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EIT FOOD ANNUAL EVENT

LET'S GET REAL ABOUT FOOD

Brussels, Belgium

 Event Lounge

October 17th & 18th 2022

NetZero Food System

Breakout room 1





Barbaros Corekoglu

Strategic Relations Senior
Manager, EIT Food



Join us in the Salon area on the ground floor for our Awards ceremony!

6 winning initiatives for innovative solutions to reduce obesity & malnutrition in Europe will be awarded a prize of 30.000 euros.

Drinks will be served during the ceremony. **Cheers!**



AWARDS PERSONALISED NUTRITION FOR ALL

17.30 – 18.30



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On stage



Chuck de Liedekerke

Co-founder and CEO,
Soil Capital



Angela Magno

R&D&I Project
Manager, Director of
Communication and
Marketing, Bioazul



Tiffanie Stephani

VP, European
Government Relations
and External
Communications, Yara
International



Nigel Scollan

Professor and Director,
Institute for Global
Food Security of
Queens University
Belfast



Chuck de Liedekerke

Co-founder and CEO, Soil Capital





Angela Magno

R&D&I Project Manager,
Director of
Communication and
Marketing, Bioazul





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Challenges related to WATER use for the transition to more sustainability AGRIFOOD systems

Angela Magno Malagón

BIOAZUL

WHAT IS BIOAZUL?

BIOAZUL is an **engineering and technological consultancy**, very active in R&D and innovation activities, focused on the development of eco-innovative solutions for the sustainable water management, specially treatment, reuse and resources recovery.





WATER REUSE

OUR DNA

19 years reusing water

At Bioazul we offer **tailored solutions for the treatment and reuse of water and recovery of resources**, based on technologies that are the result of the work carried out by the company in research, development and innovation projects.

Always complying with the legal framework in charge of regulating and establishing the standards of water reuse.

We always propose the appropriate technology to obtain the required quality of reclaimed water based on the intended use and in accordance with the applicable legal framework.

70%

Of the Earth surface



2,5%

Fresh water



1%

Water for human consumption and economic activities



USES



69% Agricultural sector



19% Industrial sector



12% Urban sector



In 2020 of **55%** of the world population

In 2050, it is estimated to reach the **66%**

Centro Virtual de información del Agua, 2017

SUSTAINABLE FOOD SYSTEM

DEFINITION (SAPEA, 2020)

“Provides and promote safe, nutritious and healthy food of low environmental impact for all current and future EU citizens in a manner that itself also protects and restores the natural environment and its ecosystem services, is robust and resilient, economically dynamic, just and fair, and socially acceptable and inclusive. It does so without compromising the availability of nutritious and healthy food for people living outside the EU, nor impairing their natural environment.”

“

”

EU agriculture by numbers

10

million
farms in
the EU

22

million
people work
in agriculture
in the EU

38%

of total EU land
dedicated to
agriculture

€97

billion
in lost value from
soil degradation
in the EU

10%

of total EU
GHG emissions

SUSTAINABLE AGRIFOOD SYSTEM

MAIN CHALLENGUES

- Main challenges are linked to malnutrition, biodiversity loss, climate change, soil degradation and water quality
- Food security and sustainability are widely recognized as very significant global challenges facing humanity in the 21st Century, under the current context of **climate change, rapid population growth, land and natural resources limitation and soil degradation, smaller rural labour force, increasing urbanisation and political instability across the world.**
- The world's growing population will lead to a **50% increase in the demand for food by 2050** unless there are changes in the **consumption patterns** and levels of **food waste generated**. This will be a significant driver of climate change.
- Climate change poses a significant threat to the whole food value chain: production, processing, distribution, storage and consumption worldwide as well as in the EU.

1/3 OF ALL
FOOD PRODUCED
GLOBALLY IS WASTED

25% OF
TOTAL WATER CONSUMED
IS FOR PRODUCING FOOD
THAT IS NEVER EATEN

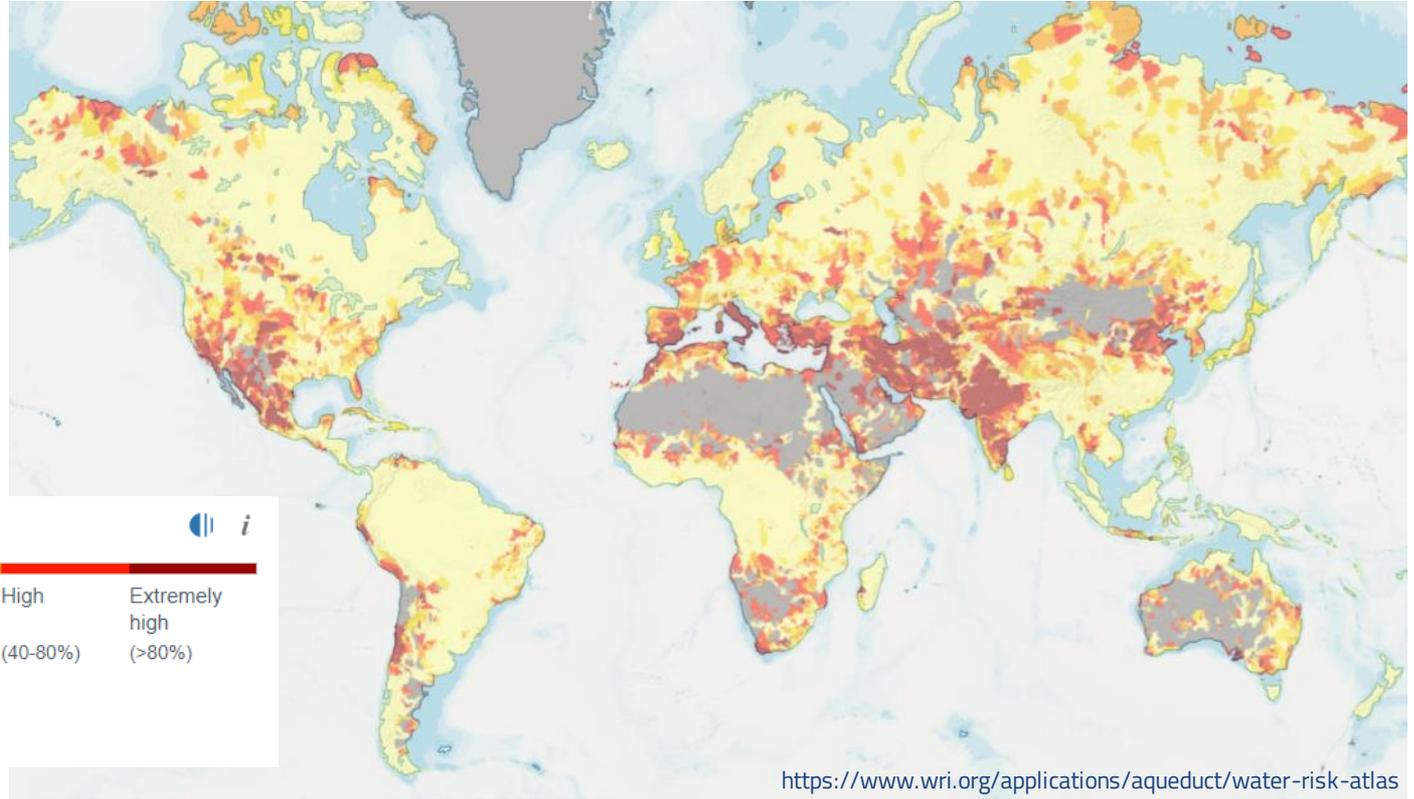
SUSTAINABLE AGRIFOOD SYSTEM

MAIN CHALLENGUES

- Therefore, ensuring sufficient, safe and nutritious food for all is a major issue for the EU and globally as reflected in the growing attention paid by international and European institutions to food system challenges.
 - ✓ **EU Green Deal's Farm to Fork Strategy** aims to transform this impact and spur the transition towards climate, nature and people friendly food systems.
 - ✓ Initiatives at global level promoting the Food system shift such as the European Food Forum , the EU Carbon+ Farming Coalition and the United Nations' Sustainable Development Goals (SDGs).
- Sustainability policies and approaches need to address the diversity of the EU's food and agricultural sectors, and territorial imbalances between urban and rural areas.
- To address these challenges towards a sustainable agrifood system, an interdisciplinary approach involving all key actors from the food value chain is mandatory to success.



SUSTAINABLE AGRIFOOD SYSTEM



WATER REUSE

STRATEGIC TOPIC IN THE EU

- **Urban Wastewater Treatment Directive (91/271/CEE)**
“Treated wastewater shall be reused whenever appropriate” (Art.12)
- **Water Framework Directive (2000/60/EC)**
- **EC Communication:** Resource efficient Europe flagship initiative (COM(2011) 21)
- **EC Communication (2012):** A Blueprint to Safeguard Europe's Water Resources
- **JRC guidelines (2014):** “Water reuse and recycling has been identified as one of the five top priorities of the EIP Water”
- **WHO guidelines**
- **Circular Economy Action Plan (EU Green Deal)**
- **New EU regulation 2020/741 on minimum requirements for water reuse in agriculture**



JRC SCIENCE AND POLICY REPORTS

Water Reuse in Europe Relevant guidelines, needs for and barriers to innovation

A synoptic overview

Laura Alcalde Sanz, Bernd Manfred Gawlik
2014



WATER REUSE

ADVANTAGES

- **Constant source** of water independent of climate events.
- Incentives to extend wastewater treatment.
- Supply of water and nutrients (**fertilizer savings**).
- Plant absorb nutrients that do not accumulate in water bodies. Diffuse pollution.
- Coastal areas: **Net increase of water resources**.
- **Lower impacts and costs** than other alternative water resources (e.g. desalinated water or water transfers).

SHORT COMINGS

- Require **adequate treatment** - lack of appropriate infrastructure.
- **Investment** needed in infrastructure (+ distribution piping network)
- Need of **control** for safe use (e.g. monitoring quality at different points of compliance)
- **Social reluctance**/ unrealistic perception of risks.



WATER REUSE

EU REGULATION 2020/741

on Minimum requirements for water reuse in Agriculture

- Regulation published on the 5th of June 2020 in the Official Journal of the European Union.
- The Regulation shall **apply from 26th of June 2023**.
- The purpose of this Regulation is to adapt to Climate Change in terms of water by **promoting the use of reclaimed water** as a safe water source, for agricultural irrigation.
- Reuse implies an **additional treatment depending on the final use** and requires more stringent standards than Directive 91/271/EEC.
- A Member State may decide that it is not appropriate to reuse water for agricultural irrigation.



WATER REUSE

Contribution to the Water Europe Vision the “VALUE OF WATER”

The wide implementation of water reuse projects supports the following key impact parameters by:

- **Reducing the impact** of European society **on our natural water resources** by reusing a high % of the urban wastewaters being generated in Europe, as well as the nutrients.
- Delivering the true value of water for our society, the economy and the environment; **reclaimed water use is** a well-recognised **climate adaptation measure**, which decreases the pressure on natural water bodies and plays a fundamental role in the conservation of the rural environment and its ecosystem services. In addition, it contributes to the economy by **ensuring the water needed** for agriculture production and by providing an important amount of the macronutrients for its fertilization.
- **Boosting** the European water market as well as the **global competitiveness** of European water industries by harmonising legal frameworks, and the water and resources circularity.
- Securing society's **long-term resilience**, stability, sustainability and security with regard to water. Water reuse will decrease the pressure on conventional water sources, the damage in agriculture related to droughts, and environmental risks linked to nutrients release.



WATER REUSE

References about EU projects





RichWater



Fast Track to innovation (FTI) focused on the application and market introduction of combined wastewater treatment and reuse technology for agricultural purposes

Objectives:

- Verification and market introduction of the RichWater® system for the safe use of reclaimed water in agriculture (fertilization+irrigation - closing the water and nutrient cycle).
- Harnessing the potential of the “wastewater” resource in regions with water scarcity and significant agricultural production through reuse (100% water, 70% nutrients).



www.richwater.eu



- RichWater® MBR has been verified for the **European Commission Environmental Technology Verification (ETV)** programme.
- **MALAGA VIVA Award – AIRE 2020** that recognizes experiences and actions in the fight against climate change to SMEs established in the province of Malaga.
- **Water Europe Innovation Award– Water Technology & Infrastructure Infrastructure 2021** for RichWater® use in agriculture, contributing to the sustainability of the agri-food systems
- Finally, It has been selected as one of 105 water-oriented Living Labs in research settings that met the Water Europe Living Labs evaluation criteria, and included in the Water Oriented Living Lab Atlas.

www.richwater.eu





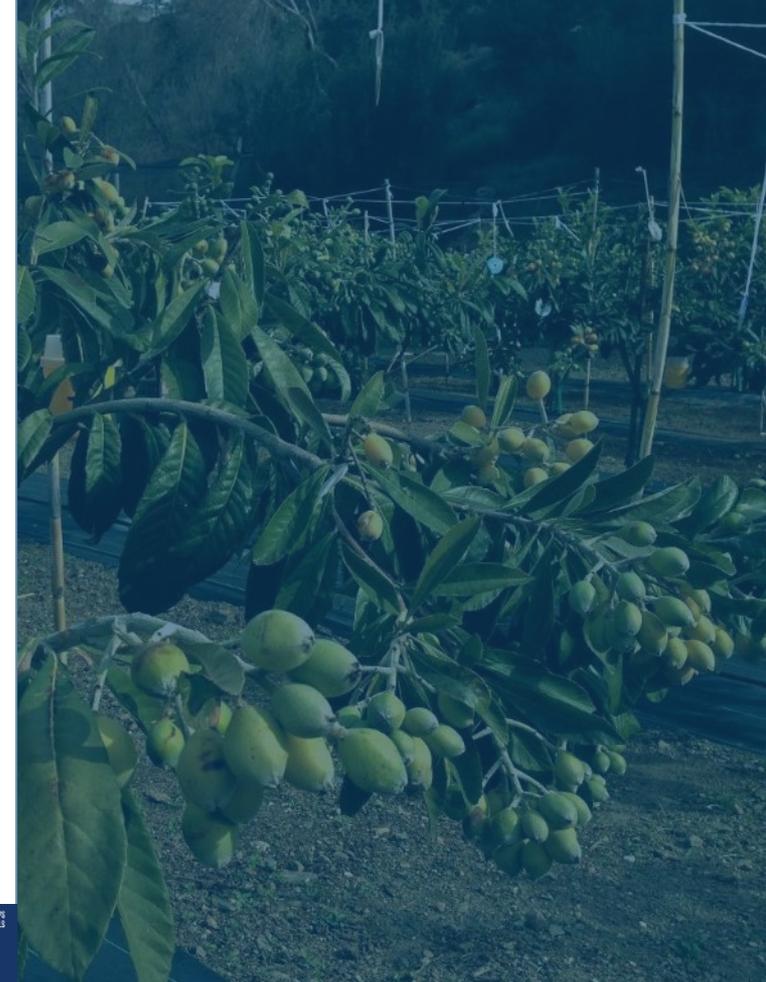
FIT4REUSE

FIT4REUSE aims to offer safe and sustainable solutions for the integrated use of non-conventional water resources in the Mediterranean agricultural sector.

Objectives:

- Develop and optimize NBS, constructed wetlands, for municipal wastewater treatment for reuse in irrigation.
- Develop and improve innovative wastewater treatment technologies.
- Improve the aquifer recharge process with wastewater treatment and soil aquifers (SAT).
- Develop guidelines to support the adoption of water reuse safety planning in the Mediterranean basin.
- Analyze in an integrated manner the economic, environmental and social impacts of the proposed solutions in order to ensure their future applicability and sustainability.

www.fit4reuse.org





PAVITR

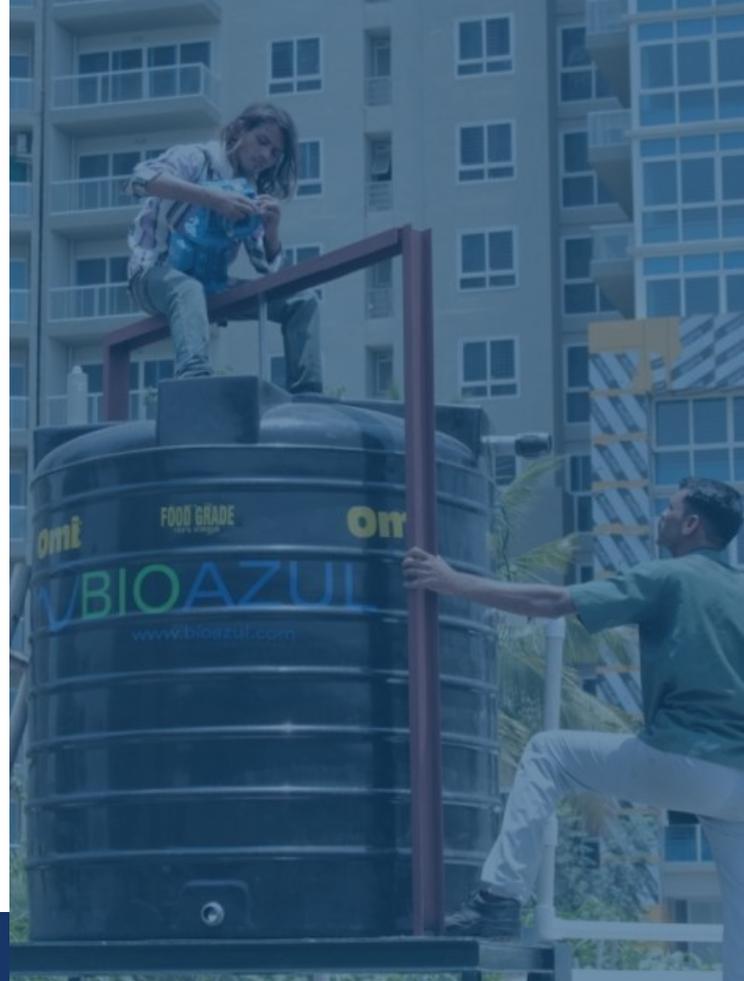


PAVITR is an Indo-European cooperation project that seeks to validate, develop and implement efficient and sustainable solutions that address water challenges by guaranteeing the reuse and quality of water resources in India.

Objectives:

- Develop, implement and validate efficient and sustainable solutions that address water challenges by ensuring the reuse and quality of water resources in India.
 - ✓ Nature-based solutions
 - ✓ Treatment and regeneration technologies
 - ✓ Algae treatment

www.pavitr.net



Let's be sustainable!

Thank you



Ángela Magno Malagón

Director of Communication & Marketing
R&D&i Project Manager
amagno@bioazul.com

BIOAZUL SL
www.bioazul.com



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Tiffanie Stephani

VP, European
Government Relations
and External
Communications, Yara
International





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Breakout Session 1: Net-zero food system

Tiffanie Stephani

Vice-President – European Government

Relations & External Communications

Yara International – Region Europe

We have started our journey... and will not stop until we reach carbon neutrality in 2050.



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2025 GHG intensity target

- 10% reduction from 2018
- Further reduction of N2O emissions, energy efficiency and renewable energy sourcing

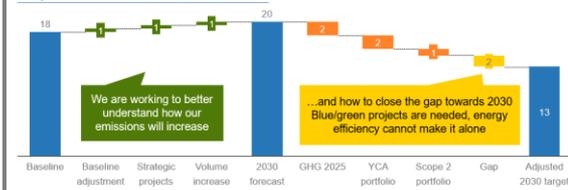


On track!

2030 GHG absolute target

- 30% reductions from 2019
- From grey to green/blue ammonia
- External partnerships
- Energy transition is key

Scope 1 & 2 GHG emissions, Million tCO₂e

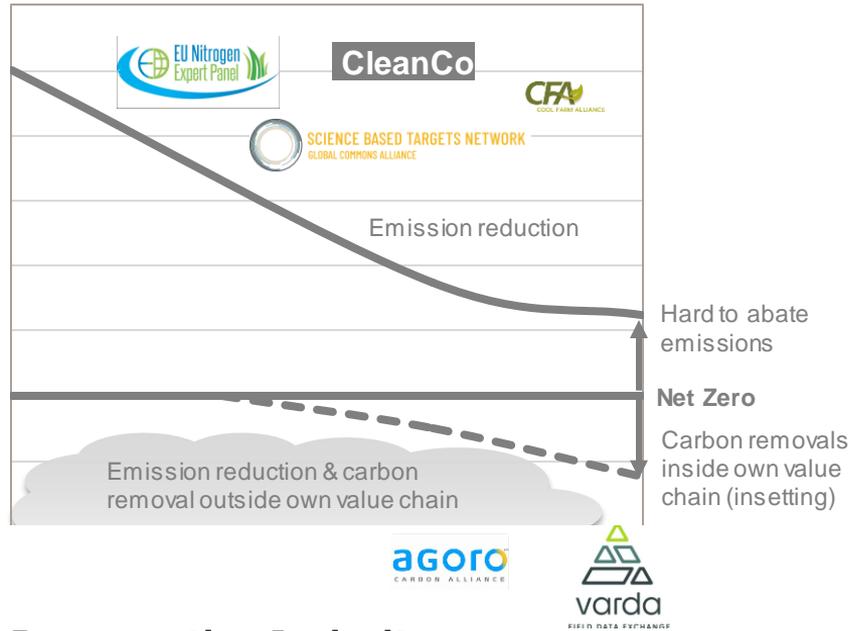


Roadmap roll-out



Combining Climate & Nature

Our initiatives are addressing Net-zero and Nature-positive



Regenerative Agriculture



Biodiversity



Climate



Soil Health



Resource Use

Pathways to decarbonize the agri-food system



Every Nutrient Counts



Green fertilizers made with renewable energy



Joining forces & building partnerships



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We are at the crossroads



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The transition to a net-zero food system is completely intertwined with the green transition of the industry.

To succeed on this twin transition, **together**, we need to:

- Upscale regenerative agriculture practices
- Boost Europe's strategic autonomy in food and fertilizers
- Accelerate the use of renewable energy

Thank you

tiffanie.stephani@yara.com



@StphaniT



Nigel Scollan

Professor and Director,
Institute for Global Food
Security of Queens
University Belfast



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Decarbonizing the agri-food supply chain

Nigel Scollan

Institute for Global Food Security

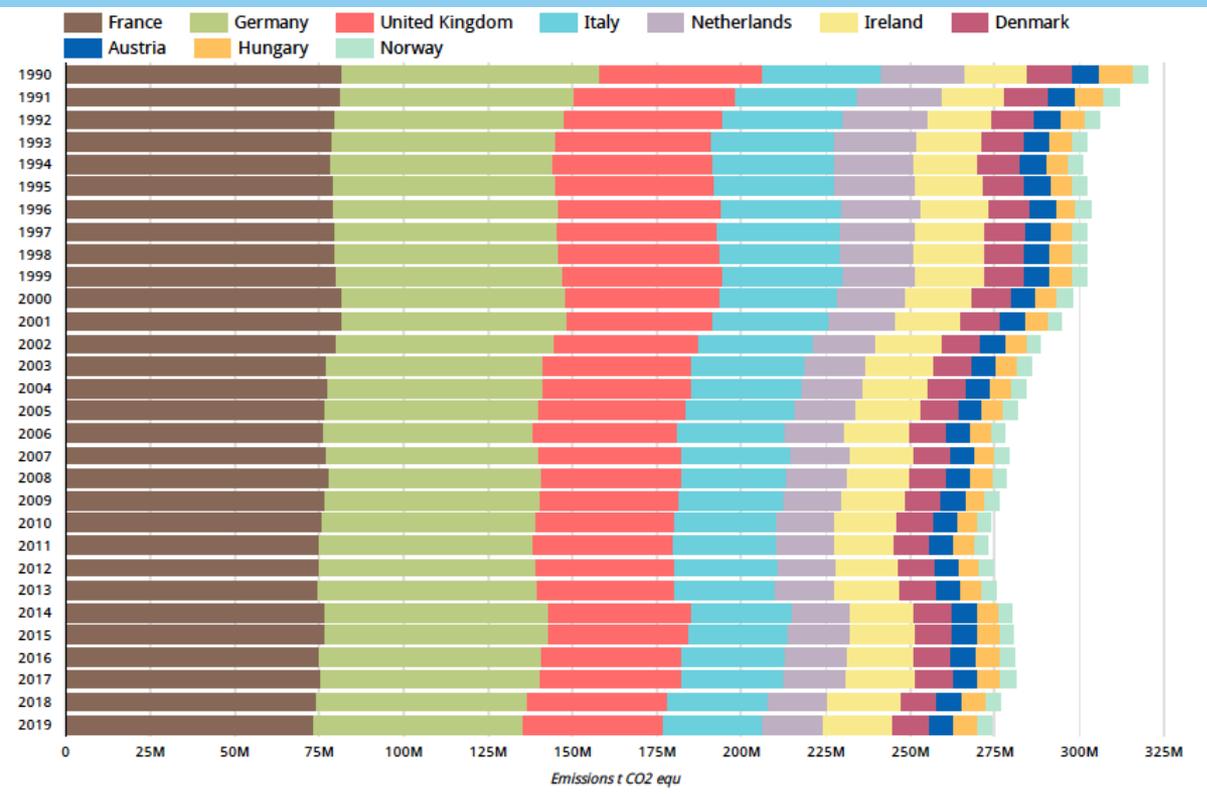
Queens University Belfast



QUEEN'S
UNIVERSITY
BELFAST

THE INSTITUTE
FOR GLOBAL
FOOD SECURITY

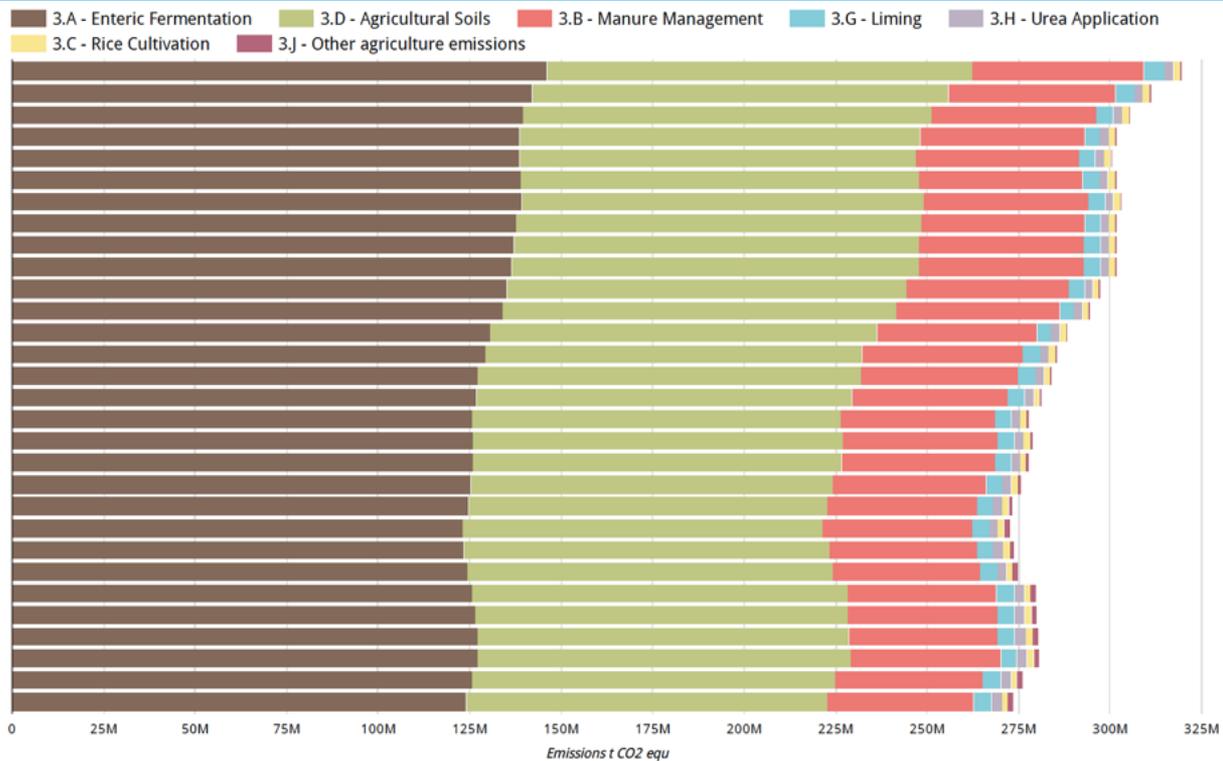
Agriculture Emission Trends and Drivers



**Decreased -16.90% (EU- 20.5%)
emissions relative to 1990**

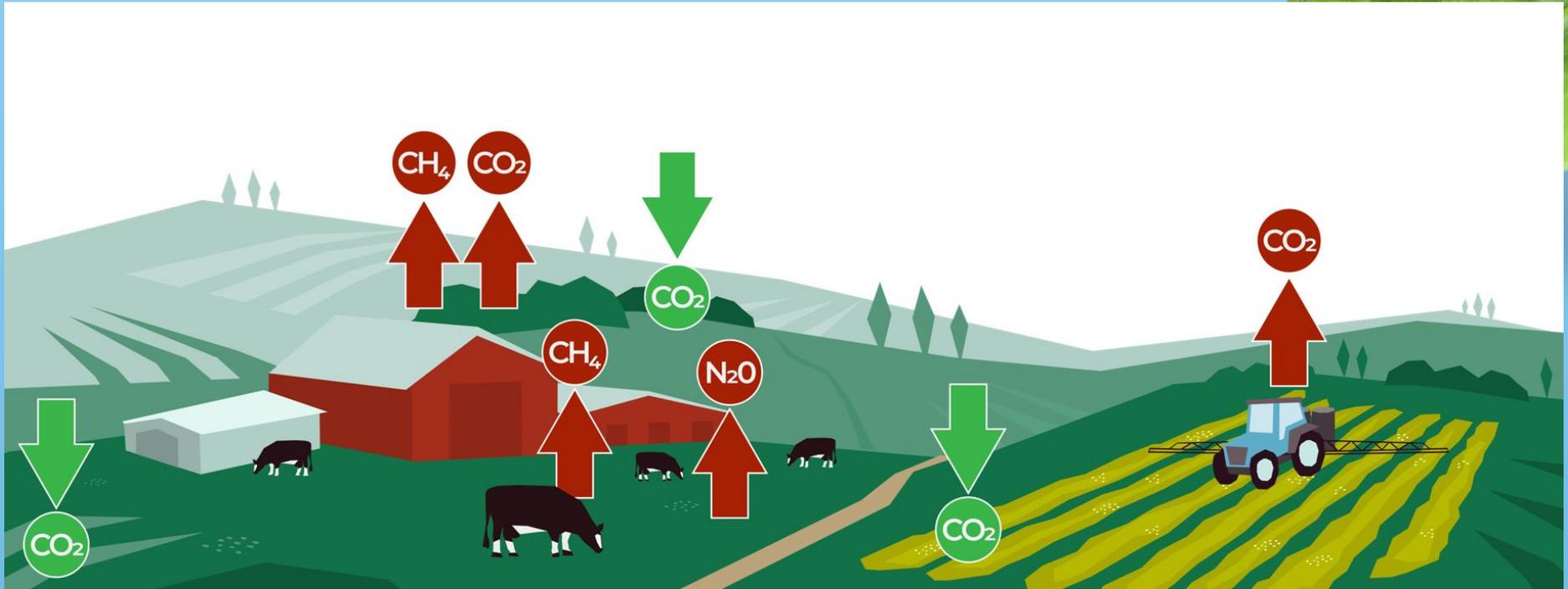
**Emissions from agriculture are
below 1990 levels but reductions
slowed**

Agriculture Emission Trends and Drivers



**Sub categories of
Agriculture (CRF3)
Enteric Fermentation,
Agriculture Soils, Manure
management are major
emission sources**

Net Farm Carbon, the sum of emissions & sequestration, annually



Mitigation Strategies

To deliver 2050 net zero target for UK, agriculture and land use sectors must reduce emissions by 64%

Equates to rate of decrease of 0.58 Mt CO₂-eq / year between 2018 and 2050

Existing mitigation technology can potentially decrease emissions by 7.1 Mt CO₂-eq, by 2035

19% of net zero target, 81%
2035 and 2050



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Carbon Removal strategies



**Forestry /
agroforestry**

**Soil C
sequestration**

**Biochar
application**

**Enhanced
weathering**

**Bio-energy
with Carbon
Capture and
Storage**

**Direct Air
Capture &
Carbon
Storage**

Vision of C-Neutral Farming

Need to determine a **farm's carbon balance** and **stocks** to accurately assess the impact of livestock production

Identify key practices to **mitigate** GHG emissions and maximise **sequestration** potential

Foster 'nature positive' behavioural change amongst farmers



Improve farm performance



Net-zero carbon farming systems

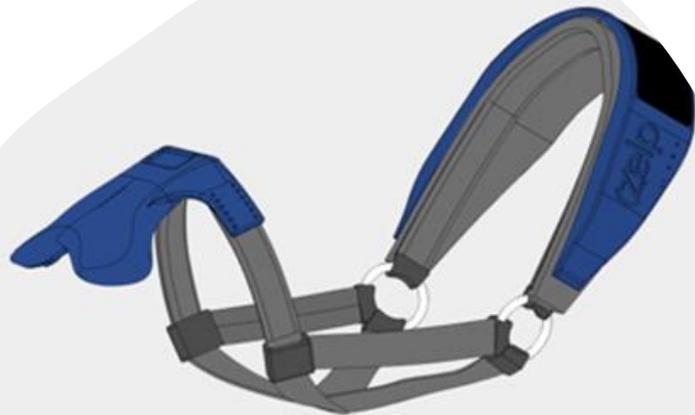


Promote sustainability





Solutions



Cloud-based carbon dashboard to assess whole-farm GHG emissions

Wearable devices to measure and reduce methane emissions

Potential of feed additives to reduce GHGs



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Incentives for transition

Barriers for change -

Technology, economy, investments, environment, safety, regulations

Farm level accounting (GHGs, N, P etc.) –

Basis for future public regulation; Basis for product labelling

Need to speed up transition processes -

Regulatory actions; new facilities and infrastructure;
Partnerships (public-private); Demonstration (living labs)



Thank you

nigel.scollan@qub.ac.uk



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