

Sustainability Implications of the Ukraine Conflict and Global Food Security: A Workshop

Policy and Global Affairs Division
in collaboration with
Division on Earth and Life Studies, and Health and Medicine Division

Wednesday, June 1, 2022
All times are US Eastern Time

The public is invited to [register](#) to join virtually via a Zoom Webinar

AGENDA

Workshop Objectives:

- Raising awareness of the global food security challenges arising from the Ukraine conflict;
- Exploring approaches for improving global agricultural preparedness for crisis response; and
- Discussing strategies that might be applicable at different scales and opportunities for international collaboration.

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| 9:00 am | Welcome from the National Academies of Sciences, Engineering, and Medicine
Franklin Carrero-Martínez, Policy and Global Affairs Division
Elizabeth Eide, Division on Earth and Life Studies
Monica Feit, Health and Medicine Division |
| 9:10 am | Workshop Overview and Objectives
Klaus Tilmes, Senior Policy Advisor and Development Consultant (Sustainability Roundtable Chair) |
| 9:20 am | Framing Remarks: Research on Recurrent Acute Disasters, Global Environmental Change, and Sustainability
Gary Machlis, Clemson University and Miguel Román, Leidos |
| 9:50 am | Framing Remarks: Global Food Security Challenges and the Ukraine Conflict
Madhur Gautam, The World Bank |
| 10:25 am | BREAK |
| 10:45 am | Panel I: Challenges and Opportunities for Global Trade and Regional Supply Chains
<i>This panel will focus on challenges and opportunities for international trade and markets, including the impacts of supply chain disruptions/uncertainties and the importance of information sharing on commodities during crisis.</i>

Moderator: Jeff Martin, Tribal Planet <ul style="list-style-type: none">• Joseph Glauber, International Food Policy Research Institute• Nicoletta Batini, International Monetary Fund• Yousuf Al-Bulushi, German University of Technology in Oman |

11:45 am	Q&A and Discussion All Participants
12:00 pm	LUNCH
1:00 pm	<p>Panel II: Improving Global Agricultural Preparedness for Crisis Response <i>This panel will highlight a systems perspective for improving global agricultural preparedness for crisis response, including the balance between greater resilience and efficiency, potential trade-offs, and unintended consequences to improve preparedness.</i></p> <p>Moderator: Roni Neff, Johns Hopkins University</p> <ul style="list-style-type: none"> • Marty Matlock, University of Arkansas • Ray Weil, University of Maryland • Nate Mook, World Central Kitchen
2:00 pm	Q&A and Discussion All Participants
2:15 pm	BREAK
2:30 pm	<p>Panel III: Understanding Links between Climate Change and Security Implications <i>This panel will focus on the linkages between food insecurity and instability/conflict in a changing climate and possible approaches to address these types of risks among the national security community, including defense, diplomacy, development agencies, etc.</i></p> <p>Moderator: Melissa Ho, World Wildlife Fund</p> <ul style="list-style-type: none"> • Rod Schoonover, Council on Strategic Risks • Brian O'Neill, Pacific Northwest National Laboratory • Tegan Blaine, U.S. Institute of Peace
3:30 pm	Q&A and Discussion All Participants
3:45 pm	<p>A Path Forward: Future Needs and Opportunities <i>Based on speaker presentations and panel discussions, participants will discuss strategies that might be applicable over multiple scales in time and space, as well as opportunities for international collaboration.</i></p> <p>Moderator: Klaus Tilmes, Sustainability Roundtable Chair</p>
4:25 pm	<p>Wrap Up Klaus Tilmes, Senior Policy Advisor and Development Consultant (Roundtable Chair)</p>
4:30 pm	Adjourns

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Biographies of Speakers and Moderators

KLAUS TILMES (Workshop Chair) is a Senior Policy Adviser and former World Bank Director with over 30 years of international experience in development policy, strategy development at global, country, and sectoral levels, and program implementation. Since leaving the World Bank, Mr. Tilmes is providing policy advice to international organization, governments, and private sector companies on economic trends, human development, data policies, and technology strategies. As senior expert, he works closely with the African Center for Economic Transformation and the United Nations organizations on science, technology, and innovation. At the World Bank, Mr. Tilmes worked most recently with the Office of the President to develop the institution's strategy on emerging technologies and scaling adoption through financial assistance, policy advice, and public-private partnerships. He served as Director of the Trade and Competitiveness Global Practice, overseeing operations across Sub-Saharan Africa, the Middle East, and North Africa and leading global expert teams on trade competition policy, innovation, and entrepreneurship. During his tenure at the World Bank, Mr. Tilmes also held positions as Operation and Strategy Director for Finance and Private Sector Development; Knowledge Strategy Advisor; and Manager at the Independent Evaluation Group. He earned a Master's in Public Administration from Harvard University as a McCloy Scholar and a Master in Economics from the University of Mannheim.

FRANKLIN CARRERO-MARTÍNEZ joined the National Academies of Sciences, Engineering, and Medicine in 2018 where he directs the Global Sustainability and Development and the Science and Technology for Sustainability program within the division of Policy and Global Affairs. Prior to this appointment, he was the Acting Deputy Science and Technology Adviser to the Secretary of State. Dr. Carrero-Martínez holds a B.S. in biology, with honors from the University of Puerto Rico (UPR), a Ph.D. in cell and developmental neurobiology, and a certificate in business administration from the University of Illinois at Urbana-Champaign. His multidisciplinary career includes several roles in academia and government: from researcher and educator, science administrator, to science policy and diplomacy. Previously, Dr. Carrero-Martínez held appointments as associate professor at the UPR, Mayagüez, Adjunct Professor at the UPR Medical Science Campus, and as visiting scholar at Duke University, Massachusetts Institute of Technology, and Japan's Institute of Genetics.

ELIZABETH EIDE is Executive Director for the Division on Earth and Life Studies (DELS) at the National Academies of Sciences, Engineering, and Medicine. Dr. Eide brings to the position an outstanding record of project leadership, program management, sponsor stewardship, and cross-Academies collaboration. She joined the National Academies in 2005 as a senior program officer in the Board on Earth Sciences and Resources (BESR). In this capacity, she directed studies that have had notable impacts on science policy on topics such as critical minerals, induced seismicity, and disaster resilience. She also has served as staff director of the standing Committee on Earth Resources for many years, and more recently as director of the Roundtable on Unconventional Hydrocarbon Development. Dr. Eide was named director of BESR in 2012 and has also directed the Water Science and Technology Board since 2016, rising to the level of senior board director for both boards in 2017. She served as acting deputy executive director of DELS for three months starting in November 2019, taking on the acting executive director role in February 2020 until she was named executive director five months later. Prior to joining the Academies, Dr. Eide served as team leader, researcher, and laboratory manager in the Geological Survey of Norway. She is an elected member of the Royal Norwegian Society of Sciences and Letters and was a U.S.-Norway Fulbright Scholar in 1995. Dr. Eide received the Academies "Best in a

Leading Role” staff award in 2017. She holds a doctorate in Geology from Stanford University and a B.A. in Geology from Franklin and Marshall College.

MONICA FEIT is Executive Director for the Health and Medicine Division at the National Academies of Sciences, Engineering, and Medicine. Previously she served as the Deputy Executive Director for the Division of Behavioral and Social Sciences and Education since 2017. During that time she has championed the institution’s work in innovation and assisted in the creation of the first NRC Strategic Plan. Dr. Feit also was instrumental in the design and staff leadership of the Societal Experts Action Network, which brings together leaders and institutions in social, behavioral, and economic fields to provide rapid, actionable responses to urgent policy questions related to COVID-19. In addition, Dr. Feit has been a member of the Senior Executive Service in the Department of Health and Human Services where she held leadership positions at the Substance Abuse and Mental Health Services Administration and the Office of the Assistant Secretary for Planning and Evaluation. She served as a congressional staffer on the Senate Committee on Health, Education, Labor, and Pensions and as a senior program officer where she directed the 2011 report *The Health of Lesbian, Gay, Bisexual, and Transgender People*. Dr. Feit holds a Doctorate of Philosophy from London South Bank University, Master of Public Health from Columbia University, and B.A. in Government and International Relations from Smith College.

Framing Remarks

GARY MACHLIS is University Professor of Environmental Sustainability at Clemson University, and served as Science Advisor to the Director, U.S. National Park Service (NPS) during both terms of the Obama administration. He was the first scientist appointed to this position within the NPS and advised the director on a range of science policy issues and programs, also serving as the Science Integrity Officer for the agency. Dr. Machlis was co-Leader of the U.S. Department of the Interior’s Strategic Sciences Group, which conducts scientific assessments during major environmental crises. He joined the Clemson faculty in 2013; he was on the faculty at the University of Idaho from 1979-2013. Dr. Machlis received his bachelor’s and master’s degrees from the University of Washington in Seattle, and his Ph.D. in human ecology from Yale University. Dr. Machlis has written numerous books and scientific papers on issues of conservation, human ecology, sustainability, and the politics of science. His books include *Warfare Ecology: A New Synthesis for Peace and Security* (2011), *The Structure and Dynamics of Human Ecosystems* (2017) which received an award as an Academic Title of the Year from *Choice*, and *The Future of Conservation in America: A Chart for Rough Water* (2018). His upcoming book, *Desolation Row: Sustainability for the Forgotten* will be published in 2023. His research has appeared in journals as varied as *Bioscience*, *Climatic Change*, *Conservation Biology*, *Society and Natural Resources*, *Science Advances*, and *Science*. Dr. Machlis is active in international conservation and worked in China in 1981, 1986-87, and 2004 on the Giant Panda Project for the World Wildlife Fund. He has conducted research on conservation and sustainability issues in the Galápagos Islands, the national parks of Kenya, and in Eastern Europe, and has helped advance environmental science and sustainability collaborations between the U.S. and Cuba. As co-leader of the Strategic Sciences Group, Dr. Machlis led the Group’s response and assessment related to the Deepwater Horizon oil spill and Hurricane Sandy. He also led the AAAS project to rebuild science capacity in Haiti after its devastating earthquake. Dr. Machlis is also a member of the Last Glacier Collective, a group of artists and scientists working together to advance public understanding of climate change. In 2010, Dr. Machlis was elected a Fellow of the American Association for the Advancement of Science.

MIGUEL O. ROMÁN serves as Senior Director and Chief Scientist of Climate and Environment at Leidos. As Chief Scientist of the Integrated Missions Operation (IMO) within the Leidos Civil Group, Dr. Román leads a broad range of capabilities across the Earth Sciences, including climate-sensitive water and agriculture, renewable energy, disaster resilience, and sustainable urban infrastructure. He is

responsible for planning, leading, directing, and growing a \$100M+ portfolio of climate-related science and technology programs. Dr. Román has served in multiple leadership, organizational management, and technical capacities across the federal government, academic and nonprofit sectors. Since 2014, Dr. Román has led a worldwide group of investigators and technical staff in generating long-term climate data records from polar-orbiting satellites. The suite of products are generated from the Moderate Resolution Imaging Spectroradiometer (MODIS) and Visible Infrared Imaging Radiometer Suite (VIIRS) – two of the largest and most comprehensive satellite systems operated by NASA and NOAA to monitor our planet’s vital signs. A leading researcher in the field of Satellite Remote Sensing, Dr. Román has championed translational research, sustainability science, and data-intensive approaches to address climate-related risks. These efforts have improved disaster resilience and reduced the disproportionate risks experienced by socially-vulnerable and underserved communities. Dr. Román, a native of San Juan Puerto Rico, was recognized by President Barack Obama in 2016 with the Presidential Early Career Award for Scientists and Engineers (PECASE). He is also a 2014 Service to America Medal “Sammies” finalist, one of the highest honors for federal civil servants. He holds a bachelor’s degree in electrical engineering from the University of Puerto Rico at Mayagüez, a master’s degree in systems engineering from Cornell University, and a Ph.D. in geography from Boston University.

MADHUR GAUTAM is a Lead Economist with the Agriculture Global Practice at the World Bank. He has a Ph.D. in Agricultural Economics from the University of Maryland. With experience across many parts of the World Bank over the past 25 years including Development Economics (Research), Agricultural Policies Division, Independent Evaluation Group, and Operations unit in Africa and South Asia, the main focus of his current work is on agricultural and food policy analysis and development strategy. In addition to leading major evaluations, including the review of the Highly Indebted Poor Countries (HIPC) Debt Relief Program, he has authored and contributed to numerous reports, policy notes and journal papers on a range of topics including agriculture productivity growth, research and extension, rural finance, food price volatility, risk management, social safety nets, rural poverty, structural transformation, forestry, and broadly agriculture and rural development policy.

Panel I: Challenges and Opportunities for Global Trade and Regional Supply Chains

JEFF MARTIN (Moderator) is Founder and Chief Executive Officer (CEO) of Tribal Planet, Inc. Through the marketing and development of groundbreaking technologies, Mr. Martin has spent his career applying innovation to multimedia product design. Mr. Martin continues to build new mobile commerce channels by changing the way consumers engage with entertainment, industry and philanthropy. In 2001 and 2008, Mr. Martin founded Tribal Brands and Tribal Technologies, respectively. Tribal Brands developed mCommerce solutions for a variety of consumer brands and was one of the first companies to drive more than one billion dollars in mobile-based sales for the entertainment industry through 17 global carrier alliances. Tribal Technologies created the first intelligent database behind mobile applications that predicted consumer behavior and interactions, powering unique mCommerce channels, and providing incentive programs for customers. The extensive mobile analytics platform captured actionable, psychographic data highlighting user tastes and preferences collected through mobile devices. In 2014, Tribal Brands and Tribal Technologies were combined to create Tribal Planet. Prior to Tribal Planet, Mr. Martin helped pioneer the entertainment and new media markets divisions at Apple in the early 1990s for 9 years and was a direct report to Steve Jobs after the NEXT acquisition.

JOSEPH GLAUBER is a Senior Research Fellow at the International Food Policy Research Institute (IFPRI) in Washington, DC where his areas of interest are price volatility, global grain reserves, crop insurance and trade. Prior to joining IFPRI, Dr. Glauber spent over 30 years at the U.S. Department of Agriculture including as Chief Economist from 2008 to 2014. As Chief Economist, he was responsible for the Department’s agricultural forecasts and projections, oversaw climate, energy and regulatory issues, and served as Chairman of the Board of Directors of the Federal Crop Insurance Corporation. From 2007-

2009, Dr. Glauber was the Special Doha Agricultural Envoy at the office of the U.S. Trade Representative where he served as chief agricultural negotiator in the Doha talks. He served as economic adviser at the so-called Blair House agreements leading to the completion of the Uruguay Round negotiations. He is the author of numerous studies on crop insurance, disaster policy and U.S. farm policy. Dr. Glauber received his Ph.D. in agricultural economics from the University of Wisconsin and holds an A.B. in anthropology from the University of Chicago. In 2012, he was elected Fellow of the Agricultural and Applied Economics Association.

NICOLETTA BATINI is the Lead Evaluator of the International Monetary Fund's (IMF's) Independent Evaluation Office. Prior to the IMF, she was Advisor of the Bank of England's Monetary Policy Committee, Professor of Economics at the University of Surrey, and Director of the International Economics and Policy Office of the Treasury in Italy. Dr. Batini's fields of expertise include monetary policy, public finance, open economy macroeconomics, labor economics, energy and environmental economics, and economic modeling. Her new book "The Economics of Sustainable Food: Smart Policies for People and the Planet" was published in 2021 by Island Press and the International Monetary Fund. She holds a Ph.D. in international finance from the Scuola Superiore S. Anna and a Ph.D. in monetary economics from the University of Oxford.

YOUSUF AL-BULUSHI is Assistant Deputy Rector for Innovation and Educational Services at German University of Technology in Oman. Former senior diplomat, innovator and entrepreneurial leader, Dr. Al-Bulushi brings forward more than 20 years of work experience in the combined fields of science-Policy-Interface (SPI), science diplomacy, innovation, entrepreneurship and building competitiveness. He has a unique combination of triple-helix expertise across academia-government-business in strategic planning, developing policies initiatives to enhance performance, and building opportunities for sustainable growth. Dr. Al-Bulushi gained professional experience through his work with world-class multi-nationals, such as United Nation General Assembly (UNGA), United Nation Science, Technology & Innovation Forum (UN STI Forum), United Nation Commission on Science & Technology for Development (CSTD), Foreign Ministries Science & Technology Advisory Network (FMSTAN) University of Oxford, UNESCO, The World Academy of Science, The International Science Council, Fletcher School of Law & Diplomacy at Tufts University, contributing significantly to complex scientific and high-technology strategy development projects for sustainable development.

Panel II: Improving Global Agricultural Preparedness for Crisis Response

RONI NEFF (Moderator) is Associate Professor in the Johns Hopkins Bloomberg School of Public Health's departments of Environmental Health & Engineering and Health Policy & Management. She also directs the Food System Sustainability and Public Health program at the Johns Hopkins Center for a Livable Future, an academic center focused on food systems and public health. Dr. Neff's work is driven by concern about the challenges we confront in the effort to meet future food needs; about food's outsized impact on global environmental challenges; and about the inequities that threaten current and future food security. Her research, policy and practice efforts focus in three main areas: 1) wasted food; 2) sustainable and plant-based diets and 3) urban food system resilience. She has worked closely with Baltimore city to support their food system resilience planning, and is currently working to develop indicators for use in modeling and to enable cities to track progress. She uses qualitative and quantitative tools to explore the social and policy questions needed to understand and address these food system challenges, with particular focus on consumer behavior and communications. She is especially interested in grappling with the complex social realities that complicate well-meaning public health efforts. Dr. Neff edited the first-ever textbook on food systems and public health. Dr. Neff has led the American Public Health Association's Food & Environment Working Group. She received her A.B. from Brown University, master's degree from the Harvard School of Public Health, and Ph.D. from the Johns Hopkins Bloomberg School of Public Health.

MARTY MATLOCK is a professor of biological and agricultural engineering in the University of Arkansas Systems Division of Agriculture and is currently detailed full time to the U.S. Department of Agriculture (USDA) as a Senior Advisor to the Marketing and Regulatory Programs (MRP) on food systems resiliency. He has worked with the global food supply chain over the past 25 years to measure and improve sustainability, increase efficiency, reduce environmental impacts, and expand resiliency. He received the CAST-Borlaug Communications Award in 2018, more than 50 national and international design awards, and served on the board of directors for Field to Market from 2010-2016. He received his B.S. in agronomy, M.S. in botany, and Ph.D. in biosystems engineering from Oklahoma State University in Stillwater, OK. He was founding executive director of the University of Arkansas Resiliency Center and chair of the Cherokee Nation Environmental Protection Commission prior to joining USDA as a Senior Advisor in 2021.

RAY WEIL is Professor of Soil Science in the College of Agriculture and Natural Resources at University of Maryland. Dr. Weil is an internationally recognized expert on soil science, nutrient cycling, soil organic matter and cover crop systems for soil health and water quality. His methods for soil microbial biomass and active Carbon are adopted by USDA/NRCS (Natural Resources Conservation Service) and researchers worldwide. His research on multi-purpose cover crops and ecological approaches to soil management is used by landscape managers and farms, large and small. He has advised on food security and soil management in Africa and other developing regions. He teaches undergraduate and graduate-level courses in soil science, soil fertility and sustainable agriculture. His textbook, *The Nature and Properties of Soils*, is the most widely used soils textbook in the U.S. and around the world. Dr. Weil received his B.S. in Crop and Soil Sciences from Michigan State University, his M.S. in Soil Fertility from Purdue University, and his Ph.D. in Soil Science from Virginia Tech, Blacksburg.

NATE MOOK is the Chief Executive Officer (CEO) of World Central Kitchen. Mr. Mook began his career as a tech entrepreneur and later worked as documentary producer, leading film productions around the world for the United Nations, U.S. Agency for International Development, and World Bank. He produced the film *Baltimore Rising* for HBO. Mr. Mook previously developed and spearheaded TEDx events in numerous countries, and was selected as a Gates Foundation “Change Hero” for his work with TEDx elevating voices in underserved communities. Mr. Mook began working with José Andrés and World Central Kitchen in 2012, and together they produced a PBS/National Geographic documentary on Haiti in 2015. Mr. Mook led World Central Kitchen’s food relief efforts in Puerto Rico after Hurricane Maria in September 2017, ultimately becoming CEO in early 2018. Since then, Mr. Mook has led the organization’s dramatic growth and strategic shift to its current work using food as a solution to humanitarian crises around the world.

Panel III: Understanding Links between Climate Change and Security Implications

MELISSA HO (Moderator) is Senior Vice President for Freshwater and Food at the World Wildlife Fund (WWF) in the United States, where she leads and supports WWF’s initiatives focusing on regenerative and resilient food systems and the conservation of freshwater ecosystems for people, nature, and climate. Dr. Ho has over 25 years of experience as a scientist, policy advisor, and development professional, working at the intersection of water and agriculture and the connections to health, energy, climate, and national security. She has served in both U.S. government bilateral development aid agencies. She oversaw a \$1.5 billion portfolio of infrastructure investments in West Africa, primarily related to agriculture, irrigation, and energy, as part of the Millennium Challenge Corporation (MCC). She also served as the Technical Division Director and Senior Advisor in the Bureau for Food Security at the U.S. Agency for International Development (USAID). Earlier in her career, Dr. Ho developed and implemented the first agriculture water management strategy and grant portfolio for a major foundation. She has also served in the U.S. Congress in various capacities. Dr. Ho’s academic training includes a

Ph.D. in plant physiology from the Pennsylvania State University, an M.S.c. in soil science from the University of California, Davis, and a B.S.c. in environmental systems from Cornell University.

ROD SCHOONOVER is the head of the Ecological Security Program at the Council on Strategic Risks. He is also the founder and CEO of the Ecological Futures Group, which examines the natural security and societal dimensions of global ecological change. He previously served as director of environment and natural resources and director of global health at the National Intelligence Council in the Office of the Director of National Intelligence and as senior scientist and senior analyst in the State Department's Bureau of Intelligence and Research. Prior to joining government as an American Association for the Advancement of Science diplomacy fellow in 2009, he was a tenured professor in the Department of Chemistry and Biochemistry at Cal Poly, San Luis Obispo, and a visiting research professor in the Department of Microbiology at the Scripps Research Institute in La Jolla, California. He earned his Ph.D. in chemical physics at the University of Michigan where he studied complex systems and chaos theory.

BRIAN O'NEILL is a Chief Scientist at the Joint Global Change Research Institute, a collaboration between Pacific Northwest National Laboratory (PNNL) and the University of Maryland in College Park. His research interests are in human-earth system interactions, in particular the human dimensions of global environmental change. Previously he was a Professor at the Josef Korbel School of International Studies at the University of Denver and also served as Director of Research at the Korbel School's Pardee Center for International Futures. He led research groups on Integrated Assessment Modeling and on Climate and Human Systems at the U.S. National Center for Atmospheric Research, and on Population and Climate Change at the International Institute for Applied Systems Analysis. Earlier in his career, Dr. O'Neill was on the science staff of the Environmental Defense Fund in New York, and an Assistant and Associate Professor (Research) at Brown University's Watson Institute for International Studies. He is a Convening Lead Author for the Intergovernmental Panel on Climate Change Sixth Assessment Report and was an author on the U.S. Fourth National Climate Assessment. Dr. O'Neill holds a Ph.D. in Earth Systems Science and an M.S. in Applied Science, both from New York University.

TEGAN BLAINE is the Director of the Climate, Environment, and Conflict (CEC) Program at the U.S. Institute of Peace (USIP). Prior to joining USIP in 2020, she served as vice president on a climate change initiative at the National Geographic Society. She also led the climate change team in USAID's Bureau for Africa for over a decade, where she developed USAID's strategy and investment plan for its climate change work in Africa, and built and led a team that provided thought leadership and technical support to USAID's Africa missions. Before USAID, Dr. Blaine worked on climate change and international development at McKinsey & Company; served as a policy advisor on water at the U.S. Department of State; and taught math and physics as a Peace Corps volunteer in Tanzania. She has taught about climate change and international development at George Washington University's Elliott School of International Affairs and at Johns Hopkins University's School of Advanced International Studies. Dr. Blaine earned her doctorate in oceanography and climate from the Scripps Institution of Oceanography and bachelor's degrees in comparative literature and mathematical ecology from Brown University.