

Building on a History of Science

CBES brings unique skills and technical experiences to sustainability problems. Because it is located at Oak Ridge National Laboratory (ORNL), CBES can call on the integrated resources of this world class national laboratory and its interdisciplinary staff.

ORNL has a long and rich tradition of environmental research. In the 1950s, environmental science was first explored at ORNL through the integration of chemistry, plant and animal biology, geology, and atmospheric sciences to study the ecology of organisms, communities, and landforms.

ORNL researchers have been performing analyses of biofeedstock options and the development of dedicated bioenergy crops for the past 30 years. In addition, researchers at ORNL have developed internationally well-known capabilities and tools for analyses of transportation systems and fuels, including biofuels. Many seminal contributions by these experts have formed the basis for decision making at the national and international levels, as evidenced most recently by the *Billion Ton Study*, which explored sustainably producing one billion dry tons of biomass feedstock per year in the United States.

ORNL ecologists, social scientists, and geographers document and explore the processes responsible for land-use change and implications of those changes. Using high-performance computing, geospatial analysis, and advanced visualization, ORNL scientists deal with computational, data, and geographic concerns underlying sustainability for bioenergy.

This research portfolio is largely supported by the US Department of Energy.

Events

- Monthly forum seminars the 3rd Thursday of every month at 3:30 p.m.
- Workshops are held to focus the national and international community on major topics

Contact Information

Dr. Virginia Dale, Director
Center for BioEnergy Sustainability
Oak Ridge National Laboratory
Oak Ridge, TN 37831-6036
United States of America
Tel: 865-576-8043
Fax: 865-574-7287
Email: dalevh@ornl.gov
Website: <http://www.ornl.gov/cbes/>



<http://www.facebook.com/pages/Center-for-BioEnergy-Sustainability/198441580180476>



[@VirginiaDale@ORNL](https://twitter.com/VirginiaDale)CBES

CBES

Center for BioEnergy Sustainability

Using science to understand bioenergy production and distribution

Enhancing bioenergy sustainability

Bringing people together to enable a sustainable bioenergy future



 **OAK
RIDGE**
National Laboratory

Sustainability has Socioeconomic and Environmental Components

Effective indicators of sustainable bioenergy systems can help to identify and quantify the benefits and costs of options. CBES has identified six environmental and seven socioeconomic categories of sustainability with specific indicators in each category. The selected indicators derive from many activities to characterize sustainability. Indicators were selected that are practical, reliable, valid, adaptable to multiple scales and processes, and cost-effective. This set of indicators assumes that prerequisite governance, legal, regulatory and enforcement conditions are in place for sustainability to occur. The indicator categories can be associated with different parts of the biofuel supply chain.

