

Blue Planet Prize

(Publicity)

Blue Planet Prize aims to safeguard the Earth

The Blue Planet Prize was founded by The Asahi Glass Foundation in 1992 to honor people or groups in science and technology who make great contributions to solving environmental issues.

That was the same year that countries attended the Earth Summit, or the United Nations Conference on Environment and Development (UNCED), in Rio de Janeiro, and pledged to work to repair the environment.

"Of the various global problems we are urged to solve, the most important one is the preservation of the global environment," The Asahi Glass Foundation, established by Asahi Glass Co., says in its pamphlet.

"Global warming, acid rain, destruction of the ozone layer,

deforestation in the tropical zone, river and oceanic pollution, and other conditions worsening the Earth's environment are caused by the effects of the human race's economic activities and daily lives on mother nature."

The name of the prize "Blue Planet" comes from the remark by Russian astronaut Yuri Gagarin, the first human to look at the Earth from space, "The Earth was blue."

"We gave the prize this name out of the prayer that this blue planet will continue to exist as a gift shared by all humans in the future," the foundation says.

The Asahi Glass Foundation was established in 1933 as the Asahi Foundation for Chemical

Industry Promotion, to commemorate the 25th anniversary of the founding of Asahi Glass Co. It first focused on fostering research in the field of applied chemistry.

But in 1990, it undertook an overall redesign of its programs, expanding the scope of its activities and establishing its commendation program. In the same year, it was renamed The Asahi Glass Foundation.

The Blue Planet Prize is part of the commendation program. The foundation confers the prize on two people or a person and a group every year. Prizewinners receive a diploma, a trophy and ¥50 million.

This year, scientists Taroh Matsuno of the Japan Agency for

Marine-Earth Science and Technology and Daniel Sperling of the University of California, Davis, have been awarded the 2013 international Blue Planet Prize.

The two were conferred the prize in Tokyo on Oct. 30.

Matsuno, 79, was recognized for his contributions to raising awareness of global warming and climate change by his leadership in climatological research. His research includes predictions of climate change using the Earth Simulator supercomputer. He also played an important role in discovering the causes of the weather phenomenon known as El Niño.

Sperling, 62, was credited for contributing to urban environmental policies through his



Awards ceremony: The Asahi Glass Foundation Chairman Tetsuji Tanaka (left photo) hands a trophy to Taroh Matsuno (left photo) and Daniel Sperling (right photo) during the 2013 Blue Planet Prize Awards Ceremony in Tokyo on Oct. 30. SATOKO KAWASAKI



research on the environmental impact of traffic systems. He was involved in creating the legislation on preventing pollution in California, which became a guideline for urban development, including traffic systems,

around the world. For the 2013 prize, 650 Japanese and another 650 non-Japanese nominators recommended 106 candidates. By category, there were 26 in environmental economy and policy, 24 in eco-

system, 17 in climate and earth science, 13 in multiple fields and others.

The candidates were from 27 countries and 22 candidates were from developing nations, accounting for about 20 percent

of all candidates. The selection committee went through several screenings before selecting Matsuno and Sperling.

Below are the excerpts of interviews with the two prizewinners.

Predicting future climate patterns

Taroh Matsuno is a modest man who wants to give credit to young scientists for various achievements in his research field — climate study.

"I shouldn't be a main character. The main characters are young researchers who actually do a lot of work in various projects," Matsuno, 79, said in a recent interview at a Tokyo hotel.

Matsuno, principal scientist at the Research Institute for Global Change, Japan Agency for Marine-Earth Science and Technology, or JAMSTEC, was awarded the Blue Planet Prize, a prize given to those who contribute to solutions to environmental issues by The Asahi Glass Foundation this year.

He said he got the prize for "laying the foundations for young scientists to nurture themselves to excel in the field of climatology."

For example, he served as the chief of the Center for Climate System Research, the University of Tokyo, founded in 1991, which trained and gave necessary research facilities to climate scientists, from 1991 to 1994. The center was merged and is now a part of the Atmosphere and Ocean Research Institute, the University of Tokyo.

Also, he served as the dean of the Department of Atmosphere and Ocean Environment at Hokkaido University for four years from 1994 when it had just been founded. He created the department from scratch, hiring professors and doing other preparatory work.

Similarly, he served as the chief of the Global Frontier Research System, created by the Agency of Science and Tech-

nology in 1997, from 1997 to 2005. The system is now called the Frontier Research Center for Global Change, under JAMSTEC.

Environmental push
He modestly said he had the privilege of taking such prestigious positions as a scientist because he was one of the most senior researchers around the late 1980s when the Japanese government, as well as the whole world, began to take tackling environmental issues seriously.

In late the 1980s, environmental scientist James Hansen said in the U.S. Congress that increasing carbon dioxide emissions were causing global warming, raising a sense of crisis in the world. Matsuno played a leading role among Japanese scientists in pushing the science ministry to consider strengthening environmental research, he said.

"Since Dr. Hansen's remarks, the environment became the center of international politics and was brought up very frequently in summit meetings," he said.

Aimed such a global movement, the University of Tokyo established the Center for Climate System Research in 1991, where researchers worked on estimating climate change dozens or hundreds of years in the future.

Earth Simulator
In one of the concrete examples in which Matsuno led a project contributing to society, the Global Frontier Research System developed the Earth

Simulator, which forecasts weather, and estimates future climate by analyzing oceanic and atmospheric data. Matsuno's team began developing it in 1997 and operating it in 2002.

A remarkable point about the Earth Simulator, a group of computers contained in telephone-booth-size boxes housed in a JAMSTEC building, is to enable researchers to use oceanic and atmospheric data in detail to a level considered uncontested.

For example, a University of Tokyo team uses a 20-km-mesh super-high-resolution model for oceanic data and a 100-km mesh for atmospheric data, compared with the global average of 100-km mesh for ocean and 300-km mesh for atmosphere, Matsuno said. The smaller the distance in kilometers, the more detailed the data are, yielding more precise estimates.

The Earth Simulator, a supercomputer worth ¥60 billion, which costs ¥4 billion annually to maintain, can estimate ocean temperatures in 50 or 100 years, which makes it easy to estimate climate then, he said.

Global collaboration
Matsuno has been involved also in a number of international collaborations on the environment.

He was one of about 20 members of the Joint Scientific Committee of the World Climate Research Program, or WCRP, between 1986 and 1994. The committee is the main decision-making body for the entire program.

He, as the representative of Japan, played a bridging role between Japan and international research institutes.

In one of the concrete results, a team of Japanese scientists joined a project in waters near the Marshall Islands to research the El Niño phenomenon and its effect on climate in 1991 and 1992. Also, preparation for launching the Tropical Rainfall Measuring Mission, or TRMM, has been in progress in collaboration between the U.S. and Japan, partly thanks to Matsuno's role.

He also was a member of the Science Committee of the International Geosphere-Bio-



Taroh Matsuno

sphere Program, or IGBP, from 2005 to 2010, during which he served two terms.

He also made great contributions to the compilation of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, or IPCC, from 2003 to 2007.

In the report, he was a review editor, a drafting author and a core writing team member of many chapters.

About 10 Japanese researchers helped to produce the report. The Japanese team compiled the chapters in the most comprehensive manner, mainly because it used the Earth Simulator, he said. The 20-km mesh the researchers used was, then, the most advanced in the world, he said.

The Fourth Assessment Report of the IPCC won the Nobel Peace Prize and Matsuno had the honor of being a co-recipient of the prize.

Young researchers

Matsuno's passion for climatology dates back to the late 1940s, after World War II, as weather information ceased to be a military secret. He was an elementary school pupil. Weather forecasting started being aired on the radio, but it was unreliable he said. In 1949, he drew a weather map from information from the radio, before newspapers started publishing it, he said.

He kept drawing the map, and a high school geology teacher was impressed and told him to keep drawing. He entered the University of Tokyo in 1953, majoring in science, but it was not until he was a graduate student at the university that he focused on studying climatology. As a young researcher, he joined a project to use a humongous computer, purchased by the Japan Meteorological Agency, to forecast weather in 1959.

Matsuno considers himself lucky as he was given a lot of opportunities when young. Matsuno expressed concern over the current employment conditions of young researchers who are often hired on a temporary basis for a project that lasts a few years.

"They have a nonpermanent contract for a project and have to look for a job every five years. We have got to do something about this," Matsuno said. "It's not only a request to the Ministry of Education, Culture, Sports, Science and Technology. I would like society as a whole to think about this. I would like young researchers to have better employment conditions so that they can concentrate on researching and doing good research."

Environment as public policy

Daniel Sperling wears two different, difficult but very important hats — an academic and a regulator.

Sperling, director of the Institute of Transportation Studies, and a professor of civil engineering and environmental science and policy at the University of California, Davis, is also an environmental policy adviser for the state of California, having been appointed by Gov. Arnold Schwarzenegger to the "automotive engineering" seat on the California Air Resources Board.

Sperling was awarded the Blue Planet Prize, a prize given for great contributions to global environmental issues by The Asahi Glass Foundation, this year for his achievement of having his transportation system study implemented as California state policy, which was copied by other U.S. states and countries worldwide.

"The reason I think I got the prize is that I brought research and science to the design of public policy on transportation systems and vehicles," Sperling said in a recent interview in Tokyo.

His chief responsibilities in the California Air Resources Board are oversight and design of the state's climate change policy, alternative fuels, vehicle travel and land use, and zero-emission vehicle programs.

One of his greatest achievements is to establish the Low Carbon Fuel Standard, which was enforced in California in 2011. The standard requires oil companies to cut the concentration of carbon in oil by 10 percent by 2020. The standard was

also adopted in countries in Europe and other regions.

The standard also allows oil companies that do not want to cut carbon to buy credits from oil companies that can. Such a system will stimulate the economy in many ways, including oil companies bringing oil refining and production to the U.S. to increase domestic employment.

He also helped California to set rules and standards on greenhouse gas emissions from automobiles and other infrastructure, calling for automakers to enhance technology and consumers to raise awareness.

Wearing two hats

When he obtained the governmental position in 2007, the change from being only an academic to being that and a regulator was "very difficult," he said. "The thought process is very difficult. Academia thinks of theory, always questions and embraces uncertainty. Regulators don't like uncertainty and take specific actions," he said.

"Before I designed the Low Carbon Fuel Standard, I thought I knew about 90 percent of what I needed to know. But in working on a governmental policy, I felt like I knew only 20 percent of what I needed to know," Sperling said.

Things he did not know include trading rules, such as the World Trade Organization's rules, and the fact that policymakers must take into consideration the business impact of policies on each company, he said.

"After all, I need to know which policy is enforceable because the goal is to enforce policies. I must also use easily

accessible data (to explain the validity of policies) and learned everything must be transparent," he said.

Science in policy
Still, he enjoys the fact that his idea became a real-life policy.

"My message is that scientists should work closely with governments and vice versa because we are facing many difficult problems and challenges. So we need more science in policy," he said.

Working with the federal government is even more difficult. It is "very slow" because it has to consider the many different interests of different states, he said.

"I talked to other states, but some states have mostly car companies, others have coal companies or oil companies, and each has different interests. Whenever things become difficult, they say, 'Let the federal government decide,'" he said.

Nonetheless, he feels that California is a leader and model, and wants other states to participate in environmental policies, he said.

California passed a law establishing a target of reducing greenhouse gas in every city in the state by 6 percent to 8 percent by 2020 from the level in 2010 and 13 percent to 16 percent by 2035.

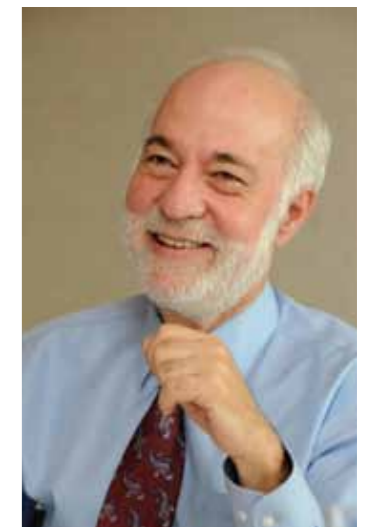
"For the U.S., it is revolutionary to say people must drive less," he said.

Academic history

Studying transportation systems could be described as Sperling's life's work. He entered Cornell University, Ithaca, New York, in 1969 to major in systems analysis and urban planning because his high school counselor said it would suit his math skills.

He became interested in his majors right away because the subjects cover engineering, technology, human behavior and everything else, he said. He thought the majors were perfect for him because he wanted to learn how roads, cars and human behavior evolved.

Upon graduation in 1973, he joined the Peace Corps and was sent to Honduras as he wanted to see the world. He was engaged in governmental work there, assisting urban planning and improvement. Two years later, he returned to the U.S. and



Daniel Sperling

worked for the U.S. Environmental Protection Agency, which had been founded in 1970 to tackle pollution problems.

Working in the agency, he realized his ignorance and decided to go to graduate school, he said. He then entered the graduate school at University of California, Berkeley, in 1977 to major in transportation engineering but also studied a wide range of subjects such as economics, energy and the environment. He wrote a Ph.D. thesis on alternative fuels and alcohol fuel, and obtained his doctoral degree in 1982.

Also in 1982, he got a job at the University of California, Davis, teaching transportation energy and environment.

He didn't think of being a teacher, but as he started in the classroom, he began enjoying it and researching, which have been his career for the past 30 years, he said.

He established the Institute of Transportation Studies inside UC Davis in 1991. Back then, study of the connection between transportation systems, environment and energy was very rare, he said. The institute worked on research of alternative fuels, among other issues.

It is unclear what will be the fuel alternative to oil in the future, but Sperling, who has authored 12 books and written hundreds of research papers on alternative fuels, thinks a combination of biofuel, hydrogen and electricity will be the fuel for automobiles in the future, he said.

Japan's role
His career as a researcher made a sudden change in 2007 because his second hat as a regulator added to his job description as a liaison between academia and politics.

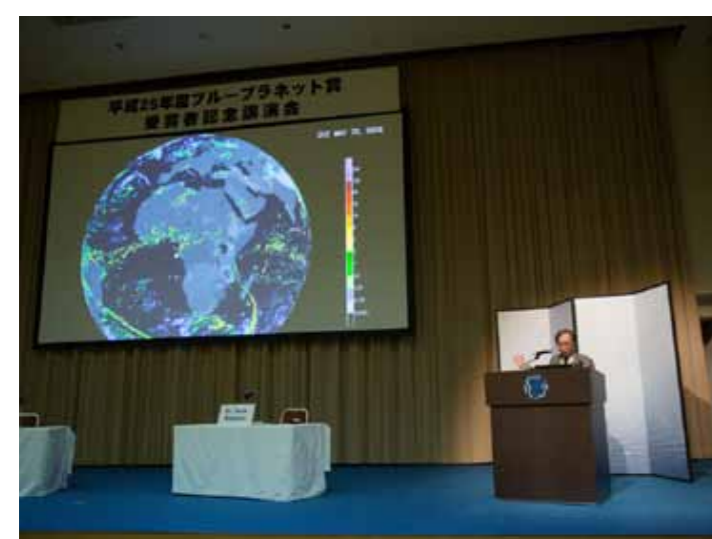
Some of his achievements in California currently impact the environmental policies in other countries. He hopes to help Japan someday.

Asked for advice for the Japanese government, he said he could help with developing energy and fuel policy to reduce dependence on fossil energy in transportation systems.

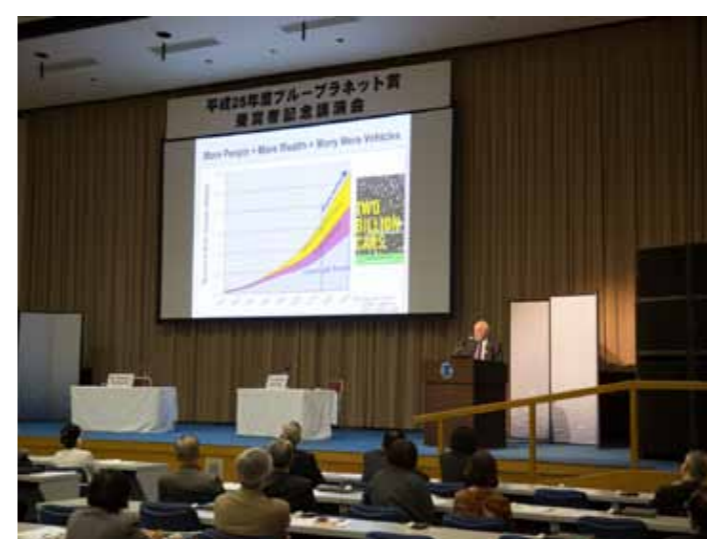
He also expects Japan to coordinate better with countries in the world because fuel is a global commodity, implicating that developing environmental technology is one thing and coordinating with other countries to reduce pollution globally is another.

That said, Sperling commended Japan for its high technology.

"I think Japan is doing a fairly good job" in developing low- or zero-emission vehicles, he said. "Japanese car companies are leaders in advanced technology."



Climate predictor: (Top) Taroh Matsuno speaks during the 2013 Blue Planet Prize Commemorative Lectures in Tokyo on Oct. 31. (Above) Matsuno shows off the Earth Simulator at the Japan Agency for Marine-Earth Science and Technology in Yokosuka, Kanagawa Prefecture. THE ASAHI GLASS FOUNDATION



Two hats: (Top) Daniel Sperling makes a speech during the 2013 Blue Planet Prize Commemorative Lectures in Tokyo on Oct. 31. (Above) Sperling and California Gov. Arnold Schwarzenegger pose for a photograph. THE ASAHI GLASS FOUNDATION