



ARUBA HARVARD

Workshop on Sustainable
Development

16-17 January 2012

DAY 1

Monday, Jan 16

Morning session at the Dr. Cheung Innovation Center/ Afternoon session at the Arikok National Park

- 8.30 - 8.45 Welcome and opening remarks by Prime Minister Mike Eman.
- 8.45 - 9.00 Introduction by Professor Dr. Ryan Peterson on the thematic framework and program of the meeting.
- 9.00 - 9.15 Introduction by Professor Daniel P. Schrag, Director, Harvard University Center for the Environment.
- 9.15 - 10.00 Overview by Alfred Rafine- Policy Adviser Utilities Aruba N.V. and Jan H.J. Ebbing, Manager, Special Assignments – Energy, TNO: *“The status of Aruba’s efforts on sustainable energy, the challenges and the plans for the future”*
- 10.00 - 10.30 Coffee Break.
- 10.30 - 12.30 Presentation by Professor George Baker: *“Managing the Intermittency of Renewable Electricity Generation”*
Short comments by Professors Mike Aziz and Jan van der Tempel. General discussion.
- 12.30 Departure to Arikok National Park.
- 13:00 - 14:00 Lunch at Arikok National Park.
- 14:00 - 16:00 Presentations by Professor Jonathan Losos: *“Evolutionary Ecology of Aruba and the Caribbean”*
Joint presentation by Professors Peter Huybers and Daniel Schrag: *“Climate change from a Caribbean perspective”*
General Discussion.
- 16.00 - 18.00 Brief tour of the park, wind farm and island highlights.
- 18.00 - 20.00 Sunset Cocktail.

DAY 2

Tuesday, Jan 17

Morning and afternoon session at Dr. Cheung Innovation Center.

- 8.30 - 10.30 Discussion and reaction to challenges to sustainability, jointly led by Professors Dan Schrag and Ryan Peterson.
- 10.30 - 10.45 Coffee Break.
- 10.45 - 12.45 Presentation by Professor Henry Lee: *“What is sustainable transportation?”*
Presentation by Professor David Keith *“Can geoengineering of the climate reduce the impacts for Aruba?”*
- 13.00 - 14.00 Lunch at the Innovation Center
- 14.00 - 15.00 Concluding session led by Professor Dr. Ryan Peterson and presentation of final observations.
- 15.00 - 15.15 Closing remarks by Prime Minister Eman
- 20.00 Dinner



Biographies



Michael J. Aziz received a Ph.D. in Applied Physics from Harvard in 1983. He has been a member of the faculty at what is now the Harvard School of Engineering and Applied Sciences since he joined in 1986 and is now Gene and Tracy Sykes Professor of Materials and Energy Technologies. Aziz has made significant contributions to a number of fields in applied physics and materials science. He is a Fellow of the American Physical Society, the American Association for the Advancement of Science, and the Materials Research Society. He is the Faculty Coordinator for Harvard's University-Wide Graduate Consortium on Energy and Environment, for which he developed a popular course on Energy Technology for a broad audience. Among his research interests are novel materials and processes for energy technology and greenhouse gas mitigation.



George Baker is a Senior Lecturer on the faculty at Harvard University where he has taught for 25 years. Until July 1, 2010, he was the Herman C. Krannert Professor of Business Administration. Baker is also the President of VCharge, a Rhode Island based smart grid company that develops controls for thermal storage and other Transactive Loads. During the period 2007-2009, while on leave from Harvard, Baker served as the developer of the 4.5 MW Fox Islands Wind Power project on the island of Vinalhaven Maine, the largest community-owned wind project in the eastern US. The project came online in December of 2009. For the past 25 years at Harvard, Baker was a specialist in Organizational Economics. His research explored issues of incentives and incentive system design, with applications to managerial compensation, contract design, corporate governance, and the market for corporate control. He taught in the MBA and Doctoral programs. Baker is currently teaching an undergraduate course on the Technology, Economics, and Public Policy of Renewable Energy.



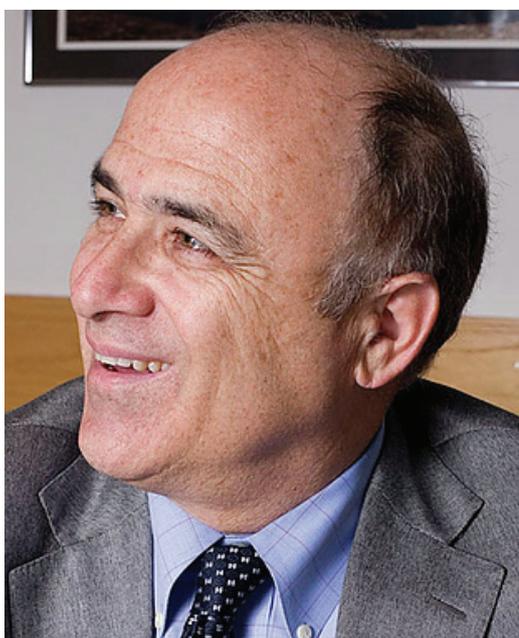
Jan Ebbing is Manager Special Assignments at TNO. He is responsible for international Business Development for Energy in China and Latin America and he is head of the Aruba development team. The first eleven years of his professional career he was successfully active as applied scientist, project manager and business developer in the (inter)national off-shore sector. Reaching goals in such a habitat depends on team play, adaptability, pragmatism and natural accepted leadership. From 1997 until 2010 he acted successfully in different management positions at TNO, Deltares and also in a private company. In that period further sharpening of his coaching, financial and leadership skills helped him to evolve from general manager of a regional office (25 employees) to director of a business unit (170 employees). His entrepreneurship was also tested in the same period, in being responsible for the start-up and management of his own company, which he sold after 3 years. Professional qualifications: General Management, (Marine) Geochemistry, Environmental Sciences, (Marine) Geology and Geophysics.



Peter Huybers is a Professor of Earth and Planetary Sciences at Harvard University whose research interests lie in understanding the climate system and its implications for society. Huybers received a B.S. from the United States Military Academy at West Point in 1996 and a Ph.D. from the Massachusetts Institute of Technology in 2004. In 2009, he received the American Geophysical Union's Macelwane Award, a Packard Fellowship, and a MacArthur Grant.



David Keith has worked near the interface between climate science, energy technology and public policy for twenty years. He took first prize in Canada's national physics prize exam, won MIT's prize for excellence in experimental physics, and was listed as one of TIME magazine's Heroes of the Environment 2009 (article). David's academic appointments are at Harvard where he serves as the Gordon McKay Professor of Applied Physics in the School of Engineering and Applied Science and Professor of Public Policy at the Harvard Kennedy School. David divides his time between Boston and Calgary where he serves as President of Carbon Engineering a start-up company developing industrial scale technologies for capture of CO₂ from ambient air.



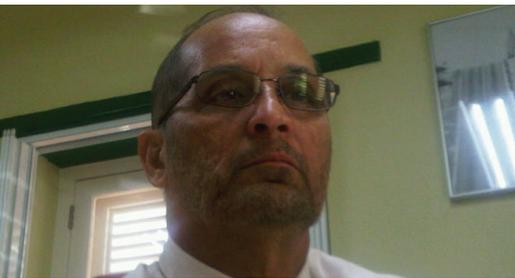
Henry Lee is a Senior Lecturer in Public Policy, the Jassim M. Jaidah Family Director of the Environment and Natural Resources Program within the Belfer Center for Science and International Affairs, Co-Chair of the Kennedy School's Program on Infrastructure in a Market Economy, and Co-Principal Investigator of the Energy, Technology, and Policy Project. Before joining the school, Lee spent nine years in Massachusetts state government as Director of the state's Energy Office and Special Assistant to the Governor for Environmental Policy. He has served on numerous state, federal, and private advisory committees and boards focusing on both energy and environmental issues and spent 12 years working with power developers in the United States and East Asia. He is presently Chairman of the Massachusetts Stewardship Council. His recent research interests focus on energy policy, energy and transportation, global climate change, geopolitics of oil and gas, and public infrastructure projects in developing countries. He is the author of several articles on China's oil strategies and a monograph on the economic viability of electric vehicles.



Jonathan Losos is the Monique and Philip Lehner Professor for the Study of Latin America in the Department of Organismic and Evolutionary Biology at Harvard University, and Curator of Herpetology in the Museum of Comparative Zoology. Losos earned his Ph.D. from the University of California, Berkeley in 1989, and started teaching at Washington University in St. Louis where he served as the Director, Tyson Research Center and as the Chair of the Environmental Studies Program before coming to Harvard in 2006. He has written a variety of articles and essays, and was the lead author on the approved White Paper submitted to the National Human Genome Research Institute that proposed the genome sequencing of *Anolis carolinensis*. Jonathan is one of the primaries responsible for the creation of Anole Annals (<http://anoleannals.wordpress.com/>), a blog serving as a clearing-house for communication about the ecology, evolution and biodiversity of anoles. He has developed museum exhibits at Harvard's Museum of Comparative Zoology and the California Science Center in Los Angeles, and is a scientific advisor for Life on Earth, an NSF-funded initiative to develop new approaches for using technology to help the public understand evolution.



Ryan R. Peterson is an Aruban native. He is professor of institutional capabilities for island innovation at the University of Aruba, and he holds a UNESCO research chair in sustainable development in island states. Professor Peterson is the President of the National Council for Innovation & Competitiveness of Aruba. Previously, he was Academic Dean of the Faculty of Tourism and International Business at the University of Aruba, and Director of the Research & Development at the Institute for Technology & Innovation in Europe. Professor Peterson received his PhD in Economics & Governance from the University of Tilburg in the Netherlands and has over two decades of research and development experience in large-scale national policies and programs on innovation and sustainable development, with a specialized focus on small economies and island communities. Professor Peterson has written and published well over a hundred scientific and business papers. He has over twenty years of international experience in business, government and academic arenas, and has worked as researcher, advisor, consultant, and project manager across different industries and countries. His current work focuses on innovation and the development of (small) island state resilience by means of institutional capabilities, and integrated economic, social and environmental policies, with a specific focus on knowledge-based innovation in public and private sectors in the Caribbean.



Mr. Alfredo O. Rafine, completed his studies in Electrical Engineering in 1977 and started the same year his career at NV ELMAR, which is the sole power distribution company on the island. Several technical functions were occupied, which led to the position of assistant managing director in 1994 and of general manager in 2005, which he occupied till 2008. In 2010 he was the chairman of the supervisory board of WEB Aruba NV (power and water production), and in 2011 up to now, he occupies the function of Policy Advisor within Utilities Aruba N.V. and advises the Minister of Energy of Aruba.



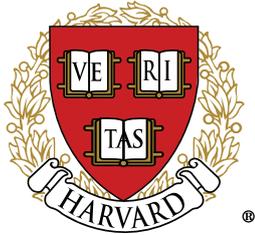
Daniel Schrag is the Sturgis Hooper Professor of Geology at Harvard University, Professor of Environmental Science and Engineering, and Director of the Harvard University Center for the Environment. Schrag studies climate and climate change over the broadest range of Earth history. He is particularly interested in how information on climate change from the geologic past can lead to better understanding of anthropogenic climate change in the future. In addition to his work on geochemistry and climatology, Schrag studies energy technology and policy, including carbon capture and storage and low-carbon synthetic fuels. Schrag currently serves on President Obama's Council of Advisors on Science and Technology. Among various honors, he is the recipient of the James B. Macelwane Medal from the American Geophysical Union and a MacArthur Fellowship. Schrag earned a B.S. in geology and geophysics and political science from Yale University and his Ph.D. in geology from the University of California at Berkeley. He came to Harvard in 1997 after teaching at Princeton.



Dr Jan van der Tempel leads the section Offshore Wind Energy at the Delft University of Technology in The Netherlands. His specialty is design of foundation for offshore wind turbines. He is currently involved in a Dutch National R&D program called FLOW (Far & Large Offshore Wind) with the goal to reach 20% cost reduction in offshore wind before 2015. With new installation methodologies and "learning by doing" in new built wind farms, this goal is well within reach. Next to his university appointment, he is founder and CEO of Ampelmann Operations. This university spin-off designs, builds and operates systems to access offshore structures in high wave conditions. The concept is a "inverted flight simulator on a ship". The motion system counteracts the wave motions through fast and accurate measuring and control, creating a stand-still top deck and gangway above the moving vessel. The gangway is then landed onto the structure (oil rig or offshore turbine) to allow engineers to walk across safely, even in adverse weather and wave conditions. In 3 years, the company now operates 8 units, with 4 new-built currently under construction. A total over 80,000 transfers have been completed on 4 continents.



Government *of* Aruba



Harvard University
Center for the Environment