

University of Illinois at Urbana-Champaign
Center for African Studies
**Power Africa: Promises, Potentials, Pitfalls, and
Possible Alternatives**
March 2 - 4, 2015

**ACES Library, Information and Alumni Center Heritage Room 1101 South
Goodwin Avenue, Urbana, IL 61801**

“Power Africa: Promises, Potentials, Pitfalls, and Possible Alternatives” is the first US conference to bring together a global community of scholars and practitioners to examine President Obama’s Power Africa Initiative (PAI). The President launched the PAI in the summer of 2013 with an injection of \$6.5 billion dedicated to growing energy delivery capacity across the continent. Since that time, major corporations in the energy sector have joined the PAI, adding more the \$9 billion to the investment flow. With Africa holding more than half of the world’s 1.2 billion people without access to electricity.

Power Africa represents an opportunity to greatly enhance the quality of millions of people’s lives. Our conference probes these possibilities. At the same time, with this potential also come questions of enormous significance such as “Who will control and ultimately benefit from expanded energy capacity?” Conference participants from the US, Canada, and the African continent examine large-scale energy development projects in African countries in order to ascertain what lessons can be learned and how Power Africa might be shaped to ensure participation of and optimum results for the rural and urban poor.

Baruti Bahati Amisi

" Inga Hydropower Projects and the Electrification of African Households"
The original idea of generating hydroelectricity from the Inga Falls to electrify the Bas Congo and its neighbouring provinces dates back to 1885. This thought was reinforced by the need for industrialisation of the Democratic Republic of Congo (DRC) and Africa in the late 1950s. It subsequently materialised, with other mega development projects, from 1965 onward under the Mobutu Regime for various reasons.

The Inga Hydropower Projects (IHP) occur, through consecutive hydropower dams, as the much needed solution to poor electrification of DRC and Africa; and the increasing demand for electricity in the Southern Europe and the Middle East. Yet, in 2009 only 11.1% of DRC had access to electricity. This statistic is far below the average 30% of other Sub-Sahara countries during the same year.

Grand Inga (Inga 4) will cost at least 80 billion US\$ at foundation phase and attract property developers as well as related entrepreneurs from around the world. What is the impact of Inga 1 and Inga 2 on African households and the industrialisation of the continent? Would further developments of the IHPs make any difference to the needs of the DRC and Africa? How could the Power Africa Project respond to the challenges which undermine the success of mega development projects and subsequent

development of Africa in order to achieve its strategic objectives? The author will seek to answer these questions based on his interviews with 122 key stakeholders in these projects.

Dipti Bhatnagar

"Why the 'Powering Africa' Initiative is Dangerous for Africa, the US, and for the World"

Jennifer N. Brass

"Democracy, NGOs, and Energy in Africa"

Roughly 60% of Africans lack access to electricity, negatively impacting development opportunities. Nongovernmental organisations (NGOs) have started promoting distributed generation – small-scale, localized electricity generation – to change this situation. Despite widespread need, however, the dispersion of these distributed generation NGOs (DG-NGOs) is uneven, with high concentrations in a few African countries. Drawing on an original database and field research, we analyze location variation among DG-NGOs across the continent. We find that DG-NGOs are likely to operate in democratic settings with large populations that lack access to electricity. International DG-NGOs are also likely to operate where aid allocation levels are relatively high.

Christopher Gore

"Energy Narratives in Africa: Governing Competing Agendas"

The electricity sectors in many African countries are undergoing profound transformations. These transformations are occurring at multiple scales and in multiple dimensions: regulatory structures are being reformed or revised; electricity provision and distribution is now often a mix between public, private and non-profit interests; many different technologies and generation sources are being promoted and implemented simultaneously to increase access, including distributed generation and large-scale hydroelectric projects; and, the influence and role of bilateral and multilateral organizations is changing quickly. Amidst these changes and the demand for electricity, this presentation examines how national governments communicate and explain the role of electricity in society, and whether this framing matches the policy and program choices and implementation strategies they promote. Is electricity a public good? Is access a right? Is electricity for social transformation and household use, or is this secondary to industrialization and national economic development? These questions are examined through the lens of "energy narratives" in one country with very low access to electricity—Uganda. I examine the various actors engaged in electricity provision in Uganda and how they have assigned meaning and framed the role of electricity over time. The specific focus is on how policy and program choices correlate to these narratives, whether there are competing or conflicting narratives being promoted in the country, and what the implications of these narratives are for future access and provision.

Kiruba Haran

"Thoughts on Leveraging Local Talent for Power Africa"

This talk is intended to stimulate a discussion on how subject matter experts in Africa can be engaged in a more effective manner to customize electric power solutions for the local market. The possibility of a joint effort to develop an electric power curriculum that can best serve emerging needs will be discussed, and opportunities for collaborative projects will be highlighted.

Lauren M. MacLean

"Power for Development: Small-Scale Renewable Energy Projects and Governance in Africa"

The paradigm for providing affordable electricity for the world's poor—power for development—has begun to change. Historically, centralized governments built large consolidated power plants and distribution and transmission lines with the ultimate goal of providing electricity to all of their citizens. It has become increasingly common in recent decades, however, for donors, nongovernmental organizations (NGOs), firms, and communities to collaborate with governments to develop small-scale localized energy systems known as distributed generation (DG) either as complements or alternatives to centralized operations. DG programs have been implemented around the world but with a mixed record of success. Based on an analysis of the existing case study literature, we examine DG program goals and outcomes, identifying major factors that affect these outcomes, including appropriately chosen technology, adequate financing and payment arrangements, ongoing end users' involvement, and supportive national policies. We highlight the importance of institutions for collaborative governance in the pursuit of these factors.

David McDonald

"Recolonizing Africa on the Power Grid...or an Alternative Power Future?" Electricity in Africa is a paradox. Although the continent is the most under-supplied region in the world, its economies are utterly dependent on it, with some of the cheapest electricity in the world available to industry. Neoliberal policies of privatization and cost recovery are making these inequalities even more pronounced, as Africa experiences a renewed scramble for its electricity resources, conjuring up images of a recolonization of the continent along the power grid. This talk highlights criticisms of market-led electrification programmes such as Power Africa, while at the same time pointing to alternative models of 'public' electrification, drawing on innovative examples from Africa and around the world.

Boaventura Monjane

"Mozambique: A Country in Darkness, Still a High Power Potential Nation—
How People Struggle for Electricity"

Mozambique is considered to have considerable energy resources with an estimated hydropower potential of 12,000MW and also gas reserves (estimated at reaching 700 billion cubic metres) and vast coal reserves with the potential of generating approximately 500 MW and 5,000 MW respectively. Nevertheless, the country is in darkness. Access to electricity is among the lowest in the world, especially in rural areas where only 1% of the population is supplied.

Despite being one of the most dynamic economies on the African continent, with a 7% rate of real GDP growth in 2014, and expected to continue to drive growth, projected at 8,2% in 2015, Mozambique is one of the poorest countries of the world, with about 54% of the population living below the national poverty line. Forests energy resources (firewood) continue to satisfy more than 85% of total domestic energy requirements. This paper aims to discuss the causes of those discrepancies, show the different struggles related to electricity and demonstrate how the use of alternative and climate friendly energy sources can sustainably fill the existing gap. It will be demonstrated that the solution to power Mozambique will not come from Government and investors only. A local perspective will have to be taken into account, where social organized movements will play a key role.

James Murombedzi

"Extending US Private Investment Opportunities in Fossil Fuel Energy in Africa:

The Contradictions of the Power Africa Initiative"

Given the low energy access that characterizes sub-Saharan Africa, the power Africa initiative at first glance appears to be a very welcome contribution to emerging solutions. The initiative seeks to build on Africa's massive but undeveloped energy generation potential by facilitating investments in oil and gas, geothermal, hydro, wind and solar energy. Of the estimated \$300 billion required to provide universal access to electricity by 2030, Power Africa aims to commit \$7 billion over five (5) years from 2013. This is projected to add more than 10,000 megawatts of electricity generation capacity on the continent through a mixture of US government tools to support investment. However, there are challenges. The bulk of the funds (\$5 billion) are designed to support private sector investments, including the privatization of public power utilities in some partner countries; many of the projects will support oil and gas based power generation with only token commitment to mini-grid and off grid solutions; and the biggest beneficiaries of the initiative are US Corporations, in particular General Electric. This raises questions about the alignment of the initiative with the continent's climate change objectives, the privatization of energy and the implications of privatization based approaches for energy access, and ultimately whether this shift towards investment in Africa consolidates the expansion of capital into new frontiers on the continent.

Thomas J. Overbye

"Visions for an Enhanced African Power Grid"

This talk focuses on options for the further electrification of Sub-Saharan Africa. Since Africa is quite diverse, certainly no single technology is going to be best everywhere. The talk considers three major approaches: interconnected grids, microgrids and standalone system. A key contribution is showing how innovative analysis and visualization software can be helpful in presenting visions for an enhanced African power grid.

Prosper Panumpabi

"Power Africa Portfolio"

In the West, living without electricity in the 21st century is almost unimaginable. But in Africa, 600 million people and their businesses have no reliable source of electricity—or no electricity at all. The project "Power Africa" will invest 21 billion U.S. dollars for building a power grid. So what opportunities of power grid and sustainable businesses are we referring to when we talk about "Power Africa?" In this talk, we will discuss core questions such as the following: What generation, transmission, and distribution potentialities have been discovered, or could be developed, in the nations of Ethiopia, Ghana, Kenya, Liberia, Nigeria, and Tanzania? How can we leverage the winning orders for those six African countries to other qualifying countries such as Democratic Republic of Congo, Cote d'Ivoire, Angola, South Africa and more? What kind of power grid should be constructed today to best ensure more stability in Africa? And how can the African diaspora contribute to support and build the portfolio of "Power Africa?"

Manuel Welsch

"Assessing Africa's Electrification Pathways—Developing a toolbox of models to support decision making"

In this presentation we would describe our research approaches applied for the World Bank, AfDB, IRENA and the IEW, including:

- Renewable Energy assessments using GIS tools
- Regional power pool models using (open-source) modelling tools

- Comparing electrification options for Nigeria and Ethiopia (grid extensions vs. mini grids vs. off-grid using GIS tools plus algorithms).
- Multiple (33,000) scenario analysis for a more inclusive energy dialogue (feeding into an AfDB developed online tool).

Conference Speakers

Poster of Sustainable Practices, Sierra Leone. Photo by Dr. Julia Bello-Bravo

Baruti Bahati Amisi is currently a PhD candidate awaiting his April 2015 graduation from the school of Built Environment and Development Studies of University KwaZulu-Natal (UKZN) in Durban, South Africa with a Masters Degree in Development Studies and the Institute of Higher Studies in Agronomics of Bengamisa in the Democratic Republic of Congo with a Diplôme d'Ingénieur Technicien en Agronomie Générale. As an independent researcher, he has worked at the School of Development Studies and the Centre for Civil Society as a research fellow involved in a variety of different projects ranging from social, economic and international migration. He has also published (solely and jointly) several peer reviewed articles and research reports as well as co-authored book chapters. His research interests include amongst other: agricultural engineering, development economics, political economy of megaprojects, migration and gender, civil society and social movements, and politics of climate crisis.

Dipti Bhatnagar works on climate justice and energy issues with Justiça Ambiental (Friends of the Earth Mozambique) and at an international level. For the last 3.5 years, she worked on fighting dirty energy issues and false solutions within Mozambique, and informing Mozambican civil society about international work and events that affect the local population. She has been an activist for over 14 years, since age 20. She lived for many years with tribal and farmer communities fighting against destructive large dams in central India. She learnt about life, rights, culture, and displacement while living with these brave people and gained a deep-rooted sense of justice that has guided all her decisions ever since.

Tami Bond joined the faculty in the department of Civil and Environmental Engineering in 2003. Since 2007, she is also an Affiliate Professor in Atmospheric Sciences. She teaches undergraduate and graduate courses in air quality monitoring and modeling. Her research addresses the interface between energy use, atmospheric composition, and global climate. Her group studies the chemistry, physics, and optics that govern the environmental impacts of combustion effluents, especially carbonaceous particles. Her research includes development of past, present and future global emission inventories, global simulations of aerosol transport and fate, and laboratory and field measurements of particle emission rates and properties.

Jennifer N. Brass is an expert on service provision, governance, and state development, with a primary geographic focus on sub-Saharan Africa. Professor Brass is currently revising a book manuscript, which examines the role that nongovernmental organizations play in service provision, state-society relations, and state development in Kenya. A second collaborative project examines the governance of renewable and small-scale electricity provision, often referred to as "distributed generation" in developing countries. Her articles appear in *Governance*, *World Development*, *Development and Change*, *Journal of Development Studies*, *Journal of Modern African Studies*, *Annual Review of Environment & Resources*, *WIREs: Energy & Environment*, *Journal of Asian and African Studies*, and the *Journal of Public Affairs Education*. She has conducted extensive field research in Senegal, Djibouti, Kenya, and Uganda. Professor Brass holds a PhD and MA in Political Science from the University of California, Berkeley, and an undergraduate degree from Georgetown University's School of Foreign Service.

Christopher Gore is Associate Professor in the Department of Politics and Public Administration and graduate associate in the Environmental Applied Science and Management Program, Ryerson University, Toronto. He holds a PhD and MA in Political Science and Environmental Studies from the University of Toronto and a BSc in Environmental Science from the University of Guelph. Chris's research focuses on the multilevel governance of environmental and urban issues. He has conducted fieldwork on energy and electricity, natural resources, food, infrastructure, and environmental policy in East Africa, particularly in Uganda, Kenya, and Tanzania. Chris has also written extensively on municipal responses to climate change in North America. In addition to several book chapters, his research has been published in journals such as *Environment and Planning C: Government and Policy*; *Environmental Policy and Management*; the *International Journal of Urban and Regional Research*; the *Journal of Urban Affairs*; and *Review of Policy Research: The Politics and Policy of Science and Technology*. Chris is now the Chief Editor of *Review of Policy Research*, the official journal of the Science, Technology and Environmental Politics section of the American Political Science Association.

Dr. Kiruba Haran grew up in Nigeria, having moved there with his family from Sri Lanka when he was eight. He obtained a BS in Electrical Engineering from the Obafemi Awolowo University, in Ile-Ife, Nigeria, in 1994. He went on to obtain his PhD in Electric Power Engineering from RPI, Troy, NY in 2000. He is currently an Associate Professor in Electrical and Computer Engineering at the University of Illinois, Urbana-Champaign. He moved to Illinois in 2014 after 13 years at GE Research. At GE, Dr. Haran was the manager of the research group developing advanced electrical machine technology for all of GE's industrial businesses, including Wind, Oil & Gas, Aviation, Transportation and Energy Services. In this role, he was responsible for recruiting and developing world class talent, shaping technology road-maps, driving execution on key development programs, and helping to insert new technology into GE's products. Dr. Haran has 33 US

patents, several more global patents, and has published 20 journal papers and given dozens of conference presentations. He is a registered PE in NY, and is a fellow of the IEEE.

Lauren M. MacLean (Ph.D., University of California at Berkeley) is an Associate Professor in the Department of Political Science at Indiana University-Bloomington. Her research interests focus on the political economy of state-building, social welfare policy, energy policy, and democratic citizenship in Africa and in American Indian/Alaska Native communities in the U.S. She has a book titled, *Informal Institutions and Citizenship in Rural Africa: Risk and Reciprocity in Ghana and Cote d'Ivoire* (Cambridge University Press, 2010; winner of the APSA 2011 Sartori Book Award; finalist for the ASA Herskovits Award) and an edited volume, *The Politics of Non-State Social Welfare Provision in the Global South* (Cornell University Press, 2014), with Melani Cammett. MacLean also has a forthcoming book with Diana Kapiszewski and Ben Read titled, *Field Research in Political Science* (Cambridge University Press, 2015). She has also published several articles in the *African Studies Quarterly*, *Annual Reviews of Environment and Resources*, *Comparative Political Studies*, *Comparative Studies in Society and History*, the *International Journal of Public Administration*, the *Journal of Development Studies*, *Journal of Modern African Studies*, *Studies in Comparative International Development*, *Wiley Interdisciplinary Reviews: Energy and Environment*, and *World Development*. MacLean has completed fieldwork and is drafting a book titled *Constructing Democracy in America: Tribal Consultation and the Representation of American Indians in Health Policy*. MacLean is also developing a new project with Jennifer Brass and Sanya Carley (IU-SPEA) on the politics of collaborative governance in local-level, renewable energy projects in Africa. Her research has been supported by grants, including ones from the NSF, SSRC, RWJ Foundation, and the U.S. Department of Education.

David McDonald is a Professor of Global Development Studies at Queen's University, Canada. He is also founder and co-director of the Municipal Services Project, which explores alternatives to the privatization and commercialization of service provision in electricity, health, water and sanitation in Africa, Asia, and Latin America. It is composed of academics, labour unions, non-governmental organizations, social movements, and activists from around the globe. McDonald has published widely on the debates around public service provision, including an edited volume titled "Electric Capitalism: Recolonizing Africa on the Power Grid" (Earthscan, London). To read more about this topic, [click here](#).

Boaventura Monjane is a Mozambique journalist and social activist. He has a degree in Communication and Journalism—Eduardo Mondlane University, Maputo. He is a Development Studies Master and research student candidate at the University of Kwazulu Natal, Centre for Civil Society. Boaventura has worked as a freelance journalist for local media and international press agency such as PlusNews, IPS and several international magazines. He has been working for the Mozambique Farmers Union

(UNAC) and the International Movement of Farmers, La Via Campesina, on media, communication, and organizing, since 2009. In his activism in Mozambique, Monjane has been engaged in creating awareness in young people, both urban and rural, on different socio-political issues for them to press for more participation in decision making processes and more positive application of democratic rights.

James Murombedzi (CODSRIA) is the Coordinator of the Responsive Forest Governance Initiative (RFGI) since November 2, 2011. Before this appointment, he was the Chief Technical Advisor (Environment and Energy) to UNDP in Liberia. He has previously held appointments at IUCN (Regional Director for Southern Africa), the Ford Foundation (Environment and Development Programme Officer for Southern Africa) and was a Research Fellow and Lecturer at the University of Zimbabwe for nearly 10 years. He holds a D.Phil in Applied Social Science from the University of Zimbabwe. His research interests include the political economy of environment and rural development, decentralization land tenure and natural resources management, and climate change, resource rights and livelihoods.

Thomas J. Overbye is the Fox Family Professor of Electrical and Computer Engineering at the University of Illinois at Urbana-Champaign where he has taught since 1991. He received his BS, MS, and Ph.D. degrees in Electrical Engineering from the University of Wisconsin-Madison. His current research interests include electric power system analysis, visualization, dynamics, cyber security and power system geomagnetic disturbance modeling. Dr. Overbye is also the original developer of PowerWorld Simulator, an innovative computer program for power system analysis, education and visualization, and a co-author of the book Power System Analysis and Design.

Prosper Panumpabi was born in Africa. He has over 30 years of experience in the electrical power industry, as well as academic, industry, and management experience in the unstable business environment of Africa. He has managed multiple responsibilities in his role as representative of a US investment company in Africa and Chief Executive Officer of a government-owned company. He has been around different tables in countries such as the United States, Canada, Mexico, Belgium, France, Switzerland, Israel, China, Egypt, Kenya, Zambia, South Africa, Madagascar, Cameroon, and the Democratic Republic of the Congo, negotiating education, mining, telecommunication, and electrical investments in Africa. He has spoken at international conferences on African development subjects. Currently, Prosper is a Power Research Engineer at the University of Illinois at Urbana-Champaign. He received his bachelor's degree in Electrical Engineering at the University of Kinshasa in the Democratic Republic of the Congo and his Master's in Electrical Engineering at the University of Illinois. In the U.S., where he has lived for more than ten years, he serves as a benevolent community leader to a thriving local African immigrant community.

Manuel Welsch joined DESA as a PhD student to contribute to the development of energy models. These models should be applied to support informed decisions on energy policy, system, and technology choices in order to effectively deliver on national, regional and global energy goals. His research work will build on advances in power system planning and design, especially with regard to the current discourse on smart grids. It will help assess how especially developing countries can profit from these developments. In particular, Manuel will contribute to the development of the Open Source Energy Modelling System, OSEMOSYS. Before joining KTH in February 2011, Manuel worked at the Energy and Climate Change Branch of the United Nations Industrial Development Organization (UNIDO), focusing on issues pertaining to UN-Energy, the United Nations' inter-agency mechanism on energy. Among many other tasks, he co-organised the Vienna Energy Conference in 2009, developed a draft five-year work programme and budget focusing on small hydro power for the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE), and was engaged in doing research work, e.g., on the benefits of Smart Grids for developing countries.