

Food-Energy-Water Nexus Conference of the National Council on Science and the Environment (NCSE)

<http://foodenergywater-nexus.org/>



The Food-Energy-Water Nexus

16th National Conference and Global Forum
on Science, Policy and the Environment

January 19-21, 2016

Hyatt Regency Crystal City at the
Washington, DC National Airport

Symposium: Considerations and Challenges Associated with a Vibrant Bioeconomy

- Moderator: Donna Perla, U.S. Environmental Protection Agency
- Speakers:
 - Virginia Dale, Oak Ridge National Laboratory
 - Bryce Stokes, CNJV/U.S. Department of Energy(Billion Ton Study)
 - Douglas Karlen, Agricultural Research Service, U.S. Department of Agriculture
 - Steve Kaffka, University of California at Davis

Work café: Innovation in Bioenergy and the Bioeconomy

- Moderators: Virginia Dale, Doug Karlen, and Donna Perla
- Speakers:
 - Sorrel Brown, Iowa State University
 - Kevin Comer, Antares Group Inc.
 - Nora Haider, Washington State University
 - May Wu, Argonne National Laboratory

Overview of Food chapter of SCOPE report

Steve Kaffka (UC Davis)

Food-Energy-Water Nexus conference of NCSE

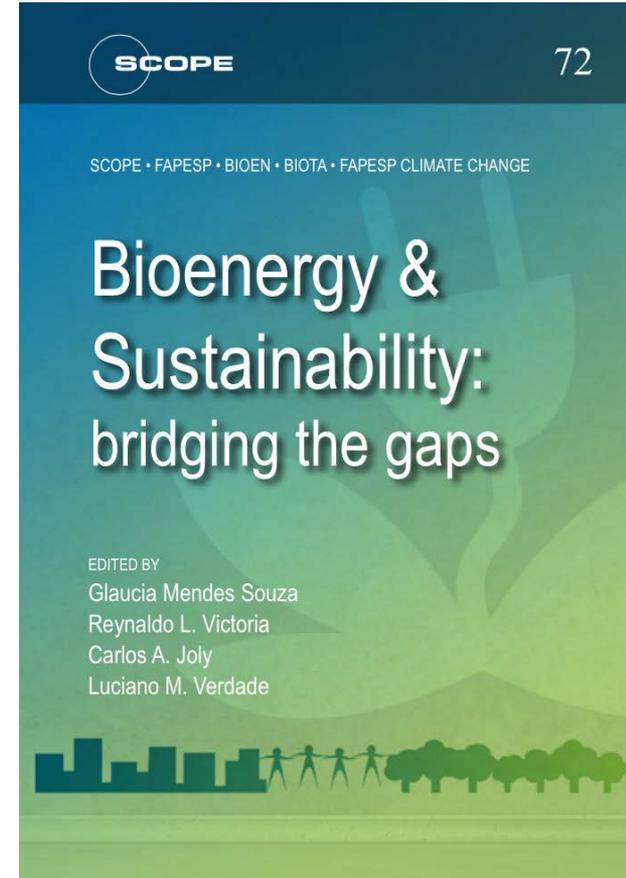


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Key points

- There is enough land available for sustainable production of bioenergy & food for a growing world population.
- Bioenergy can improve food production systems & rural economic development, but requires good governance.
- Bioenergy can stimulate investments in agricultural production in poor areas & provide a “dynamic switch system” to produce energy or food whenever necessary.
- There is no inherent conflict between bioenergy production & food insecurity.
- It is our ethical duty to develop & evaluate practices of combined bioenergy and food production in poor areas.



<http://bioenfapesp.org/scopebioenergy/index.php>

Lorentz Bio Panel

- January 2016 Leiden NL
- Workshop on bridging technological and social innovations for bio-based economies
- Strategies to overcome the social and political barriers to accelerating the development of more sustainable alternatives to fossil-based economies

Lorentz center

Bridging Technological and Social Innovation for a Biobased Economy

NIAS Workshop: 18 – 22 January 2016, Leiden, the Netherlands

Scientific Organizers

- Laurens Landeweerd, RU Nijmegen
- Lee Lynd, Dartmouth College
- Patricia Ossseweijer, NIAS, TU Delft
Distinguished Lorentz Fellow

Topics

- Visions, Values and Expectations
- Global versus Local Problems
- Ethical, Social and Economical Challenges
- Technology Design
- The Problem of Governance
- Biobased Technology for Social Development?
- Transition Routes
- Action Perspectives for Implementation

Lorentz center

www.lorentzcenter.nl

Lorentz Bio Panel January 2016

- Lorentz Center
www.lorentzcenter.nl
- Multidisciplinary group included philosophers, modelers, ethicists, engineers and energy policy experts
- Results --
- Vision statement and founding of Lorentz Bio Panel
- Preparing international cooperative research agenda aiming to help overcome social acceptance barriers.
- Press release: Irresponsible to remain addicted to fossil; urgently need courageous leadership to shift to bioeconomy.
- Action Plan launch targets the Eco-Bio 2016 Conference (6-9 March, Rotterdam)





ECO-BIO 2016

Challenges in Building a Sustainable Biobased Economy

6-9 March 2016
Rotterdam
The Netherlands

Sustainability and the biobased economy

- Governance of biobased innovation: engagement; public perceptions, policy approaches
- Economic aspects and Chain approaches: investment in innovation
- Improving modelling sustainability, certification and harmonization in BBE
- Societal challenges: food security, water security

Environment biotechnology

- Soil quality, including recycling of nutrients and sustainable biomass production
- Nature mining for bio-active compounds & enzymes from plants and microorganisms
- Safety assessment & remediation of bio-based chemicals, intermediate- and consumer products

Fundamental research in the biobased economy

- What is the impact of synthetic biology on developing a biobased economy?
- Challenges in genetic engineering (towards hijacking of cellular control systems)

Industrial biotechnology

- Advances in pre-treatment and bio-refinery
- Chemical building-block specific value chains
- The future of lignin
- Integration of Biotechnological, catalytic and thermochemical processes for conversion of biomass
- Pilot scale & large scale biofuels production solutions

Plenary speakers

- Marcel Wubbolts, DSM, The Netherlands
- Carlos Henrique de Brito Cruz, Brazil
- Wim van der Putten, NIOO-KNAW, The Netherlands
- Korneel Rabaey, University of Ghent, Belgium
- Philippe Marlière, France

Forum chairs

- Heitor Cantarella, Institute of Campinas, Brazil
- Glaucia Mendes Souza, University of Sao Paulo, Brazil
- Sean Simpson, LanzaTech, USA

Invited Speakers

- Paulo Artaxo, University of São Paulo, Brazil
- Luis Cortez, University of Campinas, Brazil
- Erick Fernandes, World Bank, USA
- Katarina Hedlund, Lund University, Sweden
- Paul Hill, Amyris, USA
- Raul Muñoz, University of Valladolid, Spain
- David R. Nielsen, Arizona State University, USA
- Edward J. Perkins, US Army Engineer Research and Development Center (ERDC), USA
- Jos Raaijmakers, NIOO-KNAW, The Netherlands
- Roberto Rinaldi, Max-Planck-Institut für Kohlenforschung, Germany
- Fabrizio Sibilla, Italian Biogas Council, Germany
- Antje Spiess, RWTH Aachen University, Germany
- Floor van der Hilst, Utrecht University, The Netherlands
- Emile van Zyl, Stellenbosch University, South Africa
- Volker Wendisch, Bielefeld University, Germany

March 15-16, 2016

Workshop on “Landscape management and design for food, bioenergy and the bioeconomy: methodology and governance aspects”

- **Logistics**

- IEA Bioenergy Task 43, in collaboration with GBEP AG6 “Bioenergy and Water” and other organizations
- 15-16 March 2016 at Chalmers, Gothenburg, Sweden.
- Feb 8 – deadline for abstracts (submit to eskil.mattsson@chalmers.se)

- **Aims**

- To facilitate the sharing of views and experiences
- To provide the basis for a publication about methodologies and tools for assessing land-use impacts on biodiversity and ecosystems services
- To develop an agenda for further advancement of science and knowledge in support of governance agreements on landscape management and design for food, bioenergy and the bioeconomy.

- **Focus**

- Terrestrial ecosystems: both agriculture and forestry activities.
- Management of aquatic resources is not included, but impacts on aquatic ecosystems are considered.



Bioenergy Symposia at US Chapter of the International Association of Landscape Ecology (IALE) meeting in Asheville, NC, April 4-8

<http://www.usiale.org/asheville2016/>

Reshaping Landscapes: Bioenergy and Biodiversity – organized by Yetta Jager

- **Yetta Jager** – Can future US bioenergy production coexist with avian biodiversity?
- **Luciano Verdade** – Vegetation biomass as a surrogate for birds' diversity
- **Colin Phifer** - Bird community responses to afforested eucalyptus plantations in Argentina
- **Elke Brandes** - Subfield profitability analysis reveals an economic case to increase biodiversity
- **Christopher Lituma** -Multi-scale assessment of wildlife sustainability in switchgrass biofuel feedstock production
- **Maria Negri** -A resource recovering landscape for sustainable bioenergy
- **Gwen White** - Mississippi Basin / Gulf Hypoxia Initiative: Seven LCCs meet large-scale agricultural conservation challenges from grassland birds to Gulf coast shrimp
- **Kevin Craig** - Linking watershed processes to coastal fisheries: effects of nutrient enrichment and hypoxia on the Gulf of Mexico fishery ecosystem
- **Samuel Evans** - The role of economics in understanding biodiversity in bioenergy landscapes
- **A Pouyan Nejadhashemi** - Optimization of bioenergy crop selection and placement based on a stream health indicator



Second Bioenergy Symposia at IALE

APRIL 6: Opportunities and Barriers for Sustainable Bioenergy

– organized by Keith Kline

- **Harry Baumes** - Policies, regulations and USDA programs to support opportunities for sustainable bioenergy
- **Johannes Langeveld** - Bioenergy opportunities to increase resource management efficiency: Effects on land use within a landscape perspective
- **Jason Hansen** - Exploring integrated landscapes for Bioenergy Feedstock Pro
- **Annette Cowie** - How emission accounting and reporting influence perceptions of bioenergy
- **Andre Coleman** - Opportunities and barriers for waste resource utilization in bioenergy production
- **Andy Scott** - Balancing bioenergy benefits on the landscape with sustainable productivity challenges on sites
- **Matt Langholtz/Laurence Eaton** - Landscape implications of US “Billion-Ton” supply assessments; historical review
- **Rebecca Efrogmson** - Investigating sustainability issues in bioenergy resource assessments: The example of the US 2016 Billion-Ton Report
- **Inge Stupak** - Creating trust and credibility in sustainability governance of bioenergy supply chains
- **Kristen Johnson** (BETO) - Research and Strategic Plans to Integrate Sustainable Bioenergy in Landscape Designs
- **Keith Kline** - Synthesis of priorities to realize opportunities for more sustainable landscape designs incorporating bioenergy



Third Bioenergy Symposia at IALE (cont.)

April 5-6: Landscapes Designs that Incorporate Sustainable Wood-based Bioenergy: a Focus on the Southeastern United States – organized by Virginia Dale

- **David Wear** - Land use futures in the Southeast: The interaction of urban and rural market forces
- **Cathryn Greenberg** - Natural disturbances shaping the structure and composition of southeastern forests
- **Danny Lee** - Remote tracking of forest dynamics using satellite imagery: Implications for sustainable forest management in the Southeast
- **Art Wiselogel** - DOE's Moves Toward Forest Landscape Design
- **Floor van der Hilst** - Variation in carbon balances of wood pellet production in Southeast US
- **Alisa Coffin** - Landscape considerations of perennial biofuel feedstock production in conservation buffers of the Georgia Coastal Plain, USA
- **Oludunsin Tunrayo Arodudu** - Spatio-temporal assessment of agro-bioenergy systems-a Human appropriation of net primary production (HANPP) approach
- **Brian Kittler** - Environmental Implications of wood pellet trade between the US and Europe
- **Jami Nettles** - Sustainable bioenergy intercropping in pine plantations - results from research to operational-scale trials
- **Esther Parish** - Analysis of US Forest Inventory and Analysis (FIA) Program Data across two Southeastern US fuelsheds.
- **Christopher Moorman** - An experimental approach to assess the effects of woody biomass harvests on wildlife habitat
- **Nathan Tarr** - Modeling the effects of biomass production on landscapes and wildlife habitat
- **Virginia Dale** - Opportunities and constraints for progress toward sustainable bioenergy in the southeastern United States



Bioenergy Study Tour in Southeast US

April 10-14, 2016

- Tour is supported by the DOE under the Bioenergy Technologies Office
- Information and registration: <http://web.ornl.gov/sci/ees/cbes/studytour2016/>

Participants

- Researchers associated with
 - DOE & its national laboratories
 - Other Agencies
 - The IEA Bioenergy Tasks 38 & 43
 - University staff & students
 - Industry
- Key stakeholders in the region
 - Land owners
 - Practitioners from industry
 - Non-governmental organizations (NGOs)

Study Tour logistics

- **Sunday, April 10, to Thursday, April 14**
 - Fly into Knoxville, TN (TYS)
 - Fly out of Savannah, GA (SAV) after 2 PM on April 14 or Knoxville on April 15
 - Participants will be responsible for booking and paying for airfare & hotel rooms
 - All meals will be provided.
 - Alcoholic beverages and incidentals must be paid for by tour participants
- **Goal**
 - Highlight innovations developed by the US Department of Energy (DOE) that support deployment of a sustainable bioeconomy.
 - Develop a better understanding of SE US bioenergy
- **Bus tour will consist of**
 - Several stops, lectures and videos along the way
 - Illustration of ways to address sustainability considerations of diverse feedstock operations
 - Perennial grasses to woody residues, harvesting operations, and use of biomaterials for different purposes.
- **To follow meeting in of the US IALE meeting on April 2-8 in Asheville, North Carolina**

Schedule: April 10-11

Sunday, April 10

- 2 to 5 pm – Guided hike for early arrivals. Depart from hotel lobby
- 6 – 8 pm – Reception at hotel in Oak Ridge. Posters will be on display.

Monday, April 11 – depart hotel

- Morning tour will split into three subgroups that will all visit the sites below in a round robin:
 - UT Arboretum - Forestry practices in the absence of an active pellet industry.
 - Old growth forest, which are quite rare in the southeastern United States.
 - National Transportation Center: Visualization and vehicle emissions testing
- Lunch
- Overview of opportunities and constraints of a wood-based pellet-industry in the SE US
 - SE US Forest condition, history, and trends: Dave Wear (USDA)
 - The wood based pellet industry in the SE US: Seth Ginther (U.S. Industrial Pellet Association)
 - Perspectives on the pellet industry in the SE US:
 - Economic perspective – Karen Abt (USDA)
 - Environmental concerns - Brian Kittler (The Pinchot Institute)
 - Wetland issues – Rob Olszewski (PlumCreek)
 - Carbon issues – Bob Malmsheimer (State University of New York)
 - Small land owner perspective – Scott Jones (Forest Landowners Association)
 - Certification programs supporting the pellet industry in the SE US – Nadine Block (SFI)
 - Auditor perspective – Norman Boatwright (NSF International)
 - EU Perspective(s) – Goran Berndes
 - How the concerns are being addressed by the US Department of Energy Bioenergy Technologies Office (BETO) – Kristen Johnson (BETO)
 - Summary of key opportunities and concerns – Tat Smith (University of Toronto)
- Dinner - Museum of Appalachia
- Return to hotel in Oak Ridge

Schedule: April 12-14

Tuesday, April 12 – check out and depart hotel with luggage

- Tour of switchgrass fields in Vonore, TN
- Genera Inc. tour of switchgrass processing and logistics and discussion of bioenergy logistics
- Lunch in Vonore
- Private forest operations in Northern Georgia
 - Land owner perspectives
 - Master logger program
- Arrive hotel in northern Georgia
- Dinner
- Discussion

Wednesday, April 13 – check out and depart hotel with luggage

- Savannah River Site (SRS)
 - SRS-Cogen Plant
 - Field studies of effects on water quality
- Lunch
- Private forest operations in Georgia
 - Biodiversity and wetland issues
 - Best management practices
- Arrive hotel
- Dinner
- Discussion



Thursday, April 14 – check out and depart hotel with luggage

- Tour of pellet mill
- Tour ends at 12 noon, and the bus will take participants to the Savannah international airport (SAV)
- Alternatively participants can return to Knoxville on the bus (a 7-hour drive)

Note: report from this workshop to be prepared

EUBCE 2016: European Biomass Conference (Amsterdam, 6-9 June 2016)

http://www.eubce.com/fileadmin/DATA/Documents_and_Pictures/05_Conference_2016/02_Conference/CALLFORPAPERS_print_5.pdf

Two IEA Bioenergy T43-initiated parallel sessions & side meeting that all support Ch 11 IPCC report: need for more land management AND bioenergy to meet climate goals.

- **Why the world needs MORE LUC**

- Concept of “beneficial LUC” (Kline et al.)
 - Builds on ExCo iLUC mitigation workshop in Brussels, etc.
 - Inter-task “Mobilization” (integrating lignocellulosic, boreal forests, cultivating pastures and grasslands)
 - Relates to IEA Bioenergy Task 43 WP1 and WP3 in triennium plans
- Focus on changing land-management patterns, intensities, effects & role of managed forests

- **Mobilisation of forest bioenergy: Green dream or reality?**

- Inter-task “Mobilisation”: boreal and temperate forests
- Task 43 & Tyndall Centre for Climate Change Research, UK discuss opportunities & challenges for forest bioenergy mobilisation in boreal & temperate biomes:
 - Present main results from the Mobilisation project
 - Discuss how realistic are global targets for solid (forest) biomass are
- Do the identified solutions from the report can support these targets?

- **EU concerns about sustainability of woody biomass supply chains.**

- Organized in response to COP21 side meetings & discussion with German colleagues.
- Special discussion on wood energy potential & perceived constraints.

IEA Bioenergy Inter-Task Project & Task 43

- **T43 Kick-off meetings for the 2016-2018 triennium**
 - Wageningen, The Netherlands
 - 28-29 January 2016
 - Marilyn Buford, Virginia Dale & Keith Kline joined by phone & Skype
- **T38, T40, T43 Inter-task project: Measuring, governing & gaining support for sustainable bioenergy supply chains**
- **Task 43: Biomass feedstocks for energy markets**
 - <http://www.ieabioenergytask43.org/>
 - WP1: Landscape management and design for bioenergy and the bio-economy
 - WP2: Developing effective supply chains for sustainable bioenergy deployment
 - WP3: Governing land use and bioenergy supply chains

