

Ecological Modernization as a Basis for Environmental Policy: Current Environmental Discourse and Policy and the Implications on Environmental Supply Chain Management

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ABSTRACT Sustainable development and ecological modernization are the two theoretical frameworks that underlie environmental policy making in industrialized countries. It is especially the theory of ecological modernization that describes recent changes in environmental policy making and assumes a positive-sum game between the economy and the environment. The article critically reflects upon ecological modernization as a basis for current environmental policy and discourse. It uses experiences of a project on environmental supply chain management to explore the implications of ecological modernization on practical environmental policy outcomes. We conclude that sustainable development and ecological modernization must be viewed as ideological and political concepts, at least as much as they are about the relationship between the economy and environment. Therefore, further analyses of environmental policy making must include issues of power and influence.

Introduction

The aim of this article is to critically reflect upon the theory of ecological modernization that underlies environmental discourse and policies throughout the industrialized world. The new environmental policy field of environmental supply chain management is used to explore how ecological modernization informs strategies towards environmental policy making. As case study we use a project about 'environmental partnering action for small- and medium-sized enterprises (SMEs) in supply chains' in industrial South Wales to evaluate the environmental policy strategies and business actions, as well as add a social science perspective to the research about environmental supply chain management. Therefore, this paper should serve the purpose of outlining a research agenda for the application of a social theory (ecological modernization) to explore practical implications within the environmental management of industrial production.

First, we look at changes in environmental politics and policy over the last two decades, a time when the theories of sustainable development and ecological modernization became buzzwords within the environmental debates in industrialized countries. We then explore the key features of ecological modernization that largely describe the changes in environmental policy making in recent years and which propose that economic development and environmental protection can be combined to a fruitful synergy. Our special focus will be how ecological modernization is informing current

models of environmental policy making. This is followed by a critique of the theory of ecological modernization and an exploration of its weaknesses when it underlies environmental policies. The last section investigates the experiences of a project on environmental supply chain management and explores the practical implications of the inclusion of environmental issues into supply chain management. As the project is in its early stages, these are preliminary outcomes of what will become a thorough investigation into environmental supply chain management.

We conclude that the theory of ecological modernization has theoretical shortcomings and weaknesses when it informs environmental policy making, especially concerning the broad task of working towards more sustainability. Ecological modernization as well as sustainable development are ideological and political concepts that cannot be narrowed down towards an exploration of the economy–ecology relationship alone. It seems necessary to investigate issues of power and influence within an analysis of current environmental policy and discourse.

Environmental discourse and environmental policy making: towards ecological modernization

For a long time, an antagonistic relationship existed between economic development and environmental protection. On the one hand, those in favour of advanced economic development often viewed initiatives towards environmental protection as a brake on growth. Especially during the 1970s, concerns about the ever more openly discussed ‘ecological crises’ were met with a pragmatic legal–administrative response in the Western industrialized countries. The then newly established departments for the environment favoured a model of environmental policy making that was largely based on end-of-pipe solutions, i.e. ‘pollution ceilings’ were introduced and scrubbers and filters were installed as the appropriate solution. On the other hand, there was a radical tendency within the environmental movements which believed that only a fundamental reorganization of social order would bring about an ecologically sound society (Gouldson and Murphy, 1997; Hajer, 1996, p. 248). Overall, there was a shared perception between both environmentalists and economists that there is a basic trade-off between the two objectives which one has to choose from (Reitan, 1998).

The rise of environmental awareness in industrialized countries throughout the 1980s and 1990s marked some important distinctions from the previous environmental debate. This was mainly due to the popularization of the concept of *sustainable development* in 1987 by the World Commission on Environment and Development (WCED, 1987)—often referred to as the Brundtland Commission—and further emphasized by the follow-up United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992 and the ‘Rio-plus-Five’ conference held in New York in 1997 (Hajer and Fischer, 1999). This concept developed a vision of the simultaneous and mutually reinforcing pursuit of economic growth, environmental improvement as well as global and social equity, together with an emphasis on global distribution (Dryzek, 1997; Huber, 1998). During the 1990s, ‘sustainable development’ became the predominant feature of the environmental discourse, underlying global, supranational, national, regional and local environmental policy strategies, company environmental management and the work of many environmental groups alike. This is mainly due to the fact that there is no overly accepted tight definition of what ‘sustainable development’ exactly means (the often-cited definition of the Brundtland Commission, ‘meeting the needs of the present without compromising the ability of future generations to meet their needs’ (WCED, 1987, p. 8) is rather broad and allows much room for further interpretation),

which enables different interests to interpret the term to suit their agendas and, as McManus (1996, p. 53) argues, it also has the potential to paste over potential conflicts between environment and economy.

Nevertheless, this new environmental discourse has also led to significant changes in the content and style of environmental politics and policy making in Western industrialized countries (Meadowcroft, 1997). For example, with the Fifth Environmental Action Programme of the European Union (CEC, 1993), which covers the period between 1993 and 2000, environmental policy became more central to the European project, and subsequently to each individual EU member state. The rhetoric of environmentally sustainable development has as its aim the re-orientation of economic and fiscal instruments towards technologies for resource efficiency and the internalization of environmental costs and strategies towards minimizing wastes as well as longer product life-cycles. These goals in EU environmental policy making are to be achieved within a climate of dialogue, partnership and shared responsibility. Therefore, the EU places much emphasis on co-operation with both business and the industrial sector to achieve environmental policy outcomes, including industrial self-regulation, voluntary agreements and self-policing, using such means as the eco-management and audit scheme (EMAS). It is official EU policy that sustainability principles are to be integrated in all EU activities, implying that a balance between sustainability and conventional market economic objectives is possible (Pepper, 1999). Overall, the EU approach to environmental policy making becomes increasingly important, as these policies also guide environmental policy making in the member states (ENDS, 2000). As a supranational body, the EU policy approach influences the global environmental agenda.

In recent years, an increasing number of environmental policy initiatives by the European Commission have been directed towards the integration of economic development and environmental protection. Some of these policy initiatives include an ever more sophisticated approach towards the environment, like the proposal for an Integrated Product Policy (IPP) which 'addresses the whole life-cycle of a product, thus avoiding shifting environmental problems from one medium to another, as opposed to specific product policy, which addresses one particular environmental effect' (CEC, 1998).

Furthermore, there was a shift in industry to move beyond the previously reactive 'end-of-pipe' approaches towards anticipatory and precautionary solutions, i.e. integrated pollution prevention and control (IPPC), as well as waste minimization and efforts for an efficient use of resources (Christie and Rolfe, 1995; Howes *et al.*, 1997). Additionally, environmental policy initiatives increasingly use industry's existing investment patterns and its capacity and need for technological innovation to facilitate improvements in environmental outcomes (Christoff, 1996). Basically all industrial sectors place now a greater emphasis on the environmental management of their resource uses and waste streams. This is influenced mainly by tighter legislation, pressures from customers, suppliers or consumers, and potential cost savings of better resource management and waste minimization.

The theory of *ecological modernization* has tried to capture the nature of the transformations outlined above (Mol, 1999). Ecological modernization proposes that policies for economic development and environmental protection can be combined to synergistic effects, creating a positive-sum game between economy and ecology. Rather than seeing environmental protection as a brake on growth, ecological modernization promotes the application of stringent environmental policy as a positive influence on economic efficiency and technological innovation (Gouldson and Murphy, 1997, p. 74). This means, as Hajer (1996, p. 248) notes, that 'economic growth and the resolution of

ecological problems can, in principle, be reconciled'. Dryzek (1997, p. 143) argues that ecological modernization 'has a much sharper focus than does sustainable development on exactly what needs to be done with the capitalist political economy'. This, so the argument goes, would be especially important in a world largely determined by free trade, capital mobility and an overall commitment to market liberalization (Dryzek, 1997, p. 136). Overall, as Hajer (1995, p. 98) argues, the theory of ecological modernization grew largely out of a necessity. Giving environmental policy the chance to claim its position in the day-to-day process of environmental politics and environmental policy making, against the background of past failures and a higher priority in industrialized societies to the goals of economic success, a new conceptualization was needed. Therefore, ecological modernization is meant to provide both a theoretical and practical guide to an appropriate response to the environmental problematic (Gibbs, 2000, p. 10).

To follow Mol (1996), ecological modernization theory states that contemporary economic practices are firmly rooted in modernity, and are related to modern scientific-technological and state institutions. In recognizing this fact, ecological modernization theory emphasizes the possibility of a process of re-embedding economic practices with respect to their ecological dimension, *within* the institutions of modernity. This process should result in the institutionalization of ecology in the social practices of production and consumption, with the consequence to redirect economic practices into more ecologically sound ones (Mol, 1995). The central assumption in this line of argument is that 'the dominant institutions indeed *can* learn and that their learning can produce meaningful change' (Hajer, 1996, p. 251). Furthermore, the potential of a combination of ecology and economy for mutual benefits is linked to truly modern factors like technology, science and a belief in progress, all of which are important elements of the traditional discourse on modernity and modernization (Beck, 1992; Beck *et al.*, 1994).

The key features of ecological modernization

Summarizing the literature on ecological modernization, one can identify four key features that distinguish it from other theoretical approaches (Christoff, 1996; Mol, 1996).

Ecological modernization as technological adjustment

Ecological modernization is concerned with technological developments with environmentally beneficial outcomes. These outcomes are specifically aimed at reducing emissions at source and fostering greater resource efficiency. Ecological modernization is primarily a strategy intended to maintain or improve market competitiveness, in which the environmental benefits of technological change are related to companies' cost-minimizing responses to new pressures from the market itself and broader society (Christoff, 1996, pp. 480–482).

Ecological modernization as belief system

The concept of ecological modernization reflects an ideology based on the understanding that environmental protection is a precondition of long-term economic development. It emphasizes the achievement of the highest possible environmental standards as a means for developing market advantage through the integration of anticipatory mechanisms into the production process, the recognition of actual and anticipated costs of environ-

mental externalities in economic planning, and the economic importance of strengthening consumer preferences for cleaner or 'green' products (Weale, 1992; Christoff, 1996).

Ecological modernization as policy discourse

Internalizing care for the environment into existing patterns of economic production and consumption or, in other words, facilitating change in environmental policy within the broad framework of modernity, also determines the discourse about 'the environment'. So far, this discourse has been largely economic—framing environmental problems in monetary terms, portraying environmental protection as a matter of good management and potential cost savings. At the core of ecological modernization is the idea that 'pollution prevention pays', thus it is essentially an efficiency-oriented approach to the environment (Christoff, 1996, p. 482). Hajer (1995, p. 31) argues that 'ecological modernization ... uses the language of business and conceptualizes environmental pollution as a matter of inefficiency, while operating within the boundaries of cost-effectiveness and administrative efficiency'.

Ecological modernization and environmental policy making

One of the most important aspects in analysing the theory of ecological modernization is how it relates to the process of environmental policy making. What policies are formulated within the discourse of ecological modernization? Which societal actors play an important role in the formulation and implementation of those policies?

First, ecological modernization favours a style of environmental policy making within which nation-state intervention moves away from a mere hierarchical command and control policy-style and towards a more decentralized policy-style, consensual negotiations, partial self-regulation (with legal boundaries), and the use of market mechanisms and instruments (Berger, 1999; Mol, 1999). This is related to the discussions on state failure in environmental policy which took place in the 1980s (Jaenicke, 1986). The discussion on the limitations of the state's ability to solve societal problems points to the capacity of a nation-state in policy making. Taking into account the different societal spheres and the development of ever more specialized knowledge and expertise, the dynamic character of a (post)modern society, and the globalization of markets, proponents of environmental capacity building, like Jaenicke (1997, pp. 1–2), argue that 'a country's capacity for environmental protection is not and cannot be restricted to government policies. Increasingly it depends on societal forces of all kinds.' The role of the state in environmental policy changes then from curative and reactive to preventive, from a rather 'closed' policy-making style to more participative forms of policy making, from centralized to decentralized, and from *dirigiste* towards contextual 'steering' (Mol, 1996; Pepper, 1999). This issue is also addressed in a change of terms by academic scholars: state action and policy making was previously referred to as *government* and is now replaced by *governance* which 'refers to a shift from state sponsorship of (...) programmes and projects, to the delivery of these through partnership arrangements which usually involve both governmental and non-governmental organisations' (Murdoch and Abram, 1998, p. 41).

Second, the changing state–market relations result in an increasing activation of economic agents and mechanisms for environmental reform. Producers, consumers/customers, and suppliers appear as actors for environmental reform, using mainly economic arguments and mechanisms to articulate environmental goals. One has to make clear that most of those actors do not embrace the environmental agenda from an

altruistic perspective, but are influenced or driven by tight state legislation, environmental awareness and protest, and changing economic cost–benefit relations (Mol, 1999).

And, finally, transnationalization and globalization change the social dynamics behind environmental reforms. The nation-state is no longer the only level of analysing and influencing environmental policy making (Mol, 1999). Supranational bodies, like the EU, influence national policy making with their policy orientations and transformations. This issue needs to be addressed much further, especially concerning the arguments for a more regional or local shaping of environmental policy making: how can a region or a local community inform environmental policies in an age largely dictated by transnationalization and globalization, not only concerning environmental issues but in the market economy as a whole? How much impact have regional resource management, as part of the concept of industrial ecology, and local environmental actions in that context?

Giorgi and Redclift (2000) analysed the implications of the EU environmental policy agenda, elaborated on the basis of the concept of ecological modernization, on research funded by the EU. They argue that environmental research undertaken by social sciences was steered into the discourse of ecological modernization, which assumes that both social and environmental costs can be ‘internalized’ in products and services. This means that social research into the environmental field is funded by the EU mainly when it takes on an ecological modernization orientation. EU-funded research projects are then meant to influence policy making on all different levels of government within the member states. However, when looking at the Fourth Framework Programme on the Environment, Giorgi and Redclift (2000, p. 20) argue that little research has been undertaken ‘on the real conflicts of interest between economy and ecology or alternatively the barriers to the achievement of the economy–technology–ecology optimum deriving from the inherent contradictions of the discourse on ecological modernisation’. Furthermore, absent from the Fourth Framework Programme are questions concerning equity or social cohesion. This suggests that ecological modernization as defined within environmental policy making largely excludes the social dimension which is one of the three defining features of the concept of sustainable development.

Critique of the theory of ecological modernization

As we have argued so far, the theory of ecological modernization can be basically used at two levels: First, it can be used as a theoretical framework to analyse changes in the institutions of modern society necessary to solve the ecological crisis. Second, ecological modernization can be used as a guide for current environmental policy making. It seems reasonable to address the criticism towards ecological modernization separately for those two levels. We shall first investigate the critique on the theoretical assumptions of ecological modernization, and then address its implications as a practical guide on environmental policy making.

There is an ever-growing amount of literature on ecological modernization; however, no common opinion about the potential or usefulness of the theory exists. Weale (1992), for example, identifies an important potential in ecological modernization. He argues that it offers a challenge to the status quo in the environment–economy relationship as it calls for development that internalizes environmental externalities. This would then eventually lead to a cleavage not between business and environmentalism, but between progressive and forward-looking businesses and short-term profit makers. Barry (1999, pp. 113–123) argues that ecological modernization is not just a legitimizing ideology for ‘business as usual’, but a new way of thinking about environmental policy principles including normative questions. Barry identifies the fact that ecological modernization

uses the language of neo-classical economic rationality, but he does not see that as a problem but rather as a chance to open up long-standing barriers, which could lead towards ‘collective environmental management’, a more democratic and collective form of ecological modernization.

Other scholars are more critical about the theoretical assumptions of ecological modernization. Connelly and Smith (1999, pp. 57–59) see ecological modernization basically as a form of ‘green capitalism’. They argue that ecological modernization justifies the status quo and Western-style industrialization by hindering more radical environmental positions from coming forward and by not fully exploiting the radical potential of the concept of sustainable development. Connelly and Smith point out that ecological modernization reinforces a technocentric worldview. They think, however, that working towards sustainability calls for a reinterpretation of needs. Quality of life, identified by them as a basic principle of the whole sustainability concept, would go beyond simple measures of economic wealth: ‘It also requires strong control of markets in order to safeguard the environment and intra- and intergenerational obligations’ (Connelly and Smith, 1999, p. 59).

The most comprehensive critique of the theory of ecological modernization was undertaken by Christoff (1996). He distinguishes between ‘weak’ and ‘strong’ versions of ecological modernization, according to their likely efficacy in promoting enduring ecologically sustainable transformations and outcomes across a range of issues and institutions (see Table 1).

Christoff (1996, p. 485) argues that within the ‘weak’ version of ecological modernization, the environment is reduced to concerns about resource management and inputs, waste management, energy efficiency and pollutant emissions. Talking this business language implies that the environment is measured in monetary terms, i.e. as financial cost savings that can be gained from environmental management. As broader social and cultural needs and non-anthropocentric values cannot be reduced to monetary terms, they are largely excluded from the theory of ecological modernization.

Furthermore, ‘weak’ ecological modernization is focused mainly on policy processes and changes within industrialized nation-states (Christoff, 1996, p. 486). As Gibbs (2000) points out, ecological modernization has ignored the sub-national level. However, there appears to be a strong rationale for including the regional and local level into environmental analyses, considering the prominence given to this level in international documents (UN Agenda 21, and the EU’s Fifth Environmental Action Programme), and the role of regional governance in regional economic policy making (e.g. the regional development agencies in the UK).

Christoff (1996, pp. 487–488) makes the criticism that ‘weak’ ecological modernization presents a unilinear path to ecological modernity. This suggests that this version of

Table 1. Versions of ecological modernization

Weak ecological modernization	Strong ecological modernization
Economistic	Ecological
Technological (narrow)	Institutional/systemic (broad)
Instrumental	Communicative
Technocratic/neo-corporatist/closed	Deliberative democratic/open
National	International
Unitary (hegemonic)	Diversifying

Source: Christoff (1996, p. 490).

ecological modernization is in favour of mainstream development theory, identifying it as the next necessary stage of an evolutionary process of industrial transformation. This stage is characterized by, and dependent on, the hegemony of Western science, technology and consumer culture.

And, finally, Christoff (1996, pp. 488–490) points out that ‘weak’ ecological modernization is characterized by a technocratic and neo-corporatist style, including mainly politicians and representatives from the industrial sector—e.g. with the policy instrument of voluntary agreements (Berger, 1999)—leaving out large parts of the population. This, argues Christoff (1996, p. 488), ‘may prove primarily a rhetorical device seeking to manage radical dissent and secure the legitimacy of existing policy while delivering limited, economically acceptable environmental improvements’.

In contrast to that, the ‘strong’ version of ecological modernization to which Christoff (1996) refers would feature the following characteristics (summarized by Dryzek, 1997, pp. 147–148): First, a consideration of broad-ranging changes to society’s institutional structure and economic system, with a view to making them more responsive to ecological concerns. Second, open, democratic decision making, maximizing participatory opportunities for broader social interests. Third, a concern with the international dimension of environment and development. Here it seems necessary to us to broaden Christoff’s ‘strong’ version with the inclusion of the sub-national, i.e. regional and local, level. Finally, conceptualizing political–economic–ecological development in diverse and open-ended terms, such that there is no single correct or accepted view of what ecological modernization must entail but multiple possibilities to which ecological modernization provides an orientation.

Weaknesses of ecological modernization as a basis of the environmental policy agenda

Analysing the implications of the theory of ecological modernization on policy making is of core importance as this theory underlies mainstream environmental policies and practices at all layers of government, especially in Western industrialized countries. It is a commonplace in current policy analysis that policy making is a socially constructed process. This process involves not only administrative and institutional aspects, but also the discourses, which frame and/or influence the policy outcomes (Hajer, 1995). This communicative aspect of social science analyses, often referred to as the *linguistic turn*, requires us to look closer at the language used in the discourses that frame a certain policy area, because it helps to identify the normative positions that underlie environmental debates (Rydin, 1999).

Policy making relates to issues that are most frequently discussed within political science, namely power and influence. An important reference point on how language use is related to power and influence is the work of Michel Foucault. Foucault examined the power that exists in discourses within societies, evolving in the hypothesis that ‘in every society the production of discourse is at once controlled, selected, organized and redistributed by a certain number of procedures whose role is to ward off its powers and dangers, to gain mastery over its chance events, to evade its ponderous, formidable materiality’ (Foucault, 1984, p. 109). In other words, what becomes an ‘official’ discourse or storyline is controlled by the exercise of power and influence which creates a framework where certain aspects of a field are identified as the ‘official’ discourse whereas others remain outside. What follows then is that the widespread adoption of a storyline can add credence to the claims of specific groups and render those of other groups less credible (Rydin, 1999).

The discourse of ecological modernization includes two very important notions, those of modernity and rationality. Furthermore, the discourse is posited on continuing global marketization under capitalism. Pepper (1999, p. 8) argues that the 'official' discourse largely excludes ideas that economic development and environmental protection might be in a serious tension. This means that the ecological modernization assumption of a compatibility between the two remains unquestioned. Furthermore, it seems that no societal actors want to convey any anti-industrial image, as this would totally go against the mainstream discourse of the current environmental debate. Making sense in the environmental policy debate means to adopt the language of business, using notions like resource or waste management, eco-efficiency or cost savings, instead of directly addressing the 'environment' as a possibly problematic issue within industrial production and processes. As Rydin (1999, p. 476) points out in the context of the planning system, 'using the language of business [makes] it easier to work with business interests or gain grants from a pro-business government'. We shall return to this argument in the next section when discussing the case of environmental supply chain management.

Eden (1999) undertook an empirical analysis of UK business associations and their view on environmental policy with the aid of 15 in-depth interviews with representatives of different associations in 1994. The interviews showed that the business associations see *technocratic rationality* as the most important means to legitimating their viewpoint on environmental policy. Businesses base their policy credibility on technocratic rationality and ground the 'soundness' of their contribution to it on specialized experience, practical competence, and on successful operations. As Eden (1999, p. 1302) was able to show, they use complementary strategies to exclude other societal actors who do not meet the inclusionary criteria. So-called 'non-experts', like critics of business in non-governmental organizations and lay publics, are portrayed as non-rational and unable to evaluate the contribution of 'experts' to environmental policy. Eden's (1999, p. 1306) argument is that 'technocratic rationality is used by the business associations not only to sustain an exclusionary environmental debate but also to fight the inclusion of others forms, and thus to prevent the democratisation of debate'.

Concerning the different layers of government, which form an important factor as policy makers, Foucault (1991), in his essay on 'governmentality', defines the arts of government as essentially concerned with how to introduce economy into the political practices of the state. Governmentality, then, applies techniques of *instrumental rationality* to the arts of everyday management exercised over the economy, society and the environment. In following this argument, Luke (1995, p. 25) argues that 'encircled by grids of ecological alarm, sustainability discourse often tells us that today's allegedly unsustainable environments can be disassembled, recombined and subjected to the disciplinary designs of its organizationally embodied expert management'. This means then, again, that governmental policy makers shape the environmental discourse in a mode of rationality, referring legitimate discourse to the expertise of managerial economic practices. Thus two of the main societal actors in environmental policy making use modes of rationality as their basis of discourse and action, businesses are referring to 'technocratic rationality' and governments to 'instrumental rationality', both shaping the 'official' environmental discourse.

However, as Mol (1999, pp. 174–175) points out rightly, for a comprehensive analysis of environmental policy outcomes, discourses do matter but it is also necessary to include an analysis of institutions and social processes in relation to environmental issues. This is why we need to look closer at examples of the application of the theory of ecological modernization in environmental policy making.

Reitan (1998) analysed the work of the Environmental Tax Committee and the Green Tax Commission in Norway focusing on how the policy-making implications included ecological modernization issues. Two factors suggest that ecological modernization theory does not provide enough insight for environmental policy as a form of *Realpolitik*: (i) distributional conflicts and social contradictions, and (ii) institutional aspects.

By analysing the discussions concerning the formulation and implementation of the carbon tax in Norway, Reitan (1998, p. 15) shows that possibilities of implementing a more ambitious environmental policy without addressing basic social contradictions can be questioned, even though this policy would be in accordance with mainstream ecological and macro-economic objectives. Despite the possibility for developing positive-sum outputs at the macro level, there were several zero-sum outcomes at the sector level which were strongly related to the distributional issues between individuals, groups and regions. Market instruments are mostly premised on their generality, but their legitimacy is also related to their distributional consequences. Therefore, a redesign of environmental policy instruments without addressing wider distributional dimensions and social contradictions seems to be difficult. As Reitan (1998, p. 18) argues, 'there will be winners and there will be losers, and there can be distributional conflicts following social cleavages in society, be they business versus ordinary people or centre versus periphery. Against this background, the consensus assumption of ecological modernisation with the perception that it is possible to carry out an ambitious environmental policy without addressing basic contradictions seems questionable.'

As we have mentioned earlier, ecological modernization presupposes that environmental improvements can be managed within the existing institutional system of modern societies. Ecological modernization argues from a managerial perspective in which it is assumed that institutional design and change is governable. By taking empirical evidence from the failure to implement a national climate goal in Norway, Reitan (1998, p. 19) demonstrated that public organizations are not only rationally designed instruments, but also institutions with their own vested interests, historically developed norms, routines, procedures and perceptions of the world. In Norway, sector ministries have been working against means of regulation to be carried out within their respective sectors. Overall, the failure to implement a national climate goal can largely be ascribed to the role of these strong sector ministries. This suggests that it is not comprehensive to argue that public institutions are driven only by instrumental rationalities, but wider political, social and cultural issues have to be taken into consideration as well.

It is also necessary to evaluate policies based on ecological modernization at the sub-national scale. Gibbs (2000) analyses the work of the new regional development agencies (RDAs) in the UK which were established when the (new) Labour government came into power. RDAs are concerned mainly with the economic development and regeneration of the regions. Moreover, RDAs have sustainable development as a key remit and their legislative basis would suggest drawing on ecological modernization as a basis for policy implementation. However, as Gibbs (2000, p. 15) shows, while there was an early implication that RDAs would adopt ecological modernization as a basis for regional policy strategies, evidence now shows that the environment 'remains peripheral to more conventional views of development. Policy reflects the adoption of *weak*, or narrowly technical, forms of ecological modernisation.' The implicit message is that regions need a growing economy to create the resources needed to address environmental problems. Therefore, there is reliance, first, upon improved economic competitiveness which is measured in conventional terms, which will then, as a second issue, enable the regions to address environmental and social problems. As Gibbs (2000, p. 16) concludes, it appears that 'more conventional views on economic development will prevail and that

most RDAs will not place issues such as increased energy efficiency, clean technologies, waste reduction and closed-loop systems on their agendas’.

To conclude this section, we can argue that the implementation of any kind of policy is the exercise of political, economic and discursive power and influence. Therefore, all aspects of environmental policy making have to be related to this. As Owens (1994) has pointed out, both sustainable development and ecological modernization are thus fundamentally *political* concepts. In any analysis of these concepts and their implication on environmental policy making, we have to address questions like: who defines the rules of the policy process, who sets the agendas, who is influencing the discourse, who is interested in what outcomes, etc.?

In the following section we examine some preliminary experiences with a project about environmental supply chain management which is based on the theory of ecological modernization. We try to identify some early conclusion about the project’s aims and targets, its main societal actors and sustainability outcomes.

Ecological modernization and the implications on environmental supply chain management

Environmental supply chain management features three issues that are of main importance in the theory of ecological modernization: first, the inclusion of environmental aspects in integrated chain management of industrial chains for manufactured goods; the integration of technological innovations for environmentally beneficial outcomes throughout all the industrial supply chains; and the participation of a broader range of industrial actors (i.e. suppliers, producers) for the environmental management of industrial production to strengthen capacity building of environmental governance.

For the purpose of highlighting the practical implications of the theory of ecological modernization, let us draw our attention to the case study of a project that the Sustainable Business Research Group at Cardiff University is currently working on. The project is called ‘environmental partnering action for small- and medium-sized enterprises (SMEs) in supply chains’ in the region of Industrial South Wales (ISW). It is set up on three different but interlinked levels: First, there is ongoing research into sustainability theories (like ecological modernization), current models of environmental policy making, environmental supply chain management, regional environmental management, and industrial ecology. Second, an Environmental Supply Chain Management Network is established to bring together large manufacturing companies from ISW to exchange experience and best practice in environmental supply chain management. Third, there is a collaboration with larger companies in ISW within a mentoring programme, to bring about a partnership approach in working together with their lower tier suppliers for a strategic environmental supply chain management approach. Two researchers of the Sustainable Business Research Group are working within the mentor companies to facilitate help and information for the mentor companies and their respective suppliers, and gain insight into environmental supply chain management practices for research purposes. The project is in part financed by the European Regional Development Fund (ERDF) under Objective 2. As the above-mentioned levels of the project suggest and the ERDF funding demands, the project is not directed mainly towards research into environmental supply chain management, but it is meant to provide information and assistance to companies in the ISW regions. This assistance is specifically directed towards SMEs in supply chains in the form of a partnership with their customer companies, best-practice examples and experience gained from the Network, and information from the research into environmental supply chain manage-

ment. Before we describe the early outcomes of the project, let us first outline some basic features in the relatively new field of environmental supply chain management.

Overall, when investigating the research undertaken so far in the field of environmental supply chain management (sometimes also referred to as green supply chain management or green purchasing), one soon becomes aware that most contributions come—with a few exceptions, like Hall (2000)—from business or management schools and that they tend to be economic analyses of the implications of including environmental issues into supply chain management. Therefore, one important issue for research is to add a social science perspective to the processes and dynamics of environmental supply chain management. As this research field is relatively new, most work done so far is to define environmental supply chain management and its importance for businesses, as well as to explore case studies or best practices undertaken by companies (Lamming and Hampson, 1996; Green *et al.*, 1998; McIntyre *et al.*, 1998; Sarkis, 1999; Wycherly, 1999). Another field of research is the way environmental issues are integrated into the purchasing function of companies (Carter *et al.*, 1998; Min and Galle, 1997), providing a less strategic picture than looking at the whole supply chain management. Most commentators on the issue argue that either because of external pressures (legislation or regulation, pressure from investors, customers or consumers) or internal measures (process efficiency, cost savings, environmental management systems, resource and risk minimization) it makes *business sense* to include environmental issues into the whole management of a company's supply chain (Green *et al.*, 1996; Bowen *et al.*, 1999).

One may argue that taking on a more sophisticated approach to environmental management also means including the whole system of production and consumption in the analysis. Waste and emissions caused by the whole supply chains (from raw material extraction via production and distribution to consumption and mostly disposal) have become a major source of environmental problems caused by industrial market economies. Definitions of environmental (or green) supply chain management differ widely with regard to focus and implications. Green *et al.* (1996, p. 188) define it as 'the way in which innovations in supply chain management and industrial purchasing may be considered in the context of the environment'. The most comprehensive approach to environmental supply chain management comes from Sarkis (1999, p. 4) who points out that 'the primary focus [of environmental supply chain management] is the management of materials that flow through the supply chain and [to evaluate] relationships among the various functions'. He suggests a cyclical approach to environmental supply chain management (raw material extraction, production, distribution, consumption, reintegration of used products or materials into the supply chain), related to the circular and systemic philosophy of 'ecosystem' thinking (Shrivastava, 1995).

What are the implications and potentials of environmental supply chain management for environmental policy making? Bowen *et al.* (1999, p. 5) argue that from a societal perspective it can aid the diffusion of environmentally sound practices throughout the complex network of industrial buying and selling. Furthermore, it would promote life-cycle and holistic approaches to environmental impacts of industry, and could facilitate moves towards a more sustainable society. In an attempt to further promote the concept of ecological modernization, governmental policies are gradually coming to recognize the potential benefits of including environmental issues into the management of whole supply chains. Beside leeway to more voluntary measures, there are governmental regulations, like take-back or packaging laws, that influence supply chain practices (Sarkis, 1999).

However, many of the environmental measures introduced by firms through their supply chain management fall short of the broad issues demanded by sustainable

development (Welford, 1995). Therefore, one has to ask, as Green *et al.* (1998, p. 94) put it, 'whether the greening of purchasing and supply management can be part of a transition to sustainability'. Overall, businesses will only act towards environmental supply chain management when it is in their interest to do so, influenced by *economic categories* like short- or long-term profits, increased efficiency, risk management or competitive advantage. As Bowen *et al.* (1999, p. 31) argue, 'the only rational explanation for the behaviour [of companies] is that they see some longer term commercial benefit from their proactive approach. [...] There may indeed be social benefits from green supply, but these benefits will only be achieved if business managers can be persuaded of the private benefits.' In other words, considering the economy–ecology relationship from a policy-making perspective, it is still the economic issue that dominates both governmental and business thinking and, therefore, strategies of environmental governance. This suggests that the mutually beneficial relationship between economic and ecological issues, as promoted by the theory of ecological modernization, falls short when related to practical experiences.

In our project about environmental partnering action for SMEs in supply chains we found companies becoming increasingly aware of the need to include environmental management into their business operations. Furthermore, there is growing pressure upon them to include environmental issues into their supply chains: most companies mention pressure from outside, such as current or forthcoming environmental legislation or pressure from customers, as the main drivers for working towards certain standards, including occasionally in co-operation with suppliers. There is less pressure from the suppliers towards the customer company to engage in more environmental improvements. There seems to be less, but still considerable, incentive to work towards environmental supply chain management as part of a programme towards better resource management, eco-efficiency and cost savings. As we mentioned earlier, environmental supply chain management has to make *business sense* to be carried out by companies, and potential savings or even profits are obviously a driving force. It is also noteworthy that the research team, which is in contact with companies that are either part of the mentoring programme or the Network, is also expected to speak the *business language*: using terms like resource management, eco-efficiency, competitive advantage or cost savings makes it easier to raise the interest of companies to take part in the project. The least important driver towards environmental supply chain management is proactivity concerning more environmental awareness and protection or social responsibility of business operations.

Concerning the environmental supply chain management already in place in several SMEs, this tends to be a rather simple model in comparison with the cyclical approach outlined by Sarkis (1999). The companies are concerned mainly with distribution issues (inbound and outbound) and production, as well as solutions that can be dealt with through technical adjustments. Their concerns are mostly influenced by legal requirements, like the packaging regulations, which put much pressure on and demand much effort from companies (Bailey, 2000). Overall, packaging seems to be one of the main issues that are addressed in environmental supply chain management, and both of the mentoring programmes within the project are directed towards packaging issues and a collaborative relationship between the customer company and its suppliers in that field. What seems to stand against the comprehensive model suggested by Sarkis is that it would involve a very strategic mindset concerning environmental supply chain management, more personal resources than most companies are prepared to commit to environmental issues, and working together with both suppliers from first to lower tiers of the supply chain and consumers further up the supply chain. Only this would allow

working towards a cyclical system of product or material flows or, indeed, a system of industrial ecology. Furthermore, there is not enough co-operation between different departments within a company (like the purchasing, environmental or design departments), and even less between the different departments within a company and their counterparts in the supplier companies. The latter would allow a much more responsive approach in design, process and operation of environmental supply chain management. Additionally, issues like cost, quality and delivery are the main concerns of companies' supply chain management, addressed mostly with managerial rationality and technical adjustments. Collaboration or participation with suppliers is a relatively new way of approaching supply chain issues. Companies still tend to believe that suppliers are or should be in competition and that sharing information would lead to a situation where a customer company loses the chance to get the lowest price through bids by suppliers.

Another important consideration is the role of regional government. Since 1999, Wales has had its own National Assembly with executive powers over a number of policy issues, including the environment. Wales is about to create its own sustainability strategy, and has published a consultation document (National Assembly for Wales, 2000). The consultation document favours an environmental policy that includes aspects of ecological modernization with the aim of creating 'a healthy environment [and] a thriving, competitive economy' (National Assembly for Wales, 2000, p. 10). However, whatever environmental decisions are taken in Wales, they are set within the economic policy issues of the country. Wales, as a peripheral area within the EU, is particularly keen to establish a fruitful economic development. Its actual development strategy has often been criticized as overly dependent on inward investment with little role for indigenous development within its regions. Discussions about a more comprehensive development trajectory are vivid.

This has been presented as a chance to include a more informed discussion about development paths and sustainability. However, economic development seems to be the dominant issue of concern for the National Assembly. Mentioning the corporate strategy of the National Assembly, 'Better Wales', the head of the business and environment branch, speaking to the Environmental Supply Chain Management Network, said that business competitiveness is the key issue for the National Assembly for Wales. Environmental issues are seen as a welcomed bonus that can increase economic competitiveness. He identified the environment as a *competitiveness issue*, linked to bottom-line savings for businesses, and not as a 'sandals issue' (referring to the myth of environmental activists' footwear). Furthermore, he said that the environmental policy of the National Assembly for Wales is largely influenced by EU environmental legislation, concerning issues like waste electronics, end-of-life vehicles and packaging.

Overall economic issues come before environmental ones both for government and for business. Therefore, one has to question the prospect of a positive-sum game between the economy-ecology relationship as outlined in the theory of ecological modernization. Furthermore, the arguments and positions of governmental and business actors seem to underline the argument by O'Connor (1994) that the issue of sustainability is not only an ecological and economic question, but also an ideological and political one, especially with regard to the strategies of development.

Conclusion

Our aim with this paper was to critically reflect upon the theory of ecological modernization that lies at the basis of environmental policy in industrialized countries, with a special focus on environmental policy making within EU countries. Furthermore,

we tried to add a social science perspective to the discussion about environmental supply chain management, by using ecological modernization and current environmental discourses and policies as a framework. We used the project about environmental partnering action for SMEs in supply chains as a case study, and outlined early experiences of this project.

We argued that the theories of sustainable development and ecological modernization are the basis for environmental policy making in industrialized countries. It is especially the theory of ecological modernization that received much attention from policy makers, business representatives and environmental groups alike, as it captures the nature of change in environmental policy making over the last two decades and proposes that policies for economic development and environmental protection could be combined to synergistic effects. This attracts much attention, especially in industrialized countries, largely determined by free trade, globalization and capital mobility. In a society where the market economy and its policy implications are a commonplace, a 'realistic' environmental policy has to operate within the frameworks and institutions of modernity.

However, there is also some criticism evolving around the theoretical assumptions and policy-making implications of the theory of ecological modernization. It has been argued that ecological modernization reduces environmental issues to concerns about economic or resource management. In framing the environmental agenda, the theory uses a business language that implies that the environment is measured in monetary terms and cared about only when it brings economic benefits, like cost savings or a competitive advantage. This focus prevents the theory of ecological modernization from including broader social and cultural needs that are clearly necessary in a move towards more sustainability. It is based on conventional measures of progress and a mainstream development theory, preventing the exploration for different paths to sustainability, where broader societal and cultural sensitivity is brought into play, democratic participation enhanced, and sub-national sustainability strategies valued. Furthermore, when assuming that policy making is a socially constructed process, this process involves discourses that frame and influence policy outcomes. The discourse of ecological modernization is based on the notions of modernity and rationality. The current 'official discourse' of environmental policy making, based on ecological modernization, largely excludes positions that economic development and environmental protection might be in a serious tension. This leads to a situation in which societal actors have to adopt this 'official discourse' for being accepted in the mainstream discourse of the environmental debate, marking critical or anti-industrial viewpoints as non-rational. Governments follow this argument of rationality in that they try to include expertise of managerial economic practices into the governance of policy making.

However, as we showed through some examples of practical environmental policy outcomes, ecological modernization theory and its policy outcomes are not always as favourable as advocates of the theory make us believe. Environmental policy based on ecological modernization does not automatically lead to positive-sum games, but zero-sum outcomes were experienced with distributional conflicts between individuals, groups and regions. One of the reasons for this is that current environmental policy pays little attention to social contradictions within policy formulations. Furthermore, the believed openness for change in institutions of modernity (governments, businesses) is naive in the context of their interests, routines and perceptions of the world. Additionally, conventional views on economic development and economically framed rationalities inform regional development policies rather than those directed towards broader sustainability issues.

The experiences gained from the 'environmental partnering action for SMEs in supply chains' project so far also suggest that an environmental policy informed by the theory of ecological modernization has certain shortcomings. In practice, economic development issues always have a more prominent role than environmental protection. Companies act rationally within a market economy that demands an orientation towards cost savings and profit making. Environmental issues are included into the management of business operations only when there is legal or customer pressure from outside or possible financial benefits from environmentally sound actions. Taking into account the prominence of the economic agenda within government policy making, it seems to be no wonder that talking the *business language* informs environmental discourses and largely excludes any other approaches towards sustainability.

Sustainable development and ecological modernization are ideological and political concepts, at least insofar as they are about the relationship between the economy and the environment. Issues of power and influence inform and frame environmental policy and discourse, and further analyses of policy strategies to include environmental criteria into conventional economic development should pay attention to this.

References

- Bailey, I. (2000), 'Principles, policies and practice: evaluating the environmental sustainability of Britain's packaging regulations', *Sustainable Development*, Vol. 8, pp. 51–64.
- Barry, J. (1999), *Rethinking Green Politics: Nature, Virtue and Progress*, London, Sage.
- Beck, U. (1992), *Risk Society: Towards a New Modernity*, London, Sage.
- Beck, U. *et al.* (1994), *Reflexive Modernization: Politics, Tradition and Aesthetics in the Modern Social Order*, Cambridge, Polity Press.
- Berger, G. (1999), 'Environmental agreements: a comparative study of the experiences in The Netherlands and Austria with co-operative environmental management', Unpublished MSc thesis, Cardiff University.
- Bowen, F. E. *et al.* (1999), 'Greening supply: potential, practices and performance', Paper intended for submission to the *European Management Journal*, School of Management, University of Bath.
- Carter, C. R. *et al.* (1998), 'Environmental purchasing: benchmarking our German counterparts', *International Journal of Purchasing and Materials Management*, Fall, pp. 28–38.
- CEC (1993), *Towards Sustainability: a European Community Programme of Policy and Action in Relation to the Environment and Sustainable Development*, Office for Official Publications of the European Communities, Luxembourg.
- CEC (1998), 'Integrated product policy: a study analysing national and international developments with regard to integrated product policy in the environment field and providing elements for an EC policy in this area', Executive Summary from the Final Report.
- Christie, I. and Rolfe, H. (1995), *Cleaner Production in Industry: Integrating Business Goals and Environmental Management*, London, Policy Studies Institute.
- Christoff, P. (1996), 'Ecological modernisation, ecological modernities', *Environmental Politics*, Vol. 5, No. 3, pp. 476–500.
- Connelly, J. and Smith, G. (1999), *Politics and the Environment: From Theory to Practice*, London, Routledge.
- Dryzek, J. S. (1997), *The Politics of the Earth: Environmental Discourses*, Oxford, University Press.
- Eden, S. (1999), 'We have the facts—how business claims legitimacy in the environmental debate', *Environment and Planning A*, Vol. 31, pp. 1295–1309.

- ENDS (2000), 'The environment, the Internet and the wooing of Tony Blair', ENDS Report 301, February, pp. 20–23.
- Foucault, M. (1984), *The Care of the Self: the History of Sexuality*, Vol. 3, Harmondsworth, Penguin.
- Foucault, M. (1991), 'Governmentality', in Burchell, G. *et al.* (eds), *The Foucault Effect: Studies in Governmentality*, Chicago, University of Chicago Press, pp. 87–104.
- Gibbs, D. (2000), 'Ecological modernisation, regional economic development and regional development agencies', *Geoforum*, Vol. 31, pp. 9–19.
- Giorgi, L. and Redclift, M. (2000), 'European environmental research in the social sciences: research into ecological modernisation as a "boundary object"', *European Environment*, Vol. 10, pp. 12–23.
- Gouldson, A. and Murphy, J. (1997), 'Ecological modernisation: restructuring industrial economies', in Jacobs, M. (ed.), *Greening the Millennium? The New Politics of the Environment*, Oxford, Blackwell Publishers, pp. 74–86.
- Green, K. *et al.* (1996), 'Purchasing and environmental management: interactions, policies and opportunities', *Business Strategy and the Environment*, Vol. 5, pp. 188–197.
- Green, K. *et al.* (1998), 'Green purchasing and supply policies: do they improve companies' environmental performance?', *Supply Chain Management*, Vol. 3, No. 2, pp. 89–95.
- Hajer, M. A. (1995), *The Politics of Environmental Discourse: Ecological Modernisation and the Policy Process*, Oxford, Oxford University Press.
- Hajer, M. A. (1996), 'Ecological modernisation as cultural politics', in Lash, S. *et al.* (eds), *Risk, Environment and Modernity: Towards a New Ecology*, London, Sage, pp. 246–268.
- Hajer, M. A. and Fischer, F. (1999), 'Beyond global discourse: the rediscovery of culture in environmental politics', in Fischer, F. and Hajer, M. A. (eds), *Living With Nature: Environmental Politics as Cultural Discourse*, Oxford, Oxford University Press, pp. 1–20.
- Hall, J. (2000), 'Environmental supply chain dynamics', *Journal of Cleaner Production*, Vol. 8, No. 6, pp. 455–471.
- Howes, R. *et al.* (1997), *Clean & Competitive? Motivating Environmental Performance in Industry*, London, Earthscan.
- Huber, J. (1998), 'Sustainable development as a concept of ecological modernisation—towards industrial ecology', Paper prepared for the international workshop on 'Ecological Modernization' at the University of Helsinki, 10–13 September.
- Jaenicke, M. (1986), *Staatsversagen: Die Ohnmacht der Politik in der Industriegesellschaft*, München, Piper.
- Jaenicke, M. (1997), 'The political system's capacity for environmental policy', in Jaenicke, M. and Weidner, H. (eds), *National Environmental Policies: a Comparative Study of Capacity-building*, Berlin, Springer, pp. 1–24.
- Lamming, R. and Hampson, J. (1996), 'The environment as a supply chain management issue', *British Journal of Management*, Vol. 7, pp. 45–62.
- Luke, T. W. (1995), 'Sustainable development as a power/knowledge system: the problem of "governmentality"', in Fischer, F. and Black, M. (eds), *Greening Environmental Policy: the Politics of a Sustainable Future*, London, Paul Chapman, pp. 21–32.
- McIntyre, K. *et al.* (1998), 'Environmental performance indicators for integrated supply chains: the case of Xerox Ltd', *Supply Chain Management*, Vol. 3, No. 3, pp. 149–156.
- McManus, P. (1996), 'Contested terrains: politics, stories and discourses of sustainability', *Environmental Politics*, Vol. 5, No. 1, pp. 48–73.
- Meadowcroft, J. (1997), 'Planning, democracy and the challenge of sustainable development', *International Political Science Review*, Vol. 18, No. 2, pp. 167–189.

- Min, H. and Galle, W. P. (1997), 'Green purchasing strategies: trends and implications', *International Journal of Purchasing and Materials Management*, Summer, pp. 10–17.
- Mol, A. P. J. (1995), *The Refinement of Production: Ecological Modernization Theory and the Chemical Industry*, Utrecht, Van Arkel.
- Mol, A. P. J. (1996), 'Ecological modernisation and institutional reflexivity: environmental reform in the late modern age', *Environmental Politics*, Vol. 5, No. 2, pp. 302–323.
- Mol, A. P. J. (1999), 'Ecological modernization and the environmental transition of Europe: between national variations and common denominators', *Journal of Environmental Policy and Planning*, Vol. 1, No. 2, pp. 167–181.
- Murdoch, J. and Abram, S. (1998), 'Defining the limits of community governance', *Journal of Rural Studies*, Vol. 14, No. 1, pp. 41–50.
- National Assembly for Wales (2000), *A Sustainable Wales—Learning to Live Differently: Consultation Document*, Cardiff, National Assembly for Wales.
- O'Connor, J. (1994), 'Is sustainable capitalism possible?', in O'Connor, M. (ed.), *Is Capitalism Sustainable? Political Economy and the Politics of Ecology*, New York, Guilford Press, pp. 152–175.
- Owens, S. (1994), 'Land, limits and sustainability: a conceptual framework and some dilemmas for the planning system', *Transactions of the Institute of British Geographers*, Vol. 19, pp. 439–456.
- Pepper, D. (1999), 'Ecological modernisation or the "ideal model" of sustainable development? Questions prompted at Europe's periphery', *Environmental Politics*, Vol. 8, No. 4, pp. 1–34.
- Reitan, M. (1998), 'Ecological modernisation and "Realpolitik": ideas, interests and institutions', *Environmental Politics*, Vol. 7, No. 2, pp. 1–16.
- Rydin, Y. (1999), 'Can we talk ourselves into sustainability? The role of discourse in the environmental policy process', *Environmental Values*, Vol. 8, pp. 467–484.
- Sarkis, J. (1999), 'How green is the supply chain?: Practice and research', Working paper, Graduate School of Management, Clark University, Worcester.
- Shrivastava, P. (1995), 'Ecocentric management for a risk society', *Academy of Management Review*, Vol. 20, No. 1, pp. 118–137.
- WCED (World Commission on Environment and Development) (1987), *Our Common Future*, Oxford, Oxford University Press.
- Weale, A. (1992), *The New Politics of Pollution*, Manchester, Manchester University Press.
- Welford, R. (1995), *Environmental Strategy and Sustainable Development*, London, Routledge.
- Wycherly, I. (1999), 'Greening supply chains: the case of the Body Shop International', *Business Strategy and the Environment*, Vol. 8, pp. 120–127.