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Ecological Modernization at the Intersection of Environment and Energy

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ABSTRACT: Contemporary environmental policy is marked by an emphasis on the fight against climate change. Technological improvements for energy efficiency and transition to a low carbon economy are seen as principal environmental policy measures. Has this been the case 40 years ago when modern environmental policy took its first leap? Or has it been the result of a particular twist in the course of the development of environmental policy? Taking sides with the latter approach, it is argued that the intertwining of environmental and energy policy is attributable to ecological modernization that has become the dominant interpretation of sustainable development. Accordingly, this article focuses on ecological modernization theory and policy strategy in an aim to capture this turn. Empirical evidence will be provided through an analysis of European Union (EU) environmental policy. It will be demonstrated how EU environmental policy takes its direction from ecological modernization and how energy efficiency lies at its core.

Keywords: sustainable development; ecological modernization; fight against climate change
JEL Classifications: Q01; Q54; Q56

1. Introduction

Environmental concern has a relatively short history with respect to its importance for the continuance of human existence. Some perspectives link the emergence of environmental problems to capitalism and the 'metabolic rift' (Foster and Clark, 2012) it creates, or more commonly the Industrial Revolution that has multiplied the speed of production, and hence the speed of natural resource use and waste creation. However, it is generally accepted that the growth paradigm that took prevalence after the Second World War (WWII) has been the main catalyst of environmental degradation. This process of accelerated economic growth and technological improvements after WWII has initially been the defining characteristic of Western developed countries. However, it was soon duplicated around the globe. Hence, the level and the extent of environmental degradation increased at an enormous pace. This led to the emergence of modern environmentalism and governmental responses to environmental problems from the end of the 1960s onwards, just as when the results of such economic growth started to become visible, mainly in terms of pollution.

Whenever the environment has risen up the political agenda, the views that human capacity is well above the limitations posed by the environment mushroomed next to it. This reflects the desire (and the need) to go on with unending technological and economic development on behalf of the socio-economic and political actors of modern industrial society. Technological fixes are mostly put forward as the solution to natural resource scarcity or the pollution created as a result of human economic activity. Such blind faith in technology, also known as technological optimism, as the miracle solution to the problem of any limits to economic growth can be traced back to the Scientific Revolution1 of the 16th and 17th centuries and the age of Enlightenment. These periods are characterized by a belief in human progress and the domination of nature through science and reason. And despite the initial Romantic critics of Enlightenment such as Mary Shelley and Jean Jacques Rousseau, who demonstrated how such an unquestioned belief could lead to an environmental

[1] 'Scientific Revolution' is a term used to refer to the 'sweeping changes to European philosophy' brought about by the 'new ideas about the physical world' that were put forward during the 16th and 17th centuries by prominent scientists such as Copernicus, Brahe, Kepler, Galileo, Bacon, Descartes and Newton (Coffin *et al.* 2002: 629).

catastrophe, it holds its prevalence and still continues to be the defining characteristic of modern times. The only exception to this trend is arguably the arrival of modern environmentalism2.

Among the pioneering works of the modern environmental critique are the Silent Spring by Carson (1962), The Population Bomb by Ehrlich (1970), The Tragedy of the Commons by Hardin (1968), The Limits to Growth by Meadows et al. (1972) and A Blueprint for Survival (1972) published in The Ecologist. What was common to all these works was a 'survivalist discourse' (Dryzek, 1997: 26). They depicted doomsday scenarios of a world crumbling in the upcoming 100 years. Furthermore, they shared a common belief that there is a zero-sum game between economic growth and environmental protection. Since these works portrayed the environmental problematique as a matter of survival, their proposed solutions were also equally radical, such as zero-growth or de-modernization. Nevertheless, the unfeasibility of such solutions for the established economic and political set-up of modern industrial society soon led to the flourishing of more optimistic solutions to environmental problems. Sustainable development was formulated in such a need.

2. The Emergence of a New Global Environmental Discourse

Sustainable development is a term used first in the World Conservation Strategy (IUCN, 1980) published by the International Union for Conservation of Nature and Natural Resources. However, it gained its current meaning with the publication of Our Common Future (Brundtland Report) by the World Commission on Environment and Development (WCED) in 1987. The definition of sustainable development provided in Our Common Future is the 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED, 1987: 43). This is a vague definition. But this vagueness has led the concept to be widely embraced by the international community. In addition, sustainable development proposed a way out of the catastrophic scenarios of the previous decades. As such, the concept soon became a 'dominant global discourse of ecological concern' (Dryzek, 1997: 123).

The period that witnessed the arrival of sustainable development was also a period when a new theory was in the making. Ecological modernization theory, which was introduced initially by German social scientists in the beginning of the 1980s, aimed to explain the environmental policy developments in green countries of Western Europe throughout the 1970s. It was principally based on the argument that environmental problems could be dealt with within the existing socio-economic and political order through more modernization and macroeconomic restructuring. It formulated the environmental problematique as a matter of efficiency, to be cured by the introduction of efficient and green solutions. Therefore, ecological modernization promised a future where economic growth was secured. Indeed, it argued that environmental protection was a prerequisite for economic growth.

Both sustainable development and ecological modernization rested on the idea that economic growth and environmental protection could be achieved at the same time, that 'we can have them all' (Dryzek, 1997: 121). Therefore, the dominant belief of the 1970s as regards their incompatibility left its place to views about their compatibility and even to their mutually reinforcing character by the second half of the 1980s. Winning against its stronger interpretations, ecological modernization became the dominant approach to implement policies associated with sustainable development (Sezgin, 2012). As a result, environmental policies that did not challenge the established socio-economic order and did promise economic gain as a result of environmental protection started to be adopted. International and supranational organizations such as the Organization for Economic Cooperation and Development (OECD) and the EU played an important role in the dissemination of such perspectives.

The 1980s was also the period when the number and the scope of environmental problems increased at a great pace. Acid rain, destruction of the rainforests, depletion of the ozone layer, species extinction, environmental disasters like Chernobyl and Bhopal and global warming were the problems that characterized this era (Dunlap et al. 2002: 13). Most of them are still urgent

[2] The 1970s can be described as a period when it was for the first time questioned as to whether a brake on constant capitalist expansion is necessary for environmental protection.

environmental issues adding up to 'the global ecological crises. Among them, global warming and the climate crisis can be argued to have come more to the fore, when judged according to the level of international cooperation to tackle climate change. The importance to keep the level of average temperature increase below 2°C is evident. Nevertheless, it is also necessary to note that fight against climate change is a policy field where technological improvements provide the humanity with the possibility to continue with the current levels of economic activity, instead of limiting economic growth. Furthermore, it is a policy field where the innovation, development and diffusion of new environmental technologies provide chances for further economic growth and competitiveness. Therefore, fight against climate change is a policy field that suits almost perfectly with the new dominant global ecological discourse and policy strategy, namely ecological modernization

As a result, advances in the energy efficiency of production and the reduction of carbon emissions via technological improvements and renewable energy are embraced like a flotation ring that would save humanity from the ultimate environmental catastrophe. In addition, it is widely accepted that a reduction of throughput[3] is possible via improvements in energy efficiency, through which it would also be possible to decrease the level of natural resources used and waste created, hence an economically more efficient production. Such a perspective inevitably brings to the fore a new relationship between environmental and energy policies, a perspective that intertwines both, one in which the former is increasingly reduced to the latter. And this is more visible in international environmental policy from the 1990s onwards. The dominance of ecological modernization in international environmental policy has an important role in this process. Thus ecological modernization needs to be analyzed in greater detail both as a theory and as a policy strategy.

3. Ecological Modernization Theory

Ecological modernization theory is developed by European social scientists from the 1980s onwards, who were inspired by the environmental policy developments of the greenest countries of Europe, Germany and the Netherlands in particular. Nevertheless, the theory obtained a global focus from the 2000s onwards (see Mol, 2002). Hajer (1995: 96) argues that ecological modernization represented a new way to shape environmental reality and that its arrival can be captured with reference to 'three different tracks': introduction of 'sustainability' to the environmental debate by the World Conservation Strategy; OECD becoming an active environmental actor that problematized the environment as mainly an efficiency issue to be cured with the appropriate tool mix, introduced the 'polluter pays principle' and disseminated these ideas to its member countries; and the UN becoming a central actor in the environmental field and the introduction of 'sustainable development'. As mentioned before, sustainable development and ecological modernization have crucial similarities. Even though they do not denote the same thing, they came to be used as synonyms and ecological modernization has become the dominant interpretation of sustainable development (Sezgin, 2012). As Weale (1992: 75) has put it, 'there is no one canonical statement of the ideology of ecological modernisation'. It is both a theory of social change and a policy strategy to implement sustainable development. Nevertheless, it can generally be characterized by 'the emergence of an ecological sphere, introducing and institutionalizing an ecological rationality' (Leroy and Tatenhove, 2000: 194). Furthermore, 'ecological modernization theory starts from the proposition that the environmental crisis can and should be overcome by a further modernization of the existing institutions of modern society' (Spaargaren, 2000: 56).

The emphasis on the importance of 'further modernization' can be observed from the initial contributions to the ecological modernization theory onwards. Huber (1982) argued that 'super-industrialization' was the way to solve environmental problems, where this emphasis was complemented by Jänicke (1985) and Simonis (1989) who argued that the state has a big role to play in this process. And this was to be done not by command-and-control end-of-pipe environmental policies but instead by an active government policy 'to internalize the solution of environmental problems into the polluting sectors' (Jänicke, 2006: 1). This is what Simonis (1989) calls 'a conversion of the economy'. As such, ecological modernization theory incorporated the importance of

[3] Throughput, as defined by Daly and Farley (2004) is 'the flow of natural resources from the environment, through the economy, and back to the environment as waste'.

'macro-economic restructuring' (Murphy and Gouldson, 2000: 34). Important contributions were made to ecological modernization theory throughout the 1990s, where scholars started to focus on the conditions that were more favorable for ecological modernization. In that sense, Weale (1992) provided a comparison between British and German policies against acid rain in an aim to trace the effect of institutional differences on eco-modernist policies. Similarly, Jänicke (1992), through his 'capacity for modernization' analysis, focused on institutional factors that would lead to a more successful formulation and implementation of eco-modernist policies. Hajer (1995: 4) took ecological modernization 'as the new dominant way of conceptualizing environmental problems' and approached it through a discourse analysis perspective. Similarly, Dryzek (1997) took ecological modernization as a discourse and analyzed its main components. With the advent of the 2000s, contributions aimed to respond to the main criticisms directed against the theory (such as its Eurocentricism)[4] as well as included attempts to incorporate new emphases (such as the role of consumption in environmental policy and ecological modernization and global dynamics)[5]. As such the scope of ecological modernization was extended 'theoretically and geographically' (Mol and Sonnenfeld, 2000: 5).

Throughout its development, the theory acquired changing and complementary emphases. However it is possible to identify recurring themes. According to Gouldson and Murphy (1996), these can be categorized into four:

- *Environment and economy can be successfully combined for further economic development with the aid of government intervention;*
- *Environmental policy goals should be integrated into other policy areas;*
- *Alternative and innovative policy measures should be explored; and*
- *The invention, innovation and diffusion of new clean technologies is essential*

(Gouldson and Murphy, 1996: 14)

The first common theme expresses the overarching emphasis of ecological modernization that there is a win-win relationship between environmental protection and economic growth, that environmental protection is an impetus for further economic growth and that the government has an important role to play in this process. This optimism is what differentiates sustainable development and ecological modernization from the pessimistic views of the 1970s as regards the necessity to either achieve economic growth or environmental protection. This is also what has made their quick adoption possible by most of the governments throughout the world. The belief in the positive and reinforcing relationship between environmental protection and economic growth rests upon the belief that technological advances in the environmental field would bring about increased efficiency in production; would help achieve 'decoupling', i.e. the possibility to have economic growth without negative environmental impacts; and the creation of a 'double dividend', i.e. the creation of new jobs via investments in environmental technologies. As such, environmental protection is argued to foster economic growth.

Secondly, ecological modernization theory has a clear emphasis on the role of environmental policy integration (EPI). Most of the environmental problems are cross-cutting sectors and therefore impossible to be dealt with in isolation. Furthermore, some policy fields that do not seem to be directly related to the environment might lead to serious environmental problems. Therefore, the piecemeal approach to the environment has to be abandoned. In that sense, the principle of EPI implies that environmental concerns and goals have to be integrated into all government policies in order to have a holistic approach towards the environment. The third common theme in ecological modernization is the necessity to develop new environmental policy instruments (NEPIs) instead of top-down command-and-control type of instruments. Typical examples of NEPIs are voluntary agreements, eco-management systems and eco-labeling. These flexible instruments are market-based and preventive and therefore motivate the private sector to willingly participate in environmental policy-making and

[4] For ecological modernization beyond Western Europe, please see Rinkevicius (2000) for Lithuania; Milanez and Bührs (2008) for Brazil and Schlosberg and Rinfret (2008) for the United States.

[5] For the role of consumption in ecological modernization, please see Spaargaren (2000) and Spaargaren and Vliet (2000). For ecological modernization and global dynamics, please see Mol (2002).

implementation. As such, they are argued to cure the implementation problems in environmental policy. Finally, the fourth common theme emphasizes the necessity to develop new environmental technologies that are clean and green and explore this field as a new catalyst for economic growth. Such a new genre of technology is argued to achieve efficiency in production, a decoupling of economic growth and environmental damage, a double dividend that would increase employment and therefore solve the problem of displacement of pollution across different regions.

These four common themes constitute the core of ecological modernization theory and can be traced in international environmental policy from the 1990s onwards. As such, the win-win relationship between environmental protection and economic growth, continued emphasis on EPI and the use of NEPIs and the importance of science and technology in this regard have been the cornerstones of the environmental policies of main international environmental policy actors. Among these actors, the EU is chosen to be the main focus of analysis in the following section as it is both an international environmental leader and also a leader in the fight against climate change at the global level.

4. Ecological Modernization Policy Strategy – the EU Example

Ecological modernization policy strategy has been the defining characteristic of international environmental policy from the 1990s onwards. According to Hajer (1995: 31), there are four reasons behind the adoption of an ecological modernization policy strategy by the governments: the necessity for the governments to provide an answer to pending environmental problems, the feasibility of ecological modernization as a policy strategy that not only promised economic growth but also offered solutions within the existing order and that ecological modernization provided a way out of the radical environmentalism of the 1970s. In addition, the adoption of ecological modernization policy strategy followed the adoption of neo-liberal economic policies in the 1980s (Hajer, 1995).

The United Nations (UN) has been the principle platform for the coordination of environmental policy efforts at the international level from the convention of the Stockholm Conference on the Human Environment in 1972 onwards. In addition to the UN, the OECD played an important role in the dissemination of principles that are related to environmental policy, such as the polluter-pays principle. Furthermore, the EU started to become an important environmental leader particularly from the late 1980s onwards. All these international actors adopted sustainable development as their overarching goal. For its achievement however, ecological modernization was chosen instead of a stronger interpretation of sustainable development. Furthermore, through time, the emphasis on environmental protection gradually gave way to economic concerns. This is most visible in the case of the UN and the EU.

In the case of the UN, the 1992 Rio Conference on Environment and Development (Earth Summit) had been a remarkable success and a leap forward in international environmental policy. The level of attendance by the heads of states and governments and the influential documents adopted afterwards attest to its importance. As a result, the 1992 Rio Summit placed environment and development amongst the most important policy issues at the international level. However, the following period witnessed a downgrading of environmental concern and the preeminence of development issues. This marked the World Summit on Sustainable Development (Johannesburg Summit) that convened in 2002. The dropping of the 'environment' from the name of the summit was indicative of the prioritization of development over the environment. In addition, ecological modernization policy strategy became more visible with the Johannesburg Summit. The Plan of Implementation adopted at the summit proposed policy responses that were part of an ecological modernization policy strategy (UN, 2002). The recent report prepared by the United Nations Environment Programme (UNEP), named Towards a Green Economy is a continuation of this approach to the environment. The document is prepared with an eco-modernist understanding, as its name reveals. It classifies ideas as to the incompatibility of the economy and the environment or that a green economy is only achievable in developed countries as 'myths' on the grounds that greening the economy would bring about an increase in economic growth and employment and eliminate poverty through the utilization of market instruments and an 'appropriate regulatory framework' (UNEP, 2011: 3).

The EU also presents a similar trend. The EU has a leading role in international environmental policy and thus its policy choices are crucial in terms of the dissemination of ecological modernization principles around the globe. Furthermore, the EU acts as a leader in the fight against climate change at the international level. Initially, European integration was not concerned with the environment. Environment-related actions were basically motivated by the aim of achieving a common market and preventing environment-based market distortions. The first attempt at taking European level environmental measures dates back to the 1972 Paris Summit. The environment became a formal policy field of the EU in 1986 with the signing of the Single European Act and thereafter, the EU acquired the competence to act in the environmental field without the need to base this on trade-related reasons. Sustainable development was adopted as an EU environmental policy goal from the 1990s onwards. Throughout the same period, ecological modernization policy strategy was adopted to achieve sustainable development (Baker, 2007). Hence, from the 1990s onwards, EU environmental policy stressed the compatibility between economic growth and environmental protection, the need to achieve EPI, the need to make more use of NEPIs and the need to foster innovation.

The initial document that gave the EU an eco-modernist push was the Fifth Environmental Action Programme (EAP). Different from the preceding four EAPs that mainly prescribed 'legal instruments' (Johnson, 2004: 162), the Fifth EAP pointed at the importance of NEPIs to achieve a more efficient environmental policy implementation. This document also set the pace in which the compatibility of the economy and the environment, the basic premise of ecological modernization, 'is achieved through the reduction of the environmental to the economic' (Baker, 1997: 97). This tendency was furthered with the proclamation of the Lisbon Strategy in 2000 that set the EU's goal in the upcoming decade as 'to become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion' (CoM, 2000: para.5). The reasons that led to the adoption of the Lisbon Strategy were the intensification of the process of globalization throughout the 1990s and the increased pressures for competitiveness as well as the level of increased unemployment and decreased innovative capacity within the EU. Within this context, environmental policy started to be justified more and more in terms of the economic potential it brings about. These concerns manifested themselves in the Sixth EAP (2002-2012), which according to Baker (2007: 307) was inspired by the growth-oriented and competition-based economic model the EU had adopted for the new millennium and hence 'was designed to support the Lisbon Strategy'. Furthermore, the Sixth EAP also incorporated some new perspectives in environmental policy that reflected similar new emphases in ecological modernization theory such as the importance of consumers in promoting environmental change through their choices in the market place for green products. Hence, ecological modernization policy strategy was consolidated further in the EU with the Sixth EAP. The formulation of environmental problems as efficiency issues and the justification of environmental measures by their economic potential also fed the process whereby the EU set the fight against climate change as its primary environmental goal. In that sense, increasing energy efficiency and promoting renewable energies became the EU's main environmental policy actions with the 2000s.

So even though the Sustainable Development Strategy adopted by the EU in 2001 stated that economy, society and ecology are equally important, economy was privileged amongst the three concerns. The Europe 2020 – A Strategy for Smart, Sustainable and Inclusive Growth that the EU has adopted in 2010 to replace the Lisbon Strategy is further evidence to this trend. The new strategy stated three "mutually reinforcing priorities":

- *Smart growth: developing an economy based on knowledge and innovation.*
- *Sustainable growth: promoting a more resource efficient, greener and more competitive economy.*
- *Inclusive growth: fostering a high-employment economy delivering social and territorial cohesion*

(CEC, 2010a: 5)

From the priorities stated above, it can be observed that the spirit of the Lisbon Strategy is still alive. The main difference between the two documents can be said to lie in the measurable targets the Europe 2020 strategy has put forward. The headline targets specified in the Europe 2020 strategy are:

- *75% of the population aged 20-64 should be employed.*
- *3% of the EU's GDP should be invested in R&D.*
- *The "20/20/20" climate/energy targets should be met (including an increase to 30% of emissions reduction if the conditions are right).*
- *The share of early school leavers should be under 10% and at least 40% of the younger generation should have a tertiary degree.*
- *20 million less people should be at risk of poverty.*

(CEC, 2010a: 5)

The 20/20/20 climate/energy targets mentioned above are adopted by the EU in 2007. They commit the EU 'to reduce greenhouse gas emissions by 20%, rising to 30% if the conditions are right, to increase the share of renewable energy to 20% and to make a 20% improvement in energy efficiency' by 2020 (CEC, 2010b: 2). They also commit the EU to the goal of achieving a 'highly energy-efficient, low carbon economy'[6]. The EU has adopted a climate and energy package in 2009 and set forward legislation in the fields of EU emissions trading scheme (ETS), national targets for non-EU ETS emissions, national renewable energy targets and carbon capture and storage to realize the 20/20/20 targets. All these developments are further evidence to the intertwining of EU environment and energy policies at the highest level. Therefore, it is safe to argue that the EU has chosen to be highly active in an environmental field which is most conducive to economic growth, i.e. fight against climate change. And the policies formulated in that sense are not by any means challenging the institutional set-up of the EU industrial society, calling into question its growth-oriented fixation or consumerism but instead looks for solutions at the energy policy realm to ensure further economic growth by decoupling it from environmental damage. As such, it can be argued that the ecological modernization perspective that shapes EU environmental policy also lies at the intersection of environmental and energy policies in the EU, increasingly reducing the former to the latter.

5. Conclusion

An analysis of contemporary environmental policy reveals that environmental and energy policies are intertwined to a great extent. This is mainly due to dominance of ecological modernization in implementing policies associated with sustainable development and the rise of the fight against climate change higher in the international environmental policy agenda. Ecological modernization rests on four core themes, being the win-win relationship between the economy and the environment, the necessity to integrate the environment into all sectors, the use of flexible and market-based environmental policy instruments instead of top-down command-and-control type of instruments and the role of science in fostering the innovation and diffusion of new environmental technologies. In today's world, this new genre of environmental technologies are basically related to the field of energy and are aimed at increasing energy efficiency of production and making more use of renewable energies.

Ecological modernization policy strategy forms the basis of EU environmental policy from the 1990s onwards. From the 2000s onwards however, it has become more pronounced. The emphasis of the Lisbon Strategy to make Europe the most dynamic and knowledge-based competitive economy worldwide led to the justification of environmental measures almost exclusively by the economic gains they are to bring about. From the 2000s onwards, energy efficiency in the form of fight against climate change started to become the core of EU environmental policy. As such, sustainable development within the EU became a policy of sustainable and smart growth, made possible by the technological advances in the field of energy efficiency and renewable energy. As a result, environmental policy increasingly came to be reduced to energy efficiency within the EU.

[6] For more on this, please visit http://ec.europa.eu/clima/policies/package/index_en.htm.

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