公開シンポジウム
2050年低炭素社会シナリオに関する
国際シンポジウム
脱温暖化シナリオ構築とその政策効果について

Open Symposium
Low-Carbon Society Scenario Toward 2050
Scenario Development and its Implementation for Policy Measures

Mar. 24, 2005
SHINAGAWA PRINCE HOTEL
本シンポジウムで我々が聞きたい事、議論したい事:
1) なぜ欧州各国で2050年低炭素経済構築が必要なのか？
2) どうやって各国温室効果ガスの排出削減数値目標を決めたのか？
3) その目標を達成するシナリオと手順をどうやって構築したのか?2050年までの経済への影響、技術革新、社会インフラの変革、ライフスタイルの変革などをどう扱ったのか？
4) 低炭素経済の考え方は、どれほど真剣に受け止められ、現行の政策に具体的に反映されるようになったのか？
5) 低炭素経済政策において、欧州各国間および日本とどのように共通するか、異なる立場や政策は何か？欧州の対策で日本および他の国々で参考になるものは何か？世界へのメッセージは？

The issues discussed during this symposium are:
1) Why do EU countries need to structure the low carbon economy?
2) How to decide country-level GHG (Greenhouse gases) reduction targets?
3) How to develop the scenario and road map to achieve the society with such target? How to consider economic impacts, technology innovation, social infrastructure change, lifestyle change, and etc?
4) How seriously the concept of low carbon economy are taken into current policy making process and realized as concrete policy and measures?
5) What are the common / different stances among and between EU countries and Japan in achieving low carbon economy?. What are the messages of the low carbon economy to future global governance?

### Agenda on March 24 (Thu), 2005

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**Session 1: Overview of Low Carbon Society Scenario Development**

- **Purpose and Objective of this Symposium**: Prof. Shozo Nishikawa, NIES
- **Long-term climate policy in EU**: Dr. Artur Runge-Metzger, Environment DG, European Commission
- **Overview and discussion points**: Dr. Norichika Kanie, TITECH
- **Discussion**: Dr. Joop Oude Lohuis, RIVM (Netherlands) Dr. Ancha Srinivasan, IIES

**Session 2: Long-term GHG reduction target**

- **Policy perspective of Long-term GHG reduction target setting**: Mr. Martin Weiss, Germany’s Federal Environment Agency (Germany)
- **Stakeholder perspective of Long-term target**: Dr. Marien van der Kerkhof, Institute for Environmental Studies (Netherlands)

**Session 3: Development of low carbon society scenarios toward 2050 and their policy impacts**

- **Overview and discussion points**: Dr. Junichi Fujino, NIES
- **UK scenarios toward 2050**: Mr. Stephen Green, DTI (UK)
- **Germany scenarios toward 2050**: Dr. Manfred Fischkoch, Wuppertal Institute (Germany)
- **France scenarios toward 2050**: Mr. Michel Colombier, IDDRI (France)
- **Coffee Break**
- **Netherlands scenarios toward 2050**: Mr. Remko Ybema, ECN (Netherlands)
- **Japan scenarios toward 2050**: Dr. Junichi Fujino, NIES
- **Panel Discussion**
- **Final Remarks**
メッセージ

本年2月16日に京都議定書が発効しました。京都議定書は、地球温暖化問題に対する地球社会の挑戦の、歴史的な第一歩であり、まずは、各国が京都議定書の国際条約を誠実に守っていくために、全力を尽くす必要がある。

しかしながら、地球温暖化問題の深刻さを最もとらえると、京都議定書は小さく一歩に過ぎないと誇張する所がございます。地球温暖化を食い止めるためには、早期に世界全体の温室効果ガスの排出量を增加傾向を抑制しつつ減少基調に転換し、更には現在のレベルの半分以下に減少させ、その状態を維持していくことが必要です。このような「低炭素社会」実現のため、すべての国が参加した枠組みに基づくで進めるのが大きな課題です。

このような枠組みを目指した国際交渉は容易なものではないでしょう。まずは、各国が「低炭素社会」の構築に向けた具体的な道路について、真剣な検討を始めることが重要です。既に数年間を経た、2050年までに温室効果ガス排出量を半分以下に削減するような具体的な目標を掲げている国がございます。我が国においても、環境省の地球温暖化対策推進費により、国内の第一線の研究者の参加によって、「2050年脱温室効果ガス社会プロジェクト」を2004年度から開始しました。

「低炭素社会」の実現には、社会のすべての主体が関与するとともに、国際社会が協力して取り組むことが不可欠です。日本を中心とする中長期的な低炭素社会シナリオ研究に携わる研究者たちが、一丸となって話し合える貴重な機会です。これを契機に、この分野の国際協業が更に進展するとともに、聴衆の皆様を始め、関係者の方々のこの問題に対する理解を深めることを大切に期待しております。

On February 16 this year, the Kyoto Protocol finally entered into force. The Kyoto Protocol is a historical first step for our global society to challenge the global warming issue, and each country needs to be fully committed to the international agreements enshrined in the Protocol.

However, compared with the seriousness of the global warming issue, we should say that the Protocol is nothing but a small step. In order to prevent global warming, it is necessary to reverse the present upward trend of global greenhouse gas emissions and foster a general downward trend as early as possible. To attain this goal, it is necessary to reduce the total emissions to at least half of the present level, and to maintain such a level. How to build up a framework to ensure effective participation of all nations to realize this “Low-carbon society” is a major issue for us.

International negotiations designed to build such a future framework will never be easy. First, it is important that each country starts earnest consideration of defining and following a concrete path toward establishment of the “Low-carbon society”. In Europe there are already some countries that have proclaimed to hold positive targets to reduce greenhouse gas emission by at least half by 2050. In our country, too, the “Japan Low Carbon Society Scenarios toward 2050” was started in 2004 with financial support from the Global Environment Research Fund of Ministry of the Environment, Japan and with active participation of domestic researchers at the forefront.

In order to realize a “Low-carbon society”, it is essential that all members of the society, including individuals, organizations, industries, and institutions, are involved, and that the international community tackles this issue in a coordinated manner. Today's workshop provides a valuable opportunity for researchers from Japan, United States and Europe, who are engaged in the study of mid- and long-term low-carbon society scenarios, to gather together in a single forum.

It is our sincere hope that this symposium will contribute to the further advancement of international cooperation in this field, and also that our efforts here will promote greater awareness and understanding about this issue among broad stakeholders including the audience today.
アツール・ランゲー
メッツァー
欧州委員会環境局、気候変動・オゾン、およびエネルギー部門の調査責任者
気候変動特別報道

Dr. Artur Runge-Metzger
Head of Unit “Climate, Ozone and Energy”
DG Environment of the European Commission

気温変動との戦いに勝るために

2005年2月9日、欧州委員会気候変動に関する今後の政策を提示した文書を採択した。この報告書には、京都議定書の第一部の期日が近づくのを念頭に置いた政策の観点を示すものがあり、地球温暖化を制限するために至るための道筋を示す。地球温暖化が進むと、収斂する気温の変化は顕著になると考えられる。海洋温暖化は、特に重要な問題である。海洋温暖化を防ぐためには、気温変動への対策が重要である。

温変動との戦いに勝るために

EUは2012年までに気温変動に対する対策を加速させるための措置を講じるべきである。EUは気温変動の影響を軽減するために、さらに強い努力が必要である。海洋温暖化を防ぐためには、海洋温暖化の防止に向けた対策が重要である。

Winning the battle against climate change

On 9 February 2005, the European Commission adopted a communication setting out future policies of climate change. It also included a set of proposals designed to structure the future negotiations of the EU with its global partners over climate change policies after 2012 when the first commitment period under the Kyoto protocol ends. The EU’s goal to limit global average temperature increase to max. 2 oC above the pre-industrial level was agreed by the Council in 1995.

The Commission document underlines that the transition to a climate-friendly society offers economic opportunities for the EU, reinforcing its Lisbon agenda. Proposals are made on how to develop innovative energy efficiency and security of energy supply, including an increase in EU spending on research, and the development of new climate-friendly technologies for which demand is growing. This Commission communication has been requested by EU heads of state and government, who will be discussing medium and longer term reduction strategies including targets at the Spring Council.

The Commission's report recommends that the EU's post-2012 strategy include the following elements:

- Broader international participation in reducing emissions. The EU should continue to lead multilateral efforts to address climate change, but identify incentives for other major emitting countries, including developing countries, to come on board. During 2005, it should explore options for a future regime based on common but differentiated responsibilities.
- Inclusion of more sectors, notably aviation, maritime transport and forestry since deforestation in some regions significantly contributes to rising greenhouse gas concentrations in the atmosphere.
- A push for innovation in the EU to ensure the development and uptake of new climate-friendly technologies and the right decisions on long-term investments into the energy, transport and building infrastructure.
- Adaptation policies in the EU and globally, which require more efforts to identify vulnerabilities and to implement measures to increase resilience.

In preparation, the document recommends accelerated implementation of existing policies that reduce emissions and which foster deployment and development of new technologies, raising public awareness, more focused research, increased cooperation with third countries and the launch of a new phase of the European Climate Change Programme to revive progress and identify further options for cost-effective emission reductions.

The report, a background paper and further information are available at: http://www.europa.eu.int/commission/environment/climate/future_action.htm
国際気候政策の長期の排出削減目標をめざして

人間が発生した気候変動は、私たちの社会や経済の成長を阻害し、果てに世界の生息の危機をもたらし、その影響は、現在のポリシーや技術の変革を必要とする。このことは特に先進国にあっても、かつては即効性があるとは言え、今後は必要な方向付けが重要であり、長期的な目標設定をすることで取り組み方に方向付けができる。今後、気候変動が気温に及ぼす影響を予測する可能性を考えた場合、気温上昇を2度に抑えることが推奨される。このためには、世界全体の排出量を、200年の内に減少させ、2050年までに1990年水準の半分以下にすることが必要である。

国際気候変動枠組条約（UNFCCC）では、対策を含めた京都議定書を含む各国の排出削減目標の設定に世界を総合して、地球温暖化を抑制するための取り組みを求める。

最新型のEUにおける政策は、段階的に参加国が政策的にも最も有望であることを示唆している。各国間の枠組みに取り組んでいる可能性として排出削減の交渉の全体目標を設定し、手続きに参加するモードを持つ。どのような方法が、先進国が2020年までに25%から45%、2050年までに60%から90%の排出削減をすることを必要としている。ほとんどの発展途上国は2020年までの間、通常の業務に隣接し排出削減に着手することはなかった。

各国間の枠組みを設けることが、より一筋の方法（これは多段階の設定と組み合わせが可能）に、Triptych Approach（3段階手法）がある。これは排出削減の目標を、エネルギー部門、国際的に競争している業界、農業、漁業、LUCF、およびその他の部門における区分データに置くものである。国連気候枠組条約では、2020年までに30%、2050年までに90%の削減をすることになっている。

Triptych Approach（3段階手法）と段階に設定された目標の結果は、他の負担の分担手法と対策を含むものである。結果として、排出削減が2050年までに地球温暖化ガスの排出を60%から80%削減することを長期目標にすることが考えられる。2020年には、京都議定書条約では、少なくとも60%の削減が必要である。これについては、国連気候枠組条約において40%から60%の削減をすることを意味し、日本は、30%から50%の削減をすることを意味する。

Towards Long-Term Emission Reduction Targets in International Climate Policy

Human induced climate change is caused by and deeply rooted in the way our societies and economies are structured, especially in developed countries. Therefore, quick fixes or end of pipe solutions (silver bullet) are hardly at the horizon. Long term orientation is needed an can be provided to business via long term target setting.

Looking at possible future impacts of climate change on a temperature scale it seems reasonable to limit temperature increase to 2°C. This requires global emissions to peak within the next two decades and fall below 50% of 1990 level by 2050.

There is a tradition of differentiating commitments to reduce greenhouse gases as enshrined in the UNFCCC as “common but differentiated responsibilities” and the selection of countries constituting Annex B of the Kyoto Protocol. The latter group can not, however, solve the climate problem on its own – participation of most of the countries is needed in the long term.

Recent work in the EU suggests, that a staged approach to participation is most promising politically. It provides for flexibility in timing and modes of participation while keeping the multilateral framework, the possibility of trading and a common overall objective in terms of envisaged emission cuts. Such an approach requires developed countries to reduce emissions by 25-45% in 2020 and 40-90% in 2050. Most developing countries have to start emission reduction relative to their business as usual path by 2020.

A more sophisticated way of differentiating commitments among countries (which can be combined with a multistage setting) is the Triptych Approach (version 6.0 now available). It bases emission quota on sectoral data in the energy sector, international competing industries, agriculture, waste, LUCF, and other domestic sectors. Annex I countries would have to reduce emissions by roughly 30% in 2020 and 90% in 2050.

The results of Triptych and Multistage are contrasted with some other burden sharing approaches. To conclude, a long term target of 80-90% reduction of greenhouse gas emissions by 2050 seems appropriate for developed countries. In 2020, at least 30% reduction for Annex I countries is necessary. For Germany this translates into a reduction of 40-50%, for Japan 30-35%, depending on the burden sharing approach and emission pathway chosen.
Long-term climate policy in the Netherlands: Experiences and lessons from the Netherlands

It is more and more acknowledged that, in order to deal with contemporary complex environmental problems like climate change, it is important to involve not only scientific knowledge, but also the knowledge and experience of people from businesses and NGOs ("stakeholders"). Stakeholder participation can contribute to better decisions, increase awareness and support, encourage learning among the involved actors, and improve the interface between science and policy. At the same time, there are a number of potential drawbacks and criticisms with regard to participation.

In the Netherlands, the policy making process on climate change is characterized by several participatory processes. At the Institute for Environmental Studies, a lot of experience has been gained with designing and organizing such processes, for instance, in the projects Climate OptiOns for the Long term (COOL) and Helping Operationalizing Article Two (HOT).

In this talk, the different pros and cons of stakeholder participation will be presented. Also, on the basis of the COOL and HOT experience, it will be discussed what are the factors for success or failure of participatory processes and to what extent social, political and other circumstances play a role in this. Finally, it will be discussed to what extent the COOL and HOT experience can be used in the case of Japan.
The Climate Change Research Team at RIVM puts its broad-based, multi-disciplinary expertise to use in informing and advising the government and international institutions on climate change. The core task is to integrate all relevant aspects of climate change, along all policy implementation levels and in relation to other environmental problems. Go to the 'who is who' page to read more about the Climate Change Research Team.

Our objectives are to inform and advise governments and international institutions. Our work on climate change and other international environmental problems, on scenarios and integrated assessments, is therefore targeted at providing policy makers with appropriate information of the highest quality and objectivity that allows them to carefully assess the effects of their choices. The main aspects of our work are related to: analysis of the potential and policy implications of the Kyoto Mechanisms analysis of the design of regimes for the differentiation of future commitments identification of long-term strategies to prevent dangerous anthropogenic interference with the climate system the potential and policy implications of sinks as an option for climate change policy CO2L: outcomes of the policy-scientific dialogues of the project Climate OptiOns for the Long term exploring the utilisation of tradable emission permits

Moreover, the Climate Change Research Team has developed the IMAGE-model and the FAIR-model.
発展途上国における長期的排出削減目標の設定

気候変動、公共政策によって相互制約されてくるグローバルな課題である。様々な利害関係者と複雑な立場で、それはしばしば対立する立場で、この問題を認識し理解するため、政策立案者や民間企業そしてNGOや学界を含む利害関係者との協議を効果的に行うことが重要である。

温室効果ガスの濃度を安定化させることは、世界全体の排出量を、生物種と海洋が持続的に取り込み可能である排出まで下げることが必要があり、そのためには長期的には1990年の水準に比べ85%以上の削減を行う必要がある。また50%や80%といった長期のあるいは中長期的な削減目標を設定する場合、経済、技術および社会的観点から実現可能性について利害関係者と協議することを含む具体的な意思決定のプロセスが必要となる。そして先進工業国が、まずは初期の目標を設定するにあたり、早期にこのようなプロセスに着手し、それらが全てのプラットホームにおける実現可能性の目標を定めることは重要である。

発展途上国における距離は、国家レベルで絶対的な排出の目標を設定することを論議することは、人口一人当たりでは低い水準にある発展途上国の排出レベルや貧困緩和と開発という複合する優先事項に照らして時期尚早に思われる。しかししながら、発展途上国における気候変動投資及び技術革新は、排出の増加傾向を変換し、経済成長、エネルギー強度、炭素の排出との関係における収束を可能とする可能性がある。まず始めに、科学的な正しい政策の排出削減目標を定めることが、発展途上国における必要な選択か否かを知る、多くの国々は気候変動がまだ優先事項となっているため、持続可能な開発の枠組みの中でこの目標に対する社会的認識を高めることが重要である。先進国における排出削減に明るい進歩が見られる中で、発展途上国においても積極的な削減の取り組みを行うことで最終的には、社会経済システムに危険な干渉をすることなく気候を危険にすることのための干渉を防ぐことができると考えられる。

Developing Countries’ Perspectives on Setting Long-term Emission Reduction Targets

Climate change is an unstructured global challenge for public policy. Since different stakeholders perceive and understand it from various, often conflicting, angles, effective consultations with policy makers and other stakeholders including the private sector, NGOs and academia are crucial. In order to fully stabilize GHG concentrations, net global emissions have to decline to the level of persistent uptake by the biosphere and oceans, requiring reductions in the very long term by more than 95 % compared to 1990 levels. Setting a long-term or medium-term target, be it 50 or 80% reduction, requires a rigorous decision making process that involves stakeholder consultations on feasibility from economic, technical and societal points of view. It is important that each industrialized country initiates such process soon to set an ambitious goal first and then identify feasible targets at national, sectoral, provincial and/or individual levels. However, it is inadvisable at this stage and potentially counterproductive to negotiate a quantified long-term target internationally.

From a developing country context, discussion on setting absolute emission targets at a national level sounds premature due to their low per capita emissions and competing priorities of poverty alleviation and development. However, climate-friendly investments and technological innovations in developing countries can change the direction of their emissions growth and offer measures to decouple the historical linkage between growth, energy intensity and carbon output. As a start, scientifically-sound sector-based emission reduction targets may be appropriate for developing countries. Since climate change is not yet a priority in many countries, it is important to raise societal awareness of the issue within the context of sustainable development. Proactive mitigation efforts in developing countries coupled with demonstrable progress in emission reductions in developed countries should ultimately lead to a world wherein dangerous anthropogenic interference with the climate system can be prevented without dangerously interfering with socio-economic systems.
I am a senior economist in the Energy Strategy Unit in the Department of Trade and Industry in London. I have worked in the field of energy policy for the last six years and in particular area of climate change policy for the last four years. In total I have worked in a wide variety of posts in the Department over a period of 26 years.

I was responsible for managing the modelling work undertaken by Future Energy Solutions and Imperial College Centre for Energy Policy and Technology using the MARKAL model. This work provided significant analytical underpinning for the Energy White paper published in 2003.

I am currently involved in providing analytical support to the review of the UK Government’s Climate Change Programme introduced in 2000. The programme is designed to ensure that the UK remains on course to meet its domestic goal of achieving a 20% reduction in CO2 emissions by 2010 compared with 1990.

The presentation will start by outlining the origins of the analysis which lead to the acceptance by the UK Government of the recommendation that the UK should put itself on a path to a 60% reduction in CO2 emissions by 2050.

It will explain the modelling work undertaken for the 2003 Energy White Paper, using the IEA MARKAL energy model. This looked at the options for and costs of achieving the 60% reduction. It involved a wide range of economic scenarios and sensitivities, including variations in the assumptions concerning economic growth rates, fuel prices, technology costs and availability and in the rate of improvement in energy efficiency. These scenarios and sensitivities will be presented to the symposium and the key sensitivity results explained, including a broad roadmap towards achieving the 60% reduction.

The overall cost estimates from the modelling will then be compared with the results from other models of climate change abatement costs from different types of models. Finally, the presentation will also outline the results of more recent work commissioned by the Department looking at models of long-term abatement costs.
Doctor of engineering (Dr.-Ing.), was born in 1964 and studied chemical technology at the University of Dortmund with emphasis on energy and environmental technologies. He earned his Ph.D. (integration of renewable energies into the existing power plant system) at the University of Stuttgart where he worked from 1991 to 1994 in the academic staff at the Institute of Energy Economics and the Rational Use of Energies. Between 1993 and 1996 he was deputy chief of the department and leader and project coordinator of the "energy scenario and future technologies" group of the department and has different lectures in the field of energy and environmental sciences (for example: University of Wiesbaden and Witten/Herdecke). Since 2003 he is director of one of the four research groups of the Wuppertal Institute ("Future Energy and Mobility Structures") and head of a group of more than 20 scientist from different disciplines.

Dr.-Ing. Manfred Fischdeck
Deputy chief of the department Wuppertal Institute for Climate, Environment Energy
Leader and project coordinator of the "Energy Scenario and Future Technologies"
Michel Colombier is deputy director of the Institut for Sustainable development and international relations (IDDRI-Paris) and a member of the Scientific Council of “Fonds Français pour l’Environnement Mondial” (FFEM).

Michel Colombier is an energy specialist; he held position at the French Ministry of Economy, at the French Agency for Environment and Energy (Ademe) and was a French delegate at the Kyoto protocol negotiations. He co-authored the “Energy 2010 – 2020” report for the French prime minister. Formerly director of “International Conseil Energie” (ICE-Paris), he developed energy projects in developing and transition countries (China, Latin America, Africa and Eastern Europe) and was a member of the Scientific and Technical Advisory Panel of the Global Environment Facility from 1998 to 2001.

In France, several modelling exercises have been carried out recently. They aimed at drawing long term energy scenarios and assessing the impact on GHG emissions. Three of them will be presented:

-“Factor 4” scenarios for France for the Ministry of Industry (LEPII-EPE)
The POLES model has been used in order to simulate and analyse in details the consequences of a “Factor 4” reduction target for greenhouse gas emissions in 2050. This model is a dynamic partial equilibrium model, essentially designed for the energy sector but also including other GHG emitting activities. It has been built for the European Union.

-“Reducing CO₂ emissions fourfold in France by 2050” (Pierre Radanne) for the French Interministerial Task Force on Climate Change.
This study is a simulation exercise for 2050 which aims to discuss the conditions of a fourfold reduction in CO₂ emissions. It draws on a projection of energy consumption and CO₂ emissions by sectors and end-uses.

-An on-going project “Scenarios under carbon constraint” (IDDRI-CIRENE-LEPII)
This research project will draw on a simulation of the industrial sector change in a low-intensive carbon economy by 2050. Two models will be used : the Poles model and a general equilibrium model developed by CIREN.

We will conclude with the implications of these various exercises on the definition of long-term energy policies and how to design new modelling tools.
オランダ長期エネルギーシナリオと大幅なCO₂排出量削減戦略

最近行われているオランダの長期エネルギーシナリオと、温室効果ガスの大幅削減を達成するために考案されている政策手段について報告する。エネルギーシステムの推移およびオランダ政府のエネルギー研究開発戦略について議論する。プレゼンテーションでは、オランダのエネルギーシステムおよび政策手段の特徴について簡単に説明した後、これまでの経験から学んだことを紹介し、長期CO₂排出量削減戦略のための提案を行う。

Long term energy scenarios for the Netherlands and strategies to drastically reduce CO₂ emissions

The presentation will focus on recent long-term (2040) energy scenarios for the Netherlands and policies and measures that are under development or being considered to achieve drastic reduction of greenhouse gas emissions. This includes an introduction to the energy transition and energy R&D strategy of the Dutch Government. The presentation will start with a brief introduction of the key characteristics of the Dutch energy system and policy and measures that are in place. Lessons from the experiences so far will be drawn and the recommendations for long-term CO₂ mitigation strategies will be presented.
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科学技術・学術審議会地球環境科学部技術委員会委員長

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東京工業大学大学院社会理工学研究科社会システム専攻教授。専門は国際関係、地球環境政治、国際関係大学院高等研究員および国立環境研究所客員研究員、慶應義塾大学総合政策学部、同大学院政策メディア研究科修了。政策メディア博士。国際関係大学院高等研究員、北九州大学大学院文学部講師、教授を経て現職。プロジェクト「気候変化社会における中長期的政策オプションの多角的かつ総合的な評価・予測・立案手法の提示に関する総合研究プロジェクト」のサブチームリーダー、IASA(International Institute for Applied Systems Analysis) PIP(The Process of International Negotiation Program) Facilitation of the Climate Talks: Dealing with Stumbling Blocksプロジェクト等の研究プロジェクトに参加中。また、気候変動枠組条約国際会議や国連経済可能な開発委員会におけるサウスポイントなどで活発に発表を行っている。

Associate Professor, Department of Value and Decision Science, Graduate School of Decision Science and Technology, Tokyo Institute of Technology, where he specializes in global environmental politics and multilateral diplomacy. He also serves as visiting associate-professor at the United Nations University/Institute of Advanced Studies (UNU/IAS), as well as visiting researcher at the National Institute for Environmental Studies. He graduated from the Faculty of Policy Management of Keio University, and studied at its Graduate School of Media and Governance, where he received his Ph.D. in Media and Governance. He assumed his present post after working at the United Nations University Institute of Advanced Studies (UNU/IAS) as a Ph.D. Fellow and serving at the Faculty of Law and Policy Studies of the University of Kinakunyama as instructor and associate professor.

Currently, he is engaged in a general research project concerning the establishment of multilateral and general methods of evaluation, prediction and planning for mid- and long-term policy options for enabling society to avoid inducing global warming, as well as other projects including a project of the International Institute for Applied Systems Analysis (IIASA): The Process of International Negotiation Program (PIN), Facilitation of the Climate Talks: Dealing with Stumbling Blocks. Moreover, he actively speaks at sessions of the Conference of the Parties to the United Nations Framework Convention on Climate Change and associated events at the United Nations Commission on Sustainable Development.
Dr. Mikiko Kaima
Head, Integrated Assessment Modeling Team, National Institute for Environmental Studies, Japan (NIES)

Lead Author of Chapter 3 of IPCC Working Group 3
Received the master course of Kyoto Toky Univ. in 1975, Head, Global Warming Response Team at NIES from 1999 to 2001. From 2001, current position, Project Leader, "Special collaborative studies for the assessment of integrated sustainable development to mitigate climate change base on AIM (Asia-Pacific Integrated Model)"under Global Environment Research Program, Ministry of Environment

Dr. Junichi Fujino
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Research Project on Establishing of Methodology to Evaluate Middle to Long term Environmental Policy Options toward Low Carbon Society in Japan (Japan Low Carbon Society Scenarios toward 2050)Ah (FY2004-2008) sponsored by Strategic Research Development Project, Global Environment Research Fund, Ministry of the Environment, Japan

The first great step to prevent global warming was taken by Kyoto Protocol which came into effect on Feb.16, 2005. But it is necessary to reduce GHG (Greenhouse gases) emissions drastically to stabilize climate change. Japan is also required to assess its long-term global warming policy. A large part of social infrastructure is likely to be replaced by 2050. It would be possible to propose concrete policy packages including institutional change, technology development, and lifestyle change toward low carbon society.

This project focuses on the following issues: 1) long-term scenario development study to integrate environmental options consistently using simulation models, 2) long-term GHG reduction target setting considering effectiveness and validity, and 3) assessment of environmental options considering future socio-economic conditions in a) urban system, b) information technology (IT) society and c) transportation system.

We have the above 5 sub projects consisting of research experts in those areas. We have developed social and technically consistent middle and long-term global warming policy.

To show probable paths toward a low carbon society in Japan which is compatible with economic development, would enhance public interest and lead to social and lifestyle changes. We propose to offer the latest research findings.

We have developed the narrative storylines, their quantitative scenarios, and environmental options especially in urban system, IT society, transportation system till 2020. We have also simulated the required GHG reduction for Japan. We have investigated the scenarios toward 2050 with back-casting method. The desired Japan 2050 future images with 60-80% GHG reduction will be set and the path considering economic impact, technological possibility, institutional and lifestyle change will be simulated objectively and consistently.

[Researchers]
Project Leader: Shuzo Nishioka (NIES),
Team Leader: Mikiko Kainuma (NIES) for scenario study,
Norichika Kanie (ITTech) for target setting,
Keisuke Hanaki (University of Tokyo: UT) for urban system,
Jun Fujimoto(UT) for Information Technology based society,
Yuichi Moriguchi (NIES) for transportation system,
and about 50 other researchers.

Study environmental options toward low carbon society in Japan
環境省地球環境研究総合推進費 戦略的開発プロジェクト「脱温室化社会に向けた中長期的政策オプションの多面的かつ総合的な評価・予測・立案手法の確立に関する総合研究プロジェクト（2050年脱温室化社会プロジェクト）」
（平成16年度～20年度）

数値削減目標を伴った地球温室化対策は、2005年2月16日の京都議定書発効でその大きな一歩を踏み出したが、究極の目的である気候安定化のためには温室効果ガスの一層の排出削減が不可欠で、日本においても、長期にわたる継続した取り組みの方向性をできるだけ早く提示することが求められている。2050年頃には現在の社会インフラのないもののが変更されるであろう。今から長期の方向性を打ち出しておけば、都市、交通、産業などエネルギーに依存している現状の社会インフラを変更するための制度改悪、技術開発、ライフスタイルチェンジなどに関する具体的な政策を提案することができる。

そこで、本プロジェクトでは、日本における中長期温室化対策シナリオを構築するために、

1. 全体像を把握する長期シナリオ開発研究とシナリオで取り入れる対策、施策、
政策群の妥当性を検討する政策検討研究[シナリオ]
2. 中長期温室化対策のための削減目標を設定する判断基準検討研究[目標検討]
3. 都市対策「都市体系に応じた対策オプション研究[都市]
4. IT導入効果「IT社会のエコデザイン研究[IT社会]
5. 交通対策「技術革新と需要変化を見据えた交通対策研究[交通]

など技術社会的への今後の変化・発展予測を含めた様々なオプションを検討する
技術・社会イノベーション統合研究を行い、2050年までに見越した日本の温室効果
ガス削減のシナリオとそれに基づく環境政策の方向性を提示する。
これらの分野に専門性を有する研究グループが結集したシナリオ研究により、技術・
制度・社会システムなどを横断した整合性のある実現性の高い中長期温室化政策策
定に寄与する。また、経済発展と対立した温室化社会に到る道筋を提示すること
で研究者の社会的脱温室化政策への関心を高め、社会システム・ライフスタイル
の改善に役立つよう情報発信を行う。

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他合計60名の研究者が参加

気候安定化に向けて日本の取るべき対策は？