

# IrBEA Bioenergy Webinar Series 2020

## WEBINAR 3

Biodiesel and Bioethanol reducing transport emissions

Date: Wednesday 8th July 9.30 - 10.30am



# About the Irish Bioenergy Association (IrBEA)

- Representative organisation for the Bioenergy Sector on Island of Ireland.
- Sectors of Biomass, Biogas, Biofuels, Energy Crops and Wood Fuels.
- Broad and Growing Membership across all the sectors.
- Work on behalf of members through Representation, Lobbying, Advocacy, Networking, Technical support, Advice, Knowledge and Information sharing.
- Engaged in a number of Research, Development and Demonstration Projects.
- EIP Small Biogas Demo Project, Interreg Three C Project, Biomass Installers and Designers Registers and the Wood Fuel Quality Assurance Scheme (WFQA)
- To become a member and find out more check out [www.irbea.org](http://www.irbea.org)



# Webinar No 3 – Agenda

- Opening by Chair – Seán Finan ([seanfinan@irbea.org](mailto:seanfinan@irbea.org)) - IrBEA CEO.
- Presentation by James Cogan - Policy advisor at Ethanol Europe - Chair of the IrBEA Transport Group
- Presentation by Tony Hennebry – Director of Green Biofuels Ireland
- Panel Discussion and Q & A with presenters and Noel Gavigan IrBEA Technical Executive.
- Webinar Attendees can submit Questions through the Q & A tab at the bottom of the screen and we will endeavour to answer as many of your questions as possible.

# Ireland Transport Energy and Climate Report

- IrBEA is commissioning a report with support from Industry partners and sponsors
- This report will focus on the mix of technologies, policy measures and supports required to reduce emissions from the transport sector to 2030 with a view to 2040 and 2050.
- If you would like to discuss how you can contribute please do get in touch with me at [seanfinan@irbea.org](mailto:seanfinan@irbea.org)

# Webinar No 4 – Save the date

- Date: Wednesday 22<sup>nd</sup> July 2020
- Time: 9:30am – 10:30am
- Topic and Speakers: To be confirmed in the coming days
- Full details will be published through our social media and communication channels.
- We thanks you for joining us this morning and we hope you can join us for our next webinar.

# IrBEA webinar series

N. 3 – Biodiesel and bioethanol reducing transport emissions

8 July 2020

James Cogan

Policy advisor at Ethanol Europe

Chair of the IrBEA Transport Subgroup

- Ethanol Europe is known commercially as Pannonia Bio
- Irish owned family business, launched ten years ago
- Makes >500 million litres bioethanol;  
>350 tonnes thousand animal feeds
  - 10% of Europe's ethanol
- >250 staff supporting >2000 jobs
- Inspiring hub of new green products, processes, investments and growth
- Ethanol made by fermenting tillage crops to alcohol

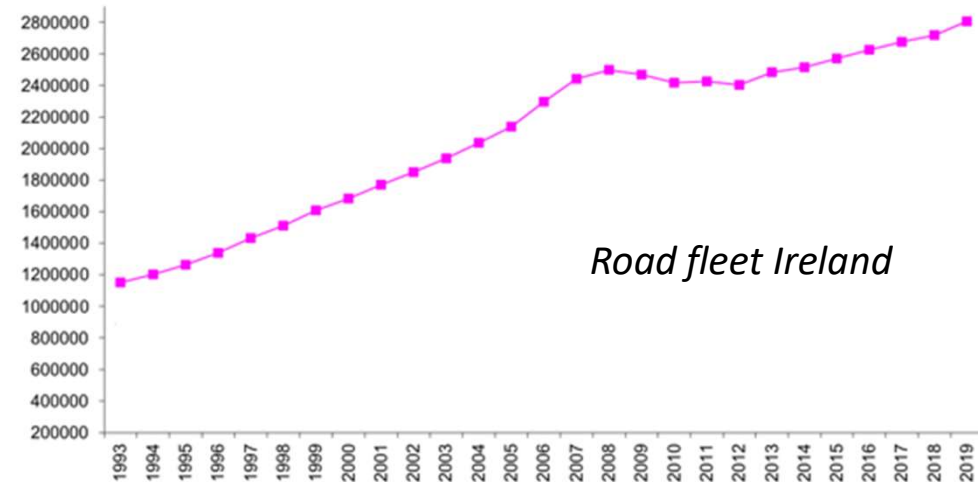


- Transport accounts for 40% of energy related carbon emissions
- Rising 1%-3% per year
- No reversal of trend in sight
- EV uptake still way slower than imagined
- All climate progress made to date is biofuels
- New government in humongous quandary

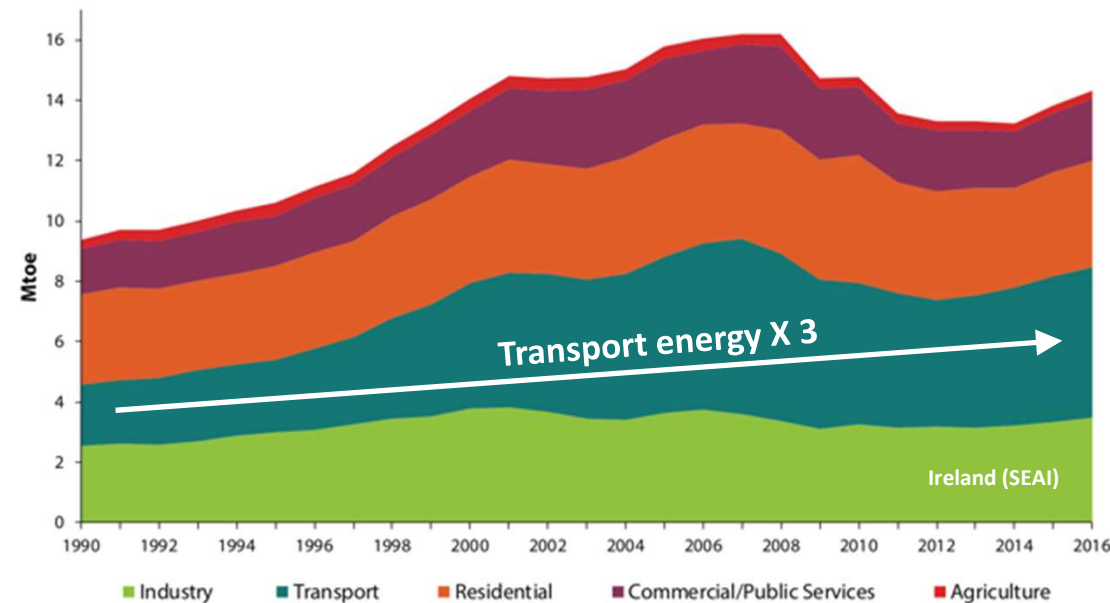




- Ireland transport energy is all oil
- Fleet growth last year was 88,117 vehicles
  - Reaching 2.8 million
  - EV fleet growth was 4,295 vehicles
- Diesel/petrol fleet on track to grow 500,000 by 2030, to 3.3 million



- In theory Ireland was “aiming” for 30% cuts by 2030 compared to 2005 (=2020)
- EU law now demands 40% cuts by 2030 compared to 1990 (80% compared to 2020 if applied to transport)
- Green Deal aims for 50-55% cuts compared to 1990 (88% in transport compared to today)
- Over 7% cuts per year
- Which is what’s in the PfG
- Major measures needed



Are current policy measures up to the job?

## EU: Renewable Energy Directive

- 10% renewables in transport by 2020 and 14% by 2030
- Real goals a third of that after options, multiple-counting and laxness factored in
- Very small potatoes

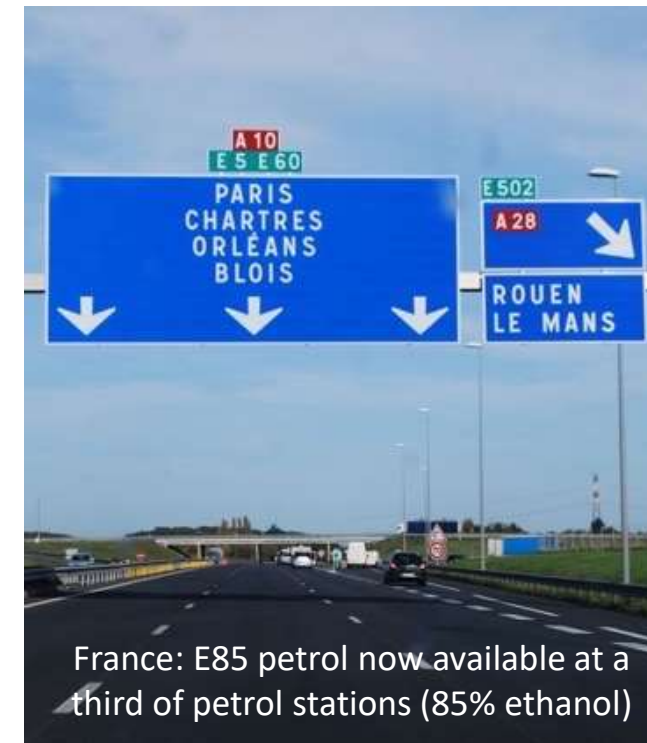
## Ireland: Biofuels Obligation Scheme + SEAI grant for EVs

- 5% ethanol, 7% biodiesel and 15,500 EV/PHEVs
- Ireland at 3.3% renewables (all ethanol & biodiesel)
- Ten years progress undone by one year's growth
- Laggard yes.. but similar story in most of Europe



Ireland: lacking target, analysis or plan for emissions cuts in transport by 2030 (same as Germany and many others btw)

- Proposed million EVs goal for 2030 dropped; Still have proposed ban on diesel/petrol car sales
  - Feasible, effective, cost, who pays? So many unknowns..
- 7% annual cuts target could be so ambitious as to not be taken seriously in many quarters
- But if taken seriously then it's good for biofuels
- UN IPCC points to 15% biofuels role in transport
- Biofuels can be doubled soon in Ireland achieving transport emissions cuts of 3-4%
- Modest seeming but low cost, quick and effective



## Introduce E10 petrol

- Ethanol already blended 5% in all petrol in Ireland's one million petrol cars - called E5
- USA, France, Germany, Netherlands, Finland, Hungary, Belgium... use 10% ethanol - E10. France also on E85, Brazil E27+
  - E5 to E10 is Ericsson GA628 to iPhone 1
- Ireland could switch to E10 overnight
- No cost to consumer of exchequer; readily available
- Ethanol carbon emissions 72% lower than oil
- E10 gives Ireland same carbon emissions reductions as
  - 100,000 EV/PHEVs
  - 50,000 less cars on the road
  - for zero euros



- How good is E10?
  - Every 1% increase in blend by volume cuts emissions by 0.6%
  - Greatly reduces tailpipe particulates and NOx emissions
  - Allows for fewer toxic chemical additives (called aromatics)
  - Boosts demand for EU tillage crops
  - Reduces imports of GMO soy meal because co-product of ethanol is protein feed meal
  - Ethanol makes great sanitiser
- Ethanol truly a wonder product





- Any downsides to ethanol?
  - None at all.. peace of mind on all fronts
  - Demand grown x6 worldwide since 2000
  - Any concerns people had 10-20 years ago shown to be unfounded
  - E10 is better fuel - working well in petrol vehicles of all makes, models, ages
  - All EU ethanol came into production in period of improving yields, reducing farmland area, increasing woodland area, reducing crop prices and improving food security
  - GHG savings of ethanol get better each year



## Messages for government

- Cap transport oil use now, at 2019 levels
  - in hole.. stop digging
- Regulatory quality deficit in Brussels means member states need to learn to legislate bioenergy by themselves
  - Netherlands is one to watch
- Take ownership of biofuels sustainability
  - Hint: biofuels from outside Europe often won't pass muster and Ireland uses a fair amount of them
- Ask Brussels to vote in Energy Taxation Directive
  - Excise duty on ethanol is twice that of diesel
- Introduce E10 petrol this year







James Cogan  
Ethanol Europe  
6 Fitzwilliam Place, Dublin 2  
[jcogan@eerl.com](mailto:jcogan@eerl.com)  
T. 085 8044110



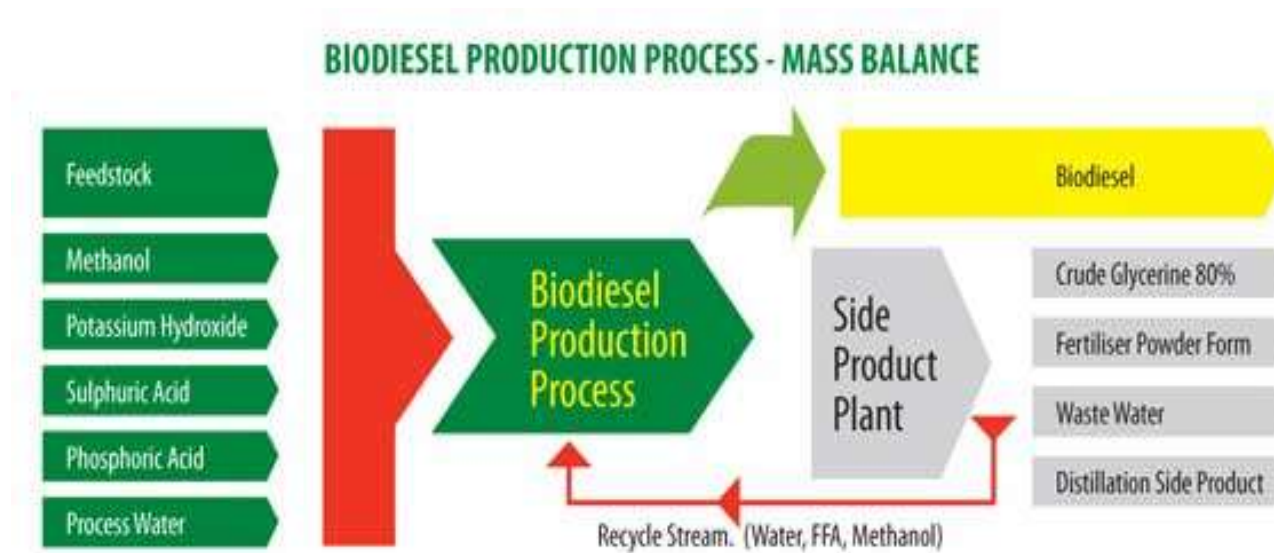
*Contact me to arrange visit to  
Pannonia Bio*

# Quality and Sustainability Presentation



Green Biofuels Ireland

# Overview of Green Biofuels Production Process





# Technology



- Advanced 2<sup>nd</sup> Generation Technology  
– non food, designed by internationally renown company, BDI BioEnergy International.
- In excess of 40 plants built across 4 continents.
- Multi-Feedstock process, leaders in waste based feedstock



## Accreditations & Licences

The Irish biodiesel market is highly regulated, especially in relation to the handling of Category 1 Tallow which is governed by the Animal By-Products (“ABP”) Regulations

### Licensing / Audits

- Department of Agriculture, Food and the Marine  
CAT1 / UCO licencing, biannual audits
- Biofuel Obligation Scheme Account Holder -  
Monthly independent ISAE 3000  
verifications, regular National Oil Reserve  
Agency audits
- IE (Industry Emissions / EPA) unannounced  
spot audits
- Dublin City Council – Trans Frontier  
Shipment (TFS) – unannounced spot audits
- ISCC certification – Annual audit -  
[https://www.iscc-system.org/certificates/all-  
certificates/](https://www.iscc-system.org/certificates/all-certificates/)
- HSA – Unannounced spot audits
- ISO 9001, 14001 and 45001 - Annual audit
- Customs & Excise - Tax Warehouse Keeper  
(bonded warehouse) – weekly verifications



# GBI Feedstock Used



- Cat 1 (BSE) tallow from Ireland
- Used cooking oil from Ireland
- International Sustainability & Carbon Certification (ISCC) certified and sustainable suppliers
- GBI is arguably the most climate-friendly and sustainable biodiesel production currently in industrial-scale production in Ireland.
- 84 % Greenhouse Gases (GHG) savings













[http://www.nora.ie/fileupload/File/Directive\\_2009\\_28\\_EC\\_-\\_Promotion\\_and\\_use\\_of\\_energy\\_from\\_renewable\\_sources\\_96522587.pdf](http://www.nora.ie/fileupload/File/Directive_2009_28_EC_-_Promotion_and_use_of_energy_from_renewable_sources_96522587.pdf)

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# GBI's ISCC Certificates

 <span>About</span> <span>Process</span> <span>Certificates</span> <span>Trainings &amp; Events</span> <span>Stakeholders</span> <span>Smallholder Academy</span>										
Certificate ▲	Certificate Holder ▲	Scope* ▲	Raw Material ▲	Add-Ons** ▲	Valid From ▼	Valid Until ▲	Issuing CB ▲	Map ▲	Certi... ▲	Audit Report ▲
EU-ISCC-Cert-DE119-35301401	Green Biofuels Ireland Ltd, New Ross, Ireland	BP	AF 1, UCO		08.06.20	07.06.21	ASG			
EU-ISCC-Cert-DE119-35391401	Green Biofuels Ireland Ltd, New Ross, Ireland	BP	AF 1, UCO		08.06.19	07.06.20	ASG			
EU-ISCC-Cert-DE119-35381401	Green Biofuels Ireland Ltd, New Ross, Ireland	BP	UCO, AF 1		08.06.18	07.06.19	ASG			
EU-ISCC-Cert-DE119-35371401	Green Biofuels Ireland Ltd, New Ross, Ireland	BP	UCO, AF 1		08.06.17	07.06.18	ASG			
EU-ISCC-Cert-DE119-35361401	Green Biofuels Ireland Ltd, New Ross, Ireland	BP	UCO, Tallow Cat ...		08.06.16	07.06.17	ASG			
EU-ISCC-Cert-DE119-35351401	Green Biofuels Ireland Ltd, New Ross, Ireland	BP	UCO, Tallow (Cat ...		08.06.15	07.06.16	ASG			
EU-ISCC-Cert-DE119-35341401	Green Biofuels Ireland Ltd, New Ross, Ireland	BP	UCO		08.06.14	07.06.15	ASG			
EU-ISCC-Cert-DE119-35331401	Green Biofuels Ireland Ltd, New Ross, Ireland	BP	UCO, Animal Fat		08.06.13	07.06.14	ASG			
EU-ISCC-Cert-DE119-353315121401	Green Biofuels Ireland Ltd, New Ross, Ireland	BP	UCO, Animal Fat		08.06.12	07.06.13	ASG			
Certificate	Certificate Holder	Scope*	Raw Material	Add-Ons**	From	From	Issuing CB			

<https://www.iscc-system.org/>

# Advanced Biofuels

## 1<sup>st</sup> generation

- Food crops only
- Settling purification
- No distillation
- Single certified

## Advanced Biofuels

- Cat 1 tallow
- Used cooking oil
- POME
- SBE
- WHEY Permeate



<http://www.nora.ie/>



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# Process

- Multiphase continuous batch process with over 30 tests over 10 stages of production.
- Biodiesel is washed and purified with a Final step of distillation, this removes all contaminants and purifies the Biodiesel.
- The result is an extremely pure, distilled crystal-clear and almost colourless product compliant with the EN 14214 standard



# GBI within the EN 14214 Standard

TEST	UNITS	SPECS	GBI	Industry
Ester Content	%m/m	96.5 min	99	98.7
Monoglyceride	%m/m	0.7 max	<0.01	0.43
Total Glycerol	%m/m	0.25 max	0.02	0.14
Water Content	mg/kg	500 max	48	114
Oxidation Stability	hours	8 min	15	10
Total Contamination		24 max	1	7.1



# Key Quality Indicators

## Filter Blocking Test (FBT)

- FBT IP 387, Cold FBT, Cold soak FBT
- EN 590 requirement
- UK specification: 2.5 max
- GBI typical results: 1 max

## Cold Filter Plugging Point (CFPP)

Fuel Type	Typical Values
Tallow methyl Ester (TME)	+10°C to +14°C
UCO Methyl Ester (UCOME)	0°C to +5°C
EN590 Diesel	Winter: -20°C to -25°C Summer: -5°C to -20°C



# Saturated Monoglycerides (SMG)

- Calculation based on Annex C of EN 14214
- Specification: Northern Europe 55 max
- High SMG content can cause filter plugging at low temperatures
- SMG EN 17057 new method 2018
- GBI Typical results: <200 mg/kg





# SMG Index Calculation

Recommended SMG Index Max 55

	Density	MG	Cloud Point	Smg	Smg Index	EN 590 Dilution
<b>Biodiesel Example 1</b>	880	0.25	8	0.089103	56	7%
<b>Biodiesel Example 2</b>	880	0.43	7	0.14359	88	7%
<b>GBI Biodiesel Example</b>	880	0.01	17	0.005587	3	7%



# Biological Contamination

- Biological growth is only possible in the presence of free water.
- GBI Tanks Independently tested.
- No movement by shipping, a common source of water contamination.
- High water and sediment content





Green Biofuels Ireland

CREATING POSITIVE ENERGY

For further information please contact:

Email: [admin@gbi.ie](mailto:admin@gbi.ie)

Web: [www.gbi.ie](http://www.gbi.ie)

