




AUSTRALIAN
BIOECONOMY
CONFERENCE 2023

Managing carbon and biomass in a carbon constrained world
Tue 19 & Wed 20 September 2023 | Rydges Newcastle, NSW



THANK YOU TO OUR CONFERENCE PARTNERS & SPONSORS



A close-up photograph of wheat stalks, showing the golden-brown grain heads and the long, thin awns. The background is a soft-focus field of similar wheat. A dark green, semi-transparent rounded rectangle is overlaid on the lower-left portion of the image, containing white text.

The improved management of carbon across our economy - or our 'bioeconomy' - is critical if we are to mitigate the impacts of climate change and increase renewable electricity production as we move away from fossil fuels in an increasingly carbon-constrained world

Invitation

The Australian Industrial Ecology Network (AIEN) takes great pleasure in inviting you to join us at the first Australian Bioeconomy Conference to be held on 19 and 20 September 2023 at the Rydges Newcastle.

This two-day event is themed *Managing Carbon and Biomass in a Carbon Constrained World*, where we will explore potential opportunities for industry in Australia and what it might look like in the future.

The improved management of carbon across our economy - or our 'bioeconomy' - is critical if we are to mitigate the impacts of climate change and increase renewable electricity production as we move away from fossil fuels in an increasingly carbon-constrained world. We also need to help shape how the bioeconomy can be supported to maximise benefits to the environment and our economy.

Furthermore, improved management of carbon across the Australian bioeconomy can open up many commercial opportunities for recovering organic matter and stimulating industries focused on biomass production. This includes the generation of energy from biomass which is otherwise lost to landfill or specifically grown crops for fuel, producing carbon-neutral transport fuels, and using recovered organic matter and other biogenic products for restoring environmental ecosystems and improving the productivity of agriculture.

Recent government policies at a National and State level on climate change and net zero, renewable energy production, recycling, agricultural productivity and environmental restoration all seek to enhance the management of carbon to deliver environmental, social and economic benefits for the Australian community.

This two-day conference will bring together policy experts from all levels of government, industry leaders and early industry adopters to highlight the opportunities in Australia's bioeconomy. The conference will also provide participants with an opportunity to engage, network, discuss and help shape policy, programs and investment in Australia's increasing important bioeconomy.

AIEN recognises that national leadership is critical in connecting key players and capabilities across the value chain and is striving to build partnerships with key stakeholders to frame this dialogue in developing a path for a circular bioeconomy in Australia.

I look forward to meeting you at the 1st Australian Bioeconomy Conference in Newcastle



Colin Barker
Chairman, Australian
Industrial Ecology Network

About the conference

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Key topics

- The Australian bioeconomy and new emerging industries that are focused on better managing carbon
- The race towards net zero - role and potential the bioeconomy can play
- Carbon cycle mechanics, and the difference between fossil and biogenic carbon
- What is the highest and best use of carbon across the bioeconomy?
- Climate change benefits from managing carbon from biogenic sources across the bioeconomy
- Current policies, program and investments to advance Australia's bioeconomy
- Techniques, processes and industries seeking to improve the management of carbon in sustainable energy generation
- Role and potential for using surplus biomass and specifically grown biomass crops in sustainable energy generation
- Creating sustainable transport fuels from biomass - technology, economics and opportunities
- Commercial opportunities for agricultural producers and forestry in biomass crop production and making use of unproductive lands
- Stimulating the development of anaerobic digestion in Australia for producing green biogas from surplus agricultural and urban biomass sources
- Government investment programs available to support industry development and the national bioeconomy

Host organisations



The Australian Industrial Ecology Network (AIEN) is a vibrant network of like-minded individuals, companies, and institutions with a common interest in sustainable development through the study and practice of industrial ecology.

AIEN aims to bring industry, government, and community stakeholders together to capitalise on Industrial Ecology opportunities and resolve emerging issues with coordinated solutions.

aien.com.au

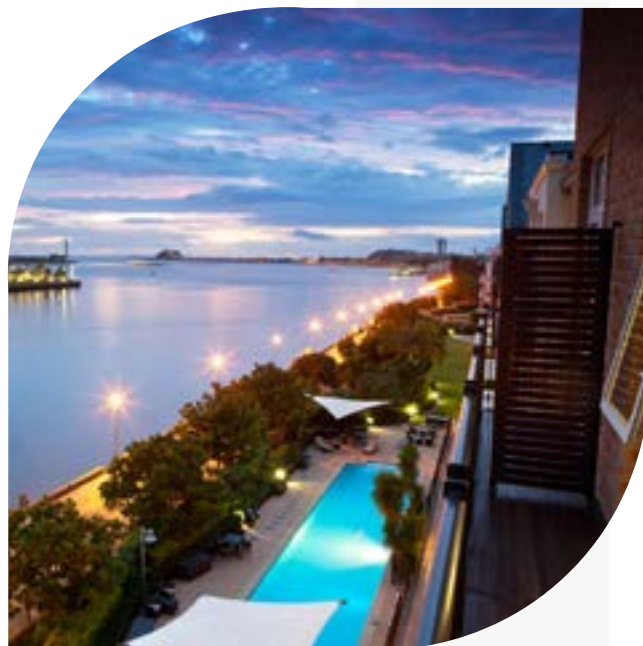


The Hunter Joint Organisation is a collaborative body that brings together the region's ten councils to provide a united and local voice. As the hub for local intergovernmental collaboration, our statutory mandate includes identifying regional strategic priorities and advocating and building collaborations around these priorities with government, industry and community.

hunterjo.com.au

Organising committee

- Dr Mark Jackson, Jackson Environment and Planning
- Tim Askew, Hunter Joint Organisation
- Colin Barker, Plastech Recycling
- Mark Glover, Ecowaste
- Veronica Dullens, AIEN



Venue

Rydges Newcastle
Wharf Rd & Merewether St
Newcastle NSW 2300

Sitting amongst the waterfront boutiques, cafés, bars and eateries of the iconic Honeysuckle promenade, Rydges Newcastle is the ideal destination to take this lively city head on. With sweeping views of the stunning harbour and only moments from the major tourist attractions, this premium Newcastle hotel is the perfect blend of vibrant coastal city and luxury holiday escape.

Rydges Newcastle is conveniently located in the heart of Newcastle's Honeysuckle precinct, only a short 30-minute drive from Newcastle Airport, and only two hours drive from Sydney.

Contact

For all queries please contact the Australian Industrial Ecology Network

T: 0400 449 100

E: info@aien.com.au

Thank you to our sponsors

AIEN would like to acknowledge the generous support of our sponsors and partners:

Verdant Earth Technologies
NETWORKING FUNCTION



Verdant Earth Technologies is a renewable energy asset and technology developer, focusing on the development of bioenergy projects.

Verdant owns the 151MW Redbank Power Station, which forms part of a broader plan to establish up to 2,000MW of biomass-based generation throughout Australia.

Verdant is working to establishing purpose grown energy crops on marginal lands, creating permanent carbon sinks and a sustainable biomass resource that can lead the way to projects with negative lifecycle CO2 emissions.

verdantearthtechnologieslimited.com

NSW Dept. of Primary Industries
SESSION SPONSOR



NSW DPI works hand-in-hand with producers – through droughts, floods, fires and biosecurity challenges – to drive stronger primary industries.

NSW DPI is globally recognised as a top 1% plant, animal and environmental sciences research organisation.

dpi.nsw.gov.au

BMH Technology
LANYARDS SPONSOR



BMH TECHNOLOGY

BMH Technology delivers solid biomass and waste handling systems with decades of experience and a global reference base. Its robust solutions guarantee industrial scale capacities for green electricity power plants. The company is also expert in the biomass and waste feedstock preparation solutions for BtC/ WtC production plants.

bmh.fi

Koppers Australia
SESSION SPONSOR



Koppers Australia is a leading diversified manufacturer of quality carbon materials, chemicals and treated wood products vital to a range of industries in Australasia and the Pacific.

Products include the manufacture and distribution of pitch to the Aluminium Industry, treated wood poles, engineering and piling timbers, landscaping and viticulture products.

koppers.com.au

Keynote speakers

JIM LANE

Editor & Publisher, Biofuels Digest (USA)



Jim Lane is the founder of The Daily Digest, the world's most widely-read bioeconomy daily, with 6 million online readers and followers. He also founded The Circular e-zine, the Bioeconomy Connect networking platform, the Robin digital streaming platform, and co-founded the ABLC conference series, the world's most widely-attended bioeconomy leadership events.

Outside of the bioeconomy, he founded the REenergize community and newsletter covering advances in battery tech, solar, wind, hydrogen and electric vehicles, and is an active technology angel investor. He received Special Achievement Awards from the Biotechnology Industry Organisation and the Commercial Aviation Alternative Fuel Initiative for his services to the bioeconomy and was recently selected to introduce President Biden's Bold Goals for the Bioeconomy.

He has authored 11 books and more than 1,500 published columns on the bioeconomy, agriculture, fashion, sports, technology and media, and documentaries on national security, biotechnology, artificial intelligence, brain-machine interfaces and advanced materials. He matriculated from Sydney Grammar and studied at UNSW before taking a BA in English from the University of Washington.

DR ANNETTE COWIE

Senior Principal Research Scientist - Climate, NSW Dept of Primary Industries



Annette Cowie is a Senior Principal Research Scientist at the NSW Department of Primary Industries, and has a background in agricultural science, with emphasis on sustainable resource management.

Annette's research sits on the science-policy interface, supporting holistic responses to climate change, and sustainable land management. Her research interests include sustainability assessment, greenhouse gas accounting for the land sector, soil carbon management and biochar science.

Annette was a lead author in the IPCC's Sixth Assessment Report, in the Cross-sectoral Perspectives chapter of the WGIII volume.

BIRGIT TEGETHOFF

Senior Advisor Clean Energy, Business Finland



Birgit has successfully made an impact in the clean energy sector within roles that bring together government, trade, and industry stakeholders, to drive strategic and commercial outcomes. She is an experienced business leader supporting sustainable growth of companies and is enthusiastic about meaningful ecosystem engagement, enabling technologies and circular economy principles.

Prior to joining Business Finland in 2022, Birgit led the industry engagement of the German-Australian Energy Partnership and the Industry 4.0 Prime Minister Task Force at the German-Australian Chamber of Industry and Commerce and is the Co-Founder of the German-Australian Hydrogen Alliance.

Based in Sydney since 2009 she holds a degree in International Management.

Preliminary program

Tuesday 19th September 2023

0800	Registration, tea and coffee
SETTING THE SCENE	
0845	Welcome and housekeeping Colin Barker , Chair - Australian Industrial Ecology Network
0900	Welcome to the Hunter Mayor Kay Fraser , Lake Macquarie City Council and Chair of the HJO Circular Economy Sub-Committee & Tim Askew , Hunter Joint Organisation
0915	Opening address Deputy Lord Mayor Declan Clausen , City of Newcastle
0930	KEYNOTE PRESENTATION: The case for a transition towards a Nordic bioeconomy Birgit Tegethoff , Business Finland In 2022 the Finnish Government launched the updated <i>Bioeconomy Strategy 2022 - 2035 - Sustainably towards higher value added</i> -aiming to double the value added of bioeconomy in an ecologically, socially and economically sustainable manner and to make Finland climate neutral by 2035. A cross governmental agency approach, close cooperation with the regions and RDI programs for the green transition of bioeconomy promoting the establishment of innovative pilot and demonstration facilities as well as industrial-scale plants in Finland are key components to deliver against the strategy.
1000	Questions and discussion
1030	Morning tea break
BIOMASS AIN'T BIOMASS	
1100	KEYNOTE PRESENTATION: The role of biomass in reaching net zero Dr Annette Cowie , Senior Principal Research Scientist - Climate, NSW Dept of Primary Industries Biomass can play a key role in reaching net zero, substituting for fossil energy sources and GHG-intensive building products, and providing bio-based products and chemicals. Bioenergy linked to carbon capture and storage (BECCS), and biochar, can provide carbon dioxide removal. The major constraint to the emerging bioeconomy is ensuring sustainable biomass supply.
1120	Beyond the 'Black Box': Understanding the value chain of sustainable fuels Michael Hughson , Aurecon There is a need to move beyond the 'black box' of the biomass conversion technology, and consider the entire value chain for sustainable fuels. Key considerations for proponents are 'who owns the value chain?' and 'who has the decision rights, or long term commitment, for an integrated solution?'
1140	Tips and tricks for optimising the inherent properties of biomass vs "fossil" Mark Glover , EcoWaste Sustainably sourced biomass is destined to play an increasing and crucial role in providing essential elemental carbon in the form of biogenic, drop-in, fossil replacement products...available on an industrial scale to manufacturers and agriculture etc But raw biomass suffers an inherent disadvantage in such a replacement market, that being its low bulk and energy density.
1200	Planning and Regulatory Approvals for the Bioeconomy - Navigating the system Dr Mark Jackson , Jackson Environment and Planning Development of new infrastructure for recovering organic matter from the urban waste stream, and its beneficial use for use in energy or value-added manufacturing is complex and time consuming in NSW. The presentation will address the range of key matters which need to be planned for early to minimise time and costs for planning and regulatory approvals.
1220	Questions and discussion

1245	Lunch
BIOMASS FOR BIOENERGY	
1345	Biomass in NSW - The bigger picture Dr Fabiano Ximenes , NSW Dept of Primary Industries This presentation will outline the current status of biomass generation and use in NSW, drawing upon current and previous projects. It will also outline challenges and opportunities for increased biomass use in NSW.
1400	Woody biomass crops for NSW David Bush , Australian Tree Seed Centre CSIRO We report on biomass trials comprising 17 species established on 12 sites throughout NSW in 2019/20. Analysis of 3-year measures and biomass harvest data allows prioritisation of best-bets for planting on marginal agricultural sites in different regions and initial productivity estimates. Results and next steps are discussed.
1415	Flexibility options in a 100% renewable grid for Australia Dr Mengyu Li , The University of Sydney We examine systemic effects of competing flexibility options - including biomass, electrical energy storage, pumped hydro energy storage and hydrogen (H ₂), and compare their grid-integrated cost-effectiveness in a future Australian 100% renewable grid. We find that under high H ₂ technology cost, biomass proves to be a cost-effective dispatchable power option.
1430	The Development of NSW BioSMART - An online biomass tool for NSW Robert Bridgart , CSIRO This presentation will outline the development of an online, freely available tool that will allow users to estimate biomass availability and potential uses for any given location in NSW.
1445	Questions and discussion
1515	Afternoon tea break
CARBON IN SOILS	
1545	Clearing the path to return organic carbon to soil Angus Johnston , BioCarbon Soil Australia has made a promising start down the path of returning organic carbon to soil but a step change in government thinking, policy and regulation is required before we can fully transition from the linear to the circular model. The regulation of recycled organic products without effective regulation of a) materials entering the economy, and b) source separation remains a key barrier realisation of the circular bioeconomy.
1605	Rethinking Soil C Storage: Opportunities and risks Dr Lukas Van Zwieten , NSW Dept of Primary Industries There is increasing pressure from the community, business and government to increase the storage of carbon in farming soils. But can this be realistically achieved, and do we have a sound understanding of how to do this? This presentation will review soil carbon and its various forms and fractions, and their role in soil processes and functions. It will also highlight some of the latest results and opportunities for recycled organics.
1625	Soil Amelioration - Making the Most of It: A microbial perspective Dr Abinandan Sudharsanam , Global Centre for Environmental Remediation, The University of Newcastle The synergy between soil amelioration, microbial strategies, and the bioeconomy offers a robust, sustainable solution for soil degradation and carbon loss in Australia and beyond. This presentation will highlight the pivotal role of microbiomes in soil amelioration, exemplifying how to optimally leverage microbial innovations for a sustainable future.
1645	Questions and discussion
1715	Close day 1
1830	Networking function

Wednesday 20th September 2023

0800 Registration, tea and coffee

BIOGENIC MARKETS: DRY/WOODY

- 0830 INTERNATIONAL KEYNOTE: The road to Net Zero is paved with sustainable molecules**
Jim Lane, Editor & Publisher, Biofuels Digest (USA)
This presentation will discuss where carbon exists around the world, how it can be captured, extracted, and used sustainably, how economics work, where technology gaps are, and where opportunities are.
- 0900 Community level manufacture and use of solid renewable carbon**
Mark Johnson, Cha Cha Char, Newcastle
This presentation will describe: The selected method of char manufacture, using the flame capped Kon Tiki kiln; The operational performance (production scale, yields); The effectiveness of carbonisation achieved; The different biomass feedstocks processed to date, and their sustainable supply, and application of the char products.
- 0920 Renewable Reductants in Ironmaking - Challenges and prospects**
Dr Joe Herbertson, Skye Point Innovation
Proving iron can be made using renewable reductants is critical to the sustainable future of the steel sector internationally. It will be conjectured that global steel industry dynamics could trigger a profound transformation to Australia becoming a major exporter of value added 'green iron', not simply iron ore resources.
- 0940 The Role of bioenergy in Australia's energy mix**
Henry Poole, Verdant Earth
Bioenergy is an often overlooked generation option in Australia. With a significant land mass and a large agricultural industry, Australia is well suited to fully utilise its natural resources to create renewable energy from waste and purpose grown biomass. We must recognise a place for bioenergy in Australia's energy landscape.
- 1000 Questions and discussion**
- 1030 Morning tea break**
- BIOGENIC MARKETS: WET/AD**
- 1100 Role of biomass in development of sustainable energy and sustainable fuels**
Jens Møller & Marc Revault, Ramboll
This presentation will detail the role biomass processing technologies and in particular AD could play in the decarbonisation megatrend using relevant international examples with a focus on how they can be integrated with other technologies for the conversion of sustainable biomass or organic waste into sustainable fuels.
- 1120 Gas emissions and ageing of biomass materials stored in an anaerobic environment**
Prof Kenneth Williams, University of Newcastle
Three biomass products were tested for their changes in gas emissions, self-heating, calorific value and compaction levels over an 6 month period. Approximately 15 litres of biomass were placed into 30-litre storage containers that were then sealed and equipped with a thermocouple and a gas-collection port.
- 1140 Carbon management for a water authority**
Lauren Randall, ANZBP Partnership Advisory Committee
In an increasingly resource constrained world, the capacity to return nutrients and beneficial microbes in biosolids to soils is a critical pillar of sustainability and the circular economy. This requires an innovative, risk-based and adaptive approach, to address challenges and embrace opportunities for improved environmental, social and economic outcomes for communities.
- 1200 Harvesting valuable resources from industrial wastewater**
Dr Caitlin Byrt, ANU College of Science &
Maja Arsic, CSIRO Agriculture & Food
Water and macronutrients are in high demand and prices for these resources are increasing. We are developing technology for harvesting nutrient resources from wastewater. The approach involves combining biomimetic concepts and molecular engineering to build selective membranes.
- 1220 Questions and discussion**

1245 Lunch

CIRCULAR ECONOMY PRECINCTS: THE BIOECONOMY'S CENTRAL ROLE

- 1345** The Hunter Joint Organisation is currently exploring the potential of circular economy precincts to drive economic evolution in the Hunter Region. We believe that by harnessing the inherent circularity of the bioeconomy, we can establish a robust platform for the circular economy precincts. This interactive workshop will present the project progress to date, share valuable insights gathered during the conference, and encourage session participants to share additional information and improvements for developing the circular economy precincts.

1515 Afternoon tea break

DRIVERS FOR CHANGE

- 1545 Solving for the 'last mile' through advanced recycling and tracking to net zero**
Brad Searle, Bingo Industries
This presentation will provide an insight into BINGO's journey with advanced recycling initiatives and offtakes to optimise benefits of diversion of waste from landfill, transition problematic biomass waste streams up the value chain and utilising biomass as an alternate fuel to reduce our reliance on coal and transition to net zero.
- 1605 Food Waste Potential for Bioenergy: Western Sydney snapshot**
Amanda Kane, NSW EPA &
Dr Melita Jazbec, Institute for Sustainable Futures, UTS
With mandatory food waste separation requirements from 2025, NSW will see a massive increase in supply. This presentation will outline the transition policy framework and program. Furthermore, the EPA supported a research project that explored the possibility of processing organic wastes at wastewater treatment plants for the RACE to 2030, and key findings will be presented.
- 1625 Questions and discussion**
- 1645 Closing remarks**
Colin Barker, Chair - Australian Industrial Ecology Network
- 1700 Conference close**



General information

HOW TO REGISTER

Registration can be completed through either the online or pdf form available at bioeconomy.au.

On receipt of your completed form, you will receive a confirmation email and tax invoice. Please note, registrations are not confirmed until payment is received in full.

AIEN Members: Please click "Register" and then below the list of ticket types, click on "Access Hidden Tickets". Enter your email address and click on "Apply" to see the member tickets.

AORA Members: Please click "Register" and then below the list of ticket types, click on "Access Hidden Tickets". Enter the code supplied by AORA and click on "Apply" to see the member tickets.

CONFERENCE REGISTRATIONS CANNOT BE SHARED. STRICTLY ONE DELEGATE PER REGISTRATION ONLY.

Payment

Registration will not be confirmed until payment is received in full. All fees are in Australian Dollars \$AUD and are inclusive of 10% Goods and Services Tax (GST)

Cancellations

Cancellation of your registration must be advised in writing to info@aien.com.au. Cancellations received on or before 4 August 2023 will receive a full refund less a \$165 administration fee, cancellations received after this date will not receive a refund, however, we will accept delegate name changes at any time leading up to the event (differences in registration fees may be applicable).

Dress Code

The dress standard for the event is business/smart casual including sessions and the networking function.

Registration inclusions

Full registration includes:

- Attendance at conference sessions (Tue 19 & Wed 20 Sep)
- Morning and/or afternoon tea and lunch as per the program
- 1 x Networking Function Ticket (Tue 19 Sep)
- Access to conference papers and presentations following the conference (subject to speakers approval)

Two-day registration includes:

- Attendance at conference sessions (Tue 19 & Wed 20 Sep)
- Morning and/or afternoon tea and lunch as per the program
- Access to conference papers and presentations following the conference (subject to speakers approval)

Day registration includes:

- Attendance at conference sessions on selected day
- Morning and/or afternoon tea and lunch as per the program
- Access to conference papers and presentations following the conference (subject to speakers approval)

Accommodation

Rydges Newcastle is offering ABC23 attendees a 15% discount on their rates to book and confirm instantly online. Please visit <https://www.rydges.com/private-page/australian-bioeconomy-conference-2023/> to view the room options available.

Parking

Valet parking is available to in-house guests at the Rydges Newcastle at \$35 per car per day and is subject to availability.

Non-secure public metered parking is available within a short walking distance of the hotel.

In addition, there are several parking stations a short walk from the Rydges Newcastle. Further details are available at: <https://bioeconomy.com.au/about-2/faqs/>.

Disclaimer

Every effort has been made to present all the information contained in this brochure as accurately as possible. The organisers reserve the right to change, without notice, any or all of these details.

Privacy

In registering for this event relevant details may be incorporated into a delegate list for the benefit of all delegates (name, organisation and title) and may be made available to parties directly related to the event including AIEN and sponsors (subject to conditions). If you do not wish to be included in the delegate list please email info@aien.com.au.

Photography/recording

By registering for the Australian Bioeconomy Conference you consent and grant permission to AIEN, its agents and others working under its authority, to take and to have full and free use of video/photographs containing your image/likeness. These images and recordings may be used for promotional, news, online/multimedia, research and/or educational purposes by and for AIEN. Copies of the event photographs will be made available to the attendees after the event.

Contact

If you have any questions about the event, registration or the AIEN please contact:

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