

# Education with Sustainability – What have I learned?

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# Overview

- Education
- Industry
- Teaching
- Research
- Communication
- Conclusions and Future Developments



# Education

- Engineering degree
- I-shaped v T-shaped
- Sustainability
- Communication
- International work experience – UK, Austria



# Industry

- 2 companies
- Small (family owned) and large (plc)
- Profit v Sustainability
- EPA and local authorities
- New onus on companies now



# Teaching



- Internationalisation
  - Increasing number of international students
  - Students concerned about sustainability
- International project sharing student videos in 5 universities for peer assessment: UCD, VT, UIUC, UPM, Bari
- Modules
  - Waste Management
  - Air Pollution
  - Farm Buildings
  - Biosystems Engineering Design Challenge

# Design Challenge - Problem-based learning with groups using recycled materials





## Research

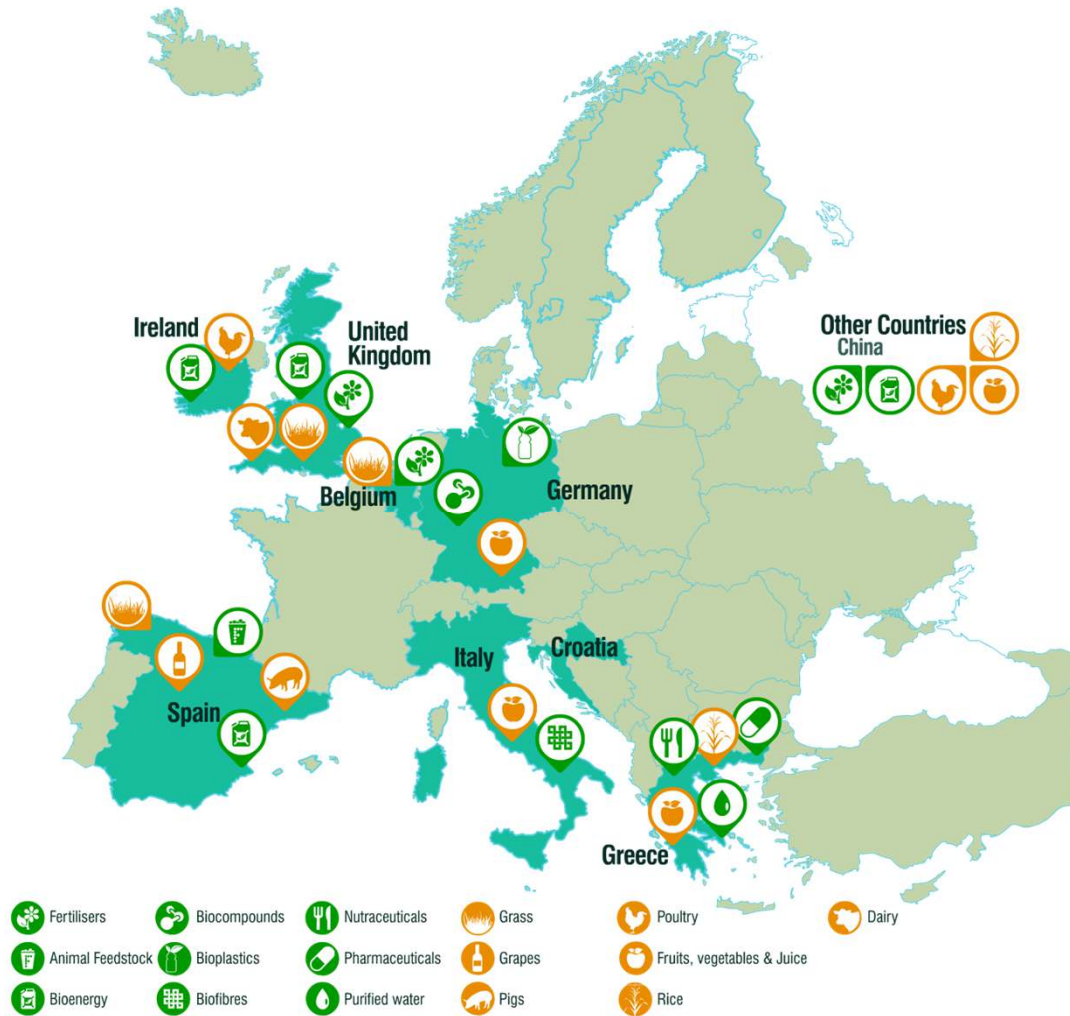
### AgroCycle H2020 Project

- Led by the School of Biosystems & Food Engineering, University College Dublin
- 3-year project (2016-19), 26 partners: Europe and China
- €7 million from EC plus ca. €1 million from Government of the People's Republic of China

- **8 European Countries**

- Ireland
- Spain
- United Kingdom
- Germany
- Belgium
- Italy
- Greece
- Croatia

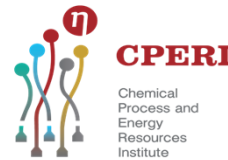
- **China**







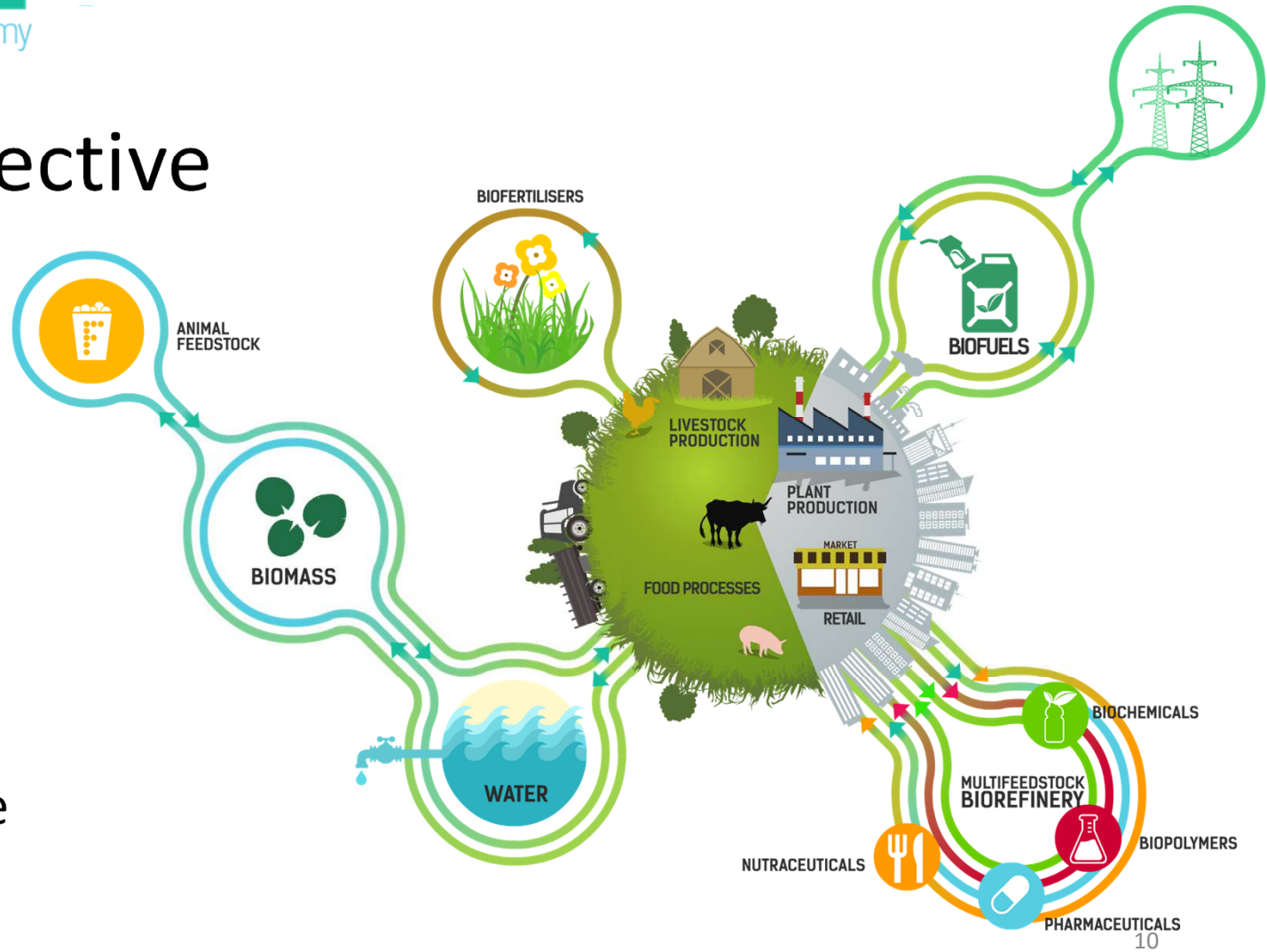
**Agrii**



This project has received funding from the European Union's Horizon 2020 Research and Innovation programme under grant agreement No. 690142 in collaboration with the People's Republic of China and the Hong Kong Government

# AgroCycle Objective

- To deliver sustainable waste valorisation
- Address European policy target of reducing food waste  
- 50% by 2030
- Contribute to the change occurring in China in relation to sustainability





# AgroCycle Approach

- A full systems approach
- Developing a 'Circular Economy' around the agri-food chain:
  - Pre- and post-farm gate
  - Food and agri-products processing sector
  - Wholesale and retail
  - Waste processing – valorisation incl. bio-fuels, high value-added biopolymers, energy & micro fuel cells.
  - Consumer



## AgroCycle Kids

Delivered AgroCycle Kids Bespoke Curriculum in Ireland.

**Free** resources available through AgroCycle Kids for teachers, guardians, children:

- Lesson Plans (won international bioeconomy award)
- Science and Environmental Animation
- Online Games
- Rap song and animated video on AgroCycle YouTube Channel

Aspects of the overall AgroCycle Kids programme delivered to Chinese primary school children in The Affiliated Primary School of Beijing Forestry University.





**Maynooth University**  
National University of Ireland Maynooth



## AgroCycle Kids Video

Developed with media company

Refined communication message

Animated Video plus Rap - has been viewed >1.5k times on YouTube





## **Horizon Europe Project - EDUCATION FOR THE BIOECONOMY**

- Funded by Horizon Europe CALL: HORIZON-CL6-2021-GOVERNANCE-01-11
- Topic: Education on the bioeconomy including bio-based sectors for young people in primary and secondary education in Europe
- Project Type: Coordination and Support Action (CSA)
- Coordinated by UCD School of Biosystems and Food Engineering
- 15 partners across 10 countries including Maynooth University and An Taisce
- Budget: ca. €2 million over 2 years (2022-2024)



## BioBeo Overall Aim:

To develop and deploy an education programme to enhance understanding and engagement across society regarding lifestyle, circularity and bioeconomy, using **5 bioeconomy themes**: interconnectedness, outdoor learning, forestry, life below water and the food loop.

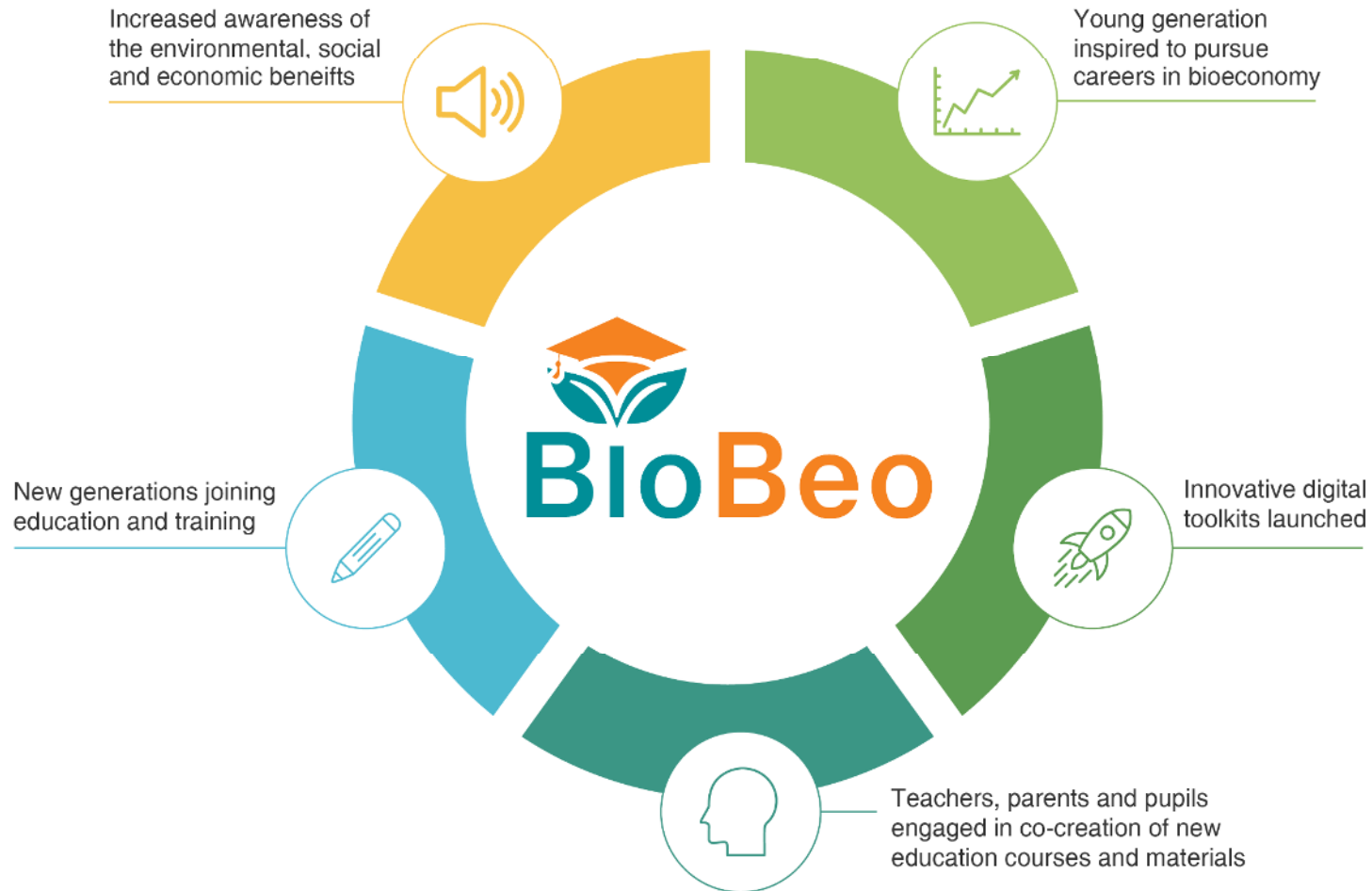
BioBeo will contribute to the transition to a sustainable EU circular bioeconomy by enhancing society-wide awareness and inspiring Europe's youth to pursue STEM related careers.



<b>Participant No.</b>	<b>BioBeo Participant organisation name</b>	<b>Country</b>
1 UCD - Lead	University College Dublin	Ireland
2 MU	Maynooth University	Ireland
3 AnT	An Taisce	Ireland
4 UH	University of Hohenheim	Germany
5 OUAS	Odisee University of Applied Sciences	Belgium
6 CASE	Centre for Social and Economic Research	Poland
7 RUAS	Rotterdam University of Applied Sciences	Netherlands
8 SYNNO	Synno	Austria
9 FEE	Foundation for Environmental Education	UK
10 YSBF	Youth in Science and Business Foundation	Estonia
11 E3STEM	E3STEM	Greece
12 IPA	International Parents Alliance	Netherlands
13 UVT	Universitatea Valahia Targoviste	Romania
14 TUB	Technical University Berlin	Germany
15 BOS+	BOS+	Belgium



## Networking & Coordination



# Communication

- Media interviews about fatbergs
- Standup Comedy in Bright Club
  - YouTube – ‘Dr Fatberg and the 3 Ps’
- Comics
  - ‘Attack of the Fatbergs’ & ‘Return of the Fatbergs’
    - [www.swiftcomply.com/attack-of-the-fatbergs](http://www.swiftcomply.com/attack-of-the-fatbergs)
  - ‘There’s Something About Ammonia’
    - Download free from UCD Research Repository



# Conclusions and Future Developments



- National and international policy
- Academic leaders
- Internationalisation
- Professions, e.g.,
  - Engineers Ireland Sustainability Framework
- Not-for-profit organisations, e.g.,
  - Environmental Sciences Association of Ireland (ESAI)
  - Climate Action Network for International Educators (CANIE)
- Lifelong learning across society