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National Self-interest: a Major Factor in International Environmental Policy Formulation

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The second half of the 20th century witnessed substantial growth in the number and magnitude of international environmental problems, both transboundary and global in scope. In response, a multitude of actors – from local to global – have responded to the challenge of international environmental problems. Egoistic (systematic self-interest) states, represented by governments, are still the major institutions attending to such challenges, both as entities of international law by (not) taking over legally binding obligations and in terms of (not) providing the resources needed to pursue environmental policies. Which incentives lead these countries to negotiate international environmental agreements that mitigate or adapt countries to international environmental problems? The interest-based explanation of international environmental policy (Sprinz and Vaahtoranta, 1994) provides a parsimonious answer by focusing on two crucial factors, namely ecological vulnerability and abatement costs. By classifying countries according to their values of both variables, it can be explained why some countries act as pushers for reducing international environmental problems while other countries act as draggers. Furthermore, it is suggested that technological advances may allow more countries to pursue strict international environmental policies as a result of declining abatement costs.

THE INTEREST-BASED EXPLANATION

The interest-based explanation suggests a benefit–cost approach as the central calculus driving a state’s decision to strive for strict international environmental agreements. The degree to which countries are ecologically vulnerable provides incentives to remedy the situation by undertaking beneficial mitigation (e.g., reducing emissions) or adaptation measures (e.g., enhancing ground water supplies in arid areas). Thus, the interest-based explanation suggests that countries which experience high ecological vulnerability (i.e., damages to the environment) will favor strict international environmental regulations as compared to countries which have a resilient environment. However, countries are

not solely driven by considerations of the environmental damages avoided by way of international environmental policies. Instead, they also take the abatement costs of such measures into account. Other aspects held constant, the interest-based explanation expects that countries with low abatement costs will be more inclined to strive for stringent international rules as opposed to countries with high abatement costs. Once countries are classified along both dimensions, namely ecological vulnerability and abatement costs, as high or low, four groups of countries can be distinguished (see Table 1).

In particular, we expect countries with high ecological vulnerability and low abatement costs to act as *pushers* in international environmental negotiations, whereas countries with the opposite characteristics are expected to act as *draggers* (see Table 1). Countries with low ecological vulnerability and low abatement costs are expected to act as *bystanders* since they have little ecological incentive to strive for strict regulations, but enjoy low abatement costs. Countries with high ecological vulnerability and high abatement costs are expected to act as intermediates since their pursuit of strict international environmental regulations will be demanding in terms of resource mobilization (see Table 1).

This four-fold typology generates expectations about the behavior of countries. Since the benefit–cost ratio is the most favorable for pushers and the least favorable for draggers – with bystanders and intermediates falling in between – the interest-based explanation also generates expectations about the stringency of the international rules favored: pushers will lead with high demands and draggers will be the least enthusiastic, whereas both bystanders and intermediates will fall in between.

The interest-based explanation of international environmental policy is not static. Technological progress often reduces abatement costs. Should this be the case, formerly less enthusiastic countries (draggers and intermediates) are likely to be able to strive for international environmental regulations that are more strict than those originally favored.

The original explanation (Sprinz and Vaahtoranta, 1994) was tested in two case studies, namely the Montreal Protocol on Substances that Deplete the Ozone Layer (see, e.g., Benedick, 1998) and the Protocol to the 1979 Convention on Long-range Transboundary Air Pollution on

Table 1 Classification of a country’s support for international environmental regulations^a

		Ecological vulnerability	
		Low	High
Abatement Costs	Low	Bystanders	Pushers
	High	Draggers	Intermediates

^a Source: Sprinz and Vaahtoranta, 1994, 81.

the Reduction of Sulfur Emissions or Their Transboundary Fluxes by at Least 30% (see, e.g., Jackson, 1990; Levy, 1993; Sprinz and Helm, 1999). By using quantitative data and either thresholds or averages for allocating countries to groups according to ecological vulnerability and abatement costs, it could be shown that the predictions were largely borne out in the case of stratospheric ozone. In the case of acid rain, only the group of pushers was well explained, whereas the countries in the remaining three groups mostly behaved passively in regulating sulfur emissions in the 1980s and early 1990s. Furthermore, it could be shown that reductions in abatement costs made countries more inclined to agree to more demanding environmental policies (stratospheric ozone); and economic interests to sell abatement technologies led countries to favor stricter international rules (stratospheric ozone and acid rain).

In the following section, we will summarize how the interest-based explanation was received in the literature (see the section on discussion in the literature) and outline a strategy to extend the explanation towards compliance with international environmental agreements (see the section on reflections and extensions).

DISCUSSION IN THE LITERATURE

The academic debate on the interest-based explanation focused on two aspects: the underlying assumptions about the role of the state, and the variables included in the explanation.

Role of the State

The interest-based explanation assumes that the nation–state plays a central role in international environmental policy. It explains in a parsimonious way how countries reacted to international environmental problems in the latter part of the 20th century (the explanation has been criticized for not attending to the causes of international environmental action, but this was never the goal of the explanation, see Frank, 1997) by focusing on the interests of countries (Keohane, 1997). In discussing the interest-based explanation, the literature emphasizes four aspects as being central for international environmental action: (i) public pressure on decision makers resulting from (ii) dramatic instances of environmental degradation and (iii) scientific understanding of the environmental problem; furthermore, (iv) it has been suggested that international institutions have been responsible for the current environmental agreements (see Frank, 1997; Meyer *et al.*, 1997; Ungar, 1995). While providing useful insights into international environmental action, these factors offer an insufficient explanation of international environmental policy since they omit the role of the state and its interests.

If countries were not ecologically vulnerable, there would be no need for environmental protection. Vulnerability by itself may not be able to spur a response. Rather, the scientifically informed perception of an ecological risk can make decision makers act on environmental degradation. (We are grateful to Matthew Auer for drawing our attention to this point (private correspondence, 8th May 1999)). Incorporating ecological risk perception makes the interest-based explanation more dynamic since the perception of ecological vulnerability may change even in the absence of changes in the state of the environment. The same observation applies to abatement costs. Public pressure may also contribute to international environmental action, although it is suggested in the literature that those political leaders having played a key role in pushing for environmental protection have not been driven by public concern but by their personal beliefs about the severity of environmental problems (see Kawashima, 1997).

However, the observable reality shows that states' preferences and policies differ from each other. The divisions cut across more familiar ways of categorizing states. For instance, one cannot necessarily predict states' preferences with reference to Western and developing countries (this categorization is used in Meyer *et al.*, 1997). For example, though western industrialized countries have been the main pushers in the international negotiations to curb the emissions of greenhouse gases, they have not acted as a unified group. The United States has referred to scientific uncertainties as well as high abatement costs and has tended to act as a dragger. Most developing countries have been sceptical about the need to act on climate change, but the judgment has not been shared by the small island nations that are particularly vulnerable to the potential rise in sea level and to greater incidences of tropical storms (for an introduction to the international politics of climate change, see Soroos (1997), 176–207, as well as Luterbacher and Sprinz, 2001). Neither does it seem useful to regard international institutions as the dominant cause of international environmental policy. For a measurement concept of the effect of international environmental institutions and a review of the literature, see Sprinz and Helm (1999), as well as Helm and Sprinz (2000). The emphasis on international institutions fails, in particular, to account for variance in states' reactions to environmental degradation. A more fundamental reason for not regarding the United Nations or other international institutions as the main actors is the fact that states have established international institutions to facilitate environmental cooperation among themselves (Bernauer, 1995).

In short, the assumption of the interest-based explanation is that the main actor responsible for international environmental policy is the state, whose preferences may be shaped by factors such as scientific understanding and public concern. Even though the state is regarded as the main actor in international environmental policy,

international cooperation to protect the environment should not necessarily be perceived as being impossible. The success of international environmental policy depends to a great extent on whether states perceive shared interests or not. Whereas in the case of stratospheric ozone depletion, there has been a sufficient degree of shared interests to enable states to agree on the protection of the ozone layer, we witness a greater diversity of state interests in the case of climate change.

Explanatory Variables

The second major reaction concerns the explanatory variables used in the interest-based explanation. Some authors suggest that the explanation could be even more parsimonious by focusing only on abatement costs (for a strong focus on the economic cost of environment protection as a factor influencing states' policies, see Biermann (1997), Montes and Magno (1997), as well as Vogel, 1997) whereas others would like to add more explanatory variables. We find it difficult to exclude environmental vulnerability from the explanation without seriously weakening its ability to account for international environmental policy. In particular, it would be difficult to explain why a country would ever accept costly environmental remedies in the absence of ecological vulnerability. There are several examples of how environmental vulnerability or the perception of it shapes the preferences of states. For instance, the policy of the Federal Republic of Germany on acid rain changed in the early 1980s when the Germans learned about the large extent of damage to their own forests; and Finland has been particularly concerned about the environmental problems in the bordering Russian regions and has been willing to pay for controlling and solving these problems which are adversely affecting the environment of Finland.

A first lesson to be drawn from the interest-based explanation is that economic side payments can be used to change the preferences of states and to influence their policies on environmental protection. As David Vogel concludes, one way of promoting effective international environmental action is for the more affluent countries not only to change their own policies but also to provide less affluent countries with sufficient incentives to modify theirs as well (Vogel, 1997). The question is how much is required and feasible. From an economic perspective, it would be most effective to protect the international environment if transfers are kept sufficiently small in relation to the donor country's wealth and sufficiently large in relation to the recipient country's wealth.

A second lesson highlights the role of changing the ecological risk perception of laggards and bystanders. China's policy on curbing the emissions of greenhouse gases, for example, should favor relative emission reductions in a pronounced way if China were to change its evaluation of

the vulnerability of its low-lying coastal areas to the threat posed by the rise of sea level.

Two studies tested the interest-based explanation or used a similar explanatory approach, and deserve more detailed attention. Rowlands (1995) uses the explanation to find out how well it accounts for national climate change policies. He calculates environmental vulnerability and abatement costs indices for 24 countries. To determine the ecological vulnerability of countries, Rowlands uses variables which measure the impacts caused by sea-level rise and measures of the impacts on agriculture. For the abatement costs he relies on three previous studies and uses the projected energy needs as well as the potential for fuel substitution to estimate the abatement costs for countries not included in the studies. After having incorporated secondary benefits, he predicts that there should be three kinds of responses to the limiting of climate change: pushers should be proactive in the efforts to reach an agreement, draggers should resist such efforts, and intermediates should be passive. Rowlands' findings show that 11 out of 24 countries were acting as predicted by the interest-based explanation and concludes that the interest-based explanation may be helpful in understanding states' environmental foreign policies. We concur with Rowlands that our explanation may be linked to a more extensive domestic policy model, and that the explicit operationalization of the two dimensions of the explanation is crucial.

In her interview-based study, Kawashima (1997) explains how five industrialized countries adopted their policies to reduce carbon dioxide (CO₂) emissions. While she does not apply the interest-based explanation, she uses similar explanatory factors to account for the behavior of states. Based on the policies pursued, countries are divided into three groups. The Netherlands and Germany are leaders, the UK and Japan act as followers, and the US is the only laggard in her sample. Kawashima's research suggests that six factors might have affected the preferences of states, namely harm caused by climate change (ecological vulnerability), economic cost of reducing emissions (abatement costs), domestic factors, international politics, the degree to which an international agreement is binding, and the experience of past negotiations on other environmental issues. According to the answers from expert interviews, four factors affected the national policies in particular. Interviewees from all countries except the US were concerned about the ecological impact of climate change, whereas US interviewees stressed the importance of high CO₂ abatement costs. These results are in accordance with the interest-based explanation. Kawashima also found that two additional factors had played a role in shaping the states' preferences. First, the role of political leaders was regarded as one of the most decisive factors in the Netherlands, Germany and Japan. These leaders pushed for emission reductions regardless of the scientific evidence of

the adverse ecological impact or of the abatement costs involved. Second, international politics played a decisive role for the UK and Japan. International pressure within the European Union influenced British policy, and Japan's policy was affected by its concern for an active international role. Kawashima agrees with Rowlands that domestic policy and international politics may shape states' policies on environmental issues.

In general, we suggest that the present form of the interest-based explanation permits a first order assessment of the likely positioning of countries in negotiations on international environmental agreements (for an affirmative assessment of the method used in the interest-based explanation, see Zürn, 1997). Subsequent detailed studies may allow for the incorporation of additional variables which permit detailed explanation of the behavior of a more limited set of countries. However, the purpose of the interest-based explanation is to simplify reality in order to draw attention to major causal relationships in international environmental policy. A more elaborate explanation will have to demonstrate that the inclusion of additional factors leads to substantive increases in explanatory power.

REFLECTIONS AND EXTENSIONS

Reflecting on the interest-based explanation, we will discuss two aspects which merit attention: a variance argument and an intercomparison (or locking) argument. In addition, we will outline how the original explanation can be extended from the stage of negotiating international environmental agreements to the stage of compliance.

First, the usefulness of the classification scheme seems to vary with the magnitude of the variance found across the two variables, namely ecological vulnerability and abatement costs. If there is very little variation in the values of both variables across countries, the classification becomes less robust. Thus, the higher the variance, the less arbitrary the thresholds, and the stronger the classificatory power of the explanation.

Second, the operationalization of the interest-based explanation rests on the relative ecological vulnerability and abatement costs, i.e., it relies on the relative positioning of countries within the same pollution domain. However, the explanatory power of the explanation could be enhanced by pooling the abatement costs and ecological vulnerability scores from a large set of pollution domains across countries – using a common metric which makes such data intercomparable. In such a pooled analysis, an (absolute) average threshold for ecological vulnerability and abatement costs could be determined for the set of countries (locking of the thresholds) and the particular pollution case could now be nested within the larger pooled analysis. This would allow us to assess whether we should expect more pushers in these negotiations as compared

to the pooled average, and, subsequently, more stringent regulations. Similar propositions can be made with respect to other quadrants of the classification found in Table 1.

In general, each party to an international treaty is expected to comply with its rules. Some treaties also have specific articles on non-compliance, but still some states do not always comply with treaties. The original interest-based explanation derived hypotheses about the expected negotiation behavior of states. In the remainder of this section, we outline an extension of the explanation so as to capture expected compliance behavior while keeping the basic logic of the original explanation. For reasons of convenience, we do not assume that countries change their classificatory label between both phases (e.g., because of changes in the abatement costs or their ecological vulnerability). Furthermore, we assume that at the end of the negotiations countries are forced to take the decision of whether to sign or not sign the international environmental agreement (signing an international agreement may take various forms such as accession, signature, ratification without signature, etc.). This may lead to the expectation that the signatories will be bound by the legal provisions of the international environmental agreement whereas the non-signatories remain free to pursue any policy they wish. Contrary to this depiction spurred by the tradition of international law, this extension of the interest-based explanation to the stage of compliance provides a much richer explanation.

First, the basic provisions of international environmental agreements may lead to positive abatement costs and therefore divert resources from the pursuit of other public policies. Thus, it is hypothesized that the higher the compliance costs for a country, the lower the degree of compliance.

Second, ecological vulnerability provides countries with positive incentives to actually implement and enforce international environmental agreements domestically. Thus, it is hypothesized that the higher the degree of ecological vulnerability for a country, the higher the degree of compliance with the basic rules of an international environmental agreement.

Pursuant to the classification introduced earlier, we suggest that one should dichotomize countries into those with low versus high compliance costs and those with low versus high ecological vulnerability, and derive expected behavior accordingly. Countries which are signatories of an international environmental agreement will carry the attribute 'committed', whereas non-signatories will be labeled 'uncommitted' (see Tables 2 and 3).

Even if a country does not sign an international environmental agreement, high ecological vulnerability provides it with some incentives to undertake actions in line with the provisions of the international environmental agreement (e.g., uncommitted pushers), especially if self-help is possible and efficient. This is also supposed to hold for countries

Table 2 Expected compliance of signatory countries^a

		Ecological vulnerability	
		Low	High
Relative national	Low	Committed bystander medium compliance	Committed pusher full to (voluntary) over-compliance
Compliance costs	High	Committed dragger no to low compliance	Committed intermediate medium compliance

^a Upper entries depict classificatory labels, lower entries refer to the degree of compliance. Scale for degree of compliance: none, low, medium, full, over-compliance. Scale for ecological vulnerability and compliance costs: low, high.

Table 3 Expected compliance of non-signatory countries^a

		Ecological vulnerability	
		Low	High
Relative national	Low	Uncommitted bystander low compliance (voluntary)	Uncommitted pusher medium to full compliance (voluntary)
Compliance costs	High	Uncommitted dragger no compliance	Uncommitted intermediate low compliance (voluntary)

^a Upper entries depict classificatory labels, lower entries refer to the degree of compliance. Scale for degree of compliance: none, low, medium, full, over-compliance. Scale for ecological vulnerability and compliance costs: low, high.

with low compliance costs. Thus, we suggest that the same rationale holds for signatories as well as non-signatories. However, non-signatories are expected to achieve a lower level of (voluntary) compliance with the provisions of an international environmental agreement (compare Tables 2 and 3). Nevertheless, for most groups we should expect actual steps towards partial compliance rather than inaction. We will highlight this by way of paired comparisons of each group across signatory status.

Five levels of compliance are used (in ascending order): none, low, medium, full, and over-compliance. The lowest rating (none) refers to no compliance behavior or even actions which are directed against reducing ecological vulnerability (e.g., increased emission); low compliance relates to very minor steps taken in the direction of compliance; medium refers to steps short of full compliance; full compliance refers to 100% congruence of the rules in the international environmental agreement and compliance-related behaviors; and over-compliance refers to any substantial exceedance of full compliance. This 5-step scale should not be confused with the two-point scale (low vs. high) for ecological vulnerability and compliance costs.

First, push countries in international negotiations seem to have the greatest incentives to actually sign and comply with international environmental agreements because of the attractive benefit–cost ratio. Thus, we should expect full compliance, at a minimum, and possibly (voluntary)

over-compliance. If a push country does not succeed in upgrading international rules sufficiently, it may decide not to sign the international agreement, e.g., for domestic political reasons which would not support weak international rules. However, given their interest configuration, we should expect uncommitted pushers to voluntarily implement the international environmental agreements to a medium or full extent.

Second, draggers are likely to show the reverse behavior because of the low benefit–cost ratio. For committed draggers, signing international environmental agreements only fulfills the useful functions of creating leverage at extracting resources from other countries in order to enhance compliance, or the opportunity to influence the negotiations of subsequent international environmental agreements. For uncommitted draggers, there are even fewer incentives to undertake any actions towards compliance. In fact, we should expect no compliance at all.

Third, intermediate countries are challenged by the high costs of compliance. Therefore, we should expect committed intermediates to show medium levels of compliance, whereas uncommitted intermediates will only endeavor to show low levels of (voluntary) compliance. Thus, the vigor of compliance behavior falls in between those of pushers and draggers because of the intermediate benefit–cost ratio. A similar calculus applies to bystanders.

In general, this approach to compliance predicts a substantial range of compliance levels – even among

signatory countries. While signatory countries are likely to show uniformly higher levels of compliance as opposed to non-signatory countries, even some non-signatory countries are likely to contribute to the alleviation of international environmental problems due to their enduring ecological and economic incentives.

CONCLUSIONS

The interest-based explanation of international environmental policy provides predictions of the likely behavior of countries in international environmental negotiations, by utilizing a combination of ecological vulnerability and abatement costs. Given its parsimonious and operational nature, the interest-based explanation can be empirically tested and extended from the stage of negotiating international agreements to the stage of expected compliance with international environmental agreements. While the critique of the explanation has focused on the role of states in international environmental action, as well as the number of variables to be included in research, we remain confident that the interest-based explanation provides a successful approach to derive initial expectations of the behavior of countries.

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