takes the first step and radically reduces the number of allowances they hand out to industry (Lohmann 2007: 88).

Critics see trading as the most inefficient way of combating climate change because it shifts the focus away from core problem of reducing our dependency

on fossil fuels. There are five reasons why the carbon-trading claim to being efficient is not effective in stimulating change (Lohmann 2007:71):

1. In order to work carbon trading needs to create a special system of property rights.
2. Pollution trading is a poor mechanism for stimulating the social and technical change needed to address global warming.
3. The attempt to build a carbon-cycling capacity is interfering with genuine and effective climate action.
4. The trading scheme lacks proper enforcement.
5. Creating a trading scheme reduces the political space that could be better utilized for education and planning around the need to transition away from fossil fuels.

If the assumptions of efficiency on which the market mechanisms of carbon trading are based on are no longer valid then the aspect of the positive sum game in ecological modernisation does not hold true. The irony is that the carbon market in the case of the ETS does generate economic growth. It just fails to uphold the other side of the EM theory that requires economic growth and environmental protection policies to exist simultaneously.

The surplus of allowances on the market guarantees new profit making opportunities for the industries that sell them. The costs of buying these pollution permits are passed onto consumers. As a result the selling of permits generates profits for corporations without having any effect on climate change and business continues as usual.

For instance in the United Kingdom oil companies BP, Esso and Shell have generated huge profits by selling off their surplus of EU ETS allowances. While on the flip side of the coin consumers like the National Health Service hospitals have had to pay tens of thousands of pounds to buy extra allowances. (Lohmann 2007: 90-91)

The market mechanism in the case of the ETS fails to create incentives that lead to a reduction of carbon dioxide into the atmosphere.

4.2 Supra-national Institutions and Policy Making

Even though the concept of positive sum game in ecological modernisation does not exist in the case of carbon trading in the EU, we can still analyse the role of institutions and policies in the implementation of market mechanism to combat climate change. I am treating these two aspects of the theory of ecological modernisation separately in order to further and deepen the understanding of the

theory of EM in the EU case study. The majority of the scholarship on ecological modernisation focuses more on the environmentally induced transformations in social practices and institutions and not on physical improvements alone (Mol 2003: 61). I will now look at these environmentally induced transformations in the policy formation and institutions of the European Union.

Globalization has brought about the emergence of new supra-national political institutions and changed the way we prioritize and approach environmental issues in the policy making process. The European Union is the only example of a supra-national institution existing today. Thus the way the EU deals with environmental issues is of particular interest for the theory of EM. A strong EU is not only essential from an economic point of view of it is also necessary in order to protect the environment. Since that environmental politics within the EU surpass the state level this makes make it's experiences unique in promoting the further development of an integrated global political system that can restrain global capitalism (Mol 2003: 107).

In this present phase of reflexive modernity the traditional institutional arrangements of the nation state are becoming less effective in dealing with some environmental problems like climate change. Nation states are still important actors in national policies and international environmental politics but the modernisation of environmental politics is moving towards globalization (Mol 2003: 107). Climate change is a global problem and thus requires a global solution in the form of a supra-national institution. This is because the effects of climate change are not limited to geographical boundaries making it hard for national institutions to deal with the problem. On the other extreme international organizations like the United Nations are too large and too weak to effectively implement and regulate environmental problems like climate change.

The original purpose of the EU was to improve the regions economic functioning through harmonizing economic policies and instruments. In the beginning the environmental activities of this institution were related to the economic harmonization of regulatory regimes. But as the pursuit for a common environmental policy moved up on the agendas of the member states, environmental protection soon became a priority on the European Union's policy agenda as well (Mol 2003: 118).

There are four institutional characteristics that are preconditions for the successful application of ecological modernisation at the institutional level. They are the existence of a welfare state with institutionalized environmental responsibilities, advanced technological development, a regulated market economy closely connected to world market and a level of institutionalized environmental consciousness⁶ (Mol 2003: 65). The EU as a supra-national institution meets these conditions making it an appropriate institution in which to deal with global environmental problems.

Although the format of dealing with climate change from the level of a supra-national institution is appropriate like the case of the EU there are still problems

⁶ These preconditions are only valid for developing countries.

with the formation of policies. The economics of climate change is very complicated and technical so close attention must be paid to the economic policy used to combat climate change. Since governments create climate policy, a carbon pricing policy must be based on a framework that allows investors to have confidence that the carbon policy will be maintained over time. Creating this type of confidence in the policy is crucial to its effectiveness. (Stern 2007: 44, 369)

The three elements needed for an effective policy framework are: credibility (the belief that the policy will be enforced), flexibility (the ability of the policy to change in response to new information) and predictability (setting out procedures where the policy will change) (Stern 2007: 368). The problem with EU policy is that it is fragmented, hard to implement and has low environmental ambitions. This was illustrated in the case of ETS when the EU chose against starting Phase One of their trading system with stringent policies and thus resulted with an overflow of emission permits.

In EM the key to successful policy is to establish common incentives across different sectors using the most appropriate mechanism for that sector. According to Hajer this is achieved through the discourse coalitions that shape how we view environmental problems (Hajer 1996: 123).

In our case study the problems that occurred in the EU ETS actually lie in the market mechanisms and policy formation used in the trading scheme and not in the institution in which the trading scheme was developed. From the theoretical perspective of EM there has been a successful transformation in the way the EU as a supra-national institution prioritizes the environmental issue but not the way the EU creates its policies.

These setbacks with policy and mechanisms should not overlook the historical process that is taking place with the development of a political mechanism that surpasses the nation state in an attempt to answer both the environmental side effects of globalization and the internalization of environmental problems into physical and socio economic dimensions.

4.3 Ecological Modernisation and Globalization

The starting point of most globalization studies begins with an understanding of economic globalization. We are not living in unregulated global free market capitalism. Political actors, norms and values and other reflexive process have the power to impact and shape the direction of global economic processes (Mol 2003: 116). If we accept this premises and understand the difference between theoretical economic models and real life consequences of globalization we come to realize the importance and influence of the non-economic factors in tackling our environmental issues.

This is why it is so important to understand the Theory of Ecological Modernisation as more than just a theory about economic growth but one that encompasses important social and political influences as well.

One common critic when examining the relationship between globalization and the environment is the tendency of the global economy to lead to the exploitation of the environment. Although there are clear empirical studies that prove this, the relationship between globalization and the environment is not one sided and it is actually the process of globalization that have provided us with the supra-national institutions and processes that also help us combat environmental problems.

In the case of the ETS, the EU with its sovereignty over nation states was able to force member states into taking environmental action. The EU is the best option in the means of a supra-national institution to be able to control and reduce the negative side effects of economic globalization (Mol 2003: 121).

Under these current conditions of reflexive modernisation the EU provides the best model for future global governance. It has the qualities of a relatively strong national institution as exemplified in the European Commission, European Parliament and European court of justice. And the EU is unique because it is supported by both member states and transnational corporations linked to those states. Not to mention the EU is the first example of supra-national democratic governance.

This case study has shown how there is a practical need to understand the theory of EM under the conditions of globalization (Mol 2003:222). EM's attempt to bring the environment back into social theory has maintained its relevance under the conditions of globalization in which we find ourselves in today. The process of globalization has strengthened environmental reforms, increased ecological consciousness and brought about a global ecological movement (Mol 2003: 209). Ecological modernisation is a valuable conceptual framework that helps us understand the ways in which environmental considerations and interests trigger changes in global institutions and social practices that are influenced by globalization.

5 Summary of Conclusions

The purpose of my study has been to analytically test certain aspects of the theory of ecological modernization in the case of the European Union Emission Trading Scheme. Using an analytical framework based on my descriptive study of the theory of EM I examined the role of market mechanisms and the role of policy and institutions in implementing these mechanisms within the context of globalization.

The empirical case study showed us that market mechanisms in the EU ETS did not follow the concept of positive sum game that is described in the theory of EM. Money was made on the carbon trading market during the first phase of the scheme but at no benefit to the environment. The analysis showed that the concept of efficiency that carbon trading is based on is actually not very efficient at all thus explaining why market mechanisms in this case were not effective in reducing carbon emissions.

When examining the role of institutions and policy from the perspective of EM in the EU we found that the policy formation and implementation was not very effective as a result of the EU not prioritizing stronger policies in their environmental agenda. Another reason is that even though society is undergoing a period of reflexive modernisation, civil society has not yet caught up to that level of modernisation. Policy is formed and legitimized through the demands made by civil society. The civil society makes these demands based on their current view of the environmental problem. The urgency of the dangers of climate change have only recently taken society by storm. Once the dangers of climate change sink in I have no doubt that civil society will demand that the EU implement stronger policies in their carbon trading scheme.

The European Union represents the type of supra-national institution that is best suited within the theory of EM at dealing with environmental issues in the context of globalisation. The EU is the best model for any form of future global governance.

Ecological modernisation is a very valuable conceptual framework that helps us understand the role of social and institutional transformations in bringing about a change in attitude towards environmental discourse in the process of globalization.

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