NIES/IGES Joint Research Report

# Climate Regime Beyond 2012

## *"Incentives for Global Participation"*

December 2003

National Institute for Environmental Studies (NIES), Japan

Institute for Global Environmental Strategies (IGES), Japan

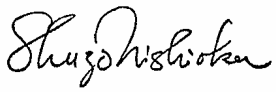
**Contents**

## Foreword

The Kyoto Protocol to limit greenhouse gas emissions by developed countries is a small but important milestone to address the threat of global climate change. With the decision of some major countries not to ratify the Kyoto Protocol, serious questions are now raised regarding the Protocol's anticipated performance. Some people even argue that the Protocol does not provide enough incentives to achieve global participation. Additional research on steps for further action beyond those outlined in the Kyoto Protocol and for building a more inclusive and equitable climate regime with adequate incentives for all participating states is, therefore, critical for further progress.

The National Institute for Environmental Studies (NIES) and the Institute for Global Environmental Strategies (IGES) in Japan have jointly initiated a research project to propose a comprehensive framework for global climate regime beyond the first commitment period of the Kyoto Protocol. It is a three-year project from April 2003 to March 2006 and is funded by the Global Environment Research Fund of the Japanese Ministry of the Environment.

The booklet summarizes current research interests and activities undertaken by various members of the project. As the project has just started, no firm conclusions have been reached yet. The primary purpose is to provide readers with the basic idea of this project. Each report included here deals with **INCENTIVES** for participation in the future climate regime. Outcome of each study will be an element of a comprehensive climate regime to be proposed at the end of this project. For further information, the readers are advised to visit our website or contact core team members listed below.



Shuzo Nishioka
Executive Director, NIES
Climate Policy Project leader, IGES

**For more information**:
Visit our websites at
*http://www.nies.go.jp/social/post2012/*
*http://www.iges.or.jp/en/cp/bkp.html*

**Contacts**:
Yasuko Kameyama, National Institute for Environmental Studies, Japan (NIES)
Tel:+81-29-850-2430, Fax: +81-29-850-2960, E-mail: ykame@nies.go.jp
Kentaro Tamura, Institute for Global Environmental Strategies, Japan (IGES)
Tel: +81-46-855-3812 Fax: +81-46-855-3809, E-mail: tamura@iges.or.jp

## NIES / IGES Research Project on Global Climate Regime Beyond 2012:

## An Introduction

### Purpose

In the Kyoto Protocol, Annex B Parties committed to emissions reduction targets. It is considered as the first step towards more significant emission reductions required to meet the ultimate objective of the Convention. The Kyoto Protocol, however, only assigns commitments up to the year 2012, and negotiations on any actions beyond 2012 are yet to commence. A joint research project between the National Institute of Environmental Studies (NIES) and the Institute for Global Environmental Strategies (IGES) aims to assist policy makers in tackling this "beyond 2012" issue by identifying key priorities and proposing options for an effective, equitable, cost-effective, and agreeable regime.

The project is for three years from April 2003 to March 2005. The research fund of 23 million yen (about US$200,000) per year is provided by the Global Environment Research Fund of the Ministry of the Environment. By March 2005, the project is expected to finalize a report on options for an appropriate international emission limitation regime after the year 2012.

### Project Design

International realms are different from domestic ones in terms of legal enforcement. At the domestic level in most countries, every individual is under a legal order: one will be punished if he/she takes an action against law. At the international level, however, a nation state is punished by no one. Until today, many of multilateral environmental agreements (MEAs) have more or less depended on nations' goodwill. In case of climate change, the Kyoto Protocol seeks for Parties to share costs required to mitigate emission of greenhouse gases, but the benefits (mitigation of adverse impact of climate change) would be shared by all countries around the world. For some countries, becoming a Party to the Protocol may be considered as nothing but a straitjacket to economic development.

This project will start from another perspective by discussing ***incentives*** and ***disincentives*** to participate in the climate regime. Unless countries find benefits from participation, the regime may not be workable. Thus, we will start defining incentives of each country and sub-national actors (1), then, design methods that will stimulate those incentives (2), and frame options for a comprehensive regime by converging those methods (3). The options will be evaluated by some key criteria (4). (Fig.1).

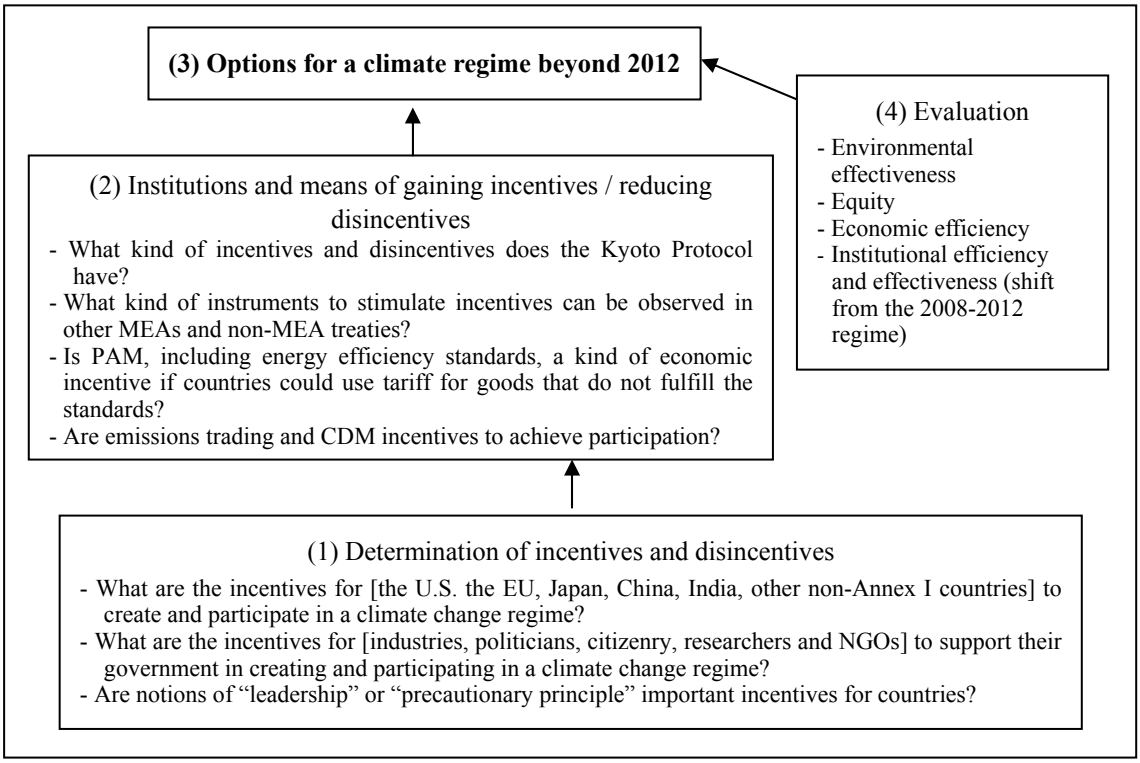



**Figure 1.** Project outline

**Project Personnel**

Researchers of NIES and IGES are core members of the project.

Core Members

Yosuke Fukushima (*fukushima@iges.or.jp*): Research Associate, IGES
Norichika Kanie (*kanie@iges.or.jp*): Visiting Researcher, IGES (Associate Professor, Tokyo Institute of Technology)
Yasuko Kameyama (*ykame@nies.go.jp*): Senior Researcher, NIES
Izumi Kubota (*kubota.izumi@nies.go.jp*): NIES Fellow, NIES
Yasushi Ninomiya (*ninomiya@iges.or.jp*): Research Associate, IGES
Ancha Srinivasan (*ancha@iges.or.jp*): Research Fellow, IGES
Kentaro Tamura (*tamura@iges.or.jp*): Research Associate, IGES
Wakana Takahashi (*wakana@cc.utsunomiya-u.ac.jp*) : Visiting Researcher, IGES (Assistant Professor, Utsunomiya University)
Rie Watanabe (*watanabe@iges.or.jp*): Research Associate, IGES

Other Collaborators

Masahiro Amano (*amano@waseda.jp*): Professor, Waseda University
Hidenori Niizawa (*niizawa@kobeuc.ac.jp*): Professor, Kobe University of Commerce
Yukari Takamura (*jlytaka@ipc.shizuoka.ac.jp*): Assistant Professor, University of Shizuoka
The AIM (Asia-Pacific Integrated Model) team, NIES

**Report on NIES/IGES Open Symposium**
**"International Climate Regime beyond 2012: Issues and Challenges"**

An open symposium "International Climate Regime beyond 2012: Issues and Challenges" was held at Fukoku Seimei Building in Tokyo, on October 7, 2003. Six speakers and one panelist from abroad and Japan were invited. More than two hundred people participated in the symposium.

Cédric Philibert (IEA) emphasized the gap between the goal of limiting greenhouse gas emissions to address climate change and costs to achieve such a goal. He suggested the "Kyoto plus plus" – an agreement based on structure of the Kyoto Protocol with additional approaches such as non-legally binding targets, dynamic targets, price cap, and technology agreements. Lutz Mez (Free University of Berlin) explained climate policy in Germany. He pointed out that Germany was so far successful in reducing $CO_2$ emissions, but additional policies were necessary to achieve its long-term goal of emissions reduction. He identified that there was still high potential in increasing the share of renewable energy and the greater use of CHP. Hidenori Niizawa (Kobe University of Commerce) observed uneasiness towards the Kyoto Protocol among certain Japanese stakeholders and explained that such uneasiness was not from the Kyoto Protocol *per se* but it would arise from any multilateral agreements aiming at international action for reduction of $CO_2$ emissions. He summarized that as of now, no alternate proposal applicable beyond 2012 was better than the Kyoto Protocol in all respects, and that there might be possibilities for reaching an agreement to utilize flexible mechanisms more effectively if it was the only workable mechanism.

Ambassador C. Dasgupta and Ulka Kelkar (TERI) suggested various ways to involve the developing countries including the promotion of voluntary actions, expansion of CDM, setting non-binding caps and globalizing emissions trading. They emphasized that such actions by the developing countries would depend on conformity with the Articles of UNFCCC, such as adequacy and predictability of flow of funds from the developed countries. William Pizer (RFF) discussed three points that could be critical in future climate agreements. First, absolute targets are divisive and alternative formulations such as intensity targets may be more agreeable. Second, the uncertainty of mitigation costs is a crucial issue, and domestic policies such as safety-valve should be encouraged in international agreements. Third, there are less expensive mitigation options in developing countries, and financing such efforts in those countries through means such as global emissions trading would be effective. Ying Chen (RCSD/ CASS) discussed different types of emissions such as those related to basic human needs and those related to luxurious lifestyle. She opined that elements for various alternate

proposals applicable beyond 2012 should be considered on the basis of sustainable development and emissions needs for human development, and according to national circumstances of different countries.

Shuzo Nishioka (NIES/IGES) concluded the symposium by stating that there were many ideas on future climate regime, and that there was a common understanding on the significance of, and the need for global actions against climate change. He mentioned that the symposium was a starting point for our discussions on climate regime beyond 2012 and he hoped to hold a series of symposia on this issue in future.

**NIES/IGES Open symposium**
**"International Climate Regime Beyond 2012: Issues and Challenges"**
**Tokyo : October 7, 2003**

PROGRAMME

10:00-10:15 Opening Remarks: Prof. Shuzo Nishioka, NIES/IGES

Session 1: Overview of Current Proposals
10:15-10:45 Mr. Cédric Philibert, International Energy Agency
*Short-term and long-term options for Beyond-2012*
Session 2: Perspectives from Countries: Part I
10:45-11:15 Prof. Lutz Mez, Free University of Berlin
*Germany's Greenhouse Gas Reduction Commitment towards Beyond Kyoto*
11:15-11:45 Prof. Hidenori Niizawa, Kobe University of Commerce
*Japanese Perspectives on Beyond-2012*
11:45-12:30 Discussion (Discussant: Ms. Rie Watanabe, IGES)

12:30-13:30 Lunch

Session 3: Perspectives from Countries: Part II
13:30-14:00 Ambassador C. Dasgupta and Ms. Ulka Kelkar, The Energy and Resources Institute
*Beyond-2012: Role of Developing Countries—An Indian Perspective*
14:00-14:30 Dr. William Pizer, Resources for the Future
*Flexible Goals and Mechanisms for Future Climate Agreements*
14:30-15:00 Dr. Ying Chen, Research Centre for Sustainable Development, Chinese Academy of Social Sciences
*Chinese Perspectives on Beyond-2012*
15:00-15:45 Discussion (Discussant: Dr. Norichika Kanie, Tokyo Institute of Technology/ IGES)

15:45-16:00 Coffee Break

Session 4: Panel Discussion
16:00-17:00 Coordinator: Dr. Yasuko Kameyama, NIES

17:00-17:15 Closing Remarks: Prof. Shuzo Nishioka, IGES/NIES

Presentations of various speakers may be downloaded in PDF format from our web sites:
*http://www.nies.go.jp/social/post2012/*
*http://www.iges.or.jp/en/cp/bkp.html*

**Invited Speakers and Panelists**

Ying CHEN
Associate Research Fellow, Research Centre for Sustainable Development, Chinese Academy of Social Sciences (CASS)

Chandra Shekhar DASGUPTA
Distinguished Fellow, The Energy and Resources Institute (TERI)

Seung-Jin KANG (Panelist)
Assistant Professor, Graduate School of Energy, Korea Polytechnic University

Ulka KELKAR
Research Associate, The Energy and Resources Institute (TERI)

Lutz MEZ
Managing Director, The Environmental Policy Research Centre and Senior Associate Professor, The Free University of Berlin

Hidenori NIIZAWA
Professor, Kobe University of Commerce

Cédric PHILIBERT
Administrator, Energy and Environment, International Energy Agency (IEA)

William Aaron PIZER
Fellow, Resources for the Future, (RFF)

**Maximizing Incentives Through Dual Track Approach**
**- A Proposal for a Comprehensive Framework for Climate Regime Beyond 2012**

Yasuko Kameyama, NIES

***Abstract***

The report introduces the "Dual track approach", a comprehensive architecture for global climate regime beyond 2012. The approach is based on three standpoints: (1) compatibility of both "global commons" and "national interest" perspectives, (2) increasing incentives for participation of countries, and (3) continuity of mechanisms of the Kyoto regime. It allows countries a choice between two commitment tracks. Track A consists of undertaking non-legally binding emission targets and submission of a detailed list of policies and measures. Track B consists of undertaking legally-binding emission caps and full participation in international emissions trading. The other institutions of the Kyoto Protocol remain, perhaps in an amended form, to be consistent with the two tracks. A virtue of this approach is that countries with either "global commons" or "national interest" perspective can find enough incentives. The remaining challenge is reaching an agreement on emissions target allocation to all countries.

## 1. Introduction

The report introduces the "dual track approach[1]", a proposal for a comprehensive architecture for climate regime beyond the first commitment period of the Kyoto Protocol. There have been many proposals on this issue, but most of them focus on only certain aspects of the regime, such as rules for burden-sharing or international emissions trading. The paper aims to show a comprehensive view of the possible future regime that incorporates maximum incentives for all countries.

## 2. Fundamental standpoints of the "dual track approach"

"Dual track approach" is built upon three standpoints.

### *2.1 Compatibility with two perspectives of the climate regime*

In a study that reviewed more than 100 publications (Kameyama 2003), two distinct perspectives on the climate change problem were recognized. One group of authors reflected a "global commons perspective". The basic ideas here are to set a long-term goal, inductively set a short-term global emissions cap, and allocate emissions targets to different countries. It assumes a supra-national authority or a norm

[1] Although nomenclature here is similar to the "dual strategy" proposed by Müller et al (2003), the content is different. Müller et al. view mitigation and adaptation as two pillars of the strategy, while the two commitment tracks proposed here are "dual" in nature.

in international society under which countries are expected to behave as agreed. The other group reflected a "national interest perspective", in which each country seeks for its own benefit and takes actions for its own sake. Such actions by countries may result in "cooperation" in one case, and "conflict" in another.

The Kyoto Protocol is more or less based on "global commons perspective", and it does not incorporate enough institutions to stimulate the pursuit of national interests by Parties. The "dual track approach" introduced below seeks for a way to satisfy both perspectives in one agreement.

*2.2 Increasing incentives for countries to participate*[2]

To incorporate "national interest perspective", institutions to stimulate incentives for countries to participate in a multilateral climate regime are indispensable. Until now, many multilateral environmental agreements (MEAs) have more or less depended on nations' good will (Jacobson and Weiss, 1998). In the case of climate change, it is only the Parties to the Kyoto Protocol that have to pay a certain cost to fulfill their commitments, but all countries, including non-Parties to the Protocol, would enjoy the environmental benefits (mitigation of adverse impact of climate change) gained by actions of the former.

Three types of incentives, namely environmental, political, and economic incentives are considered here (Table 1). Dual track approach maximizes all three types of incentives.

Table 1. Three types of incentives to participate in a multilateral climate regime

| Environmental Incentives | Political Incentives | Economic Incentives |
|---|---|---|
| - A country may participate if it could avoid the adverse effects of climate change by entry into the regime.<br><br>- A country may participate if adverse effects of climate change could be compensated by entry into the regime.<br><br>- Being a host of CDM projects may lead to the reduction of other pollutants such as sulfur. | - A country may participate if it considers an agreement as "fair" or "relatively advantageous".<br><br>- A country may participate in the regime if it considers taking a leadership role in tackling climate change to be beneficial.<br><br>- A country may participate in the regime if it gets external pressure to participate. | - A country may participate if it considers the agreement would lead to economic benefits such as technological innovation, reduction of costs due to energy efficiency, increase in the export of less carbon-intensive goods, etc.<br><br>- A country may participate if it could sell the emission permits at a high price. At the same time, a country may participate if it could buy emission permits at a low price.<br><br>For developing countries:<br>- Being a host of CDM projects may lead to economic development and enhanced technology transfer and improved access to funding for implementing emission mitigation policies. |

[2] Creation of a framework starting with "incentives" has been the basic stance taken by the NIES/IGES research project on climate regime beyond 2012. A similar approach can be found in Barrett (2003).

*2.3 Continuity of the current regime*

While there are supporters and opponents of the Kyoto Protocol, it is currently the only international agreement that has been negotiated for more than eight years since the first Conference of the Parties of UNFCCC in 1995. Many activities under international emissions trading and CDM have already begun based on the rules set by the Protocol. Such efforts by negotiators and early actions taken by stakeholders should be rewarded than ignored. Therefore, Kyoto framework should be continued.

## 3. A proposal "dual track approach"

*3.1 Setting a global emissions cap and allocation of caps to all countries*

A global emissions cap is set based on scientific knowledge accumulated by bodies such as the IPCC, and emission reduction quotas will be distributed to all Parties to the UNFCCC. The allocation of caps will be based on business-as-usual (BAU) scenarios. Developed countries shall be required to reduce emissions at a higher rate and the developing countries are required to reduce at a lower rate from BAU.

*3.2 Dual commitment tracks*

After allocation of emission reduction quotas to all Parties to the UNFCCC, each country shall select one of two Commitment Tracks outlined in Table 2.

*3.3 List of policies and measures*

A list of policies and measures [PAM] will be set in Annex. Different levels of tax rates and standards may be set for developing countries. The Parties are allowed to

Table 2: Outline of two tracks

| | Commitment Track A | Commitment Track B |
|---|---|---|
| 1. Emission limitation targets (allocated to all Parties) | Emission limitation targets are not legally-binding; they are goals that should be aimed at earnestly. | Emission limitation targets are legally-binding commitments. |
| 2. Policies and Measures (submission of country list of PAM and implementation, [see (3.3)] | Countries shall submit a list of policies and measures (country PAM list) which countries pledge to implement. The best available methodology shall be used to prove that PAMs in the list are sufficient to achieve emission targets. Country PAM list shall be consistent with the PAM list in the climate agreement. | Countries do not need to submit lists of policies and measures in addition to the national communications. It is up to a country's discretion how the emission target will be achieved. |
| 3. Compliance procedure [see (3.6)] | No penalty for non-achievement of emission targets. A report that describes causes of non-compliance shall be submitted. Penalty is applied if a large gap was observed between the country PAM list and what was actually implemented. | There will be a penalty if the emission target is not met. |
| 4. Emissions trading and CDM [see (3.4)] | A country can buy permits, but it can only sell emissions when its actual emissions are below the targets. It can participate in CDM. | A country can fully participate in international emissions trading and CDM. |

put tariffs on imported goods from non-Parties, on the condition that such goods do not fulfill standards and policies listed in the PAM list.

*3.4 International emissions trading and CDM*

The basic rule remains the same as has been agreed so far. A Safety-valve (Pizer 1999) option may be selected. In this option, the Secretariat shall set a price cap to emission permits. A country may purchase an unlimited amount of emission permits from the Secretariat. The Secretariat will transfer money raised by the sales of emissions permits into an Emission Mitigation Fund (see (3.5)).

*3.5 Funding mechanisms*

An Emission Mitigation Fund shall be set up to assist emission reduction activities in the developing countries. Developing countries requiring such funds need to submit a report as to ways in which the money will be used, and its expected effect. The adaptation fund will be financed by the share of proceeds of CDM, as well as funding raised based on historical responsibility of causes of climate change. The Brazilian Proposal shall be used to determine the amount of money to be paid to this Fund.

*3.6 Other institutions*

As for the compliance procedure, Track A countries may face a certain penalty if implementation of policies and measures turned out to be excessively insufficient to achieve the emission goal. For Track B countries, the penalty for not achieving emission targets should be slightly more than the amount of the safety-valve option. Institutions and rules set up in the Kyoto Protocol regarding the joint implementation (Article 4) and monitoring, reporting and expert reviews (Article 5,7,8) will remain in force.

*3.7 Entry into Force (double trigger)*

The agreement has to be ratified by the five largest emitters of the world, which are the U.S., China, Russia, Japan and India, or EU if it is to be considered as a single Party. In addition, the agreement requires ratification of Parties which account for at least 65% of the global emissions.

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# Combining Climate Protocol and Research and Development Protocol as an Incentive for Global Participation

Kentaro Tamura, IGES

***Abstract***

Combining a Kyoto-like climate protocol and a technology research and development (R&D) protocol originating from the Climate Technology Initiative can be an incentive for global participation. By limiting access to a global R&D fund to those countries that are subject to legally binding commitments of reducing greenhouse gas emissions, the linkage can compensate disadvantaged stakeholders (e.g., industry), thereby enhancing the domestic political support. The climate protocol must have a safeguard mechanism and periodic reviews of commitments, however, to enable the member governments to cope with impacts of future unfavourable developments on the domestic economy. Such institutional instruments can also promote a wider participation in the climate regime.

## 1. Introduction

A wide range of ideas for the future international climate regime has been proposed, but if a proposal is to prevail as a basis for the regime, it must obtain support of those with political power at the domestic level. In order for countries to join and comply with internationally agreed commitments of mitigation efforts, national policy makers must have adequate domestic support for cooperative endeavours. Without such support, even after reaching an international agreement, the credibility of an official commitment to a multilateral agreement is likely to be quite low. Stating that international cooperation gives countries *incentives* for participation and compliance means that such cooperation obtains *domestic political support* in each member country. If so, what kind of international institutions can alleviate domestic political constraints? This is the question that this contribution tries to address.

## 2. Incentive Problems for International Cooperation

International cooperation for providing public goods (like stable climate) must be *self-enforced*: i.e., the cooperation should be *incentive-compatible* so that actors create, change, and adhere to institutions because doing so is in their interests (Koremenos et al 2001; Barrett 2003). These interests, however, push and pull domestic climate policy in different directions, since such policy potentially confers asymmetric advantages upon some and costs upon others. Long-term, effective commitments to an international climate regime become more credible when governments can obtain domestic support and cope with impact of future unfavourable developments on the domestic political

economy. For international cooperation to be participation-compatible, therefore, it is necessary:

(1) to obtain and retain domestic political support; and,
(2) to enable national governments to buffer domestic constituencies from negative developments in future.

One way to enhance domestic political support is to offer a "side-payment" by which disadvantaged (and politically powerful) groups are compensated. Side-payments are defined as exchanges among the members of a coalition to equalise any inequities arising from their cooperation. Side-payments could be Pareto-improving if global benefits are sufficiently large (Anand, 2002).

A safeguard mechanism (like the safeguard provisions in GATT Article XIX) can increase the extent to which governments perform a balancing act between binding themselves tightly enough to avoid defection and allowing the flexibility to deal with the short-term vagaries of future economic shocks (see Goldstein and Martin 2000). Periodic reviews and renegotiation of obligations are important in terms of sequential decision-making under scientific uncertainty (Aldey et al., 2001), but no less important are their political implications. As the governments have several instruments to buffer their domestic constituencies from future uncertainties, they are more willing to join such arrangements in the first place, and if problems do arise, to remain loyal to them while renegotiating the terms of obligations.

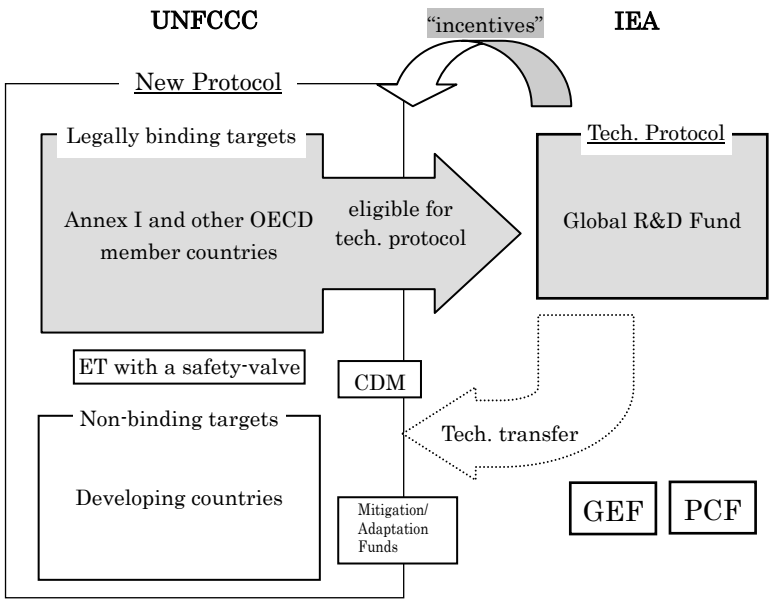
## 3. An Approach Combining Climate and Technology Protocols

### *3.1 Overall Framework*

Figure 1 shows the overall framework of the approach proposed here. Based upon the Kyoto Protocol, a mitigation targets protocol will be created within the UN Framework Convention on Climate Change (UNFCCC). This protocol prescribes two types of GHG emissions reduction commitments in terms of legal nature: legally binding commitments and non-legally binding ones. Those countries that accept legally binding, absolute emissions reduction targets are eligible for membership in the R&D protocol, where participants can get access to R&D fund resources and enjoy other benefits of cooperative R&D consortia.[1] Participation in the R&D protocol is regarded as a

[1] Sakakibara (2001) lists various potential benefits from participating in R&D consortia: (1) the expectation of a high growth or profitable rate for the area of a cooperative R&D project; (2) the expectation of building up and accumulating strategic assets deriving from a cooperative R&D project; (3) reduction in transaction costs by establishing a vertical R&D linkage; (4) the sharing of high fixed costs of R&D among participants; and, (5) a certain degree of appropriability of R&D results.

Figure 1 Overall Framework




compensation for those countries subject to legally binding commitments in general, and for domestic industry on which the costs of climate change mitigation will be concentrated, in particular.[2] The Climate Technology Initiative (CTI) can provide the basis for new R&D protocol, but it needs expansion to include a R&D funding function.

Given the institutional inertia, it is difficult to pursue an ideal path of sequential decision-making under a single institutional framework. However, some essences of the idea have been already embodied in the UNFCCC procedure. Problems associated with the targets approach can also be lessened by the promotion of domestic cap and trade mechanisms with safety-valve options, which can control compliance costs and improve economic predictability of potential costs (Pizer 1999). Implementation of CDM, GEF, and PCF are necessary for promoting technology transfer to the developing countries.

*3.2 Strengths and Weaknesses*

The combination approach has several potential strengths.

(1) Though international allocation of emission caps is politically difficult, this linkage can provide incentives for wider participation through a side-payment mechanism.

(2) The R&D protocol tackles technology issues. Incremental improvements in the existing technology help, but will not by themselves lead to achieving the objective of UNFCCC. The linkage of protocols contributes to an expanded and coordinated R&D effort.

[2] Using their economic model, Buchner et al. (2003) argues that the linkage between climate and R&D protocols does not effectively induce the U.S. to return to emissions control, since it would be based on an implicit non-credible threat. One limitation of this sort of economic theory of international cooperation is that countries are assumed as unitary actors that rationally behave to maximise their aggregate welfare. One important lesson of a history of international cooperation is that whether or not a country as a whole can benefit does not necessarily matter. Even when certain international cooperation makes a country better off as a whole, if the costs of the cooperation are concentrated in certain domestic groups, they will establish a strong interest group to block such cooperation. Therefore, the interests of key domestic groups, rather than overall national welfare, matter.

(3) Although developing countries cannot get access to R&D resources directly, they can indirectly enjoy the fruits of active R&D cooperation through CDM and other technology-transfer promoting mechanisms.

(4) The two protocols can complement each other. The R&D protocol can increase incentives but it alone may be unable to ensure sufficient reduction of GHG emissions. Emissions cap is, therefore, necessary.

There remain at least two major concerns about the idea of a global R&D fund, which need to be considered further.

(1) Who will pay for the global R&D fund? Barrett (2003) suggests the principle of ability and willingness (with reference to the United Nations scale of assessments) and that of reciprocity for the funding process.

(2) How can we know and pick up appropriate technology options? I briefly describe two possible approaches to international R&D consortia.

- Cost-sharing Approach: Promising technologies are targeted through intensive communication among funding agencies and research groups. It aims at sharing the costs associated with R&D of technologies, but there is a possibility that the technologies lock in non-optional paths.
- Option-sharing Approach: It shares burdens and responsibilities for pursuing technological options and assigns them to individual countries. Its aim is to search a vast array of possible alternatives simultaneously (Kodama 1995).

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**Prospects for Energy Efficiency Improvement through an International Agreement**

Yasushi Ninomiya, IGES

***Abstract***

The levels of energy efficiency are considerably different among countries implying that a large room for energy efficiency improvement still exists. For the industrial sector, it may be effective to formulate an international agreement on energy efficiency at the production process level in major energy-intensive industries. For the residential and transportation sectors, it may be useful to introduce international standards for energy efficiency embodied in energy appliances at their places of production and in trade. The participation in such energy efficiency-related agreements may initially be limited to the OECD and four major developing countries (Brazil, China, India, and Russia), as they account for more than 75% of the global primary energy consumption.

## 1. Introduction

It is widely agreed that participation of the US and major developing counties in the international regime to address climate change is crucial. The Kyoto Protocol, in its current form, clearly falls short of expectations from that viewpoint. The negotiations to encourage these countries to undertake binding commitments for emission reductions in the next commitment period will continue. However, it is possible to consider other international agreements to take up actions, perhaps as complementary to the Kyoto Protocol, aimed at meaningful participation of the US and major developing countries. The report addresses international cooperation to improve energy efficiency levels among major countries as part of climate change mitigation activities.

## 2. Energy efficiency improvement

Controlling energy demand, the main cause of climate change and other environmental problems, is the central part of climate policies and measures. Energy demand is principally determined by three factors related to energy appliance; number of stock, utilisation rate and efficiency. Among these, the first two are difficult to be controlled by policy makers as such policies might adversely affect economic activities and the current levels of living standards. Therefore, the most practical way to reduce energy demand is to control the final factor; energy efficiency improvement of appliances in use. An improvement in energy efficiency is always beneficial to the society as it leads to reduction of costs which can be directly realised by the public as a return of their investment. Hence, there is a strong self-incentive for energy efficiency improvement. Energy efficiency improvement does not necessarily mean the

development of new non- or low carbon-emitting technologies such as renewable energy technologies in place of current high carbon-emitting technologies. Of course, the development of new technologies is essential in the long-run to address climate change (Philibert, 2003). Nevertheless this report emphasises the potential for improvement of "end-use" energy efficiency through transfer of existing energy saving technologies, which are already in implementation on commercial basis in some parts of the world but are not universally adopted yet.

Figure 1 shows the energy intensities of the industrial, residential and transportation sectors in selected OECD and developing countries. The energy intensities of the industrial sector in all countries except China and Russia fell in a relatively narrow range. We could find a clear tendency in energy intensity levels of the industrial sector to converge into one direction towards the lowest intensity level such as in France and Japan. Even in China, Russia and India, where energy intensities levels are considerably more than in other countries, energy efficiency rates significantly improved over the past 10 years. In contrast, the energy intensities of the residential sector were much different among the countries reflecting their geographical and social characteristics. There was little evidence to indicate that energy efficiencies in the residential sector improved in one direction. A similar situation was found in the transportation sector, where energy intensities largely differed among the countries and their movements did not follow any consistent trend.

An important implication from the Figure 1 was that the energy efficiencies of the industrial sector converged towards the highest level, which was distinct from the other sectors. It means that the technologies employed in the industrial sector seemed to be universally applicable irrespective of the differences among countries. Therefore, the energy efficiency improvement of the industrial sector was different from that of the residential and transportation sectors.

## 3. Industrial sector

For the industrial sector, it may be effective to establish an international agreement based on energy efficiency levels at the production processes in major energy-intensive industries: at power stations, and in production of iron and steel, petrochemicals, paper and pulp, non-ferrous metals, and non-metallic minerals. Moreover, the global participation involving all nations in the world, an unrealizable goal at least in the short term, may not be necessary. OECD countries and four major developing counties, Brazil, China, India and Russia (hereafter OECD+4), are adequate because these countries accounted for 77% of the world primary energy consumption and their major industries listed above accounted for 22% of the world final energy consumption in 2000.

Energy efficiency can be measured by energy input in the whole production

process per output on a physical weight basis. The "target" efficiency level may be determined by a "yardstick comparison" through which energy efficiencies of the excessively inferior facilities can be improved. As seen in Figure 1, industries in China, India and Russia, which accounted for 8% of the world final energy consumption in 2000, have very large potentials for improvement through transferring "existing technologies" from the higher efficiency countries. For instance, Shen (2003) argues that, if energy efficiencies of the major energy-intensive industries in China were improved to the level of those in Japan, 127 million tons energy equivalent (mtoe) could be saved every year, which is nearly equal to total energy consumption in Italy. Mechanisms to create additional incentives for the participating countries and industries should be considered in subsequent research, but the establishment of a global research and development (R&D) fund seems to play a key role (Barrett, 2003).

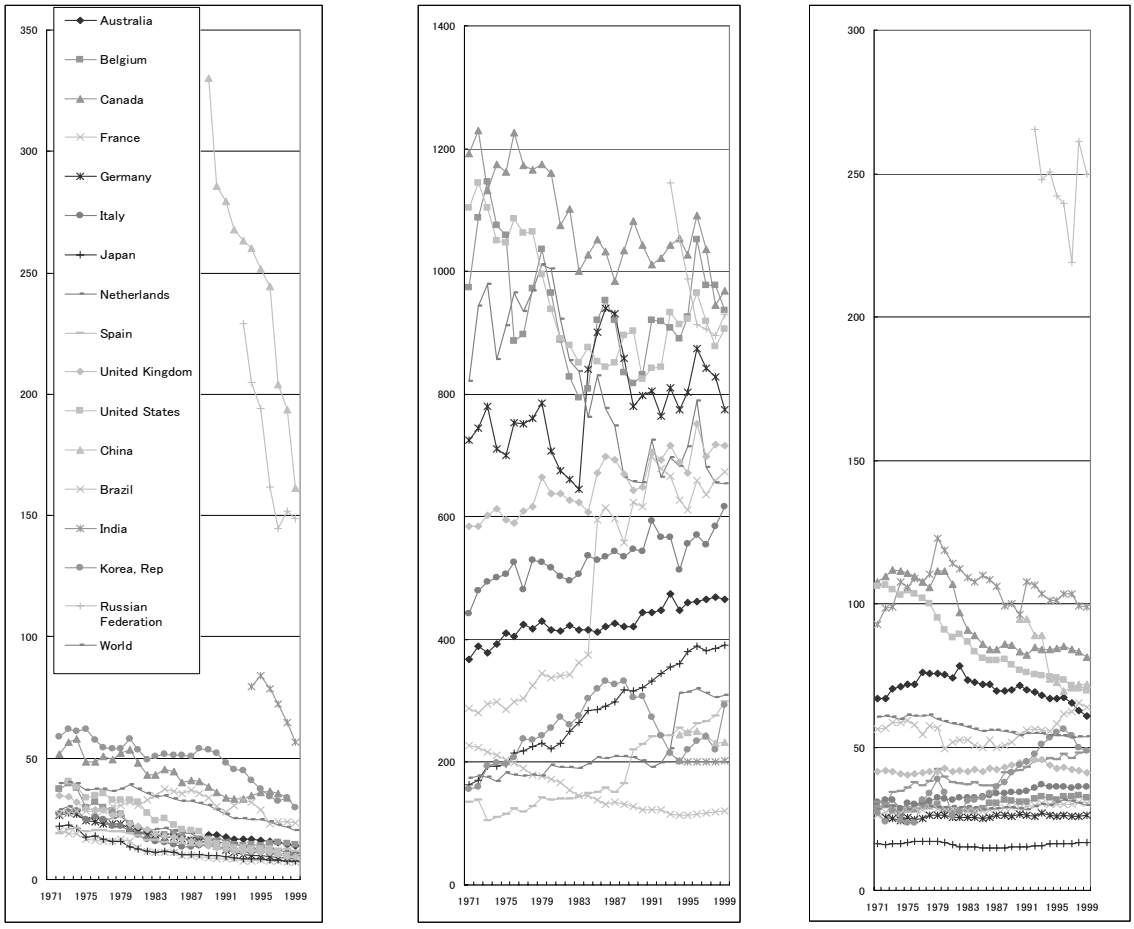
**4. Residential and transportation sectors**

As Figure 1 indicates, the energy efficiency levels in the residential and transportation sectors are highly variable among countries. Therefore, it seems e necessary to establish international standards for energy efficiency levels embodied in major energy appliances at their sites of production and in trade. The major energy appliances include motor vehicles, heating and air-conditioning systems, lighting units, refrigerators, freezers, television, office-equipment including computers and others. Again, the yardstick comparison can be used to determine an appropriate efficiency level for each appliance. The efficiency target levels, which were stipulated under existing domestic regulations such as the Energy Conservation Law in Japan, can be referred to as practical examples. Here again, OECD+4 are adequate to implement this scheme since the most of the major energy appliances are produced or at least originally designed in these countries. If energy saving technologies were used in the production of appliances, overall improvement of energy efficiency would occur, irrespective of the locations where they are actually used.

**5. No legal penalty**

It must be emphasised that no legal penalty should be applied to countries failing to achieve the target level of energy efficiency. This feature can act as an incentive for encouraging the US and major developing countries to join the agreement. As mentioned earlier, energy efficiency improvement has a self-incentive to take action. Therefore, the improvement would occur even without legal penalties in a well designed scheme. However, further research is necessary to design such scheme in future, particularly, concerning the compatibility with the CDM/JI under the existing Kyoto regime in which technology transfer is also considered as an essential element.

**Figure 1.** Energy intensities of the industrial sector (left, toe per GDP 1995 US$ by the industrial sector), the residential sector (middle, kg oe per capita), and the transportation sector (right, toe per GDP 1995 US$)

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# The Interactions between Climate Policies of the European Union and Germany - Finding Incentives and Limitations in Addressing Climate Change

Rie Watanabe, IGES

***Abstract***

A meaningful participation of all countries in the climate regime is indispensable for building an effective international regime. To achieve this, however, it is necessary to consider the incentives for and interests of sovereign countries. Through analysing the interactions between climate policies of EU and Germany as a Member State (MS), the study reported here aims at clarifying the decision making processes, incentives, and limitations in the European Union (EU), which has played a leading role in addressing climate change issue.

## 1. Introduction

EU has been regarded as active in addressing climate change (Grubb, 1993; Grant, et al., 2000; Sbragia, 2000). The study aims at finding the incentives and limitations in EU for addressing climate change, focusing on the interacions between climate policies of EU and of a member state, Germany, which has led EU environmental policy and whose greenhouse gas emissions amount to about 25% of EU emissions in 2000 (COM (2002) 702final) .

## 2. Climate Policy Development in EU

The climate change issue had been primarily regarded as a scientific issue at the EU level until 1988(Jachtenfuchs and Huber 1993). In 1988, responding to the increasing awareness of climate change issue at the international level, EU Commission submitted a "Communication to the Council, the greenhouse effect and the Community commission work programme concerning the evaluation of policy options to deal with the greenhouse effect" (COM(88)656 final). An ad hoc committee was established in 1989 containing 10 Directorate-Generals including DG XII (Energy) and DG XXI (Taxation), reflecting the cross-cutting character of this issue (Grant, et al., 2000).

In October 1990, the Energy and Environment Council of Ministers agreed to "return"emissions of $CO_2$ to their 1990 levels by the year 2000 for the EU as a whole, as part of the EU strategy to limit carbon dioxide ($CO_2$) emissions and to improve energy efficiency. The 1992 Communication on "A EU strategy to reduce $CO_2$ emissions" included a framework directive on energy efficiency (SAVE), a directive on energy/carbon tax, a decision concerning specific actions for greater penetration of renewable energy resources (ALTENER), and a decision concerning a mechanism for monitoring emissions

of $CO_2$ and other greenhouse gases in EU. The carbon/energy tax and SAVE programme were regarded as the major policies and measures to combate climate change issue. Nevertheless, the carbon/energy tax (COM(92)226final) was blocked, and the SAVE programme had been turned into an ineffective framework directive (Grant et al., 2000).

Many academics observe that the lack of development of an effective climate policy at the community level resulted in renationalization of climate policy (Jachtenfuchs, and Huber, 1993; Grant, et al., 2000). There are several reasons to explain the above. Besides EU's subsidiarity and regulatory philosophies in the environmental policy area (Sbragia, A.M., 2000), many argue about difficulties in reconciling interests of various stakeholders at three or four different decision making levels (Figure 1) as one of the profound reasons (Grant et al., 2000; Haigh, N., 1996; Jachtenfuchs and Huber, 1993; Sbragia, 2000; Wallace, 2000).

Recently, there are indications that EU exerts more influence on developing climate policies at the community level. A typical example is the adoption of EU-wide emissions trading scheme in July 2003. The establishment of emissions trading scheme at EU level is forcing member states to reorient the existing measures to comply with EU-wide emissions trading, and it would ultimately lead to development of standardized policies and measures at the community level.

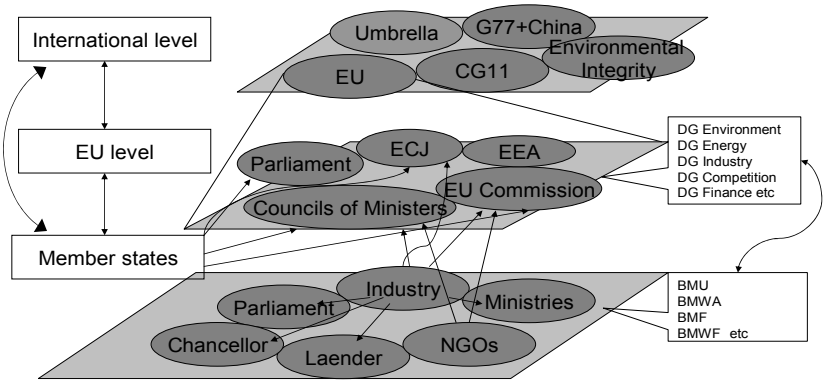


**Figure 1**. Multilayer structure of climate policy development in EU

In this study, I shall examine interactions between climate policy at EU level and climate policy at a member state level (Germany) based on a couple of case studies and clarify the climate policy making process of the EU and the change in its pattern (Table 1). (For details on the German climate policy and the Directive Making Process of EU/ETS, please refer to my publications available on the website at http://www.iges.or.jp/en/cp/index.html (Watanabe 2003a, Watanabe 2003b).

## 3. Interactions between EU and German climate policy

| Date | EU | Germany |
|---|---|---|
| 1987.3.18 | | Chancellor Kohl drew attention to climate change issues in his speech. |
| 1987.10.16 | | Enquete Kommission was constituted. |
| 1988.11.16 | Communication to the Council, the greenhouse effect and the Community, commission work programme concerning the evaluation of policy options to deal with the greenhouse effect(COM(88) 656 final) | |
| 1989 | Ad hoc meeting was established with ten Directortate-Generals including, most prominently DG energy and DG indirect taxation. | |
| 1990.10 | Energy and Environment Council of Ministers agreed to return emissions of CO2 to their 1990 levels by the year 2000 for the EU as a whole | |
| 1990.1.15 | | Federal Government pledged the reduction of $CO_2$ emissions by 25% compared to the level of 1987 |
| 1990.6.3 | | IMA (Interministerial Workinggroup for $CO_2$ reduction was established. |
| 1990.11.7 | | Federal Government reaffirmed the target of 25% CO2 reduction and passed resolutions on various instruments. |
| 1991.10 | The SAVE(Specific Action for Vigorous Energy Efficiency) initiative with a budget of 35 M euros was adopted(-1995.12.31) | Stromeinspeisungsgesetz (StrEG) was amended to promote renewable. |
| 1992.10.29 | European Commission proposed eco-tax(COM(92)226 final). | |
| 1993 | Fifth Environmental Action Program(-2000)<br>ALTENER programme was started. (1993.1.1-1997.12.31) | |
| 1995.3 | | Strengthened the commitment to mitigate $CO_2$ emissions by 25% compared to the level of 1990. |
| 1995.3.18 | | Voluntary Commitment by industries to mitigate $CO_2$ emissions. |
| 1996.12 | SAVE2 was adopted (96/737/EC) | Revised declaration by industry to mitigate $CO_2$. |
| 1997.03.12 | Proposal for a Council Directive restructuring the Community framework for the taxation of energy products (97/C139/07) | |
| 1997.12 | Communication from the Commission Energy for the Future: Renewable Sources of Energy, White Paper for a Community Strategy and Action Plan (COM (97)599 final) Setting an indicative objective of 12% for the contribution of renewable sources of energy. | |
| 1998.1 | ALTENER 2 was started.. (-2002.12) | |
| 1998 | | Amendment of Energy Sector Law |
| 1998.5.18 | Council of Ministers adopted the second phase of the ALTENER programme (1999.12.31) | |
| 1999.2.5 | Commission Recommendation on the reduction of $CO_2$ emissions from passenger cars(1999/125/EC) | |
| 1999.4.1 | | Eco tax came into force. |
| 1999.5 | Communication preparing for implementation of the Kyoto Protocol | |
| 2000.3.8 | EU commission presented a green paper on establishing EU emissions trading scheme | |
| 2000.4.1 | Sixth Environmental Action Programme was adopted. | Act on Granting Priority to Renewable Energy Sources entered into force. |
| 2000.4.13 | Commission Recommendation on the reduction of $CO_2$ emissions from passenger cars (2000/304/EC),(2000/303/EC) | |

| | | |
|---|---|---|
| 2000.4.26 | Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions, Action Plan to Improve Energy efficiency in the European Community | |
| 2000.10.18 | | The fifth climate policy programm was published.<br>Working group on emissions trading was established. |
| 2000.11.9 | | The new voluntary commitment by industries |
| 2001.02.16 | Communication from the Commission to the Council, The European parliament, the Economic and social Committee and the Committee of the regions on the implementation of the Community Strategy and Action Plan on Renewable Energy Sources (1998-2000) | |
| 2001.6.25 | | The agreement on $CO_2$ reductions using CHP was concluded. |
| 2001.10.23 | EU commission submitted a proposal on Directive on establishing emissions trading scheme.(COM(2001)581) | |
| 2002.4.1 | | The CHP law was enacted. |
| 2002.4.9 | EU commission adopted a proposal for a successor programme to SAVE(Intelligent Energy for Europe, 2003-2006) | |
| 2002.7.22 | Directive of the European Parliament and of the Council on the promotion of cogeneration based on useful heat demand in the internal energy market. | |
| 2002.10.10 | EU Parliament submitted its opinion on emissions trading at its first reading. | |
| 2002.10 | | SPD and the Greens finalized a new coalition agreement. |
| 2002.12.9 | Council of ministers agreed on a Common Position on the proposal of directives to establishe emissions trading market within EU. | |
| | | |
| 2003.7.2 | EU Parliament adopted the common position with a slight change at its second reading | |
| 2003.7.22 | Council of Ministers adopted the revised proposal at its second reading | |
| 2003.7.23 | EU commission submitted a proposal on linking the credits from project based mechanisms with EU emissions trading. | |

**Table 1**. Chronology of climate policy development at EU and a member state (Germany) levels

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# Incentives for Further Engagement of Developing Countries in the Global Climate Regime – A Preliminary Assessment

Ancha Srinivasan, IGES

***Abstract***

Effective engagement of developing countries (DCs) in the climate regime is crucial for stabilizing global climate. However, nearly all DCs strongly resist commitments for reduction of greenhouse gas (GHG) emissions due to various reasons. Creation of a framework with guaranteed and effective incentives may induce their involvement initially and participation ultimately in the climate regime. This report is aimed at making a preliminary assessment of incentives provided in the current regime and in various post-Kyoto regimes put forward by different authors. Most proposals permitted, promoted, or required implementation of the climate regime through market-based mechanisms without thoroughly analyzing the barriers for implementing them in DCs. The preliminary analysis suggested that institutional arrangements to provide incentives were reasonably established but the amount and quality of incentives offered were far from satisfactory. A few options to strengthen incentive-based approaches relevant to DCs are proposed.

## 1. Introduction

The idea of creating incentive structures for participating countries in multilateral environmental agreements is not new. In the climate change agreement too, a few incentive mechanisms were created to promote global participation. Despite no binding commitments for emissions reduction by DCs at present, incentive mechanisms for engaging them were envisioned ever since the creation of the UNFCCC. An objective assessment of how such incentive structures fared in benefiting DCs is critical for designing an effective, fair and equitable climate regime beyond the first commitment period of the Kyoto Protocol. The aim of this report is to make such an initial assessment of incentives in the current and alternate policy regimes proposed by different authors, and suggest a few options for strengthening incentive-based approaches relevant to DCs.

## 2. Developing Countries and Climate Change

Owing to rapid increases in population, income levels and energy use, GHG emissions from DCs are accelerating rapidly and may exceed those of industrialized countries (ICs) within a decade or two, and may account for more than half of global emissions by 2020. Several groups in ICs contend that GHG abatement costs in DCs are considerably less and that a further delay in action by big DCs would mean a higher

stabilization level of GHG concentrations in the future. Based on such reasons, ICs wish DCs to accept some form of commitments soon. However, income levels and per capita emissions are far less and the potential adverse impacts from climate change are more serious in DCs than in ICs due to their low resilience and adaptive capacity.

The main reasons for reluctance of DCs to accept commitments for GHG reductions include (a) fear of high costs in mitigation and potential adverse impacts on energy security and development, (b) lack of demonstrable progress by ICs in meeting emission reduction targets, (c) inadequate progress in meeting commitments of funding, technology transfer and capacity building, (d) dilution of existing climate change agreements over time, and (e) the lack of willingness of ICs to address equity concerns and clearly acknowledge the ongoing mitigation efforts in DCs. Incentive-based approaches in the future regime must remove these disincentives and contribute to sustainable development in DCs.

## 3. Incentive Structures Relevant to Developing Countries

### *3.1 Incentives in the current regime*

For GHG mitigation in DCs, two incentive structures (Global Environment Facility [GEF], and Activities Implemented Jointly [AIJ) projects) under the UNFCCC and one (Clean Development Mechanism [CDM]) under the Kyoto Protocol were created. Additional funding mechanisms such as Special Climate Change Fund (2000), and Least Developed Country Fund (2001) under the UNFCCC, and Adaptation Fund (2001) under the Kyoto Protocol were created recently to address issues such as adaptation and technology transfer. Some financial assistance is also given to DCs through various bilateral initiatives and carbon funds. Among these, the Japan-sponsored "Kyoto Initiative" and the assistance of US$ 410 million per year based on a political declaration in 2001 by the EU, Switzerland, Norway, Canada and New Zealand are significant. The World Bank recently launched a few funds (Prototype Carbon Fund – 2000; Community Development Carbon Fund – 2003 and Bio-Carbon Fund – 2004) to provide financial support to small scale GHG reduction projects in DCs and transition economies. Limited assistance is also given to identification of potential GHG mitigation projects through schemes such as feasibility study grants from Japan, Climate Challenge Fund of the UK, etc. In addition, limited assistance for technology transfer and capacity building in climate change issues was given through both multilateral and bilateral accords.

### *3.2 Assessment of Benefits to DCs*

While the institutional arrangements to provide incentives for DCs are in place for some time, the amount and quality of incentives delivered are far from satisfactory. For instance, in 13 years of its operation since 1991, GEF provided only about US$1.6 billion

for climate change projects in DCs with a population of nearly 5 billion. In the case of AIJ projects too, DCs benefited much less than anticipated as most projects depended on local co-financing and transaction costs were high. Likewise, the newly created funds at COP7 are entirely dependent on discretionary contributions from ICs and are not yet operational. Richards (2001), based on an analysis of various outcomes of the UNFCCC, concluded that DCs were generally losers and saw themselves as being cheated in the climate change regime and its negotiations.

There is also a growing consensus that the Kyoto Protocol does not provide effective incentives for DCs. For DCs, the CDM proposed under Article 12 of the Protocol is the only incentive-based approach available in the short term. However, despite substantial preparations in the past 2-3 years, many DCs perceive that CDM process is quite complex with high transaction costs and that there is only marginal potential for development assistance through CDM. The withdrawal of the US from the Protocol, inclusion of carbon sinks and "hot air" from the Former Soviet Union led to a situation where the demand on the international market for carbon credits is much lower than originally assumed. Projections of the annual mitigation market in 2008-2012 indeed dropped from 300-700 million tons of carbon equivalent (Mtce) to 0-300 Mtce (Heller and Shukla, 2003).

Insofar as incentives for technology transfer and capacity building are concerned, the progress was patchy. The Climate Technology Initiative, for example, has had little impact on DCs (Richards, 2001). Many DCs realized that several adverse conditions were forced on transfer of climate-friendly technologies from ICs and that most capacity building programmes were primarily focused on the development of markets for ICs, rather than contributing to capacity building for sustainable development in DCs. It may be concluded, therefore, that the current international climate regime was largely ineffective in providing necessary incentives for DCs in de-linking their economic, energy and emissions growth.

### *3.3 Incentives proposed by various authors for the future regime*

The cost of GHG mitigation options seemed to be the core concern of participating states in the climate regime. Several researchers, therefore, proposed the use of economic incentives through market-based instruments (MBIs). The proposals on alternative policy architectures included provision of safety valve funds (Aldy et al., 2001), ensuring additional financial flows for technology transfer and adoption (Benedick, 2001, Barrett, 2003), redistribution of taxes (Cooper, 2001) and creation of a climate bank (Heller and Shukla, 2003). Aldy et al. (2003) evaluated 14 proposals including the Kyoto Protocol based on six criteria including incentives for participation and compliance, and concluded that most proposals favoured the use of MBIs. A few proposals advocated harmonized

domestic carbon taxes while most proposals favoured hybrid quota tax schemes or tradable permit systems. Some proposals required DCs adopt emission ceilings but with "headroom allowances" so that they could become net exporters of emission allowances, thereby providing resources needed to finance GHG abatement efforts. In some proposals, DCs are bound by the technology standards incorporated in separate protocols, but the diffusion of technologies in DCs would be financed by ICs. A few authors considered it vital to provide incentives for regional cooperation in energy and environment sectors.

It is important to note, however, that very little work was reported on the feasibility of adoption of MBIs in DCs. Indeed most of the publications dealing with incentives for DCs in the future regime were written by professionals based in ICs, where MBIs have been largely successful. MBIs may not always necessarily succeed in DCs for various reasons. In many DCs, the framework for environmental regulation is predominantly command and control and there is a fair degree of suspicion and strong reluctance to consider MBIs even for local environmental issues (e.g., industrial pollution) due to inadequate understanding of MBIs among stakeholders. There are also many legal, institutional, political and cultural barriers for successful adoption of MBIs in DCs. Due attention must be given, therefore, to design good incentive structures for DCs in association with researchers and planners in DCs through strengthening the knowledge base for MBIs.

## 4. Options for Strengthening Incentive Structures for DCs in the Future Regime

Incentives for further engagement of DCs in the future climate regime may be strengthened either by reinforcing the current incentive-based approaches or by instituting new options. A few options along these lines are mentioned below.

(a) Streamlining the Kyoto Mechanisms: The scope and flexibility of CDM, the only incentive-based structure for DCs in the short term, must be broadened to include sectoral and unilateral CDM. Current rules permit CDM implementation on a project-by-project basis only. Prospects for including major DCs in emissions trading must also be explored on the basis of demonstrable progress in domestic policies and measures aimed at GHG abatement. For example, a recent publication by the Pew Center on Global Climate Change reported that six DCs – Brazil, China, India, Mexico, South Africa and Turkey – could reduce emissions growth over the past 30 years by about 300 million tons of carbon per year through adopting progressive domestic policies such as economic reforms, energy restructuring, fuel switching, population control, renewable energy development, etc. (Chandler et al., 2002).

(b) Setting targets for climate-friendly development assistance: Additional guarantees in financial assistance, technology transfer and capacity building for DCs could be linked with measurable progress in their efforts to de-link economic and emission

growth rates. To achieve such guarantees, targets for various ICs might be set in terms of their GDP.

(c) Providing incentives for Renewable energy technology development and transfer: Energy security is one of the primary concerns of DCs. As a way to decarbonising economy through reducing dependence on fossil fuels and without adverse impacts on development, emphasis must be placed on creating incentives for development and transfer of renewable energy technologies by removing market distortions and fuel subsidies in ICs. Financial incentives to support such technologies are also critical. For instance, expanding renewable energy capacity in DCs to about 50-70 GW between now and 2010 would require as much as US$50 billion. Mechanisms to provide concessionary financing to make renewable energy technologies commercially viable must be explored.

(d) Creating a new incentive structure based on alternatives to binding commitments: A new incentive structure must be created in which different DCs would have options to set quantitative non-binding targets that are linked with guaranteed financial flows and technology transfer, and partnerships in technology development (for example, through a research and development protocol proposed by Barrett, 2003).

(e) Providing resources for mobilization of social and political capital necessary to enforce climate-friendly policies in DCs, and assistance in identification of low cost mitigation and adaptation policies relevant to DCs are also important incentives.

(f) Creating additional institutional arrangements for supporting adaptation in DCs through, for example, adaptation protocol, adaptation vouchers, adaptation loan guarantees, etc. is another incentive to be explored further.

Future research will focus on the feasibility of some of these options.

## 5. Concluding Remarks

A preliminary assessment of incentives for DCs in the climate regime revealed that institutional arrangements have so far been strengthened at the level of rule-making but not so much at the operational level. It is felt that currently the incentives for DCs to mitigate GHG are not right, as the prices on offer do not reflect the true scarcity value of the services. Most incentives rely on MBIs even though there are a number of obstacles to adopt them in several DCs. Moreover, the perceptions and interpretations of ICs and DCs on incentives are divergent. While ICs consider incentives mainly from the viewpoint of cost-effectiveness for GHG mitigation, DCs consider that incentive structures must be developed based on criteria such as equity, adaptation, technology transfer, etc. besides mitigation. Additional policy research on the most desirable and viable incentive structures for GHG mitigation in the context of sustainable development in DCs is,

therefore, critical to the design of a dynamically efficient and cost-effective climate regime beyond 2012.

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**Enhancing Regional Cooperation for Sustainable Development in Asia: Increasing Incentives for Climate Change Mitigation**

Wakana Takahashi, IGES/ Utsunomiya University

***Abstract***

The performance of current mechanisms under UNFCCC has not been quite satisfactory in financing developing countries, especially the least developed countries. Although, there are some signs of expanding the scale of such funding mechanisms, apart from the Clean Development Mechanism (CDM) of the Kyoto Protocol, the current mechanisms provide very few incentives to the donor countries. The author considers enhancing regional cooperation for sustainable development could be complementary to current mechanisms in providing a better financing and toward global participation. Such an approach has already been taken in Europe and some other regions. Although the Asia-Pacific region has witnessed little progress in terms of regional cooperation so far, there is some evidence of change in the structure of governance recently and it is likely to enhance incentives for both developed and developing countries in Asia.

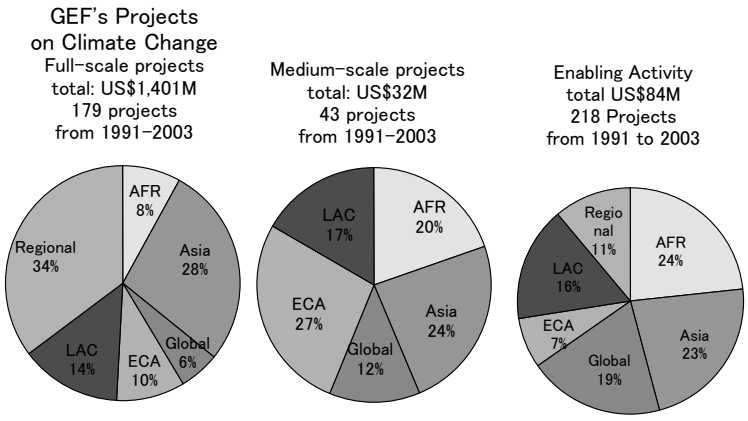
## 1. Introduction

The report introduces a proposal for enhancing regional cooperation for sustainable development in Asia, which can play as a complement to the current financial mechanisms under UNFCCC and the Kyoto Protocol and prove beneficial for promoting global participation.

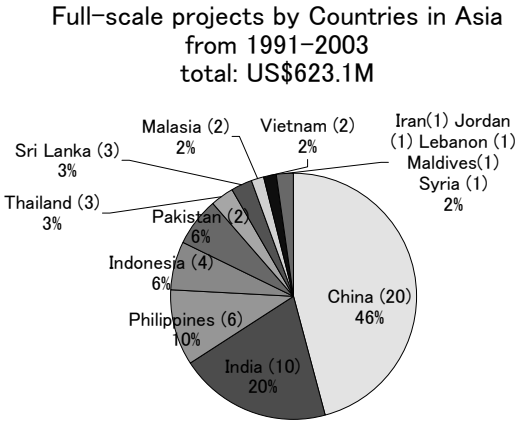
First the paper briefly reviews the current financial mechanisms under the UNFCCC and exposes their limitations. Secondly, the paper examines an option of enhancing regional cooperation for sustainable development in Asia from the perspective of governance.

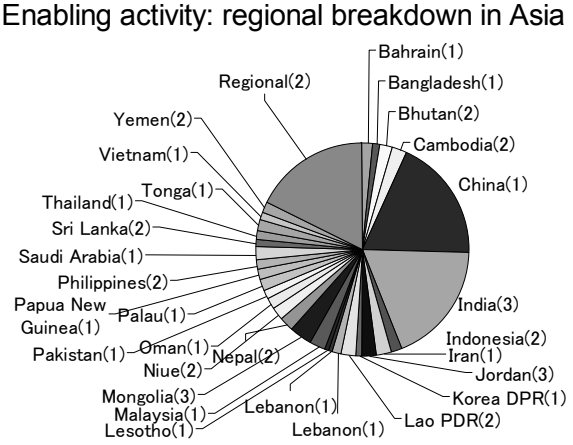
## 2. Financial Mechanisms under UNFCCC

The Global Environmental Facility (GEF), a formal financial mechanism for UNFCCC, has allocated US$ 1,578 million to 440 climate change projects and enabling activities from 1991 to 2003, which is said to be matched by more than 5 billion US$ in co-financing. The



graphs on page 30 show the regional distribution of funds.




The above graphs show the regional breakdown of GEF-funding (full-scale projects and enabling activities) from 1991 to 2003 in Asia. Out of 40 Asian developing countries, only 16 countries received funds for full-scale projects and 29 countries for enabling activities. Large developing countries like China and India have received funds repeatedly, while small countries received just once or twice in 12 years. Some countries never succeeded in raising funds. One of the reasons for this anomaly is, as many of the developing countries have complained, that the process involved in gaining access to the GEF's funds is complex. It is conceivable that small countries, with few legal and technical experts, face difficulties in following the complicated procedures[1]. Another possible reason is lack of coordination of GEF projects among implementing agencies, namely World Bank, UNEP and UNDP. Although "in theory, there is supposed to be some degree of separation and complementarity" among these agencies, in realty, "there has been some overlap and competition" among them (Huq, 2002). In addition, the total amount of fund available from GEF itself is insufficient.

Such criticisms pushed the Conference of Parties (COP) to UNFCCC into establishing three new funds with more specific targets; namely, the Least Developed Countries (LDC) Trust Fund, Special Climate Change Fund (SCCP), and Adaptation Fund. For example, COP 7 adopted guidelines for the LDC Trust Fund. The Fund is based on voluntary contributions, and it faces shortage of funds since it does not attract attention of many donor countries.

In addition to GEF and the above newly established funds, CDM is also targeting non-Annex I countries. CDM is expected to help Annex 1 countries comply with their emission reduction commitments, and simultaneously assist non-Annex 1 countries in achieving sustainable development. The CDM has been designed to be innovative and market-based so that developed countries may invest in bankable projects in the

[1] It is said that the GEF should develop streamlined and easily understood and applied procedures to enable Least Developed Countries to gain access to the new funds (Hug, 2002).

developing countries. The market-driven approach certainly provides economic incentives to both Annex I and non-Annex I countries. However, it cannot cover non-bankable projects and the LDC may find it difficult attract such funds. Complicated procedures and high transaction costs of CDM projects will be a big challenge for enabling small-scale projects, especially in LDC.

**3. Enhancing Regional Cooperation**

A limitation of the current global funding mechanisms has brought up the idea of enhancing regional cooperation. Some argue that regional agreements, in which groups of countries jointly adopt climate change policies, will bring in more economic incentives than the global regime, and consequently will be a shortcut to achieve the ultimate goal of the UNFCCC (Butcher et al, 2003).

This idea is applicable to Asia: for example it is argued that "regional energy cooperation would greatly contribute to the sustainable development of the region as well as the world, since it would not only enhance the energy supply security and energy efficiency of the region but also ensure that the huge reserves of environmentally friendly energy sources are utilized." (Lee, 2003) This idea, however, has not yet been realized, mosly due to political reasons.

In Northeast Asia, no regional entities exist, thereby lacking a centralizing political, economic or social force. The end of the cold war led to joint efforts to promote multilateral environmental cooperation and a number of cooperative programs, plans and forums on environmental issues have been advocated and extended through multiple channels. However, most of them have had little political clout. Owing to the absence of a comprehensive regional organization, there is no entity that can coordinate each initiative. Accordingly, redundancies and stagnation were inevitable.

The issue of climate change has been addressed in some of these regional and sub-regional initiatives. However, substantial cooperation has not taken place, reflecting the fact that countries' interests are highly diverse, while commonalities are limited. Considering the region's diversity, it would be unrealistic to expect that EU-type collaboration in the near future. While regional joint efforts from a multilateral perspective have been limited so far, a number of collaborative activities have already been implemented when we look at the bilateral dimension. Japan and other bilateral donors, World Bank, ADB and other international banks have provided significant amount of aid to the Asian developing countries for addressing climate change[2]. In

[2] Especially, Japan has committed itself to promoting international cooperation with developing countries in addressing climate change. For example, it pledged "Kyoto Initiative" at COP3 in 1997, and started to provide yen loans with a special interest rate of 0.75% and a repayment period of 40 years. This led to a significant increase in a number of projects which address global warming in several Asian countries. The Asian Development Bank (ADB) has been also deeply involved in the environment, and has financed climate change related projects. Among those, the

addition, many activities for sustainable development have been undertaken, which do not primarily target but contribute to climate change mitigation and adaptation. The problem is that there has been little coordination among these international cooperative activities.

Considering these facts, dynamic synergy creation with multiple activities are needed. One such way is to enhance regional cooperation for sustainable development in Asia and to link the number of above-mentioned activities into a comprehensive framework. Such a framework should primarily target sustainable development, not the climate change issue. Needless to say, sustainable development is only way for developing countries to address the climate change issue. In order to make such a framework workable, special attention should be paid to the institutional design, process of institutional building (high-political process might be necessary), and participation of different stakeholders, etc.

Building such a framework requires strengthening the structure of governance. Regarding this point, there are some signs of change in Northeast Asia. Besides Japan, South Korea and China are becoming aware of the importance of multilateran cooperation on the environment. One of such signs is that UNEP and China signed the Agreement for Establishment of Beijing Office recently[3]. It is expected that such favorable change in governance structure in Asia will lead to creating a comprehensive framework that increases incentives for better financing and global participation.

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Asia Least-cost Greenhouse Gas Abatement Strategy (ALGAS) Project was carried out in collaboration with the United Nations Development Programme (UNDP), the Global Environment Facility (GEF) and a number of other international and national institutions. One of the main accomplishments of the ALGAS Project was that greenhouse gas inventories were prepared in every developing country in Asia.

[3] One of the purposes of the establishment of Beijing Office is to implement UNEP's activities under the GEF and to promote capacity building at both country and sub-regional levels. In the signing ceremony, the Chinese delegation also stated that "The establishment of Beijing Office will play an active and effective role in promoting China's environmental protection work, strengthening the bilateral cooperation between China and the UNEP, and facilitating the UNEP's work in China and the Northeast Asia sub-region."

# Assessing International Power-Relations in Terms of Leadership Potential

## - Which State has the Principal Incentives for Leading the Climate Change Negotiations?

Norichika Kanie, Tokyo Institute of Technology / IGES

***Abstract***

Asserting international leadership can be a good incentive for countries to create and contribute to international regimes. In the current situation on climate change where no single country or a coalition of countries shows a strong and sustainable leadership, which country has more potential to breakthrough the stalemate for advancing coordinated international action? Which leadership activities are necessary to materialise the potential for collective action on climate change. This research grapples with such questions by analysing the leadership potential of selected countries and showing the necessary conditions to fill in the gap between potential and actual leadership. The potential will be analysed by employing political scientific methodology for leadership assessment - in terms of ***structural***, ***directional*** and ***instrumental*** elements of leadership in multilateral negotiations. We can visualize the future form of the climate change regime only when we have a clear understanding of which actor(s) is/are leading to solve this global problem and thus which direction climate change negotiations are heading.

## 1. Introduction

Leadership plays a vital role in international climate change negotiations.[1] Currently, however, no distinctive and sustainable international leadership has yet emerged to breakthrough the political stalemate. This raises the question of which country has the leadership potential on this issue. How to make the leadership potential into the actual emergence of leadership is one of the most pressing concerns facing nation states and other stakeholders with regard to climate change.

## 2. Leadership in Multilateral Negotiations

Leadership in multilateral negotiations is defined as "an asymmetrical relationship of influence in which one actor guides or directs the behaviour of others toward a certain goal over a certain period of time" (Underdal, 1994). Such leadership includes, first, *the exercise of influence and power associated with the collective pursuit of some common good or joint purpose*. The influence exercised by a leader is called positive influence, and not vetoing or blocking the collective action. Therefore, "being

[1] See, for example, Kevin A. Baumert and Nancy Kate, "INTRODUCTION: An Architecture for Climate Protection" in Kevin A. Baumert et al. eds., *Building on the Kyoto Protocol: Options for Protecting the Climate*, World Resources Institute, 2002.

the first to defect from a joint undertaking would not qualify as leadership" (Underdal, 1994). Secondly, because leadership pursues a "common good" or "joint purpose", it *builds on and cultivates a platform of shared values, interests, and beliefs with others*. Unilateral, stand-alone behaviour without shared values, interests and beliefs, would not qualify as leadership. Thirdly, leadership *extends throughout a certain period of time*. Under current circumstances surrounding the climate change regime beyond 2012, the first element implies that currently neither "Kyoto land" countries such as EU and Japan, nor the US is exerting leadership. The second point implies that for leadership to be sustained beyond 2012, the climate change regime must be a truly global regime and built on common ground.

## 3. Three Elements of Leadership

*Structural Leadership*

Leadership potential can be broken down into **three elements** for deeper assessment. The first leadership element is called ***structural leadership***. This element of leadership is "associated with the exercise of power derived from political strength in the global order and the weight of an actor with respect to the problem at hand" (Grubb and Gupta, 2000). In other words, *structural power* is nearly the equivalent with the "power" in conventional political terms that stems from a state's material resources. It has two different layers of power base: *issue-specific power* and *general structural power* (Sjöstedt, 1999). In climate change negotiations, the structural element of leadership potential includes such power resources as the size of greenhouse gas (GHG) emissions and energy use as well as the economic position (e.g. relative GDP). Important factors beyond 2012 negotiation in this respect are the enlargement of the EU in 2004 and 2007 as such expansion will add to the EU's already substantial collective GDP and other measures of relative power and position, given the enlarged EU becomes a coherent coalition. An equally important factor is that developing countries are expected to participate in the global negotiation more actively than ever before and that the G77+China, the biggest coalition in terms of number of the countries, could also be a candidate eligible for leadership. As a single country, Japan or China have and will continue to have sizeable structural power, but each may need to build a coalition in order to compete with the EU and the US. In general, cohesive coalition-making is a key to enlarge structural power.

*Directional Leadership*

A second constituent of leadership is the ***directional element***. It stems from domestic policy actions and incorporates institution building. It is "the possibility of states leading by a combination of internal and external initiatives that seek to influence the perception of other countries as to what is desirable and what is possible" (Grubb

and Gupta, 2000). Such an element of leadership can operate as a form of social persuasion, so that the state demonstrates "that a certain cure is indeed feasible or does work, or to set a good example for others to follow" (Underdal, 1994). A country can also demonstrate through domestic policy that a goal is indeed achievable and shapes negotiators' perception of the issues under consideration and relevant solutions.

As the persuasive impact of the policy action depends on the amount of uncertainty removed or on its moral force and symbolic significance, this element of leadership appears particularly important in climate change negotiations, which involve huge uncertainties about future climate impacts. This means that, *intellectual* ideas also play important role in this element of leadership. *Intellectual leadership* develops substantive solutions on the basis of knowledge, and has often been exerted not just by a member of national entity but also by a member of internationally oriented "epistemic communities" such as IPCC or secretariats of multilateral environmental agreements.

Successful domestic policies, either internal (domestic) or external (foreign), can also function as bases and rationales for a proposal, or as a backbone for an argument, when it comes to a regime building negotiation. For example, successful fulfilment of the Kyoto targets with minimum adverse impacts on a state's economy would be able to serve as a rationale for arguing to continue the Kyoto regime.

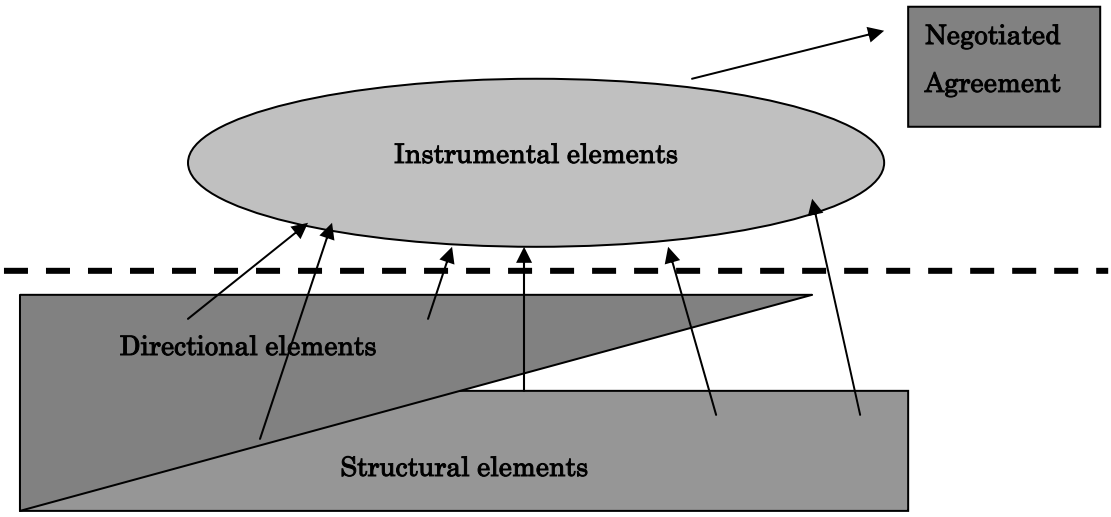
*Instrumental Leadership*

The ***instrumental element*** is the third element of leadership. It directly affects the actual conference-level diplomacy. The instrumental element of leadership refers to the negotiating skill of state representatives in identifying the common ground and shared interests, as well as the pursuit of issue-linkage, issue-based coalitions and interactive bargaining. With the instrumental element, a leader directs multilateral negotiations by expanding the scope and deepening the quality of the consensual knowledge, which results in an agreement through diagnosing the problem and creating, investigating and developing possible options to problem solving. In this sense, the instrumental element is based upon an *intellectual element* of leadership. Two sub-elements would go under ***instrumental leadership***: *entrepreneurial leadership* and *interactive leadership*.

*Entrepreneurial leadership element* is about negotiation skills and is, therefore, enhanced by *procedural prerogatives* – a formal assignment given to a national delegation such as a chairperson or rapporteur (Sjöstedt, 1999). In addition, it is backed up by *administrative resources*, which refer to various kinds of organizational capacity through support facilities related to foreign-policy actions.

*Interactive leadership element* takes the form of joint management between state and non-state actors based on interactions between the like-minded countries and the non-governmental organizations [NGOs] (Cooper et al., 2002). Interactions between governments and NGOs often strongly influence the outcome of negotiations (Kanie 2003).

**Figure 1. Image of relations among leadership elements**




## 4. Evaluation of Political Incentives for Leading Future Regime-Building Process

The relations among the three elements of leadership are shown in Figure 1. Careful attention is also paid to the interactions between three elements. Five case studies are planned for empirical investigation on leadership potential – EU, US, India, China and Japan. By evaluating the leadership potential of these international actors and the gaps between the potential and actual leadership, this research will show which actor has compelling incentives to lead negotiations on the future climate change regime. Only after that evaluation can we realistically anticipate, and propose, the future form of the global climate change regime.

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# Setting the Scene for a Future Climate Change Regime: Assuring Fairness from a Broader Perspective

Yukari TAKAMURA
Shizuoka University, Japan

***Abstract***

"Fairness" plays a key role in making an international regime effective. In designing a long-term climate regime, due consideration should be paid not only to the fairness of burden sharing, but also to procedural fairness. In addition, securing fairness from a broader perspective requires that a future regime should be constructed in a way that focuses much more on the conversion to renewable energy (the "switch-to-renewables" approach), one of whose tentative examples is the "renewables intensity target approach."

## 1. Introduction

To be effective, a regime as a whole should be perceived as legitimate. In a democratic country, the legitimacy of a regime results from "right process," that is, from the fact that it was established through a process authorized by the people (Franck 1995). This also goes for regimes in international society. But in international society states are free to participate or not, so a regime could suffer reduced stability and effectiveness without general participation by states. In this sense, an international regime should be designed so that it is seen as being fair enough for participation by states. This is especially important in the context of international environmental regimes, including the climate change regime. These regimes often define the outlines of national legislation and policies, and influence diverse activities in each country. Such being the case, they should be considered sufficiently fair by stakeholders as well; otherwise, any decision by a government to participate in the regime could lose its legitimacy and the government could face opposition to regime participation. Fairness is therefore a key issue for the effectiveness of a long-term climate regime structure.

## 2. Various Aspects of Fairness in the Climate Change Regime

### *2.1 Substantive Fairness (Fairness of Burden Sharing)*

To achieve the ultimate objective of the UNFCCC (stabilization of atmospheric greenhouse gas (GHG) concentrations) under the Kyoto Protocol, Annex I countries commit themselves to reduce and/or limit their aggregate emissions of six GHGs by about 5% below 1990 levels in the first commitment period of 2008 to 2012. Annex B stipulates the reduction level for each Annex I country. The Protocol thus allocates

reduction costs among Annex I countries in terms of quantified emission reduction commitments.

As research has so far focused mainly on sharing the burden of mitigation costs among states, burden-sharing fairness is one of the most important concerns in the context of climate change. Lack of fairness on this matter could easily lead to refusal or reluctance to participate in the regime. There are already various proposals for burden-sharing criteria (Kameyama 2003), but it is still unclear what criteria would bring the fairest outcome to the majority of countries. Burden sharing according to the ability to pay or to the extent of contribution to climate change might be acceptable. Both criteria could be supported by the principle of common but differentiated responsibilities and respective capabilities provided for in Article 3.1 of the UNFCCC. However, there are still questions on how to determine each country's ability to pay and the extent of its contribution to climate change.

In discussing burden-sharing fairness, the equity issue between developed and developing countries should not be disregarded. It has long been clearly recognized in international society that there are disparities between these two groups of countries, and that states have a collective duty to take actions to create reasonable living standards both for their own people and for those of other states[1]. The principle of sustainable development is also in this vein (Ginther et al. 1995). This requires that developing countries should not bear burdens that would prevent their citizens from satisfying their basic needs.

*2.2 Procedural Fairness for Creating a Climate Regime*

There have been a couple of proposals which suggest limiting regime participants to large emitter countries in place of a global regime (Bodansky 2003). Generally it is observed that the more participants there are, the less stringent the agreement could be (Sand 1990). In the case of climate change, however, the permitted emissions level would determine the level of adverse effects. Most vulnerable to adverse effects are developing countries, most of which are not large emitters. It would not be seen as fair and democratic if the most affected could not be heard and participate in decision-making. What is more, if participants are limited to those which bear the burden, it would likely lower the level of agreement. In that sense, if a regime excludes the countries that it affects, the legitimacy of the regime should be in question and its effectiveness be shaken. Still, it is possible to have a specific-issue regime within a global regime. For instance, once a global reduction target is agreed upon in a global regime, sharing the burden of meeting the target could be left to negotiations

[1] United Nations Charter, Chapters IX and X; Resolution 2158 (XXI) on Permanent Sovereignty over Natural Resources, 25 Nov. 1966; Charter of Economic Rights and Duties of States, Resolution 3281 (XXIX), 12 December 1974; Art. 17, UNGA, Declaration on the Right to Development, Resolution 41/128, 4 December 1986, Arts. 3, 4, and 10.

among countries sharing that burden.

Note also the importance of ensuring fair participation for developing countries in the process for establishing a regime. States are equal in terms of international law, but there are *de facto* resource disparities. Due consideration should be taken to ensure participation by developing countries both in the negotiation process and in research activities prior to negotiations (Ashton et al. 2003, Müller 2003).

**3. Designing a future regime: more focus on the conversion to renewable energy**

As stated above, it seems that developing countries are justified in increasing their energy consumption to meet the basic needs of their people. They would not agree to a regime not likely to allow them as much, which they would consider unfair. The question is then how to tackle climate change while responding to such legitimate demands.

From a long-term perspective, it should be clearly recognized that we must build a decarbonized socioeconomic system, which is the most crucial consideration for a future climate regime. According to the IPCC, stabilizing atmospheric GHG concentrations will require lowering GHG emissions to almost zero sometime during this century (IPCC 2001). International society cannot deal with climate change effectively without reducing its strong dependency on fossil fuels.

More important is that constructing a decarbonized socioeconomic system is also needed for each country's energy security. Data from various sources show that at the current pace of consumption, oil will be exhausted within about 40 years, natural gas within about 60 years -- during this century at the latest, while coal will last about 230 years (BP 2003, Kawai 2003). Extractable oil and natural gas reserves might increase to some extent with innovative technological developments, but price will inevitably increase as they run out. Ultimately, we cannot deal with this only by improving energy efficiency or only by sequestering $CO_2$ using sinks; we definitely need to take actions to reduce fossil fuel use.

For these reasons, a future climate regime should be constructed in a way that promotes the conversion to renewable energy much more[2]. Note that in this sense, such energy conversion has a dual advantage for states because it prevents climate change and ensures energy supply stability, thereby helping their own future competitiveness.

Such an orientation -- a "switch-to-renewables" approach, aimed at encouraging countries to move their economies toward more dependence on renewable energy --

[2] So far, no international agreement limits the choice of energy sources for countries, leaving states free to choose their energy sources, including nuclear energy. But nuclear energy cannot be actively supported as a mitigation measure, especially in developing countries, because of i) the high cost for the whole process, ii) the other environmental risks it presents, and iii) the risk of nuclear proliferation.

could also be attractive for developing countries. One of their main worries is that mitigation might hamper their development and curb the attendant increase in energy consumption. This approach could address their concerns and enable them to join mitigation efforts without jeopardizing their development needs. If developing countries choose a development path dependent on fossil fuel energy, their prospects are fossil fuel price rises and scarcity, which could shackle their development; at the same time, we would fail to cope with climate change. Switching to renewables is therefore essential for developing countries to achieve sustainable development, making it in their own interest.

One possible example of this orientation is the "renewables intensity target approach," in which countries commit themselves to increasing the percentage of renewable energy in their total primary energy supplies. Based on the rate of renewable energy in the baseyear, states agree on each state's renewable energy target rate to be achieved in the commitment year/period, which in principle should not be less than its own baseyear rate. They can achieve this target either by the conversion to renewables or by reducing the total energy supply through energy efficiency improvements. For developing countries, whose primary energy supply is to increase in the near future, funds should be provided for the conversion to renewables in a way that complements the energy supply increase with renewable energy (for details, see the full paper on the web)[3].

The advantages of this approach are as follows. First, it will be a clear signal to countries and industries to change their economies and activities and provide a strong incentive to develop technologies and invest for that purpose. Second, as the cost of converting to renewable energy is relatively high, it will also be an incentive for improving energy efficiency, thereby leading countries to decrease energy supply to achieve their target rates. Third and above all, it will be a strong incentive for developing countries to participate in the regime, especially because participation would guarantee their eligibility for access to funding for their energy supply increase. For the developed countries, this energy conversion-focused funding mechanism would be more acceptable because at least it ensures that developing countries will reduce or avoid emissions, and it contributes to both climate change mitigation and sustainable development in developing countries.

## 4. Conclusion

Fairness plays a key role in making any future climate regime effective with general participation by states. This analysis is still preliminary and tentative; there is

[3] The burden-sharing level for each country is an open question. Some additional device may be necessary for developed countries to reduce their emissions.

much to be considered yet. We do, however, know that it is essential to prepare for a future regime from a broader perspective of fairness – from the viewpoint of how to achieve the ultimate objective as well as sustainable development.

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# About Organisers

## National Institute for Environmental Studies (NIES)

16-2 Onogawa, Tsukuba, Ibaraki, 305-8506 Japan
TEL : +81-29-850-2314　FAX : +81-29-851-4732 □*http://www.nies.go.jp*

NIES was established in 1974 at Tsukuba Science City, about 50km north of Tokyo, as a research wing of the Environment Agency (now the Ministry of the Environment). The NIES was reborn as an Independent Administrative Institution in 2001. NIES has been conducting research both on global environmental changes, such as global warming, depletion of the stratospheric ozone layer, acid rain, destruction of tropical rain forests and desertification, and on challenges for conservation of the local environments.

The Social and Environmental Systems Division conducts research on linkages between human activities and the natural environment through employing sophisticated models such as the Asian-Pacific Integrated Model. Research on beyond Kyoto issues is one of the priority areas in this Division.

## Institute for Global Environmental Strategies (IGES)

2108-11 Kamiyamaguchi, Hayama, Kanagawa 240-0115 Japan
TEL : +81-46-855-3700　FAX : +81-46-855-3709 □*http://www.iges.or.jp*

IGES was established in 1998 as a non-profit organisation to conduct strategic research on global environmental challenges and develop innovative policies for sustainable development in the Asia-Pacific region. Currently IGES carries out research on themes such as climate policy, urban environment management, forest conservation, business and the environment, long-term perspectives and policy integration, and capacity building for sustainability. IGES also hosts the Technical Support Unit of the National Greenhouse Gas Inventories Programme under the auspices of the Intergovernmental Panel of Climate Change.

The Climate Policy Project focuses on designing and proposing both international and domestic policy measures, synchronising with development of the international negotiations in the field of climate change. The project, at present, addresses three inter-related themes: domestic policies and Kyoto mechanisms, beyond Kyoto issues, and vulnerability and adaptation issues.