

International Patterns of Environmental Policy Change and Convergence

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ABSTRACT

The article gives an empirical overview of the international spread of 22 environmental policy innovations. The policy innovations examined in the article include administrative institutions (e.g. environmental ministries, scientific advisory bodies), laws (e.g. soil protection laws, packaging waste laws), instruments of environmental policy integration (e.g. national environmental policy plans, environmental impact assessment), energy taxes and eco-labels. On this empirical basis, recurring patterns in the global spread of environmental policy innovations are identified and linked to specific causal mechanisms through which this change occurs. In particular, the paper demonstrates how and to what extent non-obligatory *diffusion*, legal *harmonization* and coercive *imposition* matter as mechanisms of global environmental policy convergence. Copyright © 2005 John Wiley & Sons, Ltd and ERP Environment.

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Introduction

NATIONS INCREASINGLY TEND TO ADOPT SIMILAR ENVIRONMENTAL POLICY INNOVATIONS, I.E. environmental institutions, laws, policies and instruments. Over the last decades more than 100 countries across the globe have created environmental ministries, adopted environmental framework laws, implemented environmental impact assessments (EIAs) and formulated national environmental strategies (Busch and Jörgens, in press). Environmental policy innovations increasingly spread across nations and the growing number of individual policy adoptions aggregates to a remarkable degree of cross-national environmental policy convergence. This empirical phenome-

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non begs the question of *why* and *how* environmental institutions, laws, policies and instruments spread across nations. To answer this question, this article first identifies distinguishable and recurring patterns of spread of environmental policy innovations. It then introduces three analytically distinct political mechanisms that contribute to the international spread of policy innovations. In a final step, the paper links these mechanisms to the previously identified proliferation patterns.

The analysis starts from the assumption that the causes of domestic policy change cannot be found at the national level only. They are not limited to isolated responses to global problem pressures either. Especially since the 1970s, scholars in comparative political science and international relations have argued that international political processes, actors and institutions increasingly affect national policy decisions (e.g. Gourevitch, 1978; Keohane and Milner, 1996; Howlett and Ramesh, 2002). Domestic politics are increasingly interdependent. This interdependence, it is argued, can account for an important share of the observable cross-national policy convergence (Bennett, 1991). While this article largely follows these arguments, it differs from these approaches in its analytical and empirical scope.

Analytically, many studies focus on only one particular mechanism and its impact on domestic policy change and cross-national policy convergence. In order to avoid this 'mechanism-related bias', this article takes a more holistic perspective by integrating several conceivable mechanisms in the analysis and by linking these to the international spread of a wide range of environmental policy innovations. This comprehensive perspective allows for a comparative assessment of the relative importance of those mechanisms at the international level which may cause cross-national policy convergence: the legal *harmonization* of national policies through multilateral agreements or supranational law, the coercive *imposition* of policies through political or financial conditionality, and the non-obligatory *diffusion* of ideas, institutions or instruments through voluntary imitation and learning (for similar distinctions of international convergence and diffusion mechanisms, see the papers by Knill and Lenschow, Tews, and Liefferink and Jordan in this issue). Our emphasis in this article will be on diffusion because this mechanism has so far received the least attention as a source of international policy coordination and driver of cross-national policy convergence. Empirically, our analysis is based on a unique empirical database, which covers the spread of 22 environmental policy innovations¹ across 43 countries² from 1945 to 2000. For eight of these policy innovations our data even covers the worldwide spread. Studies relying on a similarly broad database exist only within the federal system of the United States (see, e.g., Walker, 1969; for an overview see Berry and Berry, 1999). By contrast, analyses of the spread of policies within the international system are usually limited to a small number of policies across a similarly small number of countries (see, e.g., Collier and Messick, 1975; Bennett, 1988). Studies taking into account various policies across a large set of countries still are an exception (e.g. Miles *et al.*, 2002; Brown Weiss and Jacobson, 2000; Knill and Lenschow, 2000; Kern *et al.*, 2001; see also Liefferink and Jordan in this issue). This lack of comprehensive data sets has made it difficult to assess the plethora of theoretically inspired hypotheses about the determinants of the international spread of policy inno-

¹The term innovation can be defined as an 'idea, practice or object that is perceived as new by an individual or other unit of adoption' (Rogers, 1995, p. 11; see for a similar definition Walker, 1969, p. 881). This definition forms the basis of the analysis at hand. It excludes from consideration later amendments to already existing laws and regulations. The environmental policy innovations can be divided into six distinct groups: environmental institutions (ministries, agencies, advisory councils and sustainability commissions), general environmental laws (constitutional articles on environmental protection, legal provision for the public access on environmental information and framework laws), specific laws and regulations (air, water, nature and soil protection as well as waste laws and packaging regulations), instruments for policy integration (national environmental plans, sustainability strategies and impact assessments), economic instruments (energy/carbon taxes, feed-in tariffs and quotas for renewables) and labels and standards (eco-labels, energy efficiency labels for refrigerators and freezers and energy efficiency standards for refrigerators and freezers).

²The core set of countries can be divided into a group of industrialized countries (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Korea, Luxemburg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, UK and USA) and Central and Eastern European (CEE) countries (Albania, Belarus, Bosnia Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia and Ukraine) (for details on the reasoning that guided the selection see Busch and Jörgens, in press).

vations and of cross-national policy convergence in an empirically sound way. As Bennett (1997, p. 214) has argued, there 'is no shortage of concepts and hypotheses; if anything this literature is over-theorized' (see also Seeliger, 1996).³

Identifying Patterns

A first look at the data confirms the assumption of an increasing international convergence of domestic policies – at least for the environmental field.⁴ It shows that environmental institutions, laws, policies and instruments actually spread across the whole field of industrialized and Central and Eastern European (CEE) countries. Some policy innovations are adopted even on a global scale. Second, when taking into account the type of environmental policy innovation, the degree of convergence achieved and the speed at which these innovations spread internationally, typical patterns of proliferation can be identified, which will be described in more detail below.

The Spread of Environmental Policy Innovations Across Industrialized and CEE Countries

By the year 2000, 13 or more than half of the selected environmental policy innovations had been adopted by over two-thirds of all selected industrialized and CEE countries. Only two of the innovations examined here had been put in place in less than one-third of all countries. However, none of the environmental policy innovations had been adopted by all countries included in our sample.

Figure 1 shows all 22 policy innovations in a comparative matrix. The horizontal axis shows the average speed of proliferation of a policy innovation while the vertical axis indicates the percentage of countries that had introduced this policy innovation by the year 2000. The first time a policy innovation was introduced is mentioned in brackets. At first sight Figure 1 shows hardly any specific or apparent pattern. Rather, the distribution of environmental policy innovations across nearly all fields in the graph reveals a variance of proliferation patterns regarding the degree of convergence and the average speed. However, if one looks at the different types of policy innovation, certain typical patterns emerge. For example, general environmental laws, media related laws and environmental institutions can all be found in the upper half of the graph, indicating that at least half the countries in our sample have adopted this innovation. On the other hand, all economic instruments are located in the lower half of the graph. In some cases the majority or even all of one group's environmental policy innovations can be found in only one

³ However, large data sets such as the one used in this study bring with them methodological problems as well, which should not go unmentioned. Most importantly it has to be made clear that our quantitative assessment cannot account for qualitative differences between the policy innovations adopted by different countries. For example, while in one country the creation of an environmental ministry may be the result of a higher priority given to environmental concerns, in another country it may be mere window dressing. Ideally, therefore, the quantitative assessment should be accompanied by a qualitative study. We did this by reviewing the literature on each policy innovation, especially comparative assessments which are frequently conducted by international organizations such as the OECD, UNECE or the United Nations or by secretariats of single-issue networks such as the International Network of Green Planners or the Global Ecolabelling Network. In the case of laws or programmes we additionally examined the original documents wherever available. This more detailed analysis is about to be published (Busch and Jörgens, in press). With these additional precautions, we are confident that our quantitative data does tell us something important about environmental policy convergence on a *prima facie* examination.

⁴ In order to speak of cross-national policy convergence, a set of indispensable characteristics was defined for each policy innovation, ensuring their cross-national comparability (for details see Busch and Jörgens, in press). Only those domestic policy adoptions that fulfilled these criteria were taken into consideration. In accordance with the predominant practice in empirical studies and theoretical conceptions in the policy convergence literature, these criteria tolerate some variation in the design of individual policies (see, e.g., Rose, 1991; Majone, 1991; Bennett, 1991b; Walker, 1969). An environmental policy innovation is considered to be introduced when the responsible national legislative or executive body formally decided to adopt the innovation. The time of introduction is the year when the innovation entered into force. Sub-national regulations or state laws, which play an important role in the federal systems of Austria, Australia, Belgium, Canada, Germany, Switzerland and the US, are not taken into account.

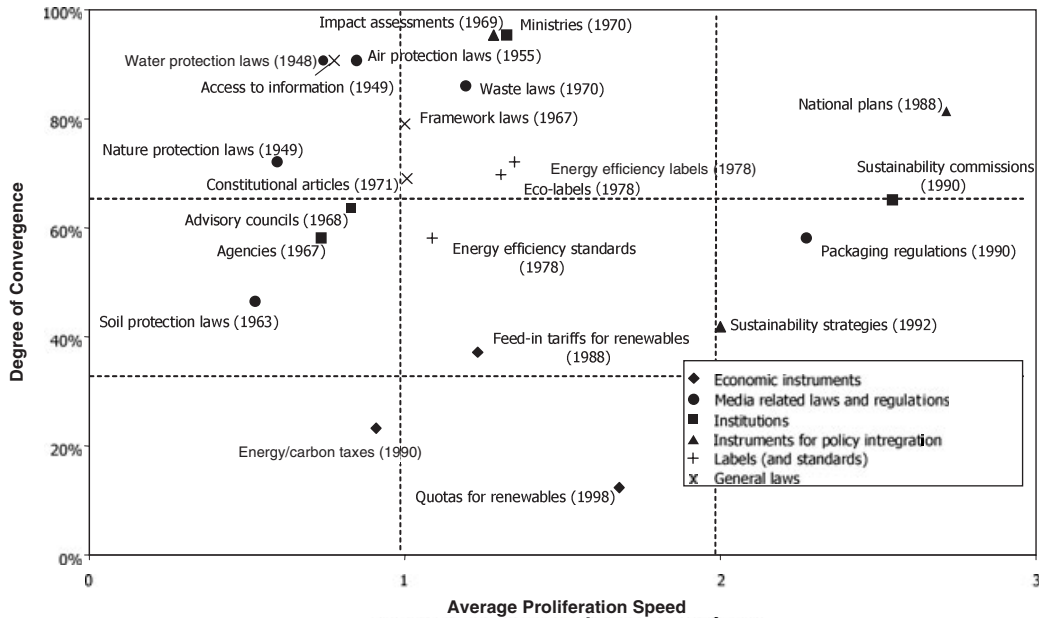


Figure 1. The international spread of environmental policy innovations across industrialized and CEE countries: degree of convergence and average speed in 2000

or two fields of the matrix, indicating a dominant pattern for this group of environmental policy innovations. Examples are environmental labels and standards, general laws and institutions.

The two environmental labels have proliferated at a moderate speed across more than two-thirds of all countries.⁵ Media related laws have for the most part been adopted by more than two-thirds of all countries and proliferated at low speed. The environmental institutions have spread across more than half or two-thirds of all countries and all general environmental laws have been implemented by more than two-thirds of all countries and – except for laws on access to environmental information – proliferated at moderate speed.

Regarding instruments for policy integration and economic instruments, patterns are less apparent. The three instruments for policy integration and planning are distributed across different fields in the graph. The same is true for the three economic instruments. However, in this case what stands out is the fact that neither of these instruments has been adopted by more than 40% of the countries, and that they all proliferated at a low to moderate speed.

Further patterns can be identified if the information contained in Figure 1 is disaggregated. Its macro-level perspective – focusing only on the beginning and the end of proliferation processes and on average values – hides important changes in the pattern of spread over time. In particular, changes in the pace at which innovations are adopted domestically are better visualized as proliferation curves, tracing the national adoptions of a given policy innovation over time.

Essentially, two types of proliferation curve can be distinguished. On the one hand we see patterns of uneven spread where periods of slow proliferation and phases of rapid acceleration alternate.⁶ On the

⁵ ‘Slow’, ‘moderate’ and ‘fast’ are being used in a comparative sense. The point of reference is the arithmetic mean of the average speed of all environmental policy innovations (1.23). Slow indicates less than one yearly introduction on average, moderate indicates more than one but less than two yearly introductions on average and fast indicates more than two yearly introductions on average.

⁶ A significant acceleration is taking place when for at least three subsequent years the number of annual introductions lies above the average speed of the proliferation of national environmental plans that spread the fastest (i.e. amounts to at least three yearly introductions). The spread is slow when on average fewer than two countries introduce an innovation each year and slows down when for two or more subsequent years the number of annual introductions falls below three.

other hand, we see patterns where the international spread of a policy innovation evolves more or less steadily, without major variations in the annual rates of adoption. Interestingly, there seems to be a very close match between the type of environmental policy innovation (general laws, media laws, institutions, economic instruments, instruments of policy integration or labels and standards) and the pattern of proliferation (uneven or steady). Only within the groups of environmental institutions and specific laws can we find both steady and uneven proliferation patterns. In the latter case, however, it is only one outlier (packaging regulations) that shows an uneven proliferation curve while all other laws spread evenly throughout the period of observation.

The first group of unevenly spreading policy innovations comprises all general laws, all instruments for policy integration and all labels and standards as well as environmental ministries and sustainable development commissions. Within this type of proliferation pattern two sub-types can be distinguished. The first one could be called 'late acceleration'. Here, the international spread starts off relatively slowly. During the years after the first adoption only relatively few countries adopt this policy innovation. Then, suddenly, the spread accelerates significantly and continues at a comparatively high pace until the end of the observation period (see Figure 2).

The second sub-type in this category resembles an S-shaped curve. Similar to the previous type, the international spread begins rather slowly and then speeds up, but in contrast to the pattern of 'late acceleration' it slows down significantly towards the end of the proliferation process (Figure 3).

The second group of steady proliferation patterns comprises all specific laws except for packaging regulations and all economic instruments as well as environmental agencies and advisory councils. Within this group three basic sub-types can be distinguished according to the average speed at which the environmental policy innovations spread. The 'slow trains' comprising laws on air pollution control, nature, water and soil protection, environmental advisory councils and agencies and energy/carbon taxes proliferated slowly and more or less evenly (Figure 4).

The proliferation speed of feed-in tariffs for electricity from renewable energy sources and of waste laws are identical or very close to the arithmetic mean of the average proliferation speed of all environ-

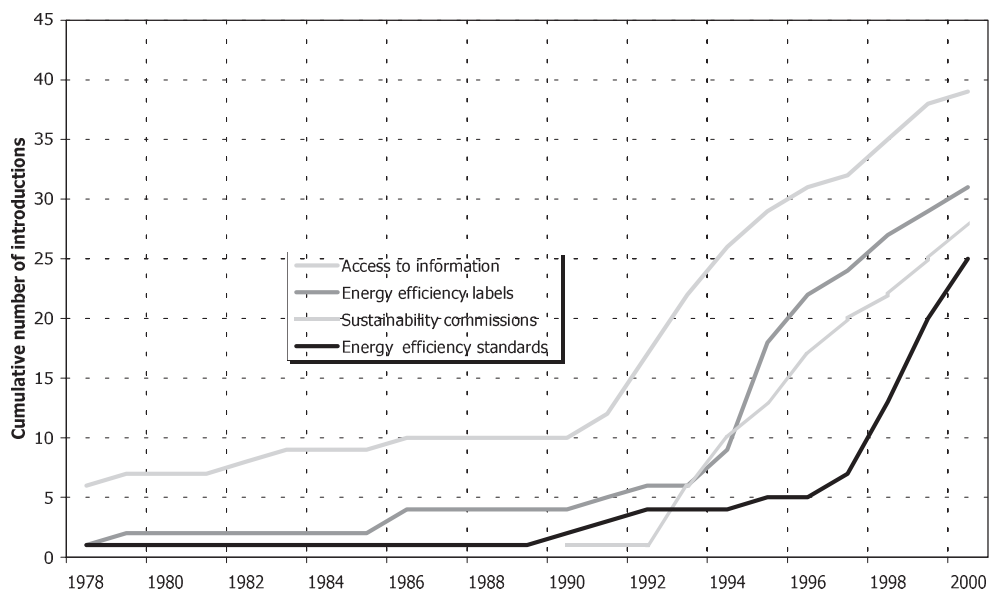


Figure 2. Late acceleration: international spread of laws on access to environmental information, sustainability commissions, energy efficiency labels and standards across industrialized and CEE countries

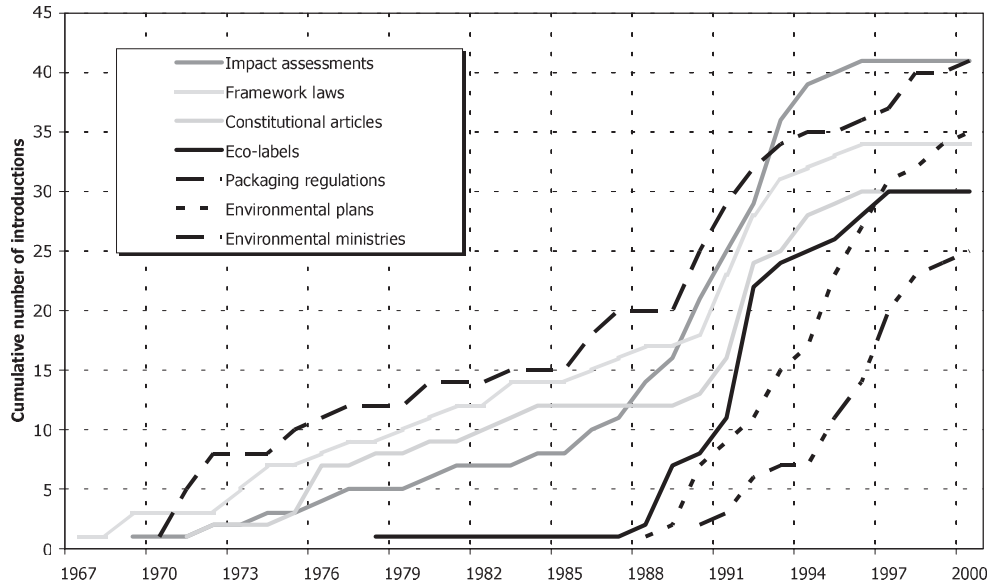


Figure 3. S shape: international spread of framework laws, constitutional articles, EIA, national environmental plans, environmental ministries, eco-labels and packaging regulations across industrialized and CEE countries

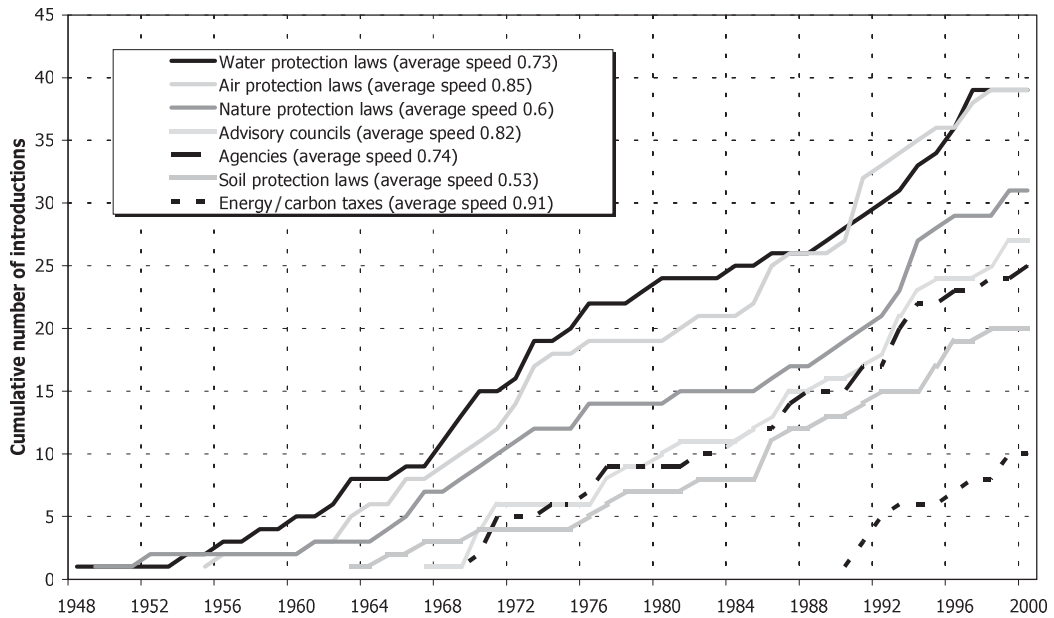


Figure 4. The slow trains: international spread of air, nature, soil and water protection laws, agencies, advisory councils and energy/carbon taxes across industrialized and CEE countries

mental policy innovations. This type of proliferation pattern can therefore be labelled ‘the golden mean’ (Figure 5).

Finally, only one environmental policy innovation in this group – national sustainable development strategies – is ‘in the fast lane’ and proliferated evenly at comparatively high pace (Figure 6).

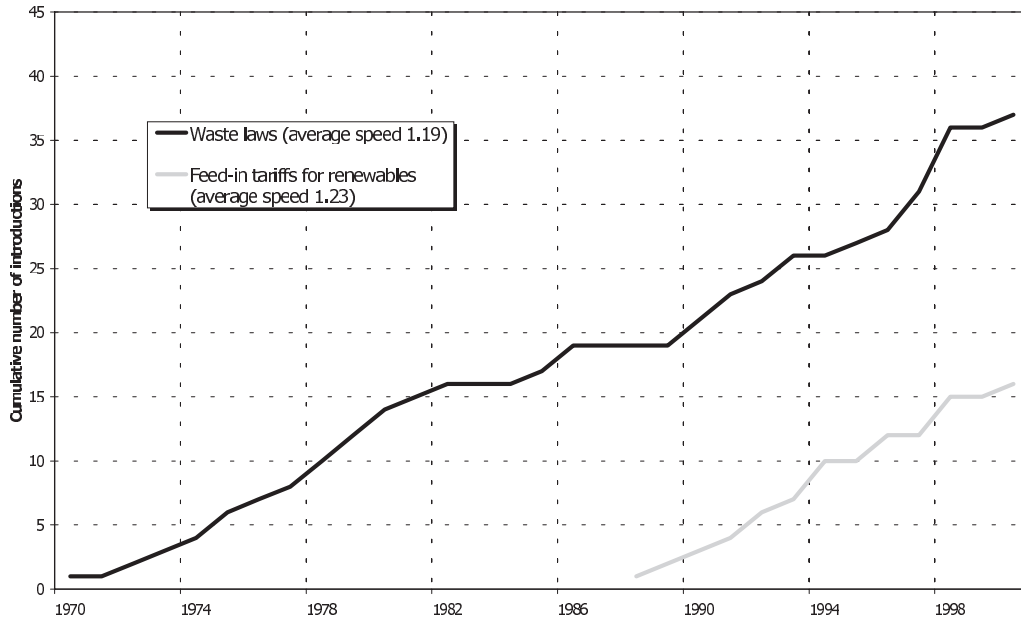


Figure 5. The golden mean: international spread of waste laws and feed-in tariffs for renewables across industrialized and CEE countries

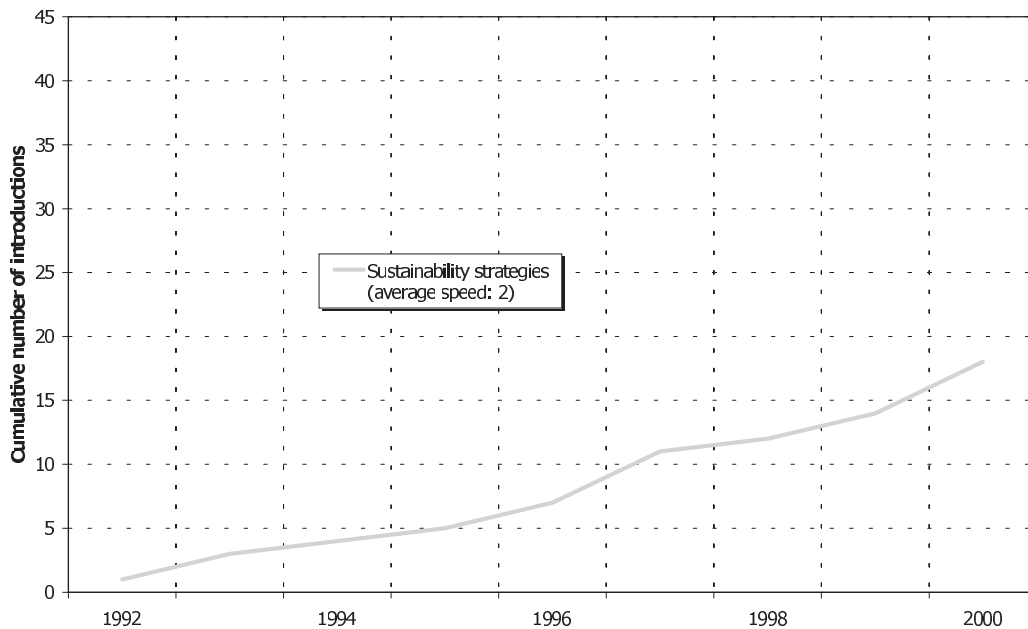


Figure 6. In the fast lane: international spread of sustainability strategies across industrialized and CEE countries

Interestingly, all significant accelerations within the group of unevenly spreading policy innovations as well as the fast spread of sustainability strategies took place during the 1990s. They add up to a remarkable peak in the frequency of annual adoptions beginning in 1990 and lasting for ten years until the end of our period of observation. In other words, these peaks in the frequency of adoptions during

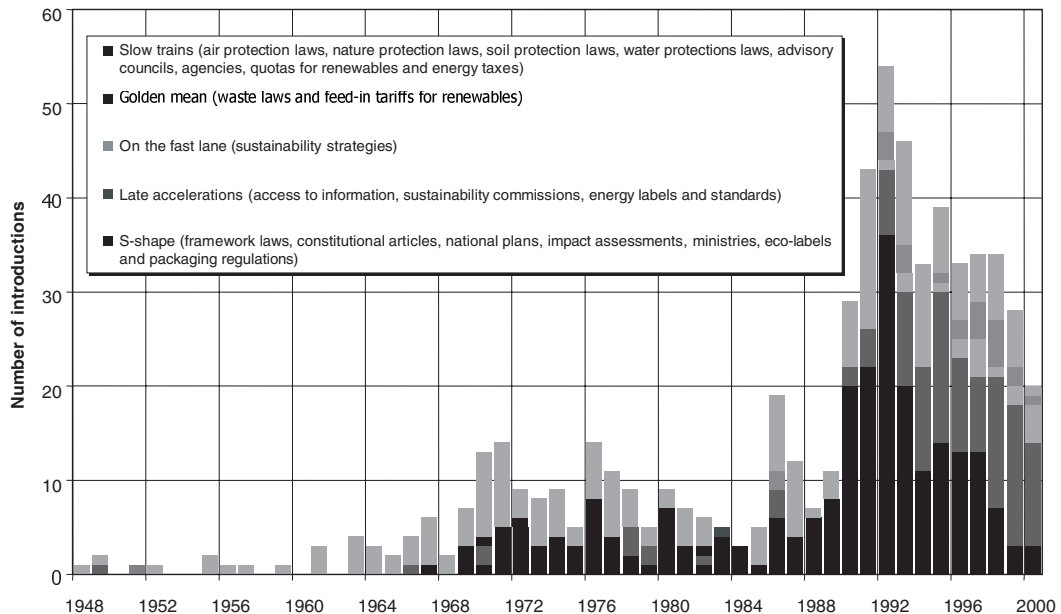


Figure 7. The distribution of peaks according to types of proliferation pattern during the international spread of environmental policy innovations across industrialized and CEE countries

the 1990s are largely nourished by the international spread of instruments for policy integration, general laws, labels and energy efficiency standards, packaging regulations and part of the environmental institutions. On the other hand, economic instruments and the majority of specific laws and regulations (five out of six) as well as the remaining two environmental institutions contributed only insignificantly to these peaks (see Figure 7).

The Global Spread of Environmental Policy Innovations

While the previous section focused on industrialized and Central and Eastern European countries, we will now look at worldwide patterns of adoption of eight selected environmental policy innovations. On a global scale, national environmental strategies, framework laws, environmental impact assessments and environmental ministries achieved a relatively high degree of convergence by the year 2000 (more than half or two-thirds of all countries).⁷ By contrast, eco-labels as well as energy efficiency labels and standards were adopted by less than one-third of all countries worldwide. Sustainable development commissions were adopted by slightly less than half the countries worldwide.

A similar picture emerges if one looks at the speed of proliferation. While in the case of eco-labels and energy efficiency labels and standards the rates of adoption are relatively low, national environmental strategies and sustainability commissions spread rather quickly. Environmental ministries, impact assessments and framework laws are adopted at a moderate to slow pace (Figure 8).

Taking a closer look at the proliferation of individual policy innovations over time, we find they spread unevenly, with low adoption rates being followed by sudden upsurges of adoption. While one half of the

⁷The category national environmental strategies aggregates national environmental plans and sustainability strategies whose spread across industrialized and CEE countries was analysed separately but that nevertheless largely resemble each other. For those countries that adopted both instruments (almost exclusively industrialized countries) only the first introduction of either a national environmental plan or sustainability strategy is taken into account (see Jörgens, 2004, for arguments supporting this procedure).

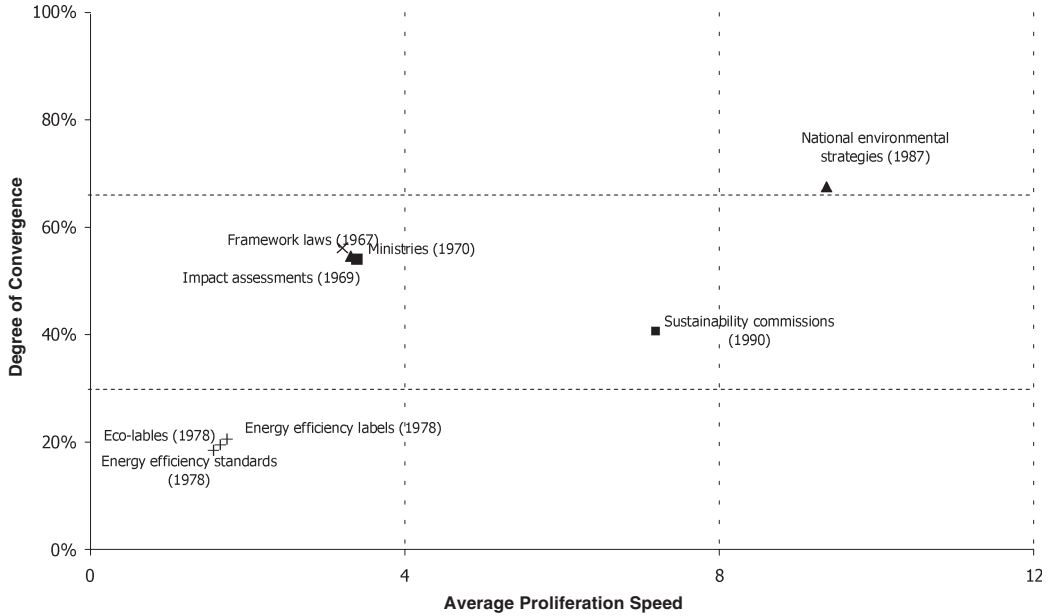


Figure 8. The global spread of environmental policy innovations: degree of convergence and average speed in 2000

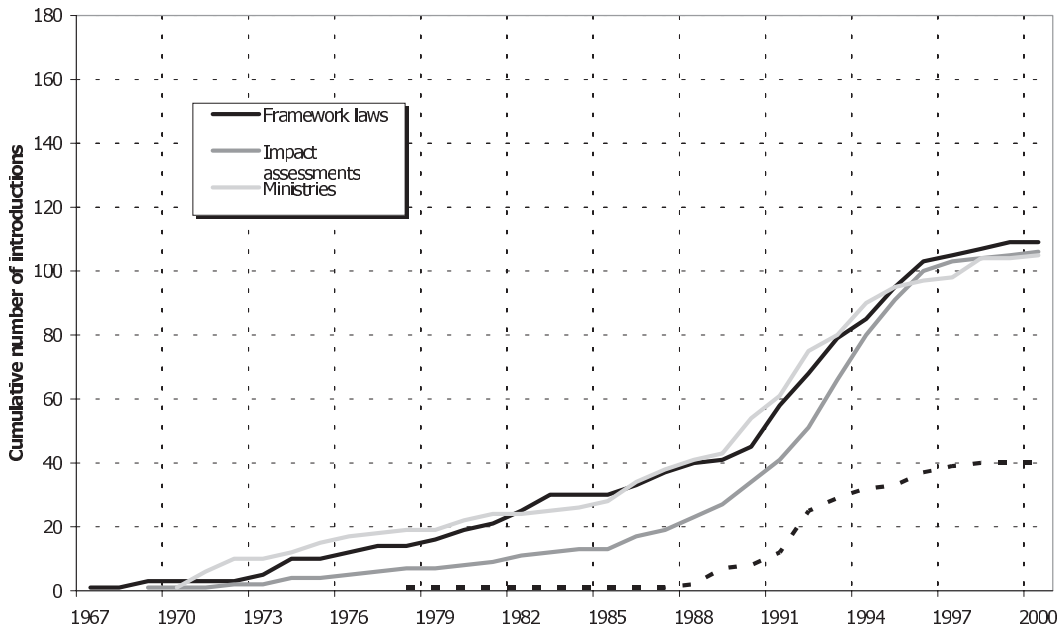


Figure 9. S-shape: global spread of framework laws, EIA, environmental ministries and eco-labels (1967–2000)

environmental policy innovations largely resembles the s-shaped pattern (Figure 9), the other half can be considered examples of the ‘late acceleration type’ (Figure 10).

Similarly to the spread of environmental policy innovations across industrialized and CEE countries, the most significant accelerations took place in the course of the 1990s, and taken together add up to a remarkable peak in the worldwide frequency of adoptions (Figure 11).

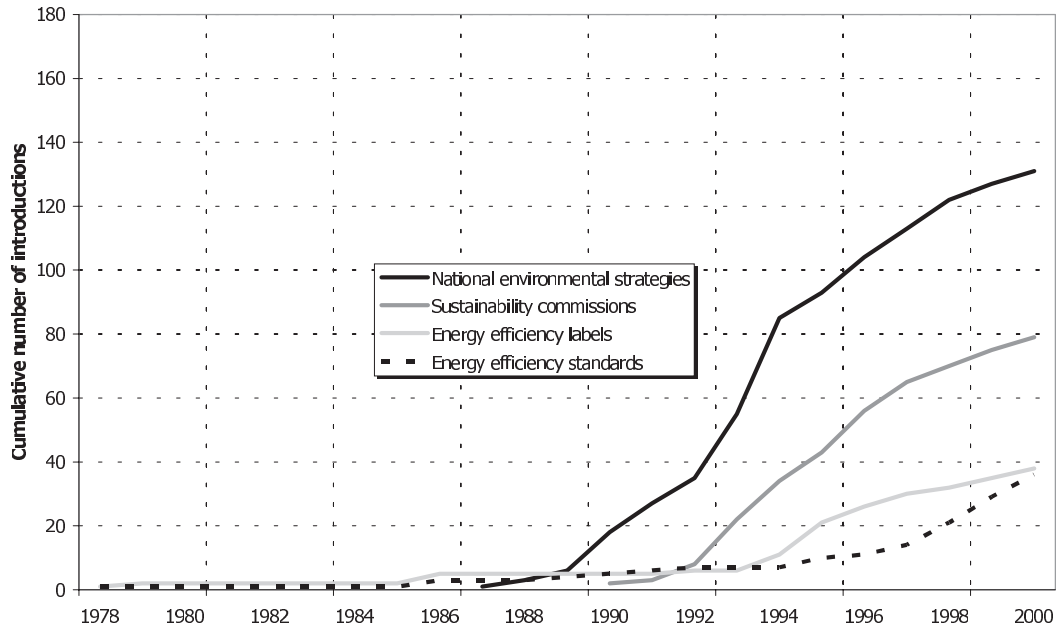


Figure 10. Late acceleration: global spread of national environmental strategies, sustainability commissions, energy efficiency standards and labels

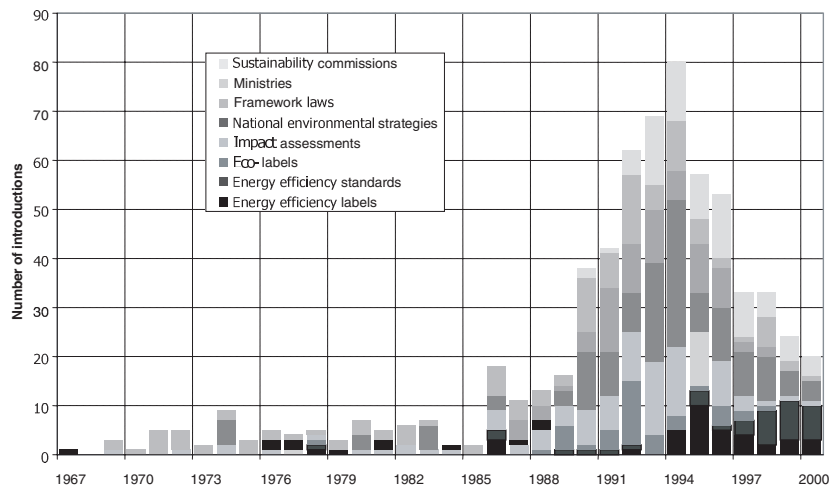


Figure 11. The distribution of peaks during the global spread of environmental policy innovations

Interpreting Patterns: International Driving Forces for Environmental Policy Change and Convergence

Harmonization, Imposition and Diffusion: Distinction and Relevance

Hitherto, three distinct international mechanisms causing national policy change and cross-national policy convergence have been identified by scholars in comparative political science and international relations. The first mechanism, which we call *harmonization*, involves the conscious modification of

domestic policies by countries committed to international agreements or supra-national regulations that they have had a hand in drafting and upon which they deliberately agreed in preceding multilateral negotiations (for international agreements see e.g. Krasner, 1983; Levy *et al.*, 1995; Hasenclever *et al.*, 1997; for supranational European Union law see e.g. Kohler-Koch and Eising, 1999; Scharpf, 1999). The second mechanism, *imposition*, refers to processes where external actors force or coerce other nations to adopt policy innovations (Keohane and Levy, 1996; Grabbe, 2002). A third mechanism, which is analytically distinct from the previous ones, is *diffusion*. Diffusion can be defined as the process by which policy innovations are communicated throughout the international system and voluntarily adopted by an increasing number of countries over time (Rogers, 2003, p. 5). Diffusion, thus, refers to an international spread of policy innovations driven by information flows rather than hierarchy or collective decision-making within international institutions. At the micro-level it is triggered by processes of social learning, copying or mimetic emulation (Jörgens, 2004; Dolowitz and Marsh, 2000). The essential feature of policy diffusion is that it occurs in the absence of formal or contractual obligation (see also Busch *et al.*, 2005).

The distinction of the three mechanisms rests mainly on their basic mode of operation and the autonomy or leeway of decision for national decision makers to adopt, refuse or accept the implementation of a certain policy innovation (for a more detailed distinction of these mechanisms and additional distinctive features see Jörgens, 2004; Busch and Jörgens, 2004; for similar distinctions see Bennett, 1991; Howlett, 2000; Dolowitz and Marsh, 2000; DiMaggio and Powell, 1991; see also the articles by Tews, Liefferink and Jordan, Knill and Lenschow in this issue).

Harmonization and Imposition

Harmonization is characterized by highly centralized and joint decision-making processes where national decision-makers convene at the international level to negotiate an international agreement. Implementation is often administered and monitored by an international body. National autonomy to deviate from the agreed policies is considerably constrained. While national decision-makers participate voluntarily in multi-lateral decision-making and, in principle, can actively influence the outcomes, once an agreement has been agreed upon, they are more or less strongly obliged to comply and to implement the agreement domestically (see Busch and Jörgens, 2004; Jörgens, 2004). In six of our cases, the spread of environmental policy innovations across industrialized and CEE countries was partially driven by processes of supranational harmonization through EC ordinances or directives. These are eco-labels, energy efficiency labels, legal provisions on the access to environmental information, environmental impact assessments, energy efficiency standards and packaging regulations.⁸ These ordinances or directives had to be implemented by all European Union (EU) member states and as far as they affected the Single European Market (SEM) also by those countries that are associated with the EU in the European Economic Area (EEA). In addition, in the case of provisions for free access to environmental information the majority of European nations agreed upon the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (the so called Aarhus Convention), which obliges all signatory states to adopt legal provisions regulating this matter. On a global scale, only the spread of national environmental strategies involved elements of harmonization. At the so-called 'Earth Summit + 5' in 1997, the UN General Assembly adopted a resolution that all UN

⁸The directives or ordinances are Ordinance 880/92/EC on a Community eco-label award scheme; Commission Directive 94/2/EC with regard to energy labelling of household electric refrigerators, freezers and their combinations; Council Directive 90/313/EEC on the freedom of access to information on the environment; Council Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment; Commission Directive 96/57/EC on energy efficiency requirements of household electric refrigerators, freezers and combinations thereof and Council Directive 94/62/EC on packaging and packaging waste.

members should complete a national environmental strategy by 2002 (United Nations, 1997). Although UN declarations and resolutions do not constitute binding international law in a strict sense, by setting a specified time frame and establishing supervisory mechanisms the resolution contained two important elements that characterize international 'hard law' and that augmented significantly the perceived pressure on national governments to comply with the resolution. It can be argued therefore that since 1997 'soft-law' harmonization has become an important mechanism influencing the global spread of national environmental strategies (see Jörgens, 2004; for a distinction of hard and soft law see Abbott and Snidal, 2000).

Imposition, on the other hand, is based on unilateral or multilateral conditionality. Imposing actors exploit asymmetries in political and/or economic power. Compared with harmonization and diffusion, imposition most severely constrains the autonomy of national policy-makers to decide on the adoption of a certain policy innovation. The imposing actors more or less exclusively determine the design of the policy innovation and the time schedule for its adoption. This mechanism, thus, leaves little or no leeway for national policy-makers confronted with imposition to refuse or accept the innovation's domestic implementation and eliminates almost any voluntary element in national decisions to adopt a policy innovation (see Busch and Jörgens, 2004; Jörgens, 2004).

Imposition partially drove the spread of eco-labels, energy efficiency labels, legal provisions on the access to environmental information, environmental impact assessments, energy efficiency standards and packaging regulations across CEE countries – that is all environmental policy innovations that were previously harmonized by means of EC ordinances or directives. The political, legal and economic conditions for accession of CEE countries to the EU obliged all candidate countries to transpose the entire secondary EU legislation into national law prior to their accession. This all-dominant condition left accession candidate countries no other choice than either to adopt the *acquis communautaire* or put at risk their accession and its expected economic as well as political benefits: access to the SEM and full-fledged participation in decision-making processes of the EU. At the same time, candidate countries, in contrast to EU and EEA member states, had not had a hand in drafting these policies because they were excluded from EU decision-making processes prior to their accession. Thus, the transposition of European directives into national law in CEE accession candidate countries featured two distinctive characteristics of imposition – exclusion from decision-making and a severely constrained leeway for national policy-makers in deciding on whether to adopt the policy or not.

On a global scale, imposition was influential during the spread of national environmental strategies and environmental impact assessments (Jörgens, 2004; Busch and Jörgens, in press; Connolly and Gutner, unpublished manuscript; Heidbrink and Paulus, 2000). In both cases, the World Bank and other international donors adopted mandatory guidelines that obliged borrowers to formulate a national environmental action plan (NEAP) (since 1992) and introduce environmental impact assessments (since 1991) prior to the issuing of a loan (World Bank, 1991, 1992).

Diffusion: Direct and Institutionalized Policy Transfer

While harmonization and imposition were evidently involved in the international and global spread of environmental policy innovations, the analysis of individual proliferation courses has revealed that policy innovations even spread in the absence of these mechanisms. This spread cannot be attributed to independent national reactions to parallel problem pressures although the latter undoubtedly still plays an important role for the adoption of policies. Rather, these observations point to diffusion, which complements harmonization and imposition as an international political driving force for national policy changes and cross-national policy convergence (Busch and Jörgens, in press; Jörgens, 2004; see for similar observations Jänicke and Weidner, 1997; Weidner and Jänicke, 2002; see also Tews in this issue).

The essential feature of diffusion as a distinctive mechanism is its voluntary character. It occurs in the absence of formal or contractual obligations and rests on international communication processes. Compared with harmonization and imposition, diffusion processes leave it at the discretion of national decision-makers to accept or refuse the policy choices of another country. Decision-making procedures are decentralized and remain at the national level. National decisions to implement a policy innovation similar to ones already implemented elsewhere are often only loosely coupled – policies of one country can be influential in shaping the policies of another without the country of origin even noticing it (Busch and Jörgens, 2004; Jörgens, 2004).

Two basic types of diffusion can be distinguished. On the one hand, direct policy transfer or horizontal diffusion describes processes where nations learn from or imitate policies implemented elsewhere through bilateral communication and direct interaction or exchange of experiences (Tews, 2002a, this issue; Kern, 2000). Indications for this type of diffusion could be found during the spread of 13 environmental policy innovations: environmental agencies, environmental framework laws, laws on access to environmental information, impact assessments, national environmental plans (NEPs), sustainability strategies, air protection laws, eco-labels, energy efficiency labels and standards as well as energy carbon taxes, feed-in tariffs and quotas for renewables (for more detail see Busch and Jörgens, in press). In some of the cases (feed-in tariffs and quotas for renewables as well as energy efficiency standards), national governments prepared individual transfers by commissioning studies that systematically compared experiences, successes and failures in the implementation of such instruments abroad (Busch, 2003).

Apart from individual cases of policy transfer, during the proliferation of seven environmental policy innovations role models evolved that were emulated or served as basic blueprints across several countries. The US environmental framework law (the National Environmental Protection Act) and the American regulations on environmental impact assessment as well as the US energy efficiency standard were widely acknowledged as policy models and were emulated across a number of mainly industrialized countries (Busch, 2003; CEQ, 1997; Hoberg, 1991). The Dutch National Environmental Policy Plan (NEPP) similarly received much attention outside the Netherlands and rapidly turned into a widely recognized model for the national implementation of sustainable development, which was copied by several industrialized countries (Jörgens, 2004; Liefferink, 1999). The German laws on feed-in tariffs for renewables as well as the German eco-label 'Blauer Engel' evolved into widely recognized and imitated exemplary regulations, which served as blueprints for the implementation of feed-in-tariffs and eco-labels in many European countries and beyond (Busch, 2003; Kern *et al.*, 2001; Landmann, 1998). The Thai energy efficiency label quickly gained acceptance as a role model across the Asian-Pacific region (Della Cava *et al.*, 2000). The energy/carbon taxes in Scandinavian countries largely resemble each other and the adoptions took place almost simultaneously (Tews, 2002b). In three cases another sub-type of direct transfer could be observed. The Dutch NEPP 'diffused' vertically from the national to the European level when the European Commission directly modelled its Fifth Environmental Action Program on the Dutch example (Jörgens, 2004). The Danish energy efficiency label and the Dutch energy efficiency standard similarly 'diffused' from the national to the international level and influenced the content of the European directives harmonizing national labels and standards (Duffy, 1996; Bertoldi, 1999; Harrington and Damnics, 2001). Similar processes took place in the case of packaging regulations, where different national models competed for the transfer to the European level, and for eco-labels, where the EU directive largely drew on the German model (for more details see Busch and Jörgens, in press).

On the other hand, internationally institutionalized policy diffusion (Tews, 2002a; Kern, 2000) comprises political processes at the global or international level and the actions of international organizations or of specific international expert and policy networks. These international actors contribute to a

more or less centralized international communication of environmental policy innovations. In doing so, they can directly or indirectly affect national decisions to introduce a certain policy innovation or increase the likelihood that national decision-makers emulate the policies of other countries. In the cases of environmental ministries and agencies, sustainability commissions, framework laws, laws on access to information, environmental impact assessment, national environmental strategies, eco-labels, energy efficiency labels and standards, quotas and energy/carbon taxes as well as air, nature and water protection and waste laws, international processes and actors actively promoted or openly favoured these policy innovations. Indicators for an international institutionalization of the policy transfer are the formulation of non-binding policy recommendations, the inclusion of particular problems on international agendas, the promotion of particular models through international actors and the creation of specific 'innovation related' expert networks.

In order to facilitate an innovation's international spread, non-binding policy recommendations were formulated and adopted that explicitly called for implementing the innovation at hand. These recommendations or 'aspirational institutions' (Botcheva and Martin, 2001, p. 12), which lack any sanctioning mechanisms or deadlines, unfold effects on national environmental policies by enabling interested actors (domestic interest groups, nations and international organizations) to exert normative pressure on national governments to comply with the non-binding targets and actions formulated in the relevant documents (Botcheva and Martin, 2001). For example, the Stockholm Declaration, which was adopted at the United Nations (UN) Conference on the Human Environment in 1972 in Stockholm, explicitly urged nations to create 'appropriate national institutions', such as ministries or agencies, in order to administratively and politically cope with environmental challenges. This call was reinforced in 1992 at the UN Conference on Environment and Development in Rio de Janeiro. Moreover, the organization of both conferences set an incentive to institutionalize environmental protection at the national level in order to back and represent national interests at these conferences (see on the impact of these conferences Haas, 2002; Tolba *et al.*, 1995). Agenda 21, which was adopted at the Rio Conference, called on nations to grant their citizens 'appropriate access to information that is concerning the environment' (Principle 10) and emphatically recommended national governments to develop and formulate national environmental strategies (Agenda 21, Chapter 8). Furthermore, it included the request that governments should set up institutions in order to facilitate the formulation and implementation of policies for sustainable development, such as sustainability commissions. The Stockholm Action Plan, which was adopted prior to the Stockholm Conference, strongly encouraged national governments to adopt water protection policies. In a similar vein, the Organisation for Economic Co-operation and Development (OECD) attempted to promote water protection policies by adopting a non-binding Council Recommendation (C(78)4(final)). Likewise, the implementation of EIA was placed on the agenda of national governments by two prominent recommendations of the OECD (C(74)216 and C(79)116) and the by United Nations Environment Programme (UNEP), which formulated principal guidelines and goals for EIA. In 1992, the Rio Declaration repeated these recommendations (Principle 17). Measures to prevent air pollution were also prominently placed on the political agenda of both UN conferences in Stockholm and Rio de Janeiro and increasingly became subject to international political processes (Busch and Jørgens, in press).

Some international organizations offered direct policy advice or even financial support for the implementation of policy innovations that they communicated or promoted. For example, international donor organizations such as the World Bank or its affiliate the International Development Association (IDA) and international organizations such as the OECD and the UNEP supported in particular developing countries during the creation of environmental administrations, including ministries and agencies (World Bank, 1991; IDA, 2001; OECD, 1994, 1995a), and environmental framework laws (IDA, 2001).

Finally, specific expert networks were created, which exclusively aimed to improve and intensify the international communication and promotion of particular innovations or models: the International Network of Green Planners, which promoted the formulation of national environmental strategies, the Global Eco-Labeling Network, which encouraged the implementation of eco-labels, the International Association for Impact Assessment, which furthered the adoption of EIA, the Renewable Energy Certificate System, which advanced the promotion of renewables through quotas, and the Collaborative Labelling and Appliance Standards Program, which supported the adoption of energy efficiency labels and standards (see for more details Busch and Jörgens, in press). The UN offered and promoted a blueprint for sustainability commissions by creating the UN Commission on Sustainable Development. The OECD in the 1970s and 1980s created various working groups for environmental problems, namely on air, water and waste, which generally increased the likelihood that certain policy innovations were being communicated and discussed at least among industrialized countries and placed on their national agendas (Long, 2000). Likewise, the OECD was actively engaged in the promotion and communication of advantages and the design of energy/carbon taxes, as selected publications illustrate (OECD, 1995b, 1999, 2001; in more detail Tews, 2002b).

Impact: Linking Mechanisms and Proliferation Patterns, Catalysts and Constraints

The most interesting cases are those proliferation processes of environmental policy innovations with distinctive features, i.e. uneven or fast proliferation patterns and those that led to a high level of convergence. How can the accelerations or a generally fast spread and a high level of convergence be linked to harmonization, imposition and diffusion? Do these mechanisms offer satisfactory explanations for the proliferation patterns or do they have to be complemented by additional considerations?

First of all, unsurprisingly and intuitively to be expected, many of the uneven proliferation patterns with significant accelerations involved harmonization and imposition (eco-labels, energy efficiency labels, legal provisions on the access to environmental information, EIA, energy efficiency standards, packaging regulations and national environmental strategies). In these cases, the vast majority of introductions contributing to the acceleration could be attributed to harmonization and imposition. Only in the case of the global spread of national environmental strategies does harmonization appear to have had no significant accelerating effect. This absence, however, does not surprise us if it is taken into account that by the year 1997 when the UN General Assembly agreed upon a deadline for the adoption of national environmental strategies 113 countries had already formulated a national environmental strategy and thus a considerable degree of saturation had already been achieved (Jörgens, 2004).

Turning to convergence, all environmental policy innovations which involved harmonization and imposition reached a comparatively high level of convergence across industrialized and CEE countries, with the exception of energy efficiency standards.⁹ On a global scale, only national environmental strategies and environmental impact assessments achieved a high level of convergence, whereas energy efficiency standards and labels remained on a low degree of convergence (see Figures 1 and 8). The absence of full convergence is on the one hand mainly due to the fact that harmonization and imposition in all

⁹This observation seems to contradict the findings by Knill and Lenschow (in this issue), who suggest that efforts to harmonize national policies do not necessarily lead to convergence and indeed may provoke resistance on the part of national bureaucracies. This apparent contradiction may be resolved if one takes into account that the article by Knill and Lenschow focuses on convergence at the institutional level. At the institutional level, our study similarly finds that harmonization plays no significant role. The areas where our study finds harmonization to matter are laws, programmes and specific instruments such as environmental labels, provisions on the access to information, environmental impact assessments or national environmental strategies.

cases except for national environmental strategies was limited to a certain number of countries (EU member states and CEE countries that applied at that time for accession to the EU as well as developing countries). On the other hand, in the case of national environmental strategies, even if introductions until 2002, the official deadline for adoption, are taken into consideration, not all countries complied with this target (by then 139 of 194 countries had formulated a national environmental strategy). This observation suggests that soft harmonization alone without strong sanctioning mechanisms is not capable of ensuring full compliance (see also the findings of Knill and Lenschow in this issue). Furthermore, several countries justified their non-compliance with the lack of national capacities, e.g. financial resources, to initiate and carry out the necessary formulation and implementation process (Jörgens, 2004).

However, neither harmonization nor imposition can account for all proliferation patterns with significant accelerations or high convergence. Instead, proliferation patterns of environmental ministries, framework laws and sustainability commissions across industrialized and CEE countries as well as worldwide feature significant accelerations where neither harmonization nor imposition were involved. Likewise, the global spread of national environmental strategies or the spread of NEP and sustainability strategies across industrialized and CEE countries accelerated before harmonization and imposition became effective. These accelerations coincide with international events and processes that indicate an international institutionalization of policy diffusion.

Against the background of this recurring pattern, it is highly unlikely that these accelerations are caused by an accidental culmination of independent and autonomous national decisions to parallel problem pressure. Moreover, the individual analyses revealed many examples where the institutionalised diffusion directly affected national decisions (in more detail Busch and Jörgens, in press). Therefore, this coincidence strongly suggests that the accelerations are closely connected to the international institutionalization of the policy diffusion.

A similar accelerating effect of *horizontal* diffusion could not be observed. Horizontal diffusion was relevant during many processes that also involved harmonization, imposition or the international institutionalization of the policy transfer (see above). Often horizontal diffusion took place prior to the accelerations, that is, before the other mechanisms became effective, but it did not have any visible impacts on the proliferation pattern. These observations suggest that although horizontal diffusion affects national decisions to adopt certain policy innovations it does not necessarily have a visible accelerating effect on proliferation patterns. In sum and confirming the corresponding assumption in the literature on policy diffusion (Kern, 2000; Tews, 2002a and in this issue), it can be concluded that an international institutionalization of diffusion processes may accelerate the international or global spread of environmental policy innovations.

Turning to convergence and regarding the spread across industrialized and CEE countries of the innovations whose proliferation was evidently influenced and accelerated by an institutionalised diffusion, all achieved a comparatively high level of convergence, except for sustainability strategies, whose number of introductions was particularly low in CEE countries. CEE countries justified the non-adoption of sustainability strategies simply with the lack of resources after they had accomplished a National Environmental Action Plan, which had been imposed on them by international donors such as the World Bank (Jörgens, 2004; Connolly and Gutner, unpublished manuscript). Overall, these findings nevertheless suggest that institutionalised diffusion under certain circumstances may increase the degree of convergence.

There still remains one exceptional case, the international spread of constitutional articles on environmental protection, which features an uneven proliferation pattern, but during which strikingly none of the three mechanisms was relevant. This proliferation pattern can only be understood through a combination of the innovation's characteristics, situational events and international normative developments. Due to the high political-institutional and procedural barriers to amending constitutions, a fast

proliferation of constitutional articles on environmental protection is highly unlikely. The pattern until the 1990s confirms this assumption. However, at the beginning of the 1990s the spread of this policy innovation suddenly accelerated. At that point in time many of the CEE countries had (re)gained independence after the collapse of communist regimes and adopted new or amended old constitutions. Only against the background that environmental protection had been established as an international norm of modern statehood and good governance can it be understood that except for one CEE country all seized this opportunity to incorporate environmental protection in their constitutions (see Meyer *et al.*, 1997, on the emergence of a world environment regime; see in more detail Busch and Jörgens, in press).

Altogether, the aggregated effects of institutionalized diffusion, harmonization and imposition on the spread of environmental policy innovations – complemented by the case of constitutional articles on environmental protection – add up to and largely account for the remarkable peak in the frequency of adoptions which was observed in the 1990s, on the international and global level.

However, the conclusion that an international institutionalization of diffusion accelerates the international or global spread and increases the degree of convergence is not applicable to all environmental policy innovations. Although the spread of environmental agencies, energy/carbon taxes, air, nature and water protection as well as waste laws involved an institutionalization of the policy transfer, all these innovations feature comparatively even proliferation patterns. None of them spread fast and energy/carbon taxes as well as environmental agencies reached only a low or moderate degree of convergence.¹⁰ Given this observation, the conclusions on the accelerating impact of an international institutionalization of diffusion processes on the spread of environmental policy innovations have to be qualified and refined and the constraints that impeded an acceleration in these cases have to be identified.

The literature on policy diffusion has pinpointed two principal and closely interrelated groups of variables that may constrain the accelerating effects of institutionalized diffusion (see for a comprehensive overview Tews, 2002a, this issue; see also Bennett, 1997; Jörgens, 2004):

- the characteristics of the policy innovation, including the problem that they address, their potential to induce political conflicts with powerful actors and the necessary economic and/or scientific resources for their implementation as well as their compatibility with regulatory and administrative structures in the adopting country, and
- the characteristics of potential adopters, including the socio-economic and political–institutional context and administrative and regulatory structures and traditions as well as situational events.

In the four cases of specific laws the constraining effects of these groups of variables are confirmed since a combination of both groups of variables largely prevented an accelerating effect of the international institutionalization of diffusion on their proliferation. The protection of air, water and nature as well as the treatment of wastes had been subject to sub-national regulations across the majority of countries long before first national laws were adopted. These regulatory traditions or path dependencies, which in some cases go back to the late 19th century and exclusively emerged due to domestic problem pressures, prevented an immediate effect of the international institutionalization of diffusion. On the one hand, the national standardization of already existing sub-national regulations usually involves lengthy negotiation and coordination processes among the various administrative levels and authorities (on the impact of path dependencies see e.g. Knill, 1998; March and Olsen, 1998). The analysis of the spread of framework laws across industrialized and CEE countries revealed similar findings. Those coun-

¹⁰This remark does not imply that the international institutionalization of the policy transfer did not have any impact at all on national decisions. Only its accelerating effect was not as significant as in the other cases.

tries that had already adopted several issue-specific laws were less likely to adopt a framework law than those countries that had not adopted any specific laws before. On the other hand, the regulatory traditions prevented the emergence of a model law that would have been applicable and easily transferable to a large number of countries. The availability of models, however, is generally perceived to accelerate the diffusion of innovations (see e.g. Strang and Soule, 1998). Such models existed for example in the case of national environmental strategies, sustainability commission and framework laws, whose spread was accelerated by the institutionalised diffusion. Given the absence of such models during the spread of air, water and nature protection as well as waste laws, the high degree of convergence cannot be related to diffusion. In all cases, the high convergence is mainly attributable to domestic problem pressures. In addition, in the cases of air and water protection as well as waste laws, the visibility and easily detectable impact of the problems that they address as well as the availability of technological solutions facilitated the adoption of related laws across a large number of countries (see Jänicke and Weidner, 1997, on the relevance of these dimensions for the adoption of environmental measures).¹¹

The decisive constraints that impeded an accelerating impact of the international institutionalization of diffusion on the spread of energy/carbon taxes were the innovation's characteristics. Energy/carbon taxes are instruments that mainly affect powerful national actors, namely the energy and transport sector as well as energy intensive and exporting industries. As redistributive policy instruments energy/carbon taxes in many nations triggered political opposition from these very actors and initiated intense political conflicts (on the general implications of redistributive instruments see Lowi, 1964, 1974). More often than not, the political opposition succeeded and convinced national decision-makers to refrain from introducing energy/carbon taxes despite the fact that in addition to institutionalized diffusion prominent international and global efforts to develop effective climate protection policies should have increased the propensity to adopt this measure (Tews, 2002b).

The case of environmental agencies reveals a constraint distinct from those that have been mentioned so far. A comparison of the international spread of environmental agencies and ministries suggests that the presence of ministries as competing models hindered the agencies' international spread. Until the 1990s environmental ministries and agencies feature more or less similar proliferation patterns across industrialized and CEE countries, although each year the cumulative number of environmental ministries slightly exceeded the number of environmental agencies. Countries either introduced a ministry or an agency in order to anchor environmental protection institutionally in their political system. However, at the beginning of the 1990s the spread of environmental ministries accelerated, while the proliferation of environmental agencies continued to spread evenly. This observation suggests that at the latest since the beginning of the 1990s environmental ministries were perceived as the model for the national institutionalization of environmental protection and superseded environmental agencies. For example, the majority of those CEE countries that (re)gained independence in the course of the transformation process in CEE opted for the creation of ministries and largely refrained from creating agencies.

To sum up and bringing together the findings, the discussion on the effects of an internationally institutionalized policy transfer has shown that its effects are constrained by the particular characteristics of policy innovations in combination with the characteristics of potential adopters as well as the lack of

¹¹ A slightly different case in point is the very slow and even proliferation of soil protection laws. Soil degradation is amongst other things characterized by a low visibility of the problem and a lack of easily available and standardized technological solutions. Moreover, neither did a model law to address soil degradation exist nor did any international process or actor contribute to an increase in the awareness of the environmental challenge, not to mention an international institutionalization of the policy transfer, harmonization or imposition. That soil protection laws proliferated at all is mainly attributable to domestic problem pressure (see in more detail Busch and Jörgens, in press, 2004; Kern *et al.*, 2001).

widely applicable models. These findings are supported by those cases where the international institutionalization of the policy transfer accelerated the proliferation. In these cases those factors that in the other cases prevented such an impact were more or less lacking. In contrast to those innovations where institutionalised diffusion did not have an accelerating impact, models for framework laws, national environmental strategies and sustainability commissions evolved and were promoted by international actors (see above). Ministries, national environmental strategies and sustainability commissions are largely additive environmental policy innovations, which are easily compatible with existing institutional frameworks and regulatory traditions. While the latter is not generally applicable for all countries in the case of framework laws, at least in those countries where media related regulatory traditions are missing they could easily be added to the regulatory structures as, for example, their comparatively fast spread across CEE and developing countries points to (in more detail Busch and Jörgens, in press).

Conclusions

First of all, the article has shown that environmental institutions, policies, laws and instruments actually spread internationally and globally. Their spread has contributed to a remarkable degree of environmental policy convergence across a significant number of environmental policy innovations. Although proliferation patterns could be identified, they revealed a rather broad variation with regard to the degree of convergence, the average speed and their courses over time.

Second, the article has demonstrated that, besides harmonization and imposition, diffusion constitutes an important and distinct third source of national environmental policy change and cross-national policy convergence. The empirical relevance of two types of diffusion, horizontal and internationally institutionalized, suggests that when national policy-makers decide to adopt a certain policy innovation they often draw on foreign experiences and policy models that have been communicated in the international system by international political processes, international organizations or on a bilateral basis. Harmonization, imposition and diffusion are not mutually exclusive. Rather, all three mechanisms may simultaneously or subsequently affect the international spread of one and the same policy innovation.

Third and finally, the different proliferation patterns can be linked to the effects of harmonization, imposition and diffusion. While harmonization and imposition generally accelerated the spread of environmental policy innovations and increased the degree of convergence, only an internationally institutionalized diffusion showed similar effects. However, the analysis also revealed that the proliferation patterns could not in all cases be satisfactorily explained by the effects of harmonization, imposition and diffusion. Rather, it suggested that additional factors have to be taken into account when attempting to understand and interpret proliferation patterns. Largely in accordance with the literature on policy diffusion, national capacities, regulatory traditions and path dependencies, the innovation's characteristics and the problem structure as well as the lack of models or competition among several policy models could be identified as important constraints on the international or global spread of environmental policy innovations. In turn, a combination of the innovation's characteristics, situational events and international normative developments can also have accelerating effects on the spread of environmental policy innovations in addition to harmonization, imposition and institutionalised diffusion.

Overall, the empirical findings underline once more that in order to understand national policy changes and cross-national policy convergence international sources have to be taken into account. However, instead of picking out one particular cause or mechanism in the international system, the

article demonstrated that it is conceptually necessary and analytically useful to expand the scope and to integrate several conceivable mechanisms into a more holistic perspective on international sources of national policy changes and cross-national policy convergence.

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