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**STRENGTHENING SUSTAINABILITY PROGRAMS AND CURRICULA AT THE UNDERGRADUATE
AND GRADUATE LEVELS**

Workshop Agenda

Seymour Marine Discovery Center • 100 McAllister Way • Santa Cruz, CA 95060

Friday, January 24

8:30 am – 9:00 am Opening Remarks

- Katharyne Mitchell, Dean of Social Sciences at University of California at Santa Cruz
- Chair Anne Kapuscinski welcomes the attendees and provides context for the study

9:00 am – 10:30 am Panel 1 – Perspectives from Sustainability Students and Alums

Discuss experiences, challenges, and opportunities in sustainability education programs.

- Natalie Arora (B.A.), Susa Ventures
- Rafid Shidqi (M.S. Student), Coastal Science & Policy, UC Santa Cruz
- Angie Xiong (M.A.), Ascent Environmental
- Leehi Yona (Ph.D. Student), Stanford University
- Casey Zweig (M.S. Student), Wells Fargo Fellow in Coastal Science and Policy, UC Santa Cruz

10:30 am – 10:45 am Break

10:45 am – 12:00 pm Panel 2 – Perspectives from End Users

Discuss the sustainability skills and competencies valued by hiring organizations.

- Kelly Damewood, Chair, California Certified Organic Farmers
- Mike Mielke, Senior Vice President, Silicon Valley Leadership Group
- Harold Mitchell, Founder and CEO, ReGenesis
- Alvaro Sanchez, Environmental Equity Director, The Greenlining Institute

12:00 pm – 1:00 pm Lunch

1:00 pm – 2:15 pm Panel 3 – Perspectives from Faculty

Discuss the sustainability skills and competencies valued in the research and academic community, as well as ideas for strengthening sustainability programs

- Bill Clark, (virtually) Harvey Brooks Professor of International Science, Public Policy and Human Development, Chair, International and Global Affairs Program, John F. Kennedy School of Government, Harvard University
- Kristi Kremers, Director of Graduate & Faculty Leadership Programs, Institute on the Environment, University of Minnesota
- Pamela Matson, Goldman Professor in the School of Earth, Energy & Environmental Sciences, Department of Earth System Science, Stanford University
- Yuwei Shi, Professor of Strategic Management, Middlebury Institute of International Studies
- Erika Zavaleta, (virtually) Howard Hughes Medical Institute Professor, Ecology and Evolutionary Biology Department. University of California at Santa Cruz

2:15 pm – 2:30 pm Higher education partnerships with local communities

- David Palter, Workforce Development Director, Silicon Valley Leadership Group

2:30 pm – 2:45 pm Plenary discussion and final remarks

2:45pm Workshop adjourns and committee moves in to closed session

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Statement of Task

An ad hoc committee under the Science and Technology for Sustainability (STS) Program, in collaboration with the Board on Higher Education and Workforce (BHEW), will plan and conduct a series of three public workshops focused on strengthening sustainability programs and curricula at the undergraduate and graduate levels in the United States. Each workshop will examine different approaches and drivers for a coherent competency- and skill-based curriculum in the growing number of higher education sustainability programs, in order to connect them to the issues addressed through such frameworks as the United Nations Sustainable Development Goals (SDGs) and the priorities of end users, including the private and public sectors. Specific issues to be addressed in the workshops may include:

- Providing an overview of current practices and major advances in sustainability education at the undergraduate and graduate levels, both domestically and internationally, including trends in expansion across programs and disciplines and promising new approaches;
- Examining a comprehensive set of key competencies critical for sustainability education, and identifying knowledge gaps and critical barriers related to the effective development of common core competencies for interdisciplinary sustainability programs;
- Identifying strengths, gaps, priorities, and opportunities for university engagement with the SDGs, including accreditation of programs or national-level organizations to support and guide sustainability programs;
- Fostering partnerships between schools, universities, sectors, regions, and nations in sustainability higher education with enhanced recognition of the SDGs; and
- Discussing research agendas related to sustainability and the SDGs and the role of academic institutions to inform post 2030 processes.

Based on the content of the three workshops, the committee will produce a report that provides findings and recommendations for strengthening sustainability programs and curricula at the undergraduate and graduate levels that relate to the SDGs and other relevant sustainability frameworks. In addition, workshop proceedings in brief will be issued for the first two workshops.

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Chair: Anne R. Kapuscinski, Ph.D.

*Director of the Coastal Science and Policy Program
Professor of the Environmental Studies Department
University of California, Santa Cruz*

Committee Members

Arun Agrawal, Ph.D.

*Samuel Trask Dana Professor
School of Natural Resources and Environment
University of Michigan*

Christopher Boone, Ph.D.

*Professor and Dean
School of Sustainability
Arizona State University*

Erin Bromaghim, M.A.

*Director
Olympic and Paralympic Development
Office of the Mayor of Los Angeles*

Garrick E. Louis, Ph.D.

*Associate Professor
Engineering Systems and Environment
University of Virginia*

Dorceta E. Taylor, Ph.D.

*Professor of Environmental Sociology
School for Environment and Sustainability
University of Michigan*

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Speaker Biographies

Katharyne Mitchell is Dean of the Social Sciences and Professor of Sociology at the University of California, Santa Cruz. Her current research explores different aspects of migration, including how faith-based and other non-governmental organizations respond to asylum seekers whose claims for refugee status are denied. Recent books include *Making Workers: Radical Geographies of Education* (2018), and the co-edited *Handbook on Critical Geographies of Migration* (2019). Mitchell is the author of over 100 articles and book chapters and the recipient of grants from the MacArthur Foundation, Spencer Foundation, Fulbright Foundation, and National Science Foundation. She received a Guggenheim Fellowship in 2016.

Natalie Arora is the Head of Operations at Susa Ventures, an early-stage venture capital firm with over \$200M AUM, based in San Francisco. She focuses on running firm operations, supporting fundraising, designing our pre- and post-investment processes, building products to support 90+ portfolio companies and most importantly, strengthening the Susa Family — our close community of founders, investors, limited partners and operators. As Susa's resident food expert, she also helps evaluate investments in food & agriculture. Prior to joining Susa, Natalie helped build foodtech startups: Ecoscraps (acquired), Hampton Creek/JUST (unicorn) and Juicero (RIP). She grew up in the rural Midwest before heading west on a scholarship to Arizona State University, where she graduated with a BA in sustainability, with honors.

Rafid Shidqi is an early-career conservationist from the city South Tangerang, Indonesia. He was the East-West Center fellow in Hawai'i and winner of the Future Conservationist Award from the Conservation Leadership Programme. After he graduated from university, Rafid moved and worked in the epicenter of marine biodiversity—the coral triangle region of Indonesia—Raja Ampat, West Papua. His passion for sharks and rays grew after his volunteer work in Lamakera, East Nusa Tenggara—the biggest manta ray hunting community in the world. Rafid conducted ecology research on endangered sharks and rays, and is developing specific goals for solving the livelihood conflicts with Indonesian remote coastal communities who are dependent on these species. Until joining Master's in Coastal Science and Policy, Rafid worked with United Nations Development Programme (UNDP) in working to develop the National Tuna Management Plan with Indonesian Ministry of Marine and Fisheries. Currently, he also managing the Thresher Shark Project Indonesia, an initiative to transition communities from traditional shark-hunting to sustainable alternative livelihoods using research, stakeholder engagement and education. He believes that endangered species protection and community livelihoods are mutually important. Through his career, he hopes to find the trade-offs of conservation policy, and find innovative approaches that could help conserve endangered species, while also maintaining livelihoods of coastal communities.

Angie Xiong is an environmental and sustainability planner at Ascent Environmental, with a broad range of experience in environmental impact analysis, climate action planning, sustainability planning, and public outreach. She works on a variety of projects including recreation and natural resource management, transportation infrastructure, water infrastructure, land use development, and climate

action plans. Angie obtained her master's degree from the School of Sustainability at Arizona State University, where she focused on systems thinking and the participatory design of sustainability interventions. As a member of the Sustainability Transition and Intervention Lab, Angie worked with a diverse set of stakeholders in a low-income community to design health provisioning systems that considered a wide range of impacts on health outcomes, including built environment, access to healthy food, and socioeconomic factors. Before landing at Ascent, Angie tried on several hats in the sustainability realm, including sustainability curriculum developer, educator, climate change fellowship manager, and community engagement consultant.

Leehi Yona is a PhD student in the Emmett Interdisciplinary Program in Environment and Resources (E-IPER) at Stanford University, where she studies how countries and institutions measure and report their greenhouse gas emissions. She received her Master's of Environmental Science from the Yale School of Forestry and Environmental Studies, and a Bachelor of Arts in Biology and Environmental Studies from Dartmouth College. Leehi is passionate about climate justice, and spent her time in school simultaneously organizing for fossil fuel divestment and at the United Nations climate change negotiations.

Casey Zweig is a Wells Fargo Fellow in the inaugural cohort of master's candidates in the UCSC Coastal Science and Policy Program. For her capstone project, she's leading operations at Full Cycle Bioplastics, a sustainable biotech startup that pioneered a process to turn mixed organic waste into an easily degradable bioplastic. Casey is scaling this technology at a pilot facility at Google to demonstrate the feasibility of circular materials and its role in mitigating climate change and eliminating plastic pollution. Casey comes from a policy background and formerly led the City of Malibu's environmental sustainability programs, including award-winning environmental campaigns and single-use plastic policies. Casey earned a B.A. from Duke University in Environmental Science and Policy.

Kelly Damewood is passionate about helping organic farmers thrive and has spent the last decade working to advance organic agriculture. She serves as the CEO of California Certified Organic Farmers (CCOF), a nonprofit organization that serves organic producers throughout North America by providing USDA organic certification services, organic advocacy, and educational programs. Damewood previously served as CCOF's policy director and holds a Juris Doctor degree from Vermont Law School and a Master of Laws degree in agricultural and food law from the University of Arkansas School of Law.

Mike Mielke is the Silicon Valley Leadership Group's Sr. Vice President, Environment & Energy. In this capacity, he works to advance state and federal policy specifically related to climate change mitigation and adaptation; corporate environmental sustainability; water quality, supply and governance; and hazardous and solid waste. Mike Mielke moved to Silicon Valley in 2008, after living in Washington DC for more than thirteen years. Mike greatly enjoys spending time hiking the Bay Area's many scenic trails in search of the next awe-inspiring vista. Mike's life's work involves promoting stronger and more sustainable businesses and communities. He has held jobs in the non-profit, government, and private sectors, including posts with a number of consulting firms, the White House Council on Environmental Quality, and the National Estuary Program. His direct experience encompasses assignments in the developed and developing world, where his work required close collaboration with business, non-profits, local and national governments, and bi- and multi-lateral donor organizations. Prior to joining the Silicon Valley Leadership Group, Mike was the Executive Director and Co-Founder of the Sustainable Business Network of Washington, a non-partisan not-for-profit dedicated to working with companies and local governments to advance the principles of corporate social responsibility. Prior to running SB NOW, Mike worked as an international development consultant, serving in posts such as Afghanistan,

Thailand, Egypt and all across the southern Caribbean. Mike holds a Master's degree in Public Policy, with a specialization in Ecological Economics, and a B.S. in Environmental Science. Mike is also on the Advisory Board for the San Francisco Restoration Authority, which works to help restore and protect San Francisco Bay's wetlands — providing more natural habitat and promoting flood protection to benefit our region.

Harold Mitchell is the Founder and CEO of ReGenesis, which is a worldwide leader in developing and implementing programs focused on helping communities address environmental injustices through proper cleanup of polluted and hazarded areas, redevelopment and revitalization of local housing and business sectors, and providing proper healthcare access and options.

Alvaro Sanchez is an urban planner with extensive experience crafting, implementing and evaluating strategies that leverage private and public investments to deliver community benefits to impacted communities. Alvaro is The Greenlining Institute's Director of Environmental Equity. He leads a team that develops policies to improve public health, catalyze economic opportunity, and enrich environmental quality for low-income communities and communities of color by leveraging "green" dollars used that address pollution, fight climate change, and helps vulnerable communities adapt to a changing environment. Alvaro is the organizational lead overseeing the implementation of the Greenhouse Gas Reduction Fund, SB 535 (De Leon, 2012), and AB 1550 (Gomez, 2016).

William Clark is the Harvey Brooks Professor of International Science, Public Policy and Human Development at Harvard University's John F. Kennedy School of Government. Trained as an ecologist, his research focuses on sustainability science: understanding the interactions of human and environmental systems with a view toward advancing the goals of sustainable development. He is particularly interested in how institutional arrangements affect the linkage between knowledge and action in the sustainability arena. At Harvard, he directs the Sustainability Science Program. He is co-author of *Pursuing sustainability: A guide to the science and practice* (Princeton, 2016), *Adaptive environmental assessment and management* (Wiley, 1978), and *Redesigning rural development* (Hopkins, 1982); editor of the *Carbon dioxide review* (Oxford, 1982); coeditor of *Sustainable development of the biosphere* (Cambridge, 1986), *The earth transformed by human action* (Cambridge, 1990), *Learning to manage global environmental risks* (MIT, 2001), *Global Environmental Assessments* (MIT, 2006) and *The global health system: Institutions in a time of transition* (Harvard, 2010). Clark is a recipient of the MacArthur Prize, the Humboldt Prize, and is an elected member of the National Academy of Sciences and the American Association for the Advancement of Science. He has taught courses in sustainable development since the 1990s at the undergraduate, masters, and postgraduate levels. In recognition of this teaching, he received the Kennedy School's Carballo Award for excellence in teaching, and the Harvard College Phi Beta Kappa Prize for Excellence in Teaching.

Kristi Kremers is the Director of Faculty and Graduate Leadership Programs including the Boreas Environmental Leadership Program, the IonE Associates Program, and the ANGLES Network. She is also finishing her Ph.D. in organizational, leadership, policy and development with a focus on the development of visionary leaders. Her passion is focused on training the next generation of environmental leaders and change agents. To do this, she believes that the landscape of graduate education must be transformed to break down academic silos and provide students with the capacity and connections to work across disciplines.

Kristi has lived multiple lives: a rock journalist at the young age of 16 interviewing musicians on tour buses, as an undergrad living with aboriginal tribes in Australia, two-time student body president at

the U representing the largest graduate governance structure in the country, co-founder of a non-profit, co-founder of a national lobbying organization, in addition to being a university researcher, administrator and teacher for the past decade.

She was previously the director of the Chancellor's Leadership Class at the University of Colorado—Colorado Springs, where she taught leadership studies, and has also taught in the leadership studies minor at the U of M. She is the best-selling author of a series of children's books that focus on the intersections of mindfulness and leadership. She enjoys yoga, traveling, quilting, and occasionally jumping out of a plane.

Pamela Matson is an interdisciplinary sustainability scientist, academic leader, and organizational strategist. She served as dean of Stanford University's School of Earth, Energy and Environmental Sciences from 2002-2017, building interdisciplinary departments and educational programs focused on resources, environment and sustainability, as well as co-leading university-wide interdisciplinary initiatives. In her current role as the Goldman Professor of Environmental Studies and Senior Fellow in the Woods Institute for the Environment, she leads the graduate program on Sustainability Science and Practice. Her research addresses a range of environment and sustainability issues, including sustainability of agricultural systems, vulnerability and resilience of particular people and places to climate change, and characteristics of science that can contribute to sustainability transitions at scale.

Dr. Matson serves as chair of the board of the World Wildlife Fund-US, and on the boards of the World Wildlife Fund – International and the ClimateWorks Foundation, and several university advisory boards. She served on the US National Academy of Science Board on Sustainable Development and co-wrote the National Research Council's volume *Our Common Journey: A transition toward sustainability* (1999); she also led the NRC committee on America's Climate Choices: Advancing the Science of Climate Change. She was the founding chair of the National Academies Roundtable on Science and Technology for Sustainability, and founding editor for the *Annual Review of Environment and Resources*. She is a past President of the Ecological Society of America. Her recent publications (among around 200) include *Seeds of Sustainability: Lessons from the Birthplace of the Green Revolution* (2012) and *Pursuing Sustainability* (2016).

Pam is an elected member of the National Academy of Science and the American Academy of Arts and Sciences, and is a AAAS Fellow. She received a MacArthur Foundation Award, contributed to the award of the Nobel Prize to the Intergovernmental Panel on Climate Change, among other awards and recognitions, and is an Einstein Fellow of the Chinese Academy of Sciences.

Dr. Matson holds a Bachelor of Science degree with double majors in Biology and Literature from the University of Wisconsin (Eau Claire), a Master degree in Environmental Science and Policy from Indiana University's School of Public and Environmental Affairs, and a Doctorate in Forest Ecology from Oregon State University. She spent ten years as a research scientist with NASA-Ames Research Center before moving to a professorship at the University of California Berkeley and, in 1997, to Stanford University.

Yuwei Shi is an expert on business model and strategy for mission-driven ventures and investments. He is professor of strategic management at the Middlebury Institute of International Studies at Monterey, and academic director for two award-winning talent development programs, the Frontier Market Scouts Fellowship Program and the Blue Pioneers Accelerator Program. He served two terms as the dean of the graduate school of international policy and management at Middlebury. He also had a decade of experience as founder of a tech venture, advisory partner at a venture capital firm, consultant to

prominent management consulting firms, and columnist in popular China business media. Yuwei earned his B.E. degree from Shanghai Jiaotong University, M.C.L. from the Dedmen School of Law at Southern Methodist University, and Ph.D. in Organization, Strategy and International Management from the Naveen Jindal School of Management at the University of Texas at Dallas.

Erika Zavaleta is the Howard Hughes Medical Institute Professor of Ecology and Evolutionary Biology at UC-Santa Cruz (UCSC). Dr. Zavaleta maintains an active, diverse research group with a focus on responses to climate, atmospheric and biodiversity changes. She has also taught and studied the outcomes of inquiry- and field-based conservation and STEM education for over 25 years. Erika won the Ecological Society of America Sustainability Science Award in 2007 for her work on consequences of and responses to climate and wildfire change in Alaska's boreal forest. She is a Fellow of the Ecological Society of America and the California Academy of Sciences, and recipient of two American Publishers Association Awards and a California Book Award for *Ecosystems of California*. Erika directs UCSC's Doris Duke Scholars Program, a national effort to nurture leaders who bridge conservation to linked social and cultural issues and contribute broader perspectives. She serves on advisory boards for the Wildlife Conservation Society, the Center for Resilient Landscapes, and the Society for Conservation Biology.

David Palter is the Director of Higher Education and Workforce Development at the Silicon Valley Leadership Group, a public-policy nonprofit that represents 350 Silicon Valley employers. In this role, he collaborates with elected officials, educational institutions, and Leadership Group member companies on issues and campaigns that affect the economic vitality and quality of life in Silicon Valley.

David founded and directs the Leadership Group's Community College to Career (CC2C) initiative, an active partnership between industry and community college leaders to expand economic opportunity and increase diversity in the STEM workforce.

Prior to joining the Leadership Group, David taught courses on U.S. labor history, social movements, and globalization at the University of California, Santa Cruz. A fellow with the UC Center for New Racial Studies, his research highlighted the relationship between race and standardized testing in California's public schools. While teaching at UC Santa Cruz, David also served as the Field Organizer for a California State Assembly campaign, and an advocate for graduate funding with the UC Office of the President.

David received an M.A. and Ph.D. in History from the University of California, Santa Cruz and a B.A. in History from Oberlin College.