



# LEADER and the Bioeconomy – A focus on biomass

Seán Finan – CEO Irish Bioenergy Association



# About the Irish Bioenergy Association (IrBEA)

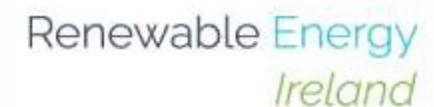


- ESTABLISHED IN 1999
- REPRESENTATIVE VOICE FOR THE IRISH BIOENERGY INDUSTRY ON THE ISLAND OF IRELAND, WORKING ON BEHALF OF:
  - THE BIOMASS, BIOGAS/BIOMETHANE, BIOFUELS, BIOCHAR, WOODFUELS & ENERGY CROP SECTORS.
    - POLICY, LOBBYING & ADVOCACY, KNOWLEDGE TRANSFER.
  - BROAD AND DIVERSE MEMBERSHIP INCLUDING: FARMERS, FORESTERS, SMEs, TECHNOLOGY PROVIDERS, CONSULTANTS, SEMI STATE ORG<sub>s</sub> FUEL SUPPLIERS, ACADEMIC BODIES, FINANCIAL INSTITUTIONS ETC.
  - UP TO 250 INDIVIDUAL, SME, CORPORATE AND HEADLINE MEMBERS, CONTACT US IF YOU WOULD LIKE TO DISCUSS MEMBERSHIP
    - CURRENT PROJECTS: WFQA, CASCADE Interreg NWE
    - FIND OUT MORE AT [WWW.IRBEA.ORG](http://WWW.IRBEA.ORG)



“Working Towards a Sustainable Energy Future with Bioenergy”

External Affiliations:



# IrBEA Bioenergy Webinar Series

available on IrBEA YouTube channel



Webinar 1: Using the right fuel, the right way in the right appliance	Webinar 26: Transport in Ireland - A Pathway to Halving Emissions
Webinar 2: District Heating - Decarbonising our heat demands	Webinar 27: Balcas Energy - Delivering decarbonised heat, hot water and process steam through wood pellet biomass
Webinar 3: Biodiesel and bioethanol reducing transport emissions	Webinar 28: Celignis Analytical - The Role of Analytics in maximising bioenergy feedstock potential
Webinar 4: Sustainable Bioenergy – Achieving Carbon neutrality and compliance with RED II	Webinar 29: Energy Supply Contracts delivering decarbonised biomass heating without the capex
Webinar 5: Producing quality wood fuels for the Irish market	Webinar 30: MyGug Micro Scale AD – A food waste solution providing biogas to small businesses & households
Webinar 6: Biomass options for Domestic Heating	Webinar 31: Ireland's Forest Resource and Potential to 2040 and WFQA Animation launch
Webinar 7: The Role of Edenderry Power Limited in the Irish Biomass Supply Chain	Webinar 32: The Agrobioheat Project and the role of agro biomass in renewable heat
Webinar 8: Policy and Action needed to mobilise a Biogas Industry	Webinar 33: Bioenergy - The Swedish experience to the largest energy source
Webinar 9: Potential for small scale AD on Irish farms	Webinar 34: Bioenergy - Launching IrBEA's Factsheet Series
Webinar 10: Digestate from Biogas as a Biofertiliser	Webinar 35: Highlights from the National Bioenergy Conference – conversations and next steps
Webinar 11: Biogas - An update from a European perspective	Webinar 36: The new Irish Solid Fuel Regulations explained
Webinar 12: The role of Bioenergy meeting the global decarbonisation challenge	Webinar 37: Sustainable Aviation Fuel – The potential and opportunity for bioenergy
Webinar 13: The value of Ireland's private forests - timber, energy and the bioeconomy	Webinar 38: The Danish Biogas industry as a model for Ireland
Webinar 14 Addressing Air Quality concerns using dry wood fuel	Webinar 39: NNFCC's 2023 Irish anaerobic digestion report explores current deployment & growth in Ireland
Webinar 15: Showcasing Europe's most advanced Irish owned biorefinery	Webinar 40: An update on the Midlands Bioenergy Development Project
Webinar 16: Biochar Addressing the Environmental and Climate Challenges	Webinar 41: Exploring the sustainable management of agricultural green waste
Webinar 17: Running a successful bioenergy business in rural Ireland - The Cotter Bros story	Webinar 42: The EBA statistical report 2023: Highlighting the rapid growth in European biomethane production
Webinar 18: Green Generation - An organisation harnessing the circular economy to decarbonise Ireland.	Webinar 43: Explaining Specified Biomass Harvesting: Realising the Biomass Opportunity
Webinar 19: Sustainable Bioenergy - Update from Brussels on a fast-changing legislative framework	Webinar 44: Launching the Interreg Cascade project and updates from the Irish Biochar sector
Webinar 20: Biomass Trade Centres - Mobilising Irelands Bioenergy Res to meet the Climate Change Challenge	Webinar 45: The Biomethane Strategy – Industry insights, Feedback and Analysis
Webinar 21: Incorporating Bioenergy in District Heating Networks	Webinar 46: Developing the bioenergy sector in the midlands region
Webinar 22: One Stop Shop - A platform to assist community energy projects	Webinar 47: Ireland's Solid Biomass Capacity Statement – Demonstrating the potential for biomass heating
Webinar 23: 40by30 - Bioenergy's contribution to a 40% Renewable Heat Target by 2030	Webinar 48: Farm scale biogas – Showcasing UK technology providers and their innovative solutions
Webinar 24: Support Scheme for Renewable Heat (SSRH)	Webinar 49:
Webinar 25: Outlining the Proposed Renewable Heat Obligation Scheme	Webinar 50:



# Different Forms of Bioenergy and Types of Biomass used



Forestry residues and thinning's

To produce wood fuel  
- Chip, Briquette, Pellet and Firewood



Biogas / Biomethane – Soft biomass used



Liquid Biofuels – From Fats, oils and sugars used



Biochar - From all types of biomass

# The Role of Bioenergy in a Zero Carbon Future

“bioenergy as an important way to mitigate climate change and a vital component for achieving net-zero emissions”

“models project a substantial increase in bioenergy use to achieve climate goals”

“Bioenergy, especially when combined with carbon capture (BECCS), is seen as crucial for sectors with limited alternatives to fossil fuels, such as aviation, heavy industry, and the production of chemicals”

“Bioenergy can play a role in carbon removal”

“Bioenergy represents the largest current contributor to renewable energy”

“climate-smart forestry,” can provide benefits beyond climate change mitigation



United Nations – IPCC  
Intergovernmental Panel on  
Climate Change

## IrBEA's view on bioenergy

- Significant role in meeting GHG targets for heat, transport and electricity
- Bioenergy is a “sleeping giant” for heat and transport decarbonisation in Ireland – massive untapped potential
- Benefits
  - Indigenous generation
  - energy security
  - displacing fossil fuels
  - jobs and rural development

*Bioenergy is strictly governed by sustainability criteria under the RED 3 Directive*

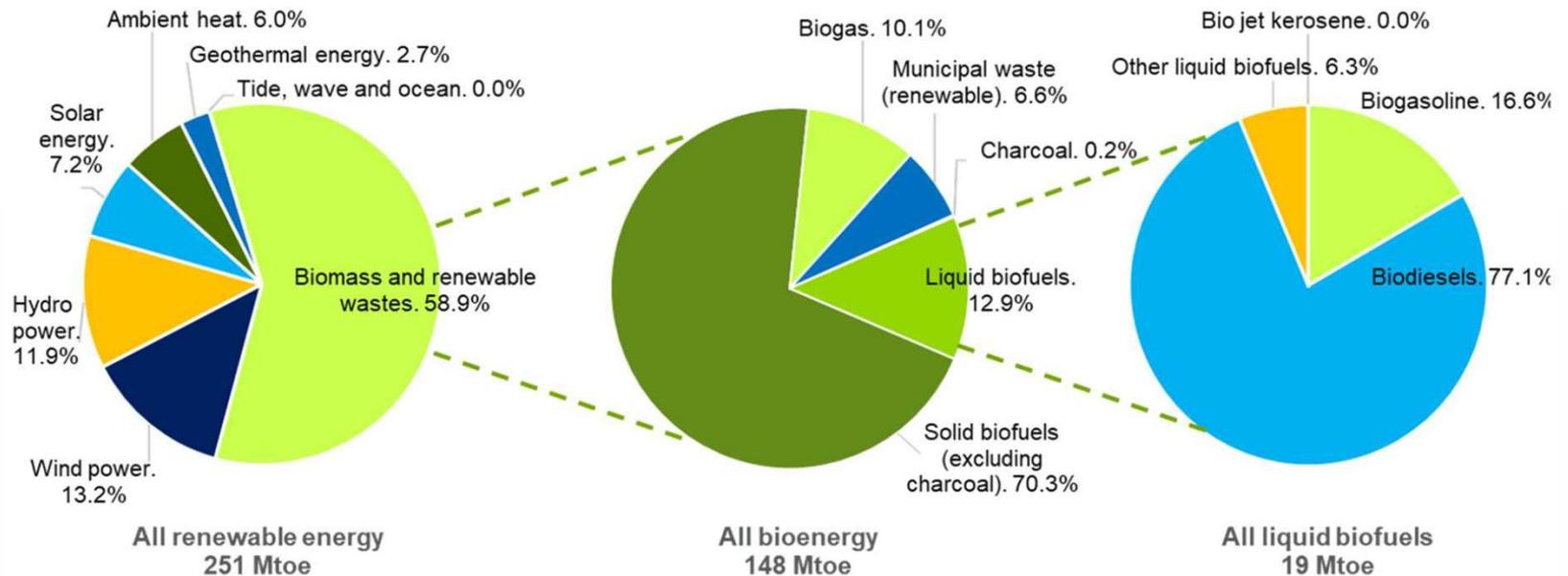


# The Crucial Role of Bioenergy

## The World's largest source of Renewable Energy

Gross EU consumption of renewable energy per type (2021, % and Mtoe)

According to Eurostat and the EU Commission, bioenergy (biomass and renewable waste) is the largest contributor of renewable energy in the EU at 58.9%. 70.3% of this bioenergy is solid biofuels (biomass/wood fuels).



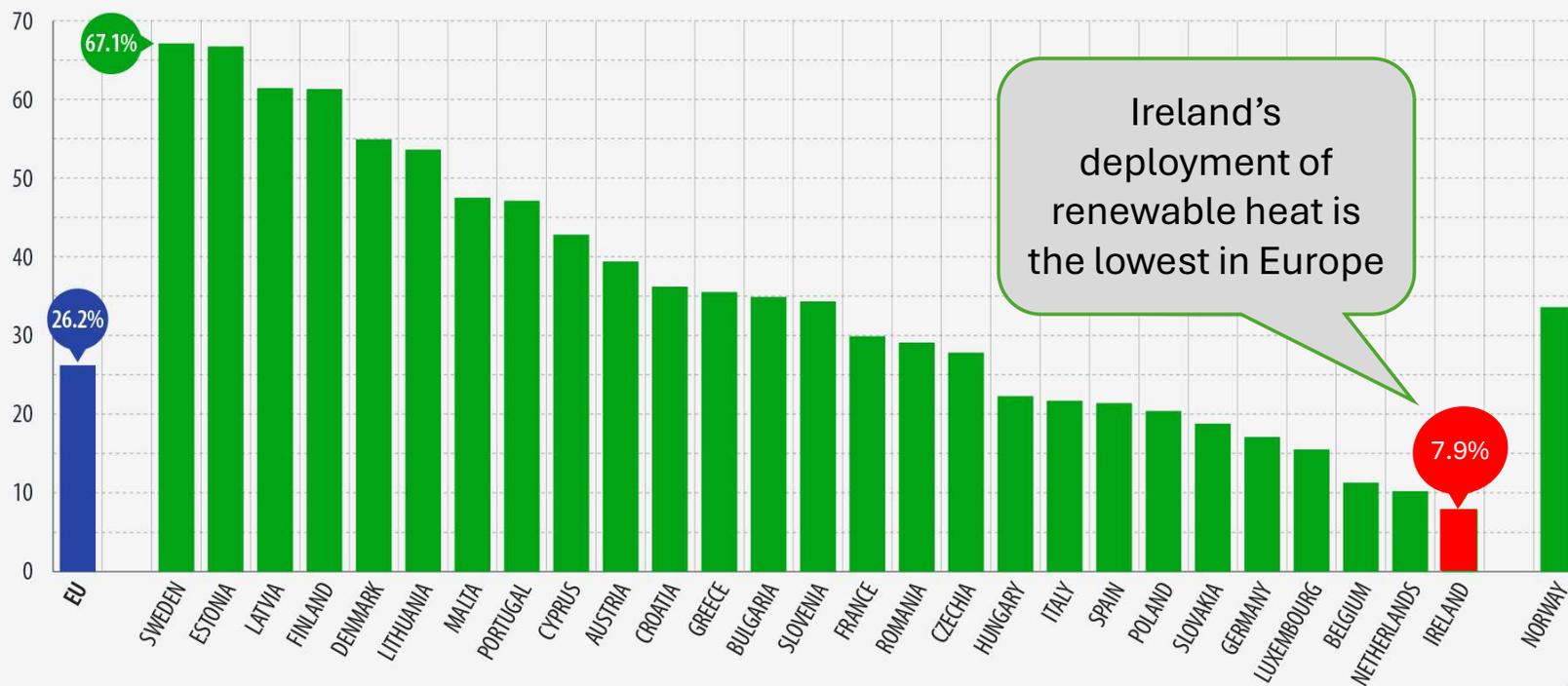
Source: European Commission - Union Bioenergy Sustainability Report. Study to support reporting under Article 35 of Regulation (EU) 2018/1999 Final report (December 2023)

<https://op.europa.eu/en/publication-detail/-/publication/96d671c9-c719-11ee-95d9-01aa75ed71a1/language-en>

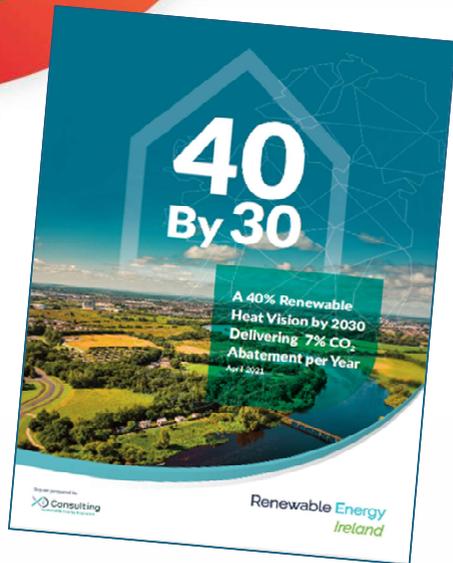
# Renewable Heat Deployment across Europe

## Renewable energy sources in heating and cooling, 2023

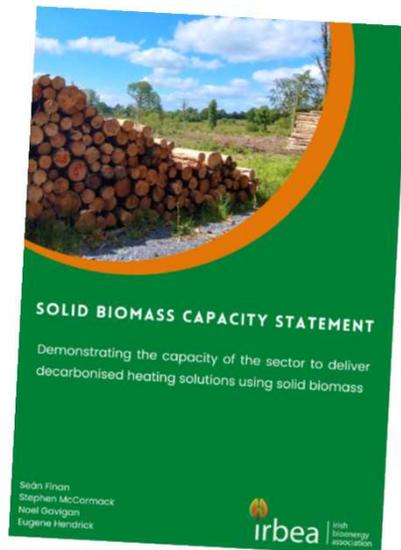
(% of energy from renewable sources)



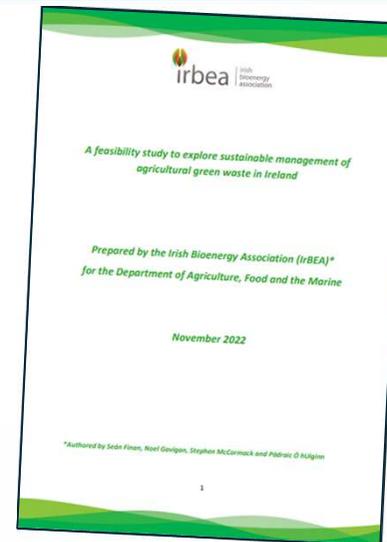
# Sector Reports & Publications



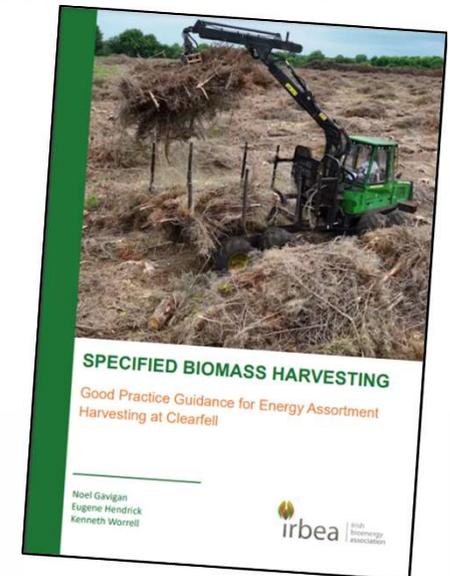
[40 By 30 Renewable-Heat-Plan.pdf](#)



<https://irbea.org/sbc-statement/>



[Sustainable management of agricultural green waste](#)



[Specified-Biomass-Harvesting.pdf](#)

[Renewables-In-Transport-Report.pdf](#)



# Heating Sectors – Biomass solutions

Domestic



Commercial

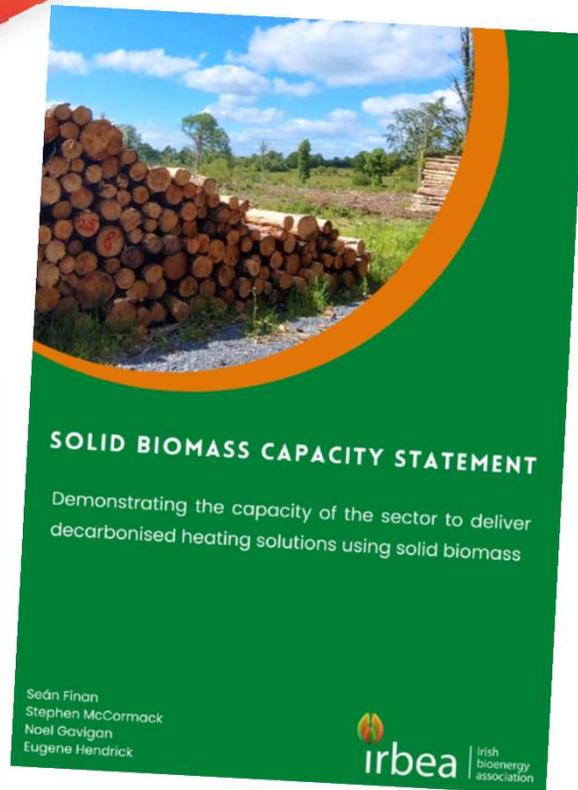


Industrial

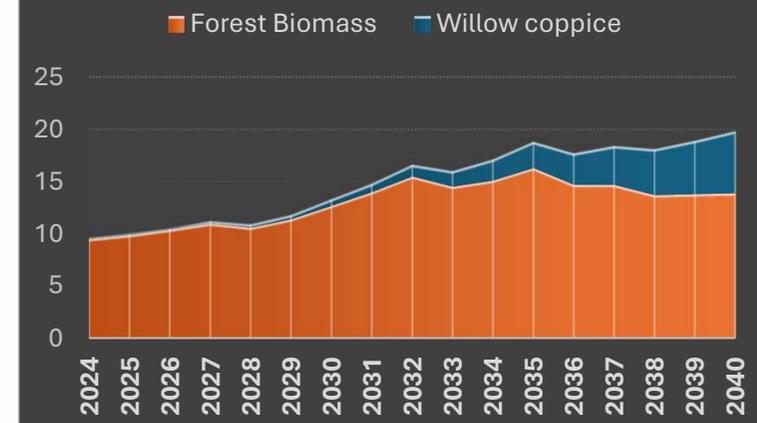


# IrBEA's solid biomass capacity statement

- Addressing perceptions around solid biomass supply and resource availability
- This document details the capacity of the sector including:
  - Solid biomass resource capacity
  - Supply chain capacity
  - Heating technology capacity
  - System design and install capacity
  - Training, knowledge and skills capacity
  - Financial models and supports
  - Project appraisal and contractual arrangement
  - Case Studies



## PJ of energy available from willow coppice and Irish forests from pulp, SBH and downgraded wood



Data sourced from Coford reports:

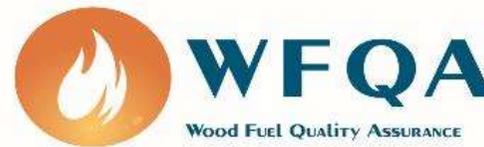
- *Forest-based biomass and modern bioenergy*
- *A sensitivity analysis of wood fibre potentially available for wood energy 2021-2040.*

<https://irbea.org/sbc-statement/>

# Wood Fuel Quality Assurance Scheme



- Started in 2009
- Managed and Administered by IrBEA
- Over 112 certified suppliers of:
  - Woodchip (29)
  - Wood pellets (3)
  - Firewood (85)
  - Wood briquettes (6)
- All fuels certified for compliance with ISO 17225
- SSRH and Solid Fuel Regulation compliance
- IrBEA now a National Supporting body for SURE Sustainability certification
- Acknowledge support from DAFM to assist in the promotion of the WFQA and wood fuel sector
- [www.wfqa.org](http://www.wfqa.org)
- [WFQA amination video](#)
  - <https://www.youtube.com/watch?v=kZhAwmQ2Wg0>



- Woodchip**
- Firewood**
- Wood Pellets**
- Briquettes**



# Industrial & commercial biomass heating

- Current status
  - Biomass systems operational in:
    - Dairy processing
    - Pharmaceutical
    - Hotel & Leisure
    - Schools
    - Healthcare
    - Intensive agriculture
  - Established supply chain
    - Fuel supply network developed (WFQA)
    - Installation & maintenance service providers
    - Support from the SEAI – SSRH



# Industrial & commercial biomass heating



- Opportunities
  - Industrial Heat Decarbonisation Roadmap
    - Increasing enquiries from large energy users regarding biomass deployment
    - Cheapest source of renewable heat available
    - Suitable source of high temperature heat
  - Department of Education and Youth - Biomass Programme
  - District Heating – Biomass opportunity as a fuelling solution
  - Support Scheme for Renewable Heat (SSRH)
- To be addressed
  - Perceptions of biomass use by commercial/industrial (SEAI presentation to cover)
    - About fuel supply – solid biomass capacity statement
    - About technology reliability and supply chain readiness – large Irish and EU network of suppliers
    - About air quality impact – boiler technology has engineered out this challenge
  - Extension of the SSRH to the ETS sector, and lifting the scheme cap from 1MW

# Biomass for domestic heating use

- Rapid deployment possible
- Low capital cost for the home-owner
- Irish supply of certified quality fuels (WFQA)



# Biomass for domestic heating

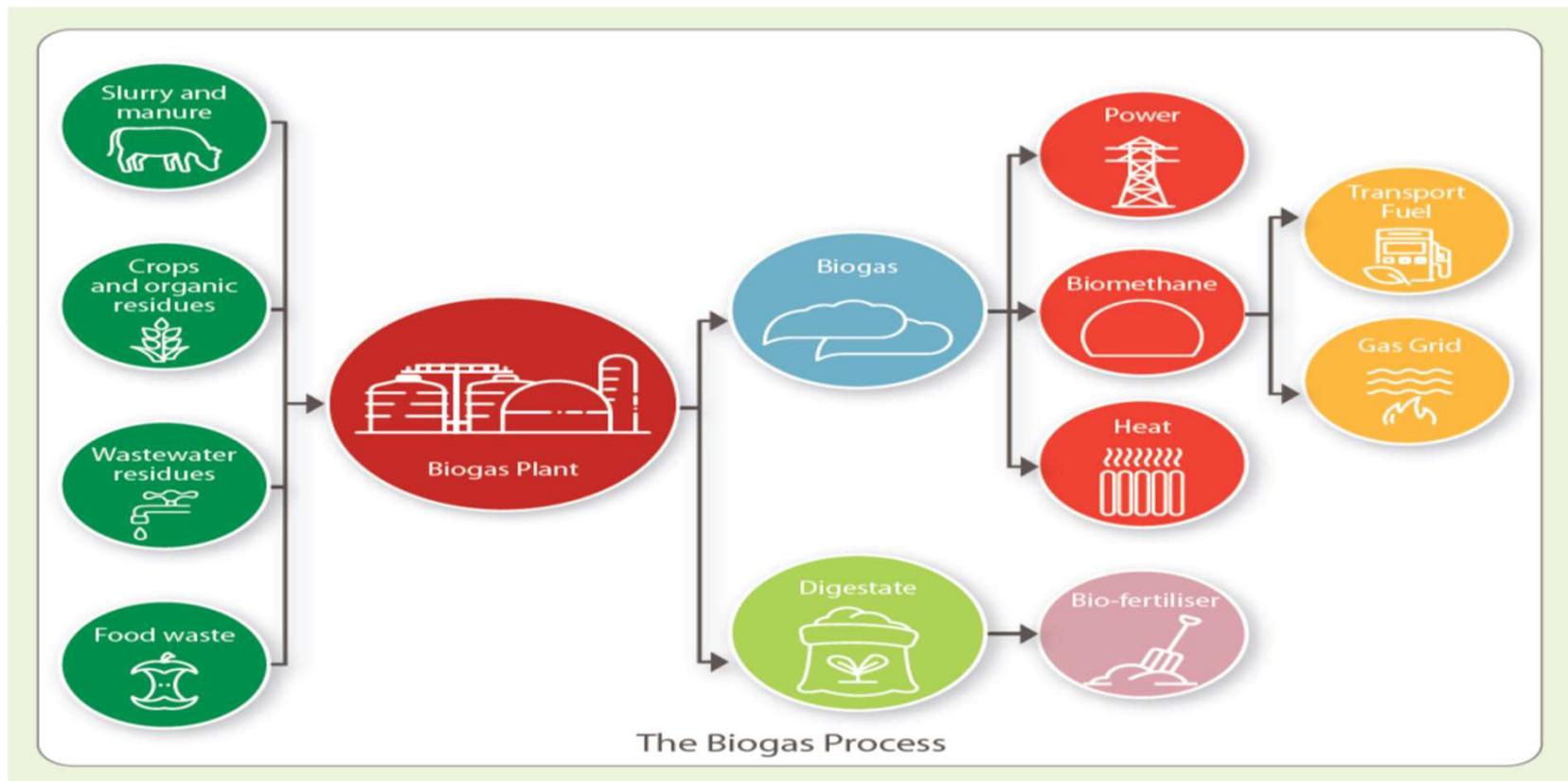
- Current Status
  - Widely deployed and understood
  - Large network of fuel and appliance suppliers
  - Recognised low carbon option
- Opportunities
  - Excellent means of rapid decarbonisation
  - Local, indigenous supply chain
- Challenges
  - Air quality addressed with
    - Fuel quality under Solid Fuel Regulations
    - Eco Design appliances
    - Regular maintenance
  - Wood fuel suppliers meeting the requirements of the Solid Fuel Regulations (20%)
  - Gaps in enforcement of the Solid Fuel Regulations by Local Authorities

# Solid Biomass Heating - Summary



- Key messages
  - Biomass resources in Ireland readily available now, and in the future
  - Developed supply chain and industry
  - Technology advancements (air quality & reliability)
  - RED confirms renewable status and sustainability criteria
  - Established contract models (ESCO's)
  - IrBEA register of biomass systems designers and installers
  - Established solid biomass practitioners training course
  - Exemplar installations nationwide
  - Reduced dependence of fossil fuels enhancing energy security
  - Indigenous means to decarbonise

# The Biogas/Biomethane Process



## Current status of Biomethane & Biogas



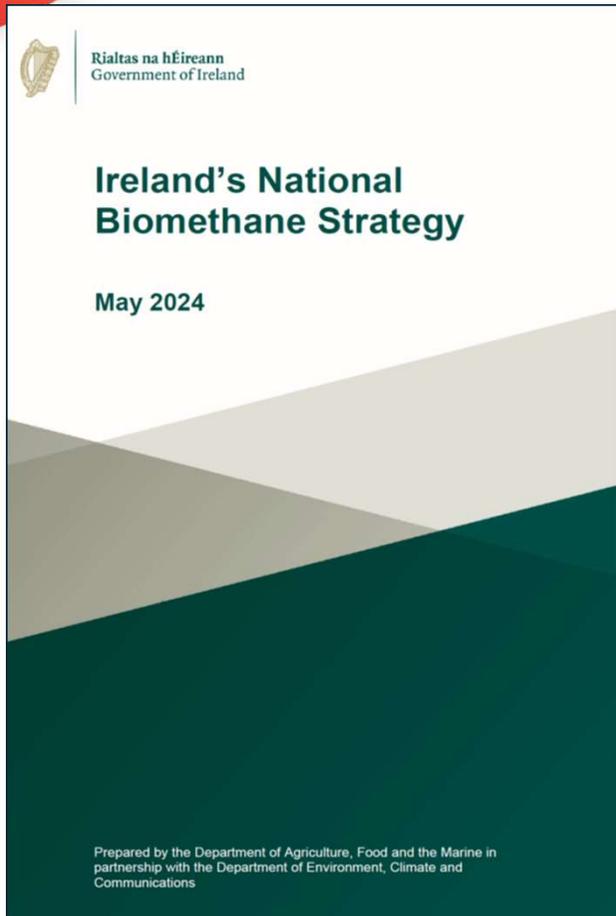
- 15/20 mainstream biogas/ biomethane plants using Anaerobic Digestion (AD) technology operating in Ireland
- Waste based plants and producing electricity through Combined Heat & Power (CHP)
- Receiving a feed in tariff for the renewable electricity produced
- Up to 20 more sites using AD technology at waste water sites and landfill gas etc
- 1 biomethane injection site (Cush Co. Kildare)
- GNI progressing a central grid injection point at Mitchelstown
- 2 plants producing biomethane
- 20,000 plants across Europe
- France, Denmark, Germany, Italy are the big markets and leaders
- Most counties have supports and incentives in the form of feed in tariffs or similar
- Ireland has published its Biomethane strategy

# Large Scale Biogas/Biomethane

- Current Status of industry
  - Small network of existing operational biogas plants
  - REFIT III supported for CHP
  - Significant biomethane potential
  - Large number of plants in planning
- Challenges
  - Planning issues
    - Community / societal acceptance
  - Biomethane offtake agreements
  - Support system (RHO and capital)
  - Regulatory items



# Large Scale Biomethane & Biogas



- Opportunities
  - Ireland's National Biomethane Strategy
    - Target of 5.7 TWh by 2030
    - €40m Capital support budget in 2025
    - Implementation of the Renewable Heat Obligation (RHO)
  - Significant need to address Ireland's GHG targets
- To be addressed
  - Digestate Management
    - RENURE to be transposed
    - Recognised digestate standard
  - EPA consistency in implementation of standards & licencing
  - Planning/public perception
  - Implementation of an ongoing operational support

# Large Scale Biomethane & Biogas



- Key Asks
  - Immediate implementation of the Renewable Heat Obligation (RHO) is critical
  - Announcement of capital support programme details for 2026
  - Raise awareness and understanding at regulatory and local authority levels
  - Ongoing support measures
    - Including state entities procuring biomethane for heat
  - Transpose RENURE (Recovered Nitrogen from manure)
  - Address issues around digestate use and standards

# Farm Scale Biogas – IrBEA EIP Project

- Small Biogas Demonstration Project
- DAFM Funded European Innovation Partnership (EIP) Project. 2019 – 2025
- Aim: Demonstrate Farm Scale Biogas to complement existing farm enterprise.
- Feedstock available on the farm i.e. slurry, silage, FYM, crop. Animal Byproducts – Type 9 plants
- Satisfying on farm or energy demand in vicinity.
- Recycle nutrients, reduce emissions, runoff and odour.
- Lead Partner: Irish Bioenergy Association.
- Project Partners: Teagasc.
- Successful demonstration plant developed in Galway with details outlined on the next slide

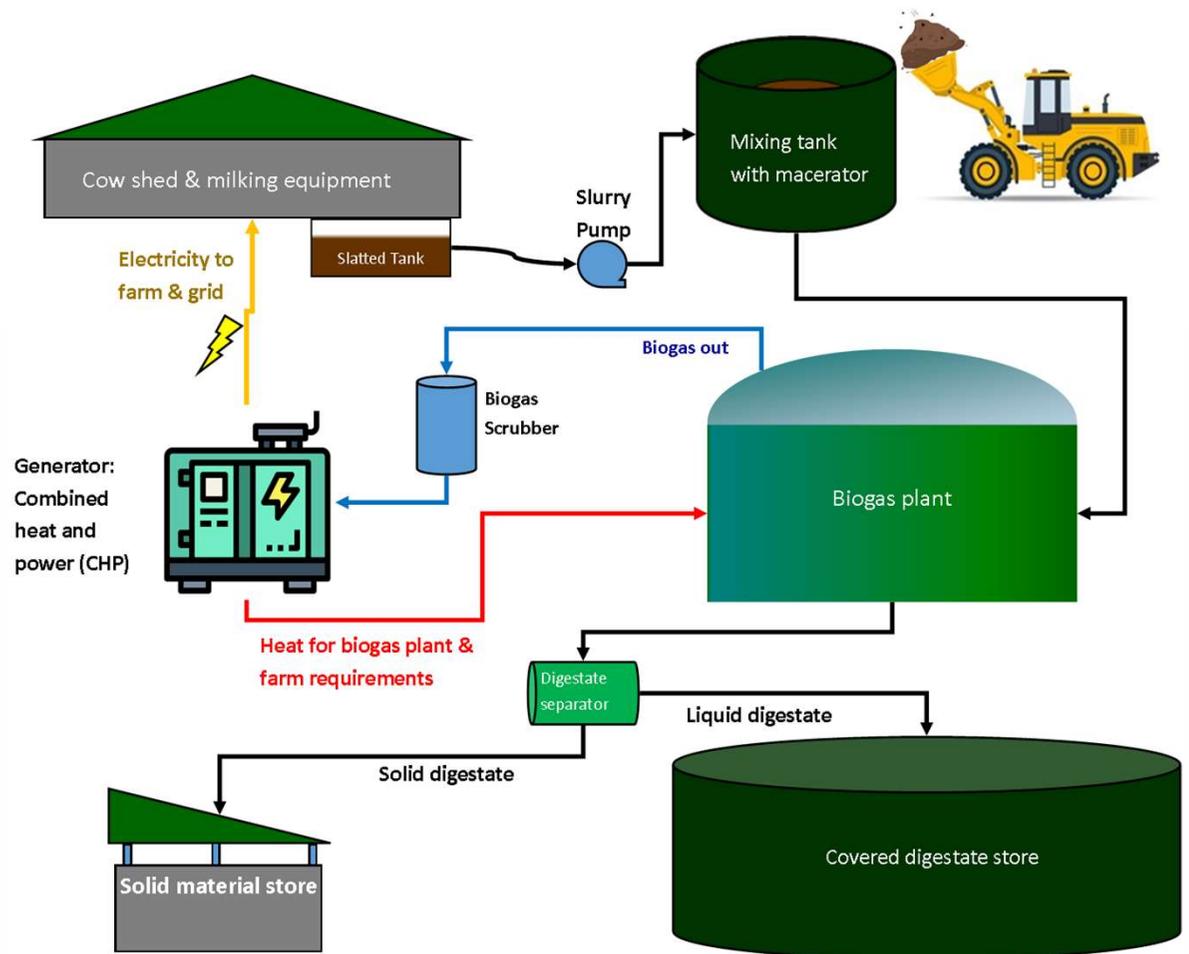


Gildea Farm biogas plant

# Demonstration Farm – Gildea Farm, Galway

## • Farm Details

- 230 cow organic dairy herd
- Robotic milking 365 days / year
- 11 tonnes slurry & manure / day
- 450m<sup>3</sup> digester
- Max 49 kW electric & 55 kW thermal output
- Cap ex €452,000 less 50% grant
- Replacing up to €30,000/yr of energy costs
- Better recycling of nutrients



# Farm Scale Biogas



- Opportunity
  - Farm scale biogas offers a real opportunity
    - Tool for decarbonisation of Irish agriculture without affecting food production
    - Reducing costs
    - Increasing revenue
    - Recycling nutrients
    - Better farm nutrient management
  - Commercial opportunities
    - Construction & servicing
- Key asks
  - Introduce a capital grant programme
    - Minimum 50% of cap ex required
    - IrBEA lobbying for a fund of €3m to start for 12-15 projects
  - Soft supports in terms of:
    - Information awareness and understanding at policy and local authority levels
    - Ease electrical connection process for MEC under 50 kW

For further details [www.irbea.org/farmbiogas](http://www.irbea.org/farmbiogas)

# Liquid Biofuels

- Current Status
  - 2 producers of FAME (Biodiesel) in IrBEA membership (College Group & Green Biofuels Ireland)
  - Incorporated into road fuel under the Renewable Transport Fuel Obligation Scheme
- Challenges
  - Imported non-EU liquid fuels
  - Imports of untraceable and unsustainable fuel from fraud prone countries into Ireland and into the EU
  - Displacement of legitimate, RED Certified, Irish and EU produced fuels



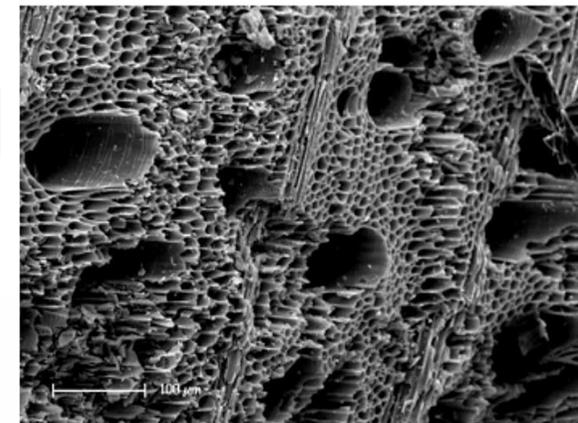
# Liquid Biofuels



- Opportunities
  - Significant market potential to displace fossil fuels with indigenous liquid fuels
  - Potential to grow supply to meet the growing market with indigenously produced fuels
- Key Asks
  - Proper enforcement of RED sustainability requirements for all supply chains – Irish and EU suppliers currently meet the requirements
  - Increase blending rates (B20 and B10) to include requirement for 7% indigenous FAME
  - Offer Mineral Oil Tax relief for indigenous liquid biofuel production
  - Legislate in Ireland for the removal of certificates for POME based liquid fuels
  - Allow use of CAT 3 material for biodiesel production in Ireland

# What is biochar and how is it made?

- Black, solid, high carbon content material
- Highly porous
- Recalcitrant(stable)
- Made from a variety of biomass streams
- Formed during pyrolysis
- Variable in shape and size Porous- Large surface area
- Cation exchange capacity (CEC)
- Can sequester carbon



**Biomass + Heat = liquid (biooil) + solid (biochar) + gas (syngas)**

**IrBEA is the representative body for the fledgling Irish biochar sector**

# What is biochar made from?

- **Grassy, fibrous biomass**
  - Rushes
  - Bracken
  - Leaf litter
  - Molinia
  - Agri residues
- **Food waste biomass**
  - Food bin waste
  - Food processing waste
- **Woody biomass**
  - Forestry residues
  - Rhododendron
  - Gorse/furze
  - Arboreal waste
- **Sludges & Manures**
  - Sewage sludges
  - Animal Manures

Biochar can be made with low, medium, high tech equipment depending on the quality and volume you would like to produce

# Biochar Use

- Slurry additive
- Animal feed additive
- Soil amendment
- Biofertiliser- EU Organic Fertiliser Regulations
- Animal bedding
- Enhancing biogas process in AD
- Seed coating
- In forestry as a carrier of nutrient
- In construction (concrete and asphalt)
- Water filtration and remediation
- Pharmaceuticals and cosmetics
- Many other uses

For Further information and details



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