CERTH
CENTRE FOR
RESEARCH & TECHNOLOGY
HELLAS

"Welcome and introduction of the workshop/Sustainable pathways using biomethane under a circular economy approach"
Biomethaverse Workshop, Thessaloniki"

20.06.2024

Dimitris Kourkoumpas
Senior Research Engineer

Agenda (1)

Time	Topic	Moderator / Presenter
10.00 - 10.15	Welcome and introduction of the workshop/Sustainable pathways using biomethane under a circular economy approach	Dimitris Kourkoumpas (CERTH)
10.15 - 10.25	The role of renewable gases in the energy sector: CERTH activities	Panagiotis Grammelis (CERTH)
10.25 - 10.35	BLAG activities in the biomethane sector	Themistoklis Sfetsas (Biogas Lagada S.A.)
10.35 - 10.45	Biomethane towards 2040	Anna Venturini (EBA)
10.45 - 11.00	Challenges and Prospects for the Production and Transport of Biomethane in Greece: the role of DESFA	Eva Tsoukalidou (DESFA)
11.00 - 11.15	Biomethane perspectives in Greece, to meet NECP objectives	Manolis Zafeiris (ENAON)
11.15 - 11.30	Guarantees of Origin – implementation for gas	Maria Koulouvari (DAPEEP)
11.30 - 11.40	Pilot site in Italy	Tomaso Amati (CAP)
11.40 - 11.55	Production costs of biogas (methane) and electricity in Greek anaerobic digestion facilities	Vasilios Diamantis (HABIO)
11.55 - 12.25	Coffee Break	

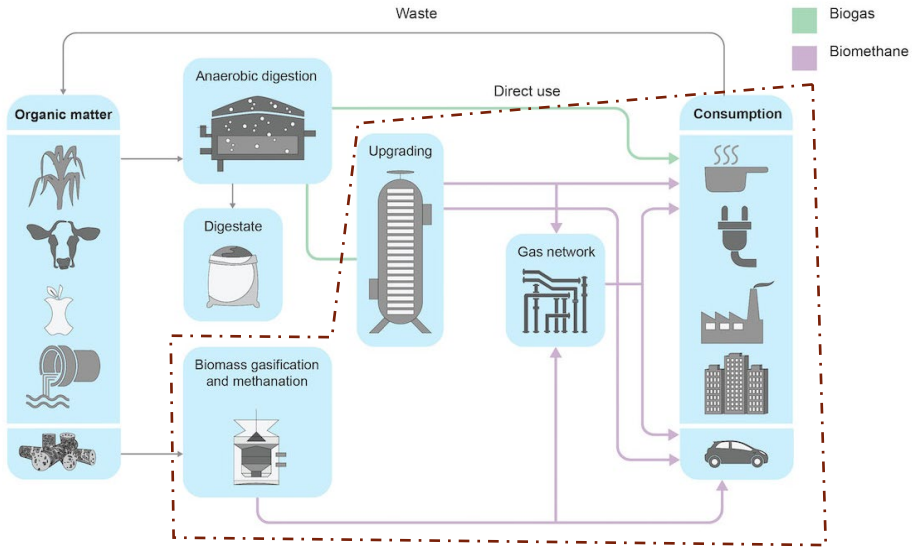
Agenda (2)

	BIOMETHAVERSE Project Demos	
12.25 - 12.35	The BIOMETHAVERSE project	Stefano Proietti (ISINNOVA)
12.35 - 12.45	Pilot site in France	Gaspard Bouteau (ENGIE)
12.45 - 12.55	Pilot site in Sweden	Karin Berg (MHP)
12.55 - 13.05	Pilot site in Ukraine	Oleksandr Dombrovskiy (RISE)
13.05 - 13.15	Pilot site in Greece	Georgia Nikolaou (CERTH) and Ifigeneia Grigoriadou (BLAG)
13.15 - 13.30	Q&A	All
13.30 - 14.30	Lunch Break	
	Other projects - Networking	
14.30 - 14.35	ALFA: Unlocking the Biogas potential of Livestock Farming	Andromachi Kalaouzi (Q-PLAN INTERNATIONAL)
14.35 - 14.40	µ2gas: Enhancing Anaerobic Digestion Efficiency and unveiling the Microbial World of Anaerobic Digestion	Manthos Panou (Qlab)
14.40 - 14.45	Fuelphoria: The microalgae valorization towards biodiesel production	Petros Samaras (IHU)
14.45 - 14.50	CO2SMOS - Advanced chemicals production from biogenic CO_2 emissions for circular bio-based industries	Dimitris Kourkoumpas (CERTH)
14.50 - 15.10	Q&A	All
15.10 - 15.45	Forum – Round table discussion	All
15.45 - 16.00	Conclusions - Closing of the workshop	Dimitris Kourkoumpas (CERTH)
Closure		

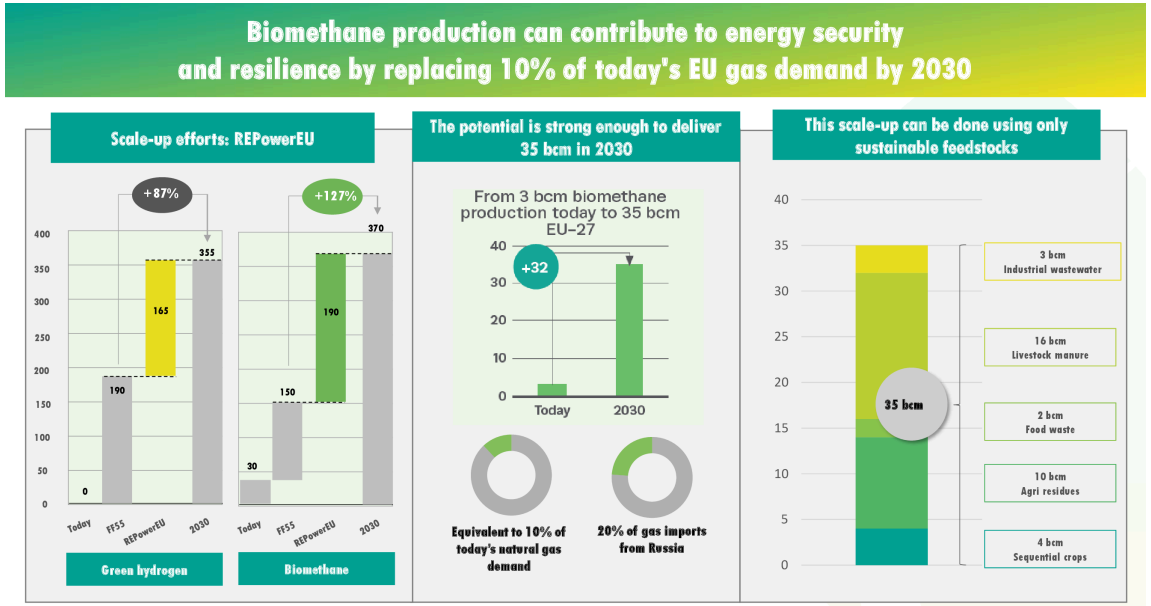
Renewable gases: Biomethane

Biomethane is a renewable substitute of natural gas (NG), which can provide energy storage capacity and be a flexible renewable energy carrier and fuel.

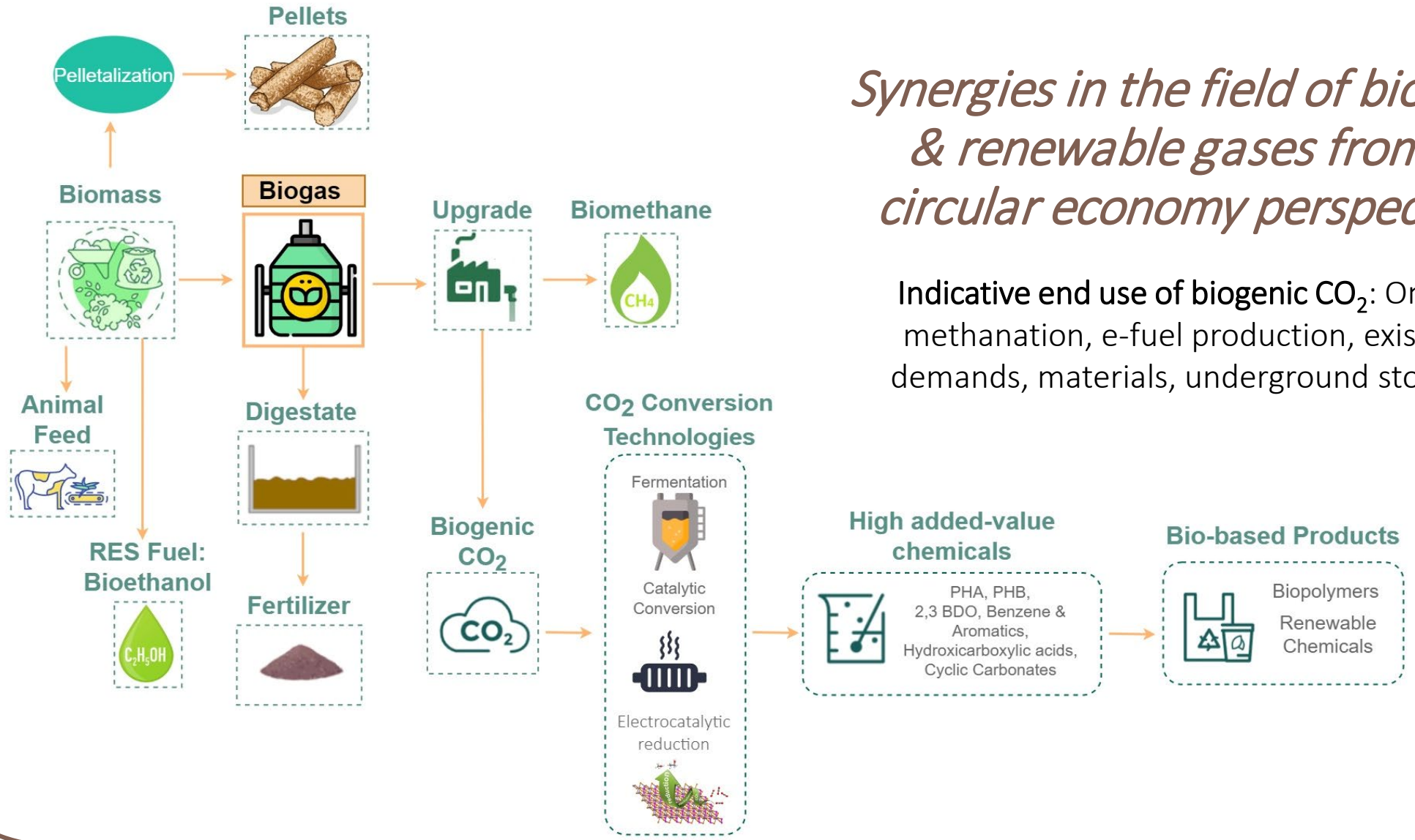
- The production of domestic renewable gases, such as biomethane, can ensure **security of gas supply** at predictable and affordable prices and supports the EU goals of energy independence and competitive sustainable growth, while creating **local green jobs**.
- **Reaching NG grid quality standa**rds at affordable prices is of high importance for upscaling biomethane production in EU.
- EBA estimates that biomethane production in EU-27 in **2030** can reach 35 – 44 bcm (370 – 467 TWh) and 95 bcm (~ 1,000 TWh) by **2050** which equals 24% of the natural gas consumption in the EU-27 in 2020.
- The most important upgrading technologies in existing commercial biomethane plants are membrane separation (39%), water scrubbing (22%) and chemical absorption (18%).



Production pathways for biomethane (Source: https://www.iea.org)



EU REPower, (Source: EBA)



Synergies in the field of biofuels & renewable gases from a circular economy perspective

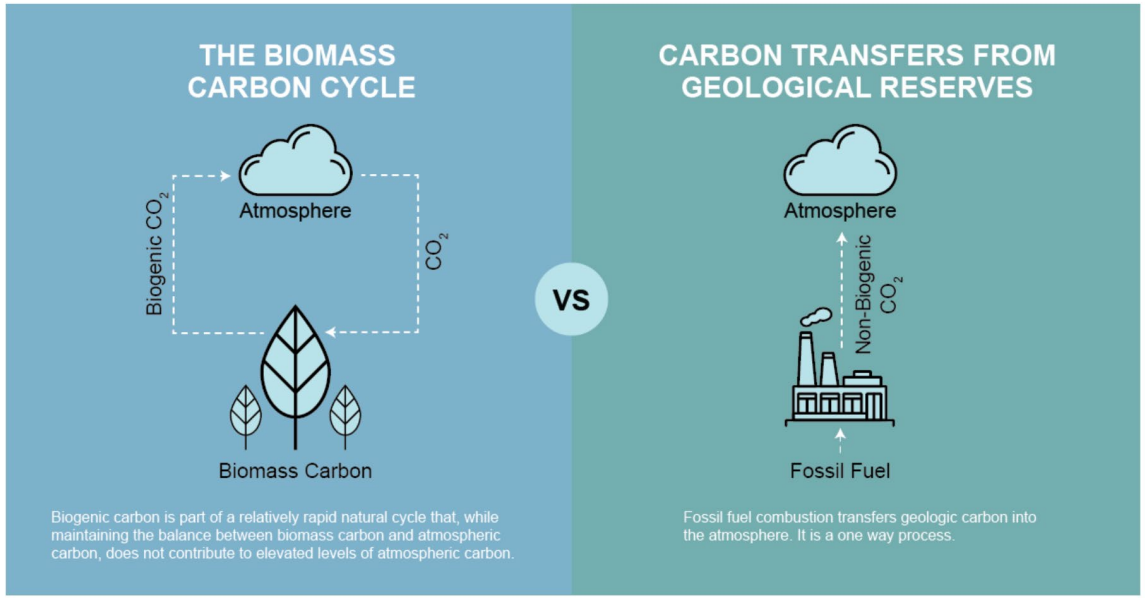
Indicative end use of biogenic CO_2: Onsite methanation, e-fuel production, existing demands, materials, underground storage

Biogenic CO_2 emissions linked with Biomethane production marker

The demand for CO_2 in the EU is **currently 41 Mt/yr,** and it is estimated to increase to hundreds of Mt/yr by 2050, mainly driven by the need for it as feedstock for zero-emission synthetic fuels and the need for CO_2 removal from the atmosphere.

CCS with CO_2 from biogenic sources or from the atmosphere results in **negative emissions** and is a form of Carbon Dioxide Removal (CDR). The IPCC defines CDR as 'anthropogenic activities removing CO_2 from the atmosphere and durably storing it in geological, terrestrial, or ocean reservoirs, or in products

CCS with fossil CO_2 emissions is not negative emissions but emission avoidance, and thus not a form of CDR.

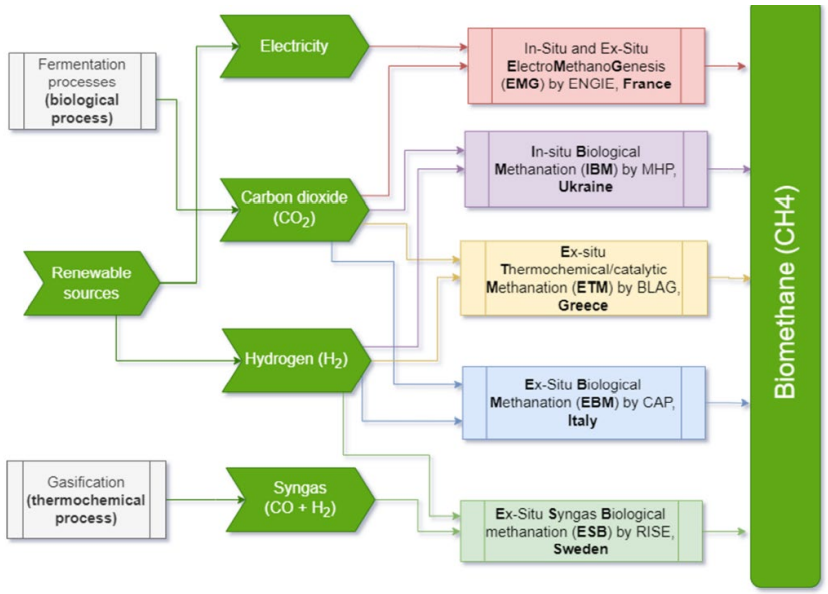


Source: BIP Europe

BIOMETHAVERSE- Demonstrating and Connecting Production Innovations in the BIOMETHAne uniVERSE

Scope – Innovation:

BIOMETHAVERSE aims to diversify the technology basis for biomethane production in Europe, to increase its cost-effectiveness, and to contribute both to the uptake of biomethane technologies and to the priorities of the SET Plan Action 8.



*Five innovative **biomethane production pathways will be demonstrated** in five European countries: France, Greece, Italy, Sweden, and Ukraine.*

innovations in the BIOMETHAne uniVERSE

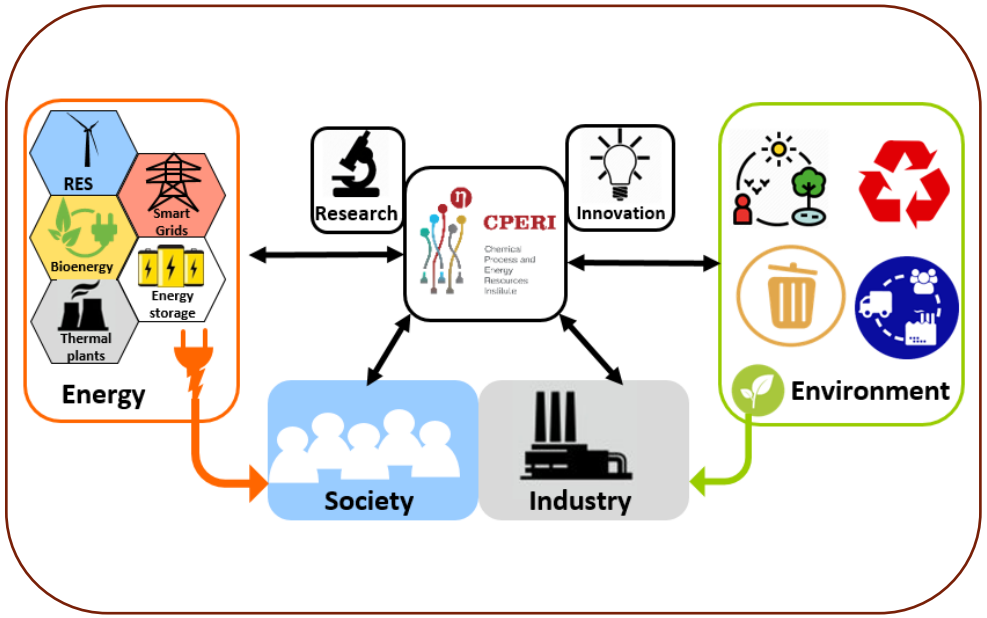
All demonstration plants have a starting *TRL 3-5* and **will reach TRL 6-7 at the end of the project**.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 101084200

Scope of the workshop

- Presentation of status of European and Greek market for biomethane production
- Presentation of innovative technologies: Next day in biomethane production
- Interaction with stakeholders regarding policy issues
- Interest for replication activities
- Networking with other European projects

Conclusions-CERTH activities at a glance



Development of breakthrough technologies for the conversion of biogenic CO_2 emissions into added-value chemicals, biofuels & renewable gases

Design of circular economy-based integrated processes with zero or negative GHG emissions

Development, control and operation of integrated circular economy systems at pilot/industrial scale

New business models and value chains in the CO_2 utilization sectors/Renewable gases

Adaption of integrated LCA/LCC models through business cases investigation in key circular economy sectors: energy, buildings, agriculture, biorefinery & waste management

Diversification of the economic base of bio-based industries

Thank you for your attention!

Contact

Dimitris Kourkoumpas

Senior Research Engineer

CERTH

kourkoumpas@certh.gr