

Bio Sketch: **Keith L. Kline**

Center for Bioenergy Sustainability <http://www.ornl.gov/sci/besd/cbes/>
Environmental Sciences Division, Oak Ridge National Laboratory (ORNL)
Oak Ridge, Tennessee 37830
Email: klinekl@ornl.gov / klkline@yahoo.com

Keith has contributed to the design, management and evaluation of international development programs and environmental analyses since 1980, when he served as a Peace Corps Volunteer supporting appropriate technologies in rural Ecuador. Subsequent field work involved 22 years living in developing nations to support programs that enhance human welfare while protecting forests and biodiversity through improved natural resource management. Keith helped design and initiate the Regional Natural Resources Management Project (Central America) and the Maya Biosphere Project (Guatemala). Keith served as the Team Leader for a variety of other regional and bilateral projects sponsored by the U.S. Agency for International Development, the most recent being the multi-national program for biodiversity conservation and water management in the Okavango Basin of Angola, Namibia and Botswana (Integrated River Basin Management Project). He also led a technical design team for the Southern Africa Regional Environment Program. Under Keith's guidance, projects incorporated community-based forestry concessions, protected area management, rehabilitation and reconstruction after natural disasters, and conflict resolution addressing issues ranging from land tenure and commercial agriculture to extractive industries in sensitive ecological areas.

Since 1990, Keith has been affiliated with Oak Ridge National Laboratory where he serves as a Senior Research and Development Staff Scientist in the Center for Bioenergy Sustainability. He holds degrees from the University of Michigan, School of Natural Resources (B.Sc.), and Framingham State College, Massachusetts (M.Ed.). Keith's current research, supported by the Department of Energy, Office of Biomass Program, focuses on the drivers of land-use change, sustainability indicators for agriculture and forestry, and biofuel feedstock potentials around the world. Keith helped plan, organize and document the "Land Use Change and Bioenergy Workshop" (May 2009), focused on data and modeling issues that contribute to uncertainty in land-use change calculations required for life-cycle assessment.

Funding for Keith Kline's Research at ORNL:

Keith Kline's research at ORNL(1) is supported almost entirely by the U.S. Department of Energy (DOE), Office of Energy Efficiency and Renewable Energy and Office of Biomass Programs (OBP). Current work supports DOE "Analysis" and "Feedstock Sustainability" task areas, to help the US achieve the strategic goal of developing "sustainable, cost competitive biomass" resources that reduce dependence on foreign oil, with a focus on issues that determine sustainability. (See Multi-Year Program Plan, Dec 2009 - http://www1.eere.energy.gov/biomass/pdfs/mypp_december2009.pdf)

Through an inter-agency agreement between USAID and DOE-ORNL (2), ORNL also provides occasional technical assistance upon request to USAID-Southern Africa on environmental and natural resource management issues. Last year, this accounted for about 10% of Keith's time.

(1) Oak Ridge National Laboratory is owned by the U.S. Department of Energy and managed by the UT-Battelle, LLC, for DOE under contract DE-AC05-00OR22725.

(2) USAID/Southern Africa Award 690-P-00-06-00118-00 with ORNL Environmental Sciences Division.

KEITH L. KLINE

Environmental Sciences Division, Center for Bioenergy Sustainability
Oak Ridge National Laboratory
Oak Ridge, TN 37831

klinekl@ornl.gov
kkline@yahoo.com
(865) 574-4230

Summary of Qualifications

Twenty-five years of experience in design, management and evaluation of energy, environmental, and development programs in Latin America, Africa and the U.S.A.

Work History and Accomplishments

- 2006 - present** **Oak Ridge National Laboratory, Oak Ridge, Tennessee; Environmental Sciences Division, Senior Research and Development Staff**
- Conduct research and modeling on the sustainability of bioenergy feedstock production in the US and abroad.
 - Investigate international land use change dynamics; empirical data analysis and models.
 - Assess commercial forestry potential for bioenergy in the Southeastern U.S.
 - Provide technical assistance to other agencies on environmental program design, monitoring, evaluation and results-based reporting.
- 2004 to 2006** **U. S. Agency for International Development (USAID) Southern Africa, Team Leader for Regional Environmental Programs**
- Led successful start of an integrated resource management program (Okavango River).
 - Developed constructive relationships with government officials in multiple countries and facilitated negotiations to reach agreement on shared river basin management goals.
 - Recruited, mentored and trained local staff to continue work.
- 1990 to 2004** **Oak Ridge National Laboratory, Oak Ridge, Tennessee; R&D Staff:**
- CHP Coordinator - FEMP Team, Engineering Science and Technology Division**
- Coordinated the accelerated development and deployment of clean, distributed energy generation systems—combined heat and power (CHP)—as a national initiative for federal facilities under the Federal Energy Management Program (FEMP).
 - Guided FEMP activities to reduce costs of government through innovative financing, property management, public-private partnerships and application of proven but underutilized technologies.
- USAID Team Leader, Environmental Strategic Objective, Guatemala (1990-2000)**
- Supervised and managed a \$6 million per year (average annual US contribution) environmental project portfolio, including the Maya Biosphere Project. Annual program performance reviews resulted in highest possible rating, “exceeding expectations.”
 - Led evaluation and design teams that integrated new approaches for civil society participation in policy issues including those related to protected areas, forestry, community participation and land-use planning, with verifiable performance metrics.
 - Coordinated a diverse team to assure successful execution of a program that involved over \$50 million in total funding and twelve partner organizations.
 - Conceptualized and drafted major elements of USAID/Guatemala's Natural Resource Management Strategy including policy agendas, resource planning and project designs.
 - Provided direction and oversight for monitoring and reporting activities, the development of customer service plans, results-based indicators, internal assessments, external evaluations and audits.
 - Managed multiple, multi-million-dollar agreements with private contractors and non-profit partners (TNC, CI, CARE, Peregrine Fund, Rodale and others).
 - Led scoping processes and supervised implementation of various Environmental Assessments, Programmatic and Site Specific, involving forestry, sustainable agricultural technologies, tourism, land titling and park management.

1984 to 1990

Independent Contractor supporting U.S. Agency for International Development programs in Central America and Peru:

Regional Environmental and Natural Resource Management (RENARM)

- Mobilized and directed the start-up of a seven-country, \$60 million project described at that time (1989) by Ambassador Jack Hood Vaughn as "the most ambitious and complex natural resource management effort attempted in Central America."
- Created effective partnerships between international assistance agencies and private voluntary organizations by developing concepts and procedures to address environmental concerns and leveraged over \$5 million in matching grants.

Central American Research Institute for Industry and Technology (a.k.a. ICAITI)

- Served as the USAID Advisor to the ICAITI Director and technical expert for clean energy. Assessed institutional capacity and impacts after nine years of USAID assistance and provided recommendations for sustaining program benefits.
- Evaluated two regional projects promoting renewable energy technologies, fuelwood, and energy conservation in industry.
- Edited 25 technical publications (30-150 pages each; most in Spanish) related to renewable energy resources and conservation issues. Evaluated two regional projects promoting renewable energy technologies and energy conservation in industry.

Disaster Rehabilitation and Reconstruction Project, USAID Lima, Peru

- Managed and monitored national disaster reconstruction activities involving a USAID staff of 33, for this \$60 million project to rebuild after the 1983 El Nino event. Developed standards for project selection, environmental compliance and performance reports. Resolved audit issues and documented achievements.
- Developed procedures for improved planning and implementation by decentralized public agencies, achieving a dramatic 300% increase in the implementation capacity of fifteen participating regional development institutions.

1980-1984

Peace Corps, Ecuador

- Planned and completed 60 small projects involving renewable energy, sustainable agriculture, water, forestry and sanitation including earthquake-resistant housing design, windmills, methane gas digesters, solar water heating, fuel-efficient cook stoves and institutional development in collaboration with USAID/Quito.
- Assessed the feasibility of 150 small projects to help beneficiaries identify and implement most appropriate solutions. Designed and conducted technology-transfer events for trainers and community groups, applying non-formal education concepts.

1978

Sierra Club, Washington, D.C.

- Registered lobbyist for energy issues (summer)

1975-1977

Maple Shade Farms, Mendon, Michigan

- Responsible for 400 irrigated acres (summers): seed corn, corn, soybeans, cucumbers

Education

M.Ed. 2000, International Education Program, Framingham State College, Framingham, Massachusetts.

B.Sc. 1979, School of Natural Resources (Energy & Environment), University of Michigan Ann Arbor, MI.

Languages, Awards, Other

- Languages: native English, fluent Spanish, some Portuguese, Setswana and French
- Certified "Cognizant Technical Officer" (CTO) for USAID grants and contracts
- ORNL Engineering Science and Technology Division "Exceptional Effort Award," 2003
- USAID Meritorious Honor Award, 1998; USAID Certificate of Commendation for Outstanding Performance, 1986; Kalamazoo Science Foundation Scholar, 1976-78
- Enjoy hiking, biking, photography

Publications and reports (selected examples)

- Kline KL, Dale VH, Lee R, Leiby P. 2009. In Defense of Biofuels, Done Right. *Issues in Science and Technology* 25(3): 75-84. <http://www.issues.org/25.3/kline.html>
- Kline, KL and Dale, VH. 2008. Biofuels, causes of land-use change, and the role of fire in greenhouse gas emissions. *Science* 321:199 <http://www.sciencemag.org/cgi/reprint/321/5886/199.pdf>
- Hecht, AD, Shaw D, Bruins R, Dale VH, Kline KL, Chen A. 2009. Good Policy Follows Good Science - Using Criteria and Indicators for Assessing Sustainable Biofuel Production. *Ecotoxicology* [18(1):1-4].
- Kline KL and Oladosu G. Presentation: Using Economic Models to Simulate Land-Use Change for Biofuels - Issues for Discussion. Purdue University Workshop on LUC and GTAP, January 13, 2009.
- Kline KL, Sanchez J. and Wallace W. "China-US Cooperation on Bioenergy R&D" in the Proceedings of *Bioenergy Consequences for Global Environmental Change* - Beijing, October 15-17, 2008; the Second Workshop of the China-US Joint Research Center for Ecosystem and Environmental Change [University of Tennessee, 2009]. <http://isse.utk.edu/jrceec/workshops/pdf/proceedings08.pdf>
- Kline, KL and Colman, MD.* Woody Energy Crops in the Southeastern United States: Two Centuries of Practitioner Experience. *Submitted (in review, 2009) for Special Issue of *Biomass & Bioenergy*.
- V Dale, K Kline, P. Mulholland, M. Downing, R. Graham, and L Wright titled "Selecting Metrics for Sustainable Bioenergy Feedstocks." China-US Joint Research for Ecosystem and Environmental Change [University of Tennessee, 2009].
- Kline KL, Oladosu GA, et al. 2008. Biofuel Feedstock Assessment for Selected Countries. ORNL/TM-2007/224. http://apps.ornl.gov/~pts/prod/pubs/ldoc10201_ornl_feedstock_potential_final_feb18.pdf
- Hadley, SW, Kline, KL, Livengood S, Van Dyke J. 2002. Analysis of CHP Potential at Federal Sites. ORNL/TM-2001/280. Prepared for DOE Federal Energy Management Program.
- Kline, KL and Gant K. 2000. Energy and Environmental Issues in Eastern Europe and Central Asia: An Annotated Guide to Information Resources. ORNL TM-2000/299. [U.S. EPA contract No. 62XSY696].
- Kline, KL. 2000. Improved Natural Resource Management and Conservation of Biodiversity (section author) in annual Guatemala Program Results and Resource Requests (1996-01), USAID/G-CAP.
- Kline, KL. 2000. Desarrollo sostenible y el proyecto de la RBM: desafíos, avances y reflexiones sobre lecciones aprendidas. Pg 241–253 in *Encuentro internacional de investigadores: nuevas perspectivas de desarrollo sostenible en Petén*. FLACSO, Guatemala City, Guatemala.
- Kline, KL. 1988. "Biomass Consumption Trends in Central America" and "ICAITI's Regional Industrial Energy Efficiency Program (PEEIR)," in *Proceedings: Energex '88*, Tripoli, Libya, November 1988.
- Kline, KL (co-editor). 1988. Aprovechamiento de Efluentes de Biodigestores. ICAITI, Guatemala.
- Kline, KL 1988. "ICAITI's Role in Fuelwood Conservation in Central America" in *Proceedings: Stoves for People Workshop*, Guatemala. Foundation for Woodstove Dissemination, Utrecht, Holland.
- Poole, A.D., deLucia, R.J., Kline K, et al. 1987. Final Report: Evaluation of ICAITI, Fuelwood and Alternative Energy Sources Project and Regional Industrial Energy Efficiency Project. ROCAP/Guatemala.
- Kline, K. 1983. "Involving Users to Develop Socially Acceptable Technologies," in *Proceedings: Latin American Workshop on Seismic Resistant Earthen Constructions, Lima, Peru* (OFDA-USAID).
- Kline, K.L. 1982. "The Hydro Option" book chapter in *Community Energy Options, Getting Started* in Ann Arbor. University of Michigan Press.
- Kline, K.L. "Energy Quiz," in *Sierra*, March 1979.

**Low Carbon Fuel Standard
Expert Workgroup Member Application Form
Please submit a CV along with this form**

APPLICANT: **Keith L. KLINE**

Employer: **Oak Ridge National Laboratory***

Current Job Title: **Senior Research Staff, Environmental Sciences Division, Center for Bioenergy Sustainability** <http://www.ornl.gov/sci/besd/cbes/> & **Global Change & Developing Country Programs** http://www.esd.ornl.gov/eess/global_change/

Address: **1 Bethel Valley Rd, Bldg 1505-MS6038, Oak Ridge, TN 37831**

Telephone # - Work: (865) 574-4230

Telephone # - Cell: (865) 405-4468

Telephone # - Fax: (865) 576-2943

Email: Klinekl@ornl.gov

Broad Areas of Expertise:

- 1. Global land use:** 22 years of direct involvement in projects addressing LUC issues in areas of high conservation value around the globe.
- 2. Biodiversity protection:** Research, design, management and oversight of over \$100 million in public sector investments to protect habitat for priority species and threatened ecosystems.
- 3. Systematic monitoring and evaluation of energy-environment interface:** Design and implementation of performance monitoring plans and evaluations, many directly related to projects aiming to reduce conversion of tropical forests (initial LUC).
- 4. Uncertainty analysis in agricultural and economic modeling:** Consideration of agent-based drivers and other social and political factors affecting markets, agricultural production, ecological services and the environment.
- 5. Energy-Environment Policy Analysis:** Policy analysis career began in 1978 as the registered lobbyist responsible for energy issues in the Sierra Club's Washington D.C. office.

Years of Relevant Experience: > 30

Comments: *Science* – testing hypotheses with evidence – is the key to resolving (or at least reducing) many uncertainties surrounding current estimates of ILUC of bioenergy policies and production pathways. My current research focuses on a scientific process to better understand relationships among energy, agriculture and land use. Based on decades of work to slow deforestation in less-developed nations, I offer a *field-based, practitioner's perspective to global modeling and analysis of land-use change*, sustainable production, uncertainty analysis, and the interface of energy and agricultural markets.

Affiliations: Over the past ten years, all my research has been funded by the US government (DOE, USAID, NSF). I have accepted no support or funds from (and have performed no consultancies for) any firm, association or other interested party in the proposed CARB regulations.

*ORNL is managed by UT-Battelle, LLC, for the U.S. DOE under contract DE-AC05-00OR22725.