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## The diffusion of environmental policy innovations: A contribution to the globalisation of environment policy

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**DISCUSSION PAPER**



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**FS II 01-302**

# **The Diffusion of Environmental Policy Innovations: A Contribution to the Globalisation of Environmental Policy**

**Kristine Kern\*, Helge Jörgens\*\*,  
and Martin Jänicke\*\*\***

**Forschungsschwerpunkt:**  
Technik — Arbeit — Umwelt

**Research Area:**  
Technology — Work — Environment

**Abteilung:**  
Normbildung und Umwelt

**Research Unit:**  
Standard-setting and Environment

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Kristine Kern, Helge Jörgens, and Martin Jänicke

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## **ZUSAMMENFASSUNG**

Die Diffusion umweltpolitischer Innovationen:  
Ein Beitrag zur Globalisierung von Umweltpolitik

Thema dieses Beitrags ist die Diffusion umweltpolitischer Innovationen zwischen Nationalstaaten in ihrer Bedeutung für die globale Entwicklung von Umweltpolitik. Dabei geht es um die empirische Beobachtung, dass nationale Umweltinitiativen vielfach mit hoher Geschwindigkeit von anderen Ländern übernommen werden und sich auf diese Weise international ausbreiten. Anhand von fünf Fallstudien (Umweltämter und -ministerien, Umweltzeichen, nationale Umweltpläne bzw. Nachhaltigkeitsstrategien, CO<sub>2</sub>-/Energiesteuern, Bodenschutzgesetze) werden Erfolgsbedingungen und Restriktionen der internationalen Ausbreitung umweltpolitischer Innovationen untersucht. Zu den zentralen Determinanten der Politikdiffusion zählen: (1) nationalstaatliche Faktoren (umweltpolitische Handlungskapazitäten, Nachfrage nach Problemlösungen), (2) die Dynamik des internationalen Systems (Bedeutung von Vorreiterländern für die globale Politikdiffusion, internationale Organisationen, transnationale Netzwerke) sowie (3) Aspekte, die die Politikinnovation selbst betreffen (Charakteristika der Politikinnovation, Verfügbarkeit von geeigneten Politikmodellen etc.).

## **ABSTRACT**

The Diffusion of Environmental Policy Innovations:  
A Contribution to the Globalisation of Environmental Policy

The subject of this paper is the importance of the diffusion of environmental innovations between countries for the global development of environmental policy. Empirical observation has shown that national environmental initiatives are often rapidly adopted by other countries; thus, these initiatives spread internationally. The conditions for and restrictions on the international diffusion of environmental innovations are examined on the basis of five case studies: environmental agencies and ministries, ecolabels, national environmental plans, CO<sub>2</sub>/energy taxes, and soil protection legislation. The key determinants of policy diffusion include (1) national factors (capacities for action in environmental policy, the demand for problem solutions), (2) the dynamics of the international system (the significance of front-runner countries for global policy diffusion, international organisations, transnational networks), and (3) aspects of the specific policy innovation (characteristics of policy innovation, availability of appropriate policy models, etc.).

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## **1. Introduction\***

Globalisation is generally seen as restricting national sovereignty and scope for action (buzz-words “globalisation trap,” “race to the bottom,” etc.). However, the international comparative analysis of environmental policy points to a contrary tendency that can be referred to as the globalisation of environmental policy (Jänicke 1998). What is meant is a global convergence of environmental policy regulatory patterns at a relatively high protective level (“race to the top”, cf. Vogel 1995, 1997a; Zürn 1998a).<sup>1</sup> Comparative studies reveal striking parallels in the development of national capacities for environmental policies in all OECD countries and often beyond the borders of the Western industrialised world (Jänicke and Weidner 1997a). Examples are the establishment of specialised environmental policy institutions (Jørgens 1996), the regular publication of environmental data in national environmental reports (Comolet 1990), or the adoption of environmental regulations.

The subject of this paper is the importance of the diffusion of environmental policy innovations between countries for the global development of environmental policy. Policy innovations, initially practised by only one or a few front-runner countries, often experience very rapid international diffusion. This (explorative) study assumes that the growing globalisation of environmental policy observable in recent years is not to be described only in terms of the increasing importance of treaties and international environmental regimes but also in very large measure as the outcome of policy diffusion.

The paper begins with a brief overview of environmental policy diffusion processes (section 2). This is followed by the systematizing of possible factors impacting the diffusion of policy innovations (section 3). Diffusion patterns are then described and analysed for five policy innovations (environmental agencies and ministries, ecolabels, national environmental plans and sustainability strategies, CO<sub>2</sub>/energy taxes, soil protection legislation) (section 4). In the final section, initial conclusions for the analysis of international environmental policy diffusion processes are drawn.

## **2. The Global Diffusion of Environmental Policy Innovations**

### **2.1. Global Convergence of Environmental Policy Regulatory Patterns**

Since the end of the 1960s, separate government environmental bodies have been set up at the national level in all OECD countries. Since the end of the 1950s, almost all OECD countries and most Central and Eastern European countries as well as newly industrialised countries (NICs) have adopted national water protection and clean air legislation. The third central area

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<sup>1</sup> On the effects of the globalisation of environmental policy see also OECD (1997a, 1997b, 1998c); Vogel (1997a); Landy and Cass (1997).

of environmental protection, waste management policy, has, in the meantime, also undergone comprehensive regulation in most industrial countries.<sup>2</sup> However, the global convergence of national environmental policies is not restricted to the initial establishment of specific institutions and legislation in this comparatively new policy area. The shift in the prevailing policy pattern from a sectorally fragmented and largely legal regulatory approach to an integrated environmental policy relying increasingly on “softer” instruments is proceeding on a global scale (Jänicke and Weidner 1997a, 1997c; Jänicke 1998).

For example, since the end of the 1980s, over 30 countries worldwide have introduced a national ecolabel, and, within the past decade, about 80% of all industrial countries (including Central and Eastern European countries) have adopted a national environmental plan or a sustainability strategy. Economic instruments like environmental taxes or ecological financial reform are not only becoming more important in Western market economies, but have also played a central role in formerly socialist countries like Poland, the Czech Republic, and Russia—to some extent even before the political revolution (Möller 1999; OECD 1997c). Negotiated solutions, especially voluntary agreements with polluter industries or commitments assumed by industry, have become a permanent component of the environmental policy repertoire, especially during the 1990s in almost all industrial countries and beyond (Commission of the European Communities 1996; Glasbergen 1998; Ingram 1999). Finally, there is a clear trend in environmental law towards consolidating initially medium-related regulation into comprehensive environmental framework laws. In contrast to the frequent assumption that policy harmonisation takes place at the level of the lowest common denominator, convergence in environmental policy over the past 30 years has generally been guided by the developmental status achieved in the most advanced countries.

This development cannot be explained adequately by comparable ecological problem pressure in all countries or by similar political and administrative systems, policy styles, and cultural factors. For example, the specific environmental problems confronting countries like New Zealand or Australia differ markedly from those of densely populated countries like the Netherlands. There are even greater differences between the political and institutional systems of Western democracies, the former socialist countries of Central and Eastern Europe, and Southeast Asian NICs. The parallels between environmental policy developments in many of the sometimes very different countries, therefore, point rather to a convergence that is at least partly unrelated to specific problems and political/institutional factors. This process is driven, on the one hand, by international negotiations and treaties which are growing in importance especially in the field of transboundary or global environmental problems; on the other hand, it is also the outcome of increasing emulation by many countries of the innovative environmental policy approaches and measures taken by a few front-runner countries.

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<sup>2</sup> The pioneers in water protection were Germany (1957), Austria (1959), and Finland (1961). In clean air legislation the United Kingdom was the international front-runner (1956). The first national waste laws were adopted in Japan (1979) and Germany (1972).

Imitation is not restricted to the narrow field of transboundary pollution. It often concerns environmental problems that need to be tackled on a regional or national basis such as surface and ground-water protection, or reducing waste generation. Moreover, general ecological modernisation approaches are also the subject of international or transnational policy transfer. An example of one such approach is the increasing integration of environmental aspects into the decision making processes of non-environmental ministries and agencies that are often closely connected to important polluting sectors (e.g., agriculture, transport, industry).

## **2.2. International and Transnational Diffusion of Environmental Policy Innovations**

While the growing importance of international regimes or treaties on environmental protection is already the subject of comprehensive research,<sup>3</sup> the second variant of environmental policy globalisation—policy transfer from pioneers to imitators and the factors impacting this process—has not heretofore been examined systematically (Kern 1997, 2000). This latter form of policy globalisation is, at least for the OECD countries, primarily a question of voluntary diffusion of policy innovations beyond “complex world governance” (Zürn, 1998a). It goes beyond the narrow spectrum of global environmental problems to be solved only at the international level (e.g., protection of the ozone layer or control of transboundary waste transportation) and concerns the entire realm of creating and expanding national capacities for action and solving problems in environmental policy.

The distinction between the effects of international environmental regimes, on the one hand, and the consequences of policy transfer between nation states, on the other (as two discrete aspects of environmental policy globalisation) is first and foremost an analytical one. It directs attention to an almost completely ignored variant of global environmental governance that can be termed “governance by diffusion” (Kern 1998: 1 ff., 2000: 249). Moreover, it explains why global policy convergence can be observed not only at international level, but also (and especially) in policy and problem areas restricted to national, regional, or local level. At the interface between national environmental policy and international environmental agreements, the diffusion of policy innovations is influenced both by the initiatives of pioneer countries and by the coordinative—but not regulative—activities of international organisations or transnational networks (cf. Keck and Sikkink 1999). Analysis of international diffusion processes is therefore primarily concerned with the comparative observation of national developments in environmental policy.<sup>4</sup> However, the second main step in this analysis would be to take account of international interactions as well as informational and coordinative activities of international organisations and transnational networks. International comparative diffusion research is thus concerned with a field of

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<sup>3</sup> E.g., Haas, Keohane and Levy (1993); Biermann (1998); Gehring (1994); Oberthür (1997); Young (1997); Zürn (1998a, 1998b); Ott (1998).

<sup>4</sup> On the status of and approaches to international comparative policy analysis see also Kern and Bratzel (1994, 1996).



environmental governance that has up to now been neglected by many of the prevailing—and largely isolated—approaches of comparative environmental policy analysis, on the one hand, and the examination of international environmental regimes, on the other.<sup>5</sup>

### **2.3. Policy Diffusion between the Poles of National and International Environmental Policy**

In recent years, comparative environmental policy analysis has increasingly pointed out the importance of pioneering countries in environmental protection (Héritier *et al.* 1994; Jänicke and Weidner 1997a; Andersen and Liefferink 1997; Liefferink and Andersen 1998). Empirically it appears that a growing number of countries—from the Netherlands and Denmark to Sweden, Germany, and Canada as well as NICs like Singapore or South Korea—claim, in official governmental publications, the role of international front-runner in environmental policy (Jänicke 1998: 333 f.). Apart from the obvious motive of governments to enhance their own images domestically, further economic and political interests could also underlie such a strategy.

The rapid international spread of regulatory innovations is usually accompanied by an expansion of markets for environmental protection technologies developed in the front-runner countries. The “first mover”—that is, the country that has introduced more stringent environmental standards on its own initiative and has thus increased the pressure on industry to develop environmentally compatible production processes or new end-of-pipe technologies—secures advantages on the market for these technologies or environmentally friendly products (Porter and van der Linde 1995; Wallace 1995: 3 f.). In this context, it is no accident that the biggest exporters of environmental technologies in the world—the United States, Germany, and Japan—have at least at times introduced the most progressive environmental policies.

A similar assumption—that regulatory innovations by pioneering countries often set international standards which, in turn, put pressure on more reluctant countries to act—underlies the hypothesis put forward by Héritier *et al.* of increasing “regulatory competition” at the European level (Héritier *et al.* 1994; Andersen and Liefferink 1997). The suggestion is that, by assuming a front-runner role in environmental protection, individual member states of the European Union attempt to shape the development of European policy in accordance with the policy patterns and regulatory traditions of front-runner countries in the hope of minimising the cost of political and economic adjustment, and reducing difficulties arising

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<sup>5</sup> In the context of his investigation of the international impact of national environmental and consumer protection regulations, Vogel came up against a similar “lack of competence” of leading research approaches: “Until recently, students of environmental and consumer regulation paid little attention to the international dimensions of national regulatory policies. Virtually all studies of protective regulations . . . have been either national or comparative in focus. With the exception of the literature on international environmental issues and agreements, there have been few efforts to place the making of national regulatory policies in an international context. . . . These omissions are understandable since it is only relatively recently that the linkages between these formerly distinctive policy areas have become politically salient” (Vogel 1995: viii).

from subsequent developments in European policy.<sup>6</sup> Hérítier *et al.* conclude that EU member states are better able to defend their own interests by assuming an active, pioneering role, rather than by adopting a “wait-and-see” attitude or pursuing a defensive blockade policy. The theory of regulatory competition appears to apply not only in the specific case of the European Union; similar developments are apparent especially in OECD countries and beyond this grouping as well (Jänicke and Weidner 1997a; Jänicke 1998: 334). Thus the Rio process, initiated at United Nations level in 1992, with its regular follow-up conferences and reporting obligations, has led to a dynamic of policy innovation that Wallace (1995: 267) describes as follows:

[T]he political processes generated by the Earth Summit provide a regular forum for those countries which take unilateral action to parade their successes and so pressurize the others. Governments which do this have the freedom to formulate policies and processes which encourage flexible and innovative responses from industry. Those who wait too long may be overtaken by international pressure for action, risking rapid, disruptive policy changes and losing the opportunity gradually to develop the dialogue mechanisms which can limit the pain of the transition to sustainability.

In view of the growing globalisation of environmental policy, national governments must attempt at an early stage to assess the dynamics of potential diffusion processes. The risk of missing out on international developments can involve political (and possibly economic) adjustment costs. For example, the German government realised the importance of the sustainable development model and the associated policy dynamics relatively late in the day. The dynamism of the sustainable development concept since the Earth Summit now poses adjustment problems for the federal government (Beuermann and Burdick 1997). This is even more evident in environmental law. In its 1998 report, the German Council of Environmental Advisors concluded, “European environmental directives of recent years . . . increasingly [contain] design elements unfamiliar in German environmental protection practices, but which nevertheless have to be integrated” (SRU 1998: 163). Examples are the directives on environmental impact assessment (1985), on environmental information (1990), and on integrated pollution prevention and control (IPPC directive 1996).<sup>7</sup>

The adjustment costs for latecomer states caused by the increasing global convergence of environmental governance patterns are particularly evident in the European Union, where independent national initiatives often lead to the development of Community law and thus gain applicability for all member states. However, it is likely that such pressure to adjust is also an important factor beyond European Union borders. For example, at the international level, organisations like the OECD increasingly seek to foster the diffusion of innovative

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<sup>6</sup> In the literature, the concept of “regulatory competition” is often defined differently as “reaction of national policy to the international competition for mobile production factors and mobile tax sources” (Scharpf 1998: 121 f.).

<sup>7</sup> See also Demmke (1999) on a framework directive on water, which largely followed a Franco-British organisational model.

approaches in environmental policy through the documentation and broad publication of national best practices. These efforts are directed explicitly at environmental problems that must be solved primarily at the national level. They include national waste minimisation strategies (OECD 1998d), extended producer responsibility (OECD 1998e), or the greening of public procurement policy. Moreover, from the beginning of the 1980s, the OECD has published Environmental Performance Reviews on almost all member states, which provide comprehensive assessment of the respective national environmental policies. These reports, explicitly addressing deficiencies like the inadequate regulation of important environmental protection areas or the lack of a national sustainability strategy (Jänicke, Jörgens and Koll 2000: 222), are taken astonishingly seriously by policymakers. Thus in New Zealand the mere announcement of an environmental performance report provoked the government to pass a series of previously blocked environmental acts and regulations in advance of the study (Bührs 1997). Apart from the OECD there are a number of other international organisations, transnational expert networks or worldwide environmental organisations that contribute in a similar manner to the global diffusion of environmental best practice.

### **3. Preconditions for and Forms of Policy Diffusion**

#### **3.1. The Diffusion of Social and Policy Innovations**

While policy diffusion is a new subject in comparative environmental policy analysis, diffusion research has a long tradition dating back to the early 20<sup>th</sup> century in France, when Gabriel Tarde asked why certain innovations were imitated while others were soon forgotten (Rogers 1995: 39 ff.). In a number of social science disciplines, diffusion research developed into an established area of investigation several decades ago,<sup>8</sup> for example in sociology, geography, communication science, and marketing (Kern 2000: 142). The best-known studies come from sociological sub-disciplines. As long ago as the 1940s, Ryan and Gross (1943) examined the spread of the use of hybrid seed corn among farmers in two Iowa villages. Another often-cited study by Coleman, Katz and Menzel in the 1950s, in the field of medical sociology (see, for example, Coleman, Katz and Menzel 1966), dealt with the diffusion of a new antibiotic, tetracycline. Otherwise diffusion research was carried out mainly in marketing and in the communication sciences. In marketing, the focus was not only on commercial aspects but also on social marketing. In addition to investigating such things as the proliferation of new refrigerators or television sets, it was also interesting to learn, for example, how energy saving behaviour, contraception, or AIDS prevention diffused (Mahajan, Muller and Bass 1991). The communication sciences focussed on the extremely rapid diffusion of information about spectacular events (e.g., Eisenhower's heart-attack, the assassination of Kennedy, or the Challenger disaster) (Rogers 1995).

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<sup>8</sup> Rogers (1995) provides a comprehensive overview of social science research on innovation diffusion.

The first diffusion studies in political science were concerned primarily with comparisons among states in the U.S. (Walker 1969; Gray 1973).<sup>9</sup> Here, the theoretical and conceptual basis (e.g., Gray 1994) as well as the methodological tools (Berry and Berry 1990, 1992) have probably been best developed in this sub-area of political science diffusion research.<sup>10</sup> In recent years, comparative policy studies have begun again to investigate systematically the phenomenon of policy diffusion.<sup>11</sup> This involves a wide range of concepts. Reference is made to lesson drawing (Rose 1991, 1993), policy transfer (Dolowitz and Marsh 1996, Peters 1997), policy borrowing (Robertson and Waltman 1992), emulation (Hoberg 1991), and policy convergence (Bennett 1988, 1991, 1997).<sup>12</sup> Furthermore, there is overlap with the investigation of diffusion of policy ideas—for example, in studying the introduction of Keynesian economic policy in industrial countries (Hall 1989)—and the analysis of policy learning and policy change (Sabatier and Jenkins-Smith 1993; Bennett and Howlett 1992). However, in contrast to much of the earlier diffusion research, the studies today are usually restricted to individual policy innovations or to a small number of countries (the United States and Canada in the case of Hoberg 1991; Britain and the United States in Wolman 1992).<sup>13</sup>

### **3.2. General Conditions for Policy Diffusion**

Three factors primarily determine which countries adopt what policy innovations at what point in time. The first, at the national level, is the available capacities for action and the demand for problem-solving approaches practised in front-runner countries. Secondly, the dynamics of the international system impact the course of diffusion. In addition to front-runner countries that decisively influence the global spread of policy innovations, international organisations and transnational networks are important. Thirdly, particular aspects of a specific policy innovation influence diffusion. This has to do not only with the nature of the approach chosen, including the problem-structural preconditions for policy innovation, but also with the existence of policy models (best practices) that can be adopted by other countries without difficulties.

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<sup>9</sup> On the current American discussion see Soule and Zylan (1997); Mintrom (1997a; 1997b); Mintrom and Vergari (1998); Grattet and Jenness (1998); O’Leary and Yandle (2000).

<sup>10</sup> An overview of this area of research is provided in Kern (2000).

<sup>11</sup> The subject of policy diffusion in comparative policy analysis is, however, not absolutely new; e.g., Hecló (1974); Collier and Messick (1975); Kuhnle (1981); Alber (1981); Wilenski *et al.* (1985). Often a historical approach to the issue has been taken.

<sup>12</sup> See also the thematically related studies on convergence between East and West (e.g., Pryor 1968). While the convergence thesis concentrates on internal factors, diffusion approaches focus on external influences; on the confrontation of convergence theory and diffusion processes see Wilenski *et al.* (1985: 9ff.).

<sup>13</sup> See also Leichter (1983); Klein (1987); Starr (1991); McAdam and Rucht (1993); Kriesi *et al.* (1995); Lake and Rothchild (1998); Senti (1998); Strang and Soule (1998); Katz (1999); Stone (1999, 2000); Dolowitz and Marsh (2000); in addition, note the beginnings of a corresponding discussion at the European Union level, cf. Liefferink and Andersen (1997); Jordan and Lenschow (2000); Jordan, Wurzel and Zito (2000); Radaelli (2000).

### **3.2.1. National Determinants: National Capacities for Action and the Demand for Model Solutions**

Of decisive importance for the generation and diffusion of new policy approaches in the international system are national capacities for action and administrative convention (Jänicke and Weidner 1997a).<sup>14</sup> They act, so to speak, as filters for the adoption of environmental policy innovations developed in other countries. Thus Rose (1993: 125) notes with regard to the international transferability of policy programmes: “A necessary first step in lesson-drawing is to see whether a government wanting to adopt a program has the institutional capacity to do so.” Dolowitz and Marsh (1996: 353 f.), too, stress the role of political, economic, and administrative resources in international policy diffusion. They argue that existing national policy patterns set limits to the adoption of innovations.

This filtering effect of national administrative conventional practises is particularly evident in the policy development in European Union countries. In a study on the harmonisation of the environmental policy within the EU, Knill and Lenschow postulate that the extent of adjustment pressure perceived by member states on existing administrative arrangements is decisive for the extent to which European programmes and legislation will be implemented. The more strongly an EU measure contradicts national administrative traditions, the less chance it has of being implemented effectively (Knill 1997; Knill and Lenschow 1997, 2000). In addition to this, countries’ technological capacities constitute a key condition, especially for the transfer of technology-intensive policies (Dolowitz and Marsh 1996: 354; Hoberg 1991).

If there is political demand in a country for solutions to problems, the chances that a given policy be adopted are stronger. The strong, general pressure of demand for solutions probably explains the speed with which environmental policy innovations diffuse as a whole. On the one hand, growing problem pressure can induce demand, , for example, when environmental problems take a prominent place on a country’s national political agenda because of some particular environmental scandal, or because of international obligations (for example, the Framework Convention on Climate Change). On the other hand, the demand for new environmental policy approaches can also arise relatively independently of specific problem situations. Governmental and societal actors can then orient their strategies or demands to what is already practised in front-runner countries. In the adoption of policy innovations that are not explicitly problem-related, approaches that require only limited legal or institutional changes are favoured.

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<sup>14</sup> On the importance of capacities for action in environmental policy see also von Prittwitz (1993).

### **3.2.2. Dynamics of the International System: Front-runner Countries, International Organisations, and Transnational Networks**

Apart from national determinants, dynamics at the international level, influenced by both front-runner countries and by international organisations and transnational actor networks, are decisive for policy diffusion, . The degree of vertical integration in the international system is crucial for the form and course of policy diffusion (Kern 2000: 167). The essential factor is the structural change of the system, especially the emergence of institutions at the international level that perform coordinative functions and support policy transfer.

Just such a role in the international system is played by the United Nations, the World Bank, and the OECD, and also by specific environmental institutions like the United Nations Environmental Programme (UNEP), the International Union for the Conservation of Nature (IUCN), the Global Ecolabelling Network (GEN) or the International Network of Green Planners. The overall number of inter-governmental environmental organisations has grown steadily since 1945.<sup>15</sup> The principal activities of such organisations include describing and examining environmental policy innovations or best practices in front-runner countries, and making this information available in a wide range of publications, in internal policy papers, and at international conferences. The explicit aim is to foster the international diffusion of environmental policy innovations and to harmonise national environmental protection measures and strategies at a high level.<sup>16</sup> Examples are the publications of the OECD on ecological tax reform (OECD 1995a, 1997c), on the application of economic instruments in environmental protection (OECD 1997d), on the use of national ecolabels (OECD 1997e), on the concept of eco-efficiency (OECD 1998a), on environmental planning (OECD 1995b), and on promoting sustainable consumption patterns (OECD 1998b).<sup>17</sup> In addition to numerous specific reports, the World Bank has dealt with the most important national innovations for a policy of sustainable development in its comprehensive report, “Five Years after Rio: Innovations in Environmental Policy” (World Bank 1997). Moreover, the World Bank demands and promotes the development of national environmental plans in a large number of developing countries (cf. Schemmel 1998). The United Nations, especially the Commission on Sustainable Development (CSD), also publishes status reports on the national

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<sup>15</sup> Since 1945, when there was a single intergovernmental environmental organisation, the number had increased to 113 by 1990. However, this includes all organisations regardless of whether their purpose is the protection or the improved exploitation of natural resources (Frank 1997: 424).

<sup>16</sup> Thus the statutes of the Global Ecolabelling Network (an international umbrella organisation of national ecolabelling boards) stress the “worldwide diffusion of ecolabels”. The General Consultative Forum on the Environment of the European Union relies on the spread of best practices in the field of more recent environmental policy instruments to attain a higher level of environmental protection in EU member states (European Commission 1997: 36).

<sup>17</sup> Richard Rose describes the OECD as a “prime example of an ‘idea-mongering’ international institution”: “It does not have the authority to issue laws and regulations that member countries must obey. Nor does it disburse large sums of money to encourage new programs in member states. It does, however, regularly compile statistical information about economic and social conditions in twenty-four advanced industrial nations” (Rose 1993: 68 f.).

implementation of all Agenda 21 policy goals, the latest of which came out in 1997 on the occasion of the special session of the UN assembly on the Rio process. Ten years after Rio, the conference of the United Nations will be another important milestone in the implementation of sustainable development.

The vehicle of policy diffusion can be either a governmental or a societal actor (Kern 1998: 8 ff., 2000: 260). In addition to international institutions like the OECD or the United Nations, worldwide interest groups (e.g., Greenpeace or the World Wildlife Fund) can serve as coordinative and transfer institutions. The number and importance of transnational environmental organisations has increased greatly in recent years. The two largest international environmental protection organisations, Greenpeace International and the WWF, now have a much larger budget than the United Nations Environmental Programme (UNEP).<sup>18</sup> Apart from such groups organised at both the international and national state level, networks like the European Environmental Bureau (EEB), representing a large number of European environmental organisations at EU level,<sup>19</sup> contribute to the diffusion of policy innovations.

Decisions to adopt innovations depend not only on the degree to which policy transfer is institutionalised but also on what decisions are taken in other (comparable) countries. Since many countries aspire to the status of environmental policy front-runner, or at least do not wish to be counted among the latecomers, dynamic processes develop that favour diffusion. For the timing of adoption, the diffusion threshold is important; it decides whether and when an initiative is taken over (Granovetter 1978; Valente 1995: 64). Corresponding models are based on general postulates of collective action (e.g., participation in revolts, strikes, and boycotts), which suggest that individuals decide in terms of their personal action thresholds.<sup>20</sup> Not distribution within the entire societal system is decisive for the adoption of innovations but the number of adopters in the specific communication network. As the number of neighbours who have already accepted a policy innovation increases, the incentive to follow suit grows if one does not wish to be considered a latecomer (Kern 1998: 10).

If the “exposition” of countries relates not to the entire system but to the existing communications networks in which countries are involved, it is clear that the creation of transfer institutions at the international level must directly impact the diffusion pattern. Existing, often regionally restricted communications networks are retained, but are supplemented by a global communications network. Since the information thus spread now serves as point of reference for decisions on adoption, the institutionalisation of policy transfer leads to a change in the diffusion pattern and also to harmonisation of policy

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<sup>18</sup> In 1992, the budgets of Greenpeace International and the WWF were about \$100 billion and \$200 million respectively, whereas UNEP had to make do with only \$ 75 million (Wapner 1995: 315).

<sup>19</sup> The EEB claims to represent 130 NGOs from 24 countries with a total membership of over 11 million (see <http://www.greenchannel.com/eeb>).

<sup>20</sup> For example, one worker will join a strike although only 10% of his/her fellow workers have come out, whereas another will join only when 90% of the workforce has downed tools.

approaches (global policy learning). A global policy arena—as the stage for national pioneering behaviour—can be said to exist only since the end of the East-West conflict.

The concept of individual diffusion threshold, addressing the micro-level, can be complemented by that of critical mass, taking account of diffusion within the overall system. Critical mass in this context means the number of countries that must rally to an initiative before an endogenous dynamic process develops that the remaining countries have difficulty to resist.<sup>21</sup> Whether and if an initiative gains acceptance depends primarily on which countries launch it or adopt it at an early stage. The scales are tipped primarily by large, populous, and economically leading countries (“critical countries”). If resistance there is great, a policy innovation is unlikely to have widespread success. This being the case, it is questionable how effective small countries can function as front-runners. Whether Danish or Dutch initiatives ultimately gain acceptance, i.e., meet with worldwide response, is not decided in Denmark or the Netherlands but in leading industrial countries like the United States, Japan, or Germany. Although small countries’ initiatives can in the medium or long term trigger learning processes at the national and international levels, rapid diffusion is rather unlikely.

### **3.2.3. Characteristics of Policy Innovation and the Development of Model Solutions**

Besides national factors and the dynamics of the international system, aspects of specific policy innovations are important, especially the characteristics of the specific innovation and the availability of suitable policy models. Problem-structural preconditions are the prime concern for policy innovation, since the concrete structure of a problem is crucial for the successful diffusion of environmental policy innovations (Jänicke and Weidner 1997a). Specific ecological problem situations can promote the diffusion of environmental policy innovations, but they may also hinder their spread. Comparative studies have shown that problems of long-term degeneration whose effects are not directly visible cannot be easily placed on the political agenda (Jänicke and Jörgens 1998). Problems, like the growing consumption of resources and land or the contamination of soils or groundwater, are often accompanied by the high social status of the agents or polluters, and a lack of standard technical solutions. In such cases, rapid diffusion of environmental policy problem-solving approaches is unlikely. The importance of problem structure for diffusion has serious consequences, for it implies that global regulatory patterns can impose themselves only for relatively easy to handle problems that can attract strong societal mobilisation and for which tried and tested technical solutions already exist. Furthermore, it is likely that the extent of policy change induced by a regulatory innovation is decisively important for diffusion. Thus programmes whose adoption leads only to incremental changes in existing political

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<sup>21</sup> In general terms, critical mass is “a system-level measure of the minimum number of participants needed to sustain a diffusion process”(Valente 1995: 79).



institutional structures are more likely to be accepted than programmes implying massive restructuring (Rose 1993: 135 f.).

It is also crucial for the course of policy diffusion whether a model solution has been developed and tested at the beginning of the process, which can then be adopted without delay by other countries. Several types of policy learning can be distinguished with regard to the decision of individual countries to adopt innovations. (1) Imitation and emulation mean that policy innovations are adopted in (almost) unchanged form or merely adapted to the given context; (2) synthesis means that various approaches are combined; and (3) mere inspiration generates a qualitatively new programme the development of which is, however, stimulated by the general discussion (cf. Rose 1993: 30 ff., Dolowitz and Marsh 1996: 351).<sup>22</sup> In principle, the spectrum thus ranges from copying legislation to the diffusion of ideas, which is, however, much more difficult to record. Although language barriers may prove insurmountable obstacles even to the simple adoption of policies, synthesis—let alone inspiration—is incomparably more difficult to accomplish.

On the one hand, the diffusion of policy innovation is usually not restricted to pure imitation but can take many forms—that is, it generally involves substantive changes.<sup>23</sup> Peters (1997: 1) demonstrates this in a study on the international diffusion of administrative reform concepts. The study shows considerable differences in the specific national forms of administrative reforms. On the other hand, empirical studies have shown that highly controversial policy innovations, if they are adopted at all, are usually only slightly modified, since that results in a greater chance of acceptance (Hays 1996). However, policies tend to converge even if there is relatively little potential for conflict. Although new programmes increase in complexity in the course of diffusion, policy approaches tend ultimately to diverge only slightly if subsequent legislative amendments by the innovators and early adopters are included (cf. Glick and Hays 1991).

Disregarding “policy learning in time”—that is, learning from experience relevant to generating policy innovation,<sup>24</sup>—“learning in space” is concerned with the various forms of policy diffusion.<sup>25</sup> Two forms are particularly important: learning from the front-runner and institutionally mediated learning. In the case of learning from a front-runner, like the Swiss imitation and emulation of the German Clean Air Guidelines (TA-Luft),<sup>26</sup> best practice developed at the national level is combined with direct transfer of the model from the front-runner to the imitator. This is the classic form of policy learning in space, by which policy is

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<sup>22</sup> Rose (1993: 30) distinguishes five forms of policy transfer: copying, adaptation, making a hybrid, synthesis and inspiration.

<sup>23</sup> In this connection, March (1997: 695) writes of “reproductive reliability”, defined as “the idea that an object of diffusion is reproduced precisely when it spreads from one place to another”.

<sup>24</sup> On the discussion about policy change and policy learning see Sabatier and Jenkins-Smith (1993); Bennett and Howlett (1992); Hall (1989, 1993); Hecló (1974).

<sup>25</sup> On policy learning in space and over time see Rose (1991, 1993).

<sup>26</sup> See Jaedicke, Kern and Wollmann (1993: 226).

learned primarily from neighbouring countries but also from international front-runners, for example by sending delegations to other countries that have developed and successfully applied their own approaches.

Particularly when a solution must be found quickly, actors often restrict themselves to imitating and emulating tried and tested solutions or at least approaches that are already under discussion. In principle, although more far-reaching forms of policy learning are conceivable in this case, active strategies for discovering alternative solutions that permit the synthesis of different models or the development of a completely new approach not only involve high transaction costs, but they are also extremely risky and time-consuming. For this reason, even in the case of direct policy transfer between countries, policy approaches are likely to be harmonised.

The growing institutionalisation of policy transfer, beyond the mere networking of countries, changes policy learning. Institutionalisation leads to the harmonisation of policy patterns since it fosters the early formation of a recognised model. Acceptance of recommendations from international organisations like the OECD is one example; such organisations do not usually develop solutions of their own but see it as their main task to improve general conditions for the transfer of best practice between front-runner and potential emulator countries. Information on model solutions is therefore systematically collected and made available to potential adopters.

## **4. International Comparison of Selected Case Studies**

The following section presents and interprets a number of examples from the perspective of diffusion dynamics. Reference is mainly to empirical material restricted to OECD and industrial countries. This limitation is necessitated by the incomplete and inadequate status of data on developing countries. Nevertheless, available studies suggest that the findings are generalisable beyond the industrial countries, with, however, a certain time lag.

### **4.1. Establishment of National Environmental Authorities**

At present, all OECD countries have national environmental authorities (mostly ministries).<sup>27</sup> The establishment of autonomous environmental ministries or—as in the case of Switzerland, Japan, and the United States—the setting up of ministry-like environmental agencies endowed with executive powers has been a key factor in the expansion of national capacities for action since the 1960s (Jörgens 1996; Jänicke and Weidner 1997a). In the 1970s and 1980s almost all industrial countries established separate environmental ministries (Jörgens 1996).<sup>28</sup> The front-runners were Sweden (1967), Britain and the United States (both 1970). As early as 1971 rapid development set in, with nine further industrial countries setting up environmental

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<sup>27</sup> Here the setting up of an environmental ministry or a national environmental agency is taken as the basis.

<sup>28</sup> The last OECD member state to do so was Spain in 1996.

ministries or agencies (see figure 1).<sup>29</sup> Most countries opted for the British model, founding a ministerial department, and not, like the US and Sweden, being content with an agency (Jörgens 1996: 80).<sup>30</sup> By 1977 there was a ministry of the environment or at least an environmental protection agency in 23 industrial countries, that is, in over two-thirds of the OECD, and in 5 socialist countries. This first wave of diffusion slowly petered out, with a marked resurgence only by the late 1980s.

It can be assumed that the first wave of innovation was stimulated mainly by the United Nations Environmental Conference in Stockholm in 1972, which had been announced some years prior and was itself preceded by several other international conferences of somewhat lesser renown, the first of which had been held in 1968 (Jörgens 1996: 87). Moreover, two very influential countries, the USA and Britain, had set up environmental authorities prior to the Stockholm conference and thus provided the models. Had Sweden taken this step alone, this institutional innovation would probably not have spread as rapidly as it did. In the socialist countries, the joint COMECON environmental programmes contributed to the development from 1971 onwards (*op. cit.* 92). The beginnings of a second innovation wave coincided with the publication of the Brundtland Report, the basis for the diffusion of the sustainable development model, which prepared the way for the second major United Nations Environmental Conference held in Rio de Janeiro in 1992. Chapter 8 of Agenda 21 adopted at Rio calls on the signatory states to expand national institutional capacities in environmental protection.<sup>31</sup>

This example shows that the international institutionalisation of policy transfer, that is, the promotion of specific development models by international organisations like the United Nations, can have a far-reaching impact on the course of diffusion. Furthermore, the establishment of environmental ministries and agencies was consistent with the general organisational principles of industrial societies based on the division of labour. The expansion of government activity thus generally led to the creation of additional sector-specific departments and specialised authorities to deal with the problems of the new policy area. This additive type of expansion in governmental organisation requires no comprehensive restructuring of the political-institutional system, and is therefore relatively easy to impose in the field of environmental protection (Jörgens 1996: 79). The case of Portugal, which set up an environmental agency as early as 1971 and where environmental issues at that time played

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<sup>29</sup> Japan, GDR, Denmark, the Netherlands, France, Portugal, Switzerland, Australia and Canada.

<sup>30</sup> Initially Japan and Germany, too, were content with agencies. While in Sweden and Germany ministries were later established and Japan intends to do the same, plans to convert the U.S. Environmental Protection Agency, probably the largest environmental agency in the world, into a government department have failed over and over again, on the last occasion in the early 90s (Kern 2000: 85).

<sup>31</sup> Although Agenda 21, in accordance with the sustainable development model, calls for greater integration of environmental policy aspects in decision making in other policy areas and the rejection of the sectoral institutionalisation of environmental policy, the prevailing environmental policy-oriented interpretation of this model as “sustainable *environment*-friendly development” or “*ecologically* sustainable development” (cf. Jänicke, Jörgens and Koll 2000: 223 f.) initially led, especially in the latecomer countries that had not yet set up separate ministries or agencies, to the expansion of these sector-specific institutions.

hardly any role on the political agenda, shows that environmental policy innovations can be adopted independently of specific problem pressure (Jørgens 1996: 85 ff.). In West Germany as well, the establishment of environmental policy institutions in the first half of the 1970s is not really accounted for “by the pressure of public opinion nor by an acute crisis” (Müller 1989: 4): rather, it was the result of the quest by a new, reform-oriented government for innovative political topics. The model for the establishment of the German Federal Environment Agency in 1974 was the United States Environmental Protection Agency set up in 1970 (Uppenbrink 1974).<sup>32</sup>

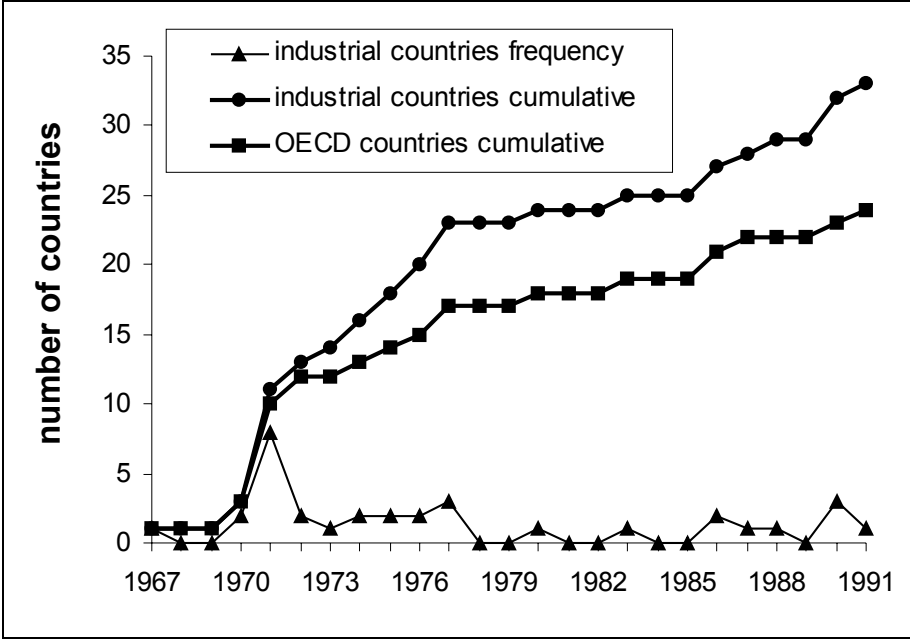


Figure 1: Establishment of national environmental authorities

#### 4.2. Introduction of National Ecolabelling

In addition to national environmental plans and the introduction of environmental taxes, which will be dealt with below, ecolabelling is among the “second generation” of environmental policy instruments that increasingly supplement and partly replace the medium-related environmental protection that predominated in the 1970s. The great advantage of ecolabels that directly target consumer habits (buzzword “sustainable consumption”) is that they permit the consumer to assess the environmental impacts of a product without requiring a great deal of time. “Environmental labeling programs can provide consumers with an immediately available, objective, and accurate evaluation of a product’s environmental impact. They also provide an incentive to manufacturers to meet the standards . . .” (Sitarz 1998: 40). The

<sup>32</sup> In spring 1973, a German government study group visited the U.S. Environmental Protection Agency. The foreword to the group report states “participants were primarily interested in what experience had been gained with the central environmental institution, the still comparatively young Environmental Protection Agency (EPA). The aim was to win ideas for the planning of the German Federal Environmental Agency (*Umweltbundesamt*), which had entered a decisive phase.” (Uppenbrink 1974: 7).

introduction and use of ecolabels, which is on a voluntary basis, is a two-phase process. First, product groups have to be selected and criteria determined for awarding a product an ecolabel. This procedure can be organised in very different ways, but general acceptance of an ecolabel requires the participation of important societal groups (industry, environmental and consumer organisations, etc.) (cf. Häbler, Mahlmann and Schoenheit 1998: 18). In many countries both the number of product groups for which criteria have been set and the number of recognised products<sup>33</sup> has increased strongly in recent years.<sup>34</sup>

There are now ecolabels in almost all OECD countries, although there are considerable differences between countries (U.S. Environmental Protection Agency 1998), especially with regard to the awarding bodies, which may be environmental or consumer authorities, standards institutes, or private institutions.<sup>35</sup> Although Germany introduced the first national ecolabel as long ago as 1978, the “Blue Angel” was the only one for many years. It was not until 1988 that Canada took the plunge and, a year later, the first multi-national ecolabelling system was introduced by the Nordic Council (Minister for Consumer Affairs). Between 1989 and 1992 there was rapid diffusion of this policy innovation, which spread to almost all OECD countries and a number of developing countries and NICs (e.g., Taiwan and South Korea). This dynamic development was decisively influenced by the introduction of the “European Flower” (1992), the EU pendant to the German “Blue Angel”.

It is worth noting that in the decisive phase between 1988 and 1992 worldwide diffusion hardly relied at all on worldwide organisations,<sup>36</sup> but rather on bilateral relations<sup>37</sup> and regional cooperation (like the Nordic Council). Only recently have international organisations begun to be noticeably active—like the Global Ecolabelling Network (GEN) founded in 1994, the International Standards Organisation (ISO), or the OECD (OECD 1997e)—specifically in fostering the international harmonisation of ecolabelling. The strong divergence in national ecolabelling systems is primarily due to the institutionalisation of policy transfer at the global level having proceeded only when several competing models were already available, offering varying development paths. Divergent forms of policy learning thus emerge. Austria, for example, imitated and emulated the German model, even taking over some criteria catalogues directly. The Canadians, by contrast, have not followed the German model exclusively.<sup>38</sup> The French system, too, differs in many ways from the “Blue Angel” (competence, for instance, is

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<sup>33</sup> On the quantitative development of ecolabels in Germany see Häbler, Mahlmann and Schoenheit (1998: 9).

<sup>34</sup> See also the current debate on certification in areas not yet covered by general ecolabelling (e.g., sustainable forestry, ecological agriculture, services).

<sup>35</sup> For example, a purely private ecolabel, the “Green Seal”, has been introduced in the U.S.

<sup>36</sup> One of the few exceptions is the International Chamber of Commerce, which had already adopted a resolution in 1990 recognising the ecolabel as a suitable instrument in sustainable development.

<sup>37</sup> For instance, the introduction of an ecolabel in Austria strongly oriented on the German model. The “Blue Angel” also strongly influenced the Scandinavian ecolabel (Landmann 1998: 97).

<sup>38</sup> The Canadian ecolabel is characterised, for instance, by publication of the criteria catalogue (Landmann 1998: 105).

vested in the national standards organisation). That many ecolabelling systems are a synthesis of differing approaches is shown by the Indian system, to which primarily Canadian, but also German and British experts largely contributed (Landmann 1998: 98 f.).

Without a doubt, the rapidity of diffusion was furthered by regional cooperation and coordination. In 1989 the “White Swan” was introduced in the Scandinavian countries, and the dynamic development that followed can be attributed to the 1992 introduction of the “European Flower.” The two years in which the Scandinavian and European ecolabels were introduced can therefore be considered the “critical years” for this policy innovation (see figure 2). Current developments give grounds for scepticism about the prospects of the EU ecolabel. Countries that had decided on a national ecolabel before the introduction of the “European Flower” are simply not willing to abandon the course they have chosen.<sup>39</sup> Divergent national policy approaches triggered a path-dependent development culminating in the coexistence of different ecolabel systems. The resulting endogenous dynamics considerably hamper harmonisation within the Union. In many member states, the “European Flower” is almost unknown, national labels are seen as more credible, and award criteria as not stringent enough (for Germany see Häbeler, Mahlmann and Schoenheit 1998: 20).

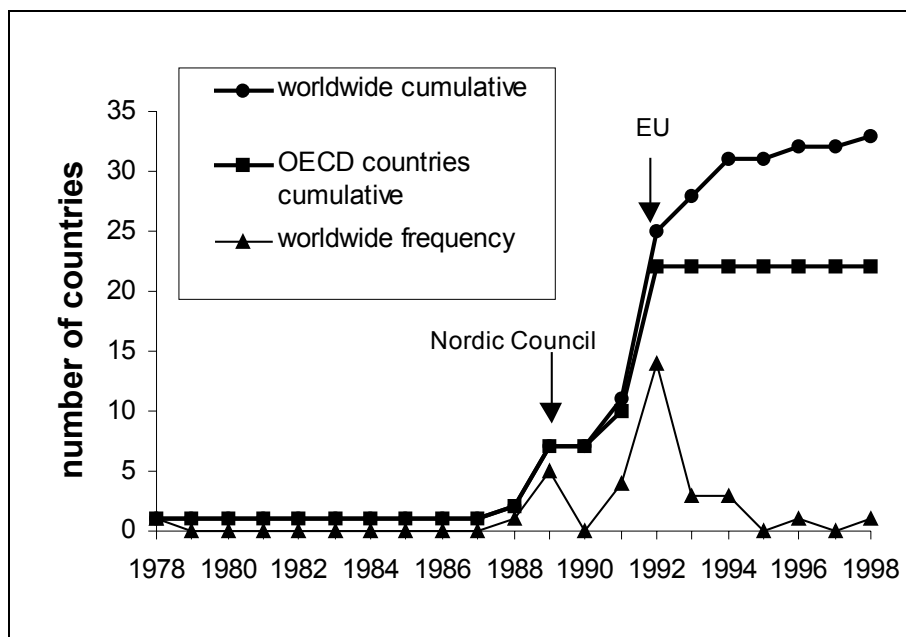


Figure 2: Introduction of National Ecolabels

### 4.3. Introduction of National Environmental Plans and Sustainability Strategies

National environmental plans and sustainability strategies are governmental action plans compatible with industrial and societal interests, drawn up with broad public participation,

<sup>39</sup> On the problems associated with establishing the equivalence of award criteria and the mutual recognition of the ecolabel, see Jacobsson and Jönsson (1998).

which set long-term environmental policy goals and priorities across media and sectors. Their most important characteristics are:

- consensual long-term environmental goal-setting (consensus)
- deriving goals from the principle of sustainability
- including all relevant policy areas (policy integration)
- involving agents/polluters in problem-solving (agent involvement)
- involving major, different interests in goal and policy formulation (participation)
- mandatory reporting on goal implementation (monitoring)

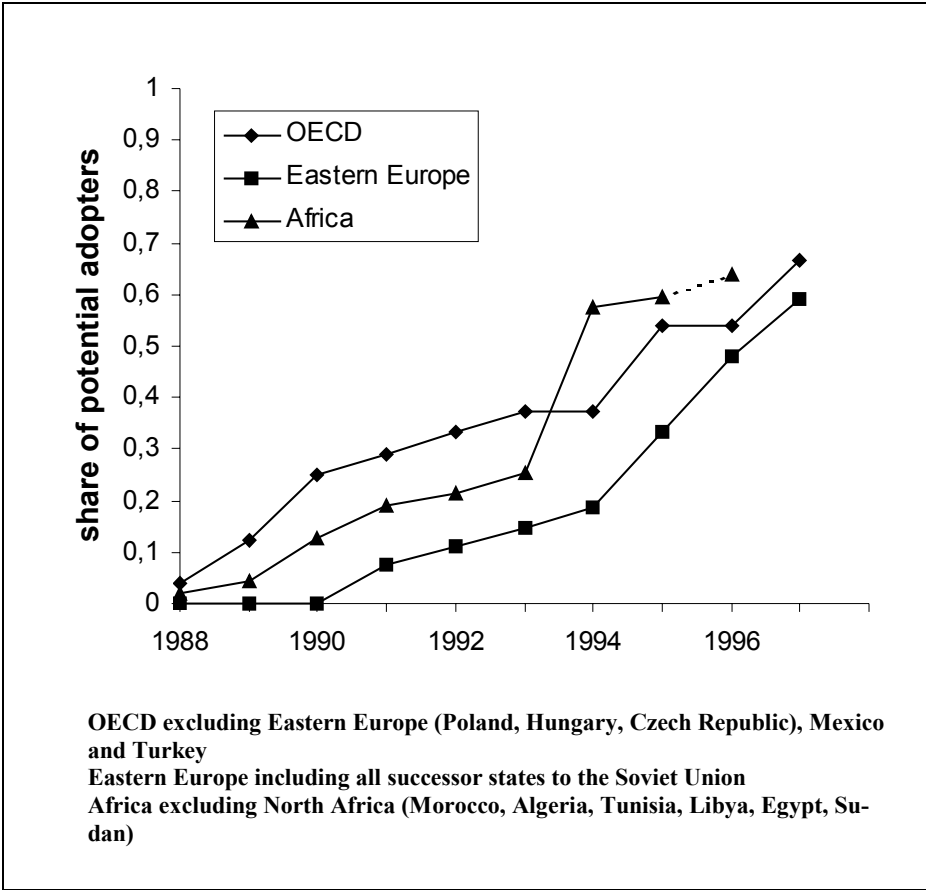
National environmental plans and sustainability strategies are among the most important attempts to implement the Agenda 21 sustainable development model at the national level (Meadowcroft 2000). Most important is a shift from a strongly fragmented, primarily medium-oriented and instrumental environmental policy towards an integrated strategy guided by long-term goals (Jänicke and Jörgens 1998). The approach of strategic, goal-oriented environmental planning has spread very rapidly since the 1980s in industrial countries, but also in newly industrialised and developing countries. Within a decade of the adoption of the first national environmental plans in Denmark, Sweden, Norway (1988) and the Netherlands (1989), more than two-thirds of OECD countries and about 80% of industrial countries (including the more developed Central and Eastern European countries) had adopted national environmental plans or sustainability strategies (Jänicke and Jörgens 1998). Moreover, a large number of NICs and developing countries developed national action plans over the same period. Although there are marked differences in national plans as regards both the relevance and specificity of goals (Koll 1998; Jänicke, Carius and Jörgens 1997) and focus, all are based on the model of targeted, cross-media and—at least in intention—participatory environmental planning.

A number of factors have influenced the relatively rapid worldwide spread of this policy innovation. Probably the most important was the 1992 United Nations environmental conference in Rio de Janeiro and the action plan adopted there, Agenda 21, which called on all signatory states to formulate a “national strategy of sustainable development”. At the 1997 special session of the UN assembly in New York, this resolution was confirmed and a 2002 deadline was set for developing national sustainability strategies. However, a number of regional activities have also had an important influence on the international diffusion of national environmental planning.

The 1989 Dutch environmental policy plan had a decisive impact on the industrial countries. Besides national planning approaches (like the Austrian approach), the European Union’s Fifth Environmental Action Plan was also strongly influenced by the Dutch initiative. Meanwhile, the OECD, too, includes national environmental policy plans or sustainability strategies in its Environmental Performance Reviews, as criteria for assessing national environmental policies. Finally, the worldwide environmental organisation, Friends of the Earth, has presented its own draft sustainability strategy for the Netherlands (Friends of the

Earth Netherlands 1992), the European Union (Friends of the Earth Europe 1995) and for Germany (BUND/Misereor 1996).

In Central and Eastern Europe, the development of national environmental action plans dates back to the 1993 “Environment for Europe” ministerial conference in Lucerne. Sixteen of 24 countries from the region, assisted by the OECD, have since developed such a programme or are in the process of doing so (OECD 1998 f.: 7). In African and Latin American developing countries and NICs, the World Bank has been particularly active in fostering and pushing through the development of environmental action plans. Since 1992 such a plan has been a prerequisite for development aid loans (Schemmel 1998). Finally, the International Network of Green Planners (INGP), a worldwide discussion and information exchange forum, has contributed much to the spread of strategic environmental planning.



**Figure 3: Introduction of National Environmental Plans**

Overall, it can be said that the strategic environmental planning approach provides national authorities with broad scope for decision and policy making. Whereas only few countries have far-reaching environmental policy goals (the Netherlands and Sweden) or changes in the administrative organisation of environmental policy (New Zealand) been decided, in the majority of cases such plans have been developed without drastic consequences for existing environmental policy (Jänicke and Jörgens 1998). The development



of national environmental plans and sustainability strategies has thus been a largely additive process. While the rapid international diffusion of this approach has been driven by a number of models with a worldwide reputation (Dutch National Environmental Policy Plan, Fifth Environmental Action Programme of the EU) it has also been vigorously encouraged by a number of international organisations (United Nations, OECD, World Bank). Strong pressure has also been exerted, especially by the World Bank in coupling development aid loans with environmental planning. The close link-up between the development of national environmental plans and sustainability strategies and the international sustainable development model propagated since the late 1980s, and the emphasis placed on this model by a number of international organisations embracing more than the industrial countries has meant that this policy innovation has spread with almost equal speed in industrial, newly industrialised, and developing countries (see figure 3).

#### **4.4. Introduction of CO<sub>2</sub>/Energy Taxes**

Since the early 1970s, green taxes have loomed large as an environmental policy instrument in the international scientific debate (Baumol and Oates 1989; Hohmeyer 1995). Since the beginning of the 1980s, a comprehensive ecological tax reform has come under increasing discussion (Koschel and Weinreich 1995: 10). Despite a generally favourable estimate in the literature of their potential, environmental taxes had played only a minor role in actual environmental policy until well into the 1980s. It was not until the international climate protection debate, which put pressure on countries to markedly reduce CO<sub>2</sub> emissions, that green taxes, especially CO<sub>2</sub> and energy taxes, gained in importance in environmental policy practice as well. Since 1990, more and more European countries have followed the Dutch and Scandinavian lead (Jänicke *et al.* 1998: 7 ff.).<sup>40</sup> A tax of this sort was introduced in Germany in 1999, with further steps to be introduced in subsequent years.

The diffusion of CO<sub>2</sub>/energy taxes shown in figure 4 is interesting for a number of reasons. First, it is worth noting that, despite demands raised back in the 1970s, comprehensive taxes on energy over and above charges on mineral oil were imposed only from 1990. This time lag between demand and reality is apparent throughout the field of market-economy instruments in environmental protection (Jänicke and Weidner 1997b, 1997c; Zittel 1996). The introduction of effective economic instruments regularly fails where powerful, well-organised economic interests are the potential losers of such a strategy. This is particularly so in the key application fields for eco-taxes, energy and transport (Mez 1998). Policy analysis confirms this in general, assuming that redistributive policies are difficult to implement. It is also striking that, following the joint front-runner policy of the Nordic countries, only European states have so far begun introducing CO<sub>2</sub>/energy taxes. With the exception of Poland, all the countries concerned are wealthier northern and western European

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<sup>40</sup> The Scandinavian countries introduced this policy innovation—coordinated by the Nordic Council—almost simultaneously.

states. To date, the diffusion curve shows moderate diffusion principally within the group of smaller and innovative front-runner countries.

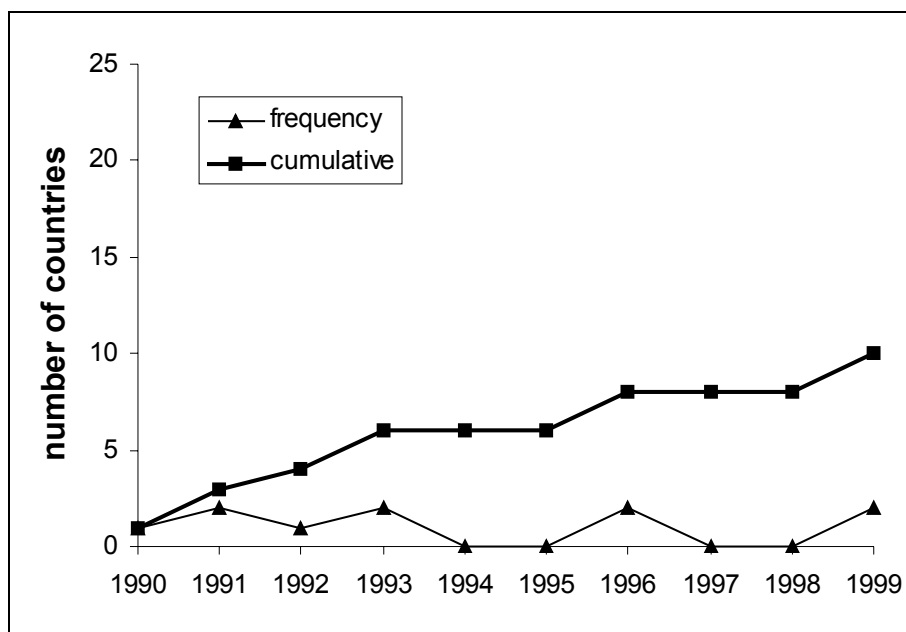


Figure 4: Introduction of CO<sub>2</sub>/Energy Taxes (OECD)

#### 4.5. Introduction of Soil Protection Legislation

While the protection of water and air has been regulated by specific national legislation since the end of the 1960s, many countries have yet to legislate on soil protection.<sup>41</sup> Key aspects of national soil protection legislation are the regulation of direct pollutants like pesticides and fertilizers, erosion prevention, contaminated soil remediation and, to some extent, the economical use of land.

Although the first soil protection act (New Zealand) had been passed as long ago as 1967, and “soil hygiene” has a long tradition, notably in Germany, there was no diffusion worthy noting until the late 1990s.<sup>42</sup> Soil protection legislation (figure 5) differs as far as the speed of diffusion is concerned fundamentally from the “success cases” of national environmental ministries and agencies or national ecolabelling. One reason might be that there was no early legislation to provide a model, so that marked differences between policy approaches are apparent. International diffusion institutions have played no role or had only a minor role in

<sup>41</sup> In a brief treatment of the development of separate environmental protection legislation in Europe and the USA, Weale (1992: 15 f.) points to this typical sequencing, without, however, offering a comprehensive explanation: “The substantive policy responses themselves also show a certain pattern. Legislative innovation begins with the topics of air and surface water pollution . . . where in some cases it was possible to build on existing policies and structures of pollution control. Then control of toxic chemicals emerges on the legislative agenda . . . followed by control of waste disposal facilities. . . . However, it is worth underlining how extensive is the selective perception embedded in these policy developments. One way of highlighting this is to note how some important topics have come only very late on the agenda of pollution politics. One of these is soil pollution.”

<sup>42</sup> See also the earlier debate in the USA; Carson (1962).

this area; institutionalised policy transfer—via the OECD, for instance—has been evident at no time. However, the lack of institutional diffusion mechanisms at the international level does not fully explain the extraordinarily tardy spread of this innovation. The structure of the underlying environmental problem is likely to be the main cause.

The political issue of “soil protection” exhibits a number of structural peculiarities: the low visibility of the problem combined with the high complexity of polluter structure; a small number of acutely affected parties with weak capacities; inadequate and highly fragmented governmental competencies (in no industrial country is regulatory power for agricultural soil pollution vested in an environmental ministry or agency); strong interdependence between politically and economically significant polluters (e.g., through the universality of private and state interests in construction or a strong agro-industrial complex); and, finally, the general absence of technical standard solutions, which, at least to some extent, could resolve conflicts of interest through win-win solutions and bringing potential winners of environmental regulation into play.

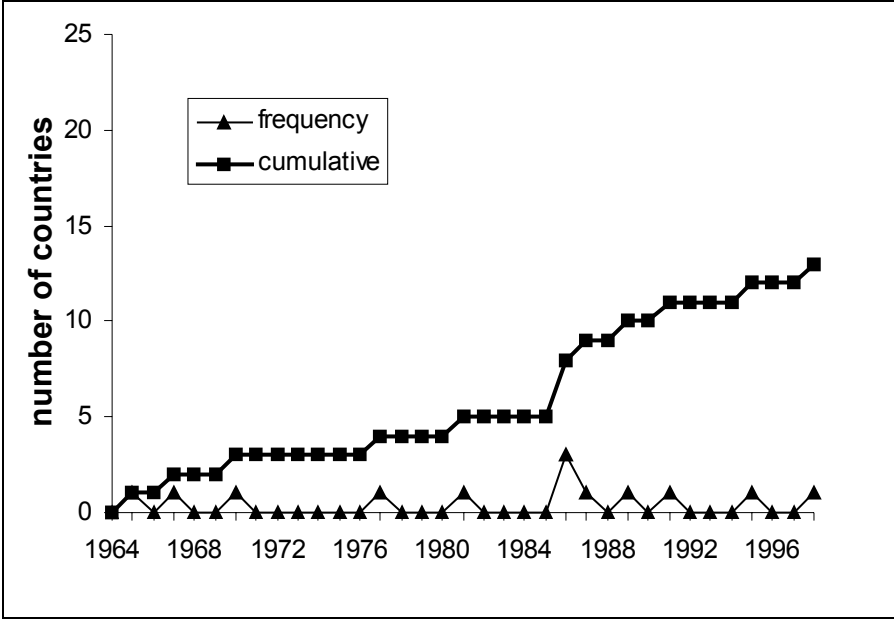


Figure 5: Introduction of Soil Protection Legislation (OECD)

### 5. Conclusions

The case studies confirm that the international diffusion of regulatory innovations in environmental policy depends on a complex set of factors. Important are structures and processes that shape national policy systems and determine the dynamics of the international system. Moreover, aspects of a specific policy innovation, especially its characteristics and the existence of model solutions, are to be taken into account.

First of all, the *national capacity for action* is important for the diffusion of policy innovations. The path-dependency of national environmental policy sets clear limits to the adoption of policy innovations. These internal factors play a key role at the national level in

deciding on adoption. They are also crucial in determining whether a country is to count as a front-runner or a latecomer. It has been evident that the most advanced industrial countries are generally the front-runners even when other countries advance at a comparable rate. Such is the case with eco-taxes whose introduction—with the exception of Poland—has succeeded only in the wealthier northern and western European countries. Furthermore, the case studies clearly show that it has frequently been smaller countries, especially the Netherlands and some northern European states that have taken the initiative in more recent environmental policy approaches under study (ecolabels, eco-taxes, and environmental plans). It is also worth noting that some countries that had attracted attention as long ago as the 1970s as innovators are still among the policy pioneers of today (e.g., Sweden), while developments have been much less continuous in other countries that, like the United States, were once clear front-runners but have meanwhile fallen well back in the field.

The *demand for policy innovation* can result both from direct problem pressure (e.g., in the event of environmental scandals) and from international initiatives, because specific environmental problems can then more easily find their way onto national political agendas. The demand for policy innovation was a significant factor underlying both the creation of environmental authorities and the establishment environmental plans, stimulated by the Stockholm and Rio conferences; it was an important, if not decisive, factor for the introduction of CO<sub>2</sub>/energy taxes, in the context of the worldwide climate protection debate. There is a high demand for policy innovations that do not involve comprehensive legal or institutional changes. In the context of the case studies under scrutiny, this was shown, for example, by the concentration of governmental environmental tasks in new environmental ministries and agencies, in the introduction of national ecolabels, or in the development of national sustainability strategies. Formal adoption of environmental policy practices from other countries has often been initially more symbolic than practicable, characterised, for instance by weak environmental authorities with insubstantial human and financial resources, or the adoption of vague environmental goals in national sustainability strategies.

The rapidity of diffusion noted in some cases cannot be adequately explained by national factors alone. It is therefore necessary to take account of the dynamics of the global policy arena in explicating such processes. In this connection, the importance of *front-runner countries* must be noted, because they seem to be decisive for the spread of policy innovations and institutionalisation processes within the international system, especially the creation or proliferation of *international organisations* and *transnational networks*. The dynamics of the global policy arena obeys a logic beyond the internal conditions for action prevailing in individual countries. Such dynamics are often precipitated by changes in the behaviour of national actors in strategically important countries. In the EU, too, policy innovations initiated by smaller countries often determine behaviour only when larger and more influential countries like Germany or France adopt them—as was the case with the diffusion of CO<sub>2</sub>/energy taxes. When a critical mass of countries (“critical countries”) is reached, policy

diffusion processes develop a momentum that can practically not be halted. However, small front-runner countries need the support of larger countries or international organisations. The rapid diffusion of environmental authorities in the 1970s is thus, at least partly, attributable to the then front-runner status of the United States and Britain.

In addition, policy globalisation contributes to institution building at the international level and thus to greater institutionalisation of the policy transfer. The institutions in question are international organisations that serve primarily the self-coordination of countries in the global policy arena. While the introduction of environmental authorities and plans clearly shows that the promotion of specific models by international organisations like the United Nations has far-reaching effects on the course of diffusion, in the case of ecolabelling regional cooperation and coordination (Nordic Council, European Union) can be considered to have accelerated diffusion. However, international environmental organisations or expert networks can also perform a quite similar function; consider, for example, the Global Ecolabelling Network in the introduction of national ecolabels, or the International Network of Green Planners in the development of national environmental plans and sustainability strategies.

The *characteristics of the specific policy innovation* also have a strong influence on diffusion. Most important are the problem-structural preconditions for policy transfer. The example of soil protection shows that low visibility of environmental problems and the lack of technologies adequate to combat them can hamper the spread of regulatory initiatives. This means that global regulatory patterns arise initially only for comparatively easy-to-solve problems that can rely on strong societal mobilisation and for which tried and tested technical solutions are already available. In addition, the analysis shows that policy programmes involving the redistribution of costs are often highly controversial in the national context and can be implemented only with difficulty and a considerable time lag. Interest groups who can organise and mobilise support can effectively prevent the spread of policy innovations, particularly in the case of redistributive policies. Ecological tax reform can be expected from the outset to generate conflicts because redistributive measures generally meet with resistance.

Also decisive for the course of diffusion is whether a specific *policy model* has managed to win international recognition at an early stage in the diffusion process. Two models were available for environmental authorities. Most countries opted for the British model and set up a ministry, thus not restricting themselves, like the United States and Sweden, to an environmental agency. The importance of such organisational models is illustrated, for instance, by the creation of the German Federal Environmental Office in 1974, which was modelled on the U.S. Environmental Protection Agency set up in 1970. The 1989 publication of the Dutch National Environmental Policy Plan, which served as a model for many industrial countries, is likely to have been decisive in the rapid international diffusion of national environmental plans. The great variations in ecolabelling systems and the resulting need for harmonisation is in all likelihood due to the apparent fact that policy transfer has

become institutionalised at the global level only when several models were competing, thus offering a basis for divergent development paths. Still greater are the differences in the area of soil protection; these differences are to be explained by the absence of early model legislation.

In sum, global diffusion of environmental policy innovations depends, above all, on whether national capacities for action in environmental policy and prior developments in environmental protection facilitate national policy change; whether there is a strong demand for appropriate solutions to problems or for environmental policy approaches practised in front-runner countries, whether front-runners or early imitators include important countries, whether international organisations and transnational networks promote policy transfer, whether the characteristics of the policy approach (especially the problem structure) favour policy transfer, and, finally, whether policy models are developed at an early stage of the diffusion process to guide other countries.

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