

Climate Policy Project

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Project Leader

1. Project name

Climate Policy Project (CP)

2. Project period

April 1, 2001 to March 31, 2004

3. Expenditure in FY2001

136,760,939 JPY (External funds: 33,784,200 JPY)

4. Budget in FY2002

¥125,820,000 (External funds: 14,791,400 JPY)

5. Goals

The goals set at the beginning of the IGES second phase are listed below.

In order to make specific recommendations to decision-makers, research will be conducted on the following themes of international climate change policy:

5.1 *What should the Japanese domestic policy entail in order to comply with the Kyoto Protocol?*

- (1) Japan's "best policy mix" in order to comply with the Kyoto Protocol and the policy formulation mechanism integrating other related policies
- (2) Comparative study on the effectiveness of domestic climate policies among developed countries
- (3) Design of international mechanisms, including emission trading, which conforms to the domestic policy

5.2 *Which types of policy measures are effective to encourage the participation of industrial/ business community and promote technological innovation?*

- (1) Impact of domestic climate policy on business
- (2) Possibilities of long-term technological innovation
- (3) Industrial structural change to promote innovation of climate-friendly technologies and policy measures to promote such structural change
- (4) Greenhouse gases (GHG) accounting system of the private sector.

5.3 *What measures and mechanisms are necessary to effectively promote international cooperation between developed and developing countries in Asia?*

- (1) Measures to close the gap in discussion between developed and developing countries and to motivate developing countries to reduce GHG
- (2) Effective utilisation of Japanese ODA and measures to assure that environmental protection programmes for developing countries are prioritised
- (3) Impacts of the promotion of CDM (Clean Development Mechanism) on Asian energy policy
- (4) Prospects for international energy and environmental cooperation among Russia, China, Korea and Japan and the impact of such programmes on energy and environmental policy in Asian countries
- (5) Influence of domestic policies of developed countries on those of developing countries
- (6) Design of CDM to promote North-South cooperation and sustainable development in developing countries including a comparative study on the cost-effectiveness between ODA and private investment projects in China in collaboration with the Urban Environment Project

- (7) Optimal design of CDM from the developing countries' viewpoint including integration of CDM in domestic policies of developing countries and evaluation of prospects for replication of policies of developed countries in developing countries
- (8) Effective process for establishing cooperation mechanisms in the background of changing domestic and international geo-political conflicts
- (9) Field studies to establish a model case for climate policy in Asia

5.4 *How much progress has been made in research on estimation methods of greenhouse gas emission and absorption?*

- (1) Review of studies on the level of accuracy in the measurement of greenhouse gas emission in Asia, and the compilation of a database
- (2) Review of the extent and accuracy of understanding regarding the carbon sequestration sinks in Asia
- (3) Impact of the establishment of inventory estimation method on international policy including design of inventory methods which would not cause conflict of interest in international politics

5.5 *How can the vulnerability to climate change be evaluated in Asia? What kinds of adaptation strategies are desirable?*

- (1) Identification of vulnerable areas to climate change in Asia.
- (2) Reviewing the concept of "adaptation" and proposing investment criteria to assess a critical adaptation project

5.6 *How should the governance of climate policy be conducted in terms of global carbon cycle management including the sink issues and International politics?*

6. Members and collaborators

[Project staff]

- Shuzo Nishioka (Project Leader)
- Tae Yong Jung (Senior Research Fellow, Project Manager)
- Naoki Matsuo (formerly Senior Research Fellow and Visiting Researcher since September 2002)
- Ancha Srinivasan (Research Fellow from July 2002)
- Rie Watanabe (Research Associate)
- Yasushi Ninomiya (Research Associate)
- Aki Maruyama (Research Associate until April 2002)
- So Won Yoon (Research Associate until February 2003)
- Wakana Takahashi (Research Associate until December 2002)
- Tomoko Miyazaki (Secretary from September 2001)

[Visiting researchers]

- Norichika Kanie, Kitakyushu University, Japan
- Shuang Zheng, Energy Research Institute (ERI), State Development Planning Commission, China
- Vladimir Kotov, Moscow Business Consulting, Russian Academy of Sciences
- Elena Nikitina, Institute of World Economy and International Relations, Russian Academy of Sciences
- Xiulian Hu, Center for Energy, Environment and Climate Change Research, ERI, China
- Choon-Geol Moon, Department of Economics, Hanyang University, Seoul, Korea
- Hoesung Lee, President, Council on Energy and Environment Korea
- Kejun Jiang, Director, Center for Energy, Environment and Climate Change Research, ERI, China
- P.R. Shukla, Professor, Indian Institute of Management, India

7. Main research activities and outcomes

7.1 *What should the Japanese domestic policy entail in order to comply with the Kyoto Protocol?*

One major outcome from this project's research on the Japanese domestic climate policy is a report entitled "*Policy Proposal for Japan's Domestic Climate Policy*" (IGES, August 2002), which is a compilation of achievements over the past few years. It is a comprehensive proposal covering a wide range of fields, and integrates the outputs of various public forums and workshops including "IGES Open Forum on Countermeasures for Global Warming" which staff from business, research and the government sectors attended, a Joint Research Workshop on the UK Climate Policy (June 2001) with major think-tanks, and several brainstorming workshops with the Japanese business community (August-October 2001). Based on an analysis of current policy measures and issues to be addressed, various combinations of economic measures, command-and-control and voluntary measures were recommended as part of a new institutional framework. Although further discussion is necessary in terms of the feasibility of new institutional framework and its consistency with the existing framework, it must be noted that the formulation of such draft by a non-governmental organisation was a breath of fresh air into the system design, and that it formed a solid basis for further discussion in Japan. The report was presented in August 2002 at a meeting which nearly 250 researchers from public and private organisations attended. It was accepted as the first recommendation for a comprehensive global warming countermeasure policy. A comparative study on energy policies of Japan and other developed countries, and a study on domestic policies including emissions trading system, which formed the basis of this report, were published elsewhere¹.

"The IGES Open Forum on Climate Change Mitigation" was held on October 16 and November 22, 2002, where issues to be addressed for further development of domestic climate policy were discussed by the officials of concerned government agencies, researchers, and business personnel. The forum was especially appreciated because critical points for adjustments of domestic legislation in order to ratify the Kyoto Protocol were discussed and the differences among views and interests of various stakeholders were clarified.

It is also worth noting that the report "Technologies for the Reduction of Greenhouse Gases to Achieve the Goals of the Kyoto Protocol", which was compiled by the Project Leader as the Chair of the Ministry of the Environment commission, examined in detail the technologies to reduce GHG in Japan and derived a GHG emission reduction cost curve. The report was used as the basis of "Guidelines for the Prevention of Global Warming in Japan 2002".

7.2 *What measures and mechanisms are needed to effectively promote international cooperation between developed and developing countries in Asia?*

Asian countries are diverse in their interests on the issue of climate change. The CP project examined the diversity of such interests through conducting policy dialogues and undertaking research collaboration with policy-makers and researchers in various Asian countries.

At first, with the cooperation from the UNEP Collaborating Centre on Energy and Environment (UCCEE, Denmark), the Energy Research Institute (ERI) of China, the Korea Economics and Environment Institute (KEEI) of South Korea, the Tata Energy Research Institute (TERI) of India, the Thailand Environment Institute (TEI) of Thailand, the Environment Agency of Vietnam, and the Environment Ministry of Cambodia, bilateral workshops on the theme of "Climate Policy Dialogue in Asia" were held in China, South Korea, India, Thailand, and Vietnam. At each workshop, a detailed

¹ Matsuo, N. (2002) "Analysis of the US's New Climate Initiative: The attitude of the Bush Administration towards Climate Change", *International Review for Environmental Strategies*, 3(1): 177-187.

Matsuo, N. (2001) "Bonn Agreements as a New Business Opportunity: How to develop the new businesses under the carbon constrained world", *Energy Forum*, October (in Japanese).

analysis of climate change issues was made along with discussions on each country's specific needs to mitigate global warming and the common challenges facing policy makers across Asian countries. The research results from this series of workshops were published as a report entitled "Climate Policy Dialogue in Asia" (IGES, August 2002). It was widely distributed at international conferences such as the World Summit on Sustainable Development (WSSD) and UNFCCC/COP8.

In addition to bilateral workshops, an international workshop on "Climate Policy of Asia" was held to exchange information and conduct comprehensive and integrative discussions on climate change issues and policies in Asia. Many specialists and government officials from both within and outside Asia attended the workshop, and a wide range of issues such as the energy forecast of Asia, GHG emissions profile, and domestic climate policies were discussed. Extensive discussion was also held on challenges that a researcher or government representative will face in the next few years. A CD-ROM report "Climate Policy of Asia" was produced as a result of the conference and distributed on various occasions including the COP8.

In order to analyse obstacles and opportunities for regional cooperation in implementing the Framework Convention on Climate Change by four countries of the Northeast Asia Region (Japan, South Korea, China, Russia), the CP project conducted an international collaborative research programme entitled "Policy Design of Climate Change Collaboration in Northern Asia" with ERI, KEEI, Russian Academy of Sciences, the Asia Pacific Energy Research Centre (APEREC) and other research institutes. In addition to conducting a qualitative analysis of the potential and outcomes of cooperation in Northeast Asia, the project completed a quantitative analysis using the IGES Greenhouse Gas Emission Models for Asia (GEMA). The research results (a final report and workshop proceedings) were published as a CD-ROM "*Policy Design of Climate Change Collaboration in Northern Asia*" (March 2002). The report was also posted on the IGES Website. The above-mentioned study on the potential of the Northeast Asian regional cooperation was published as a research paper, which was acclaimed to be spearheading research in this field².

Since the discussion on ways to implement the Kyoto Protocol was opened up following the adoption of the Marrakech Accord at COP7, the CP project, in collaboration with the Ministry of Foreign Affairs, held an informal international symposium in July 2002 to explore the role of international cooperation in climate policy. The symposium was recognised for its contribution to the promotion of Japanese diplomacy in the field of climate policy.

In December 2002, IGES hosted a workshop entitled "Energy Modelling for Climate Change Countermeasures" with the participation of energy modelling researchers from all over Asia to exchange information on energy policies, energy demands and supply models, possibility for the development of an integrated energy model, and modelling techniques in Asia. This workshop was widely considered as a new attempt to focus on energy modelling that incorporated special characteristics of Asia. Participants of each country, therefore, expressed strong desire for such meetings to be held on a regular basis in future. A research paper presented at this workshop was already published in an academic journal³.

7.3 How much progress was made in research on estimation methods of greenhouse gas emission and absorption?

Starting from the first phase, the CP project attempted to improve GHG inventories of various countries in Asia, as part of a 3-year project (1999-2001) funded by the Japanese Ministry of Environment. This activity was intended to support and contribute to the activities of the Technical Support Unit (TSU) of the IPCC National Greenhouse Gas Inventories Programme established at IGES in September 1999.

² Takahashi, W. and Asuka, J. "The Politics of Regional Cooperation on Acid Rain Control in East Asia," *Water, Air, and Soil Pollution*, 130: 1837-1842, 2001.

³ Yoon, S. W. and Jung, T. Y. (2001) "Energy Demand Project and its Environmental Implication on the Transport Sector in Korea : An Application of LEAP Model", *Climate Policy*.

The Asia-Pacific region inventory researcher network, which is an outcome of our project in first Phase, was fully utilised in the second phase to promote experimental research and focus discussions on emission sources and sinks of high priority in various countries. Significant research results were obtained and several recommendations were made to IPCC. For example, in the field of land use and forestry, researchers of three Southeast Asian countries (Thailand/Philippines/ Indonesia) collaborated and collected various data on forest carbon, and then evaluated and improved the biomass volume (carbon stockpile) estimation model using allometric growth measurement formulae. In the field of agriculture, they examined recent research on estimation methods of GHG emissions from rice cultivation, and contributed to the discussions at IPCC for further improvement of estimation method in the future.

An international workshop on GHG inventories was held at IGES (Hayama, Kanagawa Prefecture) on January 17-18, 2002, to summarise the activities of the 3-year project (1999-2001). At this workshop, besides presenting the research results of three years and sharing knowledge with inventory specialists from Asian countries, topics such as “The Application of Good Practice Guidance and the Priorities for Future Research”, “Challenges to Create a GHG Inventory from the Standpoint of the Institution, Methodology and Organisation” and “The Role of the Specialist Network Now and in the Future (The importance of Asian initiatives and the active participation of specialists from Asia)” were discussed. The workshop greatly contributed to the diffusion and exchange of useful information and knowledge on the improvement of GHG inventories in Asia. Research outcomes of various participants were published in academic journals, and such papers were compiled as a report of the workshop.

7.4 How can the vulnerability to climate change be evaluated in Asia? What kinds of adaptation strategies are desirable?

COP6 and COP7 of the UNFCCC established the Adaptation Fund, Special Climate Fund, and LDC Fund for National Action Plan for Adaptation (NAPA) and delegated the management of these funds to GEF. GEF has been working with its implementing agencies (UNEP, UNDP, World Bank) on the formulation of investment strategies and has been requesting advice on technological issues from STAP (Scientific and Technical Advisory Panel). The leader of this project was appointed to be the chief of the adaptation policy study at STAP, and he chaired the brainstorming sessions and workshops which gathered together experts including the Chairman of UNFCCC SBI and SBSTA at that time. The report of the workshop was submitted to GEF.

In December 2002, the project organised a Capacity Building Workshop that included adaptation policy for developing countries, and conducted a training programme for policy-makers from Cambodia, Laos and Vietnam. The project recruited a non-Japanese researcher on adaptation policy in July 2002, who began research on ways to shift the paradigm of adaptation policy from the present “top-down approach” to the “bottom-up participatory approach”. Research results are expected in the future.

8. Plans until the end of 2003

The following research activities are planned.

8.1 What should the domestic policy entail in order to comply with the target of the Kyoto Protocol?

Now that the Kyoto Protocol is close to coming into effect, how to achieve the GHG emissions reduction goal as promised in the first stage is an important challenge for Japan. The present policy based on the “Guideline of Measures to Prevent Global Warming” is to be reviewed in 2004. Since achieving the reduction goal by the current policy framework is regarded as unlikely, enforcement of more effective policy packages would be necessary from 2005. In this context, policy research focusing on the design of a domestic system that complies with the Kyoto Protocol will be continued based on previous research results until the end of 2003. We then plan to shift our focus to study on application of quantitative evaluation with energy modelling in addition to qualitative evaluation such as through comparative studies on global warming policies between developed countries.

Expected outcomes from the above activities include: the improvement of comprehensive policy package framework suggested in 2002; recommendations for Japanese domestic policy based on a comparative analysis of the European climate policy, analysis of GHG reduction potential in the Korean transportation sector, and advice for the creation of a registry mechanism for Japan.

8.2 *What measures and mechanisms are needed to effectively promote international cooperation between developed and developing countries in Asia?*

In COP8, it was pointed out that promoting informal dialogue with developing countries is fundamental for achieving global participation. The CP project will examine concrete cases of win-win solutions and promote a knowledge/technology transfer to further enhance the dialogue between developed and developing countries. Because CDM is now in implementation phase, CDM potential in Asia is likely to influence the framework of world climate policy greatly. The CP project, in collaboration with the Energy Research Institute of China, will analyse CDM potential of China and investigate various barriers for implementation, and then suggest measures to promote effective technology transfer. The project will also aim at improving the Asia energy model in order to quantify the effect of CDM. Policy dialogues and Capacity Building workshops targeting the policy-makers and researchers of Asian countries will be held.

8.3 *Vulnerability assessment and adaptation policy*

Policy dialogue with the developing countries can be promoted by recognising the impacts of climate change and enhancing the assistance by developed countries for adaptation. Research on prioritisation of adaptation strategies (e.g., vulnerability index) and enhancement of resilience using indigenous knowledge will be conducted.

8.4 *Long-term scenario and governance*

As per COP guidelines, discussions on the creation of an international framework applicable after the Kyoto Protocol are supposed to start in 2005, and many people have already started such research. Although this issue will be the main research theme for the third phase, basic research will be initiated in FY2003. Since it is important to publicise research products in international research community, developing research cooperation networks with international organisations in both developed and developing countries will be our first priority.

8.5 *How much progress was made in research on the estimation method of greenhouse gas emissions and absorption?*

The research was completed in March 2001 and will not be taken up in FY 2003 due to budget constraints.

8.6 *Cooperation with other IGES projects*

Joint research with other IGES projects in 2003 will focus on the following themes:

- Energy modelling aspects of the Mega City Project in collaboration with Urban Environment Project (UEP) (see the interim report by UEP)
- Strategic policy options and good practices related to transportation sector, finance sector and indigenous knowledge as part of RISPO in collaboration with LTP Project
- Education and training programmes for climate policy makers in collaboration with Capacity Building programme and Environmental Education Project

9. Evaluation of main research results up to December 2002

9.1 *Impact on policy formulation process*

Research by the Climate Policy Project has a direct influence on policy formulation through various channels. Prof. Akio Morishima, Chairman of the Board of Directors of IGES, is also the chairman of the Central Environment Council. He plays a leading role in formation of the Japanese climate policy, as climate policy is the most important challenge in Japanese environmental policy. He also attends not only

the IGES Climate Change Policy Dialogues held in various Asian countries but also important international conferences such as ASEAN, ESCAP, APFED. Besides active participation in climate change policy forums, he takes a lead in a wide range of discussions. Through such activities, the results of IGES climate policy research are strongly reflected in policy decisions.

As a member of Central Environment Council, Dr. Shuzo Nishioka, Climate Policy Project Leader, also actively makes recommendations to its Earth Environment Sub-committee based on IGES research. He chaired the Sub-committee for the Investigation of Greenhouse Gas Reduction Scenario and analysed the technical potential of Japan to achieve the Kyoto Protocol's target, which became the basis of another report entitled "Re-examination of Guidelines of Measures to Prevent Global Warming (2002)". Dr. Nishioka gave a private one-hour talk to the Japanese Prime Minister, Mr. Koizumi, prior to his meeting with US President Bush, on scientific aspects of global warming and the stance that Japan should take in future. After his meeting with the President, the Prime Minister stated in an interview that he could clearly explain Japan's stance to the President. As chief of the policy research group of "Climate Change Research Initiatives", which was set up under the Council for Science and Technology Policy where the Prime Minister serves as Chairman, Dr. Nishioka organised a dialogue between policy-makers and researchers. At an international level, Dr. Nishioka takes the lead in designing climate change adaptation policies as a member of Scientific and Technical Advisory Panel (STAP) of the Global Environmental Facility (GEF), and contributes to discussions on effective ways to make use of International Environmental Funds. Such activities are partly based on research results by IGES.

Research by the CP Project is action-oriented, in that it not only promotes research, but also uses research outcomes to actively participate in the decision processes to prevent global warming, and to promote formulation of appropriate policies. For instance, project staff (Matsuo, Watanabe, Ninomiya) participated in a number of research committees of the Ministry of Environment, Ministry of Foreign Affairs, Ministry of Economy, Trade and Industry and various research groups hosted by industrial circles, and presented their research. The project regularly holds a seminar after the COP and publishes an interim analysis of international climate policy. Moreover, the IGES Climate Policy Open Forum, which always receives over 150 participants including policy makers, researchers, industrial circles and non-profit organizations, is now recognised as an established forum in Japan to exchange diverse views on climate policy. Internationally too, the CP project held five policy dialogues targeting various Asian Nations, and deepened the understanding of policy makers in developing countries toward climate change, thereby contributing to capacity building in the region. At the request of the Japanese Ministry of Foreign Affairs, the CP project organised an informal meeting of climate change experts in 2002, using its close network of researchers and policy makers. The presentations at the workshop were highly valued.

The CP project thus disseminated its research and influenced policy through various foreign and domestic channels in different ways.

9.2 Response to research needs

This project has promptly provided useful and practical information for policy formulation by tackling cutting-edge issues. Internationally, the project follows through the discussions at COP/SBSTA/SBI meetings, and always sets up future-oriented research topics in close collaboration with policy-makers. For instance, at the request of Japanese government the project researchers (Watanabe, Ninomiya) served as members of the Japanese delegation at COP and took charge of UNFCCC negotiations as representatives of the country. The researchers also disseminated their knowledge on climate policy in response to the needs of business circles or local governments and held talks regularly with policy makers of the Ministry of the Environment, and established a system that can conduct research on priority issues at any time. A system to facilitate quick action in response to research needs was firmly established.

9.3 Originality, creativity and effectiveness

The main characteristic of the CP project's research is its integrative, strategic and action-oriented research style, which takes into account the rapidly changing trends and developments in international climate policy. The research targets of the project are set in accordance with the COP schedule. The project also promotes activities to advance policy formulation and identify new research needs through organising various interactive meetings and workshops.

The merits of an independent research organisation such as IGES are its ability to promote interdisciplinary research and make recommendations that can integrate the policies of individual government agencies (For example, the package proposal on domestic policy measures is one form of its research outcomes). The CP project has thus established a niche and comparative advantage as one of the major environmental policy research units in Asia. The effectiveness of research results was already described in section 9.1.

9.4 Others

Nothing particular.

10. Recommendations to improve project activity in 2003

It is felt that the overall research direction need not be specifically changed. One of the challenges that the CP project faces is the lack of specialised research methodology. For example, data necessary for energy modelling was obtained from only four Asian countries so far. Such efforts need to be strengthened and expanded in future to optimise research methodology and examine how climate policy in these countries affects the whole of Asia.

Another challenge is that the CP project did not produce adequate results to appeal to international research community in Europe and the United States, although its reputation has been well recognised in Asia. From now on, the project should produce outcomes to be utilised and recognised all over the world through collaborative research with international research organisations.

As the drawback of action-oriented research, an opportunity to evaluate research results in the academia is lacking. It is suggested that researchers submit academic papers for publication in international journals twice a year in order to ensure that their research is based on sound methodology.

11. Self-evaluation regarding general project activity up to December 2002

Details omitted.

12. Recommendations for the third phase project (2004-2006)

Our research efforts in third Phase will be guided by four key principles. First, we shall foresee and guide domestic and international climate policies through recommending timely and appropriate actions by closely following the progress in UNFCCC negotiations. Secondly, we believe that climate policy research cannot be conducted solely within the context of climate, but from a larger perspective of sustainable development. Thirdly, we will ensure high quality to make our research internationally competitive both in academic and policy circles. Last, but not the least, our research will be action-oriented in a sense that it will be coupled with outreach activities such as publications in academic journals and popular magazines, organisation of open forums, international workshops and training activities for various stakeholders.

Attaining the emission reduction targets by developed countries during the first commitment period of the Kyoto Protocol (2008-2012) is the basis towards the goal of global participation in the second commitment period and beyond. Since Japan is a key player in the Kyoto Protocol and a large Annex 1 country, its success in meeting the Kyoto targets will have great influence on the global climate regime. Designing effective and relevant policies for implementation by Japan as well as EU countries is, therefore, critical. We will also focus on evaluating relative success of mitigation measures adopted so far

and the likely impacts of new policies in selected countries. Despite ratification of the Kyoto Protocol by many states, progress towards the broader goal of climate stabilisation worldwide is still far from satisfactory. Our project will endeavour, therefore, to set forth a blueprint for post-Kyoto climate policy regime through identification of measures to promote participation of developing countries and other non-participating Annex 1 countries and development of policy frameworks appropriate for the second period of commitment and beyond. In addition, we will conduct comprehensive studies on governance of the future climate regime and its implications for countries in the Asia-Pacific region. Since mitigation alone will not solve the problem of climate change, the project will examine vulnerability of various sectors of significance to our region (e.g., agriculture, transportation, water resources, biodiversity) and identify “win-win” adaptive strategies developed through a bottom-up participatory approach. Special attention will be paid to identification of policies that enhance adaptive capacity (in terms of social, economic and technical resilience at various levels) of vulnerable regions and communities. Besides conducting pioneering research, we will contribute to information outreach, multi-stakeholder dialogues, capacity building and technology transfer through development of joint research projects, exchange of researchers, and dissemination of information via publications, training workshops and conferences.