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*A Comparative Analysis of the
Decision-making Processes of Developed
Countries toward CO₂ Emissions
Reduction Targets*

Y A S U K O K A W A S H I M A

Introduction

International negotiations on climate change are now in their second stage. The end of the first stage was marked by the adoption of the Framework Convention on Climate Change (hereafter FCCC or the Convention). The second stage began with the realization that a stronger commitment was necessary to achieve the ultimate objective of the Convention.¹ In March 1995, the First Conference of the Parties to the FCCC adopted the Berlin Mandate, which called for additional international agreements by the Annex I Parties to the FCCC (primarily the industrialized countries) for the years beyond 2000.² Strong initiatives by all the developed countries are indispensable for this negotiation phase to succeed; however, differences in those countries' positions regarding action still remain. In order to achieve an effective commitment, it is important to determine the factors that influence the decision-making processes of countries with respect to climate change negotiations. It may be possible to facilitate positive change in a country's behavior by identifying factors that cause other countries to play leadership roles or to take negative positions toward the climate change issue.

This article analyses the results of an interview survey that was conducted in five developed countries (the Netherlands, Germany, the United Kingdom, Japan, and the United States). The purpose of the survey was to identify and compare factors that influenced the setting of targets for carbon dioxide (CO₂) emissions during the FCCC negotiations. Particular attention was paid to the

major determinants of countries' positions regarding CO₂ emissions reduction targets in the negotiations. In analyzing the results of the surveys made in these five countries, the author does not try to explain differences in the decision making of these countries, but rather identifies common elements that influenced the formulation of their climate change policies. Decision making is a dynamic process. The results from this analysis clarify the linkages between decision-making factors and the implications these linkages may have in future climate change negotiations.

Many descriptive studies have been published on the development of climate change policies in different countries and at the international level in the International Negotiating Committee (INC).³ Each country is unique in its geographical circumstances, economic and industrial status, historical and cultural background, and political system. These factors are a common focus in descriptive studies that attempt to explain diversity in national responses towards the climate change problem. Indeed, such studies provide considerable insight into national situations. Yet, they tend to emphasize differences among countries and thus emphasize factors that complicate efforts to resolve discord among countries. Few studies have utilized rigorous methodologies to analyze climate change negotiations in a comparable way.⁴ The main focus of this article is to compare decision-making factors in different countries and to seek a general rule that will help to explain climate change decisions.

A Brief History of Targets for CO₂ Emissions

The main reason for selecting these five countries was to enable comparisons between two countries that took similar stances towards a CO₂ emission target, and among countries that took different positions on targets. Table 1 shows a chronology of the climate change negotiations and each country's position in the negotiations. The countries were categorized into three groups, according to both the timing of establishment of their national targets on CO₂ or on all greenhouse gas emissions, and their positions toward the inclusion of specific targets and timetables in the Convention.

- *leader*: The Netherlands and Germany set their national emission targets relatively early, in 1989 and early 1990, and favored clear CO₂ emission targets in the FCCC text.
- *follower*: The U.K. and Japan set their national targets in 1990, after the "leader" countries had set their reduction targets. In the negotiation, these countries basically supported the inclusion of targets, but valued acceptance of the Convention by the U.S. higher than having targets included.
- *laggard*: The United States established a national commitment to stabilization only after the Rio Summit in 1992. During the INC negotiations, the U.S. resisted inclusion of any specific target in the FCCC text.

Table 1. Chronology of Climate Change Negotiations

Year	General	Netherlands	Germany	United Kingdom	Japan	United States
1988	Toronto Conference IPCC established					
1989		Stabilization at 1988-1989 level by 1994-1995 3-5% reduction by 2000				
1990			25% reduction from 1987 by 2005	Stabilization at 1990 level by 2005	Stabilization per capita at 1990 level by 2000	
1991						
1991						
1991	The Second World Climate Conference					
1991	INC1					
1992	INC2					
1992	INC3					
1992	INC4					
1992	INC5					
1992	INC6 final					
1993	Rio Summit					

Stabilization of
overall green-
house gases at
1990 level by
2000

The following section briefly describes how each country responded to climate change negotiations, in particular on CO₂ emission target setting. Details of the decision-making process in each country may be found in sources cited previously.

The Netherlands

The Netherlands was one of only a handful of countries that proposed setting specific national CO₂ emission targets to mitigate climate change. In 1989, Holland had already demonstrated leadership in this issue by hosting two major international conferences on atmospheric problems, one in the Hague and the other in Noordwijk. In November 1989, following a Parliamentary discussion on the National Environmental Policy Plan (NEPP)—a white paper on the environment issued in May of the same year—the Dutch government announced its decision to stabilize CO₂ emissions at the 1989/1990 level by 1995 at the latest. In June 1990, a revised plan (NEPP-Plus) was submitted to Parliament.⁵ This revision called for a 3 to 5 percent reduction from average 1989/1990 levels by 2000. Throughout the INCs, the Netherlands was one of the few countries to maintain its willingness to set a CO₂ target in the Convention. Its representatives stressed the need for strict targets, and argued that only those countries that were willing to commit to achieving their targets should be allowed into the Convention.⁶

Germany

Germany was also one of the lead countries in considering the formulation of a national CO₂ emission target. In 1987, the Enquete Commission on Preventive Measures to Protect the Earth's Atmosphere was established by the German Bundestag (parliament). The Commission produced a report that recommended CO₂ emission reduction as early as possible.⁷ Since then, Germany has clearly supported setting CO₂ emissions targets. In June 1990, the federal government set a goal to reduce energy-related CO₂ emissions by 25 percent from the 1987 level by 2005, and after the reunification with former East Germany in October 1990, revised this to a 25 to 30 percent reduction. During the negotiations, Germany, together with the Netherlands, argued strongly for a CO₂ target in the Convention. They took the lead in the discussion, saying that the Convention would not be effective without targets.⁸

The United Kingdom

The U.K. has been conservative regarding target setting. In 1989 at the Noordwijk conference, the U.K. was one of the few developed countries that did not support CO₂ emission targets. However, in June 1990, the British

government set the target of returning emissions of CO₂, methane, and other major greenhouse gases to 1990 levels by 2005. In October of the same year, the U.K. agreed with other members of the EC that the Community would take action aimed at stabilizing total CO₂ emissions at the 1990 level by 2000 rather than by 2005, and the British government shifted the target of its national commitment to 2000, with the condition that other countries would make the same commitment.⁹ During the INC negotiations, the U.K. generally supported the inclusion of a target in the Convention, but considered it more important to have as many countries as possible sign the Convention, and especially the U.S. The British government was the main contributor to the final wording of the text, which had the sense of a broader goal, rather than a strong commitment toward targets.¹⁰

Japan

Japan had also been cautious toward the idea of setting CO₂ targets, and opposed targets at the Noordwijk Conference in 1989.¹¹ However, in 1990, after other OECD countries committed themselves to national targets, Japan started to debate within its ministries the possibility of stabilizing its CO₂ emissions. The Japanese government adopted an Action Programme to Arrest Global Warming in October 1990, in which a two-level target was set: first, a stabilization on a per capita basis by the year 2000, and subsequently a reduction of total CO₂ emissions to 1990 levels.¹² During the INC meetings, Japan's position was similar to that of the U.K.: to favor a convention that would be agreeable to all major countries, especially the U.S. In the early period of the INC meetings, Japan, together with the U.K. and France, proposed a "pledge and Review" system, whereby each country pledges its own emission goals; its progress in fulfilling its pledge would be evaluated after the year 2000. This proposal later turned out to be similar to what was approved in the final text. However, in the early stage of the negotiations, it was considered to be an excuse for retreating from strict targets.¹³

The United States

The U.S. was one of the leading countries in introducing the climate change issue to international politics.¹⁴ In late 1988, the U.S. became one of the main supporters of the establishment of the Intergovernmental Panel on Climate Change (hereafter IPCC) to investigate scientific evidence of climate change. However, the U.S. government opposed the setting of specific targets on CO₂ emissions. Before and during INC meetings, the U.S.'s position was that it would not sign any convention that included emission targets.¹⁵ It was not until April 1993 that the U.S. announced its commitment to return its greenhouse gas emissions to 1990 levels by 2000.¹⁶

Methodology

This section outlines the methods and procedures of the interview survey.

Schedule

In order to understand how various governments came to the positions on CO₂ targets described above, a combination of structured and open-ended interviews were carried out in 1993 and 1995, using a questionnaire.¹⁷ Although differences of up to two years occurred between the dates when surveys were conducted, these differences were considered to have had little influence on the results, because the questionnaire asked for information relating only to the period from 1988 to 1992. In addition, many of the interviewees in both 1993 and 1995 had already moved from the positions they held during the 1988-1992 period when they participated in the survey. Consequently, it became easier for them to speak out with their personal comments on the issues. All comments in quotation marks in the following sections were made by interviewees, except where indicated by citations in the endnotes. The interviewees' comments are reproduced anonymously to protect confidentiality, as promised during the interviews. The names of the interviewees are listed in the acknowledgments with their permission.

Selection of interviewees

The questionnaire focused on the decision-making processes of the various governments with respect to their positions on CO₂ emission targets in the FCCC text. In order to avoid one-sided results, the interviewees selected were not only ministers responsible for environmental policy but were also from other ministries (governmental officials responsible for economy, energy and industrial sectors, and foreign affairs) as well as legislators and those from industry and environmental NGOs. An important selection criterion for interviewees was that they played a major role in the climate change negotiations.

Often in surveys of people's perceptions such as opinion polls, having many samples is thought to be better. However, in this interview survey, the author regarded obtaining comments from those who were deeply involved in the climate change negotiation as more significant than gathering a large number of comments of uncertain relevance. Therefore, the number of interviewees was limited to seven to thirteen from each country.

Possible decision-making factors

In order to identify the critical determinants in countries' decision-making processes with respect to setting CO₂ targets, the questionnaire suggested six

major factors that might have affected such decisions. In other words, these factors were only introduced as possible elements that were likely to have influenced the decisions. These factors were gathered by the author in advance from references related to climate change or to international relations (references to each factor are indicated in the respective sections below). Although these factors are likely to be related to each other, the questionnaire assumed these factors to be independent and of equal weight, because it would have been inappropriate to draw linkages initially.

IMPACT (harm caused by climate change). If global climate change should occur, unprecedented temperature rise, sea level rise, soil degradation, and other natural changes would be expected that would then affect agriculture, the biosphere, and humanity. Countries may take account of the wide acceptance among scientists that climate change is a threat to humanity and that countries should start limiting their CO₂ emissions.¹⁸ However, there is still much scientific uncertainty in the climate change issue. If governments perceive the phenomenon to be too uncertain, they may not feel obliged to take action.¹⁹

COST (economic cost). Climate policies are deeply related to energy policies and to the structure of industry. Policies and measures for the reduction of CO₂ may induce decreases in energy consumption and impede economic growth. Research and development of renewable energy technologies may be considered unnecessary extra costs. Stricter energy-efficiency standards may affect domestic industry by increasing costs and leading to loss of competitiveness in world markets. Contrarily, climate change policies may be economically beneficial, if renewable energy is considered as energy security, or if energy-efficient facilities gain competitiveness in the world market. A nation will only commit to policies that might be economically beneficial to its economic growth and not to those that incur net costs.²⁰

Cost-benefit or cost-effectiveness approaches to the climate change issue compare impact and cost. In the course of decision making in general, cost and benefit are considered conjointly. A policy is supported if its expected benefits are likely to exceed the costs necessary for its implementation.²¹ In the survey described here, however, cost and benefit were regarded as two independent factors, due to the difficulty of comparing the two factors on similar terms, such as monetary terms.

DOMESTIC POLITICS. A nation is not a single actor; it is comprised of primary decision-making bodies and other actors that influence national decision making. Political leaders play roles in prioritizing various issues and putting them on the national agenda. Influential political leaders who are personally interested in climate change problems will pressure their governments to implement strong climate change policies. Similarly, if citizens are interested in climate change, they would also be able to change the government's position by acting directly or indirectly (such as by voting for green parties or by supporting environmental NGOs). Domestic industry may be

able to pressure legislators and government officials not to support climate policies. Governments feel no need to change their policies when there is no such political pressure. Distinctions among the authority that each national or federal ministry and department holds may lead to differences in the degree of their influences in national decision making.²²

The existence of other issues is also likely to affect the priority of environmental issues. Environmental issues, including climate change, may be treated as important when no other pressing problems arise in a country. However, if other problems are at stake, such as recession, unemployment, crime, or foreign unrest, environmental issues are likely to be set aside.

INTERNATIONAL POLITICS. National decisions may be influenced by the decisions of other countries, as well as by other relations that are irrelevant to the climate change problem. A government seeking a leadership role in the international community may consider climate change as an agenda with which to exert such leadership.²³ International pressure may also play a role in decision making. In the case of climate change, the developed countries are considered to be responsible for, and to have the ability to take responsibility for, the problem. If a country is urged by many other countries (especially developing countries) to accept CO₂ target setting, the government may feel obliged to accept it unwillingly, though the policy might not directly benefit the country.²⁴

The political influences on national decision makers are comprehensively elucidated by investigating linkages between domestic and international politics. National governments are likely to take positions that balance domestic and international politics.²⁵

EFFECTIVENESS (bindingness of international agreements). From the beginning of the negotiations, there was a general consensus that the FCCC should be a framework convention, a convention only to agree on the existence of a problem and later to be supplemented by protocols.²⁶ Such international agreements include little in the way of enforcement powers. It was assumed that governments could easily commit to a convention if targets were not legally binding but represented only goals for which to aim. Similarly, governments would accept targets more easily if they felt compliance was not obligatory in international law.²⁷

LEARNING (social learning). National decision making can be influenced by past experiences. Before climate change came onto the political agenda, negotiations were conducted on other environmental issues, such as ozone depletion and acid rain, in which each country learned something that might be useful for subsequent environmental issues. Other political and economic incidents also provided opportunities for governments to learn. A government is likely to act in a way that has succeeded in the past, even if the current issue is different. On the other hand, a government will behave differently if it has experienced a failure in the past.²⁸

The last two factors, effectiveness and learning, serve as background to the

negotiation. Target setting is not the only approach for the mitigation of climate change; effectiveness raises questions concerning the inclusion of targets as a part of international law. A government may perceive the problem from another point of view if it had some learning in the past.

Interview survey and evaluation of hypotheses

The interviewees were asked about decision making in their respective countries only. First, the diagram in Figure 1 was shown to the interviewees, followed by an explanation of how each factor was likely to emerge during their respective country's decision-making process. The explanation for each factor, defined as a "hypothesis," was a decision-making scenario in which one of the six factors played an influential role in the national decision-making process. The hypotheses were different according to the respective countries' decision-making processes, but the same hypotheses were indicated to all interviewees of one country.

Next, the interviewees were asked to comment on each of the six hypotheses and to rate them on three levels:

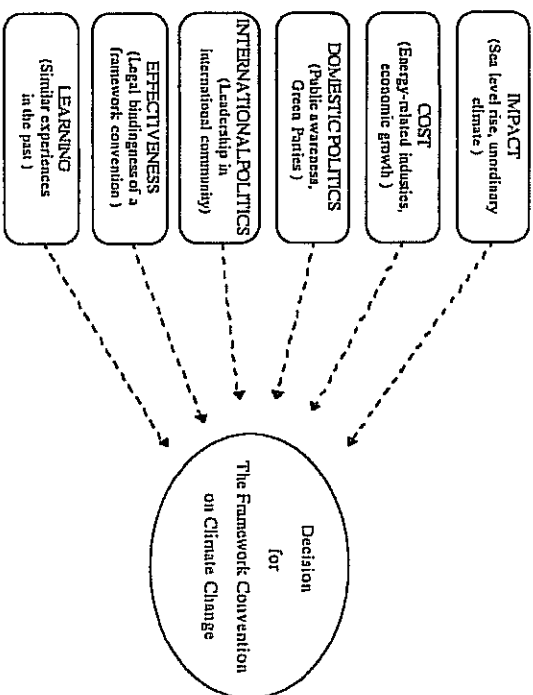


Fig. 1. Framework of the Questionnaire

Note: Some factor names are different from those indicated in the survey. These changes were due to comments from interviewees and advisors. "International politics" was formerly titled "Hegemony," and "Effectiveness" was formerly titled "Procedure." The content of the factors has not been changed.

- *Support*: Supports the hypothesis; the factor was very influential, and was one of the most decisive factors in the country's decision making regarding CO₂ emission targets.
- *Partially Support*: The hypothesis is partially supportable. The factor emerged somewhat in the course of decision-making processes regarding targets, but was not a decisive factor for the country, in relative terms.
- *Do not support*: Does not support the hypothesis. The factor did not affect the country's decision making.

The interviewees were asked to clarify their evaluations by giving explanations for each item and to provide any available data or publications.

Lastly, they were asked to make other relevant comments, such as to note elements that were not mentioned in the hypothesis that fit into one of the factors, to suggest other decision-making factors, or to draw linkages among factors.

Results of the Interview Survey

This section deals with the results of the survey, organized by factor. Evaluations and comments on each of the factors are summarized in Table 2. The numerical values in the table indicate the number of interviewees who rated "support," "partially support," or "do not support" for the hypothesis to each respective factor. Although more than ten people from each country were interviewed, some of them were not deeply involved in their country's decision-making process at the time of the INCs. The factor evaluations of such individuals were excluded from the numbers in the table, but their comments were included in the analysis. In some cases, interviewees did not evaluate certain factors. Therefore, the sum of respondents in the table does not always match the number of interviewees.

Table 2. Summary of Ratings

Factor	Netherlands	Germany	United Kingdom	Japan	U.S.
Impact	4/3/0	1/5/0	1/3/3	0/4/0	3/2/0
Cost	0/5/2	2/4/0	5/1/1	1/3/2	5/0/0
Domestic	4/2/1	6/0/0	3/1/3	2/4/0	0/6/0
Politics					
International	3/2/2	1/3/2	2/5/0	5/0/1	0/2/4
Politics					
Effectiveness	4/2/1	1/0/5	0/3/4	0/1/1	2/2/0
Learning	0/7/0	0/6/0	0/1/6	1/3/0	0/0/2

Note: The three numbers in each column indicate how many interviewees rated "Support," "Partially support," or "Do not support" for each factor.

Some respondents suggested factors other than the six proposed by the survey. After further discussion, the author and the interviewees agreed that the suggested factors could be included within one of the six factors.

Impact

GENERAL COMMENTS. Interviewees from all countries except the U.S. answered that they were concerned about the impacts of climate change. All of the comments on impacts expressed concern for global impacts, rather than impacts only on interviewees' own territories. The possibility of disasters caused by unprecedented climatic change worried most of the interviewees. A Japanese respondent said, "this is an important problem in the longer term." A German interviewee mentioned the "precautionary principle" to explain the necessity of taking action despite uncertainty. The Dutch, often said to be sensitive to the climate change problem because their low-lying land would be flooded by sea level rise, were not as worried about damage to their own land as about effects in other parts of the world. "Sea level rise is not a problem any more in our country," they reported.²⁹ Only some U.S. interviewees emphasized the uncertainty of the science, saying that it was "too early to tell whether in fact there will be a warming."

The term "impact" was also used to describe the impacts of scientific reports provided by certain organizations. The IPCC was established in 1988, with prominent financial and research support from the U.S. and the U.K. The IPCC submitted its first report in mid-1990, reporting that even though "there are many uncertainties . . . the long-lived gases would require immediate reductions in emissions from human activities of over 60 percent to stabilize their concentrations at today's levels." As major supporters of the IPCC, the U.S. and the U.K. had to accept the conclusions of the report as the most qualified scientific evidence then available. As for the U.K., given that Working Group 1 (on the impact of climate change) was chaired by John Houghton, a scientist from the U.K., "the government was not in the position to ignore what the WG 1 reported."

A similar situation occurred in Germany when the Enquete Commission submitted its report on global atmospheric problems to the German Bundestag in 1990. The Commission was composed of legislators from every political party included in the Bundestag as well as eminent German experts. "In June (of 1990), and as a result of that, there was a surprisingly highly scientific consensus on climate change."

EVALUATION. It is understandable that most of the interviewees in every country rated the "impact" factor hypothesis "support" or "partially support," considering that there would have been no need to discuss climate change if they had not been aware of impacts. However, the decisiveness of "impact" as a factor varied among countries.

In the interviewees' comments, two implications of the "impact" factor

stood out: as fear of uncertain climate change on a global scale, and as a source of encouragement via the scientific evidence endorsed by scientific organizations. Fear for the uncertain impact on climate change was partially or significantly influential in all five countries. In the Netherlands, the threat of global climate change was one of the major decision-making factors that drove the country to commit to its reduction target. Several conferences were organized in the academic community before climate change rose to the political agenda. Most Dutch interviewees mentioned those conferences, indicating their interest from early stages. In contrast, the U.S. was more influenced by continuing scientific uncertainty, and judged that there was still time to confirm the evidence of climate change before taking any action. The other three countries considered the impact of climate change only partially during their decision-making processes.

Here, we observe perception gaps among countries concerning the impact of climate change. All five countries spoke of impact at a global rather than a national level, and they all accepted the IPCC report as the best available scientific evidence. However, some countries became more anxious and took the possibility of impact more seriously than did others. It is difficult from this survey to determine the reasons for this perception gap. Extraordinary weather during the relevant period might have affected people's perceptions of climate change. Many respondents noted that North America experienced a hot summer in 1988, which brought about national debate over the issue. However, more hurricanes, floods, heat waves, and other natural disasters have occurred in the U.S. since 1988, but have not raised public interest in the climate change issue. Some respondents commented upon cultural differences among countries. Some German interviewees said that the German culture was deeply connected to forests and that the linkage between climate change and deforestation in tropical regions was the key to German awareness of the impact. However, this "culture theory" does not provide an adequate explanation for the Dutch government's concern for climate change, nor for Germany's awareness of many other environmental issues such as waste management that are unrelated to forests. Another possible explanation is that the U.S. and the Netherlands each had their own scientific evidence, which was different from that of the IPCC, though this assumption was accepted by no respondents.

The latter role of the term "impact" was noted in all countries except the Netherlands. Many commented that reports from scientific organizations urged their government to accept scientific evidence of possible climate change to some extent, indicating the effectiveness of those scientific organizations in influencing national decision making. Such organizations facilitated the participation of scientific experts in national decision-making processes. Reports from the IPCC might have been more influential to the Netherlands and Japan if those countries had contributed to the IPCC either financially or by letting more of their experts participate in the IPCC's scientific activities.

Cost

GENERAL COMMENTS. A variety of opinions about cost were offered in each country, and the rating of this factor was also diverse among countries.

The U.K. respondents were the only ones who admitted that the U.K.'s energy and industry policies were consistent with their CO₂ emission reduction policies. The U.K.'s general policy in the 1980s was to privatize industries that were at that time run by the national government. Electric utilities were privatized in 1989, and it was obvious that the privatized companies would favor gas power plants over those using coal since the coal power plants were more expensive to maintain. At the same time, the British government was considering a decrease in the subsidy to the coal industry for budgetary reasons (this policy was called the "Dash for Gas"). One interviewee in the U.K. said, "a little bit of energy efficiency, a conversion to gas, and the recession means the U.K. will achieve the target."³⁰ The incremental cost of stabilizing CO₂ emissions in the U.K. was investigated in detail by the Interdepartmental Group on Environmental Economics (IGEE), composed of eminent economists from different government departments. This group determined the U.K. target to be the year 2005.³¹ While the possibility of achieving the 2005 target was being investigated, the British economy went into a recession, and CO₂ emissions growth slowed more than was expected. This "unexpected condition" enabled the U.K. to shift its target year from 2005 to 2000.

In the Netherlands, Germany, and Japan, the economic costs for limiting CO₂ emissions were uncertain. Each of these countries had projected the costs of climate policies on their economies, but interviewees' comments on economic cost did not always reflect this projection: "almost impossible to estimate cost" (Japan); "there was no discussion of cost" (Germany). A Dutch interviewee said that possible future emissions and the costs of emission reductions could not be estimated correctly without knowing what kinds of policies were to be implemented both inside and outside of the country. In both Germany and the Netherlands, some comments were made on the "competitiveness" of their industries. If climate policies were implemented only in their countries, then their energy-related industries would bear extra costs and thus lose competitiveness against the energy-related industries in other countries. Unilateral implementation of climate policies was therefore generally considered to be more difficult and costly than simultaneous implementation of common policies (such as a carbon tax) by all the developed countries. Differences in the perceptions of cost seemed to come partly from the respondents' assumptions of the degree of policy coordination among industrialized countries.

Some German and Japanese interviewees mentioned the possibility of increasing exports of their relatively energy-efficient technologies: "they see some opportunities to export their technologies" (Germany); "firms were expecting increases in technology exports" (Japan). These comments suggest

a belief that industries with energy-efficient technologies will gain in competitiveness by developing new technologies earlier than countries driven by strict national emission targets.

Interviewees from the U.S. stressed the high cost of mitigating CO₂ emissions. Although they admitted that there were "no regret" policies (policies that would benefit the country regardless of climate change, such as improving energy efficiency), U.S. respondents said that it would be too difficult for the U.S. to change its major energy resources from coal and oil to gas and renewables. It was mentioned that U.S. coal reserves are estimated to be sufficient for another 400 years and that it was not feasible to seek a new energy source: "coal is very important for us as a domestic fuel in terms of energy dependence and economic growth." Many U.S. interviewees also mentioned that the U.S. is a large country, and that it was difficult to shift their major means of transportation from cars to public transportation: "you can only have public transportation in areas that are densely populated." The general trend of responses from U.S. interviewees was that the people in the U.S. have an established way of life that requires relatively high energy consumption, and that it would be too costly to change this lifestyle.

EVALUATION. For all countries, the economic costs of achieving CO₂ emission targets were either the most critical factor for national decision making, or one of the most influential factors. For the U.K., the estimated cost for stabilizing CO₂ emissions was small, and this estimate was regarded as the primary factor behind the decision of the British government to commit to their target.³² On the other hand, the U.S. has estimated that it would require a tremendous expense to stabilize its CO₂ emissions, and that became the most decisive factor in the U.S. decision to oppose inclusion of CO₂ targets in the Convention. For the other three countries, a wide variety of estimates have been made of economic costs, but the evaluations of informants in these countries were quite consistent; most agreed that the various cost calculations were only partially considered when their respective countries committed to CO₂ targets.

These evaluations lead to the conclusion that cost is a critically influential factor when great expense is required to achieve the target, but is only partially influential when cost is small, uncertain, or when CO₂ mitigation may be economically beneficial. This conclusion is drawn especially from the U.K. results, where cost played a decisive role but the country did not play a "leadership" role at the negotiations, and those from the U.S., where cost was expected to be high, which critically affected the decision to oppose the setting of targets.

This discussion of cost leads to a new question: "What is cost?" Calculation and perception of costs differed significantly according to each individual interviewed. If a country had another incentive to reduce CO₂ emissions, cost estimates were likely to have been low. If it had no other reasons to implement climate change policies, then the cost became relatively high. In other words,

CO₂ emissions reductions were viewed in terms of their opportunity costs rather than the actual amount needed to achieve a target. In addition to this concept, studies in the U.S. have suggested that many opportunities exist to reduce CO₂ emissions via "no regret" policies.³³ In this sense, cost may be regarded not only as opportunity cost, but also as "political cost," due to strong lobbying from energy-related industries. Thus the "laggard" countries might play more positive roles in climate change negotiations by implementing policies that would make CO₂ emission reductions more economically attractive to their major industries. Examples from Germany and Japan, where industry sought new markets for their technologies, may assist in framing such policies.

Domestic politics

GENERAL COMMENTS. There were two distinct elements in the comments made about domestic politics: personal characteristics of the political leaders (ministers, president, etc.), and public awareness on the climate change problem.

The Enquete Commission was mentioned by all German interviewees. Although several members of Parliament played a key role gathering other legislators and scientific experts for the Enquete Commission to address the climate change issue, interviewees' comments focused on the Commission itself rather than on individual political leaders. The Commission took the initiative in the climate change debate in national politics and its report influenced government decisions: "the Enquete Commission was the result of general awareness among different sectors of society and especially in the Parliament." Some German interviewees said that although Chancellor Kohl was not one of the key players, he was supportive of the problem: "[Kohl] has a feeling that he is one of the big leaders of the world. And as a big leader of the world, he feels responsible that such a global issue should be tackled in an adequate way."

Strong political leadership by one or two political leaders was mentioned by interviewees in all other countries. The most frequently mentioned individuals were Prime Minister Thatcher of the U.K., and President Bush of the U.S.

Prime Minister Thatcher became aware of the problem after "Ambassador Tickell, the ambassador to the UN in New York at that time, who got to know Prime Minister Thatcher very well," convinced her of its importance. As a scientist, she understood the significance of the problem, and started to speak about it publicly. Her speech to the Royal Society in 1988 was said to be the turning point in her position toward climate change.³⁴ A U.K. interviewee noted that "public opinion followed because the Prime Minister said it was a problem."

On the other hand, President Bush and White House Chief of Staff John Sununu were often mentioned as key players in the U.S. who were personally

skeptical of the climate change problem. Various reasons were given for this. The President "had political support from energy-related industries." The federal government made amendments to the Clean Air Act in 1990, which President Bush had difficulty passing. Sununu was said to be doubtful of the issue, and he was in an influential position: "he and his staff kept U.S. negotiators on a tight leash, monitoring developments by telephone; the President was very much ill-informed."²⁵ It was also said that compared to the Democrats, the Republicans tend to grant higher priority to economic growth than to environmental problems, and that eight years of the Reagan and four years of the Bush administrations weakened the power of the Environmental Protection Agency.

In the other two countries, several political leaders were said to be key players who influenced their countries' positions towards the FCCC.

In the Netherlands, all Ministers of the Environment from the late 1980s to 1992 were "key players in framing the strong position of the Dutch government." They had the authority to decide on some concrete matters.²⁶ Prime Minister Lubbers was mentioned infrequently in the interviews, but he was considered to be a person who trusted his Ministers and let them do whatever they thought best in matters under their areas of responsibility.

In Japan, the Liberal Democratic Party (LDP)—the leading party at that time—was said to most influence the government. In 1989, Prime Minister Takeshita established the Council of Ministers for Global Environment Conservation. Since then, there was a "general consensus in the Cabinet that Japan should play positive roles in addressing global environmental issues." In 1990, when the Environment Agency and the Ministry of International Trade and Industry (MITI) could not reach an agreement on a target for CO₂ emissions, the LDP took the initiative and advised the ministries to set a compromise target.

Comments concerning public awareness of climate change problems were similar in all countries; almost all the interviewees said that public awareness was high only for a short period in the late 1980s, and faded gradually in the 1990s. Public awareness was said to be high in Germany relative to other countries. The German public had been concerned about dying forests in their own country, which caused the population to be more concerned about climate change as well as by environmental issues in general: "Chancellors get hundreds of letters each week in the ministry, I don't know how many thousands a month, from citizens who are concerned about the environment."

Comments from the other four countries were along the same lines. In the Netherlands, "there was much awareness in the late 1980s, but as the economic recession began, interest in environmental problems began to recede." In Japan, comments on public awareness of climate change varied according to what it was compared with. Some compared present public opinion regarding climate change with that of the past, and said that there was an environmental boom in the late 1980s when the public was interested in global

environmental issues, more or less as a fashion. Others compared public awareness within other developed countries and said that the Japanese people had no intention of supporting the activities of environmental NGOs. In the U.K., public awareness was considered to be lower than in other developed countries: "The public in this country is not as environmentally aware as in other countries"; "by and large, the environmental NGOs are more concerned with local issues, nature conservation issues. So something like climate change, although it might impact their concern, is not immediately visible." In the U.S., environmental problems such as waste management and water quality are easier for the general public to understand than climate change: "The public was not so interested in the issue and was aware of regional environmental issues." Climate change was said to be a major concern of the public in 1988, when the U.S. had an extraordinarily hot summer, but concern faded quickly.

EVALUATION. In all countries, a number of political leaders significantly influenced decision making regarding CO₂ targets by supporting their environment ministries or by raising national public awareness. Especially in the Netherlands, Germany, and Japan, "domestic politics" was evaluated as one of the most decisive factors. In every country, the environmental ministry had more limited administrative power than other ministries such as those for the economy, industry, transportation, and agriculture, because those ministries were responsible for sectors where most of the climate change policies were to be implemented. Thus, the environmental ministries needed political support to convince other ministries to commit to CO₂ emission targets. This analysis indicates that acceptance of the CO₂ target was largely driven by several political leaders in those three countries, regardless of the scientific evidence or calculation of the expense needed to achieve the target.

Many notions were expressed concerning political systems and national positions on the climate change issue. For example, it is often said that in countries such as the Netherlands and Germany, where coalition rather than single-party governments dominate, political leaders tend to be aggressive in making themselves by offering new issues for the political agenda. It is also often believed that political leaders have less influence in government decision making in countries such as the U.K. and Japan, where bureaucrats in the central government exercise decision-making authority. The president of the U.S. is said to have the power to impose his will on the country's decision-making processes. It is difficult to prove these notions with only the results of this survey. However, a tendency to be more driven by domestic politics than the U.K. and Japan, and much more so than the U.S., is revealed for the Netherlands and Germany. Also, compared to other countries, more comments were made in the U.K. and Japan on interdepartmental disputes. For instance, a Japanese respondent said, "it was a gift of compromise among ministries." Therefore, there may be some relationships between national positions in climate change negotiations and the respective political systems. It would be worthwhile to conduct further comparative analyses of the political

systems of these countries, and of their electoral systems, the distribution of political power between political leaders and the governments, the distribution of administrative authority between central and local governments, and so on.

Comments about the roles of public opinion were similar in all the countries, and evaluations were also similar: that public opinion was partially and indirectly influential. To determine the relationships between public opinion and national decision making, it would be necessary to investigate further climate change opinion polls in those five countries. It was difficult to find any link between public awareness and the will of political leaders to establish ambitious CO₂ emission targets. Theoretically, it should be possible to explain this relationship in terms of the electoral systems of those countries. However, comments showed that the political leaders who played key roles in pushing the government were not considered to be driven by desire for re-election, but rather by their personal beliefs that climate change was an important problem. On the other hand, it is also possible to interpret the survey results as indicating a linkage between public awareness and political leadership, because most of those politicians who were mentioned as having exercised leadership were only in office in the late 1980s and 1990s, and had moved to other positions by 1992. Their successors were not considered as influential as the leaders they replaced.⁷ Reasons for this difference were not given by this survey.

International politics

GENERAL COMMENTS. This factor was defined by interviewees in three different ways: aspiration for leadership in the international community, contributions to the international community, and pressure by other developed or developing countries.

Interviewees in the Netherlands and the U.K. focused on the importance of leadership aspiration. As mentioned earlier, the Netherlands was interested in the climate change issue from the early 1980s, when the discussion was still largely within academic science. The two conferences the Netherlands hosted in 1989, the Hague and Noordwijk Conferences, were actually the first two conferences on climate change where political leaders—in addition to scientific experts—participated in the debate about solving the problem. Interviewees commented that these conferences were a good chance “for the Netherlands to be a leader in international issues.” The Netherlands held the EC Presidency in 1990, and climate change was an appropriate issue with which to take the lead among European countries.

On the other hand, interviewees in the U.K. again mentioned their prime minister: “Mrs. Thatcher also believed that the U.K. could secure some kind of leadership by both taking the ozone issue, and the global warming issue. I think she wanted leadership in science.” It was not the British government but rather the Prime Minister herself who considered international leadership to

be an important reason to support climate change negotiations. The interviewees commented that her ambition was for the U.K.’s leadership in science only, and that she did not intend to be a leader in all international issues. The British government, on the other hand, was more interested in taking on a special role as “a broker between the U.S. and the EC.” Rather than trying to take the lead in international negotiations, the U.K. supported the compromise text between two opposed positions.

Respondents from Germany and Japan were interested in their countries’ international contributions and coordination roles. Germany and Japan have experienced similar histories in the twentieth century, and this historical background was often mentioned to explain their present political attitudes toward climate change. During the Second World War, both nations were under military dictatorships, and both lost the war. After the war, they became sensitive to military debates, and were reluctant from any leadership roles in the arms race during the Cold War. They succeeded in recovering from the aftermath of the war by rapid economic growth in the 1960s and 1970s, and by the 1980s, both had become top economic countries. Once they came to be major economic superpowers, it was difficult to avoid global issues, but also difficult for them to contribute militarily, such as in peace-keeping operations of the United Nations. For these countries, climate change and other global environmental issues were the most advantageous political avenues through which to contribute to the international community. One German said, “we are now looking for a field of activities; where the U.S. is the military power, Japan is the economic power, we are the green one.” A Japanese interviewee, on the other hand, said, “Japan may be criticized if it takes the leadership in other international issues such as trade,” and “Japan has been expected by other countries to contribute to the world welfare.”

International pressure was clear in comments from the U.K. and the U.S. The U.K. belongs to the EC, and there was discussion among EC countries in 1990 to set a target for the EC as a whole. By that time, it was difficult for the U.K. to have no target when other major European countries had undertaken strict commitments. Some British interviewees commented that the primary reason for shifting their target year from 2005 to 2000 was “to have a common target with other EC countries.” Britain wanted to avoid being isolated at the conference. Major could not go to Rio with this (2005) target.”

The U.S. was also pressured by the European countries to set a target on its CO₂ emissions. Some U.S. interviewees said that “we were cornered by the European countries.” Some comments from the European countries admitted that “we pressured the U.S. strongly, we pushed them right to the wall” (U.K.). However, other international issues precluded the U.S. from being overly concerned by environmental issues. Most of the interviewees agreed that the international leadership role of the U.S. declined after the end of the Cold War, but that it was still the leader of the world, especially in military terms: “at least it loosened the traditional leadership role of the U.S.”; “in

political and military spheres we're still doing well." In 1990, when Iraq invaded Kuwait and the Gulf War began, the U.S. became the dominant country. The U.S. government was more interested in taking the lead on peace keeping rather than on the climate change issue.

EVALUATION. For the Netherlands, the U.K., and Japan, international politics was one of the most influential factors in setting a CO₂ target. Especially for the U.K. and Japan, the "follower" countries, international politics played a decisive role in their agreement to include a target in the Convention. In Britain, there was pressure, particularly from Germany, the Netherlands, and Denmark, to accept common commitments among the EC countries. On the other hand, it was Japan's willingness to take positive action in the international community that became the incentive to set a stabilization target. Respondents from Britain and especially from Japan often commented that "without other countries' initiative in setting a target, it would have been difficult, or even impossible, to set a CO₂ emission target by ourselves." On the other hand, "international politics" was considered to have had little effect in Germany or the U.S. The German government did not intend to make use of climate change as an issue with which to take a leadership role, although it ultimately did so. For the U.S., pressures from other developed countries did not change their decision.

Why were the "follower" countries influenced by other countries whereas the "laggard" country was not? The "follower" countries might have had potential to be "leader" countries, but that potential was not strong enough to influence the governments' decisions. This question will be investigated in a later section when the relationships between the various factors is considered.

Effectiveness

GENERAL COMMENTS. Comments concerning effectiveness fell into two categories: those that dealt with the procedural matter of whether the convention should include a target, and those that dealt with compliance with an international agreement in the absence of any sanctions.

The first definition of effectiveness, the inclusion of targets, was emphasized by U.S. informants. When negotiations for the mitigation of climate change began, it was said to be a framework convention, an agreement that contains no specific obligations. "We were negotiating a convention, not a protocol." The U.S. considered this framework/protocol approach to be more effective in the climate change problem. One U.S. interviewee mentioned that the U.S. would have supported the Convention from the beginning if it did not include specific targets. The other four countries preferred to set a target in the Convention, because they had set their own national targets by the time INC started.

The interpretation of effectiveness in the Netherlands was in marked contrast to the hypothesis described in the questionnaire. The general assertion of the hypothesis was that it would be easier for countries to sign a convention if targets were not considered to be legally binding. However, some Dutch inter-

viewees said that the Netherlands would not have signed the Convention if it had not included commitments for limiting CO₂ emissions, because the Netherlands had its own national reduction target before the INC negotiations and the Dutch government expected other countries to follow suit: "we need a target to bind other countries as well."

The second definition of effectiveness, whether parties would comply without sanctions, was mentioned by the British, American, and Japanese interviewees. Respondents in the U.K. and Japan said that, before their countries sign onto a convention, they not only analyze whether it is feasible, but they also confirm with all related ministries that they would implement the policies and measures necessary to fulfill the commitments. A U.S. interviewee commented that "the public may sue the government if the government does not fulfill their obligation in a convention." A U.K. respondent said, "the U.K. tends to be pretty careful and regards international commitments, legal commitments, as quite serious undertakings." Interviewees in these countries emphasized that their consciousness toward strict commitments had delayed their decisions. Some interviewees expressed suspicion toward commitments made by European and Scandinavian countries, saying that "some of the European countries would agree to any good commitments without sufficient consideration of feasibility."

In Germany, most of the comments were similar to those of the above three countries: that Germany had a more ambitious national commitment that must be achieved independent of the FCCC, and that they had done enough feasibility studies before signing it. However, several comments interpreted the term "target" as an aim or goal, which has less binding power. One interviewee commented that "it was considered to be more important to take action first rather than studying whether you can achieve it or not and doing nothing," while another remarked, "I'm sure they have done some study on that, but these studies are all done explicitly by some consultants or someone in universities and they just don't have the necessary insights into industrial processes."

EVALUATION. "Effectiveness" was supported by interviewees in the Netherlands and the U.S. as one of the most influential factors for their decisions. The Dutch respondents said that they agreed to the present text of the Convention because they could interpret it as a legally binding target to stabilize CO₂ emissions. On the other hand, the U.S. could sign the Convention because it interpreted Article 4.2(a) and (b) only as an aim for their greenhouse gas emissions.

The effectiveness of the target was not included in the decision-making discussions regarding CO₂ emission targets for the other three countries. Interviewees commented that the effectiveness of the target in the Convention did not matter, because they had made national commitments that they had to achieve in any case. Especially for the U.K. and Japan, it was considered more important to have all the developed countries agree to the Convention than to have a Convention with strict targets and timetables.

In all countries, the targets were considered to be legally binding commit-

ments. However, respondents in the U.K., Japan, and the U.S. made remarks that implied that they were doubtful of the implementation of targets in European countries. This skepticism regarding implementation by the European countries may be regarded as one of the elements that delayed agreement in the INC negotiation. Whether this concern was justified is yet to be seen. Current projections for the year 2000 suggest that both the Netherlands and Germany are struggling to achieve their national targets.³⁰ The influence of the "leader" countries might have been stronger if they could have refuted other countries' skepticism by publicizing their feasibility analyses as well as by taking actions necessary to achieve the target.

Learning

GENERAL COMMENTS. The term "learning" was often mentioned in interviewees' remarks on the other five factors, so it became difficult to classify "learning" as an independent factor. However, this study maintained learning as a separate factor because it was worthwhile to compare what kinds of learning countries took into consideration in their decision making and what experiences they did not choose to take into account.

"Learning" was experienced by the government, political leaders, the public, or industry. Some comments related past experiences of governments' dealings with environmental problems. Interviewees from both the U.K. and Japan commented that the ozone depletion negotiations in the 1980s had served as a lesson in the past. They were "laggards" in the CFC negotiations, and their governments later concluded that they had failed in those international negotiations because they were criticized by other developed countries. One British interviewee said that "there was certainly a perception that we made a bit of a mess at the Montreal Protocol [negotiations]." A Japanese interviewee commented that it was said that "we couldn't make any contribution to the ozone depletion problem, so we wanted to do better in the climate change negotiations."

As for the lessons of political leaders, comments were made by U.S. respondents about the experience of the President. As was already mentioned in the "domestic politics" section, the President had difficulty in getting Congress to pass amendments to the Clean Air Act in 1990, and his experience seemed to make him more negative toward the climate change problem.

"Learning" of the public was mentioned in the two leader countries. The Germans' experience of the impact of acid rain helped them to become aware of the climate change problem when climate change was linked with deforestation in tropical regions. The Netherlands and its people had gained confidence in their dikes when they did not suffer from flooding following improvement of the dikes with best-available technologies after an historic flood in 1953. This experience made the Dutch people somewhat more optimistic about the impact of climate change on their own country.

"Learning" of industry was mentioned in Germany and Japan, where "cost"

did not become an obstacle relative to other countries. Industries that had succeeded in overcoming the oil crisis in the 1970s had learned that investments in energy-efficient facilities were beneficial in the long term. With this experience, the industrial sectors in both countries generally did not oppose climate change policies, but rather tried to cooperate with their governments in framing the policies. "The funny thing is that those countries that have already done a lot are the ones who are in favor of more stringent regulations. Those states that have done nothing, they think they can't. [This is] one of the lessons."

EVALUATION. The hypothesis of the "learning" factor was rated as only partially supportive in four countries, and was denied in the U.S. Almost all U.S. interviewees concluded that "climate change is totally different from ozone depletion and there is little to learn from [the experience with the CFC negotiations]." Although a clear relationship between "learning" and national positions towards CO₂ emission targets was not found, it may be worthwhile to mention that in the countries where the decision was made by a cost-benefit approach, learning did not influence the decision.

Why were some similar experiences considered important by one country and dismissed in the next? For example, Germany was not the only developed country to experience forest damage due to acid rain. Nevertheless, only the German and Dutch governments learned from this experience to avoid damage to the global environment. The oil crises of the 1970s hit all the developed countries and most of them had improved their energy efficiencies by the 1980s. However, only Germany and Japan used these challenges as good opportunities that influenced their subsequent climate change policies. The question of the relationship between learning and behavior was not answered here and needs to be investigated further.

Discussion of Results

This section deals with the relationship between the degree of each factor's influence on national decisions and the relative positions of countries (leader, follower, or laggard). The purpose of this section is to provide a general framework for the climate change negotiations, and to review the decision-making process by taking account of linkages between the various factors. This somewhat speculative generalization of the decision-making process was derived from the results of this survey alone (Table 2). More research would be necessary to obtain more certain rules that would fit the situations in other countries as well.

Leaders

The significance of "domestic politics" was the common factor in the two leader countries, the Netherlands and Germany. The most important common element was that both had several key political leaders who were personally

interested in the issue, considered it important, and organized themselves to lead domestic efforts to set CO₂ emission targets for their country first.

In the Netherlands, those political leaders seemed to have been influenced by two other factors, namely the impact of climate change at the global level, and their eagerness for leadership in the EC. The decision-making process began with Dutch scientists who attended conferences on climate change in the early 1980s, and successfully convinced political leaders that there was enough evidence to initiate mitigation policies. The Netherlands at that time had been seeking a suitable issue with which to take a leadership role in the EC. The Ministers of Environment were especially keen to become climate leaders, and suggested that the government set a national CO₂ emission target, as well as to hold international conferences on climate change.

Germany's initial motive for exerting leadership in the climate change debate was related more to domestic politics. The German people were concerned about environmental problems in any way related to deforestation by acidification. To be supported by the public, political leaders needed to pay attention to environmental issues. They established the Enquete Commission, which published a recommendation to the government to significantly reduce CO₂ emissions.

After setting their own national CO₂ targets, the leader countries felt that other countries should have similar targets, because climate change can only be avoided when all major countries cooperate and reduce their greenhouse gas emissions. Also, it would be economically beneficial if other countries shared the economic burden. At the same time, the leader countries considered climate change to be an issue with which they could play a leadership role in the international community. They emphasized the necessity of having targets in the Convention, sometimes without enough consensus building in the government on the implementation of necessary policies and measures.

Leader countries not only had influential political leaders, but also had political systems that allowed those leaders to frame national policies and to pressure the government. In Germany, the Enquete Commission was not comprised of civil servants, and was granted the authority to recommend policies to the government. Countries with multi-party governments may have more flexibility in dealing with new issues such as global environmental problems, because it is easier for green parties in such countries to be involved in the legislation.

Followers

The follower countries were motivated by "international politics," although there were several interpretations of the term.

Follower countries, represented in this study by Japan and the U.K., had backgrounds similar to those of the leader countries; they had some concerns about the impact of climate change, and their estimates of the costs to achieve the CO₂ emission targets were either relatively small or uncertain. However,

they lacked political pressure from national political leaders as well as from the public. Some leaders were personally interested in the issue and were willing to deal with it seriously, but they were unable to impose their views on their country's decision without support from the leader countries.

In the U.K., "cost" rather than "international politics" was rated as the most influential factor. The British government announced its commitment to a stabilization target only after the Netherlands and Germany had set their national targets and it became clear that they could achieve them at little cost. Also, the British government modified the target year from 2005 to 2000 in order to coordinate with other EC countries. Even after making this commitment, the U.K. did not change its position in the INC negotiations. It remained a follower and played a special role as a mediator between the U.S. and the EC. One interpretation of these events is that "international politics," or pressure from the EC countries, was indispensable for the U.K. to the setting of its national CO₂ target.

Japan had opposed setting CO₂ emission targets, saying that it was not feasible without high cost. However, the "leader" countries and the U.K. enacted their CO₂ targets in 1988 and 1989, which influenced both the Japanese government itself and some of its political leaders. Since Japan became an economically powerful country in the early 1980s, the government as well as political leaders were seeking an issue with which to contribute to the international community. Climate change was considered to be suitable. When the government was discussing emission targets, some political leaders in LDP pressured the government to commit to a stabilization target so that they could appeal to other developed countries. Those political leaders would not have recommended CO₂ targets, and the government would not have accepted them, if other developed countries had not committed previously to national targets.

The follower countries tend to have strong central governments where national decision making takes place. In the U.K., it was not the Parliament that recommended that the government set emission targets, but rather the IGEE that played a major role in setting the target for 2005. The Japanese government established the Council of Ministers for Global Environmental Conservation, where political leaders were gathered by the ministries and discussed the outline of Japan's environmental policies. The members of this council agreed that Japan should become a more environmentally conscious country. However, Japan needed all the related ministries to agree to the decision before it was made public. This consensus system within the government seems to be a typical characteristic of the bureaucracy, and makes it difficult for governments to play a "leader" role on issues such as climate change that involve various ministries.

Laggards

The laggard countries (represented by the U.S. in this study) were influenced by the "cost" of achieving the target. They shared the same scientific findings

as did the other countries, and were pressured by the leader countries, but could not agree to CO₂ emission targets because of perceived negative influences on the domestic economy. The cost factor stimulated domestic politics in various ways.

The U.S. has huge fossil fuel reserves, and the energy industry is dependent on the energy-related economy. In a country such as the U.S. where the price of energy is low, increased energy efficiency is not economically beneficial even in the long term. U.S. industry put pressure on the government not to support CO₂ mitigation agreements. Similarly, although the public had some interest in environmental issues, they were not overtly concerned about climate change, especially since people knew that they would have been asked to change their lifestyles to reduce national CO₂ emissions. Without pressure from the public, political leaders had no incentive to place the climate change issue on the agenda.

"Laggard" countries may be those countries in which more regulatory authority rests with local governments than with the central government. The U.S. federal government allows the state governments much liberty on environmental standards and regulations. When most environmental matters are decided at the state level, it is difficult for the federal government to set targets for aggregated national emissions.

It remains unclear whether the leader countries would have taken the same position if great cost would have been incurred to reduce their emissions, or if the laggard countries had had charismatic political leaders who devoted themselves to effectively addressing climate change. To answer to these questions fully would require continued research with the five countries and observation of the dynamics of climate change policies in their subsequent decision-making processes. However, it may be said that "cost" seems to be a stronger factor at this moment, when we see the Clinton administration unable to alter the U.S. position, and the EU unable to implement uniform carbon taxes. Cost-effective policies (or "win-win" policies) may be the only achievable starting point if this situation continues.

Despite the differences in political systems that may have influenced national positions in the climate change negotiations, I do not conclude that one political system is better than any other in environmental decision making. Rather, I emphasize that this analysis was one attempt to understand the determinants of national positions in the climate change negotiations.

Conclusion

Several conclusions can be drawn from this study:

- Domestic politics was the most critical factor for decision making toward the setting of targets for CO₂ emissions. Here, the term "domestic politics"

means the strong will of political leaders, and the public awareness that supports such leaders.

- Pressure from leading countries on other countries was effective when the costs for those other countries to achieve the target were relatively low, and when domestic political pressure in those countries was insufficient for them to take initiative in the climate change negotiations.
- The countries that opposed CO₂ targets were critically influenced by the economic cost of CO₂ abatement. Pressure from other countries did not influence such countries.

In light of the above points, I suggest the following actions to facilitate consensus building in the upcoming negotiations for a protocol or other legal instruments.

- Keep the public and political leaders aware of the climate change problem. Without political support, no country will be able to implement a strong reduction target. Public awareness is still at a low level, and must be raised, since public opinion influences politics and since ultimately, it is each individual who must decrease his or her CO₂ emissions.
- Maintain good communications between countries. Some countries need pressure from other countries. Especially when negotiations deal with implementation of policies and measures in the developed countries, common policies and measures are one way to avoid debates on competitiveness.
- Demonstrate that high energy-efficiency and renewable energy pay in the long run. It is crucial to reduce the cost of climate policies to obtain support from countries that have relatively high energy demands. This problem might be alleviated by disseminating accounts of experiences of countries that have succeeded in raising their levels of technology at low or no cost.

This paper focused only on the five industrialized countries. One of the important elements in the climate change negotiation, however, is the role of other nations in diversified circumstances, including economy-in-transition (EIT) countries and developing countries. Future comparative studies of the decision-making processes in these countries, as well as of the roles they play in the negotiation process at the international level, are necessary.

Notes

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1. United Nations, Framework Convention on Climate Change, 1992. In Article 2, the ultimate objective of the Convention is "to achieve . . . stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."
2. United Nations, Document FCCC/CP/1995/L.14, 1995. In the Mandate, it is agreed to "begin a process to enable it [the Conference of the Parties] to take appropriate action for the period beyond 2000, including the strengthening of the commitments of Article 4, paragraph 2(a) and (b), through the adoption of a protocol or another legal instrument."
3. On climate change policies, see, for example, Kazuhiko Takemoto, *Japan's Initiatives on Global Warming* (Washington, D.C.: The World Bank, 1991); Tony Brenton, *The Greening of Macmillan* (London: The Royal Institute of International Affairs, 1994); Matthew Paterson, "Global Warming," in *The Environment in International Relations*, ed. Caroline Thomas (London: The Royal Institute of International Affairs, 1992), pp. 155-98; Gunnar Fernman, *Japan in the Greenhouse: Responsibilities, Policies and Prospects for Combating Global Warming* (Lysaker, Norway: The Fridtjof Nansen Institute, 1992); Fernman, *Political Leadership and the Development of Problem-solving Capacity in the Global Greenhouse: Prospects of Germany, Japan and the United States Towards the 21st Century* (Lysaker, Norway: The Fridtjof Nansen Institute, 1994); David Maddison and David Pearce, *The United Kingdom and Global Warming Policy*, CERGE Working Paper No. 31, 1994; Elizabeth J. Rowbotham and Timothy O'Riordan, *United Kingdom's Policy Response to Global Warming* (Norwich, U.K.: CERGE, University of East Anglia, 1994); Ian Rowlands, *The Politics of Global Atmospheric Change* (New York: St. Martin's Press, 1995); Miranda Schreurs, "Nihon ni Okenu Kanryo Seisaku no Ketei Kasei [Japan's Decision Making on Environmental Policies]," *Chiyon Journal of Pacific Asia* 2 (1994): 3-38. On the INCG, see Noburoshi Akae, *Chiyon wa itaru* [An agenda for global survival] (Tokyo: Sekai no Ugokishu, 1993); Daniel Bodansky, "The United Nations Framework Convention on Climate Change: A Commentary," *Tulane Journal of International Law* 18 (1993): 451-521.
4. For instance, although many studies on climate change use game theoretic methodologies, only a few build the framework with n-players and with major considerations of equity. See, for example, Johan Eyckmans, Stef Proost, and Erik Schokkacker, "Efficiency and Distribution in Greenhouse Negotiations: Preliminary Version," unpublished paper, Katholieke Universiteit Leuven, 1991; Yasuko Kawashima, "Chikyuu Ondanka Boushi ni Muketa Kokkakan no Kyochu no Kanosei [Possibilities of International Coordination for the Mitigation of Global Warming]," *Kaitaku Gyosai* 16, no. 2 (1993): 93-106.
5. Minister for Public Housing, Physical Planning and the Environment, Minister for Economic Affairs, Minister for Agriculture, Natural Resources and Fisheries, and Minister for Transport and Waterworks, *National Environmental Policy Plan*, The Hague, 1989; and *National Environmental Policy Plan-Plus*, The Hague, 1990.
6. Bodansky, "The United Nations Framework Convention," p. 513.
7. Public Relations Department of the German Bundestag, Enquete Commission of the 11th German Bundestag on "Preventive Measures to Protect the Earth's Atmosphere: An International Challenge," Bonn, 1989. Although this report does not suggest any specific reduction target, it recommends "that the Federal Republic of Germany pursue both international and national efforts aimed at drastically reducing emissions of all climatically relevant trace gases." In 1990, the Commission recommended a 30 percent reduction from 1990 levels.
8. Personal communication.
9. Government of the United Kingdom, *This Common Inheritance: Britain's Envi-*

10. *Environmental Strategy*, Cm 1200, White Paper on the Environment, HMSO London, 1990.
11. The Framework Convention on Climate Change, Article 4.2(b) states: "... with the aim of returning . . . to their 1990 levels these anthropogenic emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol." See Bodansky, "The United Nations Framework Convention," p. 491.
12. "Japan's Negative Position Becomes Apparent Again," *Asahi Shinbun* (newspaper in Japanese), 8 November 1989.
13. Government of Japan, *Action Program to Arrest Global Warming* (Tokyo: Government of Japan, 1990).
14. Chandrasekhar Dasgupta, "The Climate Change Negotiations," in *Negotiating Climate Change: The Inside Story of the Rio Convention*, ed. Irving Mintzer and Jeffrey Leonard (New York: Cambridge University Press, 1994), pp. 129-48.
15. Stephen Schneider, *Global Warming: Are We Entering the Greenhouse Century?* (San Francisco: Sierra Club Books, 1989).
16. Robert Reinstein, "Climate Negotiations," *The Washington Quarterly* (Winter 1993): 79-95.
17. The U.S. has set targets on emissions that are not limited to CO₂, but include overall greenhouse gases. The gases included in this commitment are CO₂, methane, N₂O, and HFCs (hydrochlorofluorocarbons). Government of the United States of America, *The Climate Change Action Plan* (Washington, D.C.: Government of the United States, 1993).
18. This interview survey was first organized in Japan and the U.S. in 1993. The results of the initial survey were presented in Yasuko Kawashima, *Policy-making Processes for Global Environmental Problems: A Comparative Analysis Between Japan and the United States*, Presentation given at a research workshop on "South and North, East and West in Global Climate Policy," Stockholm, Sweden, 1994.
19. IPCC, *Scientific Assessment of Climate Change: The Policy-makers' Summary of the Report of Working Group I to the IPCC*, 1990. The report suggests that, "under the IPCC Business-as-Usual emissions of greenhouse gases, a rate of increase of global mean temperature during the next century of about 0.3 degrees Celsius per decade; this is greater than that seen over the past 10,000 years . . . an average rate of global mean sea level rise of about 6 cm per decade over the next century." Estimates of future CO₂ emissions and possible climate impact in various literature and economic models are compiled and compared in Yuzuru Matsuoaka and Tsuneyuki Morita, "Recent Global GHG Emission Scenarios and their Climatic Implications," in *Global Warnings: Carbon Limitation and Economic Development*, ed. Akhito Amano (Tsububa: Center for Global Environmental Research Report, 1996), pp. 117-36.
20. Environmental issues include some degree of uncertainty, which enable scientific experts to play key roles in determining the impact and countries' commitments. On the role of scientific experts in the negotiation of the Mediterranean Action Plan, see Peter Haas, "Do Regimes Matter? Epistemic Communities and Mediterranean Pollution Control," *International Organization* 43, no. 3 (Summer 1989): 377-403.
21. Economic costs incurred by CO₂ abatement policies are discussed in Rüdiger Dornbusch and James Poterba, eds. *Global Warming: Economic Policy Responses* (Cambridge, Mass.: The MIT Press, 1991). Possible economic costs (GDP losses) were estimated by a number of macro-economic models. See, for example, Jean-Marc Burniaux, John P. Martin, Giuseppe Nicoletti, and Joaquim Oliveira-Martins, "The Costs of Policies to Reduce Global Emissions of CO₂: Initial Simulation Results with GREEN," OECD, Department of Economics and Statistics, Working

Paper No. 103, 1991. For a comparison of costs required for different types of policies to reduce CO₂ emissions, see Scott Barrett, "An Analysis of Alternative Instruments for Negotiating a Global Warming Treaty," Paper prepared for Environment Directorate of OECD, 1991.

21. For example, countries' positions on two global environmental issues—protection of the stratospheric ozone layer and the regulation of transboundary acidification in Europe—are investigated based on cost-benefit approach in Dedef Sprinz and Tapani Vauhoriata, "The Interest-based Explanation of International Environmental Policy," *International Organization* 48, no. 1 (Winter 1994): 77-105. Similarly, estimation of cost, benefit, and net benefit (benefit - cost) is compared with countries' positions in the climate change issue in Yasuko Kawashima, "Possibilities of International Cooperation towards Stabilizing Global Climate" (in Japanese), *Keizoku Gyozei* 16, no. 2: 93-106.
22. One of the most prominent works related to national decision making is Graham Brown and Co., 1971), which assumes three models to explain decision making within main decision-making bodies and actors. Public awareness of the environment can be investigated by opinion polls. Riley Dunlap and Angela Mertig, eds., *American Environmentalism* (Philadelphia: Taylor & Francis, 1992) describes in detail American public opinions regarding environment problems.
23. From a realistic or neo-realistic point of view, national positions are determined by countries' aspirations for hegemonic interest. See Fred Halliday, "The End of the Cold War and International Relations: Some Analytic and Theoretical Conclusions," in *International Relations Theory Today*, ed. Ken Booth and Steve Smith (University Park, Penn.: Polity Press, 1995), pp. 38-61. On the other hand, the liberalism or neo-liberalism school prefers to interpret the climate change problem as an international issue that needs coordination among countries, not hegemony. Establishment of institutions becomes more significant; see Oran Young, *International Governance* (Ithaca, N.Y.: Cornell University Press, 1994).
24. Climate change comprises an equity issue; commitments on CO₂ emissions are to be made under inter-generational equity (equity between present and future generations) as well as intra-generational equity (equity between developed and developing countries). See, for example, Michael Grubb, James Sebenius, Antonio Magalhaes, and Susan Subak, "Sharing the Burden" in *Confronting Climate Change*, ed. Irving Mintzer (Cambridge, Mass.: Cambridge University Press, 1992), pp. 305-322; Vinit Bhasikar, "Distributive Justice and the Control of Global Warming," in *The North, the South, and the Environment*, ed. Vinit Bhasikar and Andrew Glyn (New York: St. Martin's, 1995), pp. 102-117.
25. Studies of international relations have often considered domestic and international politics individually, but some works are intended to determine the relations between them. Robert Putnam, "Diplomacy and Domestic Politics: The Logic of Two-level Games," *International Organization* 42, no. 3 (Summer 1988): 427-60.
26. The "framework convention plus protocols" type of negotiations of the FCCC followed a suite of negotiations on the ozone depletion problem. The Vienna Convention for the Protection of the Ozone Layer, adopted in 1985, was a framework convention, which was followed by the Montreal Protocol in 1987 after more scientific evidence had appeared, and this form of negotiation was deemed a success; Richard Benedictek, *Ozone Diplomacy* (Cambridge, Mass.: Harvard University Press, 1991).
27. Many academics consider that commitments in international law cannot secure enforcement, and that mechanisms such as monitoring, submission of reports, or

multilateral consultative processes play important roles as incentives for parties' compliance. See Lawrence Susskind, *Environmental Diplomacy: Negotiating More Effective Global Agreements* (New York: Oxford University Press, 1994); David Victor, "The Early Operation and Effectiveness of the Montreal Protocol's Non-Compliance Procedure," IIASA ER-96-2, 1996.

28. "Learning" as a decision-making factor was introduced into this study based on personal communications prior to the interview survey in which some Japanese government officials revealed that they generally reflect on similar experiences when a new problem is brought up.
29. Minister for Public Housing, Physical Planning and the Environment, Minister for Economic Affairs, Minister for Agriculture, Natural Resources and Fisheries, and Minister for Transport and Waterworks, *Netherlands' National Communication on Climate Change Policies*, The Hague, 1994. The Netherlands conducted an overall impact assessment in 1994, concluding that "the densely populated and industrialized delta ... is protected by a combination of natural dunes and solid constructions from a sea level which is expected to occur only every 10,000 years. ... [I]mpact of climate change on agricultural production would be positive as a whole."
30. For more information on energy policies and the estimate of future CO₂ emissions, see Michael Grubb, *Energy Policy and the Greenhouse Effect* (London: The Royal Institute of International Affairs, 1991). It is generally recognized in the U.K. that CO₂ emissions have been stabilized in the last two decades and that it would be relatively easy to maintain that level for a short period, but after a fuel shift, emissions are likely to grow again.
31. For additional discussion of the role of the IGEE, see Maddison and Pearce, *The United Kingdom and Global Warming Policy*.
32. The cost estimate only became available in 1990. It was not clear in 1989 whether it was feasible to stabilize CO₂ emissions in the U.K., and that was the major reason the U.K. did not support the idea of targets at the Noordwijk Conference and set their own national target in 1990 (from interview).
33. For calculations of costs in the U.S., see, for example, National Academy of Science, National Academy of Engineering, and Institute of Medicine, *Policy Implications of Greenhouse Warming* (Washington, D.C.: National Academy Press, 1991).
34. Although climate change was one of many themes mentioned in Thatcher's speech, it came as a surprise. "We have an extensive research programme at our Meteorological Office and we provide one of the World's four centres for the study of climatic change. We must ensure that what we do is founded on good science to establish cause and effect." Quoted in Maddison and Pearce, *The United Kingdom and Global Warming Policy*.
35. "John Sununu: Farewell to the President's 'Fit Bull,'" *ECO*, Issue 10 (1991).
36. For example, in 1988, it was the Minister of Environment himself who convened experts to organize the Noordwijk Conference. "The Engineer Who Would Save the Climate," *ECO*, Issue 10 (1991).
37. For more on the history of green parties in European countries, see, for example, Dick Richardson and Chris Rootes, eds., *The Green Challenge* (Methuen: Routledge, 1995). It is somewhat difficult to evaluate the "greenness" of politics in a country simply by counting the number of legislators from the Green Party, because, in many cases, other major parties include green policies in their platforms. United Nations, FCCC/CF/1996/13, 1994, Second compilation and synthesis of first national communications from Annex I Parties. In this report, the Netherlands projected near-stabilization of CO₂ emissions by 2000 from the 1990 level, although actual emissions have been increasing since 1990. Germany may be able

to reduce their emissions by about 10 percent from 1990, but is struggling to reach its national target, which is a 25 percent reduction from the 1987 level by 2005.

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