

S-3 Low-Carbon Society Scenario toward 2050: Scenario Development and its Implication for Policy Measures

2. Multi criteria on evaluating long-term scenario and policy on climate change (Abstract of the Interim Report)

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[Abstract]

This research addresses issues on medium to long term target-setting on climate change policy. In order to mitigate climate change, it is important to clarify a goal of mitigation activities. Last year's G8 summit mentioned a possibility of setting a target of 50% for the global GHGs reduction in 2050. This year we tried to identify the emission level and paths that can be implicated in this target. We also draw implications of such level of target for Japan. We found that all cases showed that there is no room to increase GHGs emissions after 2010, and that emission path leading to 2050 changes the level of temperature increase in 2100. Even in the case of halving global emissions in 2050, additional 1.5°C temperature increase is unavoidable. Therefore, adaptation is equally important as mitigation. In our cases of global differentiation, Japan needs to reduce emissions in 2050 by 72-92% from 1990 level in order to halve emissions in 2050.

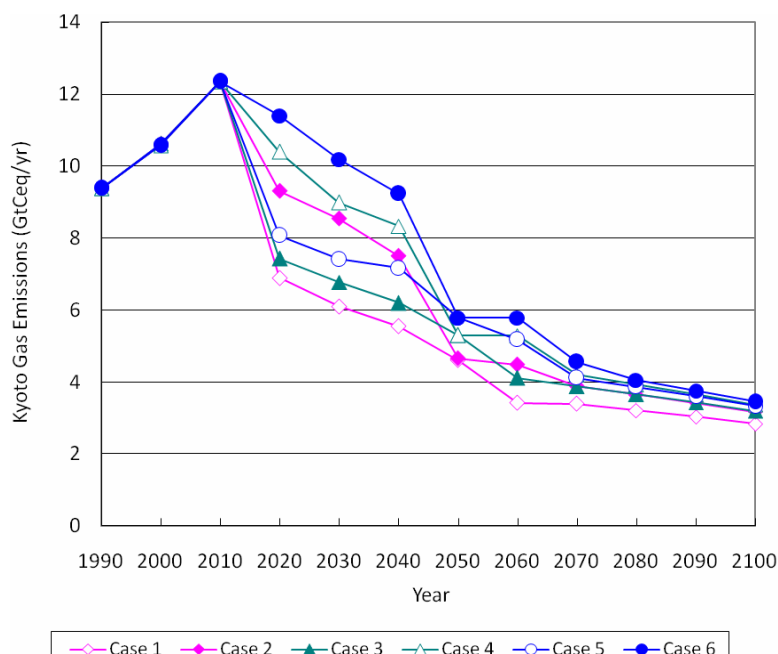
1. Introduction

The objective of the project team is to work on issues related to setting the stable GHGs level and the emissions reduction target in 2050 for Japan, as well as to identify the criteria for evaluating long-term scenarios. This includes 1) Japan's reduction targets for 2050 and their rationale (working on the global differentiation scheme), 2) target-setting process (working on ways to set socially acceptable target-setting process), and 3) Impact-Target Relations (providing robustness for the target in terms of impact of climate change, political feasibility and so on). 4) Other issues related to targets and criteria on mid- to long-term GHG reduction.

1. Methodology and the Results

The research is multi-disciplinary by nature, borrowing knowledge mainly from the study of impact of climate change, socio-economic modeling for GHGs stabilization and international relations. We have conducted literature surveys and interviews with key policy-makers and experts.

In establishing future targets for global-mean surface temperature, rises in sea level, and atmospheric GHGs concentrations, AIM/Impact[Policy] (1) projects the optimal GHGs emission path and GHGs reduction by region and (2) shows the scale of the warming impact by country and region under the optimal GHGs emission path, providing data for investigating whether established future targets are sufficient or not to avoid "dangerous impacts" (validity of future targets). It is an energy economic model estimating the optimal emission path for greenhouse gases. Global emission paths for halving (the world) emission are calculated as the following figure.



Parameters for this calculation are shown below.

Case	BaseYear	Discount R.	GHGs conc. level	Temp. increase (2100)
Case1	1990	4%	465ppm-CO ₂ eq	2.2
Case2	1990	5%	488ppm-CO ₂ eq	2.4
Case3	2000	4%	476ppm-CO ₂ eq	2.3
Case4	2000	5%	499ppm-CO ₂ eq	2.5
Case5	2004	4%	488ppm-CO ₂ eq	2.4
Case6	2004	5%	499ppm-CO ₂ eq	2.6

We also calculated implications of such emission reduction to Japan. The result is as

follows.

Japan's required emission reduction in 2050 (per capita)

	2050		2030	
	1990 level	2000level	1990 level	2000 level
Case1 (2.2°C)	85.2%	85.9%	65.4%	67.2%
Case2 (2.4°C)	85.0%	85.7%	51.6%	54.1%
Case3 (2.3°C)	82.9%	83.8%	61.9%	63.9%
Case4 (2.5°C)	82.9%	83.8%	49.5%	52.1%
Case5 (2.4°C)	81.4%	82.3%	58.6%	60.7%
Case6 (2.6°C)	81.4%	82.3%	43.1%	46.0%

Japan's required emission reduction in 2050(Equal per capita in 2100)

	2050		2030	
	1990 level	2000 level	1990 level	2000 level
Case1 (2.2°C)	78.2%	79.3%	63.2%	65.1%
Case2 (2.3°C)	78.0%	79.1%	48.6%	51.2%
Case3 (2.2°C)	75.0%	76.3%	59.2%	61.3%
Case4 (2.4°C)	75.1%	76.3%	46.0%	48.8%
Case5 (2.3°C)	72.8%	74.2%	55.5%	57.7%
Case6 (2.6°C)	72.8%	74.2%	38.8%	41.9%

Japan's required emission reduction in 2050(Equal emission per GDP improvement rate)

	2050		2030	
	1990 level	2000 level	1990 level	2000 level
Case1 (2.2°C)	92.0%	92.4%	79.4%	78.3%
Case2 (2.3°C)	91.9%	92.3%	71.2%	69.6%
Case3 (2.2°C)	90.8%	91.3%	77.1%	75.9%
Case4 (2.4°C)	90.8%	91.3%	69.7%	68.1%
Case5 (2.3°C)	90.0%	90.5%	75.0%	73.7%
Case6 (2.6°C)	90.0%	90.5%	65.6%	63.8%

In order to set such level of target in a sustainable manner, stakeholder participation in the decision making process is necessary. We also work on designing of stakeholder dialogue in Japan for obtaining consensus among stakeholders on long-term climate change policy goals to reduce greenhouse gases emission. The problem is that there is no standard guideline or methodology to follow in the facilitation of stakeholder dialogue. Under the circumstances, it becomes important to research on available methodologies, examine how they are useful for the

case of the dialogue in Japan, and design the dialogue based on the selected and agreed methodologies for application. It appears in the last year's progress of the project that the methodologies for facilitating stakeholder dialogue are investigated in two separate areas of academic study. The first area is so called "transition management" and "system innovation theory" being developed in the Netherlands. In the Netherlands, there was a stakeholder facilitation project (Cool project: Climate OptiOns for the Long term project) to investigate options for a long-term climate change policy. The project was designed partly based on the methodologies proposed in the area of transition management. The second area is the area of international public policy handling development issues as well as conflict solution issues in the developing countries.

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