

## **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**

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#### Summary

This research project addresses issues on medium to long term objective-setting on climate change policy. It includes looking into ongoing international debate on mid- to long-term objective setting and criteria for evaluating long-term scenarios. Our research also includes various ideas for differentiation scheme, and draw implications for Japanese target. It turns out that from this year's research that, according to the existing research, Japan's GHG reduction target in 2050 is at least 80-90% as compared to '90 level in order not to exceed 2 °C global mean temperature increase from pre-industrial level. In comparison to growing number of countries setting national mid-/long-term targets, skepticism also exists in setting international mid-/long-term targets.

#### 1. Research Objective

The objective of the project team is to work on issues related to set the GHG stabilization level and the emissions reduction target in 2050 for Japan, as well as to identify criteria for evaluating long-term scenarios. This includes 1) a work on the global differentiation scheme, 2) a work on ways to set socially acceptable target-setting process, and 3) to provide robustness for the target in terms of impact of climate change and political possibilities and so on.

#### 2. Research Outline

The research team is composed of three components as shown in the Figure 1. As it is the impacts of climate change, including temperature rise that make us realize that climate is changing, our team also includes a sub-team that evaluate the scientific state of knowledge on the impact of climate change. This team also includes scientific evaluation of inter-relations between the impact of climate change and atmospheric GHG concentration level. On the other hand, it is human induced climate change that is

recognized as the problem, GHG emissions reduction depends very much on the institutional framework to tackle with climate change. Therefore, we have a sub-team that looks into long-term, as well as shorter-term, international institutional framework and politics. This team also looks into regime building-process and social conditions that make the long or medium term target setting possible. The team also investigates into criteria for long-term scenarios. Furthermore, it is now widely recognized that deciding “what is the dangerous level of climate change” is a matter of value judgment. Thus, our last component looks into the way through which value judgment is incorporated into decision-making process.

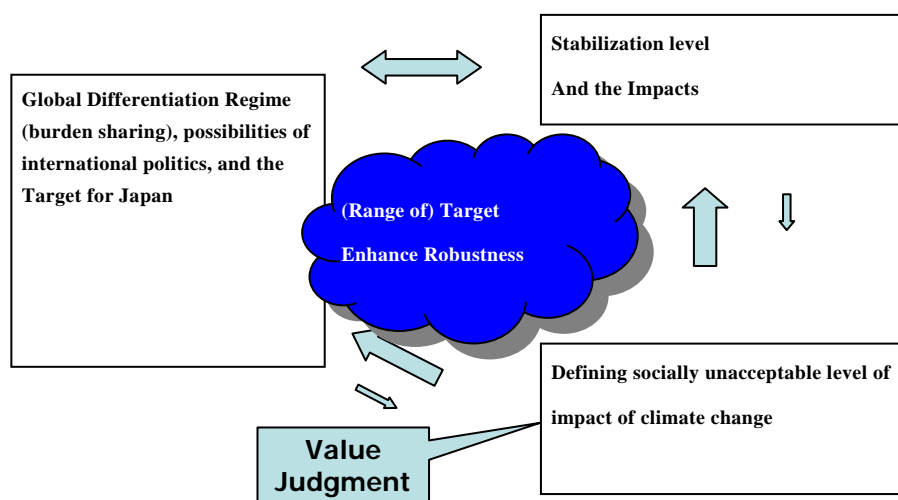


Figure 1. Three components of the project team

### 3. Results

Various countries and regional institution, such as the EU, UK, Germany, France and Sweden has already set up their respective long to middle term targets for climate change. Also, growing number of companies start to set targets. With closer investigation into EU target setting process, we have found out that there has been two periods of time in 1996, and 2001 and after when middle-long term target has become an issue of European political debate. In both time, the interaction between science and politics played significant role. Also especially in the current debate on the long-middle term targets after 2001, value judgment has drawn significant attention.

According to the approaches that were used for background reports of European countries' long-term target setting and other recent research results, possibilities for setting a Japanese target goes at least around 70-80% reduction of GHG as per 1990 level in order not to exceed global mean temperature rise of 2 from pre-industrial level. This reduction target changes, of course, depending on which stabilization level to aim at. In other words, it depends on what is considered at the dangerous level of climate change. Table 1 shows implication for Japan from the results of existing research on long-term target (Hohne et al 2004, den Elzen and Berk 2004).

Table 1. Japanese reduction targets for 2050 as per 1990 level (CO<sub>2</sub> and 6GHG)  
 CO<sub>2</sub>

Stabilization level	Multi-stage	C&C	CDC	Triptych
400	-84.05%	-77.34%	-88.31%	-84.06%
450	-81.45%	-71.67%	-77.68%	-69.10%
550	-62.65%	-45.23%	-52.16%	-46.47%

GHG

Stabilization level	Multi-stage	C&C	Brazilian Proposal	Triptych
550	-70.63%	-74.35%	-74.08%	-65.26%
650	-45.33%	-55.30%	-61.87%	-23.27%

Source: Hohne et al 2004, den Elzen and Berk 2004

It should also be noted that in comparison to growing number of countries setting national mid-/long-term targets, skepticism exists in setting international mid-/long-term targets. This paper argues the importance of international aspiration targets for changing norms and to stimulate behavioral change.

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