



2013-2014 PROSPECTUS



Energy, Resources and Environment Program

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With campuses in Washington, DC, Bologna, Italy, and Nanjing, China, SAIS is the only international relations school of its kind. Students have the unique advantage of experiencing our three strategically located centers.

For seven decades, SAIS has attracted the best and brightest applicants, eager to learn from our superb faculty and to prepare for a leadership role in solving complex global problems.

- Last updated January 8, 2013 -

Energy, Resources and Environment Program Vision Statement

Vision Statement

Educating Leaders and Problem-Solvers in Energy and Environment

Deborah L. Bleviss

Acting Director, Energy, Resources and Environment Program

The Energy, Resources and Environment (ERE) Program of the Johns Hopkins School of Advanced International Studies is an interdisciplinary graduate program focused on developing innovative solutions to urgent global energy and environmental challenges. The Program aspires to educate a new generation who will hold leadership roles in the diverse array of global, national and local institutions that will shape the world's future.

ERE faculty provide students with the intellectual framework and analytic skills to devise robust solutions to the daunting policy, financing, technological and governance challenges facing the international community. This includes development of quantitative skills to be able to estimate the scope of a given problem or a proposed solution, as well as analytic and written skills to evaluate problems and offer solutions, often within a "policy brief" format that is used widely both in the public and private sectors.

The major challenges addressed by the program include: stabilizing climate change through mitigation of greenhouse gas emissions while building resilience to climate impacts; enhancing global security by reducing the risk of economic disruption and nuclear weapons proliferation; eliminating energy poverty; achieving energy, water and food security for all; resolving a myriad of human-produced environmental problems—often exacerbated by climate change—that range from unprecedented species extinction to air and water pollution; and creating the needed institutions while mobilizing the capital investment to answer each of these challenges.

To successfully develop solutions to these problems, the ERE program embraces a vision that unprecedented and multi-faceted innovation will be required, in many cases involving new public-private partnerships, to undertake technology development, deliver the needed investment, create the appropriate policy environment, establish an appropriate governance framework and succeed in international diplomacy. This vision is borne out both in ERE classes and in the research work conducted by ERE faculty.

Energy, Resources and Environment Program 2012 – 2013 Annual Report

The 2012 – 2013 academic year was both busy and productive for the Energy, Resources and Environment Program. On the academic side, the program enjoyed an enrollment of 152 students on both the Washington, DC and Bologna, Italy campuses. The program offered a selection of 28 courses on both campuses which covered a wide array of topics ranging from energy and environmental issues to agriculture, food and water security. In addition, the International Energy and Environmental Practicum course successfully pursued a wide ranging set of topics addressing key issues in places such as India, South Africa and Brazil.

On the academic enrichment side, the program boasted a wide array of speakers through its Global Leaders Forum (GLF), in fact, ERE hosted thirteen speakers throughout the course of the year. Moreover, through its Frontiers in Energy, Science and Technology (FEST) field trip initiative, students were exposed first-hand to institutions working in the energy, resources and environment arenas. Field trips were taken both within the U.S. and internationally to Brazil and Azerbaijan. Finally, exciting progress was made in ongoing research by the department.

On a sad note, ERE not only said goodbye to Professor Bo Kong, who left the department to accept a prestigious position at the University of Oklahoma but we were all shocked and deeply saddened by the untimely passing of our program's director, Dr. David J. Jhirad.

2012 – 2013 Course Offerings

To prepare our students to tackle the complex energy and environmental issues facing our world, the ERE program embraces a vision that unprecedented and multi-faceted innovation will be required, in many cases involving new public-private partnerships, to undertake technology development, deliver the needed investment, create the appropriate policy environment, establish an appropriate governance framework and succeed in international diplomacy. To this end, the ERE program offered a rigorous and advanced assortment of courses designed to prepare our students to face these challenges head on.

Our 2012 – 2013 course offerings were as follows:

Washington, DC Campus

- Case Studies in Sustainable Development: Smart Cities & Urban Innovation
- Economics of Natural Resources
- Energy, Environment & Development in Developing Countries
- Energy Governance in China
- Energy in the Americas: Conflict, Cooperation & Future Prospects
- Energy, Politics and Development in Africa
- Energy Technology Futures
- Facing the Oil Problem: The United States, Canada, OPEC and the World
- The Geopolitics of Energy
- Global Climate Change: Ensuing Security and Resilience
- Global Electricity Markets
- Global Energy, Resources and Environment Fundamentals

- Innovation in the Electric Power Sector
- International Environmental Diplomacy
- International Environmental Law
- International Forestry: An Introduction to Major Contemporary Issues
- International Energy & Environment Practicum
- International Water: Issues and Policies
- Managing Threatened Oceans
- Nuclear Non-Proliferation Challenges in the 21st Century
- Policy to Drive Energy Innovation
- Project Finance
- Theory and Practice of China's Foreign Energy Policy

SAIS Europe Campus

- Agricultural Development, Poverty Reduction & Food Security
- Energy and Climate Change
- Politics & Economics of International Energy
- Renewable Energy: Markets, Technologies, Projects
- Science, Technology, and International Affairs

International Energy, Resources and Environment Practicum

2012-2013 Teams & Project Descriptions

ERE's International Energy, Resources and Environment Practicum is a two semester, consulting opportunity for in-depth investigation of real-world issues of critical interest to high-level client organizations. Participants function in a demanding professional context and produce deliverables that make real and high-impact contributions to the client. For more detailed information about the Practicum course, please jump to page 34 in this Prospectus.

An overview of the consultancy projects for the 2012-2013 academic year is listed below.

Carbon War Room: Renewable Energy Applications for Remote Industrial Processes

Students on this project addressed the issue of greenhouse gas emissions that are produced by industrial processes that are implemented in remote locations and/or are dependent on diesel fuel for electricity generation.

ERE Program – SPEED Project, Department of State / Rockefeller Foundation: SPEED (Smart Power for Environmentally – Sound Economic Development) Initiative

Students consulted on the Smart Power for Environmentally – Sound Economic Development (SPEED) initiative; specifically, the practicum team worked with SPEED's Indian partners to assess challenges to, and devise strategies for, scale-up of SPEED in India.

WRI: Balancing Equity and Environmental Integrity in International Climate Negotiations

Students focused on a crucial issue in international climate negotiations, namely the need to achieve "climate justice" through a multi-lateral rule based system that comes close to meeting the necessary emissions reductions.

International Energy Forum: Unconventional Oil & Gas and World Energy Markets

During the 2012-2013 academic year, an international energy policy practicum team composed of four students focused on the role of the IEF and its relation to the unconventional oil and gas boom.

Instituto De Estudos Do Trabalho E Sociedade (IETS) & Jonathan Rose & Company: Environmentally Sound Waste Management and Community Integrated Redevelopment

The Practicum team focused on the communities associated with the Gramacho Landfill, one of the largest open air landfills in Latin America that is slated for an integrated program of environmentally sound and community integrated redevelopment.

Review of ERE Research Initiatives (Washington D.C. Campus)

Smart Power for Environmentally-sound Economic Development (SPEED) and Accelerating Resilient Infrastructure Investment for Sustainable Economies (ARISE)

Approximately 1.4 billion people worldwide lack access to electricity services and the benefits they bring to human health, agriculture and economic development. To meet this challenge and to improve the livelihood of about one quarter of the world's population, innovative thinking, a global commitment to alleviating energy poverty, and new investment partnerships will be required over the next two decades. The SPEED initiative sponsored by the Rockefeller Foundation, and conceptualized by former ERE Program Director Professor David J. Jhirad, provides a uniquely creative solution that can revolutionize the provision of electricity services for poverty reduction and economic development in the rural areas of Asia and Africa in a financially and environmentally sustainable manner. This is achieved by engaging the cell phone industry — currently consuming expensive diesel fuel — as anchor tenants for cost-competitive, resilient and renewable power units and mini-grids. The ERE Program plays a leadership role in the SPEED initiative, working collaboratively with local partners implementing pilot projects in India, and serving as a global knowledge, action and solutions hub to extend SPEED to other countries and regions, and the project is now being managed by ERE Adjunct Professor Irving Mintzer.

A second initiative that was led by Dr. David Jhirad, known as “Accelerating Resilient Infrastructure Investment for Sustainable Economies (ARISE)”, explored ways in which new partnerships can alter the direction of capital flows worth billions of US dollars to ensure inclusive, equitable and sustainable economic growth in rural and urban settings in developed and developing nations. The ERE program collaborated with the US-Brazil Joint Initiative on Urban Sustainability (JIUS), launched by President Obama and President Rousseff. JIUS is a public-private partnership with the goal of attracting big money to small, sustainable, urban infrastructure projects, starting with several project pipelines of \$1.2-\$1.5 billion in Rio de Janeiro and Philadelphia. JIUS provides a prominent and unique platform to pilot the ARISE model at scale for sustainable urban systems. SPEED, with the goal of attracting massive capital to thousands of small rural mini-grids, can be viewed as an application of ARISE to sustainable and resilient rural infrastructure.

China: Nuclear Energy and Climate Change Mitigation

As the world's largest energy consumer and top emitter of greenhouse gases, China is confronted with mounting pressure to enhance its energy supply security while simultaneously reducing its carbon footprint. How the country addresses these twin challenges carries profound implications for the stability of the international energy market and global climate system. To understand China's response and identify how the international community can assist the country's effort, during his tenure at SAIS and before leaving for his new position at the University of Oklahoma Dr. Kong launched two collaborative studies.

The first was funded by the National Nuclear Security Administration (NNSA) of the U.S. Department of Energy (DOE) and was a collaborative effort with Professor David M. Lampton, Director of China Studies at the Johns Hopkins University School of Advanced International Studies (SAIS). The study focused on

China's ambitious target to expand civil nuclear energy in response to the country's energy security and climate change challenges.

The second research project received support from the Johns Hopkins University Environment, Energy, Sustainability, and Health Institute. It investigated how China uses both administrative command-and-control measures and market schemes to reduce its carbon dioxide (CO₂) emissions – the primary contributor to human-induced climate change. Similar to the first, it was a collaborative research project featuring Professor Carla Freeman, Associate Director of China Studies at SAIS and an expert on environmental issues in China.

2012 – 2013 Global Leaders Forum (GLF)

Since 2011, the ERE program has been a proud host of some of the Energy and Environment fields' most dynamic influencers and decision makers; our most recent calendar of speakers is listed below. For more detailed information about the Global Leaders Forum, please jump to page 38 in this Prospectus.



Tuesday, November 27, 2012 Location: BOB 500 | Time: 4:00 p.m.

Mrs. Maria van der Hoeven – Topic: "A Briefing on the 2012 World Energy Outlook"
Executive Director | International Energy Agency (IEA)



Wednesday, December 5, 2012 Location: Kenney Auditorium | Time: 1:00 p.m.

Mr. Adam Sieminski – Topic: "Annual Energy Outlook 2013, Early Release Overview"
Administrator | US Energy Information Administration (EIA)



Tuesday, February 12, 2013 Location: BOB 500 | Time: 2:00 p.m.

Dr. Dennis Garrity – Topic: "Crises of the African Drylands"
UN Drylands Ambassador | World Agroforestry Centre



Wednesday, February 27, 2013 Location: Kenney Auditorium | Time: 12:30 p.m.

Dr. Naoko Ishii – Topic: "Time for Transformational Change In Global Environment Policy - Role of the GEF"
CEO | Global Environment Facility (GEF)



Thursday, February 28, 2013 Location: Rome Auditorium | Time: 4:30 p.m.

Dr. R. Rajaraman – Topic: "India-US Nuclear Energy Cooperation - Has It Lost Momentum after the 2008 Nuclear Deal?"
Emeritus Professor of Physics | Jawaharlal Nehru University



Friday, March 8, 2013 Location: BOB 500 | Time: 1:00 p.m.

Dr. John Briscoe – Topic: "Water Security in a Changing World"
Gordon McKay Professor of the Practice of Environmental Engineering (SEAS);
Professor of the Practice of Environmental Health (School of Public Health) | Harvard University



Monday, March 25, 2013 Location: Kenney Auditorium | Time: 12:30 p.m.

Mrs. Heidi Kuhn – Topic: "Roots of Peace MINES TO VINES"
Founder & CEO | Roots of Peace



Friday, March 29, 2013 Location: Rome Auditorium | Time: 3:30 p.m.

Dr. Cass Sunstein – Topic: “Automatically Green”

Felix Frankfurter Professor of Law | Harvard University



Wednesday, April 3, 2013 Location: Kenney Auditorium | Time: 12:00 p.m.

Dr. Robert L. Thompson – Topic: “Ensuring Global Food Security in 2050: Building Resilience to Climate Impacts”

Professor Emeritus, U. of Illinois, Urbana-Champaign | Visiting Scholar, Johns Hopkins SAIS



Friday, April 19, 2013 Location: BOB 500 | Time: 5:00 p.m.

Governor Bill Richardson (former governor of New Mexico) – Topic: “The Role of the International Council for Science and the Environment (ICSE)”

Chairman | International Council for Science and the Environment



Thursday, April 25, 2013 Location: BOB 500 | Time: 8:30 a.m.

Mr. Robert Gardner – Topic: ExxonMobil: “The Outlook for Energy: A View to 2040”

Manager | Economics and Energy Division, Corporate Strategic Planning, ExxonMobil



Monday, April 29, 2013 Location: BOB 500 | Time: 12:30 p.m.

Mr. Lucio Noto – Topic: “Mergers & Acquisitions; Lessons Learned”

Managing Partner | Midstream Partners LLC,



Tuesday, May 7, 2013 Location: Rome Auditorium | Time: 4:30 p.m.

Aldo Flores-Quiroga – Topic: “International Energy Forum: Achievements and Prospects”

Secretary General | International Energy Forum (IEF)

Frontiers in Energy, Science and Technology (FEST)

Thanks to generous support from the Exxon Mobile Company, the ERE Program developed the FEST Field Visits initiative to provide its students with first-hand experience visiting utilities, nuclear power and LNG plants, hydraulic fracturing and off-shore oil facilities, sewage treatment plants, and solar panel manufacturing facilities, among others. FEST offers student enrichment activities designed to provide first-hand exposure to innovations in the energy and environment sectors, both domestically and internationally. For more detailed information about FEST and the student field trips, please jump to page 41 of this Prospectus.

List of 2012 – 2013 Field Trips

Dominion Energy’s Cove Point Liquid Natural Gas (LNG)

October 10, 2012 (35 Students)

US Green Building Council

October 26, 2012 (7 students)

Federal Energy Regulatory Commission (FERC)

November 9, 2012 (15 students)

Chesapeake Biological Laboratory (CBL)

December 7, 2012 (10 students)

Baku, Azerbaijan (State Oil Company of Azerbaijan Republic)

January 20-26, 2013 (14 students)

Rio de Janeiro, Brazil (Gramacho Landfill)

March 16 - 23, 2013 (17 students)



2012 - 2013 SAIS Corp Projects

The Energy, Resources and Environment program is a proud supporter of the SAIS Corps, a volunteer organization that aims to provide the SAIS community with a variety of volunteer service activities, both locally and internationally. Last spring, the SAIS Corps volunteers returned to Panama, where they first introduced eco-stoves into the Boca de las Minas, a rural community west of Panama City, during the 2012 service trip. SAIS Corps helped construct 11 stoves, including several larger community-sized stoves, working alongside a Peace Corps volunteer – Quinn Miller – and local residents. Eco-stoves have a number of environmental, health, and economic benefits over traditional stoves used by families in the region. These eco-stoves are now being actively used in the local households and community members have expressed interest in acquiring additional eco-stoves.



Encouraged by the community response and hoping to build on last year's efforts, SAIS Corps decided to send students back to the same site and continue work in March 2013. The purpose of the trip was to further support the Boca de las Minas community through increasing access to improved stoves and increasing capacity for future improvement projects.

Energy, Resources and Environment Faculty & Staff Departures



ERE Assistant Professor and Director of Research and SAIS Alumnus Bo Kong departed after the Spring 2013 term to accept a position at the University of Oklahoma as the ConocoPhillips Petroleum Professor of Chinese and Asian Studies and Assistant Professor of International and Area Studies at the College of International Studies.

ERE's Visiting Research Associates Jessica Lewis and D. Chad Reed departed as well; Ms. Lewis accepted a full-time position with a private firm in Washington, D.C. and Mr. Reed headed out to Berkeley, CA to continue his graduate studies. The ERE department wishes them all the best in their future endeavors.

In Memoriam - Dr. David J. Jhirad



The Energy, Resources and Environment program is deeply saddened by the tragic and sudden loss of our Director, Dr. David Jhirad, who passed away on the morning of Thursday, June 6th 2013, after a brief hospitalization. Dr. Jhirad was very passionate about the ERE program and the success of his students to be "global leaders and innovators." He will be very missed by many.

Dr. Jhirad's passion was seeking answers to the world's greatest challenges and "achieving energy, water and food security for all." SAIS has lost a great thinker, leader and teacher. The world has lost a great advocate. Our thoughts and hearts are with his family, friends, colleagues and students.

Energy, Resources and Environment Program Academic Year 2013 - 2014

Looking Forward: ERE in 2013 - 2014

Looking forward, the ERE program plans to continue building on the department's accomplishments from the past year. Twenty-four courses will be offered across both campuses in the 2013-2014 academic year and five of them will cover new topics. We're happy to welcome several newly appointed adjunct faculty to the ERE fold!

The International Energy and Environmental Practicum continues to flourish and will feature a total of six projects this year. ERE looks forward to forging new partnerships and strengthening existing relationships through this innovative course.

On the academic enrichment side, the Global Leaders Forum promises to highlight a variety of topical issues and the Frontiers in Energy, Science and Technology field trip initiative will continue its tradition of providing field trips for ERE students to institutions and locations of major interest. As always, ERE would like to thank our generous supporters and donors for helping to make these important co-curricular activities possible.

Additionally, the ERE program plans to continue our support of the SAIS Corp projects and is thinking of new and exciting ways to engage our alumni in program activities.

Finally, ERE's research is expanding to cover a range of energy and environmental areas. Details about our research projects and our other academic and academic enrichment programs are detailed in the following pages of this Prospectus.

Energy, Resources and Environment Program Faculty & Staff

Faculty and Staff, Washington, D.C. Campus



Deborah Bleiviss, Acting Director and Associate Practitioner in Residence, B.A. Deborah Lynn Bleiviss is a Professor in, and currently the Acting Director of, the Energy, Resources and Environment Program and has served as a Professorial Lecturer at SAIS since 1993. She has worked in the energy and environmental field for more than 30 years.

From 2002 through June 2009, she worked as an independent consultant in energy efficiency, renewable energy and sustainable urban transportation. She was also a partner (2003-2007) in the BBG Group, a small consulting firm focusing on sustainable transportation. Previously, Ms. Bleiviss worked first as an advisor to and then as program director of the Inter-American Development Bank's Sustainable Markets for Sustainable Energy (SMSE) program. Prior to her work at the IDB, she worked at the U.S. Department of Energy as an advisor to the Assistant Secretary of Energy for Energy Efficiency and Renewable Energy, developing international and domestic clean transportation and energy financing initiatives. She was also a founder and the first director of the International Institute for Energy Conservation.

Her educational background includes graduate studies at Princeton University and she holds a B.S. in Physics from the University of California, Los Angeles.



Jonathan Haskett, Associate Director, Ph.D.

Jonathan Haskett is a climate change scientist whose work focuses on the nexus of land use climate change mitigation, adaptation and poverty reduction in the developing world. His work spans the creation of land use carbon projects, the development of landscape carbon measurement methodologies, and climate change policy at the domestic and international levels. He helped in the development of the long-term acquisition plan for the Landsat-7 satellite while at the University of Maryland. As a Peace Corps volunteer in Ecuador (2002-2005), Dr. Haskett worked with indigenous communities on soil conservation, agroforestry and mapping of the landscape carbon resource. During the period 2007-2011 he worked with the World Wildlife Fund, the World Agroforestry Centre, and other development and conservation organizations.

Dr. Haskett holds a Ph.D. and a Masters in soil science from the University of Minnesota and has done post-doctoral research on the effect of climate change on agriculture with USDA-ARS. He received his Bachelors from the University of Chicago.



Mwangi Chege, Visiting Research Associate

Mwangi Chege is a Visiting Research Associate working in the Energy, Resources and Environment program at SAIS. He is affiliated with the Smart Power for Environmentally-sound Economic Development (SPEED) Program initiated by Dr. David Jhirad and funded by the Rockefeller Foundation. SPEED seeks to address the challenge of rural electrification in India through the deployment of renewable energy based mini-grids with the possibility of extension into other energy deficient regions including Sub-Saharan Africa.

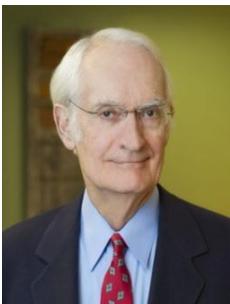
Mwangi is a Kenyan citizen who worked in the marketing industry in Johannesburg, South Africa prior to graduating with a MA from SAIS. His responsibilities include directing the research of the current SPEED Practicum team, liaising with current and potential SPEED partners and examining ways in which the SPEED program can be strengthened for long-term sustainability.



Celeste Connors, Associate Practitioner in Residence, M.Sc.

Celeste has over a decade of experience working at the intersection of economic, trade, environment, energy, and international development policy. Before joining SAIS, Celeste was the Director for Environment and Climate Change at the National Security Council and National Economic Council in the White House, where she helped shape the Administration's economic priorities and initiatives. In this capacity, she developed U.S. climate change, environment, and clean energy policies for a myriad of international institutions, including APEC, the G8, and the G20. Prior to joining the White House, Celeste served as a diplomat in Saudi Arabia, Greece, and Germany.

Celeste holds an MSc in Development Studies from the University of London's School of Oriental and African Studies (SOAS) and a BA in International Relations from Tufts University. She also studied at the Eberhard Karls Universität Tübingen, and is proficient in German and conversational in Greek and British English.



Wilfrid L. Kohl, Senior Advisor, Ph.D.

Wil Kohl is the founding director and Senior Advisor of the Energy, Resources and Environment Program. He's also the former director of the SAIS International Energy and Environment Program of the Foreign Policy Institute, and the former director of SAIS's Bologna Center. Dr. Kohl served as associate director of Columbia University's Institute in Western Europe; additionally, he's a past international affairs fellow at the Council on Foreign Relations and the Woodrow Wilson International Center for Scholars.

Previously, he was a former staff member of the National Security Council and a program officer at the Ford Foundation. Dr. Kohl also taught at the University of Pennsylvania; and he's a member of the International Association of Energy Economics. He received his Ph.D. in Political Science, from Columbia University.



Anshul Rana, Visiting Research Associate

Anshul Rana is a Visiting Research Associate with the Energy, Resources and Environment Program at the Johns Hopkins University School of Advanced International Studies (SAIS). His research at SAIS focuses on technology innovation in renewables GIS works pertaining to the adaptation atlas being developed at SAIS.

Prior to SAIS Anshul worked as a business reporter in Doha and as a TV producer for two of India's largest national news networks. In 2009, he joined the Los Angeles Times as a reporter in the Delhi bureau, where he covered the unrest in Jammu & Kashmir in 2010, India-Pakistan relations, Maoist insurgency in India, and the 2010 Commonwealth Games, among others.

Anshul holds a B.A. (Economics) with honors from Delhi University and an MA in International Economics, Energy, Resources and Environment and South Asia Studies from SAIS.



Robert L. Thompson, Visiting Scholar, Ph.D.

Professor Robert L. Thompson is a professor emeritus of the University of Illinois at Urbana-Champaign, and he was most recently appointed the Gardner Endowed Chair in Agricultural Policy. Currently he is a senior fellow of global agricultural development and food security at the Chicago Council on Global Affairs; and he has previously served as director of rural development at the World Bank, president and CEO of the Winrock International Institute for Agricultural Development, dean of agriculture and professor of agricultural economics at Purdue University, assistant secretary for economics at the Policy Council and Land O'Lakes board of directors; fellow of the American Agricultural Economics Association and the American Association for the Advancement of Science; foreign member of the Royal Swedish Academy of Agriculture and Forestry and of the Ukrainian Academy of Agricultural Sciences; and former president, International Association of Agricultural Economists.

Dr. Thompson received honorary doctorates from the Pennsylvania State University and Dalhousie University; and a Ph.D. in agricultural economics from Purdue University.



Shalini Vajjhala, Visiting Associate Professor of Environmental Policy, Ph.D.

Shalini Vajjhala is an international environmental expert with an interdisciplinary background in engineering, design, and climate change, sustainable development, and energy policy. Prior to joining SAIS, Dr. Vajjhala served as Special Representative in the Office of Administrator Lisa Jackson at the U.S. Environmental Protection Agency. In this position, she led the US-Brazil Joint Initiative on Urban Sustainability (JIUS), a bilateral partnership announced by President Obama and Brazilian President Dilma Rousseff in March 2011. The JIUS was charged with catalyzing transformational investment in green and smart infrastructure, technology, products and services, especially for poor and underserved urban communities. JIUS has been showcased as a signature initiative, demonstrating how environmental protection can serve as a driver for economic growth and job creation in building the greener economies and smarter cities of the future.

Dr. Vajjhala received her Ph.D. in Engineering and Public Policy from Carnegie Mellon University, and was a practicing architect and community organizer in Pittsburgh before moving to Washington.



Cristina Benitez, Academic Program Manager and Student Advisor

Cristina Benitez is glad to join the SAIS community as the Program Coordinator for the Energy, Resources, & Environment Program. Ms. Benitez has worked for Georgetown University's Center for Social Justice advancing service learning and community-based research among the DC Consortium of Universities. Her most recent work has covered a variety of projects for public and private ventures including constituent communications for a government agency and the strategic start-up of a local business.

Cristina Benitez attended Trinity Washington University for her BA in Public Policy and the Georgetown University Public Policy Institute for graduate studies in Nonprofit Executive Management.



Shonda Hurt, External Programs, Marketing and Outreach Manager

Shonda Hurt is the Administrative Coordinator of the Energy, Resources and Environment Program at the Johns Hopkins University School of Advanced International Studies. She has a diverse background in consulting and project/event management and has acquired over 10 years of experience planning and executing hundreds of events for major corporations. A project that she is particularly proud of is the "Why Can't We All Just Buckle Up" campaign that she helped to create and execute in a joint partnership with the National Highway Traffic Safety Administration (NHTSA).

She holds dual BA degrees in Business and Communications from the University of Pittsburgh.

Adjunct Faculty, Washington, D.C. Campus



Robert Alvarez, Adjunct Professor

Robert Alvarez is a Senior Scholar at IPS, where he is currently focused on nuclear disarmament, environmental, and energy policies. Previously, Mr. Alvarez served as a Senior Policy Advisor to the Secretary and Deputy Assistant Secretary for National Security and the Environment. While at DOE, he coordinated the effort to enact nuclear worker compensation legislation. He also served for five years as a Senior Investigator for the U. S. Senate Committee on Governmental Affairs, and as one of the Senate's primary staff experts on the U.S. nuclear weapons program. He worked to help establish the environmental cleanup program in the DOE, strengthened the Clean Air Act, uncovered several serious nuclear safety and health problems, improved medical radiation regulations, and created a transition program for communities and workers affected by the closure of nuclear weapons facilities.

Bob Alvarez is an award winning author and has published articles in prominent publications such as Science Magazine, the Bulletin of Atomic Scientists, Technology Review and The Washington Post.



John P. Banks, Adjunct Professor

Mr. Banks is Nonresident Fellow in the Energy Security Initiative at the Brookings Institution, where he provides scholarly leadership and conducts research on domestic and international energy issues. He has been working recently on projects dealing with nuclear power, renewable energy, transportation electrification, and distributed power systems. Mr. Banks worked as a management consultant for over 20 years advising governments, companies, and regulators throughout the world on energy policy, security, and governance issues.

Mr. Banks serves as an Adjunct Professor at the School of Advanced International Studies at Johns Hopkins University, and at Georgetown University in the Masters of Science in Foreign Service program. As chief analyst and co-author, he has contributed to dozens of energy reports, published numerous articles, and has provided expert testimony. He is a co-editor and author of a recently published book examining the role of the nuclear industry in proliferation prevention. Mr. Banks has worked in twenty-four countries outside the US. He holds an MS in Foreign Service from Georgetown University.



William B. Bonvillian, Adjunct Professor

William B. Bonvillian, since January 2006, has been Director of the Massachusetts Institute of Technology's Washington, D.C. Office. At MIT, he works to support the Institute's strong and historic relations with federal R&D agencies, and its role on national science policy. Prior to that position, he served for seventeen years as a senior policy advisor in the U.S. Senate. His legislative efforts included science and technology policies and innovation issues. He worked extensively on legislation creating the Department of Homeland Security, on Intelligence Reform, on defense and life science R&D, on energy and climate issues, and on national competitiveness and innovation legislation.

He has written extensively on technology and energy issues, including the book (with Charles Weiss) "Structuring and Energy Technology Revolution" (MIT Press 2009). He has lectured and given speeches before numerous organizations on energy, science, technology and innovation questions, is on the adjunct faculty at Georgetown and Johns Hopkins SAIS, and has also taught courses in this area at MIT and George Washington. He received a B.A. from Columbia University with honors, an M.A.R. from Yale Divinity School in religion; and a J.D. from Columbia Law School, where he also served on the Board of Editors of the Columbia Law Review



Carol Dumaine, Adjunct Professor

Carol Dumaine is an independent consultant specializing in internationally collaborative approaches to foreseeing and managing emerging global security issues. Ms. Dumaine began her profession as an all-source intelligence analyst at the Central Intelligence Agency, and she retired from the federal government in June 2013. While in government, she had the opportunity to create and oversee several collaborative interdisciplinary analytic partnerships in the international security community. She has been a featured speaker on climate security, resilience, and human security and natural resources issues at forums in the United States, Canada and Europe.

From 2007-2010, Ms. Dumaine served as the head of the Energy and Environmental Security Directorate in the Office of Intelligence and Counterintelligence at the U.S. Department of Energy. She is a co-editor of *New Frontiers for Intelligence Analysis: Shared Threats, Diverse Perspectives and New Communities* (2005). She was recognized as a 2007 National Security Medal Finalist by the Partnership for Public Service's "Service-to-America" program for her leadership in creating the Global Futures Forum.

Ms. Dumaine holds a Masters in International Public Policy (M.I.P.P.) from the Johns Hopkins' School of Advanced International Studies and a Bachelor of Science in the School of Foreign Service at Georgetown University.



Heather E. Eves, Adjunct Professor

Dr. Heather E. Eves is a wildlife biologist who has studied and worked in Africa since 1985. She holds a Doctorate of Forestry and Environmental Studies from Yale University's School of Forestry and Environmental Studies. Dr. Eves has provided dozens of presentations and participated in conservation collaboration activities in the US, Europe and Africa including symposia of the Society for Conservation Biology, Convention on Biological Diversity (CBD) technical meetings, collaboration on bushmeat issues through the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Bushmeat Working Group, presentations to European Parliament, Southern African Development Community (SADC) and contributions to hearings and briefings for the US House of Representatives. She has also made contributions to dozens of media (including radio and TV) articles on the bushmeat crisis including TIME Magazine, Science, Smithsonian, Newsweek, National Geographic, New York Times, The Grio, Current TV and many others.

She holds a Master of Science in Wildlife Science with a minor in Experimental Statistics from New Mexico State University and a Bachelor of Science in Animal Science from the University of New Hampshire and is also Co-Director of the Sangha River Network - a professional and academic research network based at Yale University, Council on African Studies.



Cathleen Kelly, Adjunct Professor

Cathleen Kelly is a Senior Fellow with the Center for American Progress. She specializes in international and U.S. climate mitigation, preparedness, resilience and sustainable development policy. Ms. Kelly served in the Obama Administration at the White House Council on Environmental Quality in 2010 and 2011, where she led a 20+ agency task force in developing a national climate resilience strategy. This strategy formed the basis of the climate preparedness pillar of President Obama's Climate Change Action Plan. Ms. Kelly also helped to formulate the Obama Administration positions on international sustainable development and climate change policy issues.

From 2008 to 2012, Ms. Kelly directed the Climate & Energy Program at the German Marshall Fund of the United States, where she led a highly acclaimed paper series and events on climate and clean energy policy that drew the world's top energy and climate policy players.

Ms. Kelly is an internationally recognized climate policy expert and a regular adviser to U.S. and European officials on environmental policy issues. She is a Senior Adviser at Climate Advisers, and is on the advisory board of the Clean Energy Leadership Institute. Ms. Kelly is a prize-winning graduate of the Johns Hopkins University Paul H. Nitze School of Advanced International Studies, where she earned a Master of Arts in International Relations and Energy and Environmental Policy.



Bruce W. MacDonald, Adjunct Professor

Bruce MacDonald is senior director of the Nonproliferation and Arms Control Program with the USIP Office of Special Initiatives. In this capacity, he developed and serves as lead instructor of 21st Century Issues in Strategic Arms Control and Nonproliferation, a series of courses for the USIP Academy for International Conflict Management and Peacebuilding, as well as serving as an adviser on a variety of issues related to nuclear strategy and policy, missile defense, arms control, and nonproliferation. Prior to this post, he served as senior director of the Congressional Commission on the Strategic Posture of the United States, a bipartisan body headed by former Defense Secretaries William Perry and James Schlesinger. He was project leader for the Council on Foreign Relations' study of China, Space Weapons, and U.S. Security, which the council published in 2008. Additionally he was Assistant Director for National Security at the White House Office of Science and Technology Policy, served as Senior Director for Science and Technology on the National Security Council staff, and served on the U.S. START delegation in Geneva.

MacDonald is an honors graduate in aerospace engineering from Princeton University. He also received two Masters Degrees from Princeton, one in Aerospace Engineering with a specialty in rocket propulsion, and the second in Public and International Affairs.



Dr. Irving Mintzer, Visiting Research Scholar and Adjunct Professor

Dr. Irving Mintzer is an internationally recognized expert on the impacts of energy technologies and climate change on human societies and natural ecosystems. A consultant to transnational corporations as well as multilateral financial institutions, Irving recently completed a review of worldwide private sector investment activity in clean energy technologies and energy efficiency systems for the Secretariat of the UN Framework Convention on Climate Change.

Actively engaged in the international debate on energy, environment, and economic growth for the last 20 years, Irving has been an invited expert in the negotiations leading to the Montreal Protocol on Substances that Deplete the Ozone Layer, a participant in the Response Strategies Working Group of the intergovernmental Panel on Climate Change (IPCC), and an expert observer in the deliberations of the Intergovernmental Negotiating Committee for the Framework Convention on Climate Change. Along with Amber Leonard, he is the editor of two books on the Climate Convention and has published numerous articles on issues of economic, environmental, and energy policy in such journals as *Energy Policy*; *Environmental Policy and Law*; the *Bulletin of the Atomic Scientists*; the *Journal of Policy Analysis and Management*; *Environmental Science and Technology*; and *Issues in Science and Technology*. He holds a Ph.D. in Energy and Resources from the University of California, Berkeley.



David Pumphrey, Adjunct Professor

David Pumphrey is Co-Director and Senior Fellow in the Energy and National Security Program at the Center for Strategic and International Studies. His work focuses on energy policies and strategies that will address US security and climate change challenges. He has recently written on the economic and geopolitical implications of unconventional oil and gas developments in the United States. Mr. Pumphrey spent more than 35 years working in the U.S. government on a wide range of domestic and international energy policy issues.

In his last position he served Deputy Assistant Secretary for International Energy Cooperation at the Department of Energy. During his career Mr. Pumphrey led the development and implementation of energy policy initiatives with individual countries as well as multilateral energy organizations. He was responsible for policy engagement with numerous key energy producing and consuming countries including China, India, Canada, Mexico, Russia, Saudi Arabia and the European Union. Mr. Pumphrey represented the US Government in various committees of the International Energy Agency and the Energy Working Group of the Asia Pacific Economic Cooperation. Mr. Pumphrey also represented the Department of Energy in the negotiations of the energy related sections of the U.S-Canada Free Trade Agreement and the North American Free Trade Agreement.

Mr. Pumphrey received a Bachelor's Degree in Economics from Duke University and a Master's Degree in Economics George Mason University. He speaks extensively on energy issues including testifying before Congress.



Steve Roady, Adjunct Professor

Steve Roady is an attorney at Earthjustice's Washington, D.C. office. He received his B.A. from Davidson College with honors in 1971, and his law degree from Duke University in 1976. He practiced environmental law in Washington, D.C. from 1976 to 1989, then joined the United States Senate Committee on Environment and Public Works as counsel to Committee Chairman John H. Chafee. After helping draft the Clean Air Act Amendments of 1990, Mr. Roady returned to private practice before launching the Ocean Law Project at Earthjustice in 1998.

During 2001 and 2002, Mr. Roady was the first president of Oceana, an international ocean conservation organization; he rejoined Earthjustice in 2002. He has handled cases under the National Environmental Policy Act, the Magnuson-Stevens Fishery Conservation and Management Act, the Clean Air Act, and other statutes. He has served as an adjunct professor at the law schools of American University and the University of Hawai'i, as a senior lecturing fellow at Duke Law School, and as a visiting scholar at Duke's Nicholas School of the Environment, where he recently won an award for his teaching. Harvard Law School named Steve a Wasserstein Public Interest Fellow for 2007-2008.



Dr. Fred Stolle, Adjunct Professor

Fred Stolle is program manager for WRI's Forest Landscape Objective, working on forest governance, forest changes, and their impacts on climate change, and biofuels issues in Southeast Asia, especially Indonesia. At WRI since 2003, Fred's focus is on the development in Southeast Asia (focus on Indonesia) of a decision-making environment where reliable, accurate and current information on forest and timber resources and related decisions are continuously and publicly available (Transparency) and that actions by the government are taken based on this information.

Recently, he was also involved in advising the Indonesian government on the inclusion of reduced deforestation programs in the UN Climate framework (UNFCCC). Fred is also involved in several international processes in Asia as the Forest Law Enforcement and Governance (FLEG) initiative, the Asian Forest Partnership (AFP), the Roundtable of Sustainable Oil palm, and the world-wide UN FAO Forest Resources Assessment. He holds a MSc in Landscape Ecology and a PhD in Geography.



Dr. Winston Yu, Adjunct Professor

Winston Yu is a Senior Water Resources Specialist at the World Bank. He has extensive experience working on technical and institutional problems in the water sector and has carried out a number of investment projects in a variety of developing countries (e.g. India, Pakistan, Bangladesh, China). His research interests include the development of river basin management tools, flood forecasting and management, groundwater depletion, international rivers and transboundary issues, and adaptation to climate change. Prior to joining the Bank he was a senior researcher at the Stockholm Environment Institute (SEI) and also served as a American Association for the Advancement of Science (AAAS) Fellow at the US Department of State. He is currently associated with the multi-discipline Johns Hopkins Global Water Program and is serving as a technical member of the Water and Society Committee of the American Geophysical Union.

He holds a Ph.D. and M.S. in environmental science and engineering from Harvard University. He received his B.S. from the University of Pennsylvania.

Faculty and Professorial Lecturers (SAIS Europe Campus)



Kenneth H. Keller, Director, SAIS Bologna; Professor of Science and Technology Policy

President emeritus of the University of Minnesota; was professor of chemical engineering and materials science, department chair, academic vice president and president of the University of Minnesota for more than three decades; was senior fellow for science and technology and senior vice president of programs at the Council on Foreign Relations in New York; member of the National Academy of Engineering; fellow of the American Association for the Advancement of Science; founding fellow of the American Institute of Medical and Biological Engineering; member of the Council on Foreign Relations; former member and chairman of the National Research Council's Board on Assessment of National Institute of Standards and Technology Programs and NASA Astrophysics Performance Committee; former member of the Board of Life Sciences, the Commission on Physical Sciences, Mathematics and Applications, and the Science and Technology Advisory Panel to the Director of Central Intelligence; past chair of the Medical Technology Leadership Forum; Ph.D., chemical engineering, The Johns Hopkins University.



Jonathan Brooks, Adjunct Professor of International Economics, Senior Economist in the Trade and Agriculture Directorate, OECD

Ph.D. in Agricultural Economics, University of California, Davis; M.S. in Economics, Purdue University; B.Sc. in Economics, London School of Economics. Dr. Brooks is working mainly in the areas of agricultural policy, trade and development. His current focus is on the role of agricultural policy in poverty reduction. He is currently responsible for work on global food security, and has led OECD reviews of agricultural policies in Brazil (2005) and Chile (2007). Before joining OECD in 1999, he was a Lecturer at the University of Reading and worked on a range of consultancy projects. Prior to specializing in agricultural economics, he worked as a macroeconomist for Data Resources, Inc. where he was responsible for country forecasts and for the company's Middle East and African Review.



Marco Dell'Aquila, Adjunct Professor of International Relations, Chairman of Power Capital

Currently CEO of Meridian Power and non-executive director of Purepower; formerly an executive director at GE Capital and a regulatory energy economist at Putnam, Hayes and Bartlett; a member of the Advisory Council of the SAIS Bologna Center; co-founder and editor-in-chief until 2007 of Infrastructure Journal; was previously a senior fellow of the Institute of Latin American Studies at the University of London; M.A., International Relations, SAIS.



Manfred Hafner, Adjunct Professor in International Relations, Visiting Professor in the International Energy Master program, Sciences-Po Paris; BP Professor in the Executive MBA program, Skolkovo Moscow School of Management; President of International Energy Consultants; Research Director at IEFE (Centre for Research on Energy and Environment Economics and Policy), Bocconi University; Fellow, Fondazione Eni Enrico Mattei; Associate Senior Research Fellow, Centre for European Policy Studies; Senior Scientist, Euro-Mediterranean Center for Climate Change.

Ph.D. in Energy Sciences, Mines-Paris Tech; Master degrees in energy engineering, energy economics and energy policy from Technical University of Munich, IFP-School Paris, University of Pennsylvania. Previously and still occasionally teaches at Mines Paris-Tech, IFP-School, HEC-Paris, the Florence School of Regulation and the Geneva Graduate Institute of International and Development Studies; has served as Scientific Director of the Observatoire Méditerranéen de l'Énergie.



Bob van der Zwaan, Adjunct Professor of International Relations

Serves as a senior scientist at the Energy Research Centre of the Netherlands and at the Lenfest Center for Sustainable Energy; was formerly a research associate at the John F. Kennedy School of Government, research scientist at the Institute for Environmental Studies of VU University, science fellow at the Center for International Security and Cooperation and research scientist at the Institut Français des Relations Internationales; co-director of the International Energy Workshop; a member of the Council of the Pugwash Conferences on Science and World Affairs; Lead Author for Working Group III of the Intergovernmental Panel on Climate Change; a member of several scientific advisory boards and academic review committees; Ph.D., physics, CERN and University of Nijmegen.

ERE Program Staff & Faculty Directory

1717 Massachusetts Avenue NW, Washington, DC 20036
Tel: 202.663.5786 | Fax: 202.349.0989 | Email: saisere@jhu.edu

Name	Title	Office		
Washington, DC Campus				
Debbie Blewiss	Acting Director	746	O: 202.663x5761	dblewiss@jhu.edu
Jonathan Haskett	Associate Director	742	O: 202.663x5645	jhaskett2008@gmail.com Jhasket1@jhu.edu
Cristina Benitez	Academic Program Manager & Student Advisor	743	O: 202.663x5786	sbenite1@jhu.edu
Mwangi Chege	Visiting Research Associate	601	O: 202.650.5417	mchege2@jhu.edu
Celeste Connors	Visiting Scholar	749	O: 202.663x5974	cconno10@jhu.edu connorsca@gmail.com
Shonda Hurt	External Programs, Marketing and Outreach Manager	743	O: 202.349x0989	shurt3@jhu.edu
Wil Kohl	Senior Fellow, Foreign Policy Institute	545	O: 202.663x5725	wkohl@jhu.edu
Anshul Rana	Visiting Research Associate	603	O: 202.587.3205	arana3@jhu.edu anshulrana.84@gmail.com
Bob Thompson	Visiting Scholar	744	O: 202.663x5667	rthomp48@jhu.edu Dr.Robert.L.Thompson@gmail.com
Shalini Vajjhala	Visiting Associate Professor	740	O: 202.650x5414	svajjhala@jhu.edu Shalini@cdotsdevelopment.com
SAIS Europe Campus				
Kenneth H. Keller	Director, SAIS Europe	n/a	n/a	kkeller@jhuc.it

ERE Adjunct Faculty		
Robert Alvarez	301.585.7672	kitbob@erols.com
John Banks	917.370.4537	jbanks13@jhu.edu
Bill Bonvillian	703.863.3962	bonvill@mit.edu
Jonathan Brooks	n/a	Jonathan.Brooks@oecd.org
Marco Dell'Aquila	n/a	mdellaquila@johnshopkins.it
Carol Dumaine	703.964.6140	carol.dumaine@gmail.com
Heather Eves	703.254.7474	heather.eves@aya.yale.edu
Manfred Hafner	n/a	mhafner@johnshopkins.it
Cathleen Kelly	n/a	cathleen.mary.kelly@gmail.com
Bruce MacDonald	703.346.3347	bmacdonald@usip.org
Irving Mintzer	202.412.9208	irv.mintzer@gmail.com
David Pumphrey	202.457.8773	DPumphrey@csis.org
Steve Roady	202.667.4500 x5233	sroady@earthjustice.org
Fred Stolle	202.729.7694	astolle1@jhu.edu
Winston Yu	202.4.8536	wyu@worldbank.org

Energy, Resources and Environment Program Program Overview

A critical component of the curriculum in the Energy, Resources and Environment program is requiring that students take both energy and environment courses. This is consistent with ERE's vision for the program, and means that no one can graduate as an ERE concentrator without being knowledgeable about the deep links between these two subject areas. An understanding of the "iron triangle" of energy, water and food security, the threats posed by global climate change, and possible solutions to these daunting problems, is a critical component of the ERE graduate's tool kit.

The ERE program provides its students both an academic and academic enrichment focus. Currently, the program offers a MA degree only. We also accept applications for M.I.P.P. candidates to affiliate with ERE.

Academic Program Requirements

Energy, Resources and Environment (ERE) Courses

Students concentrating in Energy, Resources and Environment must take at least four courses within the program – only one course may be cross-listed. In addition, all students must successfully complete the Online Basics of Energy course (within the first three weeks of their first term). Three courses must have an ERE course number (SA.680.XXX). At minimum, one course must be designated as an "Energy" course, and one course must be designated as an "Environment" course. Refer to the ERE Curriculum matrix for course designations.

Equivalency for Bologna Students

To fulfill their energy course requirement, students initiating their studies in Bologna may take either SA.680.756 "Politics and Economics of International Energy" or SA.680.781 "Renewable Energy: Markets, Technologies & Projects" at the SAIS Bologna Campus **OR** take an energy-designated course upon arrival at the SAIS Washington Campus. To fulfill the environment course requirement, Bologna students should take SA.680.722 "Energy and Climate Change." A Bologna student may elect to substitute an equivalent energy-designated or environment-designated course in Washington for the Bologna courses. Refer to the ERE Curriculum matrix for a listing of ERE courses and designations.

- **International Relations** - Students also must fulfill the general requirements for the field of International Relations – that is, an additional two courses within IR from two different fields other than Energy, Resources and Environment. Students may select the two courses from the following IR Fields: Conflict Management, Global Theory & History, International Law and Organizations, **OR** Strategic Studies. The two selected courses must not be from the same field. Courses from regional studies programs may count toward the IR requirement only if the course is cross-listed with an IR field.
- **International Economics** - All candidates for the M.A. degree must complete a concentration in the field of International Economics by taking at least four economics courses: Macroeconomics, Microeconomics, International Trade Theory and International Monetary Theory. Eligible students who pass the waiver exams in these subjects or who pass Micro and/or Macro in Pre-Term, must replace those classes with alternate economics classes. Many students choose to specialize in one of four areas of economics and therefore use electives to meet these

requirements. Students may also choose to specialize in Emerging Markets. Additionally, students must take one quantitative reasoning course.

- **Core Exams** - All SAIS students must pass two core exams and/or courses. Energy, Resources and Environment concentrators must pass *Theories of International Relations* as one of these core requirements prior to the start of their third semester. If the other core is not completed by the start of their final semester, the student must enroll in a qualifying core course.
- **Language Proficiency** - MA candidates must pass exams to demonstrate proficiency in a language taught at SAIS other than their native language.
- **Capstone** - ERE Concentrators must complete one of the two following Capstone exams in order to graduate: (1) Energy, Resources and Environment Oral Exam or (2) MA Oral Exam (to compete for honors - if eligible).

Concentration Transfers to Energy, Resources and Environment (ERE)

Students wishing to change their concentration into the Energy, Resources and Environment Program after their first semester should be aware that three ERE courses (SA.680.XXX) are mandatory and must include at a minimum one course designated as energy focused and one course designated as environment focused. The required form is available from the Registrar's Office. The student must seek approval from the Field Director of the program the student is leaving as well as from the ERE Director.

M.A. Dual Concentrators

The ERE program accepts dual concentrators. In the event that a particular course is oversubscribed, second-year ERE Dual concentrators receive the same priority considerations as ERE concentrators during the bidding process.

Master of International Public Policy (M.I.P.P.)

M.I.P.P. is intended for mid-career professionals in international fields who have at least nine years of work experience. The program offers one-year of full-time study or two years of part-time study in international relations, international economics or some combination of the sub-fields of these disciplines. The ERE program allows M.I.P.P. students to affiliate, upon approval, and offers one priority course of choice. M.I.P.P. students are also required to take a minimum of one ERE course designated "Energy", and one ERE course designated "Environment" as outlined in the section above. Refer to the ERE curriculum matrix for course designations.

Academic Enrichment Programs

To supplement its rigorous academic curriculum, ERE has developed the following programs:

- **Global Leaders Forum** - Over the past year, the ERE Program initiated the ERE Global Leaders Forum (GLF). The GLF brings leaders to SAIS from government, finance, industry, research and civil society, to engage students and the larger SAIS community on crafting solutions to intractable domestic and international energy and environmental challenges.
- **The International Energy and Environment Practicum** - Helps students develop their practical problem solving skills. Teams of four ERE students work on a project for an international business, NGO, or foundation during the course of the full academic year, allowing them to apply their academic training to real world problems. The teams also travel abroad to conduct hands-on research.
- **Frontiers in Energy, Science and Technology (FEST) Field Trip Initiative** - Provides students with first-hand experience visiting utilities, nuclear power and LNG plants, hydraulic fracturing and off-shore oil facilities, sewage treatment plants, and solar panel manufacturing facilities, among

others. These experiences enhance student understanding of the SAIS ERE curriculum.

- **GLOEES** (Global Energy & Environmental Solutions) – An international research program that explores solutions to complex interdisciplinary challenges facing public & private decision makers.
- **iSEE** (International Solutions for Energy and the Environment) – An online academic journal and blog created and edited by students. The journal provides an engaging online forum for students to post substantive articles and editorials on global energy-environment related issues. Students receive direction and guidance from faculty members.

Career & Internship Placements

ERE encourages students to pursue internships and research opportunities during the summer or after their first year of study in Washington. Many of our graduates begin careers in prominent institutions upon graduation.

- **Placements:** World Food Programme, Adaptation Fund, United Nations Environment Programme, Dept of Energy, PFC Energy, Sidar Global Advisors, Overseas Private Investment Corporation, World Resources Institute, and the World Bank, among many others.

Select Course Descriptions (Washington, D.C.)

Agriculture - Global Issues SA.680.783

Examines issues related to global agriculture. Topics covered include: the world food system, the nexus of poverty and hunger, the rurality of poverty, the uniqueness of agriculture relative to other economic sectors, agriculture's role in economic development, resource constraints on future food production, climate change and agriculture, energy and agriculture, technological change in agriculture, public vs. private roles in agricultural and rural development, public policy distortions in global agriculture, globalization and agriculture, and the volatility and trend in agricultural commodity prices.

Case Studies in Sustainable Development: Smart Cities & Urban Innovation SA.680.784

This course will provide students an opportunity to author a publishable-quality case study on a set of topics related to sustainable cities and urban systems. The first part of the course will include a review of existing case studies from the Harvard Business School and other case study programs, followed by a methodological review of what makes a good case study. The second half of the term will focus on the research and development of one new case study by each student (or student team) focused on the core issues of integrated planning and economic, environmental, and social trade-offs of specific urban sustainable development challenges. The final products of this course will be a set of case studies; the top papers from the spring and fall semesters are anticipated to be compiled into an edited volume for publication.

Energy, Environment, and Development in Developing Countries SA.680.714

The issue of energy demand growth and access to energy services in the developing world is one that will have increasing impact on international economic conditions, the global environment, and international relations. The class opens with a review of the historic relationship between energy and development in developing countries and the economic, socio-political, and environmental implications of that relationship. It looks at the impacts of the use of traditional energy strategies as well as non-traditional options (e.g. energy efficiency, renewables, decentralized power generation) to deliver the

needed energy services growth by these countries, assessing the relative positive and adverse impacts of such strategies. This examination focuses on both the modern and traditional energy-consuming sectors. Within the modern sector, both the supply and demand perspectives are addressed, that is, options are examined from both the individual fuel sector viewpoints (e.g. electricity, oil and gas, biofuels) and from the energy demand end-use sector perspective (e.g. industry, buildings, agriculture, transportation). In the examination of the traditional sector, historic fuel use patterns are examined, the adverse impacts of these patterns assessed, and the role of alternative fuels and/or energy efficiency addressed insofar as they mitigate these impacts. The class ends with an assessment of how such changes can be effected through national (and local) governments, donor agencies (including the multilateral development banks), and the private sector. The potential role of climate agreements in fomenting change is also addressed.

Facing the Oil Problem: The United States, Canada, OPEC and the World SA.680.759

Every aspect of foreign and domestic policy feels the effect of the oil problem. Solutions have proven difficult. The course assesses direct and indirect costs of oil addiction, including global climate change; considers scenarios of supply disruption; examines who controls oil and how; explains “peak oil” and the loss of “spare capacity” to cushion price shocks; investigates heavy oil production from Canada, America’s largest oil supplier; weighs energy initiatives, alternative energy development and future energy RD&D; unravels complexities of the oil problem and explores what is to be done about it. (This is a cross-listed course offered by the Energy, Resources and Environment Program that also can fulfill a requirement for the Canadian Studies Program).

The Geopolitics of Energy SA.680.765

This course will define and address the geopolitical and security risks associated with new developments and urgent threats that have emerged on the global energy stage, and will examine potential means to mitigate these risks. The challenges of preserving and enhancing global energy security now extend beyond oil to include the burgeoning international use of natural gas, and the role of nuclear power after Fukushima, both globally and in specific countries with plans for nuclear power expansion. The course will also review mechanisms to limit the proliferation of nuclear weapons. The geopolitical dimensions of these energy developments are unfolding in the context of the daunting security impacts of climate instability, as well as the energy poverty of one quarter of the world’s population. The course will examine the impact on global energy security of regional developments in Brazil, Russia, India, China, sub-Saharan Africa and the Middle East, including the rapidly rising energy demand of developing countries, particularly India and China, and their quest for secure supplies of energy. The course will examine options to ensure global security and stability, including the future role of international bodies such as the G-8, the G-20, the International Energy Agency (IEA), the International Atomic Energy Agency (IAEA), the International Energy Forum (IEF), and the Bretton Woods institutions.

Global Climate Change: Ensuring Security and Resilience SA.680.760

The purpose of this course is to explore solutions to a class of new and urgent global threats associated with climate change and its impact on the “iron triangle” of energy, water and food security. The course will also focus on the new nexus of climate change, physical infrastructure, global security, global financial and economic stability, and resilient and sustainable economic development.

The course will be based on the best current scientific understanding of the ways in which economically important activities affect the physical and chemical properties of the atmosphere. It will assess the

ways in which global warming due to the atmospheric buildup of greenhouse gases may affect agriculture, forestry, fisheries, human health, urbanization, and coastal zone development. Our discussions will highlight the ways in which global warming may exacerbate intra- and inter-regional tensions; inflame economic and geopolitical rivalries; and complicate the challenges associated with achieving the United Nation's Millennium Development Goals. We will examine how strategies to catalyze new public-private investment partnerships and to enhance inter-regional and international cooperation could increase resilience, adaptive capacity and security. Finally, we will assess the role of sustainable and resilient infrastructure investments in assuring the inclusive and equitable economic growth of nations in the face of the dynamic and multi-dimensional challenges that already confront the international community.

Global Electricity Markets SA.680.730

This course is designed to provide a more detailed introduction to the electric power industry. The focus is on the policy, technology, institutional, and regulatory factors affecting the industry, major current issues, and the prospects for the industry's future development and sustainability. Students are not required to have a background in engineering, economics, finance, etc, although these disciplines are integrated into the discussion. Broadly, the main topics are:

- Industry Reform - What does reform entail? What are the lessons learned thus far? And what does the future hold? Case studies will focus on emerging markets.
- Meeting the Challenges of Demand and Global Climate Change – How will the power sector meet the challenge of de-carbonization? Will the industry undergo a dramatic transformation from the traditional ways of doing business? What will it cost? What will the future electricity industry look like? Scope will be global, but several key developments in the US that are impacting world markets will be discussed in some detail.

The overall objective of the course is to provide students with the knowledge to understand, analyze, and formulate policy paths that address these complex questions.

Global Energy Fundamentals SA.680.697

This course is an essential element in meeting the goals of the ERE program; it is geared to provide a good energy background to students who have previously not had much exposure to the energy policy arena. It will provide an overview on all of the subjects within the energy fields, as well as their impacts on the environment, economic growth and social development. Critical to this learning will be an emphasis on the interactivity among all the subjects and their impacts. Students will emerge from the course with a basic understanding of the major issues in these fields as well as an appreciation of the types of policies that may be applied to address a variety of threats resulting from the growing global demand for energy.

Global Environment Fundamentals SA.680.698



This course is the complement to the Global Energy Fundamentals course; it is geared to provide a good environmental background to students who have not had much exposure to environmental issues and environmental policy. This class will place the environmental topics already covered in our courses in a broad context, as well as introduce students to environmental issues not covered in other courses. The class will open with an introduction and context-setting, in which the key earth systems and the benefits they bring for life will be discussed along with the concept of the carrying capacity of the earth. Human

impact on global environmental processes will be discussed. This context will set the stage for a review of major topics in environment, including climate change, food security, water security and pollution. We will look at how human choices and imperatives drive these issues. The class will conclude with an assessment of policy making options to address these challenges, their history, successes and failures, as well as the prospects for establishment of the necessary institutions and the leveraging of the necessary finance to address these issues.

International Energy and Environment Practicum SA.680.775

As both a course and a consulting project, the practicum provides students the opportunity to apply the principles and methods they have learned in their academic courses in a real-world setting. Sponsoring organizations—including NGOs, government agencies, multilateral organizations and private companies—pose real and pressing problems, and students work to develop useful findings for their “client” company. All projects concentrate on international environment and energy issues, although some may intersect with the other focus areas of the Energy, Resources and Environment Program: infrastructure, technology and health. Students work in teams to (1) agree to detailed terms of reference with the organization; (2) form a work plan for their project; (3) plan and conduct stakeholder interviews, data collection, travel, etc.; and (4) prepare and present draft and final reports. All students meet every other week in both fall and spring terms. Students register for this course in the fall term, and grades are assigned when projects are completed in the spring. Enrollment is limited to 20 students.

International Energy & Environmental Policy: Rethinking Multilateral Engagement SA.680.882



This course will provide an overview of the emerging trends in international environmental policy, particularly new alternatives to the formal multilateral architecture, to support international action in two areas: climate change and sustainable development. Class discussion will explore the recent history of traditional multilateral and bilateral environmental fora and the potential for non-traditional fora—including regional, plurilateral, and functional processes—to raise the level of international ambition to tackle climate change and support sustainable development. The course will examine lessons learned from Copenhagen and Rio+20 to consider the post-2015 development framework and possible pathways to achieve the desired outcomes of two UN processes: a new climate treaty and new sustainable development goals (SDGs).

International Forestry: An Introduction to Major Contemporary Issues SA.680.884

The main focus of this course is to deal with forest issues in an international setting, looking into current state and threats, forest management for wood products, trade, and the important role of forests in the climate debate. However, this course will also look into some of the socio-economic functions of forests in developing tropical countries as well as the regulatory and policy context in which those countries manage their forests and their relations with forest dependent peoples and communities. This will include issues such as land rights, logging titles, forest concessions systems, forest revenue systems benefit sharing mechanisms, and the role of climate change. Each of the session will discuss separate but inter-meshed issues, through review and analysis of concepts, policies etc., as well as illustrative practical examples in a tropical country (mainly Congo Basin countries and Indonesia).

International Water: Issues and Policies SA.680.738

Is it true as recent headlines suggest that our fragile planet is on the loom of a grave water crisis, that our rivers are running dry and groundwater aquifers increasingly over-tapped and over-exploited, that wars will be fought between nations over this precious resource (more valuable than oil), and that this is likely to affect development opportunities for a large share of the world population? Or is this looming crisis over-hyped, a matter of political will and proper pricing, and within the capacity of society to manage? Water is a classic renewable resource, essential to life on this planet. Water sustains the livelihoods of society and makes productive economic activity possible. For such an important resource, it is no wonder that issues surrounding its use (and abuse) can generate cause for so much passionate controversy and concern. This course is a broad survey of the international water issues facing the 21st century. Topics to be covered include: privatization of water service delivery, conflict and cooperation on trans-boundary rivers, the role of large multi-purpose reservoirs (for hydropower, water supply, irrigation), water as a human right, achieving the Millennium Development Goals on water supply and sanitation, the role of water in food security, and climate change. Any discourse today on sustainable development is not complete without a discussion of the important role of water to society.

International Wildlife Conservation SA.680.738

Wildlife populations around the globe are under serious threat, impacted by human activity, development, and encroaching industry, much of which is prompted by decisions made by governments and other institutions. Local-level land-use, local, national and international policies, and human trade and development activities heavily influence wildlife populations and the potential for their protection and management. This course provides an overview of the theory and practice of wildlife conservation internationally, with a focus on African wildlife. The objectives of the course are to provide knowledge on policies and practices used to protect and manage wildlife populations, especially as they compete with other development goals. The course will examine: the major issues of concern in global wildlife conservation; the US-based and international agencies working toward wildlife conservation objectives and the way they interact with other “development” groups implementing projects in conservation areas; the impact of major international treaties; and, conservation practices across key regions of the globe.

Nuclear Non-Proliferation Challenges in the 21st Century SA.680.786

Nuclear energy can be used for peaceful purposes or for nuclear weapons. An international non-proliferation regime was established based on the 1968 Nuclear Non Proliferation Treaty (NPT). The Treaty assigned responsibility to the International Atomic Energy Agency of the United Nations for applying safeguards to nuclear and related materials, nuclear equipment and facilities to ensure that they remain in peaceful use. New challenges arise from resurgent interest by some nations in acquiring nuclear weapons to meet their perceived security needs, and the recent revival of interest in nuclear power as a carbon-free energy source, including from developing countries that have no experience in nuclear technology. In addition, with the end of the Cold War there is a new threat of nuclear terrorism from acts of malice, diversion, sale, and theft of nuclear material and technologies. This course explores how nuclear weapons work, why some countries are tempted to seek them, and the implications of nuclear weapons for civilian nuclear power and geopolitical stability. Students will gain an understanding of the political and military dynamics of nuclear weapons, ways to slow or halt the spread of such weapons and how to reduce the dangers of nuclear terrorism. Group discussions, simulated exercises, and guest lecturers will introduce additional real-world dimensions into the classroom.

Policy to Drive Energy Innovation SA.680.774

With the rising challenges of mitigating both energy security and climate change vulnerabilities, the need for facilitating rapid introduction of new energy technologies that are cleaner and more efficient has never been higher. This course will examine the policy framework required to achieve this. It will begin with an overview of the elements needed to drive technology innovation in general, along with the types of policies to spur these elements. The course will then apply this analysis to the specifics of accelerating energy technology innovation, discussing a framework for energy technology policies. Strategies used to drive energy technology innovation in major countries around the world—including both OECD and the more advanced developing countries—will then be examined, beginning with the U.S. The assessment of the US will include an examination of its innovation system institutions: their strengths and gaps in driving energy technology innovation, including recent programs to address those gaps, and an analysis of what remains to be done. The course will conclude with an examination of approaches being considered to spur energy technology innovation as part of the climate negotiations. Since this course focuses on policies to achieve energy innovation, it is a good complement to the *Energy Technology Futures* course, which focuses on future technologies and their risks and benefits.

Select Course Descriptions (SAIS Europe)

Agricultural Development, Poverty Reduction and Food SA.680.783

This course will examine issues relating to the functioning of the world's food and agriculture system. Topics to be examined include: the role of agriculture in economic development; how agricultural development contributes to poverty reduction and food security; the supply side challenge of feeding a world population that is expected to exceed 9 billion by 2050; the impacts of climate change and the linkages between agricultural and energy markets international agricultural trade; and the role of agricultural policy (including agricultural trade policies). The aim is to provide students with an understanding of the major policy issues, illustrate ways in which economic analysis can lead to improved policy advice, and provide some insights into the mechanisms through which policy decisions are made. (Cross listed: IR, IDEV and ERE) Prerequisite: Microeconomics

Energy and Climate Change SA.680.722

This class provides an interdisciplinary introduction to the technology, economics, and politics of energy use. It investigates specific technologies and discusses their impact on geopolitics the environment and mitigating the effects of climate change. The course seeks to address these questions, among others: What is the role of energy in national security? What is the future of oil? What role can nuclear power serve for the next century? Do wind and solar power have the potential to supplant other energy sources? What will climate change mean for our energy mix? How do developing countries view energy differently? What is the proper balance of regulation and free market operation in energy markets? What new technologies are on the horizon, and how promising are they?

Politics and Economics of International Energy SA.680.756

Economic growth requires a constantly growing use of energy, and the availability of sufficient sources of energy on a global scale cannot be assumed. Energy—oil, gas and power—remains one of the biggest businesses and maintains a strategic characterization that sets it aside from other economic sectors. As

such, it attracts the attention of industrial, financial and political actors internationally. The course aims to provide students with the critical knowledge and skills to avoid superficial generalizations and simplifications in addressing this issue.

Renewable Energy: Markets, Technologies & Projects SA.680.781

This course provides an overview of the renewable energy sector. Students will be exposed to all of the building blocks necessary to take a renewable energy project from concept to reality, spanning regulation, technical, project development and financing aspects. By necessity the topic is multi-disciplinary and also international in its scope. The course will provide a context for renewable energy projects in the wider energy debate. There will be a number of guest speakers who are experts in their field and will expose students to live projects.

Science, Technology and International Affairs SA.680.710

This course examines how advances in science and technology as well as the dynamics of technological development affect relations among nations in matters such as autonomy, national security, relative economic strength, environmental protection, cultural identity and international cooperation. It illustrates these effects with examples from the current international scene, and it considers various approaches to negotiating international agreements in areas affected by these science and technology considerations.

2013 – 2014 ERE Course Offerings

SAIS Washington Campus	
Fall Courses	Spring Courses
Global Energy Fundamentals SA.680.697 Bleviss	Global Energy Fundamentals (Blended Learning Format) SA.680.697 Bleviss 
Facing the Oil Problem: United States, Canada, OPEC & the World SA.680.759 Doran (joint Canadian Studies, IR-Global T&H)	Geopolitics of Energy SA.680.765 Bleviss & Pumphrey
Policy to Drive Energy Innovation SA.680.774 Bleviss & Bonvillian	Global Electricity Markets SA.680.730 Banks
Global Climate Change: Ensuring Security and Resilience SA.680.760 Mintzer	Nuclear Non-Proliferation Challenges in the 21st Century SA.680.786 Alvarez & MacDonald (joint IR-Conflict Management, IR-Strategic Studies)
Case Studies in Sustainable Development: Smart Cities & Urban Innovation SA.680.784.01 Vajjhala	Case Studies in Sustainable Development: Smart Cities & Urban Innovation SA.680.784.01 Vajjhala
Case Studies in Sustainable Development: Smart Cities & Urban Innovation SA.680.784.02 Vajjhala	Case Studies in Sustainable Development: Smart Cities & Urban Innovation SA.680.784.02 Vajjhala
International Forestry: An Intro to Major Contemporary Issues SA.680.884 Stolle	Global Climate Change & Global Security SA.680.787 Mintzer & Dumaine 
International Wildlife Conservation SA.680.881 Eves (joint African Studies, IDEV)	International Energy & Environmental Policy: Rethinking Multilateral Engagement SA.680.882 Connors & Kelly 
	International Water: Issues and Policies SA.680.738 Yu (joint IR-Conflict Management, IDEV)
	Agriculture--Global Issues SA.680.783 Thompson (joint IDEV)
	Global Environment Fundamentals SA.680.698 Haskett & Roady 
International Environmental Policy Practicum SA.680.775 Haskett (application required, 2 nd year ERE students only, year-long project, work timeline varies by project)	
SAIS Washington Cross Listed with ERE	
Fall Courses	Spring Courses
Asian Energy Security SSA.775.710 Calder (joint Japan, Middle East, Asian, African)	Project Finance (Corporate Finance prerequisite) SA.380.834.01 Dymond (joint Economics)
Project Finance (Corporate Finance prerequisite) SA.380.834 Staff (joint Econ, Corporate Finance Prereq)	Project Finance (Corporate Finance prerequisite) SA.380.834.02 Staff (joint Economics)
Environmental Negotiations SA.640.746 Wagner (joint Conflict Management)	Comparative Agricultural Policy SA.400.754 Thompson (joint IDEV)
	Public-Private Partnerships: Aligning Resources & Interests SA.400.756 Trager (joint IDEV) 
	International Environmental Law SA.650.730 Magraw (joint International Law)
	China's Environment & Development: Politics, Policy and Sustainability SA.750.733.01 Freeman (joint China Studies)
	Energy in the Americas: Conflict, Cooperation & Future Prospects SA.810.761 Gonzalez (joint Latin American Studies)
	Energy Transition in Europe: Systems, Innovation & Leadership SA.700.792 van der Lans (joint European & Eurasian Studies)
	Energy Markets in the Middle East and Central Asia SA.860.761 Seznec & Tsereteli (joint Middle East Studies)
SAIS Europe Campus	
Fall Courses	Spring Courses
Politics and Economics of International Energy SA.680.756 Hafner	Energy and Climate Change SA.680.722 van der Zwaan
Science, Technology, and International Affairs SA.680.710 Keller	Agricultural Dev, Poverty Reduction & Food Security SA.680.783 Brooks
	Renewable Energy: Markets, Technologies & Projects SA.680.781 Dell'Aquila (joint Econ)

Energy, Resources and Environment Program Practicum

International Energy and Environment Practicum Overview

What is the Practicum?

The Practicum is an innovative program that allows students to combine a for-credit course at SAIS with extensive, in-depth, real world experience consulting for client organizations on projects aimed at addressing international environmental and energy policy challenges. The Practicum is designed to provide quality research and analysis on intractable challenges to clients, while providing students with the opportunity to apply concepts learned in the classroom to critical problems. Where possible, the work is integrated into the on-going research of an ERE faculty member.

What are the Deliverables to the Client Organization?

Each Practicum team of four students begins by developing a specific, practical research work-plan for the project, designed collaboratively with the client and their academic supervisor. Over the course of the academic year, the team then conducts its research, often accompanied by site visits, and prepares a detailed report on its findings for presentation to the client and in a public forum. Oversight of the student teams is provided by SAIS faculty as well as the client, and students are held to the highest standards in the work they conduct.

How Long does the Project Last?

The Practicum is a “for credit” course at SAIS and runs an entire academic year – from September through May. Students typically conduct literature reviews and other research during the fall months, undertake any necessary field research in January, and complete their report and client presentation by May.

Types of Projects:

All client projects have an international environmental and/or energy policy dimension and are often involved with issues of economic development, resource management, climate change, and technology policy. Practicum projects have been conducted in Africa, Asia, and Latin America. Current projects and client sponsors include:

- Carbon War Room: Low-Carbon Opportunities for Cement Production in China
- c.dots Development and Blue Raster: Mapping Resilience: Creating an Adaptation Atlas innovation hub at SAIS
- SPEED Project, Rockefeller Foundation: Putting SPEED to Work On the Ground
- Swiss RE: Building Resilience and Reframing Risk in the Columbia River Basin
- World Resources Institute: Adaptation Measures in Mexico City for the BRT System
- World Wildlife Fund: Reduced Emissions from Deforestation and Degradation: Removing Barriers and Achieving Potential

What are the Responsibilities of the Client Organization?

Organizations interested in participating in the Practicum are asked to submit a brief document describing a project they would be interested in having a SAIS student team address. The description includes any particular concerns or challenges with the project, any travel required, and any particular skills on the part of the team members that would be useful in completing the project. ERE faculty then choose the teams for each project and try to match team skills to any requirements specified by the client. The client organization provides guidance and assistance to the team throughout the academic year, as needed, including initial contacts for any necessary student field work. Working together, the team, faculty and client organization craft practical, integrated solutions to the challenge they have accepted.

What Value do SAIS Students Bring to the Client and Practicum?

SAIS is one of the world's premiere institutions for graduate study in international relations and policy. Its students are drawn from over 70 countries and are trained in economics, international relations, regional studies and languages. Many also have a strong business and finance background for project analysis. ERE students are solution oriented integrators who draw on breadth of knowledge and experience in rigorous and creative ways to successfully implement cutting edge research. The student teams provide the client with an opportunity to explore and answer a critical question that they would not otherwise have. In addition, the interaction provides a chance for insight and mutual knowledge sharing, beyond the scope of the more standard internship programs. The Practicum is a real chance for collaborative effort with benefits to all participants.

An overview of the consultancy projects for the 2012-2013 academic year is listed below.

Energy Resources and Environment Program – SPEED Project, Department of State / Rockefeller Foundation: SPEED (Smart Power for Environmentally – Sound Economic Development) Initiative

-Principal Client: David Jhirad / SPEED Project

-Advisers: David Jhirad, Jessica Lewis

-Team Members: Mwangi Chege, Nathan Miller, Viraf Soroushian, Yao Zhao

During the 2012-2013 academic year an international environmental policy practicum team composed of four students engaged closely on the Smart Power for Environmentally – Sound Economic Development (SPEED) initiative. Specifically, the practicum team worked with SPEED's Indian partners to assess challenges to, and devise strategies for, scale-up of SPEED in India. The practicum team interfaced with partners including Development Alternatives (DA), Technology and Action for Rural Advancement (TARA), DESI POWER, the Confederation of India Industry (CII) Green Business Center, and Sambodhi, and traveled to India during the January intersession to meet directly with partners and visit project sites. Though focused on India, the team's research and analysis also maintained a global orientation. The team examined best practices in rural economic development through delivery of clean, distributed energy services that may be replicated across geographies, as well as systemic obstacles to global scale-up of the SPEED model and strategies for overcoming them. The team's highly successful trip to India provided valuable insights which were used in addressing the core research issues.

World Resources Institute: Balancing Equity and Environmental Integrity in International Climate Negotiations

-Principal Client: WRI

-Adviser: Wilfrid Kohl

-Team Members: Kari Hatcher, Kristin Panier, Joonkyung Seong, Carolyn Warren

This project focused on a crucial issue in international climate negotiations, namely the need to achieve “climate justice” through a multi-lateral rule based system (i.e. international climate change negotiations) that come close to meeting the necessary emissions reductions. The team had to consider the conflict between the need for an equitable development pathway for less developed nations and the need to maintain the environmental integrity of the atmosphere from a climatic perspective which has been a key point of difficulty in international climate negotiations. The World Resources Institute is seeking to develop an approach to addressing this question that will be acceptable to a broad array of important international actors. The Practicum team contributed to this effort through supporting the creation of a solid evidence base through literature reviews and interviews.

Carbon War Room: Renewable Energy Applications for Remote Industrial Processes

-Principal Client: Carbon War Room

-Adviser: Deborah Blewiss

-Team Members: Fentress Boyse, Amar Causevic, Ellen Duwe, Martin, Orthofer

This project addressed the issue of greenhouse gas emissions that are produced by industrial processes that are implemented in remote locations and/or are dependent on diesel fuel for electricity generation. The client’s interest is in the potential for distributed renewable energy to generate electricity in commercially significant quantities to that could supply these industries, while at the same time reducing emissions. The study performed by the Practicum team looked at the market potential of off-grid renewable energy sources for industrial processes. The study looked at energy related decision making processes in relevant industries, barriers and opportunities for adoption of renewable energy sources. Initial results from the team field visit to South Africa indicate that there is significant opportunity for diesel replacement in remote mining sites that are off the grid, although adoption of this benefit from renewables has yet to be fully realized.

International Energy Forum: Unconventional Oil & Gas and World Energy Markets

-Principal Client: International Energy Forum

-Adviser: Wilfrid Kohl

-Team Members: Sebastian Ernst, Hanns-Bernhard Koenig, Lee Levkowitz, Shannon Thomas

Description: Founded in 1991 as a neutral platform to facilitate dialogue between energy producing and consuming nations, the International Energy Forum [IEF] has grown to be the most inclusive energy organization on the planet. In line with the IEF’s close coordination with the Energy Ministers of its 89 member countries, as well as with top executives from the IEF Industry Advisory Committee, key decision-makers are increasingly turning to the IEF to gain insights into the global energy dialogue. The IEF, along with its stakeholders, recognize that unconventional oil and gas represent true “game changers.” Yet what does the rise of unconventional oil and gas mean for world markets and world politics? How can the IEF help the world’s Energy Ministers craft policy related to this game-changer?

During the 2012-2013, academic year, an international energy policy practicum team composed of four students focused role of the IEF and its relation to the unconventional oil and gas boom. In conducting its research, the practicum team leveraged publicly-available studies and sources, and likewise accessed

contacts through the SAIS and IEF networks. The team has traveled to Saudi Arabia where they were able to have valuable high level meetings with IEF officials, as well as with selected high-level Riyadh-based IEF contacts and stakeholders.

Instituto De Estudos Do Trabalho E Sociedade (IETS) & Jonathan Rose & Company: Environmentally Sound Waste Management and Community Integrated Redevelopment

-Principal Client: Instituto De Estudos Do Trabalho E Sociedade (IETS) & Jonathan Rose & Company

-Adviser: Shalini Vajhalla

-Team Members: Ralph Albus, Diana Galperin, Arai Monteforte, Philipp Tagwerker

Description: The IETS is a Non-Governmental Organization based in Rio de Janeiro that is working with the New York based Jonathan Rose & Company to develop a green-jobs focused electronic waste management facility. The Practicum team provided analysis of the relevant incentives and programs in place for electronic waste management, evaluation of the potential for deploying a local electronic waste management and job training facility, conducted field interviews and meetings with local stakeholders to identify priorities, challenges and opportunities for community redevelopment, and develop a final case study including innovative recommendations to put into practice the electronic waste provisions and the social program components of the Brazil National Solid waste law in this area. The context of this work is the focus on community redevelopment opportunities provided by Brazil's preparations to host the 2014 World Cup and the 2016 Olympics. The focus is on the communities associated with the Gramacho Landfill, one of the largest open air landfills in Latin America that is slated for an integrated program of environmentally sound and community integrated redevelopment.

Energy, Resources and Environment Program Global Leaders Forum (GLF) Speaker Series

Global Leaders Forum

The Energy, Resources and Environment (ERE) Global Leaders Forum at the Johns Hopkins University School of Advanced International Studies (SAIS) is a speaker series that brings together leaders from the public sector, research, finance and industry throughout the academic year to explore solutions to key domestic and international energy and environmental challenges. The ERE Global Leaders Forum serves as a platform for policymakers and executives to share their expertise and insight with SAIS faculty and students and the broader academic, business and media communities.

Our invitations are sent to professionals from the energy and environment sectors in the Washington D.C. area as well as the SAIS student and faculty body and SAIS alumni. Typically a diverse audience of approximately 100-150 participants – including students, professionals and faculty – attend Global Leaders Forum events.

Recent GLF events:

Reference Case for Annual Energy Outlook 2014

Adam Sieminsky - Administrator, Energy Information Administration, December 16, 2013

Turkey and the Regional/Global Energy Geopolitics

Memduh Karakullukçu - Vice-Chairman and President, Global Relations Forum, November 19, 2013

Can Expanding Rooftop Solar Coexist with Traditional Electric Utilities – Electricity Seminar

Bob Gibson - Solar Electric Power Association; *Bill Murray* - Dominion Virginia Power; *Rick Morgan* - DC PSC; *Robert Margolis* - National Renewable Energy Laboratory; *Prof. Wil Kohl* - Energy, Resources and Environment Program, November 12, 2013

The Energy Revolution: Key Geopolitical Impacts

Paolo Scaroni - CEO ENI, November 4, 2013

Global Energy - Key Themes and Features of the Landscape

David Hobbs - Head of Research, King Abdullah Petroleum Studies and Research Center (KAPSARC), November 4, 2013

Debate on the Keystone XL Pipeline

Prof. Charles F. Doran - Andrew W. Mellon Professor of International Relations and Director of Canadian Studies, SAIS and *Daniel J. Weiss* - Center for American Progress, October 29, 2013

Geopolitical Implications of Gas Development in the Eastern Mediterranean

Zeynep Dereli - APCO Worldwide (Istanbul), October 24, 2013

The Energy Roadmap – Setting the Direction for 21st Century Energy

Dev Sanyal - Executive VP, BP London, October 18, 2013

The Four A's in Australia's Energy Future & Climate Policy: Action Overwhelmed by Advocacy, Activism & Apathy

Prof. Chris Greig - Director of Energy Initiative, University of Queensland, October 10, 2013

US Energy Policy Priorities of the Administration and Energy Secretary Dr. Ernest Moniz

Melanie Kenderdine - Senior Advisor to the Secretary of Energy, September 26, 2013

New Strategies for the Climate Challenge: a Perspective from Brazil"

Congressman Alfredo Sirkis - Brazilian Parliament, Rio de Janeiro, Brazil, September 9, 2013

International Energy Forum: Achievements and Prospects

Aldo Flores-Quiroga - Secretary General, International Energy Forum (IEF), May 7, 2013

Mergers & Acquisitions; Lessons Learned Location

Lucio Noto - Managing Partner, Midstream Partners LLC, April 29, 2013

ExxonMobil: The Outlook for Energy: A View to 2040

Robert Gardner - Manager, Corporate Strategic Planning, ExxonMobil, April 25, 2013

The Role of the International Council for Science and the Environment (ICSE)

Governor Bill Richardson - Chairman, ICSE, April 19, 2013

Ensuring Global Food Security in 2050: Building Resilience to Climate Impacts

Dr. Robert L. Thompson - Visiting Scholar, Johns Hopkins SAIS, April 3, 2013

Automatically Green

Dr. Cass Sunstein - Felix Frankfurter Professor of Law, Harvard University, March 29, 2013

Roots of Peace MINES TO VINES

Mrs. Heidi Kuhn - Founder & CEO, Roots of Peace, March 25, 2013

Water Security in a Changing World

Dr. John Briscoe - Professor of the Practice of Environmental Health, Harvard, March 8, 2013

India-US Nuclear Energy Cooperation - Has It Lost Momentum after the 2008 Nuclear Deal?

Dr. R. Rajaraman - Emeritus Prof. of Physics, Jawaharlal Nehru University, February 28, 2013

Time for Transformational Change In Global Environment Policy - Role of the GEF

Dr. Naoko Ishii - CEO, Global Environment Facility, February 27, 2013

Crises of the African Drylands

Dr. Dennis Garrity - UN Drylands Ambassador, World Agroforestry Centre, February 12, 2013

Annual Energy Outlook 2013, Early Release Overview

Adam Sieminski - Administrator, U.S. Energy Information Administration, December 5, 2012

2012 World Energy Outlook

Maria van der Hoeven - Executive Director, International Energy Agency, November 27, 2012

The Rise of Asian National Oil Companies

Willy Haakson Olsen - Consultant, May 9, 2012

OIL: The Unnoticed Revolution, is Global Oil Supply Outpacing Consumption?

Dr. Leonardo Maugeri - Harvard University, May 4, 2012

Transitioning to a Post Carbon Economy: The Greatest Wealth Creation Opportunity of Our Lifetimes

Jose Maria Figueres - Carbon War Room, April 16 2012

Renewing America's Focus on a Secure, Sustainable Energy Future

Tom Farrell - Dominion Resources, February 13, 2012

U.S. Energy Information Administration (EIA) Release of the Updated Energy Forecasts to 2035

Howard Gruenspecht - Acting Administrator, U.S. EIA, January 23, 2012

Prudent Development: Realizing the Potential of North America's Abundant Gas and Oil Resources

Jan W. Mares - Senior Policy Advisor, Resources for the Future, November 17, 2011

The 2020 Oil Inflection Point

James H. Lambright, CFO and President, International, Sapphire Energy, November 10, 2011

Energy and Security in South Asia: Cooperation or Conflict?

Dr. Charles K. Ebinger - Senior Fellow & Director, Energy Security, The Brookings Institute, November 4, 2011

Science During Crisis: Lessons Learned from the Deepwater Horizon Oil Spill

Dr. Gary E. Machlis - Science Advisor to the Director, National Park Service and Lead Scientist, Department of Interior Strategic Sciences Working Group, October 17, 2011

A Wild Solution for Climate Change – How the Planet's Biology can make a Difference

Tom Lovejoy - Biodiversity Chair at the Heinz Center for Science, Economics, and the Environment and University Professor, George Mason University, September 23, 2011

EU Efforts to Combat Illegal, Unregulated, and Unreported Fishing

Maria Damanaki - European Union Commissioner for Maritime Affairs and Fisheries, September 8, 2011

Energy and Climate Policy in Austria

Guenter Liebel - Deputy Minister for Environment, Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management, May 10, 2011

Anticipatory Governance: Uniting Foresight and Policy

Leon Fuerth - Former National Security Advisor to Vice President Al Gore; Distinguished Research Fellow, National Defense University, April 29, 2011

Smart Power: Climate Change, the Smart Grid, and the Future of Electric Utilities

Peter Fox-Penner - Principal and Chairman Emeritus, The Brattle Group, April 12, 2011

Charting a Course for America's Nuclear Fuel Cycle

Sekazi Mtingwa - Senior Lecturer, High Energy Accelerator and Nuclear Physicist, Massachusetts Institute of Technology, April 8, 2011

Growing Green in a Crowded, Carbon-Constrained World

Achim Steiner - Executive Director of the United Nations Environment Program (UNEP)

Kate Gordon - Vice President for Energy Policy, Center for American Progress

Richenda Van Leeuwen - Senior Director of Energy Access, United Nations Foundation
March 9, 2011

Renewable Energy in Developing Countries: Meaningful GHG Emission Reductions or just another Con?

Dr. Peter Meier - Energy Economist, March 2, 2011

The Natural Gas Revolution: US and Global Impacts

Melanie A. Kenderdine - Executive Director, MIT Energy Initiative

Vello A. Kuuskraa - President, Advanced Resources International Inc.

John Quigley - Former Secretary, Pennsylvania Department of Conservation and Natural Resources; February 16, 2011

Putting the Cart before the Horse - Why Transport Policy Must Lead the Effort to Restrain CO2 Emissions in Transport

Lee Schipper - Senior Research Engineer, Precourt Energy Efficiency Center, Stanford University
February 8, 2011

Report from Cancun: The Future of the UN Framework Convention on Climate Change (UNFCCC)

Dr. Jonathan Pershing - Deputy Special Envoy for Climate Change, U.S. Department of State
February 3, 2011



Global Leaders Forum (GLF)

For more information, please contact: saiseregional@jhu.edu

Energy, Resources and Environment Program Frontiers in Energy, Science and Technology Field Trip Initiative

Frontiers in Energy, Science and Technology (FEST)

To supplement its rigorous academic curriculum, the Energy, Resources and Environment Program also developed the Frontiers in Energy, Science and Technology (FEST) Field Visits initiative to provide its students with first-hand experience visiting a utilities, nuclear power and LNG plants, hydraulic fracturing and off-shore oil facilities, sewage treatment plants, and solar panel manufacturing facilities, among others. FEST offers student enrichment activities designed to provide first-hand exposure to innovations in the energy and environment sectors.

2011-2012 Program Activities

Federal Energy Regulatory Commission (FERC) – November 18, 2011

- 15 students
- Visited FERC headquarters in downtown Washington, DC
- Met with the Director of Public Affairs and technical support staff
- Students gained a better understanding of US energy regulation, complexities of federal energy laws and how FERC helps to coordinate energy distribution between states, given different state laws and different state interests (e.g., if a state in the south wants to obtain gas/oil from somewhere in the north, the states in between have to give their approval for pipeline construction, and this could cause conflicts and delays)

Morgantown Generating Station – February 24, 2012

- 21 students
- Visited a coal-powered electrical plant in Charles County, MD with a 1467 megawatt capacity
- Met with a team of engineers and senior plant operators
- Heard a presentation about inputs for coal-powered electricity, costs of building and maintaining a power plant (very high, can only build a plant if there is a near-guarantee that energy demand will be high enough for the investors to recoup construction costs over time); learned about electricity production and pricing, EPA regulations and compliance
- Observed heavy machinery, control room, furnace, scrubbers that remove environmental contaminants
- Learned about the coordination process between an external energy production regulator and the power plants that actually complete the energy production process

US Green Building Council – March 2, 2012

- 5-7 students
- Tour of USGBC Platinum Headquarters in downtown Washington, DC (USGBC developed the LEED building certification system)
- Met with researchers
- Learned about energy and water efficiency in buildings, how building design affects energy usage, how USGBC plans to reduce energy usage across the US
- This trip was important because it allowed students to understand the impact of building design on long-term energy usage, and how USGBC successfully explains the connection between energy efficiency and cost-savings for major companies

The Stella Group, Inc. – March 26, 2012

- 5 students met with Scott Sklar (CEO), observed renewable energy generators and 3 types of solar panels
- Learned about solar panel installation, wind power, fuel cells
- Observed use of renewable energy in a single-family house, benefits and challenges
- Discussed renewable energy pricing, how large companies might blend renewable energy technologies in order to make renewables more cost-effective
- This trip was important because students learned how individuals, governments, and large corporations can take steps to improve energy efficiency and reduce their carbon footprint

Marcellus Shale Region/Fracking Sites – May 18, 2012

- 25 students
- Met with a researcher from Penn State Marcellus Research Center
- Observed drilling rigs, withdrawal sites, well pads
- Learned about water and pipeline issues, shale drilling techniques, safety measures, inherent risks of drilling for shale gas
- Gained a better understanding of the natural gas market, shale drilling, energy policy issues, gas extraction regulations
- This trip was important because hydraulic fracturing has garnered national attention over the past few years, and students in the ERE program benefited by gaining a first-hand understanding of the fracking process

2012 – 2013 Program Activities

Dominion Energy's Cove Point Liquid Natural Gas (LNG) – October 10, 2012

- 35 students
- Students were treated to a presentation by Dominion Cove Point Director Mark Reaser detailing Cove Point's operations and the upcoming transformation of the facility for export capability
- Onshore and offshore tours by Dominion staff including a one-mile undersea bike ride through a narrow tunnel to access the offshore platform, which was followed by a discussion of receiving, off-loading, and gasification operations
- All in all, the visit received an enthusiastic student response for knowledge gained on LNG and its import and export operations.

US Green Building Council – October 26, 2012

- 5-7 students
- Tour of USGBC Platinum Headquarters in downtown Washington, DC (USGBC developed the LEED building certification system)
- Met with researchers
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Federal Energy Regulatory Commission (FERC) – November 9, 2012

- 15 students
- Visited FERC headquarters in downtown Washington, DC
- Met with the Director of Public Affairs and technical support staff
- Students gained a better understanding of US energy regulation, complexities of federal energy laws and how FERC helps to coordinate energy distribution between states, given different state laws and different state interests (e.g., if a state in the south wants to obtain gas/oil from somewhere in the north, the states in between have to give their approval for pipeline construction, and this could cause conflicts and delays)

Chesapeake Biological Laboratory (CBL) – December 7, 2012

- 10 students
- Met with the captain of their 81' research vessel "The Rachel Carson"
- Visited the Environmental Chemistry & Toxicology Laboratory and met with researchers with ongoing experience with methane gas and the impacts of oil on deep sea communities
- Q&A session with Dr. Thomas Miller, Director of the Chesapeake Biological Laboratory on how the lab's research influences policy
- This trip was important because we were able to learn about their work on topics such as climate change, the north pole, and the repercussions of the oil spill in the Gulf

Baku, Azerbaijan – January 20-26, 2013

- 14 students
- Meeting with high level officials from The State Oil Company of the Azerbaijan Republic (SOCAR), The State Oil Fund of the Republic of Azerbaijan (SOFAZ) and BP
- Visiting the BP operated Sangachal Terminal, BTC Pipeline, South Caucasus Pipeline and Caspian Energy Center
- Meeting with U.S. Ambassador to Azerbaijan Richard Morningstar to discuss US energy interest in the region
- This trip is important because the Caspian region is an up-and-coming oil and natural gas producer that offers diversification options for Europe and the US

Rio de Janeiro, Brazil – March 16 - 23, 2013

- 17 students led by Visiting Urban Sustainability Research Associate D. Chad Reed
- The group engaged over ten organizational stakeholders active in social and environmental sustainability initiatives throughout the region – including social enterprises, non-governmental organizations, public servants, political leaders, trade organizations, and energy companies
- The research delegation explored Brazil's urban sustainability investments in light of the Joint Initiative on Urban Development (JIUS) (launched by US President Barack Obama and Brazilian President Dilma Rousseff), the Rio+20 Conference on Sustainable Development, the 2014 World Cup, and the 2016 Olympic Games, as well as recent efforts to channel Brazil's national hydrocarbon revenue into sustainable development projects

Energy, Resources and Environment Program Faculty & Staff Publications and Research Initiatives

Faculty Publications and Research Initiatives (Washington, DC)

Deborah Bleviss

Areas of Expertise: Asia • Latin America • climate change • developing nations • energy technologies • sustainable development • U.S. energy policy.

Professor Bleviss' current ongoing research is directed at the challenge of joint technology cooperation for advanced energy-related technologies. Joint technology cooperation involves cooperation in research and development between OECD countries, where most research of this type has been centered, and emerging countries, where growth in energy demand is expected to be much more substantial than in OECD countries. Professor Bleviss is working jointly with Professor Dipankar Chakavarti of the Carey Business School on this research. They are focused on identifying barriers to this type of cooperation as well as potential solutions to those barriers.

Recent publications include:

- Deborah Bleviss is the author of numerous articles and papers.
- She co-authored *A New Role for UNFCCC: The Matchmaker of Global Climate Governance* (published in 2011)
- Committee of Review, National Academy of Sciences, *Research Program of the FreedomCAR and Fuel Partnership, Third Report* (published in 2010)
- Lead author for the transportation mitigation chapter of the *Second Assessment Report of the Intergovernmental Panel on Climate Change* (published in 1995)
- Author of the book, *The New Oil Crisis and Fuel Economy Technologies: Preparing the Light Transportation Industry for the 1990s* (published in 1988)

Dr. Jonathan Haskett

Areas of Expertise: Africa • Latin America • agricultural development • climate change • food security.

Dr. Haskett's current ongoing research is focused on the development of landscape - based climate change mitigation and adaptation strategies that provide livelihood benefits in the near term as well as climate benefits in the long term. The regional focus of this research is less developed countries in Africa and Latin America.

Recent publications include:

- Haskett, J.D., and P. Gutman, 2010. Taking stock of the Global Environment Facility experience with payments for environmental services projects. *in* Tacconi L., Mahanty S., Suich H. eds. 'Livelihoods in the REDD?: Payments for Environmental Services, Forest Conservation and Climate Change'. Edward Elgar, Cheltenham.
- Haskett, J.D., B. Schlamadinger and S. Brown, 2009. Land-based carbon storage and the European union emissions trading scheme: the science underlying the policy. *Mitigation and Adaptation Strategies for Climate Change*, Vol.15(2) pp. 127-136.
- Haskett J.D., 2005. Experiencias en la Introducción y Promoción de la Inoculación con Rhizobium para Mejorar la Productividad de las Leguminosas en la Región Central Interandina del Ecuador. In: G. Bernal and V. Diego eds. *La Fijación Biológica de Nitrógeno: Un proceso clave en la agricultura sostenible en el Ecuador*. ANCUPA, Quito, Ecuador.

- Haskett, J.D., Y.A. Pachepsky, B. Acock. 1997. Increase of CO2 and climate change effects on Iowa soybean yield, simulated using GLYCIM. *Agronomy J.* 89: 167-176.
- Haskett, J.D. 1995. The Philosophical Basis of Soil Classification and its Evolution. *Soil Sci. Soc. Am J.*, 59:179-184.

Dr. Robert Thompson

Areas of Expertise: Agricultural development • agricultural policy, trade and commodities • developing nations • food security • foreign aid and global poverty • globalization • rural development.

An internationally recognized authority on issues of food security and the challenges facing agriculture going forward in a resource constrained world, Professor Thompson is currently a member of the Working Group convened under the Global Food Ethics Project. The aim of the project is to bring together an inter-disciplinary team of experts in food, bioethics and public health to create and build an ethical framework that can help to address the core challenges presented by the need to feed an expanding human population in a resource-constrained world.

Recent publications include:

- Thompson, R.L. "Global Agriculture: Gaining Ground?" in SAISphere 2011-2012--Growth Ahead for Global Agriculture. (Washington, DC: JHU School of Advanced International Studies, 2012), pp.8-11. (<http://media.sais-jhu.edu/saisphere/sites/default/files/saisphere-2011-2012-rd.pdf>)
- Thompson, R.L. "Globalization and Rural America," Chicago Fed Letter, Essays on Issues, number 239, Federal Reserve Bank of Chicago, June 2007, 4 pages. (http://www.chicagofed.org/digital_assets/publications/chicago_fed_letter/2007/cfljune2007_239.pdf)
- Thompson, R.L. "Globalization and the Benefits of Trade," Chicago Fed Letter, Essays on Issues, number 236, Federal Reserve Bank of Chicago, March 2007, 4 pages. (http://www.chicagofed.org/digital_assets/publications/chicago_fed_letter/2007/cflmarch2007_236.pdf).
- Thompson, R.L. "The Doha Round Suspension: The Role of US Politics," Bridges Monthly, year 10, no. 5, August 2006, pp. 15-17. (<http://ictsd.org/downloads/bridges/bridges10-5.pdf>).
- Thompson, R.L. "The US Farm Bill and the Doha Negotiations: On Parallel Tracks or a Collision Course?" Policy Brief No. 15, International Food & Agricultural Trade Policy Council, Washington, DC, September 2005, 20 pages. (<http://www.agritrade.org/Publications/IBs/329701.pdf>).

Dr. Wilfrid Kohl

Areas of Expertise: Energy issues • energy technologies • environmental issues • nuclear power • oil politics • OPEC • U.S. energy policy.

Dr. Kohl's current ongoing research includes examining issues of global energy governance and the future of nuclear power.

Recent publications include:

- W.L. Kohl is the author of "Outlook for Nuclear Power Revival After Fukushima," USAEE Dialogue, Vol. 20, No. 1 (2012)
- Author of "Consumer Country Energy Cooperation: The IEA and the Global Energy Order" in A. Goldthau and J.M. Witte, Global Energy Governance: The New Rules of the Game (Brookings, 2010).

Dr. Shalini Vajjhala

Areas of Expertise: Energy issues • urban sustainability • energy technologies • environmental issues • oil politics • U.S. energy policy.

Based on a patent she received for her previous work on climate change adaptation, Professor Vajjhala is exploring opportunities to establish a climate change resilience mapping hub at SAIS in partnership with several DC academic and non-government institutions, using the platform she developed called the Adaptation Atlas.

Recent publications include:

- Vajjhala, S.P. and Walker, W.M. (2010). Roads to Participatory Planning: Integrating Cognitive Mapping and GIS for Transport Prioritization in Rural Lesotho, *Journal of Maps: Special Issue on Cognitive Mapping and Participatory Research*. v2010: 488-504. 10.4113/jom.2010.1086.
- Wilson, E.J., M. Granger Morgan, J. Apt, M. Bonner, C. Bunting, M. de Figueiredo, J. Gode, C. Jaeger, D. Keith, S. McCoy, R. S. Haszeldine, M. Pollak, D. Reiner, E. Rubin, A. Torvanger, C. Ulardic, S. Vajjhala, D. Victor, I. Wright (2008). Regulating the Geological Sequestration of Carbon Dioxide. *Environmental Science & Technology* 42(8): 2718–2722.
- Vajjhala, S. P. and P. S. Fischbeck (2007). Quantifying Siting Difficulty: A Case Study of U.S. Transmission Line Siting. *Energy Policy* 35(1): 650-671.

Dr. Shalini Vajjhala and Ms. Celeste Connors

- NYS 2100 Commission Report - <http://www.rockefellerfoundation.org/news/publications/nys-2100-commission-report-building>
- Rockefeller Press Releases - <http://www.rockefellerfoundation.org/news/press-releases/rockefeller-foundation-announces-support> and <http://www.rockefellerfoundation.org/news/news/re-invest-initiative-change-water>
- Washington Post - http://www.washingtonpost.com/local/trafficandcommuting/sandy-spurs-rockefeller-plan-to-fight-flooding/2013/01/17/0a16d43e-602e-11e2-b05a-605528f6b712_story.html
- White House Blog - <http://www.whitehouse.gov/blog/2013/01/18/building-future-innovative-water-infrastructure>

Dr. Winston Yu

- YU, W, Y. Yang, A. Savitsky, D. Alford, C. Brown, J. Wescoat, D. Debowicz, and S. Robinson (2012). Climate Risks on Water and Agriculture in the Indus Basin of Pakistan, World Bank Report.
- Thurlow, J., P. Dorosh, W. YU (2012). A Stochastic Simulation Approach to Estimating the Economic Impacts of Climate Change in Bangladesh. *Review of Development Economics*, 16(3), 412-428.
- Brown, C., R. Meeks, K. Hunu, W. YU (2011). Hydroclimatic Risk to Economic Growth in Sub-Saharan Africa. *Climatic Change*, 106, 621-647.
- YU, W., M. Alam, A. Hassan, A.S. Khan, A. Ruane, C. Rosenzweig, D. Major, J. Thurlow (2010). Climate Change Risks and Food Security in Bangladesh, Earthscan Publishers, pp 162, June 2010.
- YU, W. (2008). Benefit Sharing in International Rivers: Findings from the Senegal River Basin, the Columbia River Basin, and the Lesotho Highlands Water Project, Africa Region Water Resources Unit Working Paper Series.

Faculty Publications and Research Initiatives (SAIS Europe)

Dr. Kenneth H. Keller

Areas of Expertise: American foreign policy • biotechnology and information technology policy • education policy • environmental issues • global health policy.

Recent publications include:

- "From Here to There in Information Technology," in American Behavioral Scientist (2008).
- "Nanotechnology and Society" in Journal of Nanoparticle Research (2007).
- "Improving the Understanding of Science and Technology," in Technology in Society (2006).
- He's also published numerous articles in academic journals related to science, technology and international relations; and is widely published in medical and scientific journals on subjects including, fluid mechanics, blood flow and mass transfer.

Dr. Jonathan Brooks

Areas of Expertise: Agricultural development • economics.

Recent publications include:

- Agricultural Policies for Poverty Reduction, editor (2012).
- Joint-author, with Colin Carter, The Political Economy of US Agriculture, which in 1995 won the American Agricultural Economics Association's prize for quality of communication.

Marco Dell'Aquila

Areas of Expertise: Latin America • corporate finance • energy issues • International political economy.

Recent publications include:

- "Conclusion," co-author, in Regulatory Policy in Latin America: Post-Privatization Realities (2000).
- "Economic Stabilisation in Argentina: the Austral Plan," co-author, in Journal of Latin American Studies (1988).

Dr. Manfred Hanfer

Areas of Expertise: Europe • Middle East and North Africa • Russia and former Soviet Union • environmental issues • energy technologies • energy issues • energy and security.

Latest books (co-authored) and recent publications include:

- A New Euro-Mediterranean Energy Roadmap (2012).
- A New Architecture of EU Gas Security of Supply (2011).
- EU Energy Innovation Policy Towards 2050 (2011).
- "From Here to There in Information Technology," in American Behavioral Scientist (2008).
- He's also the author and co-author of numerous papers, studies and books on energy policy and economics.

Charles Pearson

Professor of Economics and Environment, Diplomatic Academy of Vienna, Austria; Professor Emeritus, Johns Hopkins University SAIS, Washington D.C.

- Offered a miniseries that ran on December 3, 6, and 10, 2012 entitled “Economics and the Challenge of Global Warming” (Three-part Series) by Charles Pearson

Dr. Bob van der Zwaan

Areas of Expertise: Energy issues • climate change.

Recent publications include:

- “US Tactical Nuclear Weapons in Europe after NATO’s Lisbon Summit: Why Their Withdrawal is Desirable and Feasible,” co-author, in *International Relations* (2012).
- “Learning Curves for Solid Oxide Fuel Cells,” co-author, in *Energy Conversion and Management* (2012).
- “Cost Reductions for Offshore Wind Power: Exploring the Balance between Scaling, Learning and R&D,” co-author, in *Renewable Energy* (2012).
- “Modeling Uncertainty and the Economics of Climate Change: Recommendations for Robust Energy Policy,” co-author, *Environmental Modeling and Assessment* (2012).
- “Evaluating Uncertain CO2 Abatement over the Very Long Term,” co-author, in *Environmental Modeling and Assessment* (2012).
- “The Impact of Uncertainty in Climate Targets and CO2 Storage Availability on Long-Term Emissions Abatement,” co-author, in *Environmental Modeling and Assessment* (2012).
- Co-author of around 100 peer-reviewed scientific articles in journals such as *Climate Policy*, *Climatic Change*, *Ecological Economics*, *Energy Economics*, *The Energy Journal*, *Energy Policy*, *Environmental Science and Technology*, *Journal of Environmental Economics and Management*, *Nuclear Technology*, *Physics Letters B*, *Resource and Energy Economics*, *Science*, *Solar Energy*, *Survival and Zeitschrift für Physik C*.
- Has published two refereed monographs, contributed chapters to several books, and is co-editor of two peer-reviewed volumes in the field of energy and sustainable development.

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Energy, Resources and Environment Program Support

The Energy, Resources and Environment Program (ERE) has become one of the largest programs at SAIS and the program is delighted with the progress and continuing popularity we've garnered over the past few years. Our growth is a reflection of the continuing hard work of the program's faculty, students, and staff as well as a number of key supporters. We are grateful for the generosity of the following organizations and individuals who have helped to successfully build our program:

Enzo Viscusi: Provided funding for a new course on the Geopolitics of Energy within ERE. Additionally, Mr. Viscusi generously supports the Global Leaders Forum (GLF) speaker series.

ExxonMobil: Provided funding to allow a group of energy students to travel to China to learn about the energy sector and the cultural, political and economic factors that influence it. Additionally, ExxonMobil generously supports the Frontiers in Energy, Science and Technology (FEST) program.

Henry Luce Foundation: Provided a three-year grant to develop and test the International Energy and Environment Practicum to provide students with practical experience analyzing real-world problems within an institutional setting.

John Metzler: Provided funding to help support an ERE course on Global Climate Change.

Robert Carr: Provided funding for a new course on Electricity Markets offered within ERE.

The Rockefeller Foundation: Provided funding for two major research projects - Accelerating Resilient Infrastructure Investment for Sustainable Economies (ARISE) and Smart Power for Environmentally-sound Economic Development (SPEED).

Saudi Aramco: Generously supports the Global Leaders Forum (GLF) and the Frontiers in Energy, Science and Technology (FEST) programs.

The Starr Foundation: Provided funding to allow a group of energy students to travel to China and India to learn about the energy sector and the cultural, political and economic factors that influence those areas.

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