

Cover sheet

Stabilisation Level, Burden-sharing Regime, and Long-term Target - A Challenge to Set Japan's Long-term Target for 2050 -

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Norichika Kanie, Yasuko Kameyama, Yasuaki Hijioka and Shuzo Nishioka

Corresponding Author: Norichika Kanie

Associate Professor

Graduate School of Decision Science and Technology

Tokyo Institute of Technology

2-12-1-W9-43 O-okayama, Meguro-ku, Tokyo 152-8552, Japan

Tel/Fax: +81-3-5734-2189

Email: kanie@valdes.titech.ac.jp

Stabilisation Level, Burden-sharing Regime, and Long-term Target - A Challenge to Set Japan's Long-term Target for 2050 -

Norichika Kanie¹, Yasuko Kameyama², Yasuaki Hijioka², and Shuzo Nishioka²

1: Tokyo Institute of Technology, Tokyo, Japan

2: National Institute for Environmental Studies, Tsukuba, Japan

Abstract

In order to draw from a stabilisation level a long-term target for 2050 in a particular country, a burden-sharing scheme is necessary that could distribute to each country total global emissions. This study proposes an option to set a Japanese emissions reduction target for 2050 by employing a few burden sharing schemes such as “graduation” scheme and “per GDP emission target” scheme. The results show that a target for Japan drastically changes as the rules of the game changes, and therefore, we propose to present a range of target that is divided into three levels. The three-level target includes the political uncertainties with regard to burden sharing as well as a few other scientific uncertainties. With a target of this kind, awareness can still raise, capacity to understand the long-term nature of the issue may be built and perceptions of the people may change, while avoiding an intense controversy.

In order to draw from a stabilisation level a long-term target for 2050 in a particular country, we need a burden-sharing scheme that could distribute to each country a total sum of global emissions. This study proposes an option to set a Japanese emissions reduction target for 2050 by employing a few burden sharing schemes. We conclude that showing a range of target (e.g. three level targets) is preferable for a country like Japan to showing the only one target figure. The study concentrates on the case for Japan, but the same approach may be applied to set a target to a country in a similar situation as Japan, where controversies between people concerned about environmental interests and about economic interests are rather intense.

1. Lessons learnt from the European experience

The European Union has a stated goal of limiting global warming to 2 °C above the pre-industrial mean temperature, and growing number of leading European countries in the field of environmental policy also tends to aspire their goal to limit warming to 2 °C in combination with 450 to 550ppmv CO₂ eq. concentration

level [6, 7]. However, starting with IPCC with uncertainty ranging from 1.5 to 4.5 for climate sensitivity, there has been little scientific evidence showing that either 2 or 450 to 550ppmv concentration level is the level “ that would prevent dangerous anthropogenic interference with the climate system ” (Article 2, UNFCCC). After all, long-term targets aspired by the EU or some European countries are political aspiration rather than scientifically evidenced goal to aspire.

Setting a political target is possible in Europe where environmental movements have “built-in” to the society to a certain extent. Unlike European cases, however, countries such as Japan, where controversies between people concerned about environmental interests and about economic interests are rather intense even at the governmental level, need some other approach for setting a target. In this study we propose to set a range of target by three levels.

2. A Challenge to set a target for Japan

There are at least three kinds of variations / uncertainties accompanied with setting a long-term target in a particular year such as 2050 for Japan [Figure1]. These variations and uncertainties are derived from scientific as well as political uncertainties.

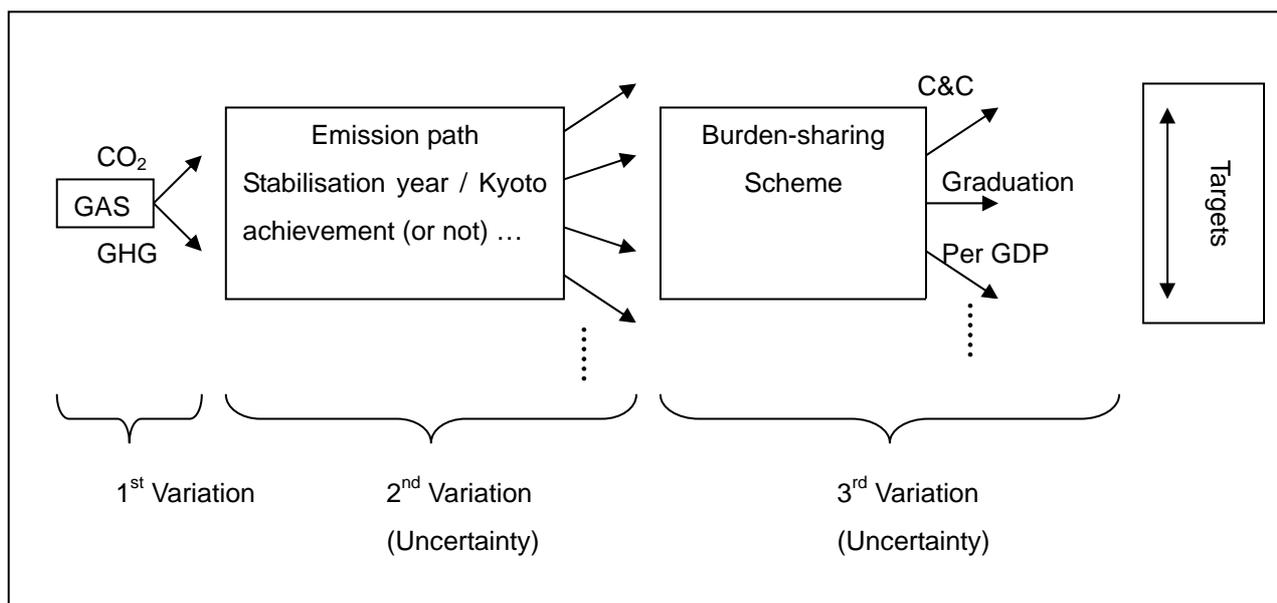


Figure 1 Three kinds of uncertainties and targets

First, there are at least two variations with regard to the stabilisation level itself: different gas coverage (CO₂ only or six GHGs) leads to different targets in terms of CO₂ eq. concentration level [Figure 2]. Second variation comes from a difference in emission path: even though stabilisation level is set, there are different paths to reach that level (e.g. as the stabilisation year changes). The third kind of variation lies in the burden-sharing scheme: that is, the form of future climate change regime. Apart from the stabilisation level

debate that is basically viewed in the global scale, a country-specific target needs to entail a burden-sharing scheme in order to draw it from global stabilisation level. As we have seen in the debate on international regime beyond 2012, there is a policy and political uncertainties about whether or not global burden sharing scheme such as (an extension of) the Kyoto-type regime is possible, and even necessary, in the long-run. Such an uncertainty should also be taken into account when dealing with a long-term target.

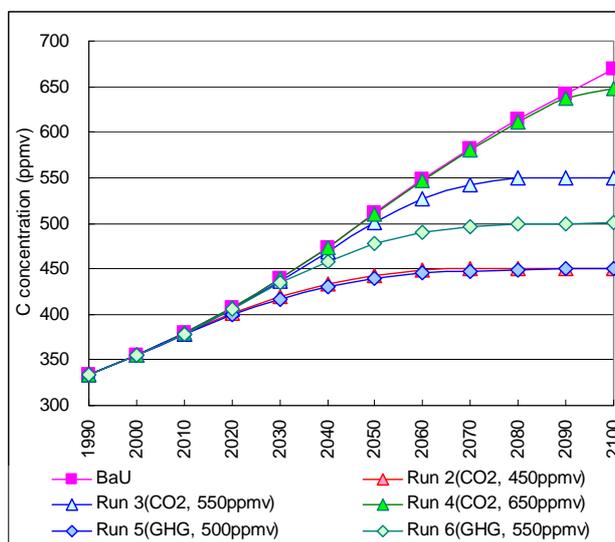


Figure 2 Various CO₂ concentrations [8]

3. Presenting a target range

In order to move one step further for more robust target-setting before sceptics, we propose to include these variation and uncertainties into the target itself, and present a target with a certain range. The following analysis will be presented. On the gas coverage, we take up the case for CO₂ only and for six GHGs that are included in the Kyoto Protocol. For each of these cases, we apply a few emission paths. With regard to burden-sharing scheme, we have chosen a “graduation” scheme, “per GDP emission target” scheme, and “contraction and convergence (C&C)”, which has frequently been taken up in the case of European target-setting [1, 3]. Stabilisation level is tentatively set for a certain level such as 500 or 550 ppmv.

The results show that a target for Japan drastically changes as the rules of the game changes. Also, although we have tentatively set the stabilisation level in this study, eventually we need to further identify the level of the impact of climate change at which Japanese people and society would (not) accept, and combine it with the stabilisation level, as has been done in the Netherlands [6, 9]. It is assumed that there would be a range of different perceptions on the levels of tolerable impacts among variety of group of people in the society in this regard.

4. A three-level target

As a conclusion of the current study we propose to present a range of target divided into a few levels for Japan. This, possibly three, levels of target includes the political uncertainties with regard to burden sharing. By setting a rather “soft” target (as compared to setting one figure as the target) as our three-level target, still awareness can be raised, capacity to understand the long-term nature of the issue may be built and perceptions of the people may change, while avoiding an intense controversy. It can also help considering long-term direction of the society that may affect day to day decision-making at a grass-roots level. If one of the grounds for setting a long-term target lies on showing the overall direction to the society, and taking into account that there are scientific and political uncertainties associated with the long-term target and “laggards” always tend to take up the uncertainties for reasoning their inaction, the purpose of long-term target can still be achieved by a three-level target. Of course, the three-level target needs to be associated with climate change impacts for each level eventually. The range of the three levels will be narrower as the scientific uncertainty removed.

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