

Biography as of July 2020

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People's response to the climate crisis has been shifting at an almost decadal pace. Starting from the scientific exploration of the phenomenon in the mid-1980s, the global community has subsequently proceeded to the policy-framing stage, followed by the negotiation stage. From the mid-2010s, the world has entered the implementation stage.

Throughout these 30 years, Prof. Nishioka consistently dedicated his career to building the scientific bases of climate policy in Japan, as well as globally. His lifelong question has been "Given that human beings exist within ecosystems, how much wisdom on living sustainably with nature can humans accumulate?" With the understanding that the only way we may begin to find out the answer to this question is through utilising and applying our knowledge as actors in society, Prof. Nishioka traversed between science and policy in search for his answer.

Hence, he deemed that the climate change issue was appropriate for him to investigate this question, and he has since participated actively in many discussions at every stage of science-policy interface. Currently, his major interest is how Japan and the rest of the world can redirect developmental pathways and transform societies toward carbon neutrality.

Prof. Nishioka's educational training is in control systems engineering. After gaining practical experience at a chemical company (Asahi Chemical) in planning work on petrochemicals, energy, and pollution control, he joined the Systems Analysis and Planning Division of the National Institute for Environmental Studies (NIES) in 1979. From the early 1980s, he started tackling the climate change issue. As a Fulbright scholar in 1987-88, he was based in MIT and UC-Irvine, and surveyed the progress of science and policy regarding climate change in US during visits to the National Center for Atmospheric Research (NCAR), the Scripps Oceanology Institute, the Environmental Protection Agency (EPA), among others. Just after returning to Japan, he was invited to the Committee on Global Warming Policy, organised by the Environment

Agency (the predecessor of the Ministry of the Environment), as its youngest member. The Committee discussed how to design the scientific bases of Japanese policy. The following activities represent his footprints as he journeyed from this point to present day.

1. Building the bases of a research system for studying the global environment in Japan, with the Center for Global Environmental Research as the pivot (1990-1997)

In 1990, the Center for Global Environmental Research (CGER) was established within NIES. Prof. Nishioka was appointed its first Director and dedicated six years to building the new organisation. CGER mobilised the Japanese global environmental research community through building a network of independent researchers and institutes working in diversified field, with CGER as the pivot. CGER developed the satellite GoSAT that is observing GHG concentrations around the globe, and invited ICSU/GCP (Global Carbon Project of ICSU) and the National GHG Inventory Office of Japan to establish their base in Tsukuba. CGER is now fully established as a highly-reputed research center specialising in monitoring, research, and knowledge dissemination, with more than a hundred researchers.

2. Leading large-scale climate-related research projects (1989-2008)

Environmental issues are caused by interactions between human activities and nature, and require scientists and experts from many different disciplines, in both the natural sciences and social sciences, to resolve. From 1989, Prof. Nishioka led three big cross-ministerial research projects which contributed effectively to building scientific bases of Japanese climate change policy, as described below.

A. Policy Options for Moderating Global Climate Change and Integrated Strategies for Stabilising the Global Climate: COSMO PLAN (1989-91)

The project considered particular features of climate change, such as irreversibility, uncertainty, and the possibility of delays in response, and the need for global united action. Considering these aspects of climate change and the potential for delayed action, this project explored policy options and integrated strategies to allow future generations to decide their future for themselves, by earning ‘time’ as an inheritable asset. With a team of 15 members from research institutes, universities, and the private sector, the project covered policy options in the areas of urban planning, nature-based energy, housing insulation, lifestyle change, carbon absorption, cooperation with developing

countries, and economic instruments. The findings, as explicated in “Fifteen Proposals for the Restructuring Contemporary Social Systems for a Stable Climate,” were published as two special journal issues. The main messages were summarised at UNCED (Earth Summit, 1992), as one contribution from Japan, and resulted in the allocation of research funds in the global climate change field.

B. 2050 Low-Carbon Japan Project (2004-2009)

This project developed mid- and long-term low-carbon society scenarios for Japan. The AIM (Asia-Pacific Integrated Assessment Model) team at NIES led this project, which comprises 60 researchers across academia. The main finding of this study -- that it is technically possible to achieve a 70% reduction in GHG emissions in 2050 -- formed the scientific basis for PM Fukuda’s announcement that “Japan will aim to become a low-carbon society by reducing emissions by 60-80% by 2050”, made just before the Toyako G8 Summit in 2008. AIM models have been used as an in-house model for the Ministry of the Environment (MoEJ), and contributed to the discussion on Japan’s GHG 80% reduction target of 2050. This project was further expanded as a joint project between MoEJ and UK DECC as well.

C. KAKUSHIN 21 Project (Climate Change Predictions for the 21st Century) (2007-2011)

Along with Prof. Matsuno, Prof. Nishioka co-led this large project with a budget of ¥2.52 billion over 5 years (sponsored by the Ministry of Education, Culture, Sports, Science and Technology; MEXT). This project involved refining the models using the supercomputer “Earth Simulator”. Prof. Nishioka was in charge of assessing climate disaster impacts. This study produced many research articles that contributed to the IPCC AR5 report.

3. Contributing to the IPCC and dissemination of IPCC outputs in Japan (1988-2007)

When the IPCC was established in 1988, Japan became Vice-Chair of WGII. Prof. Nishioka supported the Vice-Chair as secretary, and served as Vice-Chair for supplementary report work in 1992. With other Lead Authors, he edited the 1994 Special Report: “IPCC Technical Guidelines for Assessing Climate Change Impacts and Adaptations”. He also contributed as Coordinating Lead Author, Lead Author, and Review Editor in FAR, SAR, TAR, and AR4.

He has organised several IPCC workshops such as “The IPCC Asia-Pacific

Workshop on Integrated Assessment Models” (UNU, Tokyo, March 10, 1997), and translated IPCC reports, such as WGII/FAR (Impacts and Adaptations) and WGIII/SAR (Economic and Social Dimensions of Climate Change) into Japanese. He works aggressively on enhancing public interest in climate change and raises awareness about IPCC activities through more than 150 publications, articles, essays, commentaries and lectures. He has educated younger generations as Professor at the Tokyo Institute of Technology and Keio University.

He was awarded the 1997 Nikkei Global Environmental Technology Prize for his contributions to climate change research, research coordination and systematisation, and risk communication of climate change.

4. Promoting the internationalisation of the Japanese research community studying the global environment (1996-)

After the Earth Summit in 1992, the importance of international collaboration in responding to this newly emerging issue was well recognised by governments, international organisations and academia, and many scientific networks for monitoring, research, data collection, capacity building and funding were established. CGER (NIES) was invited to many of these networks for initial planning and represented the Japanese global research community. Prof. Nishioka actively participated in and promoted the internationalisation of the Japanese research community. He was involved in communities such as the Science Planning Committee of the Asia-Pacific Network on Global Change Research (SPC/APN); the Science Steering Committee (SSC) of the Global Change System for Analysis, Research, and Training (ICSU/START); Collaborating Centers of Global Environment Outlook 1 (UNEP/GEO1); Science and Technological Advisory Panel (STAP) of the Global Environment Facility (WB/UNEP/GEF); the China Council (CCICED); and the UN Millennium Ecosystem Assessment.

In 1998, the Institute for Global Environmental Strategies (IGES) was established as part of the Prime Minister’s initiative to contribute to the global environmental research field, especially in the Asia-Pacific region. Initially, Prof. Nishioka led the Climate Change Group. In 2005, IGES hosted the 2nd IHDP International Meeting with 150 participants, which he and Dr. Jill Jaeger of IIASA organised and led successfully as co-chairs.

At G8 in 2008, Japan proposed the establishment of the International Research Network for Low Carbon Societies (LCS-RNet) to strengthen science-based policymaking in G8 countries, which was agreed upon by other G8 members. Prof.

Nishioka was LCS-RNet's Secretary-General until 2017, and the network continues to expand as a worldwide platform for research on carbon-neutral societies.

5. Advising for building institutional research system to support global environment policy in Japan (1997-2013)

In response to the Kyoto Protocol in 1997, ministries started strengthening the foundations of global environment research to support their policies. Prof. Nishioka was invited to advise major councils and committees and led as the chair of working groups for the promotion and institutionalisation of the research community. He participated in dialogue with the Cabinet Office, the MoEJ, MEXT, and the Science Council of Japan (SCJ). During 2009-13, he was Chair of the Council for Environment, Tokyo Metropolitan Government, and led the discussion on Tokyo's policies to go low-carbon.

6. Bridging research and policy (2001-)

After ten years of establishing the global environmental research system at NIES, Prof. Nishioka transferred to Keio University as Professor (Media and Governance). Two year later, he returned to NIES as Vice President (Research Director), and dedicated his time to re-establishing NIES as an independent administrative agency.

Meanwhile, the MoEJ started discussions on the long-term strategy and roadmap based on the findings of the 2050 Low Carbon Japan Scenario Project (which used the AIM Model developed by late Dr. Morita's group). He served as Chair of two successive working committees of the Central Council of Environment. The outputs of this work have contributed to setting the 2020 reduction target submitted to G8 in 2009 and to UNFCCC-COP15, as well as the nationwide "Environmental and Energy Strategy" discussion among citizens after the 2011 Great East Japan Earthquake and Fukushima Nuclear Accident that was organised by Cabinet Office.

7. Fostering international collaboration in Asia to build science-based climate policy (2011-)

Recognising the necessity of strengthening the scientific foundations for Asian countries to respond to climate change, the Japanese MoEJ established the Low Carbon Asia Research Network (LoCARNet) with climate-related researchers in Asia. IGES serves as the Secretariat of LoCARNet, and Prof. Nishioka was appointed as Secretary-General. He has also worked with Bhutan's National Environment Committee (NEC). Bhutan has declared to be a carbon-neutral nation at the UNFCCC, and Prof. Nishioka has supported the development of Bhutan's long-term carbon-neutral strategy.

8. Emerging concerns: reconsidering the climate crisis management system (2018-)

Prof. Nishioka is deeply concerned about the global climate crisis management system, to which he contributed through his work in Japan, and has been questioning the extent to which this system has been working effectively. Societal response has been quite slow, despite rapidly rising temperatures. The scientific community has presented society with sufficient evidence, warning us all of this crisis (albeit being perhaps a bit late in doing so). However, society has yet to react sufficiently. Now is the time to act. We need to implement policies for individuals, companies, and public sector actors who are leading GHG reduction efforts. At the same time, we need ambitious policies to address the current economic and political system and our prodigal lifestyles.

From this point of view, Prof. Nishioka is carefully observing the advocacy of green recovery, the Green Deal, the Citizens' Climate Congress or Assembly that just began in France and the UK respectively. He is observing the movement of youth, who are obliged to be the main player in coming decades, as well as Bhutan as the pioneer of a new way to human development. Meanwhile, he continues to devote his time to designing transition management in Japan.
