

Opening Remarks:**Prof. Hironori Hamanaka**, Chair of the Board of Directors, IGES

Prof. Hamanaka opened the session by saying that since its inception in 1998, IGES has been conducting strategic, innovative and pragmatic research on policies and practical solutions to support sustainable development, particularly in Asia and the Pacific, with a view to making research results applicable to actual policy-making. Having celebrated its 10th Anniversary last year, IGES must now explore, in collaboration with its stakeholders, ways for better achieving its mission to contribute to international community, particularly Asia and the Pacific.

Low Carbon Society (LCS) - Looking towards achieving significant GHG emission reductions by 2020, Japan needs to develop and deploy on a large scale low carbon technologies, and to move toward a transition to a low-carbon society. Important point to be noted here is that in several developing countries in Asia low-carbon development are being seriously pursued, not only by governments but also by business, universities and research institutions. In this symposium, we would like to take up the issue of LCS, and consider how government, business and academia can work together to transform social structures towards a low-carbon society and achieve significant reductions of GHGs.

Sustainable Consumption and Production (SCP) – In view of the rapid growth of wastes and depletion of natural resources as industrialisation and urbanisation proceed in Asia and the Pacific, we would like to deepen discussion on what actions should be taken to achieve SCP, bearing in mind the social, economic and cultural diversity of the region. Also, we would like to discuss environmental leadership development toward establishing LCS.

Loss of Biodiversity – The question is whether it can be slowed. With the upcoming COP10, the Convention on Biological Diversity in Nagoya in 2010, we would like to have discussions on actions to fill the gaps between policies to slow the loss of biodiversity and their actual performance, as well as on international cooperation to be pursued for this purpose.

Introducing the above issues which will be covered in related sessions of ISAP meeting, Prof. Hamanaka asked participants to actively participate in discussions, and hoped that they would take this opportunity to enhance partnerships and build networks among themselves.

Guest Remarks 1:**Mr. Kazuhiko Takemoto**,

Vice Minister for Global Environmental Affairs, Ministry of the Environment, Japan

Mr. Takemoto offered his congratulations to IGES, which celebrated its 10th anniversary last year. It is expected that ISAP would be a trigger to take IGES into the next decade. The Ministry of the Environment of Japan, Kanagawa Prefecture, UN Environment Programme, and many other institutions have been supporting IGES and he hoped that this support would continue into the future.

He stated that climate change, which is one of the major themes of the forum, is the most critical issue the world faces today. The Japanese government has published its cabinet decision on an action plan for a Low Carbon Society (LCS) to include concrete measures such as green tax system, innovative technology development and its diffusion, as well as promotion of actions by individuals such as implementation of changes in business/life style. This can be marked as the first step towards an LCS.



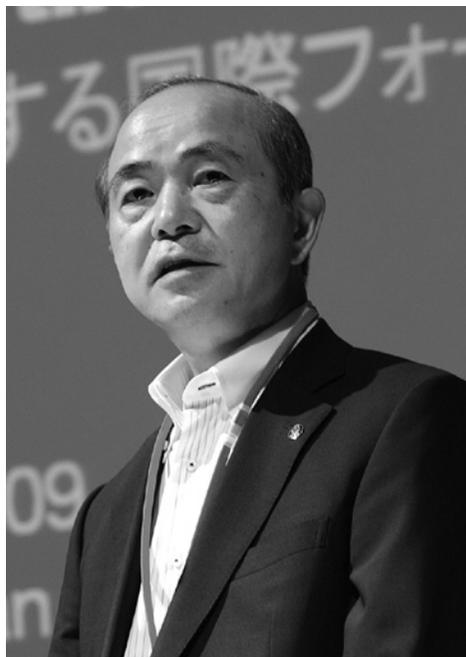
In consideration of an international target to halve GHG emissions on global scale by 2050, the Aso administration announced Japanese mid-term targets in June, which showed Japan's commitment to make every efforts to take the lead in a low-carbon revolution. Japan will also continue contributing to reduce emissions by transferring its advanced energy-saving and environmental technologies to developing countries whose efforts are to be another key to solve climate change.

Biodiversity is another main theme of this forum. Japan has committed itself to the success of COP10 of Convention on Biodiversity. The enhancement of conservation and sustainable use of biodiversity must be given priority across the whole world. Possible measures and international cooperation to face this issue are expected to be discussed in the forum.

Thus, focussing on the hot agenda including initiatives towards a LCS, co-benefit approach, forest sinks and biodiversity, the forum is hoping to provide the findings and opinions open to the public through deep discussions among relevant experts and researchers.

Guest Remarks 2:**Mr. Yoshihiro Ono**, Vice-Governor of Kanagawa Prefecture

Mr. Ono welcomed participants to Kanagawa, the prefecture that won out in the competition to host IGES in the Shonan International Village. Since then, Kanagawa has extended its contribution to the global environment through supporting IGES.



Kanagawa launched its Cool Renaissance campaign in January 2008 aiming for GHG emissions reduction, and has put in place initiatives for 13 leading projects, including promotion of lifestyle/business style change and Eco-Drive to encourage drivers to be more eco-friendly. The promotion of Electric Vehicles (EV) is also one of the projects. In collaboration with industry, academia, and government, Kanagawa has put forward the EV Diffusion Promotion Policy which aims to have 3,000 units on the road within about 5 years after EVs become commercially available. There are generous financial support measures offered, including subsidy of JPY700,000 per unit by the prefectural government that is in addition to the one provided by the central government, as well as tax benefits and discounts for parking fees and highway fees. Kanagawa has also set up subsidy schemes for households to introduce solar power equipments, which support JPY35,000 per kilowatt up to a maximum of JPY120,000 in total, in addition to the one from the municipalities.

Kanagawa Prefecture is also involved in international collaboration to promote solar rechargeable lanterns in India, with a project called "Lighting a Billion Lives" launched by Dr. Rajendra Pachauri, Chair of the IPCC. Contributions have been offered from local companies, and lanterns have already been sent to India.

In these ways, Kanagawa promotes diverse measures against global warming showing itself as an environmentally advanced prefecture.

GHGs emitted in Asia and the Pacific have global effects. Asia Pacific countries must cooperate to show the pathway to a Low Carbon Society and Sustainable Development. ISAP is expected to be a platform for knowledge sharing for these issues.

Keynote Speeches:**Moderator: Ms. Charmine Koda**, Journalist

Keynote Speech 1:

Low-Carbon Society for Sustainable Asia and the Pacific**Prof. Nay Htun**,

State University of New York, Stony Brook

Prof. Htun started by stating that achieving a sustainable Asia-Pacific will significantly contribute to global sustainability. The context, parameters and the understanding of sustainability and sustainable development is expanding. It can consist of large areas such as energy, environment (biodiversity, water, soil and forest), economic aspects and ethical/societal determinants. Climate change is at the very centre of sustainability and could be seen as the mother of all changes.

There are many telling indicators of diversity, complexity, vulnerabilities, challenges and opportunities in the Asia-Pacific region. For example, the region has a large population, coastal mega-cities, as well as having the most island states, most rainforests etc. Particularly in the Asia-Pacific region, there are two very important indicators - a population under 15 years of age (with high expectations for sustainable livelihoods, systems, education and healthcare) and an ageing population, which has experience and knowledge, but is also very vulnerable to climate change. All these indicators and more will be affected by climate change and how we use or do not use energy. Within the expanding impacts of climate change, the role of carbon is key.

Increasing resource energy efficiency and productivity is extremely important. He introduced the McKinsey Global Institute Report "The Climate Challenge – the fierce urgency of now" – a report from the symposium by the Royal Society of London, with Nobel Laureates, experts and US Energy Secretary. The report mentioned that by 2020 there needs to be a 10-fold rise in economic output for every tonne of GHG emitted. The report believes this rise is manageable in terms of cost and benefit (similar to the Stern Review estimates). It is well worth investing to gain more energy productivity, and the report urges governments at all levels as well as the scientific community, to join with business and civil society to seize hold of this historic opportunity to transform our carbon-intensive economies into sustainable and equitable systems.

There are three milestones of great transformation: 1) delivering an effective and just global agreement on climate change (at COP15 in Copenhagen, at least as a step in the process), 2)



delivering a low-carbon infrastructure, and 3) delivering tropical forest protection, conservation and restoration. Without effective management and control of tropical deforestation, there will be no management and control of climate change.

Transforming system efficiency and productivity must be the next great wave. Instead of taxing labour, we must look at how to promote resource productivity. We need to focus on sectors but must go beyond tinkering with sectors. We need to look at how to systemically transform systems. The ecosystem, transportation and infrastructure system, built environment system must all be looked at in an integrated manner.

A report by the Center for American Progress Economic Plan for the Next Administration (in 2007) says that there needs to be major transformation in increasing vehicle fuel efficiency, boosting production and availability of low-carbon alternative fuels and investing in low-carbon transportation infrastructure. It has been called a carbon revolution, and history and economics give confidence that this can be done.

The top five priorities which represent a large share of the opportunities to curb global energy demand and CO₂ emissions include; new industrial capacity to best practice in China, replacement of least efficient power generation capacity globally, global standards for new buildings in China, improvement of US residential energy efficiency, removal of road transportation subsidies – these “low hanging fruits” can be added up and show how to reduce energy demand and where CO₂ emissions reduction can come from. There needs to be a common understanding, not only in the US and OECD countries, but also China, India and many other countries in the Asia-Pacific region. There has been call for a Global Green Deal, after the recent financial crisis which can be seen as an opportunity for systematic innovation and revolution. Some examples are social conscience building, moving in 10 to 15 years towards an equal civilisation, long-term goals on different pathways with different actions, many of which are being implemented already.

The transformation of industry would mean restructuring, technology upgrading, energy saving and pollution abatement, and phasing out outdated capacity of production. Some of these concepts lead a paradigm change and the expanding context of sustainability. We need more of the 3R to add up 4th R – “Rethink” the system. This will lead to revolution, transformation and innovation.

In the Asia-Pacific region (and in other regions), a low-carbon society is linked to a sustained society on environmental, economical and social levels, and is a platform for a more secured society.

In conclusion, Prof. Htun stated that we must think beyond the current revolution. The first revolution was the Industrial Revolution. We are now in the second revolution, the Carbon or Green Revolution, and we are moving towards a third revolution, the Bio Revolution. The diverse, dynamic Asia-Pacific region plays an important role in the carbon revolution.

Keynote Speech 2:

Research Frontiers for Low-Carbon Energy Systems: Some Reflections on UK Transition Pathways

Prof. Peter Pearson,

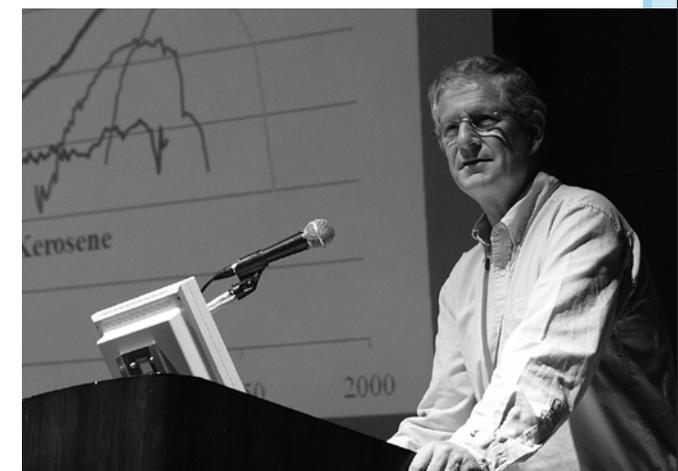
Director, Imperial College, Centre for Energy Policy and Technology

Prof. Pearson explained the key challenges for the UK pathways, based on the study of the UK's history of transitions, although he gave caution to the audience not to presume that other countries would follow the example of a single country.

Some key research and policy challenges from a UK perspective are: Can we create strategies for an energy system that is low-carbon, resilient, just and affordable? It is necessary to aim to do all three of these things at once. Can we build a low-carbon energy system that can assist in recovery from the credit crunch? A number of technologies that we want for a LC future system cannot immediately be rolled out to provide jobs that the economic recovery requires. Can we learn from past transitions and policies? Can we develop and deliver better technologies on both supply and demand side? Can we understand and affect the changing behaviour of key energy system actors? There needs to be a balance of the market, government policy and intervention, and actions by people.

Looking back the history of energy transitions in the UK, from the 16th century to the 19th century, Britain went from a traditional agricultural economy with limited flows of energy, into a new regime using fossil fuel stock (coal) for bigger energy flows, along with new innovations and other institutional, social and political changes. In the 18th century, coal and new steam technologies (beam engines, rotary steam engines) emerged. Steam power assisted in the UK development and diffusion of technology, due to advanced mobility (the engines could be moved to where they were needed) and efficiency. Thus the factory system was developed. Railways and ships developed national and international transport and markets. The growing energy needs along with this change were satisfied with the use of coal, which peaked in the 1930s. Then, coal use declined (due to concerns about resource depletion), to be replaced with petroleum. Prices matter with an inverse relationship between energy intensity (rising trend) and real energy prices (downward trend).

New technology diffusion took time to develop, for example electric light took about 40 years to become economically competitive compared to gas. It can take time for the benefits to emerge. Modern transitions can be much faster than historical ones, however, it still takes time to build new infrastructure, particularly in mature industrial societies, to overcome the lock-in situation of older technologies and turn over the old capital stock. The benefits of the energy system with lighting is an example, where costs have been lowered and quality of services have increased over several centuries, moving from the use of candle light with dirty tallow, animal fat and whale oil, to gas light, kerosene, up to the dominant electric light. This meant a rise in the quality of life. Energy innovations



have profound effects on human development and welfare. However, there can be inertia in the systems, with first mover advantage in carbon-based energy which can lead to path dependence, e.g. textile industries in UK were the first to adopt steam, but were the last to adopt electricity.

Regarding the response to the costs of energy transition, such as health problems from pollution and acidification of the air, the UK was slow to act, but eventually there was the Clean Air Act in 1956. As more recently in 2008, the UK created a new Department to combine Energy and Climate Change issues, and has legally binding GHG target of 80% by 2050. However, there is evidence that government policy can make a difference.

What the future is for low-carbon energy systems? Previous revolutions were about manufacturing – textiles, iron and steam in 18th century, and then in the 19th century – electricity, chemicals, petroleum and mass production. Improved technology, the combination of energy and information and communication technologies e.g. in smart grids, might help break the link between energy services, fuel demands and emissions. It could help enhance macro level productivity. We might see energy and Information and Communication Technology (ICT) as General Purpose Technologies (GPT) that can take us to another industrial revolution. GPT have two key features such as technological dynamism (efficiency and low costs), and innovational complementarities (to find new ways to use the technologies). However it takes time to raise productivity so patience is needed.

UK Energy Research Centre is an interdisciplinary, independent virtual centre spread across the UK. One of its major achievements is the Energy 2050 project. The project focused on two goals – firstly, an 80% cut in emissions by 2050 and ensuring that energy is delivered reliably, and secondly, trade-offs. The messages from the project report were that a resilient LC UK energy system is technically and economically feasible at an affordable cost. A key trade-off is between reduced demand or decarbonisation on the supply side. Although new and improved technologies are vital, there needs to be more R&D investment with a balance between the private and public sectors. Technology take-up depends on policy and consumer behaviour.

Lastly, citing transition pathways to a low-carbon energy system focusing on electricity, Prof. Pearson explained how patterns of governance shift balance in the triangle formed by actors in government, liberalised markets and civil society. Civil actions can in fact change society from the bottom up. Perspectives on energy system transitions involve interactions for example, between fuels and energy converting technologies, between infrastructures, environment and most importantly, people that must require more focus than fuels and technologies.

Questions for Speakers:

Ms. Charmine Koda, as a moderator, posted the question - “Given the diverse aspects of Asia and the Pacific, can low-carbon be endorsed by the region? Is the urgency shared by all countries?”

Prof. Htun commented that the Asia-Pacific region recognises the urgency. The general public knows, for example, that there is something happening with the weather, but the public is not sure what it can do, or if it is responsible. “Low-carbon” is understandable by simple methodologies such as “switch off the light”.

As far as giving advice to Asia, Prof. Pearson pointed out that there was a danger of oversimplifying the energy challenge vision. There should be an emphasis on resilience and justice of the system.

Everyone has to pay – we all need to recognise the resource impacts and social/environmental costs. Internationally, industrialised countries can offer assistance. However, each country in the region will have to find its own perspective with regards to LCS.

Panel Session 1:

Efforts to Shift towards Low-Carbon Societies in Selected Countries

Moderator: Ms. Charmine Koda, Journalist

Efforts to Shift towards Low-Carbon Societies in Selected Countries**Dr. Eric Kaler,**Provost and Senior Vice President for Academic Administration,
State University of New York, Stony Brook

Dr. Kaler started by pointing out that US President Obama has brought a dramatically new way of looking at climate change and there is now a new emphasis on science-based analysis and policy, specifically on energy policies include energy and greenhouse gases (GHGs) with cap and trade, clean coal technologies, and aggressive and realistic fuel efficiency standards. President Obama pushed through a stimulus package in response to the credit crisis, including energy savings, smart grid technologies, renewables development, and investment on clean energy technologies and a large budget on research.



A report called "Lighting the way - towards a sustainable energy future", funded by Brazil and China, and chaired by US Energy Secretary Steven Chu identified several conclusions as follow.

- Meeting the basic energy needs of the poorest people is a moral and social imperative.
- Energy efficiency must be improved and the carbon intensity of the world economy must be reduced.
- Technologies for capturing and sequestering carbon is important for cost-effective management
- Competition for oil etc. increases geopolitical tensions.
- Nuclear power, renewables and biofuels are important ways to address energy shortfalls.
- Cost-effective storage and energy carriers must be developed.
- The science and technology community has a critical role together with the public to reduce carbon footprint.

Low-Carbon Development in China**Prof. Xia Kunbao,**

Member of the Board of Directors and Advisor, All-China Environment Federation

Prof. Xia pointed that low-carbon (LC) development is a new concept in China, but has now got the attention of the government and general public. China has two laws related to low-carbon societies (LCS) to promote cleaner production and to promote a circular economy. There is also a National Climate Change Program implemented in 2007, introducing policies and measures to address climate change and contribute to the development of LCS. This has been implemented over the past two years with fairly good results. There is also government plans to reduce energy consumption, increase renewable and increase forest cover. He introduced research and new institutions on LCS. China is participating in UNFCCC, such as CDM projects, and willing to cooperate with other countries.

**Efforts to Shift towards Low-Carbon Societies (LCS) in India****Dr. Ritu Mathur,**

Associate Director, The Energy and Resources Institute (TERI)

Dr. Mathur presented on efforts to shift towards LCS in India. She set the context for India in terms of its unique social, economic and development dimensions of sustainable development and climate change issues. Because of stress factors and the vulnerability of the population, many are deprived of basic facilities and amenities (electricity, water etc.). Energy intensity and the human development index are closely related and energy needs must be met sustainably.

India's National Action Plan on Climate Change with eight missions relating to mitigation and adaptation sets out priority areas in addressing climate change issues. There have also been several programmes and policies from the viewpoint of development but with climate co-benefits and reduced energy intensity across entire energy flow.



Various initiatives including Lighting a Billion Lives (LaBL), and corporate efforts to contribute to solar power development, improving R&D, technology provision to address LC options in India. Communities are also responding with examples of clean and efficient fuel use, markets for clean end-use products, and green buildings. So there are actions not only by government, but by businesses and individuals.

In terms of international collaborative actions, India has a large share of CDM projects in renewable and energy efficiency. India is a partner of the Asia Pacific Partnership on Clean Development and Climate, to promote development, deployment and transfer of clean and efficient technologies. Partnerships of about 20 cases are mainly public-private partnership. There are still barriers to the huge challenges – technical transfer and absorption, financial issues, implementation models and R&D.

Dr. Mathur stressed a need for an early agreement on post 2012 regime to avoid the gap between the first and further commitment periods to motivate climate change and development co-benefit activities, and bring about investment in clean energy. She looks forward to international cooperation on facilitating technology and financial flows.

Low-Carbon Economy and Green Growth in Korea

Dr. Hoi-seong Jeong,

Former President, Korea Environment Institute;
President, Korea Environmental Policy and Administration Society

Dr. Jeong presented on low-carbon economy and green growth in Korea. The current government announced its vision on low-carbon green growth in 2008. There needs to be synergic development between environment and growth, in order to separate economic growth and environmental degradation, to formulate a grand vision (incorporating energy-environment issues, green job creation and a more competitive national economy, and land management and life style change) and to develop and share consensus among stakeholders.

There are several strategies and major policy tasks, including responding to climate change and becoming self-reliant in energy, creating a new motivations for national development (development of green technologies and industries etc.) and improving the environmental conditions and the quality of life.

Introducing the episode of controversies and disputes over the construction project of canals for GHG mitigation and a river water quality, he stressed the difficulties and importance in setting strategies, means and achievements.

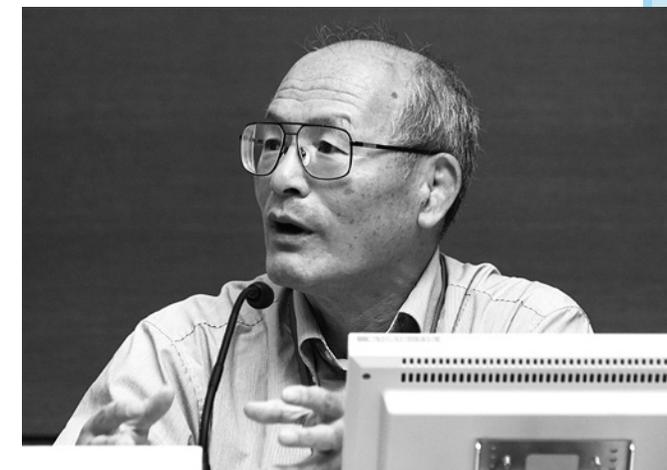


Efforts to Shift towards Low-Carbon Society: Japan

Dr. Shuzo Nishioka,

Senior Research Advisor, IGES; Senior Visiting Researcher, National Institute for Environmental Studies (NIES)

Dr. Nishioka presented the history of LCS related policies in Japan from 2007 to the current time. In Japan, in recognising LC is not only a matter of the economy, Prime Minister Fukuda used the terminology of Low Carbon 'Society'. Setting up the International Research Network for Low Carbon Societies (LCS-RNet) was proposed and accepted at G8 Environment Ministers Meeting in Kobe, with IGES named as the secretariat. In 2009, Prime Minister Aso introduced the Low Carbon Revolution to recover from the current financial crisis, and then in June, he announced Japanese Mid-term target. So Japan has a good start towards COP15.



In Japan, research supports these policy decisions, for example, the report of the National Institute for Environmental Studies (NIES) showing the possibility to reduce CO₂ emission by 70% by 2050. It also proposes that Japan needs technological, industrial, infrastructure and social innovations to achieve the potential reductions. In evaluating options for mid-term targets, six levels of reduction targets using the integrated assessment models were proposed and discussed. The Prime Minister then decided on its target level based on this evaluation process.

Research has just begun in collaboration amongst IGES and other research institutions on whether Asia is in a good position to shift to LCS, with the research hypothesis of positive answer by the application of leapfrogging (with low-carbon technologies).

He then sets out the objective of LCS-RNet with the value-added of a good information exchange. Research faces a challenge, because the society which we are aiming for is quite different from the high energy consuming societies of the industrial revolution. There needs to be a forum to promote understanding of LCS dialogues among researchers, society and industries. Therefore the LCS-RNet was proposed by G8 Environment Ministers Meeting and thus with a good connection between policy and research. There are already ten research institutes from six countries in LCS-RNet with IGES serving as the Secretariat. In Japan, the research is assisting the policy issues.

Questions for Speakers:

Ms. Koda, as the moderator of the session, posed the question, "What are the next steps of the Network?"

There was a call for more research institutions to join the network to encourage more developing countries to make their own paths towards LCS by their own capacity, as well as assisting so that they can choose. This was echoed by others. The goal is to enable exchange of best practices and influence policies in a cooperative and intelligent way. The need to transfer technology and financing to developing countries was also pointed out. This is both a challenge and an opportunity.

Panel Session 2:

Efforts to Shift towards Low-Carbon Societies in Japan

Moderator: Ms. Charmine Koda, Journalist

Efforts to Shift towards Low-Carbon Societies in Japan – Policy Context

Mr. Hiroaki Takiguchi,

Director, Office of International Strategy on Climate Change, Ministry of the Environment, Japan

Mr. Takiguchi from the Ministry of the Environment, Japan, presented on government efforts to move towards LCS in Japan. First, there are three principles (participation of all major emitters in future regime, combining environment and economy, and achieving long-term targets) for Japan's mid-term targets announced on 10 June (to reduce emissions by 15% from 2005 levels, by 2020). Furthermore, for the path to long term emissions reduction, and in order to achieve 70% reductions by 2050, it is necessary to increase the annual reduction rate from 1% to 4.5%. While it is necessary to reduce emissions as quickly as possible, it is also necessary to implement social changes at the same time. On the other hand, the governments' role towards LCS must include four pillars (institutional arrangement, enhanced intangible and tangible asset, and nature conservation). Finally, Mr. Takiguchi stressed that a sustainable society must be created from three components, namely LCS, sound material-cycle society, and a society in harmony with nature.



Efforts to Shift towards Low-Carbon Societies in Japan – Local Government Initiatives

Mr. Reiji Hitsumoto,

Director for Eco-Model City Affairs, Environment Bureau, Kitakyushu City

Mr. Hitsumoto from Kitakyushu City introduced efforts towards LCS in Kitakyushu City. First, he looked back on efforts in Kitakyushu that achieved both environmental improvements and economic growth from the emergence of pollution issues in the 1960s. Learning from those experiences, Kitakyushu has been promoting international environmental cooperation with Asian countries

through the Asian City Network and Eco-towns. Furthermore, in July 2008, Kitakyushu City was selected as a model environmental city for sustainable development towards LCS. There are four practical approaches that are being implemented by Kitakyushu City to achieve both CO₂ emissions reductions (50% reduction by 2050) and economic growth. The first one is a promotion of LCS by including the concept in designing urban development, e.g. the development of Higashigata (Green Village). The second one is to develop low-carbon industries through technology and product development. The third approach is to promote capacity building for a LCS through eco-museums, eco-housing as well as the introduction of solar power systems at elementary schools. The fourth approach is to create an intercity network for environmental cooperation aiming for sustainable development in Asia by knowledge transfer from Kitakyushu City through the Asia LCS Centre.



Efforts to Shift towards Low-Carbon Societies in Japan – Context of Industries

Mr. Masayuki Sasanouchi,

Senior General Manager, CSR & Environmental Affairs Division, Toyota Motor Corporation

Mr. Sasanouchi from the Toyota Motor Corporation explained positions and views of businesses regarding moves to a LCS. First, he presented a map showing the burden-sharing for developed and developing countries. The map indicated that, in order to achieve emissions reductions of 50% by 2050, developing countries still have to reduce their emissions by 60%, even if developed countries could reduce emissions by 100%. Therefore, technological innovations are vital to achieve such results. The Kaya equation (CO₂ emissions formulated from carbon and energy intensities with amount of activity per emissions source) well explains the position of industries which promote a sectoral based approach in order to reduce carbon intensities through technological development. In addition, comprehensive approaches in designing the measures are important,

e.g. an assessment of the emissions through the whole product lifecycle, and corporate strategies and policies based on cost benefit analysis taking into account both the cost for CO₂ emissions reductions and the environmental cost.



Toward New Paradigm of Energy & Environmental Policy From Mode1 to Mode 3

Mr. Tetsunari Iida,

Executive Director, Institute for Sustainable Energy Policies

Mr. Iida from the Institute for Sustainable Energy Policies gave a presentation on Japan's environmental energy policies from a Japanese political context. First, the current world-wide boom of renewable energy diffusion can be characterised as energy diversification. As a result, the world market for renewables has expanded to about JPY 15 trillion at present. Indeed, the targets-setting (by policies) can give a boost to renewable energy diffusion. However, there has been an absence of the political initiative to shift to a more diverse energy-mix in Japan. This is the reason why Japan has simply continued to rely on thermal power generation to meet an increasing energy demand, and the cause of a delay in taking the necessary measures for emissions reductions. Furthermore, due to the Japanese political structure, macrolevel model analysis are not fully utilised in policy-making, so as a result, policies are not effective enough in making concrete progress. For Japan to achieve its reduction target, there needs to be a new approach of knowledge-based policy-making combining a knowledge community and local communities. In this way, it is necessary to make a paradigm shift of current environmental energy policy-making.



Efforts to Shift towards Low-Carbon Society in Japan – Research Context

Dr. Mikiko Kainuma,

Chief, Climate Policy Assessment Research Section, Center for Global Environmental Research, National Institute for Environmental Studies (NIES)

The final panelist, Dr. Kainuma from NIES, talked about measures needed to achieve a 70% reduction by 2050 compared with 1990 levels. The methodology applied for the research firstly drew imaginary societies achieving the reduction target in 2050, and then back-casting analysis was done to come up with 12 practical ways to achieve such societies. She pointed out the necessity to bring in policies that offered incentives for measures associated with cost, in order to implement each of the measures. As steps towards a LCS, three measures are vital, namely public awareness raised, for example, by offering incentives, improvement of knowledge on technologies on both the supply and demand sides, and also having public participation, not just political leadership.



Discussion

Ms. Koda, as a moderator, asked Mr. Sasanouchi if he takes the challenge of LCS as a risk or a chance. He indicated the fact that about 180 global companies are taking part in the WBCSD (World Business Council for Sustainable Development) may be an evidence that those companies view LCS as a business chance e.g., through the participation in Emission Trading in energy sector. However, he stressed that his company Toyota would like to find its own way in taking a lead in manufacturing as a business chance.