

**INTERNATIONAL WORKSHOP**  
**ADEQUACY OF SPATIAL DATABASES FOR CONDUCTING RISK ASSESSMENTS OF**  
**SUSTAINABLE WOOD SOURCING PRACTICES OF THE U.S. INDUSTRIAL WOOD**  
**PELLET INDUSTRY SUPPLYING EUROPEAN ENERGY DEMAND**

**VENUE**

GA Center for Continuing Education & Hotel  
1197 S Lumpkin St, Athens, GA 30602

**Dates**

May 01, 2019 (Noon) to May 03, 2019 (Noon)

**ORGANIZERS**

Puneet Dwivedi  
Warnell School of Forestry and Natural Resources  
University of Georgia

Tat Smith  
Department of Geography and Planning  
University of Toronto

Inge Stupak  
Department of Geosciences and Natural Resource Management  
University of Copenhagen

Brian Kittler  
Pinchot Institute for Conservation

Elizabeth Woodworth  
Wood & Co. Consulting

**FUNDING SUPPORT**

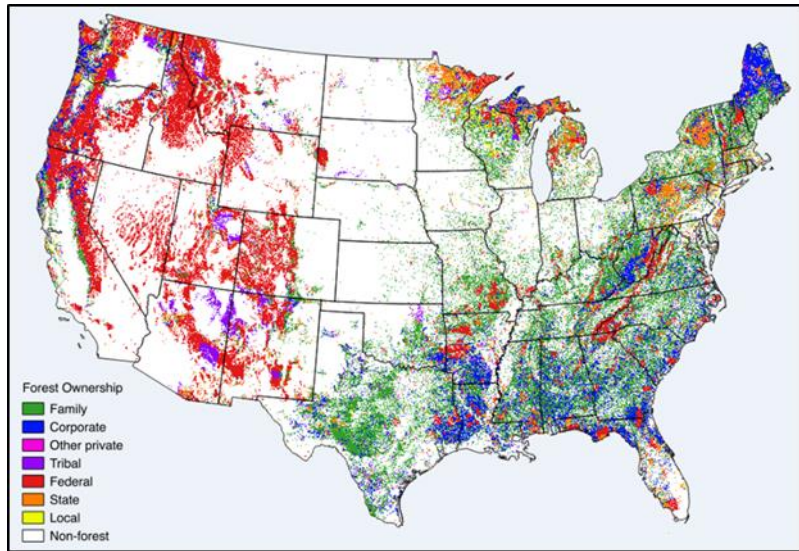
International Energy Association Bioenergy  
Task 43 “Biomass Feedstocks for Energy Markets”



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## Workshop Description

Wood pellets imported from the southeast United States comprise the largest imported source of biomass used for large scale energy generation in Europe. A variety of third-party forest management certification schemes meet European Union member states' sustainability requirements. However, given the relatively small percentage of certified forests in the US, supply chain certification at the pellet mill level combined with a risk-based assessment and mitigation



*Forestlands in the United States by owner type (Source: USDA Forest Service)*

where needed, offers a means of verification in regions where there is little or no certified fiber. Also, landscape-scale risk-based assessments are being considered that provide a geographically wider and more homogenous measure of assurance and reduce the administrative and economic burdens of verification for individual plants.

This international workshop aims to identify ways for improving the use of existing spatial data sources and tools for documenting sustainable forest management in wood pellet supply chains. We will discuss issues at the interface of social, environmental, economic, and governance aspects of wood pellet supply chains. The specific objectives of the workshop are:

1. Provide an understanding of how the pellet industry is applying sustainability certification and verification;
2. Develop an understanding of the latest development in domestic and international sustainability-related policies in the context of transatlantic wood pellet trade; and
3. Provide an independent and informal platform for mutual exchange of ideas across stakeholder groups on how sustainability and its documentation can be improved.

The expected outcomes of the workshop include new contacts and collaborations, knowledge creation and sharing, and plans for engaging stakeholder groups in a constructive manner for ensuring the sustainability of forestry resources in the United States and beyond.

## Workshop Schedule

<b>First Day (May 01, 2019)</b>	
11:00 AM - 11:45 PM	Registration
11:45 PM - 12:30 PM	Lunch - GA Center Ballroom
12:30 PM - 12:35 PM	Introduction - Puneet Dwivedi (Warnell School, University of Georgia)
12:35 PM - 12:40 PM	Welcome - Scott Merkle (Associate Dean of Research, Warnell School, University of Georgia)
12:40 PM - 12:45 PM	Overview of the First Day - Tat Smith (University of Toronto)
12:45 PM - 01:15 PM	Bioenergy Policy for Ensuring Carbon Benefits and Protecting Land, Water, and Wildlife - Steven Hamburg (Environmental Defense Fund)
01:15 PM - 01:45 PM	Feasibility and Acceptance of Forest Management Unit (FMU)-level and Risk-based Certification for Ensuring Sustainability of Wood Pellet Supply Chains - Inge Stupak (University of Copenhagen)
01:45 PM – 02:30 PM	Upcoming Changes in European Bioenergy Policies - Giulio Volpi (Policy Coordinator, DG for Energy, European Commission)
02:30 PM - 03:00 PM	Wood Sourcing Practices and Sustainability Policies of the US Industrial Wood Pellet Industry - Brian Kittler (Pinchot Institute for Conservation)
03:00 PM - 03:30 PM	Coffee Break
03:30 PM - 04:45 PM	Panel Discussion (#1): How Companies are Documenting Compliance with Sustainability Standards? - Moderator Elizabeth Woodworth (Wood & Co. Consulting) - Panelists Barry Parrish (GA Biomass)   Richard Peberdy (Drax Biomass)   Jennifer Jenkins (Enviva Biomass)
04:45 PM - 05:15 PM	Trans-Atlantic Policy Issues - Gert-Jan Nabuurs (Wageningen University & Research)
06:30 PM - 08:00 PM	Banquet + Talk - GA Center Ballroom - Industrial Wood Pellet Trade: Past, Present, and Future: William Strauss (FutureMetrics LLC.)

<b>Second Day (May 02, 2019)</b>	
07:30 AM - 08:30 AM	Breakfast - GA Center Ballroom
08:30 AM - 08:45 AM	Summary of First Day and Overview of the Second Day - Tat Smith (University of Toronto)
08:45 AM - 09:15 AM	Sustainable Forest Initiative (SFI) Fiber Sourcing Standard and Small Lands Initiatives - Barry Graden (Sustainable Forestry Initiative, Inc.)
09:15 AM - 09:45 AM	Forest Steward Council (FSC) United States: Risk Assessment of Forest Regions - Amy Clark Eagle (FSC United States)
09:45 AM - 10:00 AM	Dynamic Poster Session - Keith Kline (Oak Ridge National Laboratory) and Virginia Dale (University of Tennessee)
10:00 AM - 10:30 AM	Coffee Break
10:30 AM – 11:00 AM	US perspective on auditing practices of FMU-level and risk-based approaches to forest certification - Mike Ferrucci (Independent Consultant)
11:00 AM - 11:30 AM	NEPCon: Implementation of risk-based verification, as developed for legality in the European Timber Regulation, FSC controlled wood and SBP, and possible needs for improvement. - Gweneth Langdon (NEPCon)
11:30 AM – 12:00 PM	The Forest Inventory and Analysis (FIA) Program data for Carbon accounting John Coulston (USDA Forest Service)
12:00 PM - 01:00 PM	Lunch @ GA Center Ballroom
01:00 PM - 01:30 PM	Wildlife Conservation Data and Tools - Healy Hamilton (NatureServe)
01:30 PM - 02:45 PM	Panel Discussion (#2): Tools for Risk Assessment - Moderator: Brian Kittler (Pinchot Institute for Conservation) - Panelists - Sorin Popescu (Department of Ecosystem Science and Management, Texas A&M)   Puneet Dwivedi (Warnell School, University of Georgia)   Steven Castleberry (Warnell School, University of Georgia)   Nathan Truitt (American Forest Foundation)
02:45 PM - 03:15 PM	Coffee Break
03:15 PM – 03:30 PM	Summary of Dynamic Poster Exercise - Keith Kline (Oak Ridge National Laboratory) and Virginia Dale (University of Tennessee)
03:30 PM – 04:45 PM	Panel Discussion (#3): Opportunities for Encouraging Collaboration, Finding Common Ground, and Developing Trust - Moderator Elizabeth Woodworth (Wood & Co. Consulting) - Panelists Inge Stupak (University of Copenhagen)   Keith Kline (Oak Ridge National Laboratory)   John Schelhas (USDA Forest Service)   Lisbeth Sevel (Ørsted)
04:45 PM - 04:55 PM	Summary of Discussions - Tat Smith (University of Toronto) and Elizabeth Woodworth (Wood & Co. Consulting)
04:55 PM - 05:00 PM	Thanks - Dr. Dale Greene (Dean, Warnell School, University of Georgia)

<b>Third Day (May 03, 2019)</b>	
07:30 AM - 08:30 AM	Breakfast @ GA Center Ballroom
08:30 AM - 10:15 AM	Collaborative Session: Explore Oak Ridge National Laboratory's (ORNL's) recent sustainability case study of two Southeast US wood pellet supply areas using a proto-type visualization tool called the Bioenergy Sustainability Tradeoffs Assessment Resource (BioSTAR*). Moderators: Keith Kline and Esther Parish (Oak Ridge National Laboratory)  <b>Please bring your laptop for this session.</b>
10:15 AM - 10:45 AM	Coffee Break
10:45 AM - 12:00 PM	Collaborative Session Continued

\*Oak Ridge National Laboratory (ORNL) is developing a web-based Bioenergy Sustainability Tradeoffs Assessment Resource (BioSTAR) to help the US Department of Energy's BioEnergy Technologies Office (DOE BETO) and industry holistically quantify costs and benefits and analyze tradeoffs of US biomass production options. By helping users tailor assessments to local conditions and stakeholder priorities, BioSTAR aims to identify options that will maximize environmental and socioeconomic benefits to the society (e.g., improvement of water and soil quality, a net increase in value-added processing and jobs, etc.) while minimizing negative impacts. Through collaboration with the USDA Forest Service (USFS), ORNL recently assembled a variety of datasets and estimated changes in indicators of sustainable production for two forested landscapes supplying over half of US industrial wood pellets to an established export market: the Chesapeake wood basket supplying the ports of Norfolk, VA, and the Savannah wood basket supplying the ports of Savannah, GA. For this collaboration session, we invite interested stakeholders to engage with a prototype of the BioSTAR tool to explore the sustainability indicator datasets assembled for these two case-study areas. Our goal is to understand how different users prioritize indicators and assess potential tradeoffs between them. Getting feedback on BioSTAR's utility and ease of use will help ORNL to refine and improve this multimetric visualization platform for future decision makers.

## **Registration**

Please use the following link for completing workshop registration

Link: <https://www.hotel.uga.edu/events/bio-energy-conference>. Please use hotel block code 91558 for booking the hotel.

## **Travel Directions**

### **Nearest Airport**

Hartsfield-Jackson Atlanta International Airport (<https://www.atl.com/>). The Atlanta International Airport is the busiest airport in the world with flights over 150 U.S. destinations and more than 75 international destinations in 50 countries. The airport is divided into international and domestic terminals. The airport is about 80 miles (about 130 km) from Athens, GA.

### **Airport Shuttle**

Please use the Groome Transportation Shuttle Service from Atlanta to Athens. You can book your shuttle by visiting this link: <https://groometransportation.com/athens/>. Keep in mind that Groom shuttles are only available from the domestic terminal of the Atlanta International Airport. A person arriving at the international terminal first has to take an ATL shuttle (no extra cost) to arrive at the domestic terminal. If you are running late, then do not panic as you will be accommodated in the next shuttle (no extra cost) as long as you have your reservation number. For locating your shuttle, please follow directions given on your reservation.

### **Hotel**

Please book your stay at the University of Georgia Center for Continuing Education and Hotel (aka Georgia Center). Groom Shuttle can drop you at the GA Center and pick you up as well from GA Center. The address of the hotel is 1197 S Lumpkin St, Athens, GA 30602. Guest parking is available. You can explore the hotel at <https://www.georgiacenter.uga.edu/>. GA Center also provides a shuttle service (no extra cost) for visiting nearby places (e.g., Downtown Athens or Five Points). Please ask at the registration desk if you need shuttle service from GA Center.

### **University of Georgia**

Chartered by the state of Georgia in 1785, the University of Georgia ([www.uga.edu](http://www.uga.edu)) is the birthplace of public higher education in America. The University of Georgia is a Land and Sea Grant University supporting over 37,000 students, 5,000 staff members, and 2,000 faculties. The Warnell School of Forestry and Natural Resources (<http://warnell.uga.edu/>) is the oldest forestry school in the southern United States with about 200 graduate students researching various cross-cutting themes. The University of Georgia is located in Athens, Georgia also known as Classic City due to local music, food, and recreational opportunities all year around. Please visit <https://www.visitathensga.com/#> for more information on ongoing activities in Athens, Georgia.

### **Contact**

Please contact Puneet Dwivedi ([puneetd@uga.edu](mailto:puneetd@uga.edu)) for any queries related to the workshop.

## Short Biographical Sketches of Speakers and Panelists

**Castleberry, Steven:** Steven Castleberry is a professor of wildlife ecology and management in the Warnell School of Forestry and Natural Resources at the University of Georgia. He earned his B.S. and M.S. degrees in forest resources at the University of Georgia and his Ph.D. in forest resource science from West Virginia University. His research focuses primarily on the ecology and management of small mammals and bats in managed forest systems. Much of his research has focused on the influence of timber harvesting, woody biomass harvesting and prescribed fire on wildlife habitat relationships in pine systems.

**Clark Eagle, Amy:** Amy joined the Forest Stewardship Council US in 2016 as the Director of Science and Certification. In this role, she leads the FSC team dedicated to development and application of FSC policies and standards in the United States, including the FSC US Forest Management Standard and FSC Controlled Wood US National Risk Assessment. She works with internal and external partners both nationally and globally to ensure the integrity and improve the accessibility of the FSC system. Amy spent much of the previous two decades collaborating with government and non-government partners to develop and implement landscape-scale conservation and management plans within and amongst managed forests. Before joining FSC, Amy served as Biodiversity and Conservation Program Leader for the Michigan Department of Natural Resources' (MDNR) Forest Resources Division, where one of her primary responsibilities was working to ensure that the MDNR maintained FSC forest management certification on 4 Million acres of state-administered forest lands. Amy is a graduate of Amherst College and earned her M.S. in Wildlife Science at the University of Washington-Seattle's College of Forest Resources.

**Coulston, John:** John Coulston is the National Leader for Forest Products Monitoring and National Co-lead for Forest Projections for the USDA Forest Service. Dr. Coulston earned his PhD in Forest Biometrics and Remote Sensing from North Carolina State University and is an adjunct faculty member at North Carolina State University, Virginia Polytechnic Institute and State University, and the University of Tennessee. He currently serves as an editorial board member at Nature Scientific Reports and on the Roster of Experts for the United Nations Framework Convention on Climate Change. Dr. Coulston has authored over 125 technical publications including 60 peer-reviewed articles.

**Dale, Virginia:** Virginia Dale is an adjunct professor in the Departments of Ecology and Evolutionary Biology and Forestry, Wildlife and Fisheries at the University of Tennessee and Corporate Fellow Emeritus at Oak Ridge National Laboratory. Her research focuses on environmental decision making, ecosystem management in view of disturbances and climate change, and sustainability of agricultural landscapes and energy systems. She has served on national scientific advisory boards for five US agencies and several committees of the National Academies of Science. She has authored 11 books and 260 scientific articles. She received her PhD in mathematical ecology from the University of Washington.

**Dwivedi, Puneet:** Puneet Dwivedi is an associate professor of sustainability sciences at the University of Georgia's Warnell School of Forestry and Natural Resources. He specializes in wood-based bioenergy development, forest-based ecosystem services, forest governance, and family forest landowners. Dr. Dwivedi has published over 60 refereed journal articles and is currently serving as an Academic Editor at PLOS One and as a Member of Editorial Advisory Board at Global Change Biology Bioenergy. Dr. Dwivedi completed his doctoral research at the University of Florida (2010) followed by two postdocs at Yale University (2010 – 2012) and University of Illinois (2012-2013) before starting faculty position at the University of Georgia.

**Ferrucci, Mike:** Mike Ferrucci is a Consultant in Forest and Chain of Custody Certification, providing certification programs, training, and support to all segments of the industry throughout the U.S. He is trained and experienced as an SFI Lead Auditor for Forest Management, Procurement (Fiber Sourcing), and Chain of Custody, as an FSC Lead Auditor for Forest Management and Chain of Custody, as a Tree Farm Auditor, and as an auditor in the Sustainable Biomass Program. Mike has led Sustainable Forest Initiative (SFI) certification reviews throughout the United States, and has also led or participated in joint SFI and Forest Stewardship Council (FSC) certification projects for public lands in nearly one dozen states and a joint certification gap-analysis project on tribal lands throughout the United States. He also co-led the pioneering pilot joint SFI/FSC evaluations on two U.S. National Forests. Mike has conducted Chain of Custody audits for all segments of the forest products industry against all three leading standards. Mike has also conducted or participated in assessments of forest management operations throughout the United States, with field experience in 4 countries and 34 states. He has over 40 years of forestry experience.

**Graden, Barry:** As Director, SFI Forest Partners, Barry oversees the SFI Forest Partners® Program which is aimed at finding innovative approaches to group and coordinated certification for smaller and medium-sized mills and forest ownerships, seeking opportunities for collaboration, cost-effectiveness and incentives for certification. He also supports the SFI Program's community activities including SFI Implementation Committees and SFI's partnership with Boy Scouts of America. Before joining SFI, Barry accumulated over 30 years of experience working in the forest products industry. He holds a Bachelor of Forestry from Iowa State University and a Master of Business Administration from Winthrop University. Barry is an Eagle Scout, a Certified Forester with the Society of American Foresters and a licensed forester in South Carolina. Barry and his wife own and manage a tree farm certified to the American Tree Farm System.

**Hamburg, Steven:** Steven Hamburg is chief scientist of the Environmental Defense Fund and is an ecosystem ecologist. Trained at Vassar College (AB, Biology), Yale (MFS ecology and forestry; Ph.D., biogeochemistry and ecosystem ecology), Stanford Universities (Post-doc ecology) and Harvard (Bullard Fellowship) he has been involved in biogeochemistry/forest ecology research for more than 25 years. He has published 100 scientific papers on biogeochemistry, climate change impacts on forests and carbon accounting approaches and methodologies and has served as a lead author for the IPCC. His involvement with the IPCC resulted in his being acknowledged as one of the contributing recipients of the 2007 Nobel Peace Prize. He was twice awarded the US EPA Environmental Merit Award from Region 1 for his climate change related work. He was a senior member of Brown University faculty for 15 years where he was the founding director of the Global Environment Program at the Watson Institute for International Studies. Before being at Brown University, he was on the faculty of the University of Kansas where he directed the Environmental Studies Program and served as the Environmental Ombudsman.

**Hamilton, Healy:** Healy Hamilton is Chief Scientist at NatureServe, a western hemisphere biodiversity information network focused on management and conservation of at-risk species and ecosystems. She is a biodiversity scientist with graduate degrees from Yale and the University of California, Berkeley, and extensive field experience in the tropical forests of Latin America. At NatureServe, Dr. Hamilton leads a staff of over 20 scientists with expertise in ecology, zoology, botany, conservation, data science, and information management. She is also a world expert on the taxonomy, evolution and conservation of seahorses and their relatives. Dr. Hamilton is past President of the Society for Conservation GIS, a Fellow of the World Conservation Monitoring Centre, and serves on the Science Committee of the National Park Service Advisory Board. She is a Switzer Foundation Environmental Leadership grantee and a former U.S. Fulbright Scholar.



**Jenkins, Jennifer:** As VP and Chief Sustainability Officer, Dr. Jennifer Jenkins leads the team responsible for Enviva's environmental stewardship, from ensuring the sustainability of the fiber supply chain and implementing Enviva's Responsible Sourcing Policy to interacting with policymakers on regulatory matters. A nationally- and internationally- recognized expert in methods for measuring and monitoring forest carbon (C) cycling at local, regional, and national scales, Dr. Jenkins has authored over 36 publications and technical reports, including 26 peer-reviewed articles in high-impact journals such as Science, Bioscience, Forest Science, Ecosystems, and Ecological Applications. In addition, she is a co-recipient, with former Vice President Al Gore and other members of the IPCC, of the 2007 Nobel Peace Prize. Dr. Jenkins holds an MBA from the University of Maryland's RH Smith School of Business, a Ph.D. in Ecosystem Ecology from the University of New Hampshire, a Master of Forest Science from Yale University, and a BA in Biology and Environmental Studies from Dartmouth College

**Kittler, Brian:** Brian directs the Pinchot Institute's Western Regional Office; planning, overseeing, and implementing innovative conservation projects, evaluating policies and science related to the conservation and restoration of public and private lands. His programmatic focus includes advancing knowledge and strategies for sustaining working lands, climate adaptation, forest carbon management, and forest ecosystem health. Since 2013, Brian has led a multi-year project in the Pacific Northwest focused on removing barriers to non-industrial forest owner participation in markets for improved forest management carbon offsets. Over the last decade, Brian has also led the Institute's programmatic focus on bioenergy sustainability analysis, including: producing studies for the European Commission, The International Energy Agency Bioenergy Tasks, Environmental Defense Fund, Massachusetts Department of Energy Resources, and University of Maryland. Before the Pinchot Institute, Brian led programs for the National Fish and Wildlife Foundation focused on community-based wetland and riparian forest restoration, and accelerated water quality restoration in the Chesapeake Bay watershed.

**Kline, Keith:** Keith Kline is a Distinguished Researcher in the Environmental Sciences Division, Oak Ridge National Laboratory, Tennessee. From 1980-2008, Keith lived and worked in developing nations supporting rural development programs to improve land management for agriculture and ecosystem services. Current research supports the Department of Energy to assess national and international effects associated with the development of renewable energy resources, with attention to land cover, management and disturbance.

**Langdon, Gweneth:** Gweneth Langdon is the North America Deputy Director of NEPCo's Solutions division, which provides corporate advisory, training and verification services. Her work focuses on the evaluation of company sourcing practices, traceability systems and broader corporate and/or product sustainability claims. Before working for NEPCo, Gweneth worked with the Rainforest Alliance Certification Division, managing their FSC CoC/Controlled Wood accreditation and FSC trademark and Rainforest Alliance Certified seal use. Gweneth has over 10 years' experience in certification services, working on audit or quality teams in over 15 countries. She is approved as a Senior Auditor and peer reviewer for all of the FSC CoC Standards and has conducted over 200 audits and assessments for a variety of high profile companies. Gweneth is also a qualified to act as lead auditor on ISO 9001, PEFC, LegalSource and Rainforest Alliance/NEPCo Verification Audits.

**Nabuurs, Gert-Jan:** Gert-Jan Nabuurs is professor European forest resources at Wageningen University and Research, Netherlands. His background is in European scale forest resource analyses, and management under climate change. His work has both scientific aspects, as well as very practical applications. He started the work with the EFISCEN model, the European forest resource, forest management, and carbon balance model. European scale applications are in wood availability, effects of

forest management, climate change impacts, and CO2 sequestration. Further he has been IPCC Coordinating lead Author in Good Practice Guidance and IPCC 4AR. He will lead the Agriculture and Forestry chapter in the IPCC 6AR, starting 2019. He was Assistant Director of the European Forest Institute in Finland from 2009-2012. He is member of Ministerial Advisory Committee Sustainability of Biomass for Energy Purposes, advising on certification schemes and their applicability to Dutch biomass sustainability criteria.

**Parish, Esther:** Esther Parish is a scientist at the Oak Ridge National Laboratory (ORNL) and the PI of a US Department of Energy (DOE) BioEnergy Technologies Office (BETO)-funded project entitled, “Quantifying and Visualizing Progress Toward Sustainability.” As a geographer for the ORNL Environmental Sciences Division, Esther conducts interdisciplinary landscape ecology and regional analyses utilizing GIS and integrated models and datasets to assess (1) potential tradeoffs between environmental and socioeconomic indicators of sustainability for renewable energy resources, and (2) climate change impacts on human populations. Esther has a recent Ph.D. in Energy Science & Engineering through the Bredesen Center for Interdisciplinary Graduate Research and Education, an M.S. in Geography from The University of Tennessee, and B.S. in Geology & Geophysics from Yale University.

**Parrish, Barry:** Barry is responsible for purchasing, fiber supply, and sustainability standards for the US biomass business of Georgia Biomass. Barry is also responsible for maintaining sustainability certifications and ensuring the highest sustainability standards are met as required by our stakeholders in the United States and Europe. Barry has over 30 years of experience in the forest products industry, and prior to his role with Georgia Biomass held various management positions with the former Smurfit-Stone Container Corporation where his last position was in fiber procurement responsible for fiber supply for their Fernandina Beach linerboard mill in Florida. He was also the Georgia Land Manager where he was responsible for the forest management of over 400,000 acres of forestland. Barry serves on the Board of Directors of USIPA, on the Executive Committee of the Forest Resources Association, and the Board of Directors of Georgia Forestry Association. Barry holds a BS degree in Forest Resources from the University of Georgia and is a Registered Forester and Certified Fraud Examiner.

**Peberdy, Richard:** Richard has worked here in the US for Drax for the past 6 years. His tasks have included setting up and overseeing sustainability systems at Drax’s 3 pellet mills – 2 in LA and 1 in MS. Richard has also worked with other North American suppliers to Drax on working out the best way to evidence sustainability. One answer, in part at least, has been through the Sustainable Biomass Program. Prior to working for Drax, Richard worked in the UK forest industry, running his own forestry business in North Wales for 10 years, and then in a large forest management company for 20 years.

**Popescu, Sorin:** Sorin Popescu is a Professor in the Department of Ecosystem Science and Management (ESSM) at Texas A&M University. He received his Ph.D. from Virginia Tech in 2002, in forestry remote sensing. His area of research and teaching is in remote sensing of the environment, with a specialty in lidar remote sensing of vegetation structure, Unmanned Aerial Systems, sensors and algorithms to derive vegetation biophysical parameters, including biomass and carbon. Dr. Popescu has received research funding from NASA, NSF, USDA and other federal and state agencies. He currently serves as Principal Investigator on the NASA Science Team for the Ice, Cloud, and land Elevation Satellite-2 (ICESat 2), a lidar satellite. Selected awards and honors received by Dr. Popescu include: Deans’s Outstanding Achievement Award for Interdisciplinary Research Team Excellence (2018), ESSM Excellence Award in Discovery/Innovations (2017), American Society for Photogrammetry and Remote Sensing (ASPRS) Outstanding Workshop Instructor Award (2014), NASA New Investigator Award in Earth Sciences (2008),

ESSM Graduate Professor of the Year (2008 and 2014), First Honorable Mention for 2005 ASPRS Talbert Abrams Award for Authorship and Recording of Current and Historical Engineering and Scientific Developments in Photogrammetry, and NASA Earth System Science Fellowship (1999).

**Schelhas, John:** John Schelhas is a Research Forester with the Southern Research Station of the USDA Forest Service in Athens, GA. His research centers on relationships between people and forests. His primary research focus is private forest landowners and rural communities, addressing topics such as land use decision-making, environmental values and discourse, forest-based rural development, race and ethnicity, relationships between protected areas and their neighbors, invasive plants, bioenergy, and climate change. He has conducted research in Latin America and the U.S. South. He holds a Ph.D. in Renewable Natural Resources with a Minor in Anthropology from the University of Arizona. He has worked as a researcher at Cornell University and the Smithsonian Migratory Bird Center, and has also worked for the U.S. National Park Service and served as a Peace Corps Volunteer in Guatemala.

**Sevel, Lisbeth:** Lisbeth Lyck Sevel is a senior sustainability advisor at the Danish energy company Ørsted. Her responsibility is collecting of and reporting on sustainability data. Her focus is on understanding all steps in the chain of supply, contact with suppliers on issues of sustainability, development of internal systems handling data and reporting. Lisbeth is part of a team, where focus also is on communication and dialog with different stakeholders and input for regulatory work. Lisbeth has a background within forestry and a Ph.D. within biomass production of short rotation willow.

**Smith, Tat:** Tat Smith is Professor and Dean Emeritus (Forestry) at the University of Toronto since 2005, and has held the following positions since the early 1980s: Professor and Head of the Department of Forest Science at Texas A&M University from January 1999 to June 2005; Programme Manager for the New Zealand Forest Research Institute 1993 to 1998; and professor in the Department of Forest Resources, University of New Hampshire in Durham from 1983-92. Tat served in international collaboration leadership roles for IEA Bioenergy from 1994 to 2019; was founding member and past Chair of the Board of Directors of the Invasive Species Centre; Past President of the Canadian Institute of Forestry; and is a past member of the Board and Secretary-Treasurer of the Sustainable Forestry Initiative (SFI).

**Strauss, William:** William Strauss is the President and founder of FutureMetrics, LLC. Bill and his team are globally recognized as the leading experts in the wood pellet sector. Bill continues to be a thought leader in the sector and has published numerous papers on a variety of subjects relevant to the wood pellet sector. He is also a founder and a Director of Maine Energy Systems, the largest manufacturer of European style automatic pellet fueled central heating systems in North America. Bill has been named as one of the most influential leaders in the biomass sector in 2016 and again in 2017 by Argus Media and is the 2012 recipient of the International Excellence in Bioenergy award. He has an MBA (specializing in finance) and a Ph.D. (economics and earth systems science).

**Stupak, Inge:** Inge Stupak is an associate professor at the University of Copenhagen. Her major research focus is on environmental impacts of forest biomass production, including impacts on growth, site fertility and forest carbon, and governance of sustainable forest management and sustainable bioenergy. She was the Danish national team leader in IEA Bioenergy Task 43 'Biomass feedstocks for energy markets' (2013-2018), and is alternate national team leader in Task 45 'Climate and sustainability effects of bioenergy within the broader bioeconomy' (2019-2021). Together with Tat Smith, University of Toronto, she coordinated a workpackage on governing the sustainability of bioenergy in the IEA Bioenergy inter-Task project "Measuring, governing and gaining support for sustainable bioenergy supply chains" (2016-2018).

She is currently engaged in work around the Danish national forest soil inventory to provide data for Denmark's reporting to the Climate Convention and the Kyoto Protocol.

**Truitt, Nathan:** Nathan Truitt joined the staff of the American Forest Foundation in March 2013. As VP of Strategic Partnerships, he works with corporate and NGO partners to develop innovative solutions to engaging America's family forest owners in climate mitigation, wildfire risk reduction, the support of biodiversity, and the production of sustainable fiber for the forest products industry. He began his career in the non-profit world working on international education and development, first as a Peace Corps Volunteer in Turkmenistan, and later as a Program, Country and Regional Director in Uzbekistan, Serbia and Kosovo. Nathan graduated from Pomona College in Claremont, California and has a Master's Degree in Philanthropy and Development from Saint Mary's University in Winona, Minnesota. He met his wife, Zalina, in Uzbekistan, and they now live in Alexandria, VA, with their three children.

**Volpi, Giulio:** Giulio Volpi is Policy officer in the Renewables and CCS Policy Unit, Directorate General for Energy (DG ENER) of the European Commission, where he coordinates the bioenergy policy file. Giulio has more than 15 years of professional experience in the field of clean energy, climate change and environmental policy, including working experiences from Latin America. Giulio has a European Master's Degree in Environmental Management (Erasmus University Rotterdam) and an MA in Political Sciences from University of Pisa. He has also concluded advanced studies on energy markets at the Florence School of Regulation, European University Institute.

**Woodworth, Elizabeth:** Elizabeth Woodworth is a recognized leader in sustainability communications, with particular expertise in the forest and conservation sectors. After more than 20 years working for both private and non-profit organizations, she founded Wood & Co. in 2016, a boutique consultancy that specializes in providing clients with diverse and bespoke consulting services — such as sustainability policy guidance, marketing and communications strategy, workgroup organization and outreach, content drafting and editing, and media relations. Elizabeth has worked as Director of Sustainability and Communications at Enviva, VP of Communications at the Sustainable Forestry Initiative, and Director of Marketing at L'Oréal. Elizabeth served on the European Biomass Association (AEBIOM) Board from 2012-2014 and received the 2014 Argus Award for Sustainability. She holds a BA in international studies and French from the University of Richmond, an MBA from The Wharton School and an MA in international studies from the University of Pennsylvania.