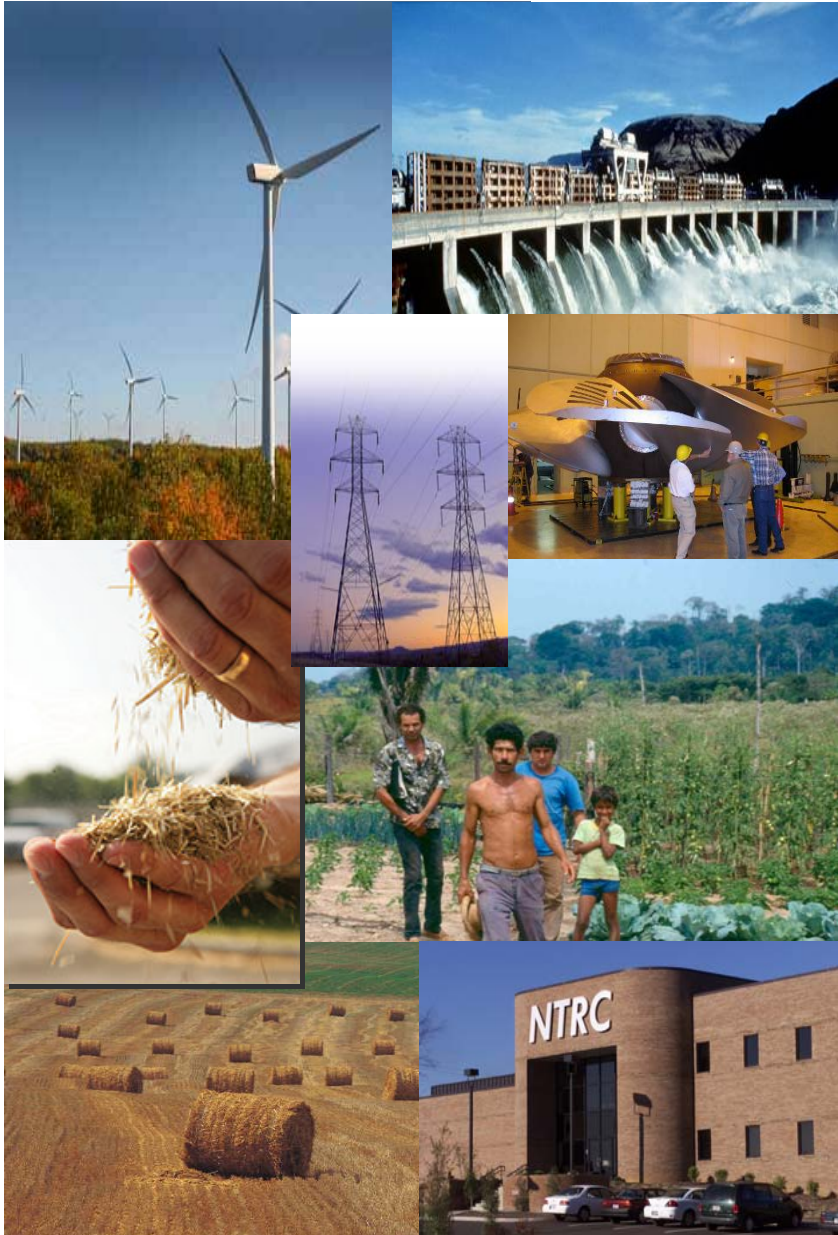


ORNL capabilities in support of international development



- World-class facilities for transportation technologies, earth-systems modeling, bioenergy, and materials R&D
- Quantification of costs and benefits of options for energy security, supplies, and technologies
- Strategic-planning, policy, technical, and economic analyses
- Integration of human needs, energy, and environmental sustainability
- Assessment of climate-change impacts and adaptation strategies
- Systems approach that integrates renewable resources with building technologies, smart grids, and markets
- Valuation of ecosystem services
- Development of effective public–private partnerships
- Multidisciplinary approach to project design, environmental impact assessment, mitigation, and evaluation



Oak Ridge National Laboratory International Capabilities



Facilities and Capabilities

- **International programs**
 - 100+ staff with international field experience
 - Global, regional, and bilateral projects with 70+ nations
- **Environmental sciences**
 - Landscape ecology
 - Ecological risk
 - Bioenergy systems
 - Biodiversity and aquatic systems
 - Soils, nutrients, and macro/micro ecology
 - Energy–environment–development interactions
- **Buildings technologies**
 - Commercial, residential, industrial applications
 - Whole-system design tools
 - Advanced components and materials
- **Materials and engineering**
 - High Temperature Materials Laboratory
 - National Transportation Research Center
 - Accelerated testing and characterization
 - Advanced energy storage
- **Information and communication systems**
 - Data quality, storage, retrieval, and management tools and techniques
 - Audit feedback for continual improvement
 - “Everest” visualization facilities
- **Multidisciplinary and strategic analyses**
 - Environmental impact assessments
 - Agricultural and resource economics
 - Market analysis and market transformation strategies
 - Energy security and development

Outcomes

- **Support sustainable development adapted to local needs**
 - Provide policy and technology options to solve supply and demand problems
 - Carry out program design, monitoring, evaluation, and capacity-building
 - Develop leadership for the global impact, adaptation, and vulnerability community
- **Establish low-cost, sustainable biomass production systems**
 - Optimize use of wastes and of agriculture and forestry residues
 - Develop improved energy crop systems (switchgrass, poplar, and willow)
 - Characterize resource supplies, costs, and impacts
 - Develop sustainability metrics
- **Deploy intelligent buildings and grid technologies**
 - Apply tools, sensors, and controls for zero-energy residential, commercial, and industrial buildings
 - Improve effectiveness of weatherization programs
 - Deploy appropriate technologies for low-income housing
 - Optimize renewable-supply, demand, and grid management
- **Accelerate market penetration of clean, efficient vehicle technologies**
 - Provide high-performance materials (hydrophobic, nano-manufactured carbon fiber), improved combustion, and controls
 - Integrate residential and transport energy systems
 - Support policy with planning, logistic analysis, and modeling
 - Enable more-electric, more efficient transportation systems
 - Expand hydro power production without new dams
- **Improve Information for Policy and Decisions**
 - Deploy the ORNL Knowledge Discovery Framework
 - Clarify issues affecting bioenergy futures
 - Advance scientific and public understanding of land-use change
 - Develop tools for sustainable site planning and design