



ABC ECONOMY

Developing sustainable value chains from waste

Dr Fionnuala Murphy
Assistant Professor
School of Biosystems & Food Engineering
University College Dublin
fionnuala.murphy@ucd.ie



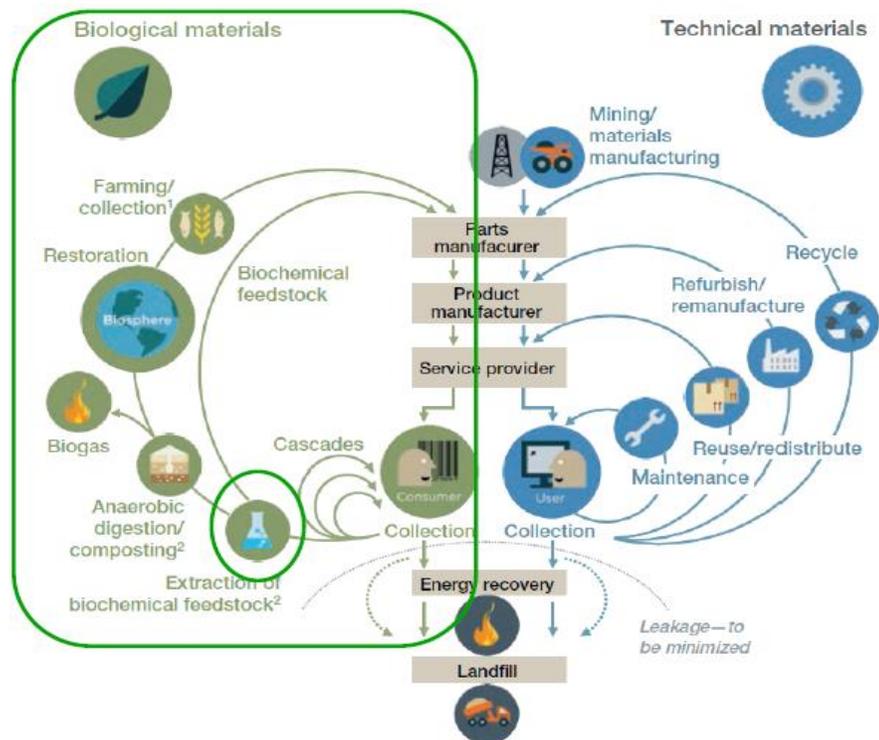
What is the Bioeconomy?



As defined by the European Commission, refers to the "the production of renewable biological resources and the conversion of these resources and waste streams into value-added products, such as food, feed, bio-based products as well as bio-energy" (EC, 2017).



What is the Bioeconomy?



The bioeconomy is often represented as the biological element of the circular economy, in which “the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimised” (EC, 2017).



What is the Bioeconomy?

- Rural redevelopment (>800,000 jobs by 2030)
- Innovation to allow diversification and growth
- Sustainability – Resource efficiency, GHG reduction, Low carbon society
- Moving Europe towards a post-petroleum society



The ABC Economy Project

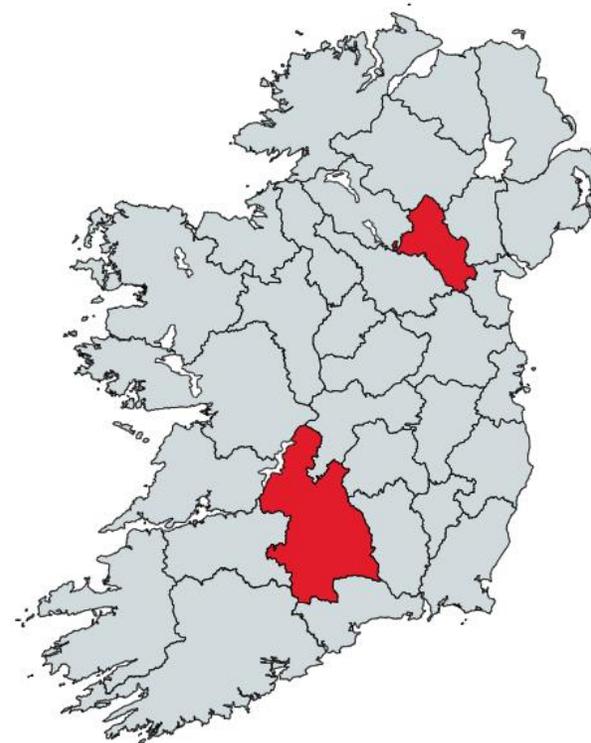
SEAI RD&D Call 2018 Co-Funded by DAFM - An investigation to quantify the impact of applying circular economy

1. Research and review the array of potential uses for biomass across its life cycle. Energy consumption, carbon emissions reduction, biobased products and renewable energy generation potential, should be considered throughout the life cycle.
2. Within the above context, quantify impacts of the application of circular economy principles, and market potential for these options, with a focus on achieving coherency and examining trade-offs between energy and bio-based material use of biomass.
3. Disseminate outcomes within the Irish biomass and financial sectors and internationally



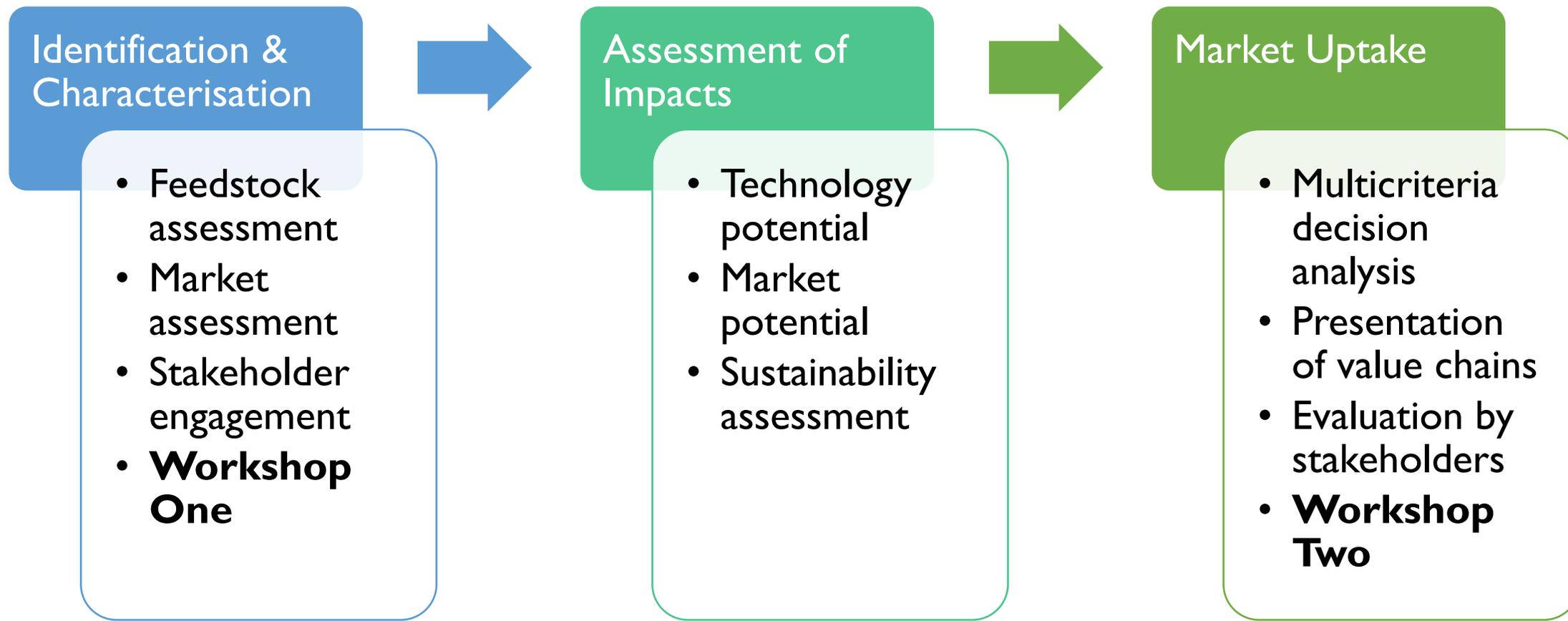
The ABC Economy Project

- ABC Economy – **A**gri **B**io **C**ircular **E**conomy
 - Project partners are UCD and Cré
 - Funded by SEAI and DAFM
- Aim of the project is to develop new bio-based products and generate energy from waste bio-resources through a cascading use of resources
- Case studies focus on Monaghan and Tipperary County Councils



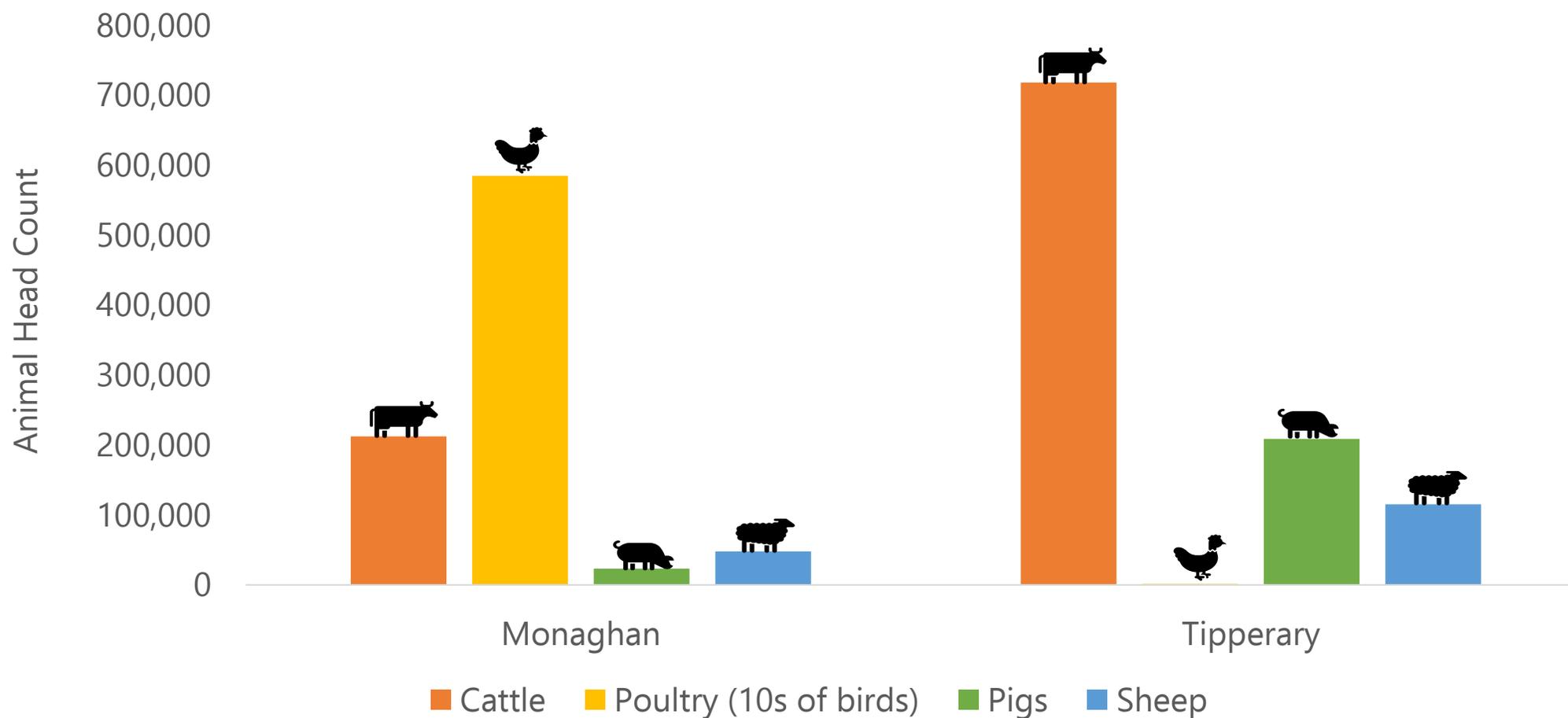


The ABC Economy Project



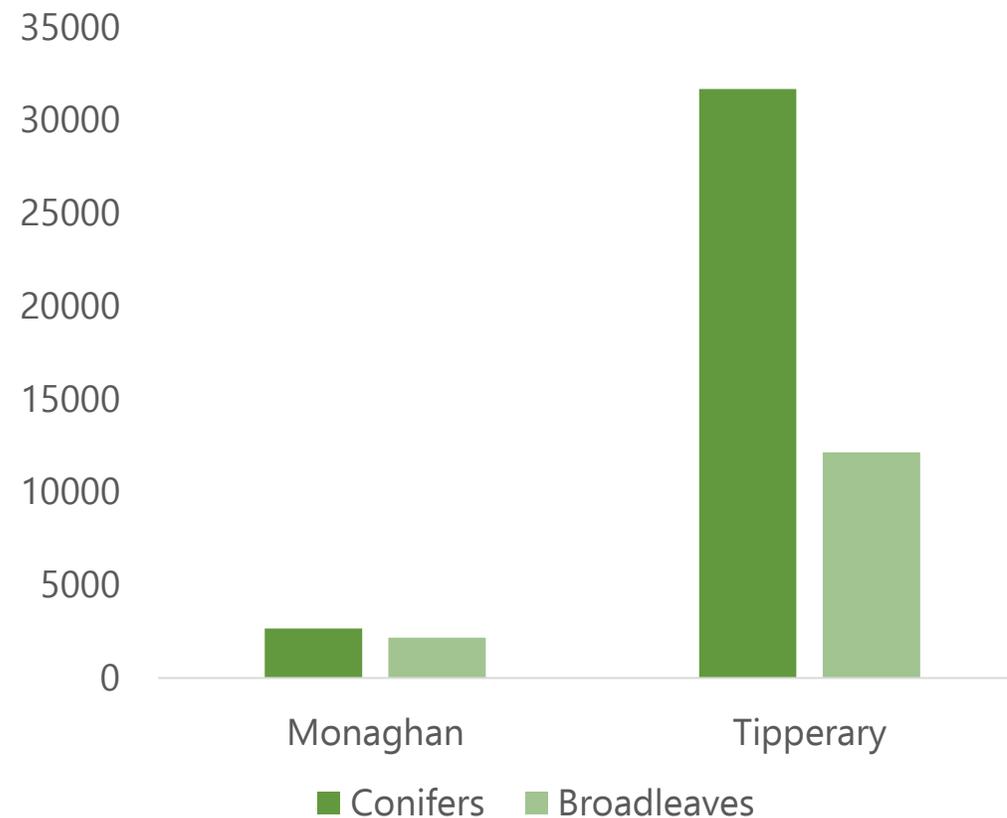
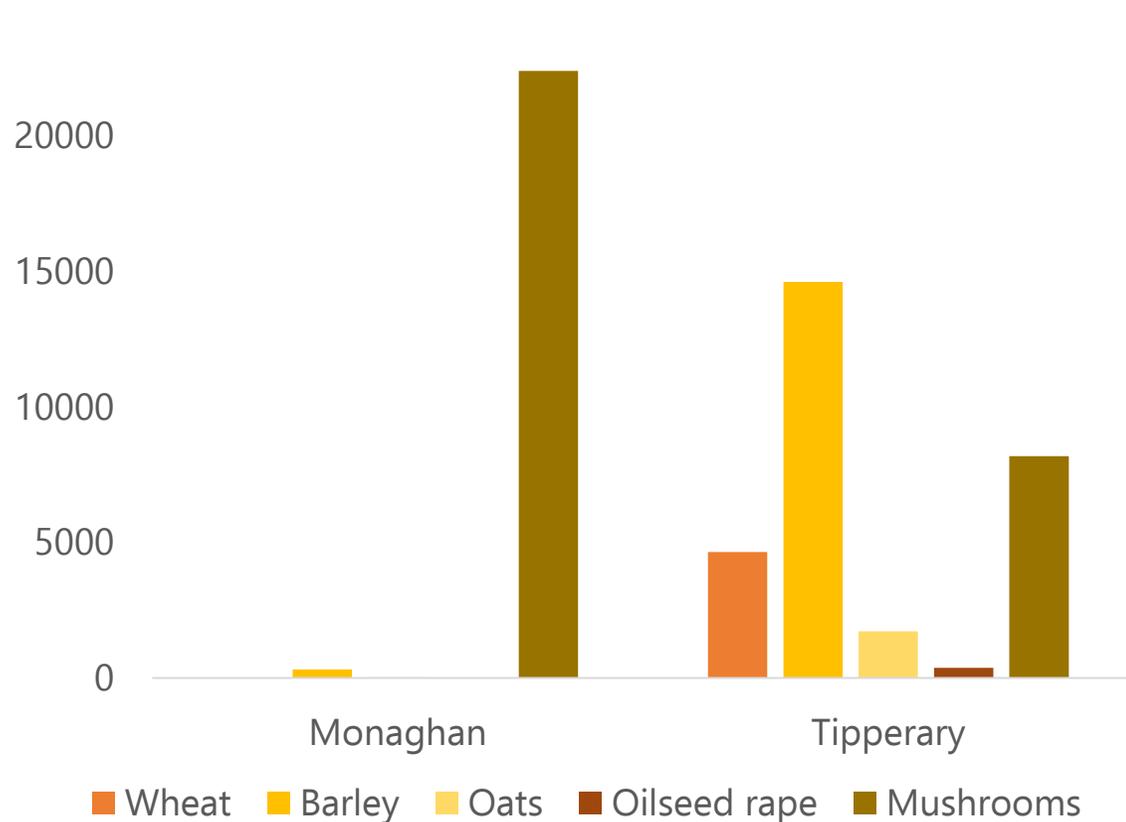


Animal Head Count





Crops & Forestry



All quantities in hectares



Workshop #1

- Tipperary 5th June 2019 Horse & Jockey Hotel
- Monaghan 26th June 2019 Hillgrove Hotel
- Discussion opportunities & barriers associated with valorising wastes under four topics: Feedstocks, Logistics, Market, and Knowledge/Communication

Feedstocks	
Opportunities	Barriers
Incentives for biogas as fuel	Dry moisture content & other characteristics unknown
Excess manure	Separation of feedstock
Anaerobic digestion is a good option	Contamination of feedstock
Local scale = More load & reduces footprint	Pre-processing required
Increase soil organic matter	Lack of grease traps in rural restaurants
Carbon sequestration	

Logistics	
Opportunities	Barriers
Local base to avoid transport <ul style="list-style-type: none"> - Use of rail instead of truck - Infrastructure: arterial motorways 	Disruption of current transport: Changing current practice of transporting
Collaborate to produce a product	Traffic movement & planning
Closed loop system locally: collecting waste & returning energy	Lack of incentives to use locally & avoid long distance transport
Local central facility: bring waste to be used by other companies	Connection to the grid required
Using locally & avoid long distance transport	Funding the facilitator to bring small processors together
	Cost: Who pays?



Workshop #1

Market	
Opportunities	Barriers
Potential for matchmaking: waste producers & end users	Lack of funding / investment to kick-start new technologies
Co-operative systems could allow communities to make valorisation viable on a local scale	Changing farmer mindsets on new production pathways / markets
Can fully valorise all products e.g., waste heat for district heating	Legislation e.g., permits required to bring waste feedstocks onsite
	Public perception when a company is using a (perceived?) waste
	Making scale of operations viable for SME's
	Competing uses in the market
	High quality is a higher cost
	Lack of market
	Big business competition

Knowledge / Communication	
Opportunities	Barriers
Demonstration units	Lack of community engagement
Link with co-operative systems : provide support	Trust between all parties
Map/online marketplace	Message not getting through
De-mystify the bioeconomy for SMEs	Accessibility of information
Site visits – national and international to gain knowledge	Concept of waste from government / high level does not help change perceptions
Dissemination of information & fact sheets in simple formats	Insufficient knowledge about processes / technologies
Networking between waste producers & handlers	Conversion of strategy to results
New generation are already thinking this way “the green agenda”	Narrowing down from big business to community & rural Ireland
	Consumer acceptance
	Isolated thinking & acting
	Not knowing the value of waste
	Regulation & planning

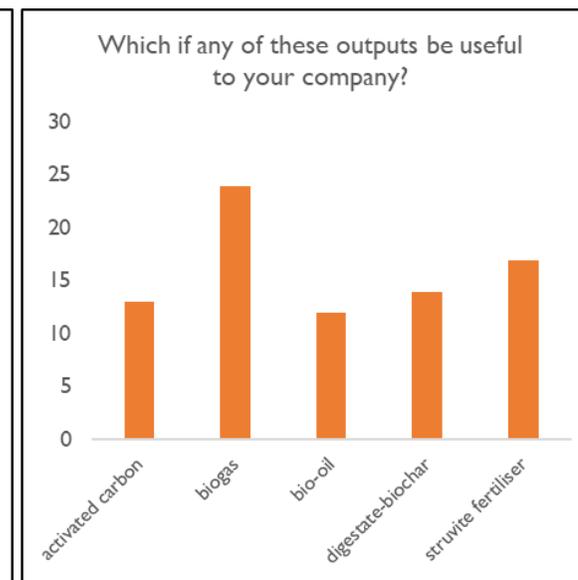
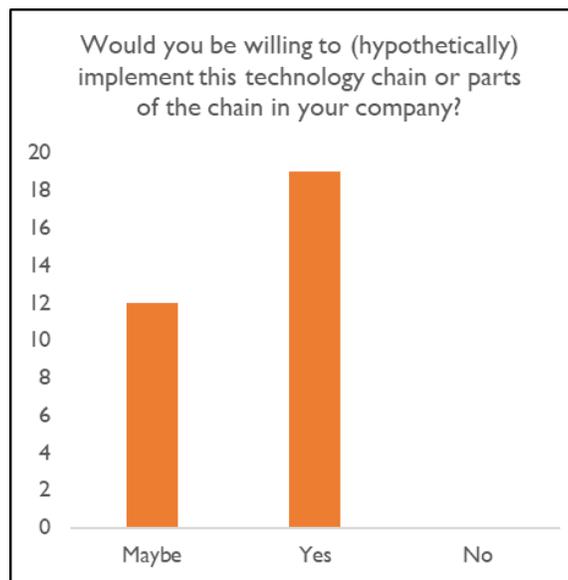
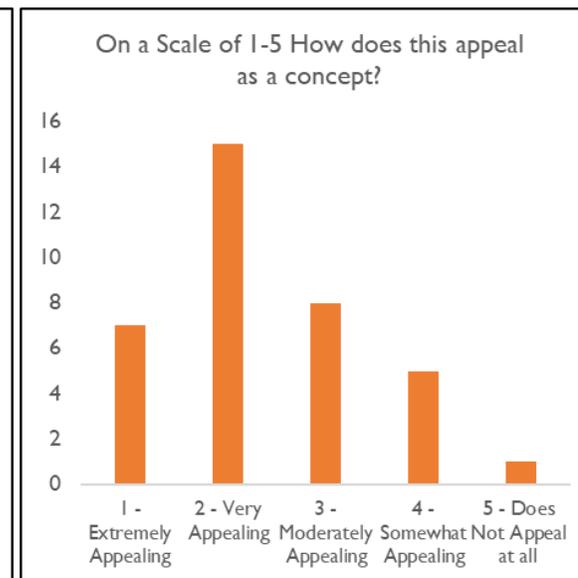
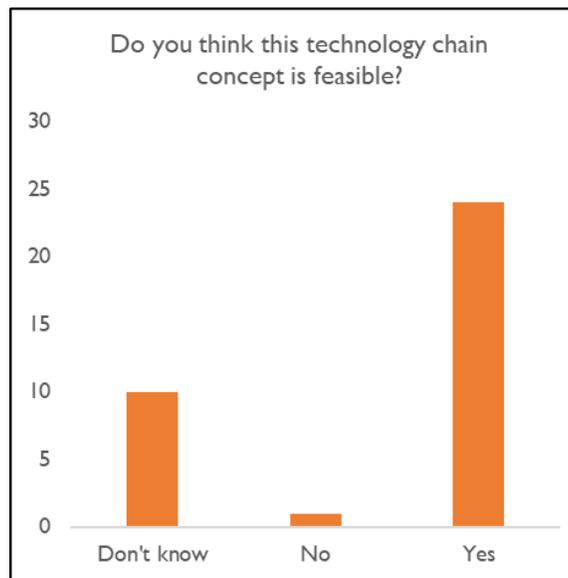


Workshop #2

- Online 27th January 2022
- Focused on gathering information on potential technology chains

Poll Questions

- 1 Do you think this technology chain concept is feasible?
Yes/No/Don't know
- 2 Does this appeal as a concept?
1-5 range
- 3 Would you be willing to (hypothetically) implement this technology chain or parts of the chain in your company?
Yes/No/Maybe
- 4 Which if any of these outputs be useful to your company?
Digestate-biochar mix / biogas / bio-oil / activated carbon / struvite





ABC Economy Final Event

- The new sustainable *ABC Economy* value chains will be to be presented to key stakeholders
 - Rosanna Kleemann
 - Seán Douglas
- Panel Discussion: Bioeconomy Innovation Blueprint for a Local Authority
 - Fionnuala Murphy
 - Rosanna Kleemann
 - Patrick Barrett, Department of Agriculture, Food & Marine
 - PJ McLoughlin, Sustainable Energy Authority of Ireland



Thank you!

- For project updates follow @ABCECONOMY on Twitter and visit <https://www.abceconomy.ie/>