"The Mid- to Long-Term Global Vision for Challenges against Global Warming"
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The Canon Institute for Global Studies (CIGS)

<Panel Discussion>

1. Presentation

Tetsushige Nishio

Social change approaches for achieving a low carbon society

- There are lots of research results on the reduction scenario. Therefore, it is important to discuss them in order for us to improve our understanding of climate change issues, just like we are doing in this symposium.
- Japan has announced a mid-term reduction target of cutting greenhouse gas emissions (GHG) by 2050 from 1990 levels, while proposing the "Hatoyama Initiative" to help developing nations achieve their emissions reduction target. This initiative will surely develop our incentives to ensure that Japan play a leading role in discussions to formulate a new international framework for curbing emissions from 2013 after its 2012 expiration date.
- Japan needs to urgently examine ways and means to achieve this mid-term target.
- Examination on the emission reduction measures and strategies for the 2050 long-term target is essential, not to mention the 2020 mid-term target. Hence, AWG-KP and AWG-LCA should collaborate, while ensuring their consistency, for continued discussion in order to find strategies for making long-term changes in existing economic and social systems.
- Social change is premised on advancing energy supply technologies and energy conversion. Strong instigation for its starter is most important.
- Policies needed for the social change include domestically promoting green policies, which is famously known as the "Green New Deal". What is most important here is that the government clearly expresses strong political will and provides incentives in bringing about the change.
- You can see, for instance, ongoing international competitions in electrical vehicle, as one

of various efforts for achieving a low carbon society. Even though Japanese energy-efficient technologies are among the most advanced in the world, should Japan neglect making efforts to stay internationally competitive, the result is blindingly obvious: we unknowingly lose out in the competition. To avoid such worst-case scenario, we need continuous efforts for achieving a low carbon society

- Internationally, taking up a co-benefits approach on antipollution measures and energy policies in emerging and developing countries is important. Japan, in its history, has proven that a country can balance new energy conservation measures and antipollution measures during the time of rapid economic growth.

Mitsudo Urano

- Japanese domestic business communities recognize the new Hatoyama administration's challenge of the 25% reduction initiative as its strong willingness to contribute to the post-Kyoto policy framework. However, ambiguities seen in this target are creating confusion among the business communities.
- The following three issues should be solved in order for the Hatoyama 25% target to be achieved.
  - International fairness

    The developing countries also should set some numerical targets to strive for the fairness with the industrial countries. On the other hand, the fairness among the industrial countries should be strived using marginal abatement cost.
  - Innovations in energy supplies

    Nuclear energy, among those energy sources producing very low levels of carbon dioxide emissions, should be steadily promoted. Facilitating domestic consensus-building on nuclear safety and committing to support capacity building needs of young generation remain as issues to be further addressed.

4.4 Compliance

- A compliance mechanism is put in place to ensure that commitments on delivery of these means of implementation.
  - Issues on establishing specific policies and regulations

Effective and specific policies/systems

Designing effective policies and institutional scheme that promote a shift for a low carbon society (e.g. ETS or CDM) is necessary.

Huaqing Xu

- Discussion on long-term target
  - Our discussion should adhere to "the basic framework" set up in the UN Framework Convention on Climate Change (UNFCCC), signed by more than 150 countries in 1992, and the principles of UNFCCC-endorsed "common but differentiated responsibilities" and the principle of capacity and fairness.
  - In addition, besides mitigation, adaptation is also very important. In the sense, the technology deployment and transfer will play an important role.
  - The historical responsibility (accumulated emission), growth space for the developing countries, and the scientific evidence for the numerical targets (2°C, 450ppm, double 50 and the base year, etc.) should be carefully examined when discussing long-term target and burden sharing.
- Establishing of mid-term target
  - First of all, it is essential for countries involved to politically share common awareness of each country's reduction potential by 2020. In other words, developed countries need to take lead in emissions reduction efforts and set practical examples that developing countries can follow. Developing countries maintain their reduction obligation in accordance with their development level, capacity and responsibility. In that sense, the 25% target of Japan is excellent.

    Emission reductions achieved should be given serious consideration in target-setting. CO2 emissions in many of the Annex1 Parties increased since 1990, and the target has not been achieved.
  - The average mid-term target announced by the industrial countries is 15-22%, which is not enough compared with the demand of IPCC-AR4, even though Japan and Norway announced 25% and 40% reduction target respectively.
- China's mitigation efforts

- On 3rd June 2007, Chinese government ratified the National Climate Change Programme. This programme aims to make significant achievements in emission reductions in designated six main fields to control GHGs in the 11th five-year period (2006-2010).
- On 27th August 2009, the National People's Congress (NPC) Standing Committee approved the Congressional Resolution on Actively Tackling Climate Change, deciding to include such items as low carbon economy, mitigating climate change, and reduction action into the national social economic plan, to promote the budget strengthening of all levels of governments and the improvement of laws and legislations.
- National action programme, so called "Ten Key Energy-Efficiency Projects" initiative was incorporated into China`s latest economic plan promoting energy-efficient technology and products, exploiting renewable and clean energy, and cutting GHG emissions in industry process to name a few.

2. Discussion

Topics

(1) Sharing of the scientifically prescribed GHG emission pathway by 2050
(2) Technologies in energy supply
(3) Carbon market

Contents

(1) Sharing of the scientifically prescribed GHG emission pathway by2050
    －uncertainty of science
    －conditions of sharable pathway
    －relation between science and politics

- Science is not a uniform thinking, and it is not simple to bring harmony to the scientific views.

- We don’t yet have full understanding of carbon cycle. There are still many uncertainties
- Climate model projections are not completely free of uncertainties, and the carbon cycle is part of that.
- If the temperature rise was set to 2 degrees, then uncertainty would occur on the estimation of emission. On the other hand, if the global accumulative emission was determined, then uncertainty would occur on estimating the temperature rise.
- The target of avoiding temperature rise below 2 degrees should be discussed with caution, because it is a sense of probability.
- It is important for us to realize the uncertainty of science, and go ahead to solve the problems based on the analyses of IPCC.
- There has been a global common agreement on both necessity and difficulty of emission reduction.
- Accurate monitoring of GHGs emission in main countries is necessary, at least main regions. Policies should be made based on the accurate air measurement using the method agreed by countries, and verification of models. It is important to include the verification strategy into the future international conventions.
- From global viewpoint, it is important to grasp the whole image of the global carbon cycle rather than the measuring emissions individual countries.
- Most important thing, that the science indicates, is that the CO2 emission should reach its peak around 2020 and then decrease.
- It is necessary to use the same time span to discuss the scientific issues from the viewpoint of fairness
- The accumulative emission should be considered when discussion preventing the global warming. That is an important scientific view.
- From the viewpoint of fairness, it is important to try to convergent the emission of per capita. Based on that, if the industrial countries took action first and achieved large technical progresses, then the developing countries would follow.
- The country leaders have obtained the chance to get together, talk about the climate change, and understand each other better thanks to the financial and economic crisis.

Awareness of people of climate change has been improved, and involvement of industries is getting better. First step to solve the problem is that science supports the politics.

- There are gaps among science, politics, and reality. The policy and measures are important for overcoming these gaps, therefore the politics will play an important role.

Summary

- Discussions were carried on from the viewpoint of sharing scientific view, based on the GHG emission pathway shown in the keynote speech.
- The scenario of Dr. Matsuno based on accumulative emission is expected to be accepted as scientific understanding.
- There are various uncertainties of science, accurate measurement and an international system for that purpose is necessary to minimize uncertainties.
- Two common understanding have been agreed pertaining to the sharable reduction pathway. One is that the CO2 emission should reach its peak in the near future even though the uncertainty of estimation. The other is to introduce the concept of accumulative emission instead of the stable GHG concentration in the air.
- The convergence of emission per capita in 2050 was proposed for the burden sharing, and harmony was obtained about it.
- The discussion on the sequence of reduction between industrial and developing countries will continue to insure international fairness. In the sense, the politics will play an important role, thus the science should support the politics.

(2) Technologies in energy supply

－technology portfolio

－development of new energy

－utilization of the conventional technologies

－system of technology development

- Global warming urges a large revolution of the energy composition on a highly developed industrial society. In order to mitigate the global warming, not only conservational technologies in energy demand side, but also clean utilization of coal, nuclear and renewable energy in the energy supply side will play important roles.
- All technologies have potential, thus full utilization of them is necessary. As to the nuclear power, if issues around storage of high level wastes and life-extension of nuclear plant could be solved, it would be capable to enlarge the capacity of existing technology.
- It is not that single technology in particular holds the key, but every single technology has it.. Therefore, an approach that centers on technology portfolio is very important.
- Integrated technical and economic examination is necessary for clean coal technology and CCS.
- Economic measures are not enough for technology promotion policy. Such a drastic solution, as an example from China, where they closed small and inefficient coal fired power plants and constructed new efficient ones, also is very important.
- Coal is an energy resource that cannot be given up, because it makes up more than 50% of the power generation energy in China, India, U.S., and German. However, average thermal efficiency of coal power generation in the world is only about 30%, therefore there is a very large potential of reducing CO2 emission though efficiency improvement.
- Setting technological trends by accumulating the existing technologies is not enough to generate solutions. What is important in policy making is to consider how to shift economy. It is important not to stay at trend making, but to create the society where the innovative reform is generated by the policy.
- Attention should be paid to the applying advanced technologies to large scale infrastructure construction taken place in developing countries.
- Introducing advanced technologies is important for mitigating global warming. However, more important technology is not such end processing ones as CCS, but energy conservation and clean energy technologies.
- Scientists from all over the world gather in IPCC to assess new scientific views. It is

hoped that engineers form a similar forum to assess and review such new technologies as hydrogen or solar energy.

Summary

- Deployment and sharing of advanced technologies globally will greatly contribute to mitigation of global warming.
- Hence, necessity of policies that promoting full utilization of existing technologies and development of key technologies is agreed.

(3) Carbon market

－improvement of CDM

－establishment of ETS

－role of market

- Many attempts have been made for CDM since the introduction of the Kyoto Protocol, but it needs to be improved according to the opinion of the parties concerned.
- Target of CDM is to improve development of clean energy in developing countries, while lowering reduction pressures of industrial countries; thereby it adds positive meaning to GHG emission efforts.
- Emerging trend is discussion on making application procedures more simplified and streamlined in order for more developing countries to join.
- Discussion among some industrial countries to change the CDM to new mechanism is ongoing. However, such new mechanisms as sectoral CDM or NAMA are not the right concepts seen form the entirety of environment. Therefore the right and fair way is to promote putting some limits on CDM along the lines of UNFCCC.
- If 80% reduction in 2050 committed by the industrial countries were to be realized through involvement of developing countries by some ways, global reduction might not be able to be achieved.
- Such developing countries with large reduction potential as China and India

experiencing rapid economic growth, have been requested such actions as domestic reduction or much earlier peak out. Therefore, they do not have the carbon credits for sale.

- Emission per capita in 2050 will be 2.5 tons to be consistent with the 2 degrees target, and the current value in China is 4 to 5 tons. Probability for China to decrease the value to 2.5 tons and to contribute to carbon trading is very low, even if the future effort is taken into account. Thus, emission trading system will not work seen from the long term viewpoint. It is necessary to confirm such issues as reviewing civilization, changing the energy supply drastically, or finding feasible solution by technological development.
- Thorough review on civilization aspects is necessary. However, it is still important to establish the financial mechanism including CDM if aiming to Copenhagen. Therefore it is essential that the AWG-KP and AWG-LCA collaborate consistently to discuss the long-term strategies.
- EU emission trading scheme is widely and often discussed. But it is skeptical whether it will link to substantial reduction or not. It seems more effective for reduction to establish sound financial mechanism for CDM.
- Europe and United States are establishing law/legislation on emission trading. Carbon trading is different from CDM. Climate change cannot be solved through that the industrial countries purchase carbon credits from developing countries.
- Excessive expectation to emission trading should be avoided. Role of government is very important. Effects generated by the EU's recommendation on renewable energy is not less than ETS.
- Do not put excessive expectation in the loan function of the carbon market. Fair market has not yet been formed, even though it is important to include market mechanism. It is very difficult to create globally unified market.

Summary

- Some market mechanisms are necessary for global GHG reduction.
- CDM started by the Kyoto Protocol needs improvement.

- ETS proposed by EU will play a constant role, but excessive expectation on it should be avoided.
- Basis of GHG reduction is domestic reduction efforts by each country.

Synthetic summary

Following common understandings were obtained through the discussion.

- Reached a consensus on the three basic points of the scientific scenario on GHG reduction proposed by Dr. Matsuno and Sir Hoskins, those are the idea of the accumulative emission based approach, necessary earlier peak out, and convergence of CO2 emission per capita in 2050 to 2.5 tons. It is also agreed that the scenario will be proposed to international society after further examinations.
- Some technologies were highlighted as key technology, such as clean utilization of coal, development of renewable energy, efficiency improvement of nuclear power, and so on. Meanwhile, importance of new technology development and technology portfolio approach for efficiently utilizing existing technologies was recognized.
- Reached a consensus on necessity to examine international scheme on technology deployment including the existing CDM and ETS.
- Importance was heightened of dialogue among scientists, engineer and policy makers from the concerned parties who play essential role on mitigating global warming (e.g., Japan, China, EU, and US). It is agreed to continue this dialogue for generating sound proposal to international society.