Blue Planet Prize

FOR IMMEDIATE RELEASE
June 14, 2017

2017 BLUE PLANET PRIZE: ANNOUNCEMENT OF PRIZE WINNERS

This year marks the 26th awarding of the Blue Planet Prize, the international environmental award sponsored by the Asahi Glass Foundation, chaired by Kazuhiko Ishimura. Two Blue Planet Prizes are awarded to individuals or organizations each year that make outstanding achievements in scientific research and its application, and in so doing help to solve global environmental problems. The Board of Directors and Councillors decided the following recipients for this year.

1. Prof. Hans J. Schellnhuber (Germany)

Founder and Director of the Potsdam Institute for Climate Impact Research (PIK)

Prof. Schellnhuber heads the Potsdam Institute for Climate Impact Research (PIK). He is also the founder of the Institute. He has helped establish a new field of science, "Earth System Analysis," which uses mathematical models to integrate interdisciplinary resources into providing a planet-wide view. His activities eventually created a torrent of measures against global warming worldwide, resulting in the 2-degree guardrail agreed upon by more than 190 countries at the UN climate summit COP21 in 2015. Prof. Schellnhuber and the PIK have played a central role in this field for many years.

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2. Prof. Gretchen C. Daily (USA)

Bing Professor of Environmental Science in the Department of Biology, Director of the Center for Conservation Biology, and Senior Fellow at the Stanford Woods Institute, at Stanford University, Co-Founder and Faculty Director of the Natural Capital Project

Prof. Daily has studied the effects of human activities on the biosphere, based on field work of many years. She has played the major role in the creation and development of a new interdisciplinary field of environmental science called "Countryside Biogeography." She is making significant contributions to our understanding of biodiversity, by predicting various species' likelihood of surviving human impacts and analyzing the future of ecosystems and the implications for human well-being, especially from the standpoint of agricultural land use. She has incorporated environmental issues into business practices and public policies in worldwide.

Both recipients will be awarded a certificate of merit, a commemorative trophy and a supplementary award of 50 million yen.

The awards ceremony will be held on October 18, 2017 (Wednesday) at the Palace Hotel Tokyo (Chiyoda Ward, Tokyo). The commemorative lectures by the prize recipients will be held at the United Nations University (Shibuya Ward, Tokyo) on Ocotber 19.

*This press release may also be viewed on our web site at www.af-info.or.jp. from 15:00, June 14, 2017.
The photos of the recipients are available from the web site of the Asahi Glass Foundation.

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Report on the Selection Process (26th Annual Prize, 2017)

A total of 530 nominators from Japan and 770 nominators from other countries recommended 130 candidates. The fields represented by the candidates, in order of number, were ecology (30), environmental economics and policy making (25), atmospheric and earth sciences(16), multidisciplinary field (16).

The candidates represented 33 countries; 25 persons, 19 percent of the total, were from developing countries.

After individual evaluation of the 130 candidates by each Selection Committee member, the committee was convened to narrow down the field. The results of their deliberation were examined by the Presentation Committee, which forwarded its recommendations to the Board of Directors and Councillors. The Board formally resolved to award the Prize to **Prof. Schellnhuber**, and to **Prof. Daily**.

The Laureates

1992	Dr. Syukuro Manabe (USA) International Institute for Environment and Development (UK)
1993	Dr. Charles D. Keeling (USA) IUCN—The World Conservation Union (headquartered in Switzerland)
1994	Professor Dr. Eugen Seibold(Germany) Mr. Lester R. Brown (USA)
1995	Dr. Bert Bolin (Sweden) Mr. Maurice F. Strong (Canada)
1996	Dr. Wallace S. Broecker (USA) The M.S. Swaminathan Research Foundation (India)
1997	Dr. James E. Lovelock (UK) Conservation International (head-quartered in the USA)
1998	Professor Mikhail I. Budyko (Russia) Mr. David R. Brower (USA)
1999	Dr. Paul R. Ehrlich (USA) Professor Qu Geping (China)
2000	Dr. Theo Colborn (USA) Dr. Karl-Henrik Robèrt (Sweden)
2001	Lord (Robert) May of Oxford (Australia) Dr. Norman Myers (UK)
2002	Dr. Harold A. Mooney (USA) Professor J. Gustave Speth(USA)
2003	Dr. Gene E. Likens (USA) and Dr. F. Herbert Bormann (USA) Dr. Vo Quy (Vietnam)
2004	Dr. Susan Solomon (USA) Dr. Gro Harlem Brundtland (Norway)
2005	Professor Sir Nicholas Shackleton (UK) Dr. Gordon Hisashi Sato (USA)
2006	Dr. Akira Miyawaki (Japan) Dr. Emil Salim (Indonesia)
2007	Professor Joseph L. Sax (USA) Dr. Amory B. Lovins (USA)
2008	Dr. Claude Lorius (France) Professor José Goldemberg (Brazil)
2009	Professor Hirofumi Uzawa (Japan) Lord Nicholas Stern of Brentford (UK)
2010	Dr. James Hansen (USA) Dr. Robert Watson (UK)
2011	Dr. Jane Lubchenco (USA) Barefoot College (India)
2012	Professor William E. Rees (Canada) and Dr. Mathis Wackernagel (Switzerland) Dr. Thomas E. Lovejoy (USA)
2013	Dr. Taroh Matsuno (Japan) Professor Daniel Sperling (USA)
2014	Prof. Herman Daly (USA) Prof. Daniel H. Janzen (USA) and Instituto Nacional de Biodiversidad (INBio)
2015	Professor Sir Partha Dasgupta FBA FRS (UK) Professor Jeffrey D. Sachs (USA)
2016	Mr. Pavan Sukhdev (India) Prof. Markus Borner (Switzerland)
2017	Prof. Hans J. Schellnhuber (Germany) Prof. Gretchen C. Daily (USA)

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Attachment

Profile of the 2017 Blue Planet Prize Recipient

Prof. Hans J. Schellnhuber (Germany)

Achievements of Prof. Hans J. Schellnhuber

Professor Hans Joachim Schellnhuber helped to create a new field of science, described in his book "Earth System[1] Analysis for Sustainability"[2]. He and his fellow researchers developed the concept of critical climatological "tipping points"[3] and "tipping elements"[4], which refers to special tipping points leading to enormous environmental and social impacts. The information gained by this research can be used by policymakers to prepare for and cope with possible natural disasters related to climate change. Thus, he has been a major contributor to multidisciplinary collaborations between the natural and social sciences.

Professor Schellnhuber's research on climate change at the Potsdam Institute for Climate Impact Research (PIK)[5] has contributed to the international community's target of limiting global warming by 1.5 to 2 °C at the COP21 UN climate change agreement in Paris. To achieve this target, he advocated the science-based control of total CO2 emissions (the "carbon budget approach"[6] – humanity can dispose only a limited amount of greenhouse-gas emissions in the atmosphere if it wants to avoid the bulk of climate risks, and this amount can be calculated) and proposed the now-mainstream idea that the global community should shift away from its reliance on carbon energy to make a historic change in its economic and social system. He informs global opinions by clearly explaining the science behind global warming and sustainability to the public.

Professor Schellnhuber has published around 350 articles and papers , presenting his research initiatives and findings in the most renowned international scientific journals. Yet in addition to this, he assumed the role of a public intellectual, contributing to some of the key public debates. He does so not only by providing countless media contributions. For example, in 2015, he published his book "Self-Combustion," which from the personal perspective of a passionate scientist discussed topics including the global warming crisis, the physical processes of the earth, and the impact of humanity on the environment. He continues to contribute to society through his research and communications.

[1]The Earth System

This phrase refers to the complete system of our planet, including groups of sub-systems such as the atmosphere, the ocean, the crust, the biological sphere (ecosystem) and the anthropogenic sphere (human society).

[2]The Science of Earth System Analysis for Sustainability

Professor Schellnhuber is an expert on theoretical physics and studied quantum mechanics, nonlinear dynamics, and chaos theory. He originally used numerical models to study the ecosystem of tide flats. When the German government initiated the Potsdam Institute for Climate Impact Research (PIK) in 1992, he became the founding Director.

Professor Schellnhuber utilizes numerical simulations and has undertaken a variety of interdisciplinary collaborations with other scientists. One representative example of PIK's activities is the Inter-Sectoral Impact Model Intercomparison Project (ISI-MIP), which works as a core organization for huge interdisciplinary simulations studies by experts worldwide.

Professor Schellnhuber has published about 350 papers and 60 books. Furthermore, the World Bank Group entrusted him with the preparation of a series of reports called "Turn Down the Heat":"Turn Down the Heat: Why a 4°C Warmer World Must be Avoided" (2012), "Turn Down the Heat: Climate Extremes, Regional Impacts and the Case for Resilience" (2013), and "Turn Down the Heat: Confronting the New Climate Normal" (2014). He greatly influenced the consensus of the international community at COP21 in 2015 to limit average global warming to 2 degrees compared with pre-industrial levels.

[3]Tipping Points

When the state of an Earth system is in transition to a qualitatively different state, in which large changes can be initiated through minor additional perturbations, the critical threshold is generally called a tipping point. In some cases, even if a tipping point is exceeded, a significant change may not occur immediately, though a sudden change may still occur after the transition period. For example, Earth's atmosphere, oceans, and ecosystems are subsystems that have critical tipping points leading to sudden changes in their physical state.

[4]Tipping Elements

When an element of the Earth system, pushed for instance by human-made warming, reaches a particular tipping point, it can cause significant changes which occur over broad areas (sub-continental at least) and with enormous magnitude. If this happens, the impacts on human society can be very high. Elements of the Earth system that are susceptible to such drastic, relatively rapid and potentially irreversible changes are called tipping elements.Since system changes inevitably affect human societies, information about tipping elements can be relevant to public policy; for example human-induced CO2 increases can be considered a tipping element leading to a tipping point for global climate change. Other examples include the reduction of Arctic sea ice in the summer, melting of glaciers, reduction of ice sheets in the western part of the South Pole (THC), thermohaline circulation in the Atlantic Ocean (WAIS), El Niño-Southern Oscillation (ENSO), Indian Summer Monsoons (ISM), West African Monsoons (WAM), Amazon Rainforest, Boreal Forest, Antarctic Bottom Water (AABW), global warming and the tundra, permafrost soil, methane hydrate in the ocean, Oceanic Anoxic Events, and the ozone hole above Antarctica.

（Ref：Lenton, T. M., et al. (2008). "Tipping elements in the Earth's climate system." Proceedings of the National Academy of Sciences of the United States of America 105(6): 1786-1793.）

[5]Potsdam Institute for Climate Impact Research (PIK)

The Potsdam Institute for Climate Impact Research is a publicly funded scientific organization that was founded in Potsdam, Germany in 1992. It is a member of the Leibniz Association. With a current staff of about 300 people, PIK is organized into four research domains: Earth System Analysis, Climate Impacts and Vulnerabilities, Sustainable Solutions, and Transdisciplinary Concepts & Methods. Its mission is summarized on its website as follows:

"PIK addresses crucial scientific questions in the fields of global change, climate impacts and sustainable development.
Researchers from the natural and social sciences work together to generate interdisciplinary insights and to provide society with sound information for decision making.
The main methodologies are systems and scenarios analysis, modelling,
computer simulation, and data integration."

[6]Carbon Budget Approach

It is well-established science that anthropogenic, meaning man-made, global temperature increase is correlated (in a quasi-linear way) to the total amount of greenhouse gases released into the atmosphere (past emissions + future emissions). This means that in order to meet the environmental target of the Paris Agreement – keeping global average temperature increase well below 2°C – a remaining global carbon budget can be calculated. This is done by taking into account historic emissions to date and by specifying a probability for staying below this temperature threshold.

Early on, Professor Schellnhuber recognized the importance of this fundamental principle in climate physics and, together with his colleagues at the German Advisory Council on Global Change (WBGU), developed the so-called "Budget Approach", published in a 2009 Special Report. The concept stipulates a fair allocation of the remaining global carbon budget for climate stabilization among the nations of the world together with the possibility for carbon pricing and emissions trading in order to operationalize its implementation in practice. In turn, the allocation of a limited "carbon budget" for each country based on a number of objective and transparent rules allows the world to divide up the efforts to reduce emissions of greenhouse gases. Although there are different methods for determining national emissions budgets, most research papers and provisional calculations concerning the differentiation of numerical targets make reference to the basic principles of the carbon budget approach in some way. Moreover, the Potsdam Institute for Climate Impact Research (PIK) plays a central role in analyzing the numerical targets and commitments of each country communicated in the context of the conclusion of the Paris Agreement.

Biographical Summary

Academic background

1976 B.S. in Department of Physics and Mathematics at the University of Regensburg, Germany

1980 Ph.D. in Theoretical Physics from the University of Regensburg, Germany

1981 Postdoctoral Fellow at the Institute for Theoretical Physics (ITP), University of California, Santa Barbara, USA

Career

1982 Student Assistant in Physics Department, University of Regensburg
1987 Assistant Professor in Physics Department, University of Oldenburg
1987 Heisenberg Fellowship of the German Science Foundation (DFG)
Visiting Professor at the Institute of Nonlinear Sciences, University of California, Santa Cruz, USA
1988 Full Professor for Theoretical Physics, University of Oldenburg
1992 Managing Director of the Interdisciplinary Institute for Coastal Environment Studies (ICBM), University of Oldenburg
1993 Director of the Potsdam Institute for Climate Impact Research (PIK)
Chair for Theoretical Physics at the University of Potsdam, Germany
2001 Additional engagement as Research Director of the Tyndall Centre for Climate Change Research
Professor at the Environmental Sciences School of the University of East Anglia, Norwich, UK
2010 External Professor at the Santa Fe Institute, USA
2015 Senior Research Fellow with the Stockholm Resilience Centre, Sweden

Awards

2002 Wolfson Research Merit Award and Research Fellowship of the Royal Society

2004 Honorary CBE (Commander of the Most Excellent Order of the British Empire) awarded by Queen Elizabeth II

2007 German Environment Prize

2008 Environment Prize of the "Bundesdeutscher Arbeitskreis für Umweltbewusstes Management e.V." (B.A.U.M)

2008 Times Higher Education Award: Research Project of the Year (University of East Anglia: Climate-System Tipping Elements, initiated by Hans Joachim Schellnhuber)

2011 Volvo Environment Prize, awarded in Stockholm

2011 Pioneer of the German Energy Transformation

2013 Wilhelm-Foerster-Prize awarded by the URANIA Potsdam

2014 Honorary citizenship of the town of Ortenburg, Passau

2014 Culture Prize awarded by the district of Passau

Prof. Gretchen C. Daily (USA)

Achievements of Prof. Gretchen C. Daily

Professor Daily has studied the effects of human activities on the biosphere[8] based on field work of many years. She has also assessed which types of species and ecosystems[9] will survive human impacts, over the coming decades and century, and the implications for human well-being. She has been making efforts based on scientific evidence to achieve a sustainable society that is in harmony with nature.

To this end, Professor Daily has developed a new field of academic study called Countryside Biogeography[10]. Under this model, most parts of the earth can be seen as countrysides[11]—that is, areas that are strongly influenced by human activities. Daily has explored the extent to which biodiversity[12] and ecosystem services[13] to society are being changed by humans. Together with other researchers, she is making significant contributions to our understanding of biodiversity, by predicting various species' likelihood of survival and analyzing the future of ecosystems, especially from the standpoint of agricultural land use.

Premised on the theory of Countryside Biogeography, Professor Daily has developed a quantitative framework and supporting models[14] to explore how a sustainable society could be achieved. The model she used—developed by the Natural Capital Project (NatCap) partnership[15] that she co-founded and directed—considers bioenvironmental, economic, and institutional elements, and forecasts likely future changes to life and life-support systems on Earth. With the objective of achieving a balanced ecosystem and the welfare of humans, under a particular scenario (the environmental conditions of habitats), her findings have served to inform investments in nature by governments, multi-lateral institutions, corporations and communities.

In summary, Professor Daily has played a significant role in the creation and development of a new interdisciplinary field of science called Countryside Biogeography. Further, She has made an important contribution to our understanding of practical actions that can be implemented to secure both ecosystems and human well-being, and of the policy measures needed to support these outcomes.

[8]Biosphere

The biosphere is the thin layer of life about Earth's surface – the sum of the area in which organisms live, and where the interactions between the organisms and non-living materials occur. In a narrow sense, a biosphere refers only to the organisms in the area.

[9]Ecosystem

An ecosystem includes all the groups of organisms and non-living materials in a certain area. To a certain extent, an ecosystem represents a closed system.

[10]Countryside Biogeography

Countryside Biogeography is the study of life over space and time in areas defined as Countryside*[11] that have been significantly affected by human activities.

[11]Countryside

Countryside is defined as the increasing proportion of the Earth's ecosystems strongly influenced by humans. It includes the Earth's unbuilt land surfaces, as well as agricultural plots, gardens and pastures, plantations or managed forests, and the remnants of native vegetation in areas devoted primarily to human activities. For example, more than half of Costa Rica is Countryside; over half of its native bird species occur in largely deforested countryside habitats, together with comparable proportions of mammals, reptiles and amphibians, and butterflies, moths, bees and other insects.

[12]Biodiversity

Biodiversity consists of diversity with respect to ecosystems and species, as well as genetic diversity (diversity of genes), and indicates that a variety of organisms exist in an ecosystem/biotic formation, as well as globally.

[13]Ecosystem services

Ecosystem services are the benefits an ecosystem provides to humans. These benefits are of four types:

1) Supply services

Food, lumber, clothing, water, and medicine that is necessary for food, clothing, and shelter

2) Adjustment services
Purification of the air and water, modulation of climate, and prevention of natural disasters
3) Cultural services
Entertainment such as outdoor recreation for enriching human life
4) Fundamental services
Plant photosynthesis, soil formation (soil formed by insects and microorganisms), and the water cycle are the foundation of the above services 1) to 3).

[14]Quantitative analysis model

The Natural Capital Project[15] has developed a framework for valuing the benefits of nature, codified in a quantitative analysis model called InVEST (for Integrated Valuation of Ecosystem Services and Tradeoffs). This software is used to model and map the transmission/distribution of ecosystem services and economic values. InVEST is used by researchers and decision-makers to visualize the effects of a variety of development scenarios, and the trade-offs between and convertibility of environmental, economic, and social benefits. It is capable of simulating the effects of resource management practices and various investment options (scenarios) on the economy, health, and environment for administrators and policy makers.

[15]Natural Capital Project (NatCap)

The Natural Capital Project (NatCap) is a partnership comprising academics, software engineers, and real-world professionals that provides free, open-source tools to advance understanding of the value of nature to society, and the trade-offs between the benefits of investments and ecosystem services when governments/developmental organizations/NGOs/corporations make significant decisions on investments/loans. InVEST (Integrated Valuation of Ecosystem Services and Tradeoffs) software provides tools for mapping and valuing ecosystem services on land and in the ocean.

Biographical Summary

Academic background

1986 B.S. in biological sciences from Stanford University

1987 M.S. in biological sciences at Stanford University

1992 Ph.D. in biological sciences from Stanford University

1992 Winslow/Heinz Postdoctoral Fellow at UC Berkeley's Energy and Resources Group.

Career

1995 Bing Interdisciplinary Research Scientist in the Department of Biological Sciences at Stanford University.

2005 Bing Professor of Environmental Science in the Department of Biology at Stanford University

Senior Fellow at the Stanford Woods Institute for the Environmen

Director of the Center for Conservation Biology at Stanford University

2006 Member of the board of directors of The Nature Conservancy

2013 Visiting Professor in Sustainability Studies at the University of Cambridge

Awards

2000 The 21st Century Scientist Award

2008 The Sophie Prize

2009 The International Cosmos Prize

2010 The Heinz Award

2010 The Midori Prize

2012 Volvo Environment Prize

Remarks from the Award Recipients upon Notification of their Selection

Prof. Hans J. Schellnhuber (Germany)

Seen from outer space, our home looks like a fragile blue marble, embedded in endless darkness. Evidently, the Earth and its life-supporting systems need to be handled with the utmost care. Therefore, I am most grateful for receiving the Blue Planet Prize 2017. But at the same time, I feel humbled by the daunting challenge to help preserve our common home for future generations. We climate scientists have a twofold task to fullfill: first, unravelling the web of processes that make or break the planetary environment. And second, taking responsibility for the relentless communication of our findings to the stakeholders and the public. The latter is quite difficult in these times dominated by 'fake news' and 'alternative facts'. So we have to defend reason agains superstition and to set moral agains ideology. All this epitomized by the Blue Planet Prize.

Prof. GRETCHEN C. DAILY (USA)

Understanding the deep interconnections between people and Nature is fundamental to human health, security, and prosperity. We live in dangerous times, but at the cusp of a revolution in how people think about Nature. Around the world, we see awakening to human dependence on our blue planet's non-human companions, from microbes and bees to giant sequoias and vast coral reefs. We see emergence of a common language and approach for integrating the values of nature into the design of cities, working landscapes and seascapes, and protected areas.

The Japanese *satoyama* and *satoumi* systems yield key insights, and illuminate the challenge of bringing understanding from the past into our urbanized and digitized world.

I am so grateful to the Asahi Glass Foundation – and my many colleagues in the Center for Conservation Biology, the Natural Capital Project, and elsewhere – for driving the transformation from understanding into compassion and meaningful, durable action.