

Working Paper

Comparative Analysis of Decision-making Processes of the Developed Countries towards CO₂ Emissions Reduction Target

Yasuko Kawashima

WP-95-106
September 1995



International Institute for Applied Systems Analysis □ A-2361 Laxenburg □ Austria

Telephone: +43 2236 807 □ Fax: +43 2236 71313 □ E-Mail: info@iiasa.ac.at

**Comparative Analysis of
Decision-making Processes of the
Developed Countries towards CO₂
Emissions Reduction Target**

Yasuko Kawashima

WP-95-106
September 1995

Working Papers are interim reports on work of the International Institute for Applied Systems Analysis and have received only limited review. Views or opinions expressed herein do not necessarily represent those of the Institute, its National Member Organizations, or other organizations supporting the work.



International Institute for Applied Systems Analysis □ A-2361 Laxenburg □ Austria

Telephone: +43 2236 807 □ Fax: +43 2236 71313 □ E-Mail: info@iiasa.ac.at

Foreword

The research described in this Working Paper has been performed by a participant of the Young Scientists' Summer Program 1995 with the Methodology of Decision Analysis (MDA) project. Although the main approaches taken by the MDA Project are computer modeling and system analysis, this Paper has adopted a method which is often used in the field of political science: an interview survey.

Prior to IIASA, the author carried out interview surveys on the decision-making processes of Japan and the US towards negotiations during the Framework Convention on Climate Change. During her stay at IIASA, the same method of interview survey was organized in the United Kingdom, the Netherlands and Germany. This Paper is comprised of the results of the surveys and the noticeable conclusions drawn from the results. Each country was different in many respects, yet the author sought to find similarities among the countries' decision-making processes.

The results from five samples were not enough to draw a general conclusion on the decision-making processes in different countries; in addition, three-months of research was not enough time to achieve final results. Therefore this paper reports intermediate results of the research to be continued at the author's home institute.

Abstract

This working paper aims to determine the most influential factors for countries' decision-making policies towards international negotiations on the climate change convention from the late 1980s to 1992. A thorough interview survey with the same questions posed to all the interviewees is organised to achieve this aim. This study selects five developed countries, the Netherlands, Germany, the United Kingdom, Japan and the United States, to compare the decision-making process of each country. The author introduces six major factors that are likely to affect their decision-making; impact, economic cost, domestic politics, international politics, effectiveness of the convention, and learning. These factors are evaluated by those who were actually involved in the decision-making of their respective countries. It is concluded from the survey that (1) political leadership within the country was the major factor for the countries that played the leadership role in the negotiation, (2) pressure from other countries was the major factor for the countries that gradually became positive towards the negotiation, and (3) economic cost necessary to reduce the CO₂ emissions was the major factor for the countries that oppose to the strong commitments in the convention. The structure of this paper is as follows; a brief background on the positions the five countries took during the negotiation, a description on the method of the interview survey, results of the survey and discussions obtained from the results.

Contents

1	Introduction	1
2	Brief history of targets for CO ₂ emissions	2
2.1	Netherlands	3
2.2	Germany	3
2.3	The United Kingdom	4
2.4	Japan	4
2.5	The United States	4
3	Framework of research	5
3.1	Schedule	5
3.2	Selection of interviewees	5
3.3	Questionnaire	6
3.3.1	Impact	6
3.3.2	Cost	7
3.3.3	Domestic Politics	7
3.3.4	International Politics	7
3.3.5	Effectiveness	8
3.3.6	Learning	8
3.4	Evaluation	9
4	Result of the Interview Survey	10
4.1	Impact	10
4.2	Cost	12
4.3	Domestic Politics	14
4.4	International Politics	18
4.5	Effectiveness	19
4.6	Learning	21
5	Discussion of Results	23
5.1	Leaders	24
5.2	Followers	25
5.3	Laggards	25
6	Conclusion	26
	Acknowledgement	27
	References	29

Comparative Analysis of Decision-making Processes of the Developed Countries towards CO₂ Emissions Reduction Target

*Yasuko Kawashima**

1 Introduction

The first Conference of the Parties to the Framework Convention on Climate Change (hereafter FCCC or the Convention) was held in Berlin in March 1995. The mandate adopted at the conference, the Berlin Mandate, called for additional international agreements to be negotiated in order to mitigate emissions of greenhouse gases after 2000 (United Nations, 1995).¹ A strong initiative of the developed countries is indispensable to move the negotiation forward, but this upcoming negotiations are regarded to be difficult tasks because of certain characteristics of this issue, i.e. scientific uncertainty of the problem, complex linkages among causes and effects, the equity issue between generations and between north and south.² In order to reach an international agreement that includes effective commitments, it is important to determine factors which influence decision-makings of countries towards climate change negotiations. The factors which act as driving forces to commit to a stronger position in one country may be attributed to another country by certain policies and measures. Those factors which lead a country to be negative toward the Convention may be deleted as well.

There have already been many descriptive studies on the development of climate change policies in different countries (see, for example, Takemoto, 1991; Brenton, 1994; Fermann, 1992, 1994; Maddison and Pearce, 1994; Rowbotham, 1994; Rowlands, 1995), and also on the international level of negotiating process in the Intergovernmental Negotiating Committee (hereafter INC) (see, for example, Bodansky, 1993; Akao, 1993; Mintzer and Leonard, 1994). Most of them are well-described, go into details, that there seem to be little to do more research of the same style. Therefore, this paper is not intended to go over what have already done in other related works. Rather, the main focus of this paper is to compare decision-makings factors of different countries and to attempt to seek for a general rule that enables us to explain the climate change policies with several key factors.

Each country is different from other countries in terms of their geographical circumstances, economical and industrial status, historical and cultural backgrounds, political systems, etc. It is therefore easier, and in many cases more natural, to attribute these differences to the explanation of the countries' different positions towards climate change issue. However,

* Participant of the Young Scientists' Summer Programme 1995 at IIASA, current affiliation: National Institute for Environmental Studies (NIES), Social and Environmental Systems Division, 16-2 Onogawa, Tsukuba, 305 Japan.

¹ In the Mandate, it is agreed to "begin a process to enable it (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."

² Equity and fairness issue is becoming major debate in climate change problem. See, for example, Paterson (1992).

this explanation raises little suggestions to alter present positions of the countries that are relatively reluctant to agree on effective climate policies. It is also difficult to develop the discussion to draw possibility of coming to an effective international agreement.

This paper is a result of an interview survey that was organized in five developed countries (the Netherlands, Germany, the United Kingdom, Japan and the United States) to compare their decision-making factors towards setting a target on CO₂ emissions during negotiations on FCCC, and to determine major factors that are necessary to formulate positive positions in climate change negotiations. By comparing the results of the survey of each country, the author seeks for the common elements, rather than differences of countries, that affect countries' climate change policies. With the results obtained by this analysis, some proposals for the future negotiations on climate change issue are given, by addressing to the key factors that are necessary to take initiative in this issue.

2 Brief history of targets for CO₂ emissions

The main reason for selecting those five countries was to enable us to compare (1) between two countries that took similar stances towards the CO₂ emission target, and (2) among countries that took different stances towards their targets. The five countries were categorized into three, according to the timing of setting their national target on CO₂ emissions and on their position for including a target in the Convention. Table 1.1 shows the chronology of the general process of the climate change negotiation and each country's response towards the negotiation.

Table 1.1 Chronology of Climate Change Negotiation

	General	Netherlands	Germany	United Kingdom	Japan	United States
1988	Toronto Conference, IPCC established					
1989	Noordwijk Conference	Stabilization at 1988 level by 2005		Against targets	Against targets	Against targets
1990	IPCC report The Second World Climate Conference	3~5% reduction by 2000	25% reduction from 1987 by 2005	Stabilization at 1990 level by 2005 Stabilization by 2000	Stabilization per capita at 1990 level by 2000	
1991	INC 1 INC 2 INC 3 INC 4					
1992	INC 5 INC 5 final Rio Summit					
1993						Stabilization of overall greenhouse gases at 1990 level by 2000

With this timetable, the countries were categorized into three groups, as below.

- *leader: The Netherlands and Germany. They set their national emission targets at relatively early stages, in 1989 and early 1990, and their positions in the negotiation were to have a clear CO₂ emission target in the FCCC text.
- *follower: The UK and Japan. They set their national targets in 1990 after the "leader" countries set their reduction targets. In the negotiation, they basically supported to have a target in the Convention, but considered that US's acceptance was more important than to have a target.
- *laggard: The US. It established a national commitment of stabilization only after the Rio Summit. During the INC negotiations, it resisted to have any specific target in the FCCC text.

In order to facilitate understanding the following discussion, this section briefly describes how each country responded to climate change negotiation, mainly focussed on setting targets on CO₂ emissions. For those who are more interested in the details of decision-makings of each country, it is worthwhile to go to other papers listed in the previous section.

2.1 Netherlands

The Netherlands had been interested in the climate change from an early stage, and called for reduction of CO₂ emissions by setting a certain target. In 1989, it had already shown its leadership in this issue by hosting two major international conferences on atmospheric problems, one in the Hague and the other in Noordwijk. Also in November 1989, the Dutch government announced its decision to stabilize CO₂ emissions at the 1989/90 level by 1995 at the latest, following a Parliamentary discussion on the National Environmental Policy Plan (NEPP), a white paper on the environment issued in May the same year. In June 1990, a revised plan (NEPP-Plus) was submitted to Parliament, which called for a 3 to 5% reduction from average 1989/90 levels by 2000.

Throughout the INCs, the Netherlands was one of the few countries that maintained its strong willingness to set a CO₂ target in the Convention. They stressed the need of strict targets, and only those countries that are willing to achieve the target may sign on the Convention.³

2.2 Germany

Germany had also considered climate change as an important problem since an early stage. In 1987, Enquete Commission on "Preventive Measures to Protect the Earth's Atmosphere" was established by the German Bundestag, and this Commission brought about its report which recommended to reduce CO₂ emission as early as possible.⁴ Since then, Germany has been clearly supportive to setting targets on CO₂ emissions. In June 1990, the Federal Government set themselves an aim to reduce energy-related CO₂ emissions by 25% from 1987 level by 2005, and revised to 25-30% reduction after the reunification with former East

³ Bodansky, 1993, p.513.

⁴ Public Relations Department of the German Bundestages, 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." The Commission later recommended to a 30% reduction in 1990.

Germany in October 1990.

During the negotiations, Germany, together with the Netherlands, stressed to set a CO₂ target in the Convention. They took the lead in the discussion, saying that the Convention would not be effective without targets.⁵

2.3 The United Kingdom

The UK had been conservative in terms of target setting. In 1989 at the Noordwijk conference, UK was one of the few developed countries that did not support the idea of 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. Later, in October the same year, the UK agreed with other members of EC that the Community would take action aiming at stabilizing total CO₂ emissions at the 1990 level by 2000 rather than 2005, and the British government shifted the target of their national commitment to 2000, with conditions that other countries would take the same commitment.

During the negotiations, the UK generally supported the target in the Convention but considered it more important to have as many countries as possible to sign on the Convention, especially the US. The British government was the main contributor to the final wording of the text⁶ which changed the article to a broader goal without any strong commitment towards targets.⁷

2.4 Japan

Japan was also the country that has been cautious towards setting CO₂ targets. It opposed to the idea of targets at the Noordwijk Conference in 1989.⁸ However, in 1990 after other OECD countries committed themselves to national targets, Japan also started to debate within ministries on the possibility of stabilizing its CO₂ emissions. The Japanese government adopted Action Programme to Arrest Global Warming in October 1990, in which a two-level target is set, first a stabilization on a per capita basis in the year 2000, and to aim for the total amount of CO₂ emissions in 2000 at 1990 level.

During the INC meetings, Japan's position was similar to the UK; to favor a convention that would be agreeable to all major countries especially the US. In the early period of the INC meetings, Japan, together with the UK and France, proposed "Pledge and Review" system, where each country pledges their own aim of emissions and would be evaluated after 2000. This was later turned out to be rather similar to what was obtained in the final text, but at that time, this proposal was considered as an excuse to step back from targets.⁹

2.5 The United States

The US was one of the leading countries that contributed to introducing climate change issue on international politics.¹⁰ In the late 1988, the US became one of the main supporter of the

⁵ Personal communication.

⁶ The Framework Convention on Climate Change, Article 4.2(b) says "...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.

⁷ Bodansky, 1993, p.491.

⁸ Asahi Shinbun (newspaper), November 8, 1989.

⁹ Dasgupta, C. in Mintzer and Leonard, 1994, p.136-137.

¹⁰ The climate change became a major political agenda in the US in 1988. See, Schneider, 1989.

establishment of Intergovernmental Panel on Climate Change (hereafter IPCC) to investigate more on the scientific evidence of the issue. However, the US government has opposed to setting a certain target on CO₂ emissions. Before and during INC process, the US's position was that it would not sign on a Convention if it had any emission targets.¹¹

It was not until in April 1993, that the US announced its commitments to return its greenhouse gas emissions to the 1990 level by 2000. The gases included in the commitments were CO₂, methane, N₂O and HFCs.¹²

3 Framework of research

This section frames the method and the procedure of this interview survey.

3.1 Schedule

The interview survey was carried out in the following periods.¹³

April - October	1993	Japan
July	1993	US
June	1995	UK
June	1995	Netherlands
July	1995	Germany

Although there are two-years discrepancy between the surveys (Japan and the US in 1993 and other countries in 1995), it was considered to have little influence on the result of the survey due to the fact that the questionnaire had dealt with the period from 1988 to 1992 only. At the same time, both in 1993 and in 1995, many of the interviewees had already moved from the position they used to be during 1988-1992 by the time of the survey, which seemed to facilitate to obtain free and personal comments on the issue.

3.2 Selection of interviewees

The questionnaire was focussed on the governments' decision-makings towards setting a target for CO₂ emissions in the FCCC text. In order to obtain the balanced information, the interviewees were selected not only from the ministry responsible for environmental issue but also from other ministries (governmental officials responsible for environmental matters, economy, energy and industry sectors, and foreign affairs) as well as those from industry, environmental NGOs and legislators.

In ordinary survey on people's perception as opinion polls, it is often regarded that the more samples, the better the survey is. However, in this interview survey, it was considered that to obtain comments from those who were deeply involved in the climate change negotiation was more significant than to seek for many uncertain comments, and therefore the number of the interviewees in each country was limited from seven to thirteen.

¹¹ Reinstein, 1993, p.88-91.

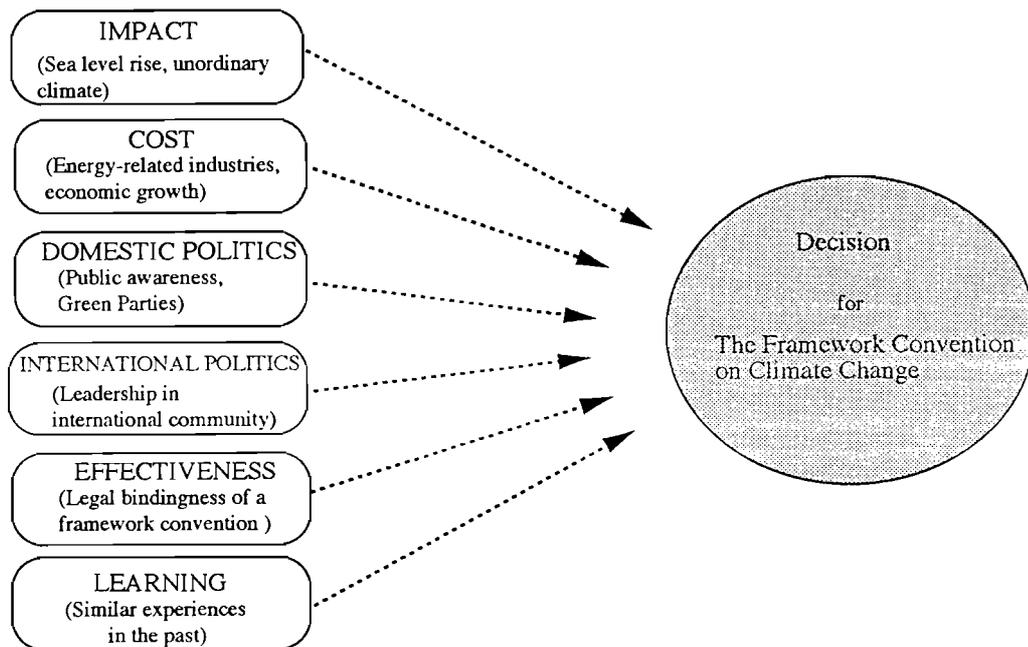
¹² Clinton and Gore, 1993. The US has set a target on their emissions, but it is not limited to CO₂, rather a target for overall greenhouse gases.

¹³ As is said in the Forward of this paper, the interview survey was first organized in Japan and the US in 1993. The result of this survey was presented in Kawashima, 1994.

3.3 Questionnaire

In order to determine the decisive factors of countries' decision-makings in setting CO₂ targets, the questionnaire gave six major elements of factors that might have affected the decision.¹⁴ This means, at this point, these factors were only introduced as possibilities: it was assumed to be totally unclear which factors actually influenced the decision. These factors were expected to be interrelated to each other, but this questionnaire dealt these factors equally and independent from other factors, because it was considered not be appropriate to draw the linkage from the beginning. This framework of the questionnaire made it easier for the interviewees to explain the decision-making of their government with the given six factors. Fig.3.1 shows the idea of the questionnaire.¹⁵

Fig. 3.1 Framework of the Interview Survey



The explanation for the each of the six factors in Fig. 3.1 is given in the following section. To facilitate understanding the meaning of each factor, the examples for the "leader" and "laggard" countries are given after each explanation.

3.3.1 Impact (harm caused by climate change)

Although scientific uncertainty of the climate change problem had still existed, there was enough evidence to start acting on mitigation. If the climate change would occur, unprecedented temperature rise in general, sea level rise, soil degradation, and other natural changes were

¹⁴ In the interview surveys of Japan and the US, the decision-making factors were described as "models" and those "models" were attributed to each country as "scenarios." However, this two-step approach made it more difficult for the interviewees to understand the questionnaire. To avoid this confusion, the questionnaire only used the term "factors" for the interviews in the Netherlands, Germany and the UK. The category of those six "factors" or "models" are consistent.

¹⁵ Some of the names of the factors are different from the time of the survey. It has been changed due to the comments from interviewees and advisors as inappropriate. "International politics" was formerly titled "Hegemony," and "Effectiveness" was formerly "Procedure." The content of the factor has not been changed.

expected which would affect agriculture, biosphere and life of human being.

- * The "leader" countries supported the emission target because they were threatened by the possible damage occurred by climate change and felt the need to mitigate the impact by reducing their CO₂ emissions.
- * The "laggard" countries opposed to the emission target because they were still doubtful of the climate change theory itself, or impact of climate change was expected to benefit their countries.

3.3.2 Cost (Economic cost)

Climate policies deeply relate with energy and industry policies of every country. The stabilization or reduction of CO₂ emissions usually required not only energy-efficient facilities but also net reduction of energy consumption by changing social infrastructures and policies to decrease the demand. The government would only commit to policies that might be beneficial to the economic growth of their country.

- * The "leader" countries supported the emission target because they believed those climate policies would need little cost, or even be beneficial to their countries by shifting to more energy-efficient society and exporting energy-efficient technology to other countries.
- * The "laggard" countries opposed to the emission target because much cost was expected to be required to achieve the target.

3.3.3 Domestic Politics

Political leaders of a country play important roles in putting an issue on their agenda. If there are influential political leaders who are personally interested in climate change problems, they will be able to put pressure on the government to implement strong climate change policies. Similar to this, if the public is interested in the climate change, they would also be able to change the government's position either acting directly or indirectly by voting on Green Party or by supporting environmental NGOs. The government feel no need to change their policies when there is no political pressure.

- * The "leader" countries supported the emission target because there were influential political leaders in the country who were personally interested in climate change problems and pressured the government to play active roles.
- * The "laggard" countries opposed to the emission target because there were influential political leaders who were personally suspicious to climate change problem and pressured the government not to play active roles.

or

- * The "leader" countries supported the emission target because the public was interested in global environmental problems and they wanted their government to have strong climate change policies.
- * The "laggard" countries opposed to the emission target because the public was not at all interested in the issue or even opposed to certain climate change policies i.e. carbon tax.

3.3.4 International Politics

International politics affect the decision-makings of governments. A government seeking for a role as a leader in international society may consider climate change as an agenda to obtain such a leadership. In another case, we may be able to talk about pressure from abroad. If many other countries urge a country to a decision towards CO₂ target setting, the government would have to commit to it unwillingly, although the decision may not be beneficial to the country.

- * The "leader" countries supported the target because they were seeking for an issue that would enable them to take lead in international society.
- * The "laggard" countries opposed to the target because they were not interested in being leaders in international society.

or

- * The "leader" countries supported the target because they were pressured from other countries to support the target.
- * The "laggard" countries opposed to the target because they were pressured from other countries to oppose to the target.

3.3.5 Effectiveness (Bindingness of International Agreements)

From the beginning of the negotiations, there was a general consensus that the FCCC to be a framework convention, a convention just to agree to the idea that the problem exist and later supplemented by protocols. At the same time, international agreements have little power of enforcement to the once-ratified countries. The governments would easily commit to the Convention because they consider it not as a legally-binding target which they must achieve, but only as a goal which they aim for. On the other hand, they would be more careful in the adoption of international commitments if they consider targets in the Convention to be legally binding.¹⁶

¹⁶ This factor was brought about in this survey as one major factor because some countries seemed to consider "target as obligation" more serious than others. The "framework convention plus protocols" type of negotiations on FCCC followed suit of negotiations on ozone depletion problem. The Vienna Convention for the Protection of the Ozone Layer, adopted in 1985, was a framework convention which was followed by Montreal Protocol in 1987 after more scientific evidence appeared, and this form of negotiation was deemed to be a success (Benedick, 1991). There is no consensus whether the FCCC had been still a framework convention if they had a target on emissions (Grubb, 1989).

- * The "leader" countries supported the target because they considered it only as an aim and has no responsibility if they couldn't achieve the level they have committed to.
- * The "laggard" countries opposed to the target because it was a legally binding target and the government owed responsibility if they couldn't achieve the target.

3.3.6 Learning

Decision-making of countries can be influenced by the past experiences. Before climate change came into political agenda, there were negotiations on other environmental issues such as ozone depletion and acid rain, and each country has learned something which might be able to utilize in the next environmental issue. There are also political and economical incidents from which governments may learn. The government are likely to follow the same path when they had a successful experience in the past, even if they are facing different issues. On the other hand, the government would change their behavior when they had failed in the past experiences.

- * The "leader" countries supported the target because they have had a similar experience in the past, behaved as so and succeeded, or behaved otherwise and failed.
- * The "laggard" countries opposed to the target because they have had a similar experience in the past, behaved as so and succeeded, or behaved otherwise and failed.

3.4 Evaluation

The interviewees were asked to evaluate decision-makings of their respective countries only. They evaluated each of those six factors in three levels as below;

- * Support: The factor was very influential, and it was one of the most decisive factors for the country's decision-making towards the target.
- * Partly Support: The factor somewhat influenced the decision-making towards the target, but it was relatively not a decisive factor in the country.
- * Not support: The factor did not affect the country's decision-making.

The interviewees were asked to reassure their evaluations by giving explanations to each of their evaluations and give any data or publications if available. They were able to comment freely, so that they could suggest another decision-making factors and also the linkage among factors.

4 Result of the Interview Survey

This section deals with the result of the survey according to each factor. The evaluation of the factor and comments to the factors are summarized in Table 4.1 through 4.6. The numerical values in the tables show the number of interviewees evaluated either "support", "partly support" or "not support," and comments in each column are some of the main comments obtained from those interviewees. Although around ten people were interviewed in each country, there were some who were actually not involved in the decision-making process of the country's climate change policies at the time of INCs. In those cases, their evaluation was not included in the numerical value of the evaluations in the tables, but their comments were fully reflected which contributed to interpret the results. In other case, the interviewees did not make any evaluations to certain factors, so the sum of the number of interviewees in the tables did not always be the same.

4.1 Impact

General comments: All the countries except the US answered that they were concerned about the impact likely to be caused by climate change in the future. All of those comments referred to the impact on a global scale, a large magnitude of uncertain climatic change, rather than the impact within their own territory, but rather a large magnitude of uncertain climatic change on a global scale.¹⁷ A German interviewee mentioned the "precautionary principle" to explain the importance of taking action even under uncertain scientific evidence. Even the Netherlands, that was often said to be sensitive to climate change problems because of a sea level rise that would flood their low-lying land, were not much worried about the damage to their own land, but more about effects in general.¹⁸ Only the US stressed 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 mentioned also to describe the impact of scientific reports given out by certain organizations. International Panel on Climate Change (IPCC) was established in 1988, with its prominent financial support and human resources from the US and the UK. IPCC submitted its first report in mid-1990 (IPCC, 1990), and mentioned that even "there are many uncertainties," "the long-lived gases would require immediate reductions in emissions from human activities of over 60% to stabilize their concentrations at today's levels." Being major supporters of the IPCC, the US and the UK had to accept the conclusion of the report as the best scientific evidence one can get of climate change. As for the UK, especially Working Group 1 (impact of climate change) was chaired by John Houghton, a scientist from the UK; "the government was not in the position to ignore what the WG 1 reported. (from interview)" The similar occasion was observed in Germany when 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 that consisted the Bundestag and by eminent German experts. "In June (of 1990), and as a result of that, there was a surprisingly highly scientific consensus on climate change (from interview)."

¹⁷ The first IPCC report (1990) suggests "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°C 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 6cm per decade over the next century.

¹⁸ The Netherlands in 1994 gathered an overall impact assessment to their country. (Minister of Housing... et al., 1994) It says 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 10,000years...impact of climate change on agricultural production would be positive as a whole."

Table 4.1 Result of the survey - Impact

	Support	Partly Support	Not Support
Netherlands	4	3	0
	<ul style="list-style-type: none"> * Climate change in global scale was the issue. * Sea level rise is not a problem any more in our country. * The Netherlands has been deeply involved even at the time of the scientific conference on climate change in Villach in 1985. 		
Germany	1	5	0
	<ul style="list-style-type: none"> * Impact had some influence but it had been more global change (than the domestic impact) * Generally, it was the scientist that pushed the Enquete Commission. * The possible impact which is a part of the (Enquete Commission's) assessment. * What science tells us is that there is an impact on the environment. 		
United Kingdom	1	3	3
	<ul style="list-style-type: none"> * There never was any very serious concern about the impact of sea-level rise or vulnerability in weather. * The government was not in the position to ignore what the WG 1 reported. * Nowhere does the IPCC document say that there is a big threat of global warming. 		
Japan	0	4	0
	<ul style="list-style-type: none"> * The impact is said to be extremely large, and actions should be commenced immediately. * We can only discuss on the basis of what information we have. * This is an important problem in the longer term. * It is a feeling that our activities seem to be going beyond limit. 		
United States	3	2	0
	<ul style="list-style-type: none"> * There might be warming but little harm was expected. * Too early to tell whether in fact there will be a warming trend or not. * There was a concern that there was time to respond to this. * Broad recognition that GCMs were not sophisticated enough. 		

Evaluation: It is easy to recognize that every country evaluated "support" or "partly support" considering that there was no need to discuss setting targets in the first place if there was no possibility of impact of climate change. However, whether impact was a decisive factor or not was different in one country from another.

From what was drawn out from general comments, "impact" was a factor which played mainly two kinds of roles; fear of uncertain climate change on the global scale, and the influence of scientific evidence authorized by scientific organizations.

The former implication of "impact" was partly or significantly influential in all five countries. In the Netherlands, the threat of the global climate change was one of the major decision-making factors which drove the country to commit to reduction target. There had been several conferences in the scientific field before climate change arose to a political agenda. Those conferences were commented in the Netherlands, showing their interest from early stages. On the other hand, the US was influenced by the large uncertainty of science, and judged that there was time to confirm the evidence of climate change. Other three countries only partly considered the impact of climate change during their decision-making processes.

Here, we observe perception gaps among countries concerning the impact of climate change; all five countries were concerned about impact at a global level rather than national level, and they all had IPCC report as science, but some countries became anxious of impact more seriously than another. It was difficult to determine reasons for this perception gap from this survey. Extraordinary weather at that time might have affected the people's perception of climate change. It is often said that the US had a hot summer in 1988 which brought about national

debates on the issue (from interview). However, there have been more hurricanes, floods, heat waves, and other natural disasters in the US after 1988, which raised almost no public interest in the climate change. Some commented cultural differences among countries. It was said that the German culture had deep relation with deforestation in tropical regions. However, this "culture theory" does not give adequate reason for the Dutch government to fear climate change, nor the reason for Germany to be aware of many other environmental issues not related to forest such as waste management. Another possibility was that the US and the Netherlands had their own scientific evidence that were different from IPCC, but this assumption was accepted by none.

The latter usage of "impact" was observed in all countries except the Netherlands. It was commented that reports from scientific organizations urged the government to some extent to accept the scientific evidence that there is a possibility of climate change. This result shows that establishment of those scientific organizations were effective when the governments were negotiating on the basis of uncertain matters. These institutions support scientific experts to play important roles in countries' decision-making processes. Reports from IPCC might have been more influential to the Netherlands and Japan if those countries had contributed to IPCC either financially or by letting more experts from their countries.

4.2 Cost

General Comments: A variety of comments on cost were obtained in each country, and their evaluation was also diverse according to each country.

Table 4.2 Result of the survey - Cost

	Support	Partly Support	Not Support
Netherlands	0	5	2
	<ul style="list-style-type: none"> * It was considered to be feasible with no regret policies such as implementing clean technologies. * Change in electricity power generation to gas. * We have a good discussion between Environmental Ministry and industry. * It is up to economic scenario (how much cost is required). 		
Germany	2	4	0
	<ul style="list-style-type: none"> * Increase in energy efficiency, pushing forward innovation on this sort of things will be triggered off by increasing energy prices. * Resulted into rather high reduction potentials which were then calculated with no or positive cost. * There was no discussion on cost. 		
United Kingdom	5	1	1
	<ul style="list-style-type: none"> * A little bit of energy efficiency, a conversion to gas and the recession meant UK will achieve the target. * Analysis showed that UK could adopt its target without imposing huge cost on our economy. * If we privatized the industry then they would chose what fuel they would use ("Dash for Gas.") 		
Japan	1	3	2
	<ul style="list-style-type: none"> * Firms were expecting an increase in technology exports. * Almost impossible to estimate cost. * Much cost is incurred, and stabilizing CO2 emission is difficult. * The government agreed without knowing how difficult it was. 		
United States	5	0	0
	<ul style="list-style-type: none"> * Coal is very essential to us as a domestic fuel in terms of energy dependence and economic growth. * The emphasis shifted much toward the costs. * You can only have public transportation in area that are densely populated. * It's more difficult in a country like the US, it's so huge. 		

The UK was the only country that admitted its energy and industry policies to be heading the same direction as CO₂ emission reduction policies. In the UK, their general policy in the 1980s was to privatize industries which were at that time run by the government. They privatized electricity utility companies in 1989, and it was rather obvious that the privatized companies would favor gas power plant to that of coal because the coal power plants were more expensive. At the same time, the British government was considering to decrease the amount of subsidy to the coal industries, which were hampering the budget. This policy was called "Dash for Gas." One interviewee in the UK used the term "A structure of political interest in domestic government" to explain the image of cost by relating to climate change policies that have matched with other policies.¹⁹

The incremental cost of stabilizing CO₂ emissions in the UK was investigated in detail by the Interdepartmental Group on Environmental Economics (IGEE). The group was composed of eminent economists from different governmental departments, and this group determined the year 2005 as the UK target.²⁰ While the possibility to achieve the 2005 target was investigated, the British economy went into a recession, and the trend of CO₂ emission growth became slower than expected. This "unexpected condition" enabled the UK to shift its target year from 2005 to 2000 (from interview).

In the Netherlands, Germany and Japan, the economic cost of limiting CO₂ emissions was rather uncertain. They have undergone projections of climate policies on their economy, but comments on the evaluations of economic cost were different according to the interviewees. "Almost impossible to estimate cost (from interview in Japan)" "there was no discussion on cost (from interview in Germany)" were the comments from those countries. A Dutch interviewee commented that the possible amount of future emissions could not be estimated correctly without knowing what kinds of policies were implemented in and out of the country. Both in Germany and the Netherlands, some comments were made on "competitiveness" of their industry. If the climate policies were implemented only in those countries, their energy-related industries would be charged with extra cost and thus lose competitiveness from industries in other countries. Therefore, it was generally considered to be more difficult and costly to implement climate policies only by themselves, but would require less cost if all the developed countries had common policies, such as the rate of carbon tax. Comments concerning this competitiveness problem observed in such occasions when they proposed to have common environmental regulations and economic measures within EC.

In other perspective, Germany and Japan mentioned the possibility of increasing exports of their relatively energy-efficient technologies; "they see some of the opportunities to export their technologies (from interview in Germany)" "firms were expecting increase in technology exports (from interview in Japan)." In this sense, the industry with energy-efficient technologies would gain its competitiveness by developing new technologies earlier than other countries driven by stronger national emission targets.

The US was the country that stressed most the cost side of mitigating CO₂ emissions. Although they admitted that there were such policies as "no regret" policies (policies which would benefit the country regardless of climate change, such as elevating levels of energy-efficient equipments) the US said it would be too difficult to change their major energy resource from coal and oil to non-fossil fuels. It was mentioned that the US has coal that last for another

¹⁹ For more information on energy policies and the estimate of future CO₂ emissions, see Grubb, 1991. It is generally recognized in the UK that the CO₂ emissions have been stabilized in the last two decades and it would be relatively not difficult to maintain the level for a short term, but after fuel shift the emission is likely to grow again.

²⁰ For more description on the role of IGEE, see Maddison (1994).

400 years and it was not feasible to seek for a new energy source "coal is very important for us as a domestic fuel in terms of energy dependence and economic growth (from interview)." It was also mentioned that the US was a large country, and it was difficult to alter their means of transportation from cars to public transportations: "you can only have public transportations in areas that are densely populated." The people in the US have already established the way of life where they consumed relatively much energy, and it was regarded to be costly to change their facilities.

Evaluation: For all countries, economic cost to achieve CO₂ emission targets was evaluated to be the most critical factors for the decision-making of the government, or one of the influential factors. For the UK, the estimation of the cost to stabilize their CO₂ emissions was small, and this projection was regarded to be the primary factor of the decision of the British government to commit to their target.²¹ On the other hand, the US estimated that it would require large amount of cost to stabilize their CO₂ emissions, and that became the most decisive factor of the US's decision-making to oppose to have CO₂ target in the Convention. For the other three countries, there was a wide variety of the perception of economic cost, but their evaluation on the influence of the cost was rather consistent; it was found out that those various calculations on cost only mattered partially when they committed to their CO₂ targets.

These evaluations lead to a result that cost is a critically influential factor when much cost is needed to achieve the target, but it is only partially influential when cost is small, uncertain or even beneficial. This is drawn out especially from the result of the UK, where the cost played as a decisive factor but the country did not play a "leader"'s role at the negotiations, and of the US where the cost was expected to be high and that critically affected their decision to oppose to the target setting.

This discussion on cost leads to a new question, "what is cost?" Calculation and perception of costs differed significantly according to the base line conditions. If a country had another incentive to reduce CO₂ emissions, their estimations of cost were likely to be low. If it had no other reasons to implement climate change policies, the cost became relatively high. Even in the US, there were studies that suggested many opportunities in their country to reduce CO₂ emissions and policies that are "no regret" policies.²² The cost, in the US, may be regarded not only as an economic cost but also "political cost (from interview)," strong lobbying from energy-related industries. In this case, the possibility of the "laggard" countries to play more positive roles in climate change negotiation is to have policies that would make CO₂ reduction more attractive economically to the US industry. More investigations on Germany and Japan where the industry sought for new market for their technology may assist framing such policies.

4.3 Domestic Politics

General Comments: There were two distinct elements in the comments made on domestic politics; personal characteristics of the political leaders (Ministers, President, etc.) and the public awareness toward the climate change problem.

In Germany, Enquete Commission was mentioned by all interviewees in Germany. There were several key players in the Parliament that gathered other legislators and scientific

²¹ The estimation of cost only became available in 1990. It was not clear in 1989 whether it was feasible to stabilize CO₂ emissions in the UK, and that was the major reason for not supporting the idea of targets in Noordwijk Conference and setting their own national target in 1990 (from interview).

²² For calculation of cost in the US, see, for example, National Academy of Science, National Academy of Engineering, Institute of Medicine, 1991, Grubb, 1991.

Table 4.3 Result of the survey -Domestic Politics

	Support	Partly Support	Not Support
Netherlands	4	2	1
	<ul style="list-style-type: none"> * Ministers personally interested in the climate change issue * people's awareness decline * The Dutch people compared with people in other countries had a higher awareness of environmental problems at that time. 		
Germany	6	0	0
	<ul style="list-style-type: none"> * Enquete Commission was the result of the general awareness in the different sectors of society and especially of the Parliament. * The general perceptiveness towards environmental issues has something to do with strong position of Green Party. 		
United Kingdom	3	1	3
	<ul style="list-style-type: none"> * A little bit of energy efficiency, a conversion to gas and the recession meant UK will achieve the target. * Analysis showed that UK could adopt its target without imposing huge cost on our economy. * If we privatized the industry then they would choose what fuel they would use ("Dash for Gas.") 		
Japan	2	4	0
	<ul style="list-style-type: none"> * The public responded, which I consider important. * The Environment Committee of LDP moved behind the scene. * It was a gift of compromise among ministries. * The Cabinet Committee on Global Environment was established in 1989 under Takeshita. 		
United States	0	6	0
	<ul style="list-style-type: none"> * The public was not so interested in the issue and was aware of regional environmental issues. * Public opinion did not affect the government very much. * Environmental issues in general, were not a major issue. * President Bush was very much ill informed. 		

experts in the Enquete Commission in 1987 to deal with the climate change issue, but comments focussed on the Commission itself than individual political leaders. They took the initiative of the climate change debate in the national politics and their report became influential to the government decision. Chancellor Kohl was commented to be supportive of the problem but was not one of those key payers; "he (Kohl) has a feeling that he is one of the big leaders of the world. And as a big leader of the world, he is responsible that such a global issue should be tackled in adequate way."

Strong leadership of political leaders was mentioned in all other countries. Of all the interviewees, the most frequently mentioned names were Mrs. Thatcher, Prime Minister of the UK, and President Bush of the US at the time.

Mrs. Thatcher become aware of the problem after "Ambassador Tickell, the ambassador to the UN in New York at that time, who got to know the Prime Minister Mrs. Thatcher very well" and convinced her of the importance of the problem (from interview). Herself being a scientist, she understood the meaning of this problem, and started to announce publicly about the problem. Her speech at Royal Society in 1988 was said to be the turning point of her position toward climate change.²³

²³ Although climate change was one of many themes mentioned in her speech, it was taken with 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" (Maddison, 1994).

On the other hand, President Bush and a White House Chief of Staff at that time were often mentioned in the US as key players who were personally skeptical of climate change problems. Various reasons were given for his position. His political supporters were engaged in energy-related industries (from interview). The federal government made amendments to Clean Air Act in 1990, and President Bush was said to struggle in this amendment (from interview). Chief of Staff at the time was said to be doubtful of the issue, and that he was in influential position, "he and his staff kept US negotiators on a tight leash, monitoring developments by telephone (ECO, 1991a)." It was also said that in general, the Republicans give priority to economic growth than environmental problems, and eight years of Reagan administration and four years of Bush administration has weakened the power of Environmental Protection Agency (from interview).

In other two countries, there were several political leaders that were mentioned to be the key players that influenced the countries' positions towards the FCCC.

In the Netherlands, all Ministers of the Environment from late 1980s to 1992 were mentioned to be the key players in framing strong position of the Dutch government. They had a authority to decide on detailed matters.²⁴ Prime Minister Lubbers was not mentioned much, but he was considered to be a person who trusted Ministers and let them do whatever they want under their responsibility (from interview).

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

The comments concerning public awareness of the people toward climate change problems were similar in all countries; it was said that public awareness was high only a short period of time in the late 1980s, and later gradually faded in the 1990s.

In Germany, the comments on the public awareness were relatively higher than other countries. It was said that the people had been concerning about dying forest within their country. They took the climate change problem as a deforestation in the tropical forest, and became aware of the problem; "Chancellors gets hundreds of letters each week, I suppose, in the ministry, I don't know how many thousands a month, from citizens that are concerned about environment (from interview)."

Comments from other four countries were along the same line. In the Netherlands, "there was much awareness in the late 80s, but as the economic recession began, their interest in environmental problems began to withdraw." In Japan, comments made on public awareness varied according to what it was compared with. Some compared the public opinion with that of the past, and said there was a environmental boom in the late 80s which dealt with global environmental issues in general as a fashion. Others compared with public in other developed countries and mentioned that the Japanese people had no idea to support activities of the environmental NGOs (from interview). In the UK, public awareness was considered to be lower than other developed countries. "Public in this country is not as environmentally aware as in other countries," "by large, the environmental NGOs are more concerned with local issues,

²⁴ For example, in 1988, it was Minister of Environment himself that gathered experts to organize the Noordwijk Conference (ECO,1991b).

nature conservation issues. So something like climate change, although it might impact their concern but it is not immediately visible (from interview)." In the US, environmental problems such as waste management and water quality were easier for the general public to be aware of, but not climate change. It was said to be a large concern of the public in 1988 when the US had an extraordinary hot summer but withdrew quickly.

Evaluation: In all countries, a number of political leaders significantly influenced the decision-making for CO₂ targets. They played the role of supporting environmental ministry or of raising public awareness in the country. Especially in the Netherlands, Germany and Japan, "domestic politics" was evaluated to be one of the most decisive factors. In every country, the environmental ministry had limited administrative power than other ministries such as economic, industry, transportation and agriculture because those were the ministries responsible for sectors where most of the climate change policies were implemented (from interview). In that case, the environmental ministry needed a political support to convince other ministries to commit to CO₂ emission target. This result of the evaluation indicates that the CO₂ target was more or less driven by several political leaders in the three countries, regardless of scientific evidence or calculation of the cost needed to achieve the target.

There are many "sayings" concerning political system and the position on climate change issue. For example, it is often said that in countries like the Netherlands and Germany where they have coalition-party rather than single-party cabinet, political leaders tend to get aggressive to appeal themselves with new issues. It is also believed that political leaders have less influence in decision-making of the government in countries like the UK and Japan where bureaucrats in the central government obtain authority of the decision-making of the country. President of the US is said to have power to reflect his will to the country's decision-making.

It is difficult to prove these "sayings" only with the result of this survey. However, there is a tendency that the Netherlands and Germany are more driven by the domestic politics than the UK and Japan, more so than the US. Also, there were more comments in the UK and Japan on the interdepartmental disputes compared with other countries. Therefore, there may be some relation between the countries' position on climate change negotiations and their political systems. It would be worthwhile to make further analysis by comparing political system of those countries; electoral system, distribution of political power between political leaders and the government, distribution of administration between central and local governments, etc.

The comments for public opinion were similar in all the countries, and its evaluation was also similar; that it was partly and indirectly influential. To determine relations between public opinion and decision-making of countries, it is necessary to investigate further by organizing common opinion poll on climate change in those five countries. It was also difficult to find the link between the political leaders' will to have ambitious target on CO₂ emissions and public awareness. Theoretically, it is possible to explain the relation by the electoral system of the countries. However, comments of the survey showed that the political leaders who played the key roles in pushing the government were not considered to be driven by the idea of being re-elected in the next election, but rather by their personal belief that climate change was an important problem. On the other hand, it is also possible to admit the linkage between public awareness and political leaders from the result of the survey, that those political leaders only existed in the late 80s to early 90s, and by 1992, most of them moved to another position.²⁵ This could not be answered in this survey.

²⁵ For more on the history of Green Parties in European countries, see, for example, Richardson, 1995. It is somewhat difficult to evaluate the "greenness" of politics of a country only by counting the number of legislators from Green Party because in many cases, other major parties include green policies in their conventional policies.

4.4 International Politics

General Comments: This factor was interpreted in three different meanings; to take a leadership in international community, to make contribution to international community and to be pressured from international community.

Table 4.4 Result of the survey - International Politics

	Support	Partly Support	Not Support
Netherlands	3	2	2
	<ul style="list-style-type: none"> * We had a presidency of EC at the very crucial time, it was the six months ending in 1991. * It was a good chance for the Netherlands to be a leader in international debates. * Climate change cannot be solved only by the Netherlands. * The Netherlands always thinks much of EU as a whole. 		
Germany	1	3	2
	<ul style="list-style-type: none"> * US is the military power, Japanese is the economic power, we are the Green one. * In general, the German government is interested in EU. * Having taken such an ambitious national target, it was natural that we took a clear stand in the international negotiations. 		
United Kingdom	2	5	0
	<ul style="list-style-type: none"> * These European countries were pressuring the UK to set a targets and time tables on CO2 emissions. * A role of a broker, to be a compromise between a strong EU position at the time and very weak US position. * Prime Minister Major could not go to Rio with this (2005) target. 		
Japan	5	0	1
	<ul style="list-style-type: none"> * There was a self-consciousness as a world leader. * There was a strong pressure from EC countries. * Japan has been expected from other countries to contribute to international welfare. * Japan may be accused if it was to take leadership in other international issues such as trade. 		
United States	0	2	4
	<ul style="list-style-type: none"> * In political and military sphere we're still doing well. * The US was in the lead concerning scientific knowledge. * We were somewhat cornered by the rest of the world. * It at least loosened the traditional leadership role of the US. 		

The first definition was used in the Netherlands and in the UK.

The Netherlands, as was mentioned in the early section of this paper, was interested in climate change issue from the early 1980s, when the discussion was still within the scientific academic field. The two conferences they hosted in 1989, the Hague and the Noordwijk Conferences, were actually the first two conferences on climate change where political leaders, especially ministers of the environment, rather than scientific experts, participated in the debate to deal with the issue. Comments were made that these conferences were deemed to be a good chance "for the Netherlands to be a leader in international issues (from interview)." The Netherlands had a Presidency in the EC in 1990, and climate change was an adequate issue to take the lead within European countries.

On the other hand, the interviewees in the UK mentioned again of Prime Minister, "Mrs. Thatcher also did believe that the UK could secure some kind of leadership by both taking the ozone issue, and the global warming issue. I think she wanted leadership in science (from interview)." It was not the British government but Prime Minister herself that considered international leadership as an important factor to support climate change negotiations. The

leadership commented here limited to that in scientific field, and there was no comment on her intention to have leadership in international politics in general. The British government, on the other hand, was rather interested in taking its special role as a broker between the US and EC (from interview). Rather than trying to take the lead in international negotiations, the UK discussed the compromise text between two oppositions.

The second interpretation was found in Germany and Japan. In these countries, the meaning of the international politics was taken not as "lead" but as "contribution" or "coordination." Germany and Japan have experienced a similar history in the twentieth century, and this historical background often came out to explain their political situations. During the Second World War, they were led by military government, and both have lost the war. After the war, they became sensitive to military debates, and reserved themselves not to play any leadership roles in arms race during the time of Cold War. They have succeeded in recovering from the aftermath of the war by rapidly growing economy in the 60s and 70s, and by 1980s, they became top economic countries in the world. Once they came to be major economic superpowers, it was difficult to stay away from global issues, but it was still difficult for them to contribute with military such as in the case of Peace Keeping Operations of the United Nations. For them, climate change and other global issues were the most advantageous political issues to contribute the international community. "We are now looking for a field of activities, where US is the military power, Japanese is the economic power, we are the Green one (from interview)."

The third usage of the term was observed in the comments from the UK and US. The UK belonged to the EC, and in 1990, there was a discussion in the EC countries to set a target of EC as a whole. By that time, it was rather difficult for the UK to have no target when other major European countries had stronger commitments. It was often commented that the primary reason for shifting the 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 US was also pressured from the European countries to set a target on its CO₂ emissions. Comments were made that "we were cornered by the European countries." It was also admitted by some of the comments of the European countries that "we pressured the US strongly, we pushed them right on the wall (UK)." However, for the US, there were other international issues that kept them away from being concerned in environmental issues. Most of the interviewees agreed that the US's international leadership role declined after the Cold War, but that it was still the most powerful country in the world. The US was said to maintain its leadership especially in military affairs. In 1990, when Iraq invaded Kuwait and the Gulf War began, the US was the major country that was involved in the war. The US government was more interested to take the lead in peace keeping than in climate change issue.

Evaluation: For the Netherlands, the UK and Japan, international politics was one of the most influential factors in setting a target on CO₂. Especially for the UK and Japan, the "follower" countries, the international politics played a decisive role in agreeing to setting a target in the Convention. In Britain, it was a kind of a pressure especially from Germany, the Netherlands and Denmark to have common policies within the EC countries. On the other hand, for Japan, it was their willingness to take some positive action in international community that became incentive to set a stabilization target. It was often commented in both countries but especially in Japan 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, evaluation of "international politics" was supported little in Germany and the US. The German government did not have much intention to make use of climate

change as an issue to take leadership role, although it turned out to be so. For the US, pressures from other developed countries did not change their decision.

Why were the "follower" countries influenced by other countries and the "laggard" countries not? The "follower" countries might have had a potential factors to be the 'leader' countries but that factors were not strong enough to influence the governments' decisions. To obtain more clear idea to this question, the relation between the factors should be considered. This question will be investigated in the later section.

4.5 Effectiveness

General comments: Every country agreed that they would have considered a CO₂ target in the FCCC as a legally binding target if it had been agreed. This strict perception was especially stressed by the UK, the US and Japan. It was said that before they sign on a convention, not only do they make analysis whether it is feasible, but also confirm with all the related ministries that they would agree on the implementation of the policies and measures necessary to achieve the commitment in the convention. A US interviewee commented "the public may sue the government if the government did not fulfill their obligation in a convention." Those countries emphasized that they would accomplish the commitment once they have agreed to it, and this system delayed to formulate their decision of the country.

Table 4.5 Result of the survey - Effectiveness

	Support	Partly Support	Not Support
Netherlands	4	2	1
	<ul style="list-style-type: none"> * We needed a target to bind other countries as well. * The Convention is legally binding. * We have a national commitment before the FCCC to reduce the emission. * We can achieve the target. 		
Germany	1	0	5
	<ul style="list-style-type: none"> * There is a national reduction target, so no one is really interested about legal bindingness of the Convention. * Climate change is a problem you have to solve regardless of cost. * If you do not have a legally-binding commitments, it is difficult to get anything implemented. 		
United Kingdom	0	3	4
	<ul style="list-style-type: none"> * UK does the analysis, and set the target. Once set the target, we deliver it. * If it was a protocol, then it would give a significant cost on them. * UK tends to be pretty careful and regards international commitments, legal commitments, as quite serious undertaking. 		
Japan	0	1	1
	<ul style="list-style-type: none"> * Japan keeps its promise once it has been announced, because of the consensus system in the government's decision-makings. * It is necessary to have international agreement in order to achieve some kind of specific target. * Whether CO₂ target is included has no effect on Japan's position in the negotiation. 		
United States	2	2	0
	<ul style="list-style-type: none"> * We were negotiating a convention, not a protocol. * It should not be decided just because we're having a Conference in Brazil. * The Bush administration was very reluctant to enter into any kind of agreement on global warming. * The other obstacle clearly was this question of the target, a very specific target. 		

In Germany, most of the comments were similar to those of the above three countries; Germany had a more ambitious national commitment that must be achieved independent of the text of the FCCC, and that they made enough analysis concerning its feasibility before signing on it. However, there were several comments where the term "target" was interpreted as an aim or goal, which has less binding power. One interview commented "it was considered to be more important to make 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 in industrial processes (from interview in Germany)."

Effectiveness was interpreted in a marked contrast sense in the Netherlands. The general assumption of this questionnaire was that it would be easier for countries to sign on a convention if they considered targets in the convention could be neglected. However, in the Netherlands, some said that the Netherlands would not have signed on the Convention if had no article on the obligation to reduce CO₂ emissions, because the Netherlands had its own reduction target before the INC negotiations and it was necessary for the Dutch government to have other countries follow suit (from interview).

Evaluation: For the Netherlands and the US, "effectiveness" was supported by interviewees as one of the most influential factors for their decisions. The Netherlands said that they agreed to the present text of the Convention because they could interpret the text as a legally binding target to stabilize CO₂ emissions. On the other hand, the US could sign on the Convention because they interpreted Article 4.2(a) and (b) only as an aim for their greenhouse gas emissions. One US interviewee mentioned that they would have supported the Convention from the beginning of the negotiations if it did not discuss on specific targets.

As for the other three countries, the effectiveness of the target was not included in the discussion of decision-makings towards CO₂ emission targets. They commented that effectiveness of the target in the Convention did not matter because they have bounded themselves with their national commitments. Especially for the UK and Japan, it was considered more important to have all the developed countries to agree on the Convention rather than to have a Convention with strict targets and timetables (from interview).

In all countries, they considered target as a legally binding commitments. However, there were some remarks made in the UK, Japan and the US that they were doubtful of the implementation of obligations in European countries. They said that some of European countries would agree to anything good without enough consideration about feasibility. This skepticism on the implementation of European countries may be regarded as one of the elements that delayed the agreement in the INC negotiation. Whether it is true or not is yet to be seen, but the current projection made by each country, the Netherlands expects to reach the stabilization target while Germany seems to be struggling to achieve its ambitious target.²⁶ The influence of the "leader" countries might have been stronger if they could deny other countries' skepticism by indicating their analysis for achieving the target or by addressing their commitment with their industries and energy sectors.

²⁶ In September 1994, Annex I Parties submitted to the Secretariat of the FCCC their first national communications concerning the Convention. In the report, the Netherlands' projection showed 3.7% reduction of CO₂ emissions in 2000 from 1990 level. Germany only estimate emissions in 2005, where the level was projected to be 980,000 Gg compared with 1,032,000 in 1990 (-5.1%) (United Nations, 1994).

4.6 Learning

General comments: The term "learning" was often mentioned while the interviewees were explaining other five factors, so it became difficult to distinguish "learning" as an independent factor. However, this paper maintained this factor as one separate element because it was worthwhile to compare what kind of learning countries included in their decision-making and what experiences they did not care to take into consideration.

Table 4.6 Result of the survey - Learning

	Support	Partly Support	Not Support
Netherlands	0	7	0
	* There was a serious flood in 1953, and after that, the Netherlands put its best technology in building dikes so we don't have to worry about sea level rise. * Acidification problem pushed other environmental issues.		
Germany	0	6	0
	* It is more realistic to have Geneva Convention on Transboundary pollution on SO ₂ that the government learned from. * Some scientists were involved in both issues (ozone depletion and climate change). * The people were concerned in dying forest after their forest being heavily damaged by acid rain.		
United Kingdom	0	1	6
	* There was certainly a perception that we made a bit of a mess at Montreal Protocol. * Negotiation for climate change is a bargain shop and what happens behind the closed door of UN is completely different. * The ozone depletion is much easier to deal with than climate change.		
Japan	1	3	0
	* There was a stream of learning from ozone depletion issue. * Japanese industry learned during the oil crisis that energy-efficient technology is beneficial in the long run. * The Japanese people started to travel abroad from the 1980s and learned Western way of thinking.		
United States	0	0	2
	* Ozone depletion and climate change are different kinds of issues, and we cannot learn much. * (At the time of the amendment of Clean Air Act) the Bush administration was feeling we did all this, it's going to slow down the economy and we didn't get any environmental credit.		

Some comments were made about the past experiences of environmental problems. In the 1980s, Germany experienced its forest dying by acid rain. This has taught them that human activities can damage global environment. This learning was helpful for the German people to be aware of climate change problem when climate change was linked with deforestation in tropical regions. In the Netherlands, the country and its people gained their confidence in their dikes due to the fact that they have never suffered from flood since they improved their dikes with best-available technologies after a historical flood in 1953, and this learning somewhat made the Dutch people more optimistic with the impact of climate change on their own country.

In Germany and Japan, as was already mentioned in the "cost" section, the industry had improved their energy-efficiency in the 1970s which supported them get over the increased price of oil. They learned from this experience that investments to introduce energy-efficient facilities were beneficial in the long term. With this experience, the industry sector in both countries generally did not to oppose too much on climate change policies but rather tried to get along with

the government in framing the policies." The funny thing is that those countries that has 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. One of the lessons."

In the US, as was already mentioned in the "domestic politics" section, the President of the US had a difficulty in the amendment of Clean Air Act in 1990 and this experience seemed to turn him more negative in climate change problem (from interview).

As for the "international politics," the UK and Japan both commented on the ozone depletion negotiations in the 1980s as a lesson learned in the past. They were "laggards" in the CFC negotiations, and later they considered that they have failed in international negotiations because they were criticized from other developed countries. One comment from the UK was "there was certainly a perception that we made a bit of a mess at Montreal Protocol." In Japan, it was said that "we couldn't do any contribution in ozone depletion problem, so we wanted to do better in climate change negotiations."

Evaluation: The "learning" was evaluated only partly supportive in four countries, and was denied in the US. In the US, it was said that "climate change is totally different from ozone depletion and there is little to learn from it." Therefore, it was not possible to find the relation between "learning" and countries' position towards CO₂ emission targets. It was also difficult to find out the reason why some of the similar experiences were considered in one country and neglected in another. For example, it was not only Germany but also most of the developed countries that experienced damages of their forests by acid rain, but somehow it was only the German and the Dutch government that learned from it and had a will to avoid it. Oil crises in the 1970s hit all the developed countries and most of them had improved their energy efficiencies by the 1980s. However, it was only in Germany and Japan that commented it as a good experience that influenced the climate change policies. Why only in those two countries? This question could not be answered in this survey, and this need to be further investigated.

It is also important to find the relation between learning in each of the other five factors and their evaluation. One factor might influence more when there had been a learning from the past concerning the certain factor. This also needs to be further discussed.

5 Discussion of Results

This section deals with the relation between the degree of evaluation for each factor and the position of countries (leader, follower or laggard). The purpose of this analysis is to deliver some general decision-making rules of countries for climate change negotiations. This generalization is of course at a level of ambitious attempt which were drawn out from this survey only. More interview surveys would be necessary to obtain more certain rules that would fit to other countries as well.

Table 5.1 shows the overall result of the survey. Here, the numbers of interviewees which were indicated by numerical values in the tables of the previous section are expressed by stars (*) to facilitate understanding the degree of evaluation.

Table 5.1 Comparison of Evaluation

	Impact	Cost	Domestic Politics	International Politics	Effectiveness	Learning
Netherlands	**** ***	*****	**** **	** **	**** **	*****
Germany	* *****	** ****	*****	* ***	*	*****
United Kingdom	* ***	***** *	** *	** *****	***	*
Japan	****	* ***	** ****	*****	*	* ***
United States	** **	*****	*****	**	** **	

Note: * represents an interviewee who evaluated "support".
 * represents an interviewee who evaluated "partly support".

5.1 Leaders

* The "leader" countries were motivated by domestic politics to set the target.

Although it was unclear whether public awareness was higher than other countries, it was certain that there were several key political leaders who were personally interested in the issue, considered it important and organized themselves to lead domestic debate to set a CO₂ emission target for themselves. In the Netherlands, those political leaders seemed to have been influenced by two other factors. One is the impact of climate change of the global level. After the Dutch scientists attended conferences on climate change in the early 1980s, they succeeded to convince the political leaders that there had already been enough evidence to start working on it. The other factor is international politics where the Netherlands had been seeking for a suitable issue that would be useful to obtain leadership role in the EC. Ministers for the Environment were especially keen to appeal themselves by being active on this issue.

Germany's initial motive was more political domestically. The German people were concerned about environmental problems that somewhat related to deforestation by acidification, and the political leaders considered it important politically to tackle with these global environmental problems. They established the Enquete Commission in 1987 where they gathered prominent experts in the country and published a report with the recommendation to the government to reduce CO₂ emission significantly.

After having set their own national CO₂ targets, the "leader" countries considered that other countries should have similar targets, because climate change can only be solved when all major countries cooperated and reduced their greenhouse gas emissions, and also it would be economically beneficial if other countries shared the same burden. At the same time, they considered climate change as an issue in which they could play a leadership role in international community. They emphasized the necessity of having targets in the Convention, sometimes without enough analysis on the feasibility of achieving the target.

"Leader" countries not only had influential political leaders, but also had political systems that allowed political leaders to frame national policies and pressure the government. In Germany, the Enquete Commission did not have civil servants as its membership, and they could recommend to the government what policies to take. Countries with multi-party cabinet

may have more flexibility to deal with new issues such as global environmental problems, because in such countries, it is easier for Green Party to be involved in the activities of the Parliament.

5.2 Followers

* The "follower" countries were motivated by international politics.

They had a similar background to the "leader" countries; they had some concern on the impact on climate change, and their estimates of the cost to achieve the CO₂ emission target was either small or uncertain. However, they lacked political pressure from national political leaders. There were some leaders who were personally interested in the issue and were willing to deal with the issue seriously, but they were not able to influence the country's decision without being supported by pressures from the "leader" countries; international politics.

In the UK, the "cost" rather than "international politics" was evaluated as the most influential factor. It is true that the British government announced its commitment to a stabilization target only after they were sure they could achieve it with little cost. However, even after this prediction, they never changed their position to a "leader" country in the INC negotiations. They stayed as a "follower" and played a special role as a mediator between the US and EC. Therefore, it could be interpreted that "international politics," or pressure from EC countries, was indispensable for the UK to set their national CO₂ target.

In Japan, more cost was said to be needed because they were expecting a continuous growth in its CO₂ emissions. However, the "leading" countries and the UK put up their CO₂ targets in 1988 and 89, and this influenced both the government itself and some of the political leaders in Japan. Japan became economically powerful country around the early 1980s, and the government as well as political leaders were seeking for an issue where they could cooperate in international community, and considered that climate change would be a suitable issue. When the government was discussing the targets, it was the political leaders in LDP that pressured the government to have a stabilization target so that they could appeal to other developed countries. Those political leaders would not have had an idea to recommend CO₂ targets, and the government would not have accepted it if other developed countries had not committed themselves to their national targets before Japan.

The "follower" countries tend to have strong central governments where main decision-makings take place. In the UK, it was not the Parliament that recommended the government to set emission targets, but it was Interdepartmental Group on Environmental Economics (IGEE) that played a major role in setting a target on 2005. It was composed of leading economists from different government departments and an academic advisor (Maddison, 1994). Similar to this, in Japan, the Japanese government established the Council of Ministers for Global Environmental Conservation where political leaders gathered and discussed the outline of the environmental policies in Japan. The members of the council agreed that Japan should be more environmentally friendly country. However, Japan needed to have all the related ministries to agree to the decision before it was open to public. This consensus system within the government seems to be a typical character of the bureaucracy, and this system makes it difficult for the government to play a "leader" role in climate change problem which has many scientific uncertainties and which relates to various ministries.

5.3 Laggards

* The "laggard" countries were influenced by the cost needed to achieve the target.

The "laggard" countries shared the same scientific evidence with other countries, and was pressured by the "leader" countries, but could not agree to CO₂ emission targets. The

crucial reason for this situation was the "cost." It was considered to be impossible to achieve a stabilization target without damaging its economy. Those countries owned huge amount of fossil fuel reserves, and the industry and the people were dependent of these energy-related economy.

The "laggard" countries may be those countries which allow more authority to the local government than central government on regulatory matters. The US leaves much liberty to the state governments on standards and regulations related to environmental problems. When most of the environmental regulations are decided at state level, it will be difficult for the federal government to set a target for the total amount of emissions in the country.

It remains unsolved what would have happened if the "leader" countries were also required to spend a lot of cost to reduce their emissions, or if the "laggard" countries had charismatic political leaders that would devote themselves to solving climate change. In order to give answers to these questions, it is necessary to continue this research with the five countries and observe the dynamics of climate change policies in their decision-making processes. It would also be important to organize this type of survey to other countries. With only five countries, it is difficult to conclude whether these decision-making rules can be attributed in general, or they were just a characteristic of the five countries.

This section referred to a political system that may be influencing the countries' position in climate change negotiations, but this does not lead to conclude one political system is better than other system in environmental decision-making. It was one attempt of generalization, which would be helpful to understand other countries' position when negotiating for the climate change policies.

6 Conclusion

There is no denying the fact that all countries had different factors in decision-making towards climate change policies. However, from the survey, we were able to come to certain results as follows;

- * Domestic politics was the most critical factor to have a strong target for CO₂ emissions. Here, the term "domestic politics" was used to express strong will of political leaders to lead the country, and public awareness that support such leaders.
- * The pressures from leading countries to other countries were effective when those other countries did not expect much cost to achieve the target but did not have enough political pressure inside of the country.
- * The countries that opposed to setting a CO₂ target were critically influenced by their economic cost necessary for CO₂ abatement. Pressure from other countries did not influence such country.

With these results above, we can draw some proposals derived from this survey, to assist the upcoming negotiations for the Protocols or other legal instruments.

- * Keep the public and political leaders aware of the climate change problem. Without political support, no country may be able to put up a strong target towards reduction. The public awareness is still at a low level, and it is needed to be raised because public opinion can influence politics and also because it is each individual that decrease the CO₂ emissions.
- * Maintain good communication with other countries. Some countries need pressure from other countries. Especially when the negotiation comes to an implementation of policies and measures in the developed countries, it is important to set common policies so that they will not raise another debate on competitiveness.
- * Show how high energy-efficiency pays in the long run. It is crucial to reduce the cost of climate policies to get support from countries that require relatively much energy. This problem may be helped by distributing some experiences of countries that had succeeded in raising the

level of technology without much cost.

This paper focussed only to the domestic level of decision-making process on climate change, but it is also important to determine the decision-making factors in international level. Climate change is a difficult issue to come to an agreement because a wide variety of countries participate in the negotiation, and therefore it is important to forecast what kind of solution would be agreeable to all countries. For example, this survey did not attempt to evaluate "target and timetable" approach itself. The text of the FCCC seemed to be the only agreeable text when it was adopted in 1992, but it was considered to be "not adequate (United Nations, 1995)," when Annex I countries seemed to have been struggling to achieve their targets (United Nations, 1994). There are new studies on the suitable instruments and measures for the upcoming negotiations (see for example, Jaeger and Loske, 1994; Victor and Salt, 1995) where they suggest new prospects of negotiations other than setting another targets and timetables. Further research is necessary to evaluate this "targets and timetables" approach.

Another point that should be mentioned here is that climate change is a difficult problem also because it involves discussion on "fairness." This paper only dealt with the developed countries, but to suggest a comprehensive judgment, we must consider the fairness between the developed and developing countries (intra-generational equity) and between our generation and the next generation (inter-generational equity). The "fairest" solution may not be the most cost-effective solution. A new political scientific approach is needed to deal with this issue.

Acknowledgement

I am grateful to all the people who had me to interview and gave inspiring opinions towards this complicated climate change problem. The following list shows names of those who have pleasantly accepted the survey. Their occupations are those at the time of the survey, in the alphabetical order. Without their help, this survey could not be completed.

Germany

Michael Ernst, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
Joachim Heim, Federal Association of the German Industry, BDI
Sascha Muller-Kraenner, German Nature Protection Ring
Markus Kudziel, Alliance 90/ The Green party
Bernd Lange, European Parliament
Hermann Ott, Wuppertal Institute for Climate, Environment and Energy
Cornelia Quennet- Thielen, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
Wendelin Wilhelm, Federal Ministry of Economics

Japan

Nobutoshi Akao, Ministry of Foreign Affairs
Saburo Kato, Research Institute for Environment and Civilization
Yoichi Kaya, University of Tokyo
Miwako Kurosaka, World Resources Institute
Katsuo Seiki, Global Industrial and Social Progress Research Institute
Hikaruko Seki, Ministry of Foreign Affairs
Yasuhara Tadashi, Environmental Information Center
Ryuhei Wakasugi, University of Yokohama

Keiichi Yokobori, World Energy Council

Netherlands

Joseph Alcamo, RIVM
Hans Altevogt, Greenpeace International
Hans de Boois, Netherlands Organization for Scientific Research (NWO)
William Hare, Greenpeace International
Reggie Hernaes, European Commission
Arjetta Stevens, Greenpeace International
Andreas J. Te Boekhorst, Ministry of Foreign Affairs
Maria Oomen-Ruijten, MEP
Jan van der Kooij, Physical Planning and Environmental Policy (SEP)
Bas Weenink, Ministry of Housing, Spatial Planning and the Environment
P. Winkel, Stichting voor de Technische Wetenschappen (STW, Technology Foundation)

United Kingdom

Robin Aram, Shell International Petroleum Company Ltd.
Christophe Bourillon, World Coal Institute
Alan Davis, Department of Environment
Michael Grubb, Royal Institute of International Affairs
David Pearce, CSERGE University College London
Tessa Robertson, Greenpeace -UK
Ian Rowlands, London School of Economics and Political Science
Tom Spencer, EU Parliament
Farhana Yamin, Foundation for International Environmental Law and Development (FIELD)

US

Robert Beck, Edison Electric Institute
Joel Darmstadter, Resources for the Future
Roger Dower, World Resources Institute
Jae Edmunds, Battelle PNL
Dexter Hinckley, Environmental Protection Agency
Mark Kerrigan, Science Applications International Corporation
Daniel Lashof, Natural Resources Defense Council
Richard Loughery, Edison Electric Institute
Walker Nolan, Edison Electric Institute
Hugh Pitcher, Battelle PNL
Robert Reinstein, Washington International Energy Group
Dennis Tirpak, Environmental Protection Agency
John Topping, Climate Institute

Other Countries

Shana Mertens, Climate Network Europe
François Roelants du Vivier, GLOBE EC

I would also like to express my full appreciation to Jaap Wessels, Marek Makowski, Antonie Stam, Kazuhiko Takemoto, Owen Greene and Jill Jaeger who have given me stimulating comments and advice while I was participating YSSP at IIASA, and Tsuneyuki Morita who has supported this survey from technical point of view.

References

- Akao, N. (1993) *An Agenda for Global Survival* (in Japanese), Sekai no Ugoki-sha, Tokyo, 356pp.
- Benedick, R. (1991) *Ozone Diplomacy*, Cambridge, Harvard University Press, 300pp.
- Bodansky, D. (1993) *The United Nations Framework Convention on Climate Change: A Commentary*, *Yale Journal of International Law* 18, pp.451-521.
- Brenton, T. (1994) *The Greening of Machiavelli*, The Royal Institute of International Affairs, London, 163-196.
- Clinton, W. and A. Gore (1993) *The Climate Change Action Plan*, Washington DC.
- ECO (1991a) John Sununu: Farewell to the President's 'Pit Bull', Issue 10.
- ECO (1991b) *The Engineer Who Would Save the Climate*, Issue 10.
- Fermann, G. (1992) *Japan in the Greenhouse: Responsibilities, Policies and Prospects for Combating Global Warming*. The Fridtjof Nansen Institute, Norway, 74P.
- Fermann, G. (1994) *Political Leadership and the Development of Problem-solving Capacity in the Global Greenhouse: Prospect of Germany, Japan and the United States Towards the 21st Century*, The Fridtjof Nansen Institute, 86pp.
- Government of Japan (1990) *Action Program to Arrest Global Warming*, Tokyo, 13pp.
- Government of the United Kingdom (1990) *This Common Inheritance: Britain's Environmental Strategy*, Cm 1200, White Paper on the Environment, HMSO London.
- Grubb, M. (1989) *The Greenhouse Effect: Negotiating Targets*, The Royal Institute of International Affairs, London, 10-12.
- Grubb, M. (1991) *Energy Policies and the Greenhouse Effect*, The Royal Institute of International Affairs, London, 450pp.
- IPCC (1990) *Scientific Assessment of Climate Change*, The Policymakers' summary of the Report of Working Group 1 to the IPCC, 26pp.
- Jaeger, J. and R. Loske (1994) *Options for the Further Development of the Commitments within the Framework Convention on Climate Change*, Wuppertal Papers, Nr.22.
- Kawashima, Y. (1994) *Policy-making Processes for Global Environmental Problems; a comparative analysis between Japan and the United States*, presentation given at Research Workshop: South and North, East and West in global climate politics, Stockholm, Sweden.

Maddison, D. and D. Pearce (1994) *The United Kingdom and Global Warming Policy*, CSERGE Working Paper, 31.

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 (1989) *National Environmental Policy Plan*, The Hague.

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 (1990) *National Environmental Policy Plan - Plus*, The Hague.

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 (1990) *National Environmental Policy Plan - Plus*, The Hague.

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 (1994) *Netherlands' National Communication on Climate Change Policies*, The Hague.

Mintzer, I. and J. Leonard (1994) *Negotiating Climate Change: The Inside Story of the Rio Convention*, Stockholm Environment Institute, Cambridge University Press, 392pp.

National Academy of Science, National Academy of Engineering, Institute of Medicine (1991) *Policy Implications of Greenhouse Warming*, National Academy Press, Washington D.C., 127pp.

OECD (1994) *Climate Change Policy Initiatives, 1994 Update*, OECD countries, OECD, 217pp.

Paterson, M. (1992) *Global Warming*, in Thomas C. *The Environment in International Relations*, The Royal Institute of International Affairs, London, 155-198.

Public Relations Department of the German Bundestages (1989) *Enquete Commission of the 11th German Bundestag on "Preventive Measures to Protect the Earth's Atmosphere- An International Challenge*, Bonn.

Reinstein, R. (1993) "Climate Negotiations". *The Washington Quarterly*, Winter, 79-95.

Richardson, D. and C. Rootes (1995) *The Green Challenge*, Routledge, 268pp.

Rowbotham, E. and T. O'Riordan (1994) *United Kingdom's Policy Response to Global Warming*, CSERGE, University of East Anglia.

Rowlands, I. (1995) *The politics of global atmospheric change*, Manchester University Press, 276pp.

Schneider, S. (1989) *Global Warming; Are We Entering the Greenhouse Century?* Sierra Club

Books. San Francisco.

Takemoto, K. (1991) Japan's Initiatives on Global Warming, The World Bank.

United Nations (1992) United Nations Framework Convention on Climate Change.

United Nations (1994) Document FCCC/A/AC.237/81. Compilation and synthesis of national communications from Annex I Parties.

United Nations (1995) Document FCCC/CP/1995/L.14.

Victor, D. and J. Salt (1995) Keeping the Climate Treaty Relevant, Nature 26 January.

Yagishita M. (1991) Concerning Action Programme to Arrest Global Warming (in Japanese), Kankyo Keikaku, No.80, 16-34.