8. A Climate Regime Beyond 2012

A variety of proposals have been made relating to commitments under the next climate regime, and it is important to scientifically analyze their advantages and disadvantages from a broad perspective. This section summarizes key points regarding commitments, and also introduces features and issues regarding adaptation that must be considered in the design of the future climate regime.

8.1 Proposals Regarding Commitments

A variety of proposals have been made relating to commitments under the next climate regime, and it is important to scientifically analyze their advantages and disadvantages from a broad perspective. In regards to the targets, it is possible to set the long-term, medium-term, and short-term targets. By setting these targets, it is expected that thei will help countries achieve their concrete emissions reductions, the diffusion and development of technology in the medium-term, and achievement of the ultimate objective of the UNFCCC.

When countries consider different options for commitments, it is important to have criteria in order to evaluate the proposals. There are a number of criteria for evaluation, and one of the major topics in future will be on how to conceptually organize the tradeoffs and prioritization of these criteria in order to assist the evaluation.

<Positioning of the Proposals on Commitments>

○ In the discussions concerning the future regime, the form of the commitments is one of the major elements. Indeed, various proposals that are already presented publicly suggest the forms of the commitments. Therefore, this section discusses the proposals on the commitments in the future regime. .In order to secure equity, however, it is more realistic to ensure equity in a comprehensive way by structuring the overall future climate regime to consider various factors, such as fund for developing countries and special consideration to the circumstances of the countries with vulnerability, rather than simply through the setting of emissions targets.

<Elements of Proposals Regarding Commitment>

○ Key elements of the proposals regarding the commitments can be listed as follows.

- Long-term targets
- Medium-term targets
- Short-term targets
- Policies and measures
- Target actors and the form of the agreements
- Types of the commitments
- Differentiation of the commitments
- Supplemental Measures for the commitments

The proposals regarding the commitments will be compiled as a package combining various elements.

○ Regarding the targets, it is possible to choose an approach that establishes the long-term, medium-term, and short-term targets and creates strategies for each target, including scenarios, technology development and diffusion, and social system creation. In this way, it can be expected to develop effective plans to make progress with the effects of the actions in the short term, technology development and diffusion strategies in the medium term, and achievement of the ultimate objective of the UNFCCC in the long term. In addition, in order to set the concrete targets and plans, it is essential to analyze the strengthes and the weaknesses of the options, such as setting all the targets simultaneously and separately.

○ The key issues for discussion on the long-term targets will be not only their levels, but also the targets of actions (i.e., GHG concentrations, emissions amounts, or temperature increase, etc.) and their timeframes. For example, the European Union has set a maximum temperature increase of 2 degrees Celsius and a target atmospheric concentration of 550 ppm (CO2 equivalent) for all GHG specified under the Kyoto Protocol. In order to make the climate change measures, strategic and effective for the long-run, it could be beneficial for the world to agree on setting such numerical medium and long-term targets.

○ Regarding the medium-term targets, the key issues for discussion will be the target of the GHG emissions for the entire world. There are some other issues that should be addressed, such as the timing of when global GHG emissions should start declining, what the total annual emissions will be, and what the emissions of the world's major emitters will be at that time.

○ Regarding the short-term targets, besides the issues mentioned for the medium and long-term targets, several issues, including the target gases, the treatment of sinks, the treatment of emissions from bunker oil (used for international aviation and international shipping), and the commitment period, should be discussed. Even when discussing solely the proposal on the emissions targets, there are several options to be considered, such as total emissions, emissions intensity, per capita emissions, and cumulative historical emissions.

○ Regarding medium-and short-term targets, various proposals have been made regarding the issues of setting the common policies and measures. This could also be the topic of future discussions. Besides, there are several concrete proposals on issues including, energy efficiency standards, the amount of renewable energy introduced, efficient resource use, world-wide introduction of carbon taxes, abolition of fossil fuel subsidies, technology development, cooperation and transfer; and adaptation measures.

○ There are various approaches on several issues, such as the targeted actors (global scale, regional, national government, local government, private sector, or specific industrial sector), the form of agreement (multilateral such as within/outside the UN or within/outside the UNFCCC; inter-regional; or bilateral), and the format (legally binding or non-binding, measures for non-compliance).

○ Regading the differentiating national commitments, a key point of discussion will be about how their commitments should be differentiated. An approach is suggested to set different commitments dipending on different stages, and when a country achieves the threshold point of a certain stage (graduation index), it will advance to the next stage.

○ As for the supplemental measures for the commitments, various approaches are being presented. For example, flexible measures, such as banking from the previous and borrowing from the next commitment periods, utilization of market mechanisms such as in the Kyoto Mechanisms, and a “safety valve” approach that would lower the targets once the costs for achievement exceeded a certain value.

<Evaluation Criteria for Proposals on Commitments>

○ When countries consider the different options for the commitments, it is important to have

criteria in order to evaluate the proposals. Some examples of such criteria for evaluating such proposals are as follows:

- Environmental integrity
- Equity
- Cost-effectiveness
- Political feasibility
- Implementation feasibility (implementability)

In future, it is crucial to conceptualize how to treate the tradeoffs and prioritization of these criteria in order to assist the evaluation.

○ What needs to be emphasized here is the genuine need of the criteria that respect environmental integrity. It is important to remember that GHG emissions reductions are needed on a global scale, and whatever kind of commitment is chosen, emissions predictions should be the top priority. For example, if the long-term target is set at limiting the temperature rise from global warming to 2 degrees Celsius, and the average climate sensitivity 2.5 is chosen, GHG emissions must peak in 2020 and then, be reduced to the 1990 level by around 2030. In this case, developed countries must reduce emissions significantly, and developing countries must start their efforts to reduce emissions even if their levels of per capita income are still considerably below the level at which developed countries started reducing emissions.

○ Also, when it comes to criteria for ensuring equity, there are crucial issues including ensuring basic needs, economic capability, responsibility for past emissions, and emissions rights (sovereignty, acquired rights, etc.). Regarding these points, it is necessary to evaluate the priorities for each of them.

○ When designing a climate regime beyond 2012, it is also necessary to adequately consider the issues of credibility in international negotiations, as well as incentives for action. For example, if the Kyoto Protocol regime were to be scrapped completely, there would be considerable damage in the credibility that makes future negotiations much more difficult. Although proposals have been made for maintaining the Kyoto Mechanisms but without numerical targets for emissions reductions, it ceases to function unless international agreements will be made to establish innovtative system on incentives that can substitute for the numerical targets.

Examples of Proposals on Commitments

Insitutions like RIVM of the Netherlands have analyzed three proposals on commitments, namely, Per Capita Convergence, the Brazilian Proposal, and the Multi-Stage Approach, to identify each of their strengthes and weaknesses. The characteristics of these three proposals are as follws:

Table 8.1 Examples of Proposals on Commitments

Per capita convergence	• Emissions rights will be allocated equally based on the principle that the atmosphere is a common good., • Per capita emissions converge in 2050 or 2100. • Respect the principles of equity and sovereignty • Proposal has gained a certain level of support from developed and developing countries
Brazilian Proposal	• Differentiate in terms of the contribution to temperature increase • Initial goal of the proposal: To demand historical responsibility of developed countries • The only framework being considered under the UNFCCC • Assessment may vary considerably depending on reference year, starting year, types of gases, and whether or not to count forest sinks/emissions
Multi-Stage Approach	• Step by step commitments for each country – Stage 1: No obligation for quantitative reductions – Stage 2: Emissions intensity target (CO2/GDP) – Stage 3: Stabilization of emissions – Stage 4: Emissions reductions (differentiation with emissions per capita) • Unlimited variations for the units to determine the threshold (graduation index). E.g., a combination of per capita GDP (purchasing power parity) and per capita emissions.

8.2 Adaptation: Key Points and Issues

A number of issues arise regarding adaptation to climate change. Some of these include the role of adaptation as complementary measures to mitigation; how to distinguish between the projects on adaptation to climate change and those on infrastructure management; and how to incorporate climate change adaptation into other policies and development plans.

<The Need for Adaptation>

○ A certain degree of impact of global warming is inevitable, given that it is not realistic to expect immediate large GHG emissions reductions and stabilization of GHG concentrations at the current level (about 370 ppm). Thus, when seeking agreement on the stabilization level of GHG concentrations, it is necessary to think about not only reducing GHG emissions (mitigation), but also adapting to the impacts of climate change (adaptation).

○ Regarding the adaptation measures, unlike the mitigation measure that many concrete proposals on the commitments have made, there has not made any such proposals yet. Therefore, this section focuses on indentifying the key issues regarding adaptation measures.

<Key Points Regarding Adaptation>

○ The IPCC Third Assessment Report (2001) recognizes adaptation as being complementary to mitigation, and provides the following comments:

- Adaptation has potentials to reduce adverse impacts of climate change significantly and enhance beneficial effects, but will not be able to prevent all damages.
- Natural systems are only allowed to adapt to climate change *ex post* while human systems have the ability to make anticipatory adaptations.
- Planned adaptation can reduce vulnerability and offer the potential to take advantage of available opportunities.
- Adaptation to current climate risks (e.g., drought, severe storms, flooding) also works as adaptation measures to climate change.
- The costs of adaptation often are marginal to other management or development costs.

- To improve the effectiveness of adaptation to climate change, it is necessary to consider the stresses other than climate, and ensure consistency with existing policy criteria, development objectives, and management systems.
- The ability to adapt differs by region, country and social group. It also changes over time.
- The ability for adaptation depends on wealth, technology, information, skills, infrastructure, management capabilities, and access to resources.
- Activities required for enhancement of adaptive capacity are essentially equivalent to those promoting sustainable development. Climate adaptation and sustainability goals can be jointly advanced by policy changes that lessen pressure on resources, improve management of environmental risks, and enhance adaptive capacity.
- Policy making, implementation and planning of development measures have a huge impact on trends in adaptive capability.

○ Adaptation is a serious issue for not only developing countries but also developed countries. It is important to note, however, that some countries, such as small island states, are extremely vulnerable to climate change and sea level rise while their contribution to the global GHG emissions is extremely small. For those countries, adaptation must be the main response to climate change in contrast to the situation of many developed countries.

<Key Issues Regarding Adaptation>

○ The starting point of discussions about adaptation is the role of adaptation measures as a climate change response that complement mitigation. In other words, it is necessary to answer what could the best combination of mitigation and adaptation be. When addressing this problem, it is important to give adequate considerations to the differences in the key features of adaptation and mitigation, as shown in the table below.

Table 8.2 Comparison of Mitigation and Adaptation

	Migitation	Adaptation
Impacts and scope of measures	Global	Local
Time until effects are felt	Long	Relatively short
Criteria	Amounts of the GHG emissions reduction and the increase of sinks	No common measure to evaluate the adaptation to different impacts
Target countries	Major emitting countries	All countries, particularly the vulnerable developing countries

○ A second issue regarding adaptation is how to distinguish between the projects on adaptation to climate change and those on infrastructure management It is also essential to define "adaptation".

Present infrastructure, whether it be urban or agricultural, has been designed based on the assumptions of relatively stable climate condition for the past several decades or recent centuries. Meteorological events that exceed these stable climatic assumption generally called as "abnormal" or "extreme" weather events. "Extreme weather" is a weather pattern that occurs only rarely, not regularly. However, it is predicted that, as a result of global warming, the occasions that are now classified as extreme become more frequent, and this trend is expected to continue in the future. Therefore, the assumptions for infrastructure design and improvements will have to change dramatically. If there will be a need to upgrade infrastructure in response to climate change in near future, there will be pressing needs for huge financial resources in both developed and developing countries.

Even if it remains difficult to specify the impacts of anthropogenic climate change, a realistic approch is to seek for the response measures by formulating the questions in a way like, where an impact is obviously causesd by climate change, and the impact will be beared by the area that is extremely vulnerable to the impact of climate change.

○ Third, it is also important to consider how to incorporate adaptation into other policies and development plans. It is clucial to not only integrate climate change adaptation into national development plans and disaster prevention plans of individual countries, but also link it with other international frameworks in fields other than climate change responses, such as disaster prevention.

○ Discussions concerning where responsibility lies for implementation of adaptation and cost sharing are also crucial. It is indeed difficult for a country to work alone to respond to climate change. For developing countries, in particular, regional and international cooperation are essential for taking any response measures. When considering the form of cooperation, it is necessary to take country-specific needs concerning adaptation responses, capacity building, and international cooperation into account. Moreover, in designing such adaptation measures, it is essential to make use of each region's local conditions, traditional frameworks for mutual help, and local technologies.

○ Finally, based on the needs for the maximum use of the limited resources, it is also possible to include the adaptation components into the exiting ODA framework. This allows a country to use ODA more effectively in achieving its objectives.