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EMS-based Environmental Regimes as Club Goods: Examining Variations in Firm-level Adoption of ISO 14001 and EMAS in U.K., U.S. and Germany

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Abstract. This paper examines variations in firm-level adoption of environmental management systems (EMS) – ISO 14001 and the European Union's Eco-Audit and Management Scheme (EMAS) – in the United Kingdom, Germany and the United States. Drawing on insights from club theory, institutional theory, and stakeholder theory, it argues that despite the fact that these EMS are created by supranational organizations (one regional and one international), firms' perceptions of their costs and benefits are largely determined by domestic factors. In particular, these perceptions are shaped by how EMS are promoted and information about them is disseminated in each country (supply aspects) and how the constellation of stakeholders (suppliers, environmental groups, regulators, general public) support their introduction (demand aspects). The paper concludes that there are numerous ways governments and interested stakeholders can encourage companies to adopt voluntary environmental codes. The key is to find the right mix of incentives for specific national contexts.

Introduction

This paper seeks to explain variation in firm adoption patterns of ISO 14001[1] and the European Union's Environmental Management and Audit Scheme (EMAS) in the United Kingdom (U.K.), Germany, and the United States (U.S.). It conceptualizes these voluntary schemes as club goods to illustrate how excludable benefits for participation can be created. Drawing on insights from club theory, institutional theory, and the stakeholder literature, it examines how both the 'supply' and 'demand' for voluntary, supranational codes at the firm-level varies cross-nationally. It concludes that despite the fact that these are supranational standards, domestic factors are still critical in influencing firms' perceptions of the costs and benefits of adopting these voluntary codes.

ISO 14001 and EMAS are Environmental Management Systems (EMS) that encourage firms to adopt voluntarily policies dedicated to continual improvement in environmental performance. Over the course of the past two decades, a number of supranational voluntary codes have been created which encourage businesses to adopt practices intended to improve their environmental per-

formance (often combined with guidelines for worker health and safety) beyond what is required by law. In many ways, EMAS and ISO 14001 represent the most advanced of these voluntary codes. In addition to outlining detailed procedures for erecting an environmental management system, they also require the certification of this management system by a third party auditor.

The growth in popularity of supranational EMS standards can be linked to several processes taking place under what is currently labeled globalization. The advent of new forms of communication technology and greater interaction between citizens of different countries has led to the diffusion of common norms and cultural practices across borders (Rosenau, 1997; Falk, 2000). One of the most obvious examples of this phenomenon is the widespread acceptance of the 'sustainable development' norm – a broadly defined term which is interpreted in varying ways – as a framework for supranational and domestic environmental policies (WCED, 1987; World Bank, 1992; Schmidheiny, 1992). EMS standards draw on this norm by encouraging firms to develop and install environmentally sustainable management and production systems.

Perhaps even more directly, the advent of supranational EMS codes can be related to economic globalization (for a review of globalization literature see Berger and Dore, 1994; Unger and van Waarden, 1995; Boyer and Drache, 1996; Prakash and Hart, 1999a; 2000a, b). Increased flows of goods, services, and capital across borders, and the expanding reach of MNEs has created a demand for supranational regimes designed to regulate the behavior of these firms as well as policies of governments that have jurisdiction over their activities. Given that varying national regulations can become non-tariff barriers to trade, MNEs have welcomed standard setting by sympathetic supranational bodies. The World Trade Organization (WTO) has also encouraged the creation of supranational standards and has been particularly supportive of the ISO 14000 series.

The extent to which these environmental regimes will cause a convergence in firm behavior remains unclear. Convergence can take place in a number of different ways – setting objectives, establishing systems, adopting technologies, and achieving outcomes (Bennett, 1991). EMS-based policies focus on the convergence of management practices and are based on the assumption that when management systems are in place, firms will adopt the strategies that are most suitable to them to improve their environmental performance over time.

However, the evidence indicates that convergence is not occurring. As of January 2001, the varying adoption patterns by firms (in terms of number of certified sites) in the U.K., Germany, and the U.S. suggest that domestic institutional contexts greatly influence firms' responses (Tables 1 and 2). As opposed to 122 sites in the U.K., 2632 German sites are EMAS validated. U.K. companies have, however, responded enthusiastically to ISO 14001 with about 1400 sites certified. While not quite as successful as EMAS, 2400 German sites have also become ISO 14001 certified. In contrast, only 1340 American sites are ISO 14001 certified. (American firms are not eligible to participate in EMAS). When considered in relative terms, that is, the number of certificates in relation to

Table 1. EMAS: Response across countries.

Country	# of sites as of 01/2001	# of registered sites per $Billion of 1999 GNP at PPP
Total	3800	n/a
Germany	2632	1.43
Austria	340	1.77
Sweden	205	1.11
U.K.	122	0.10

Source: ISO WORLD (2001), World Bank (2000/2001: 274–275).

Table 2. ISO 14000: Response across countries.

Country	# of registered sites as of 01/2001	# of registered sites per $Billion of 1999 GNP at PPP
Total	23721	0.61
Japan	5338	1.75
Germany	2400	1.31
U.K.	1400	1.13
U.S.A.	1340	0.16

Source: ISO WORLD (2001); World Bank (2000/2001: 274–275).

each country's gross domestic product, these differences become even more pronounced.[2]

In light of such non-convergence, this paper seeks to address two questions: first, why has the uptake of ISO 14001 been so much higher in Germany and the U.K. than in the U.S.? Second, why has EMAS been so much more popular in Germany than in the U.K.? In answering these questions, the paper will argue that firms' perceptions of the costs and benefits of EMS participation are largely determined by domestic factors. In particular, these perceptions are shaped by how information about EMS is disseminated in each country (supply) and how the constellation of stakeholders (suppliers, environmental groups, regulators, general public) react to the introduction of these voluntary codes (demand). By examining the uptake of EMS cross-nationally, we address the issue of the extent to which supranational standards can be expected to cause a convergence in firm behavior. Additionally, this paper adds to our understanding of the circumstances under which voluntary 'beyond compliance' measures are likely to be adopted and those under which widespread take-up is unlikely. As such, the results could be of use to policymakers who are trying to evaluate the potential usefulness of 'beyond compliance' instruments which are often touted as the future of environmental policy.

The paper proceeds in four sections. The first section examines 'club' theory, and uses insights from institutional theory, and the stakeholder and corporate social performance perspective literatures to identify the factors that shape

the supply and demand of these voluntary codes. Section two outlines the basic features of ISO 14001 and EMAS and their historic development. Section three examines the supply and demand aspects of the two EMS standards in each country to explain the cross-national differences in their take-up. Section four discusses conclusions and issues for future research.

EMS as club goods

In 'The Tragedy of the Commons,' Garrett Hardin (1968) employed the metaphor of the medieval commons to describe what he saw as the inevitable damage that will occur to natural resources held in common. In Hardin's public meadows, herders fail to prevent their sheep from overgrazing because each receives a direct benefit from allowing all of his animals to feed there while the cost of deteriorating land is spread out among all. The answer to this dilemma reasons Hardin is to create alternative institutions to regulate their use.[3] At the heart of this allegory is the idea of collective/non-private goods (more of it below). Because individuals cannot be excluded from the benefits of some categories of collective goods, they have little motivation to provide for their production. Instead they would rather 'free-ride' on the efforts of others, leading to market failures (Olson, 1965).

Goods and services are no longer understood to be either public or private but rather are divided into four stylized categories according two attributes, excludability and rivalry/subtractability. The resulting four categories of goods are private goods (rival, excludable), public goods (non-rival, non-excludable), common-pool resources (rival, non-excludable), and impure public goods (non-rival but congestible, excludable) (Ostrom and Ostrom, 1977; Weimer and Vining, 1992).[4] A good is excludable when it is technologically feasible and economical for A to exclude B from appropriating benefits once a product has been produced. Rivalry implies that if A consumes a particular unit of a product, B cannot. Rivalry could lead to over-consumption and degradation of resources that are non-renewable, or if renewable, whose harvest rates exceed their regeneration rates. When rivalrous resources are excludable, their scarcity should lead to higher prices and lower consumption. The problem occurs when goods are non-excludable since scarcity does not result in higher prices.

Although governmental provision of collective goods (public, impure public, and common-pool) has historically been seen as necessary, research has shown that non-governmental institutional mechanisms can be used to correct certain types of market failure (Coase, 1960; Ostrom, 1990). In particular, 'impure public goods' (Tiebout, 1956; Buchanan, 1965; Cornes and Sandler, 1996) can be successfully provided by non-governmental institutions. These goods come in two different forms, toll and club (Prakash, 2000c). Toll goods such as toll roads and movie theaters are amenable to unitization. Consumers are able to reveal their preferences by paying for each additional unit and in this way

(theoretically) a continuous demand-schedule for each consumer can be worked out. By contrast, the discrete consumption of club goods cannot be priced because of the difficulties in calculating their marginal costs. Thus, their collective provision is financed by membership fees, which are based on average costs.

Voluntary EMS standards like ISO 14001 and EMAS can be thought of as examples of club goods because it is impossible to price the discrete units of goodwill benefits that they generate.[5] Their supply is not impeded by market failures because most of their benefits are potentially excludable. The membership fee that firms pay to join EMAS or ISO 14001 is the cost of erecting an EMS and hiring a third party auditor to certify this system. Firms only have an incentive to pay these membership fees if the excludable benefits (that the certification bestows upon these firms) are seen to outweigh the costs. As will be elaborated below, the outcome of such cost/benefit analyses are affected by the manner in which information about EMS standards is disseminated (supply) in each country and the manner in which firms' stakeholders react to their introduction (demand).

Supply of EMS club goods

This paper is somewhat unique in that it looks at both the supply and demand sides of environmental voluntary codes. Most studies up to this point have concentrated on demand issues and have ignored the importance that the supply of information about EMS can have on firms' decisions to participate. In the case of EMAS and ISO 14001, the rules, codes and monitoring procedures for establishing and maintaining certifiable EMS are supplied by supranational organizations, one non-governmental (ISO) and one intergovernmental (EU). High transaction costs can impede the supply of collective goods. Though perhaps not the case for EMAS, the transaction costs of developing ISO 14001 were significant. To draft the ISO 14000 series, many technical committees were established that had representatives from national standards bodies and industry associations.[6] The problem of supply, however, does not disappear with the publication of a standard. There are also transaction costs involved in disseminating the information required by firms to erect these new systems. These costs could be reduced by the existence of an organization or a network of organizations that share information and develop common procedures for implementing EMS. Erecting EMS requires extensive documentation and employee training. These costs are reduced when companies share information about how to compile data and implement the procedures necessary for EMS certification. For example, industry associations and chambers of commerce in Germany provide checklists to help firms carry out the internal audits required by both ISO 14001 and EMAS. The types of organizational structures available for this kind of information exchange vary from country to country. Additionally, the history of domestic institutions may shape the extent to which

they are able to promote EMS standards. Existing organizations may be hindered by 'path dependencies' that prevent them from carrying out the tasks necessary for the successful promotion of EMS.

Similarly, the capacities of domestic organizations to promote EMS clubs will affect the excludability of the goodwill benefits that firms gain from having such certificates. It is important that key stakeholders can distinguish between companies that have a certifiable EMS and those that do not, thereby making the goodwill benefits excludable. Stakeholders' ability to make this distinction is dependent on the visibility of the code and the credibility of the certifiers. To sum up, although supranational organizations created EMAS and ISO 14001 clubs, the supply of information necessary to ensure that these standards will be widely taken-up by firms is dependent on the capacities of domestic organizations.

Demand of EMS clubs

The demand side of EMS standards concerns who demands voluntary codes, why this demand varies from country to country, and how this impacts firms' perceptions of the benefits and costs of joining an EMS club. Institutional theory (especially, the strain developed in sociology and business schools) and stakeholder theory provide useful insights for understanding the sources of demand.

According to neoclassical economic theory, firms should demand voluntary codes if they maximize their profits (Friedman, 1970). Theoretically, there are several ways in which firms can increase profits by voluntarily adopting EMS. If enough firms adopt EMS and these firms have the ability to influence regulators, they could perhaps preempt or shape environmental regulations and raise rivals' cost of entry (Porter and van der Linde, 1996). Regulators could also offer companies with EMS regulatory relief not available to their competitors. Supranational EMS norms could also facilitate international trade by replacing country-specific standards with supranational standards.[7]

Additionally, EMS have the potential to bring companies excludable financial gains. Uncovering and minimizing resource waste during production processes could lead to significant cost savings (Hart, 1995). These savings would result from lower energy expenditures, reduced waste handling fees and lower raw material costs. Additionally, some banks or insurance companies may be willing to offer companies with certified EMS special rates (Schmidheiny, 1996). Recent research suggests, however, that this 'low-hanging fruit' has already been harvested (Walley and Whitehead, 1994) and that EMS can only marginally lower production costs. These benefits are weighed against the often significant costs of adopting EMS which can be as much as $100,000 per site (Kolk, 2000).

Because it is difficult to quantify the benefits of EMS, estimating *ex ante* their equilibrium levels of supply and demand is often not possible.[8] Consequently, managerial perceptions about their usefulness play an important role

in influencing firms' decisions to adopt or not adopt EMS (Prakash, 2000d). Non-market factors often play a crucial role in influencing managerial perceptions of the costs and benefits of EMS adoption. Research carried out in business schools have pinpointed some of the factors which influence manager attitudes. Institutional theory, for example, focuses on the impact of external institutions on firms' policies and suggests that firms are not profit maximizers but rather shape their policies to reflect external pressure for legitimacy (Meyer and Scott, 1992; Zucker, 1988).[9]

The stakeholder literature has argued along similar lines (Freeman, 1984: p. 46; Mitchell, Agle and Wood, 1997; for a review, see Clarkson, 1998). Most of this research has found that while it is possible for stakeholders to encourage firms to take socially responsible action, which is not directly related to quantifiable profits, firms may not always react to the broad-based social demands. In adopting EMS, firms may in part be responding to key stakeholders such as environmental groups, regulators, and community groups.[10] The constellation of influential stakeholders as well as the nature of the relationships between firms and these stakeholders varies across and within countries/sectors. As a result, firms' demand for EMS certification is shaped by factors such as styles of regulation and the historic development of environmental movements. After a brief description of EMAS and ISO 14001 in the next section, we will show how these factors have affected EMS adoption patterns in the U.K., the U.S. and Germany and explain why there has been such a variation in EMS adoption rates in these countries.

ISO 14001 and EMAS

EMAS and ISO 14001 are club goods whose origins can be traced back to two trends taking place in international business. The first is the establishment of several environmental programs in which business formally recognizes the goals set out in the sustainable development framework and pledges to take a proactive stance towards reducing ecological impacts of its activities. With its three pillars of social responsibility, environmental stewardship, and economic growth, some strands of the sustainable development perspective call for more cooperative relations among industry, regulators, and environmental groups.

The second trend is the growing use of non-governmental, quality management codes, especially the ISO 9000 quality series. ISO, a non-governmental international organization located in Switzerland, was originally created to write technical standards for industrial processes and products to guarantee that interchangeable parts are indeed interchangeable.[11] The ISO 9000 series was the first ISO standard which certified management practices rather than compliance with some technical norm. Due to the widespread adoption of this quality management system standard in the late 1980s, many national standards organizations began to see a need for a certifiable environmental management system. The Rio Summit also examined proposals for such initiatives. In

1992, the British Standards Institute (BSI) launched the world's first EMS, BS 7750.

The early 1990s also saw changes in the EU's basic environmental policy framework as the Commission sought to incorporate more voluntary and market-oriented instruments into its policies (CEC, 1992). Interest in a voluntary EMS scheme grew within the Commission after the widespread and successful piloting of BS 7750 in Britain. In December of 1991, the Commission submitted a proposal for the EMAS Regulation to the European Environmental Council.[12] This proposal was for a voluntary system in which industrial sites could participate by implementing an EMS and making a commitment to achieving continual improvement in environmental performance. To be certified, this system has to be audited by an outside, accredited verifier. Once registered, the company is allowed to use a participation logo – the symbol of club membership – in non-product advertisements. Additionally, registered sites are required to publish an environmental statement outlining the site's environmental impacts, listing its goals for improvement and evaluating its performance since the last audit. The individual member states are responsible for establishing the accreditation system for the independent verifiers and for appointing a body responsible for registering companies into the system (CEC, 1991).

Like EMAS, the ISO 14000 series also seeks to preempt the proliferation of national environmental laws that could serve as trade barriers (Roht-Arriaza, 1997). As was the case with EMAS, the ISO 14001 series was developed in a relatively short period of time. In 1992, a Technical Committee (TC 207) was set up to formulate environmental standards. Forty-seven countries participate in TC 207 as full voting members and another thirteen as advisors. National standards organizations such as the DIN (Deutsche Institut Normen) in Germany or the BSI (British Standards Institute) in the U.K. make up the official membership of ISO. Most of the actual writing of the standards is, however, carried out in subcommittees by appointed 'experts.' Many of these experts are representatives of industry (Hortensius and Barthel, 1997). The ISO 14000 series that emerged from this committee work consists of one mandatory compliance standard – ISO 14001, and several non-mandatory guideline standards. The mandatory standard, like EMAS, issues guidelines for the erection of an EMS whose criteria must be met in order to receive certification from an outside verifier.[13]

Cross-National differences in the supply of EMS

As stated previously, firms' responses to EMAS and ISO 14001 codes have varied in Germany, the U.K. and the U.S. (Tables 1 and 2). The paper argues that the take-up rates in each country are related to domestic factors that affect the supply and demand of the EMS standards. As will be shown, the fact that certain institutions existed in Germany and the U.K. that were able to vigor-

ously promote the take-up of EMAS in the former and ISO 14001 in the latter, which do not exist in the United States, goes a long in explaining the differences in adoption rates in the three countries. We start with Germany. Although the German system of government is comparatively decentralized, the German private sector (i.e. non-state, economic actors) is one of the most centrally organized in the world (Katzenstein, 1987; 1989; Streeck, 1992). Along with neo-corporatist, peak organizations for industry (Bundesverband der Deutschen Industrie) and labor (Deutscher Gewerkschaftbund), more decentralized institutions exist which represent business needs at the regional level and labor concerns at the plant level. The regional business associations take the form of para-public chambers of commerce, which *inter alia*, are responsible for organizing Germany's well-regarded vocational training program, granting certain licenses and helping formulate regional policy. As public law bodies, all businesses are required to belong to their regional chamber. The various business associations in Germany, which organize between 80–90% of all firms, represent an incredible co-ordinating and information exchange mechanism. These organizations help lower the transaction costs of implementing Germany's extremely complex set of laws and organizing its unique business-labor relations (Katzenstein, 1987).

Despite the existence of these institutions, it was not immediately clear that they would be used to promote either EMAS or ISO 14001. In fact, both the German government and German industry actively opposed the adoption of EMAS during the negotiations in the European Council. Because domestic German environmental law is generally more stringent than that of other member states and legal compliance is a prerequisite for firm participation, German firms felt they would have to do more to secure EMAS certification than firms in most other EU countries. Industry associations and the German negotiators within the Council argued that unless substantive measures of environmental performance were written into the text of the regulation, German industry would be unfairly disadvantaged. As support for the Regulation grew among the other member states throughout 1992, Germany felt that it could no longer play the lone holdout. Before the regulation was passed, however, German negotiators did manage to get a weakened version of a Best Available Technology (BAT) standard written into the text of the Regulation which they hoped would be used as a substantive measure for environmental performance (Smith, 1998; Waskow, 1997).

The controversy surrounding EMAS in Germany did not end with its adoption by the Council in 1993. Efforts to transpose the Regulation into national law led to a heated and prolonged debate about who should be in charge of accrediting the third party auditors and registering firms into the scheme. While environmental groups and some regulators wanted the Federal Environmental Protection Agency (Umweltbundesamt) to carry out these tasks, industry groups balked at the idea of giving a government agency so much influence over a voluntary scheme. After two years of debate, a compromise was reached in which it was agreed that the regional chambers of commerce would act as the

registration body while a new private law company would be formed to carry out the accreditation of third party auditors (Waskow, 1997). This company is owned by the various industry associations but is overseen by a pluralistic committee made up of representatives from the government, trade unions, environmental groups, and industry associations.

This series of compromises has resulted in the industry associations being intimately involved in the implementation of EMAS in Germany. As a result, they have been able to use their dense network of organizations to both promote EMAS and disseminate information about firm-level implementation. These activities have chiefly occurred through the chambers of commerce. Most of the state-level chambers have published a detailed information packet about EMAS which includes a description of the regulation, tips for implementation, sources of financial support, case studies of companies who have implemented the EMS and an extensive list of contact points for further information (IHK-Nordrhein-Westfalen, 1995; Peglau, 1997). These general publications are supplemented by a myriad of sector specific manuals issued by industry associations such as those representing chemicals, breweries, and electronics. Additionally, the chambers of commerce and the industry peak association, BDI, sponsored numerous seminars and conferences about EMAS during its first two years of existence (BDI, 1995; DIHT, 1996). This activity led to EMAS being well covered by both industry and the mainstream press. This promotion has also helped supply companies with information useful for the implementation of ISO 14001. Industry associations have also promoted ISO 14001, although this has occurred on a much smaller scale. The success of this latter EMS in Germany, however, can largely be explained by market demand and the fact that third party auditors often offer to certify EMAS-participating companies to ISO 14001 for a minimal fee.[14]

The organization of business interests in the U.K. differs greatly from that in Germany. It is marked by a high degree of fragmentation and a lack of the coordinating mechanisms found in the German system. Although chambers of commerce do exist in the U.K., their scope and range of activities are modest compared with their German counterparts (Katzenstein, 1978). It is thus not surprising that business associations in the U.K. have played only a minor role in the implementation of EMAS and ISO 14001. The supply of information for EMS standards – in particular for ISO 14001 – has come from another organization in the U.K., namely the British Standards Institute (BSI). In addition to being the oldest and largest national standards institute, BSI also takes pride in having developed and published the world's first certifiable management system, BS 5750. This standard, which was released in the early 1980s, was the model for the now globally ubiquitous quality management system series, ISO 9000. Similarly, ISO 14001 was based on a previously published BSI EMS, BS 7750. Because EMAS is a government initiative and not a private norm such as the ISO standards, BSI plays no role in promoting it. Not surprisingly, this has greatly influenced the relative popularity of the two EMS in the U.K.

The success of the original BSI management systems and their compatibility

with the British voluntaristic style of industrial regulation created path dependencies (past choices and commitments influencing future actions) in many U.K. firms which remain today. This fact is illustrated by the number of existing management systems currently held by firms in the U.K. At the end of 1998, U.K. firms had a combined total of 59,889 ISO 9000/ISO 14001 certificates compared with 24,706 and 25,058 for German and U.S. firms respectively (ISO, 1999).[15]

If the U.K. has developed a 'management system culture', this, in large part, can be attributed to the hard work of BSI. Although a non-profit with a Royal Charter, BSI aggressively markets both its technical and management standards and is continuously expanding its range of services (BSI, 2000a, b). In addition to developing new standards and operating one of the world's largest certification bodies, BSI offers a wide range of services to help disseminate information about EMS (as well as other management systems) to firms in the U.K. Like the chambers of commerce in Germany, BSI runs a number of seminars and conferences for firms who are interested in implementing BSI or ISO management systems. In addition to these seminars, they offer training courses for environmental managers and internal company auditors. BSI also does a great deal to promote its standards and companies who subscribe to them. On its website it lists prominent companies who have been certified to ISO 9000/14001 and even releases press statements after particularly well-known companies have become certified (BSI, 2000a). This promotion of management systems generates the kind of recognition necessary to create excludable benefits for participating companies.

The promotion of BSI's original EMS was given a special boost before it was even published in 1992. With support from the Department of the Environment, the standards institute carried out an extensive pilot program of BS 7750 in the U.K. This program both familiarized participating companies with EMS implementation procedures and generated a great deal of publicity for the standard. BS 7750 and the pilot program also greatly influenced the structures and contents of both EMAS and ISO 14001. In the end, however, ISO 14001 wound up being much more similar to BS 7750 than EMAS. This is largely due to the fact that the German delegation to ISO had much less influence over the ISO norm than the German negotiators in the European Council had over EMAS. As such, they were unable to get any substantive measures like a BAT requirement written into text of ISO 14001. As a result the structure and language of ISO 14001 is much more familiar to U.K. firms than the structure and language contained in EMAS.

In the U.S., the EPA has put some effort into promoting EMS standards (EPA, 1999), however; no organization like BSI in the U.K. or set of organizations like the chambers of commerce in Germany has aggressively promoted ISO 14001 in the U.S. (EMAS is only available to European firms). As in the U.K., U.S. business associations are fragmented and tend to organize themselves along industry lines (or even along sub-industry lines) instead of across industry sectors (Katzenstein, 1978). Perhaps for this reason, industry-level,

'beyond compliance' codes such as the chemical industry's Responsible Care program have been relatively successful in the U.S. (Prakash, 2000c). Because industry organizations tend not to co-ordinate efforts in the U.S., however, these organizations are not as good at promoting broader-based schemes like ISO 14001. Unlike in the U.K., no other body exists in whose interest it is to aggressively promote ISO 14001.

This relative lack of supply of information about ISO 1400 has hindered firm take-up of ISO 14001 in the U.S. in two ways. As has been pointed out several times, without promotion EMS certificates lack the recognition necessary to bring firms excludable benefits. Secondly, although many U.S. manufacturing firms have extant EMS and therefore do not need extensive information about how to implement them, most of these systems are not inspected by third party auditors. As such, U.S. firms have very little experience with these procedures. Better information about what is entailed in these processes could help build industry's trust in outside, environmental auditors. Given the fact that American firms are very leery of divulging information to outsiders for fear that it could be used against them in liability suits, this kind of information exchange could be an important confidence-building tool.

To summarize, this section described how domestic organizational structures affect the supply of information (and persuasion) available to firms for implementing ISO 14001 and EMAS. Information about firm-level and societal benefits helps to lower transaction costs in creating new systems and to raise the visibility/credibility of the EMS certificates. This kind of promotion is essential for the production of excludable benefits. In Germany, the chambers of commerce and other business associations heavily promoted EMAS and have played an important role in its success there. In Britain, by contrast, ISO 14001 has been the EMS which has received the most promotional support through the aggressive marketing of the innovative national standards body, BSI. In the U.S., barring the EPA, which has a serious credibility problem with firms because of its refusal to grant external auditors attorney-client privileges, no such organization has taken it upon itself to promote ISO 14001. This has greatly impacted adoption rates. In the next section we will show how the national variations in the supply of EMAS and ISO 14001 are reinforced by (and in some cases caused by) national variations in demand for these EMS.

Cross-national differences in EMS demand

As mentioned above, firms' demand for certifiable EMS is dependent both on the market advantages that the certificates bring and the pressure that stakeholders put on managers to strengthen firm environmental policies and improve firm environmental performance. The market pressure experienced by firms to adopt EMS is closely linked to how well these schemes are promoted (supplied) and adopted by leading firms. Large firms, therefore, have

Table 3. Trends in ISO 14001 certification (# of sites).

	U.S.A.	U.K.	Germany
Dec 1995	1	61	35
Dec 1996	34	322	166
Dec 1997	79	644	352
Dec 1998	291	921	651
Dec 1999	711	1014	1800
April 2000	750	1014	1950
Jan 2001	1340	1400	2400

Source: ISO World (1999, 2000, 2001), ISO (1999).

capacities to create 'environmental multipliers.' From a public policy perspective, a focus on such big fish could have a large payoff.

In the U.K. and Germany where many large MNEs are ISO 14001 or EMAS certified, there is significant pressure on their suppliers to adopt these systems. This pressure comes in the form of supplier questionnaires or audits. Thus, while very few companies in Germany or the U.K. insist that their suppliers have EMAS or ISO 14001, these suppliers are asked about their environmental performance and what steps have been undertaken to improve it. As the number of companies with EMAS and ISO 14001 certificates increases, so does the pressure on non-participating firms – especially supplier firms – to adopt these schemes. Because there are so few certificates in the U.S., the same kind of market pressure does not exist. This is similar to the notion of 'network externalities' (Katz and Shapiro, 1983; Farrell and Saloner, 1985). Standards or platforms that manage to create a significant user base tend to become even more popular. To launch such self-reinforcing trajectories, it is important to quickly establish a viable user base. The presence of organizations that supply such standards as well create demand for them becomes important.

Market demand significantly contributed to the success of ISO 14001 in Germany. Although not particularly well promoted and criticized by many stakeholders for being too weak, the success of ISO 14001 in the rest of Europe and Asia (where EMAS is not available) has caused many firms to adopt this standard either instead of or in addition to EMAS. Although ISO 14001 had a slow start in Germany, this market pressure has contributed to its increasing success in the last two years (Table 3). The growing popularity of ISO 14001 among German firms can also be attributed to the fact that many third party auditors offer to certify EMAS-participating firms to ISO 14001 for very little extra cost and with no changes to the management system.

In general, however, the benefits that firms gain from EMS certificates are non-quantifiable and therefore cannot always be directly related to market advantages. The decision to adopt EMAS or ISO 14001 is more often related to firms' perceptions about how an EMS will affect its relations with key stakeholders. Theoretically, there are many reasons why firms, regulators and citi-

zens groups would welcome voluntary EMS schemes. Regulators, for example, could ensure greater environmental protection at lower costs. Similarly, citizens would enjoy an increased supply of public goods without increasing their tax burden. Firms, for their part, could gain greater operational flexibility in designing and implementing environmental programs that more traditional governmental regulations often deny them.

Many citizen and activist groups, however, are wary of EMS standards and view them as 'private regimes' that are outside public scrutiny. These groups tend to put more faith in open and transparent administrative rule-making processes where public groups have the right to provide their input and to monitor decision-making processes. Many believe that voluntary codes do not provide such opportunities to citizen groups. Despite their voluntary nature, however, codes like EMS tend to work in the shadow of the law either by complementing existing regulations or by being subject to regulatory oversight. As such, a firm's willingness to participate in such codes very much depends on the nature of industry-government relations and levels of trust between the two.

We have argued elsewhere that firms in countries with adversary economies – where regulators and business are not on friendly terms – are less likely to demand EMS (Kollman and Prakash, 2001). This is because regulators in these systems are generally unwilling to offer companies the necessary incentives, such as regulatory relief, to make these voluntary schemes attractive. Environmental groups often play an important role in the creation of adversarial economies within environmental policy networks.[16] When faced with a strong environmental movement, which embraces an anti-industry ideology, governments often have little choice but to deal harshly with 'dirty' industries. Environmental groups who are suspicious of industry 'capture' (Stigler, 1971) of regulators are generally wary of consensual 'beyond compliance' policies. As a result, these groups often put a great deal of pressure on governments to continue using command and control policy instruments. Not surprisingly, trust levels between all three actors in such systems tend to be rather low. As argued below, this hypothesis can explain why the demand for EMS has been high in the U.K. and rather low in the U.S. In Germany, however, where stringent environmental laws have often been a source of contention between industry and government regulators, a more a subtle analysis is needed to explain the success of both EMAS and ISO 14001.

We begin with the U.S. The term adversary economy is often employed to describe government-business relations in the U.S. (Chandler, 1981; Marcus, 1984).[17] The origins of this adversary economy can be traced back to the early emergence of manufacturing monopolies at the end of the 19th century. Unlike in most European countries, the U.S. government stepped in to regulate big business and these sometimes aggressive practices have become a part of the culture of many federal regulatory agencies. While the Environmental Protection Agency (EPA) is considerably younger than the regulatory agencies established during the Progressive Era, it was created to regulate and curb what was

perceived to be widespread industry exploitation of the environment. During its short existence, the EPA has learned to aggressively regulate industry in order to maintain the support of its key constituencies. Because of the fragmented nature of American government and its uniquely weak bureaucracy, government agencies like the EPA have come to rely on the public's right to challenge and prod official action through litigation (O'Leary, 1993). In the environmental field this type of 'adversarial legalism' manifests itself in frequent court challenges of industry activity and strict liability laws (Kagan, 1991; Kagan and Axelrad, 1997). As a result of this style of environmental regulation, relations between environmental groups, government regulators and industry are characterized by varying levels of hostility and high levels of mistrust.[18] It is, therefore, not surprising that U.S. regulators have reacted cautiously to the introduction of ISO 14001. The EPA has offered limited regulatory relief (EPA, 1995; 1997) and also outlined an action plan for popularizing EMS policies (EPA, 1999). However, and from firms' perspective, it has declined to offer attorney-client privileges to third party auditors (Prakash, 1999b).[19] This makes the prospects of using such auditors less appealing to U.S. firms who have to contend with strict environmental liability laws. The EPA's reaction to ISO 14001 (especially in terms of not granting attorney-client privilege), coupled with American environmental groups' traditional mistrust of voluntary industry schemes, have left firms with reduced incentives to participate. Unless this situation changes or market pressure increases, it is unlikely that the demand for ISO 14001 among American firms will grow significantly.

In contrast to the U.S., the U.K. has developed a very different style of environmental regulation which is based on voluntarism and co-operation between industry and government. Unlike in the U.S. and Germany, the British government has historically been reluctant to use legally binding emissions limits to curb industrial emissions. Although national laws do stipulate non-binding, general guidelines for emissions limits, these laws have traditionally allowed regulators to excuse factories from complying with these limits when local environmental or economic conditions make meeting these limits unnecessary or unrealistic. Given the slack in these laws, it is not surprising that in the past British environmental regulators have seldom taken violators to court and have facilitated what is often referred to as a 'cozy' relationship between themselves and the industries they regulate (Vogel, 1986; Jasanoff, 1991; Heritier, Knill and Mingers, 1996).[20] This relationship between regulators and industry has been facilitated to a certain extent by the more moderate environmental movement in the U.K. which has been strongly influenced by more conservative forces such as the National Trust and other older conservationist groups (Lowe and Goyder, 1983; Boehmer-Christiansen and Skea, 1991).

As one might expect given this history, British regulators have reacted very positively to the introduction of EMAS and ISO 14001. The government has taken great pains to promote both standards by linking them to other voluntary initiatives such as its high profile environmental reporting and sustainable

business schemes (DETR, 1998; 1999). Additionally, the Department for Environment, Transport and the Regions (DETR) has been very supportive of the BSI's efforts to develop EMS standards. Just recently the DETR, along with a consortium of environmental groups, agreed to help BSI develop and promote a sustainability management system (BSI, 2000a, b). Finally, the British government offers both ISO and EMAS participating firms limited regulatory relief by using both EMS as a reducing factor in the risk assessment calculations used to determine site inspection frequencies (Cheeseborough, 1998). These positive governmental incentives have contributed to the enthusiastic response and high demand for ISO 14001 by U.K. firms. As has already been addressed, firms' preference for ISO 14001 over EMAS largely can be explained by the way that the former has been promoted by BSI.

While the adversary economy hypothesis does a good job of explaining demand for EMS in the U.S. and the U.K., it cannot explain why firm demand has been so high for both EMAS and ISO 14001 in Germany where the levels of trust between governmental regulators, industry and environmental groups are quite low. Although policymaking in Germany is usually a consensual affair characterized by extensive consultation with both business and labor union peak associations, environmental policy is, in many ways, an exception to this rule.

As in the U.S., the environmental movement in Germany has relatively deep popular support and is ideologically opposed to compromise with industry. Unlike in the U.S., this movement is supported by a successful Green Party, which is currently serving in a coalition government with the Social Democrats at the national level. Faced with a politically powerful and ideologically radical environmental movement, the German government has been forced on several occasions to pass stringent environmental policy above the objections of industry (Vogel, 1986; Müller, 1986). Given the strained relations between government, environmental groups and industry, how can we explain the success of EMS standards in Germany? In particular, what explains the fact that the government offers EMAS participants even more regulatory relief than the British government? To understand this we have to take a closer look at both the nature of Germany's adversary economy and the way in which EMAS has been implemented (Kollman and Prakash, 2001).

Germany's environmental 'adversary economy' is quite different from the one that developed in the U.S. While the environmental movement in Germany has forced the government to pass complex and legalistic policy to stringently regulate industrial pollution, it has not adopted the adversarial legalism approach practiced in the U.S. The German government and environmental groups only rarely use the threat of judicial action to ensure that environmental policy is properly implemented. German regulators are not faced with the constant threat of judicial review where their decisions may be reversed. Thus, unlike in the U.S., the German courts have played only a minor role in shaping environmental policy. Similarly, liability law remains relatively weak in Germany and has been seen as a secondary instrument to the preferred use of BAT

and strict emissions limits (Weidner, 1995; Rose-Ackerman, 1995). As a result, the fear that third party auditors could uncover practices that would be used against them in liability suits is almost non-existent for German firms. Furthermore, the government has used the dense networks of para-state industry organizations to help work out many of the technical details contained in German environmental law (Müller, 1986; Weidner, 1995). This has helped to create some trust between government regulators and business despite the deep antagonism that exists between environmental groups and industry.

Following from this unique form of adversary economy, the German government has been able to offer firms positive incentives to participate in EMAS. It has done this by adopting a compromise position in its implementation EMAS. Unlike in the U.K., where regulators have gone to great lengths to tie EMAS and ISO 14001 to what they call the 'voluntary movement' in environmental policy, German regulators have used EMAS as an additional instrument to oversee and measure the environmental performance of industrial sites. In contrast to the U.K., where no new legislation was adopted in setting up the EMAS scheme, the German government has passed a series of detailed laws implementing EMAS. The Federal Environment Ministry (BMU) made sure that procedures for the legal compliance part of the third party audit were carefully spelled out and well regulated. Having done this, the BMU made it clear that state governments – who are largely responsible for implementing environmental law in Germany's federal system – could use EMAS as a substitute for certain legal requirements. This mostly applies to such legal requirements as mandatory environmental reports that industrial sites are required by law to submit to regulators. However, the BMU has always insisted that this regulatory relief would not result in the lifting of material environmental standards (Waskow, 1997). In short, firms could be relieved from the burden of double reporting but they would not be granted pure deregulation. Additionally, government regulators have made it clear that firms with ISO 14001 certificates will receive no regulatory relief since it is a private scheme which does not directly require legal compliance.

Thus, Germany was able to reach a compromise in its use of EMAS; it offered firms light regulatory relief while at the same time emphasizing the legal compliance and performance measurement aspects of the standard. As such, it was able to make EMAS acceptable to both business and environmental groups. The promise of regulatory relief encouraged many firms to adopt EMAS when it was first introduced in 1995. Whether EMAS can sustain this momentum in the face of business disappointment about the extent of relief actually offered remains to be seen. At the present time it looks quite likely that the market demand for ISO 14001 will win out over government incentives for EMAS. During the crucial beginning phases of the scheme, however, the government was able to create the necessary incentives to significantly affect firm demand for EMAS.

To sum up, in each of the three countries under study, the supply and demand aspects (that are rooted in domestic institutions) of supranational

EMS have profoundly impacted firms' incentives for adopting EMAS and ISO 14001. In each case, variations in the national incentive structures have led to different country outcomes. In the U.S., the lack of a promotional vehicle for ISO 14001 coupled with the lukewarm response of key stakeholders (EPA, environmental groups) to the introduction of ISO 14001 has resulted in an equally lukewarm response by firms. In the U.K., by contrast, the aggressive marketing of ISO 14001 by BSI and the positive response to EMS by both government regulators and environmental groups has led to strong adoption rates of the non-governmental EMS. Because no organization promoted the uptake of EMAS with the same enthusiasm, ISO 14001 has remained the more popular of the two standards. In Germany, the effective dissemination of information about EMAS by business associations coupled with regulatory incentives has led to a strong take-up of the EU standard by German firms. Since 1997, ISO 14001's popularity among German firms has grown tremendously (Table 3). This recent enthusiasm for ISO 14001 among German firms is a reaction to both market demand and the ease with which EMAS-participating firms can attain ISO 14001 certification.

Conclusions and further research

ISO 14001 and EMAS are supranational, club goods which seek to alter firm-level incentives for adopting beyond compliance EMS codes. By conceptualizing EMS as club goods, we have been able to show how, through careful structuring, voluntary codes can produce non-rival *but* excludable benefits. These benefits become excludable through the granting of certificates that indicate the existence of high quality environmental policies and programs. Drawing upon multiple theoretical perspectives – club, institutional and stakeholder theories – this paper has shown that while supranational in scope, domestic factors play an important role in firms' decisions to participate in EMS codes. Thus, while globalizing forces may lead to the creation of supranational standards, these standards will not necessarily lead to a convergence in the behavior of the target groups. As the evidence presented in this paper suggests, domestic factors such as organizational arrangements, regulatory styles, and market structures significantly influence firms' incentive structures. Thus, supranational codes must be well-conceived to bring firms club benefits, but domestic institutions are often the final arbitrators in determining how excludable these net benefits can be.

By examining both the demand and the supply aspects of EMS standards, we explored the effects that a wide range of domestic institutions has on how the net excludable benefits of supranational standards are perceived by domestic actors. Our results show that while most analysts tend to concentrate on the demand side of environmental policies, it is necessary to include supply aspects as well to explain fully variations in inter-country responses. One of the key learnings which emerges from this more comprehensive approach is that sup-

porters of environmental programs can create incentives for firms to participate only if the policy architecture creates excludable benefits for them while at the same reducing the costs of participation. Constantly under pressure from the stock market and knowledgeable analysts, managers need persuasive reasons to justify their investments. Gaining legitimacy *per* se may not constitute sufficient incentives if there are possibilities of free-riding. Thus, it is important that the policy architecture creates a distinction – which both EMAS and ISO 14001 provide – enabling stakeholders to distinguish club members (those who have adopted EMS codes) from non-members. Further, proponents of environmental programs need to publicize the benefits of such clubs both for the firm subscribing to them and to the society at large. For good intentions to be translated into successful policies, policy engineering is required.

While the U.S. is faced with a number of historically-structured stumbling blocks to widespread ISO 14001 adoption, better information exchange about third party auditing practices, government 'name and shame' programs (such as the TRI program) or their positive variants (such as the 33/50 program) and better advertisement (by government or industry groups) of successful EMS case studies could help change the incentive structures of U.S. firms to participate. We also pointed out that having key firms which have extensive forward and backward linkages in the economy subscribe to these codes can create market incentives for their value-chains to subscribe as well. Thus, perhaps to encourage the first-movers to join the club in the U.S., a higher level of incentives needs to be offered. These could include significant governmental subsidies for certification and regulatory relief. Once the 'installed base' reaches a critical mass, these incentives can be phased out. This may be politically difficult because the first movers tend to large firms and regulators may be accused of cuddling up to them. Nevertheless, instead of one-size-fits-all approach, strategies for facilitating policy adoption need to differentiate across firms and the phase of policy in its life cycle.

The important question becomes, are there institutions available in the U.S. context which could employ these strategies? In fact, globalizing processes could cause certain U.S. institutions to take a second look at the usefulness of supranational EMS. This could happen through two different processes. The first of these is the spread of ideas and the establishment of a supranational policy community dedicated to promoting EMS schemes. In an interesting example, the Bavarian Environmental Ministry created a joint pilot program with the EPA in which U.S. firms agree to implement ISO 14001 in exchange for limited regulatory relief (Weigand, 1999). In this way, the Bavarian government hopes to promote a regulatory formula which it sees as the future of environmental policy. Although this project is very limited in scope, such supranational policy initiatives could help change the EPA's disposition toward voluntary EMS.

The other process which could change the institutional setting in the U.S. is the increased use of EMS standards, especially ISO 14001, in the global market. As was observed in the German case, market pressure can have a profound

effect on firms' enthusiasm toward EMS adoption. In the U.S. case, market demand could also encourage certain organizations to act as a promotional vehicle for ISO 14001; something which is conspicuously missing in the U.S. context. For example, if American accountancy firms become convinced that there are profits to be made in environmental auditing, they could begin building expertise in this area and promoting ISO 14001 to U.S. firms.

To conclude globalizing forces have the potential to play a dialectical role in the domestic uptake of EMS standards. Even countries whose institutional landscapes are unpropitious for the widespread take-up of supranational EMS schemes could develop the necessary structures if supranational policymaking circles and/or global markets exert enough adaptation pressure. While the type of policy engineering necessary to encourage widespread adoption of supranational EMS will vary from national context to national context, globalizing processes can exert ever greater pressure on domestic actors to undertake these necessary steps.

Notes

1. The ISO 14000 series consists of many standards but only one – ISO 14001 – is a verifiable standard. This paper focuses on ISO 14001 only.
2. Ideally, we should look at the ratios of certified sites to total sites. Unfortunately, information for the latter is not available. Hence, we are assuming the GDP corrected for purchasing power parity, to be rough proxy for the total number of sites, given that the economies of the U.S., the U.K., and Germany, have broadly similar economic structures.
   Since EMAS is relevant for the manufacturing sector only, EMAS sites should be examined in relation to the share of manufacturing in GDP. However, because the share of manufacturing in GDP is comparable in U.K. (21%), and Germany (24%) (World Bank, 2000/2001), employing only GDP serves as an appropriate control.
3. For a rebuttal to Hardin's argument, see Ostrom (1990).
4. A good could have multiple attributes, some of which having properties of private goods while others having properties of say, common-pool resources.
5. Of course, they potentially generate other benefits such as identifying savings through environmental audits and reduced premia for environmental insurance (*Chemical Week*, 1997). It may be possible to price discrete unit of these benefits.
6. Arguably, because industry associations and national standards bodies from developing countries are often unable to bear the costs of participating in the ISO meetings, these countries are effectively locked out of the rule-making processes (Clapp, 1998). Most rules are made in technical committees – 2800 as per recent count. If members wish to retain their voting rights in these committees, the ISO requires that they regularly attend the meetings – absence from two consecutive meetings can trigger action by the ISO. Tobon (1999) reports that though developing countries account for about 75 percent of national standards bodies in the ISO, they contributed less than 5 percent to the technical rule-making work. UNCTAD (1997, especially, the third recommendation) has been cognizant of this issue and has recommended financial support to facilitate developing countries' participation. Another issue that impedes participation is the 'expertise gap' in many developing countries.
7. Of course, the expensive certification process could disadvantage firms in developing countries (UNCTAD, 1997; Clapp, 1998).
8. For a discussion of how policy design can encourage firms to voluntarily implement clean

technologies/company policies even when no clear or immediate financial gains are apparent, see Norberg-Bohm (1999) and Andrews (1998).

9. In an interesting study of the timber industry Cashore and Vertinsky (2000) integrate policy network analysis with institutional theory to explain why some firms voluntarily adopted sustainable forestry practices while others sought to defray societal pressure for such reform. In their analysis, the type of policy networks in which companies are embedded acts as an intermediating variable between diffuse public pressure and individual company policy choices.
10. Firms with certain characteristics (such as high levels of pollution intensity, rocky relationship with regulators) may be more susceptible to such demands, and stakeholders with some other characteristics (for example, high education levels) may be more aggressive in making demands for such 'informal regulation' (World Bank, 2000). In this context, the literatures on Toxic Release Inventory and 33/50 programs offers useful insights (Arora and Cason, 1996; Konar and Cohen, 1997).
11. It has 129 members that belong to three categories: 85 'member body' that represent national standards associations, 34 'correspondent members' from countries that do not have fully developed national standards organization, and 10 'subscriber members' from small countries.
12. The Environmental Council of Ministers is the intergovernmental body made up of the environmental ministers of the fifteen member states which is responsible for adopting all environmental legislation proposed by the Commission.
13. Despite attempts to harmonize ISO 14001 and EMAS, differences exist in reporting requirements and the strength of language. For example, EMAS is more explicit on making continual improvements in environmental performance and only EMAS participants are required to publish an environmental statement.
14. As shown in Table 3, ISO 14001 began to gather momentum in Germany only in 1997. Because there is no public register for ISO 14001, it is difficult to tell what percentage of ISO 14001 certificates are held by EMAS participants but based on our informal information gathering, the percentage of overlapping certificates is rather high.
15. These are the results of the 8th survey that the ISO completed in June 1999.
    Upon the publication of ISO 9000 and ISO 14001 and the withdrawal of BS 5750 and BS 7750, U.K. firms holding the national certificates were automatically granted ISO certificates. These numbers naturally include these firms.
16. For an explanation of the circumstances under which business-environmentalist collaborations are likely to occur see Lober, 1997.
17. Adversary economies co-exists with instances of capture. Some depression era agencies (such as railroads) also served as cartel-enforcing vehicles for their industries.
18. Not surprisingly, the Bush Administration has sought relaxation in some provisions of the Endangered Species Act with an objective to limit citizen groups' ability to use courts to force the Fish and the Wildlife Service to list species and habitats under this law. For reference, about 92 percent of the listings are initiated by citizen lawsuits. The propose changes would provide more discretion to the Agency in deciding which species to protect and how (Grunwald, 2001).
19. This point was reinforced during our discussions with many managers working in the Environment, Health, and Safety (EH&S) departments.
20. The willingness of environmental regulators to regulate polluting sites more aggressively has supposedly increased with the creation of the Environmental Agency in 1995. However, the extent to which the regulatory climate has really changed has been questioned by several scholars (Jordan, 1998).

References

Andrews, R. (1998). 'Environmental regulation and business "self-regulation,"' *Policy Sciences* 31: 177–197.

Arora, S. and T. N. Cason (1996). 'Why do firms volunteer to exceed environmental regulations? Understanding participation in EPA's 33/50 program,' *Land Economics* 72: 413–432.

BDI (Bundesverband der Deuschen Industrie e.V.) (1995). *Dokumentation der Informationsveranstaltung des BDI und des Bundesverbandes der Freien Berufe für klein und mittlere Betriebe zur Förderung umweltorientierter Betriebsführung-Öko-Audit-Beginn einer neuen Umweltpolitik am 23. Mai 1995 im Haus der Deutschen Industrie.* Köln. Köln: BDI.

Berger, S. and R. Dore, eds. (1996). *National Diversity and Global Capitalism*. Ithaca, NY: Cornell University Press.

Bennett, C. (1991). 'Review article: What is policy convergence and what causes it?,' *British Journal of Political Science* 21: 215–233.

Boehmer-Christiansen, S. and J. Skea (1991). 'Acid politics: Environmental and energy policies in Britain and Germany.' London: Belhaven Press.

BSI (British Standards Institute) (2000a). http://www.bsi.org.uk/bsi/corporate/stakeholder/index.xhtml; 5/15/2000.

BSI (British Standards Institute) 2000b). http://www.bsi.org.uk/sigma; 5/15/2000.

Buchanan, J. (1965). 'An economic theory of clubs.' *Economica* 32: 1–14.

Cashore, B. and I. Vertinsky (2000). 'Policy networks and firm behaviors: Governance systems and firm responses to external demands for suitable forest management,' *Policy Sciences* 33: 1–30.

CEC (Commission of the European Communities) (1991). *Draft Proposal for a Council Regulation Establishing a Community Scheme for the Evaluation and Improvement of Environmental Performance in Certain Activities and the Provision of Relevant Information to the Public (Eco-Audit)*. COM(91)XI/83.

CEC (Commission of the European Communities) (1992). *Towards Sustainability: A European Community Programme of Policy and Action in Relation to the Environment and Sustainable Development.* COM(92)23 final.

CEC (Commission of the European Communities) (1993). *Regulation on EMAS.* EEC/1836/93.

Cheeseborough, M. (1998). 'Personal communication, environment agency,' July 14.

Chemical Week (1997). 'Responsible care earns discount on EIL premium,' July 23: 11.

Chandler, A. D. (1980). 'Government versus business: An American phenomenon,' in J. Dunlop, ed., *Business and Public Policy*. Cambridge, MA: Harvard University Press, pp. 1–11.

Clapp, J. (1998). 'The privatization of global environmental governance: ISO 14000 and the developing world,' *Global Governance* 4: 295–316.

Clarkson, M. B. E., ed. (1998). *The Corporation and Its Stakeholders*. Toronto: University of Toronto Press.

Coase, R .H. (1960). 'The problem of social cost,' *Journal of Law and Economics* 3: 1–44.

Cornes, R. and T. Sandler (1996). *The Theory of Externalities, Public Goods and Club Goods*. Cambridge: Cambridge University Press.

DIHT (Deutscher Industrie- und Handelstag) (1996). *Ein Jahr Umweltmanagement- und Betiebsprüfungssystem. Zwischenbilanz und Ausblick. Diskussionsveranstaltung am 3. Juni 1996 im Haus des DIHT*. Bonn: DIHT.

DETR (Department of Environment, Transport and the Regions) (1999). *Environmental Reporting: Getting Started*. London: HMSO.

DETR (Department of Environment, Transport and the Regions) (1998). *Sustainable Development: Opportunities for Change and Sustainable Business*. London: HMSO.

Environmental Protection Agency (EPA) (1995). 'Incentives for self-policing,' *Federal Register*, Volume 60 (246), pp. 66705–66712, December 22, 1999.

Environmental Protection Agency (EPA) (1997). 'Audit policy interpretive guidance,' January 1997. http://es.epa.gov/oeca.audpolguid.pdf, 01/07/2000.

Environmental Protection Agency (EPA) (1999). 'Action plan for promoting the use of environ-

mental management systems,' December 20, 1999. http://www.epa.gov/ems/plan99.htm, 01/07/2000.
Falk, R. (1999). *Predatory Globalization: A Critique*. Cambridge, U.K.: Polity Press.
Farrell, J. and G. Saloner (1985). 'Standardization, compatibility, and innovation,' *Rand Journal of Economic* 16: 70–83.
Freeman, R. E. (1984). *Strategic Management: A Stakeholder Approach*. Boston: Pittman.
Friedman, M. (1970). 'The social responsibility of business is to increase profits,' *New York Times Magazine*, September 13: pp. 32–33; 122–126.
Grunwald, M. (2001). 'Bush seeks to curb endangered species suits,' *The Washington Post* April 12: A2.
Gupta, A. K. and L. J. Lad (1983). 'Industry self-regulation: An economic, organizational, and political analysis,' *Academy of Management Review* 8: 416–425.
Hardin, G. (1968). 'The tragedy of commons,' *Science* 162: 1243–1248.
Hart, S. L. (1995). 'A natural resource-based view of the firm,' *Academy of Management Review* 20: 986–1014.
Heritier, A., C. Knill and S. Mingers (1996). *Ringing the Changes in Europe. Regulatory Competition and the Transformation of the State*. Berlin: de Gruyter.
Hortensius, D. and Barthel (1997). 'Beyond 14001,' in C. Sheldon, ed., *ISO 14001 and Beyond*. Sheffield, U.K.: Greenleaf Publishing, pp. 19–44.
IHK (Industrie- und Handelskammern in Nordrhein-Westfalen) (1995). *EG-Umwelt-Audit-Faltblatt*. Duisburg: IHK-NRW.
ISO (1999). *The ISO Survey of ISO 9000 and ISO 14000 Certificates: Eighth Cycle -1998.* http://www.iso.ch/infoe/8thcyclesurvey.pdf; 05/25/2000.
ISO World (1999) http://www.ecology.or.jp/isoworld/english/analy14k.htm; 01/31/2000.
ISO World (2000) http://www.ecology.or.jp/isoworld/english/analy14k.htm; 05/24/2000.
ISO World (2001) http://www.ecology.or.jp/isoworld/english/analy14k.htm; 03/27/2001.
Jasanoff, S. (1991). 'Cross-national differences in policy implementation,' *Evaluation Review* 15: 103–119.
Jordan, A. (1998). 'The impact on U.K. environmental administrative structures,' in P. Lowe and S. Ward, eds., *British Environmental Policy and Europe.* London: Routledge, pp. 173–195.
Kagan, R. (1991). 'Adversarial legalism and American government,' *Journal of Policy Analysis and Management* 10: 369–406.
Kagan, R. and L. Axelrad (1997). 'Adversarial legalism: An international perspective: An international perspective,' in P. S. Nivola, ed., *Comparative Disadvantages? Domestic Social Regulations and the Global Economy.* Washington DC: Brookings Institution Press, pp. 146–202.
Katz, M. L. and C. Shapiro (1983). *Network Externalities, Competition, and Compatibility*. Princeton, NJ: Princeton University Press.
Katzenstein, P. J., ed. (1978). *Between Power and Plenty*. Madison WI: University of Wisconsin Press.
Katzenstein, P. J. (1987). *Policy and Politics in West Germany*. Philadelphia: Temple University Press.
Katzenstein, P. J. (1989). *Industry and Politics in West Germany*. Ithaca: Cornell University Press.
Kolk, A. (2000). *The Economics of Environmental Management*. Prentice Hall/Financial Times.
Kollman, K. and A. Prakash (2001). 'Green by choice?: Cross-national variations in firms' responses to EMS-based environmental regimes,' *World Politics* 53 (April): 399–430.
Konar, S. and M. A. Cohen (1997). 'Information as regulation: The effect of community right-to-know laws on toxic emissions,' *Journal of Environmental Economics and Management*, 32: 109–124.
Lober, D. J. (1997). 'Explaining the formation of business-environmentalist collaborations: Collaborative windows and the paper task force,' *Policy Sciences* 30: 1–24.
Lowe, P. and J. Goyder (1983). *Environmental Groups in Politics*. London: Allen and Unwin.
Marcus, A. (1984). *The Adversary Economy*. Westport CO: Quorum Books.
Meyer, John W., and Scott, W. Richard, eds., (1992). *Organizational Environments: Ritual and Rationality*. Thousand Oaks, CA: Sage.

Mitchell, R. K., B. R. Agle and D. J. Wood (1997). 'Towards a theory of stakeholder salience,' *Academy of Management Review* 22: 853–886.

Müller, E. (1986). *Innenwelt der Umweltpolitik: Sozial-liberal Umweltpolitik*. Opladen: Westdeutscher Verlag.

Norberg-Bohm, V. (1999). 'Stimulating "green" technological innovation: An analysis of alternative policy mechanisms,' *Policy Sciences* 32: 13–38.

O'Leary, R. (1993). *Environmental Change: Federal Courts and the EPA*. Philadelphia: Temple University Press.

Olson, M. (1965). *The Logic of Collective Action – Public Goods and the Theory of Groups*. Cambridge, MA: Harvard University Press.

Ostrom, E. (1990). *Governing the Commons*. Cambridge: Cambridge University Press.

Ostrom, V. and E. Ostrom (1977). 'Public goods and public choice,' in E. S. Savas, ed., *Alternatives for Delivering Public Services*. Boulder, CO: Westview, pp. 7–49.

Peglau, R. (1997). *Bibliographie zur EG-Öko-Audit-Verordnung*. Berlin: UBA.

Porter, M. and C. van der Linde (1995). 'Towards a new conception of environment-competitiveness relationships,' *Journal of Economic Perspectives* 9: 97-118.

Prakash, A. and J. A. Hart, eds. (1999a). *Globalization and Governance.* London: Routledge.

Prakash, A. (1999b). 'A new-institutionalist perspective on ISO 14000 and responsible care,' *Business Strategy and the Environment* 8: 322–335.

Prakash, A. and J. A. Hart, eds. (2000a). *Responding to Globalization*. London: Routledge.

Prakash, A. and J. A. Hart, eds. (2000b). *Coping with Globalization*. London: Routledge.

Prakash, A. (2000c). 'Responsible care: An assessment,' *Business & Society* 39: 183-209.

Prakash, A. (2000d). *Greening the Firm: The Politics of Corporate Environmentalism*. Cambridge: Cambridge University Press.

Preston, L. E. and J. E. Post (1975). *Private Management and Public Policy: The Principle of Public Responsibility*. Englewood-Cliffs, NJ: Prentice-Hall.

Roht-Arriaza, N. (1997). 'Environmental management systems and environmental protection: Can ISO 14001 be useful within the context of APEC?,' *Journal of Environment and Development* 6: 292–316.

Rose-Ackerman, S. (1995). *Controlling Environmental Policy: The Limits of Public Law in Germany and the United States*. New Haven: Yale University Press.

Rosenau, J. N. (1997). *Along the Domestic-Foreign Frontier*. Cambridge: Cambridge University Press.

Sbragia, A. (1996). 'Environmental policy,' in H. Wallace and W. Wallace, eds., *Policy-Making in the European Union.* Oxford: Oxford University Press, pp. 235–256.

Schmidhieny, S. (1992). *Changing Course*. Cambridge, MA: MIT Press.

Smith, G. (1998). Personal communication, July 13.

Stigler, G. (1971). 'The economic theory of regulation,' *Bell Journal of Economics* 2: 3–21.

Streeck, W. (1992). *Social Institutions and Economic Performance*. London: Sage.

Tiebout, C. M. (1956). 'A pure theory of public expenditure,' *Journal of Political Economy* 64: 416–424.

Tobon, F. (1999). 'Twining and sharing between partners at a similar stage of development,' *ISO Bulletin*, August.

Umweltbundesamt (1999). *EG-Umweltaudit in Deutschland: Erfahrungsbericht 1995 bis 1998.* Berlin: Umweltbundesamt.

United Nations Conference on Trade and Development/UNCTAD (1997). 'Report of the expert meeting on possible trade and investment impacts of environmental management standards, particularly the ISO 14000 series, on developing countries, and opportunities and needs in this context. Geneva, October 29–31, 1997, http://www.unctad.org/en/special/c1em4d3.htm; 05/26/2000.

Unger, B. and F. van Waarden, eds. (1995). *Convergence or Diversity?* Aldershot, U.K.: Avebury.

Vogel, D. (1986). *National Styles of Regulation. Environmental Policy in Great Britain and the United States*. Ithaca, NY: Cornell University Press.

Vogel, D. (1995). *Kindred Strangers*. Princeton, NJ: Princeton University Press.
Walley, N. and B. Whitehead (1994). 'It's not easy being green,' *Harvard Business Review* May/June, 46–51.
Waskow, S. (1997). *Betriebliches Umweltmangement*. Heidelberg: C. F. Müller.
Weidner, H. (1992). *Basiselemente einer Erfolgreichen Umweltpolitik*. Berlin: WZB.
Weider, H. (1995). '25 Years of modern environmental policy in Germany: Treading a well-worn path to the top of the international field,' WZB Working Paper, FS II 95–301.
Weigand, M. (1999). Personal Communication, January 25.
Weimer, D. L. and A. R. Vining (1992). *Policy Analysis: Concepts and Practice*. 2nd edition. Englewoods Cliffs, NJ: Prentice Hall.
Wood, D. J. (1991). 'Corporate social performance revisited,' *Academy of Management Review* 16: 691–718.
World Commission on Environment and Development (1987). *Our Common Future*. Oxford: Oxford University Press.
World Bank (1992). *World Development Report*. New York: Oxford University Press.
World Bank (2000). *Greening Industry*. New York: Oxford University Press.
World Bank (2000/2001). *World Development Report*. www.worldbank.org/poverty/wdrpoverty/report/index.htm; 03/27/2001.
Zucker, L. G., ed. (1988). *Institutional Patterns and Organization*. New York: Ballinger.