

The National Academies of SCIENCES • ENGINEERING • MEDICINE

2021 Nobel Prize Summit: Our Planet, Our Future The Future of Sustainability Education

Wednesday, April 28, 2021
10:00 - 11:40 am EDT
(all times are U.S. Eastern Time)

Overview: This session will highlight the findings and recommendations from the recent National Academies of Sciences, Engineering, and Medicine's report, [*Strengthening Sustainability Programs and Curricula at the Undergraduate and Graduate Levels*](#) with a focus on the future of sustainability education. Presentations and facilitated discussion will examine the role of universities in achieving the United Nations Sustainable Development Goals (SDGs), digital learning opportunities and student engagement, and the critical need to build a K-12 pipeline to higher education.

- 10:00 am **Welcome**
Marcia McNutt (NAS), President, National Academy of Sciences
Vaughan Turekian, Executive Director, Policy and Global Affairs, The National Academies of Sciences, Engineering, and Medicine
- 10:05 am **Opening Remarks**
Marilu Hastings, Chief Innovation and Strategy Officer, Cynthia and George Mitchell Foundation
- 10:10 am **Overview of the National Academies Report, Strengthening Sustainability Programs and Curricula at the Undergraduate and Graduate Levels**
Anne Kapuscinski, Director, Coastal Science and Policy Program, University of California, Santa Cruz
- 10:20 am **Panel: The Future of Sustainability Education**
Moderator: Arun Agrawal (NAS), Samuel Trask Dana Professor, School for the Environment and Sustainability, University of Michigan
- Sajitha Bashir, Adviser, Office of the Global Director, Education Practice, The World Bank (Building Science and Technology Capacity for Local Innovation)
 - Shamila Nair-Bedouelle, Assistant Director-General for Natural Sciences, United Nations Educational, Scientific, and Cultural Organization (Universities and Agenda 2030)
 - Zohra Yermèche, Program Director, Connect to Learn, Sustainability and Corporate Responsibility, Ericsson (The SDGs through Digital Learning and Entrepreneurship)
 - Dan Higgins, Global Technology Consulting Leader, Ernst & Young Global Ltd. (Digital Learning Opportunities for Sustainability)
 - Ellen Stofan, Under Secretary for Science and Research, Smithsonian Institution (Creating Pathways and Pipelines in Sustainability Education)
 - Jeffrey Sachs (NAM), Sustainable Development Solutions Network (Accelerating Education for the SDGs in Universities)
- 11:15 am **Special Dialogue**
Sir Richard Roberts, Chief Scientific Officer, New England BioLabs, Inc. (Nobel Prize in Physiology or Medicine, 1993)
- 11:30 am **Q&A Forum**
- 11:40 am **Adjourn**

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Biographies of Speakers and Moderators

MARCIA MCNUTT (NAS) is a geophysicist and the 22nd president of the National Academy of Sciences. From 2013 to 2016, she was the Editor-in-Chief of Science journals. Dr. McNutt was the Director of the U.S. Geological Survey (USGS) from 2009 to 2013, during which time USGS responded to a number of major disasters, including the Deepwater Horizon oil spill. For her work to help contain that spill, Dr. McNutt was awarded the U.S. Coast Guard's Meritorious Service Medal. She is a Fellow of the American Geophysical Union (AGU), the Geological Society of America, the American Association for the Advancement of Science, and the International Association of Geodesy. Dr. McNutt is a member of the U.S. National Academy of Engineering, the American Philosophical Society, and the American Academy of Arts & Sciences and a Foreign Member of the United Kingdom Royal Society, the Russian Academy of Sciences, and the Chinese Academy of Sciences. In 1998, Dr. McNutt was awarded AGU's Macelwane Medal for research accomplishments by a young scientist. She received the Maurice Ewing Medal in 2007 for her contributions to deep-sea exploration. Dr. McNutt received a B.A. in physics from Colorado College and a Ph.D. in Earth sciences from the Scripps Institution of Oceanography.

VAUGHAN TUREKIAN is the executive director of the National Academies of Sciences, Engineering, and Medicine's Policy and Global Affairs Division. Prior to joining the National Academies, he served as the fifth science and technology adviser to the U.S. secretary of state. In this capacity, he advised the secretary of state and other senior State Department officials on emerging science, technology, and health matters affecting the foreign policy of the United States. He is currently the co-chair of the 10 member group of advisers to the United Nations Secretary General on the role of science, technology, and innovation to advance the achievement of the Sustainable Development Goals. He has affiliations with Georgetown University School of Foreign Service and the University College London. Previously, Dr. Turekian was chief international officer for the American Association for the Advancement of Science and the founding director of its Center for Science Diplomacy. Dr. Turekian holds a B.S. from Yale University and an M.S. and Ph.D. from the University of Virginia, where he focused on the transport and chemistry of atmospheric aerosols in marine environments.

MARILU HASTINGS is Chief Innovation Officer for the Cynthia and George Mitchell Foundation in Austin, Texas. Marilu originated and leads the foundation's grantmaking program that moves knowledge to action for sustainability. Prior to moving to the foundation, Marilu held leadership positions at the Houston Advanced Research Center, a non-profit research organization founded by George P. Mitchell. During her career she has specialized in the interaction of science, public policy, and philanthropic investment. She is a trustee of the Regional Endowment for Sustainability Science, an appointed member of the National Petroleum Council, Chair of the Energy Institute Advisory Board at the University of Texas, and a member of the Advisory Board of the Bureau of Economic Geology at University of Texas. Marilu earned a Bachelor of Arts in economics and political science from Duke University, an MBA from the University of Texas at Austin, and a Master of Public Affairs from the University of Texas at Austin.

ANNE KAPUSCINSKI is Director of the [Coastal Science and Policy Program](#) and Professor of Environmental Studies at the University of California, Santa Cruz. She previously served as the Sherman Fairchild Chair of Sustainability Science and chair of the Environmental Studies program at Dartmouth College. Her current research aims to shift aquaculture, the world's fastest growing food sector, towards sustainability by integrating innovation, life-cycle analysis, and agroecology. Dr. Kapuscinski participates actively in the science-policy interface, presently serving as Chair of the Board of Directors of the Union of Concerned Scientists and member of the California Ocean Protection Council Science Advisory Team.

She is a Pew Fellow in Marine Conservation, editor in chief of the sustainability transitions domain of the journal, *Elementa: Science of the Anthropocene*, and was chair of the National Academies of Sciences, Engineering and Medicine committee on strengthening sustainability programs and curricula at the undergraduate and graduate levels.

Panel: The Future of Sustainability Education

ARUN AGRAWAL (NAS) is Samuel Trask Dana Professor at the School for the Environment and Sustainability at the University of Michigan. His research and teaching emphasize the politics of international development, institutional change, and environmental conservation. He has written critically on Indigenous knowledge, community-based conservation, common property, population and resources, and environmental identities. Since 2013, Dr. Agrawal has served as the editor-in-chief of *World Development*, and his recent work has appeared in *Science*, *Proceedings of the National Academy of Sciences of the United States of America*, *Conservation Biology*, and *Development and Change*, among other journals. Preceding his work at the University of Michigan, Dr. Agrawal held teaching and research positions at Yale University; University of Florida; McGill University; University of California, Berkeley; and Harvard University, among others. Dr. Agrawal received his Ph.D. in political science from Duke University.

SAJITHA BASHIR is Adviser in the Office of the Global Director of the Education Practice in the World Bank. She currently leads the work on digital skills as part of the Digital Economy initiatives of the World Bank and on using technology for accelerating human capital outcomes in South Asia. Formerly, she was Education Practice Manager responsible for over 20 countries in Africa. She pioneered the World Bank's support for science and technology in Africa. Her initiatives include financing the Africa Centres of Excellence regional project and establishing the first pan-African science fund, with contributions from African governments, the World Bank, donors and private sector (the PASET Regional Scholarship and Innovation Fund). She is the co-author of *Facing Forward: Schooling for Learning in Africa*, a flagship study of the World Bank on the quality of basic education in Africa. She has worked on Africa, Latin America, South Asia and the Middle East and holds a Ph.D. in economics from the London School of Economics.

SHAMILA NAIR-BEDOUELLE took up her new duties as the Assistant Director-General for Natural Sciences at the United Nations Educational, Scientific and Cultural Organization (UNESCO) in April 2019. Prior to this appointment, Dr. Nair-Bedouelle served as Director of the OzonAction programme at the United Nations Environment Programme (UNEP). A strong advocate for enhancing women's role in science and engineering, she launched UNEP's first training program for women technicians. Dr. Nair-Bedouelle holds a Ph.D. in life sciences from the University of Capetown in South Africa. She pursued her research career at the Institut Pasteur in Paris then within the pharmaceutical industry at the Massachusetts Institute of Technology. She has published in numerous scientific journals and is the co-inventor of several patents. She has been the Director of Research at the University of Paris V in France since 2000 and was nominated as the First Class Director of Research at INSERM in 2017. From 2002 to 2007, she was seconded from INSERM to the European Commission to serve as the Scientific Officer and the Deputy Scientific Coordinator of Scientific Programmes. In January 2007, Dr. Nair-Bedouelle was seconded from INSERM to UNESCO to head its Ethics of Science and Technology program.

ZOHRA YERMECHE heads Ericsson's flagship education program and oversees the development and deployment of Ericsson's Information and Communication Technology (ICT) solutions in schools across the world. Dr. Yermèche is a strong advocate of the key role that ICT and access to digital connectivity can play in addressing global sustainable development challenges particularly in the area of education. She has worked at the intersection of ICT and education in key projects around the globe, leading diverse coalitions of like-minded organizations. Currently Dr. Yermèche oversees Ericsson's global partnership with UNICEF that is focused on school connectivity mapping as part of the Giga project. Dr. Yermèche also drives Ericsson's contribution to the UNESCO led Global Education Coalition, setup in response to

Covid 19. Dr. Yermeche received her Ph.D. in Applied Signal Processing from the Blekinge Institute of Technology (Sweden). Her professional experience includes working as a senior researcher in Multimedia Technologies at Ericsson Research.

DAN HIGGINS is Ernst & Young's (EY's) Global Technology Consulting leader and a member of EY's Global Consulting Executive where he is responsible for driving the business strategy and offerings for the practice. He oversees approximately 30,000 global technology and data specialists, contributing approximately \$4B to EY's overall Consulting revenue. Technology is core to EY's growth strategy and he is responsible for expanding Technology Consulting capabilities, assets and solutions. He has been with the firm for over 20 years and held a number of senior leadership positions, including Global Client Service Partner for BNY Mellon. Mr. Higgins has a passion for Diversity & Inclusiveness, holding related leadership positions in the Americas and Europe. He is a lead sponsor and architect of EY's global Women in Tech program and an active supporter of its Neurodiversity initiatives. He has led numerous global technology-enabled transformation programs over his 24+ year career.

ELLEN STOFAN is Under Secretary for Science and Research for the Smithsonian Institution. Dr. Stofan oversees the science museums and science research centers as well as the Smithsonian Libraries and Archives, Office of International Relations, Smithsonian Scholarly Press and Scientific Diving Program. Dr. Stofan previously was the John and Adrienne Mars Director of the Smithsonian's National Air and Space Museum. As the former Chief Scientist of NASA, Dr. Stofan served as the principal advisor to the Administrator on science programs and strategic planning. Dr. Stofan held senior scientist positions at NASA's Jet Propulsion Laboratory. Currently, she is on the science team of the NASA Dragonfly mission to Titan. Dr. Stofan holds master's and doctorate degrees in geological sciences from Brown University, and a bachelor's degree from the College of William & Mary.

JEFFREY D. SACHS is a University Professor and Director of the Center for Sustainable Development at Columbia University, where he directed the Earth Institute from 2002 until 2016. He is also President of the UN Sustainable Development Solutions Network and a commissioner of the UN Broadband Commission for Development. He has been advisor to three United Nations Secretaries-General, and currently serves as an SDG Advocate under Secretary General António Guterres. He spent over twenty years as a professor at Harvard University, where he received his B.A., M.A., and Ph.D. degrees. He has authored numerous bestseller books. His most recent book is *The Ages of Globalization: Geography, Technology, and Institutions* (2020). Sachs was twice named as one of Time magazine's 100 most influential world leaders and was ranked by The Economist among the top three most influential living economists.

Special Dialogue

RICHARD J. ROBERTS is the Chief Scientific Officer at New England Biolabs in Ipswich, Massachusetts. He received a Ph.D. in organic chemistry in 1968 from Sheffield University and then moved as a postdoctoral fellow to Harvard University. From 1972 to 1992 he worked at the Cold Spring Harbor Laboratory, eventually becoming the Assistant Director for Research under Dr. J.D. Watson. He began work on the newly discovered Type II restriction enzymes in 1972 and these enzymes have been a major research theme. Studies of transcription in Adenovirus-2 led to the discovery of split genes and mRNA splicing in 1977, for which he received the Nobel Prize in Physiology or Medicine in 1993. During the sequencing of the Adenovirus-2 genome computational tools became essential and his laboratory pioneered the application of computers in this area. DNA methyltransferases as components of restriction-modification systems are also of active interest and the first crystal structures for the HhaI methyltransferase led to the discovery of base flipping. Bioinformatic studies of microbial genomes to find new restriction systems are a major research focus as is the elucidation of DNA methyltransferase recognition sequences using SMRT sequencing and a new approach to m5C containing recognition sequences.