The BIOMETHAVERSE project

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ISINNOVA

BIOMETHAVERSE workshop
Barcelona, 29 November 2024

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innovations in the BIOMETHANE uniVERSE

Who we are

- Research and consultant Institute founded in **1971**
- Consolidated experience in **energy efficiency**, **sustainable mobility**, **territorial systems**, **environmental sustainability**
- **15** members staff with **multidisciplinary background** in engineering, statistics, economics, politics and informatics
- Long story of collaboration at **national** (Ministries, Regions, Provinces and Municipalities) and **international** level (European Commission, World Bank, European Bank of Investments, foreigner Ministries, Regions e Municipalities, etc.)
- Specialised skills in **coordination** of projects, **analysis** of and support to policies, **impact assessment**, **evaluation** of policies and technologies energy efficiency, **monitoring** of participation processes to policies.
- www.isinnova.org

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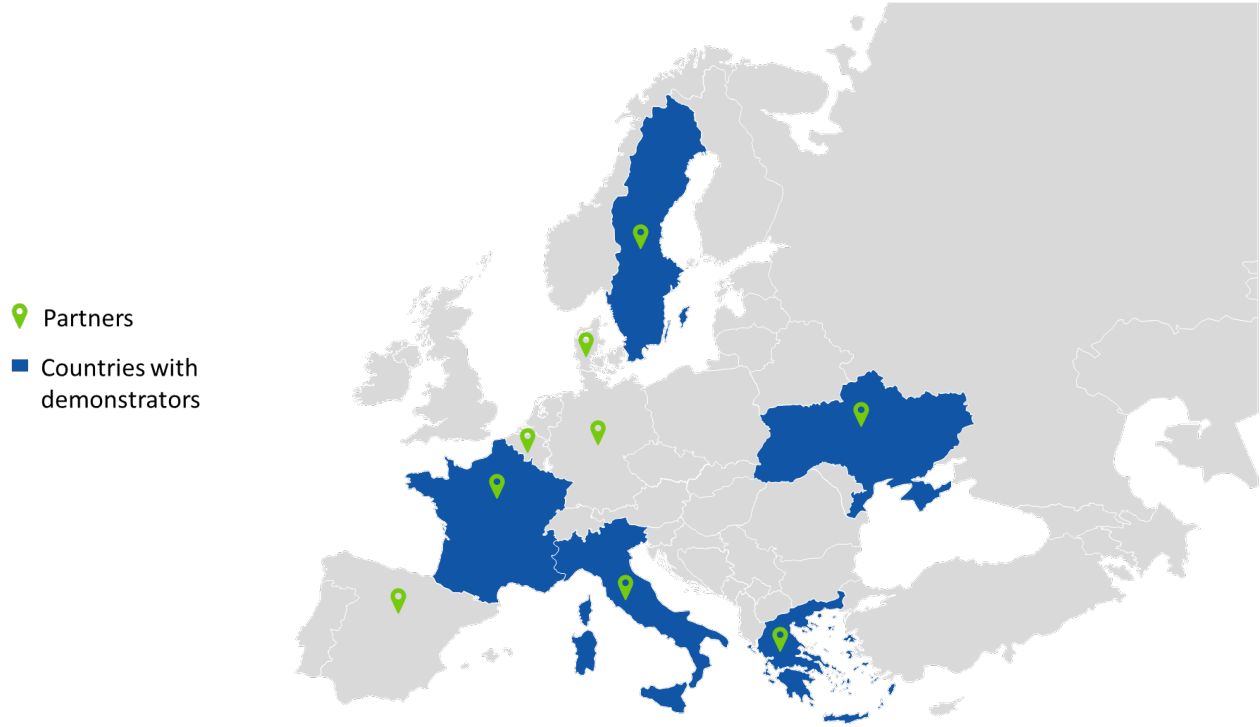
Project in a nutshell

- **BIOMETHAVERSE**: Demonstrating and Connecting Production Innovations in the **BIOMETHA**ne uni**VERSE (HORIZON EUROPE);**
- **54** months (October 2022- March 2027);
- **22** partners in **9** countries: ISINNOVA, ENEA, CAP, POLIMI, SIAD, CIC (**IT**), EBA (**BE**), FAU, DBFZ, EE (**DE**), UABIO, MHP (**UA**), BLAG, CERTH (**EL**), RISE, CORTUS, WARTSILA, SGA (**SE**), ENGIE (**FR**), AERIS, LEITAT (**ES**), DTU (**DK**);
- **9,871,773** € of EC funding (**70%** of EU funding);
- 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** in five European countries: France, Greece, Italy, Sweden, and Ukraine.



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Pillars of the project

- Demonstration of Innovative Biomethane Pathways
- Assessment and Optimisation of Innovative Biomethane Pathways
- Replicability, Planning Decisions, Market Penetration, and Policy Dimension
- Dissemination, Exploitation & Communication

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Demonstration of Innovative Biomethane Pathways

- **Design** and **implementation** of demonstration activities:
  - ✓ In-Situ and Ex-Situ Electromethanogenesis (**EMG**) in France
  - ✓ Ex-Situ Thermochemical/catalytic Methanation (**ETM**) in Greece
  - ✓ Ex-Situ Biological Methanation (**EBM**) in Italy
  - ✓ Ex-Situ Syngas Biological Methanation (**ESB**) in Sweden
  - ✓ In-Situ Biological Methanation (**IBM**) in Ukraine
- **Wrap-up** of demonstration activities

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Assessment and Optimisation of Innovative Biomethane Pathways

- Evaluation framework and data collection strategy
- Demos flow sheeting and techno-economic assessment
- Environmental and social sustainability evaluation
- Evaluation results and upscaling of demos

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Replicability, Planning Decisions, Market Penetration, and Policy Dimension

- Replicability analysis
- Assisting future planning decisions
- Market penetration
- Policy dimension

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Dissemination, Exploitation & Communication

- **Communication** (website, leaflets, poster, roll-up, e-newsletters, video, press releases, social media)

- **Dissemination and exploitation** (publications, social media, final conference, transferability workshops in other countries)

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Replicability, Planning Decisions

- **Replicability** analysis (assessing the degree and the **replicability** of technology pathways): **INSPIRE** methodology based on the analysis of 5 dimensions (Socio-cultural, Institutional, Technological, Environmental, and Economic). Stakeholders **workshop** with other potential investors and project developers to assess **replication potential** of project technologies.

- Assisting future planning decisions: **Biomethane Planning Decisions Guide** (criteria and steps leading to deploy biomethane projects) with stakeholder **survey** and **workshop** to consolidate it**.**

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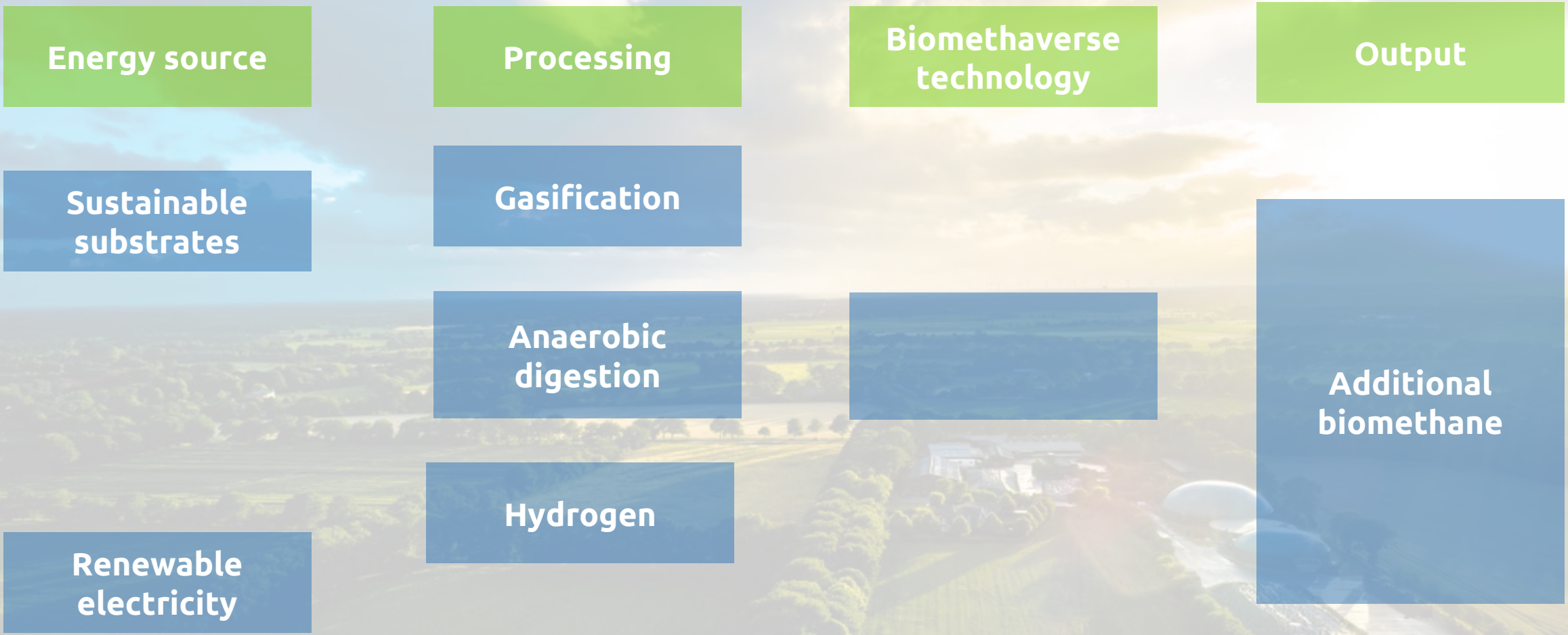
Innovative technological concepts in BIOMETHAVERSE



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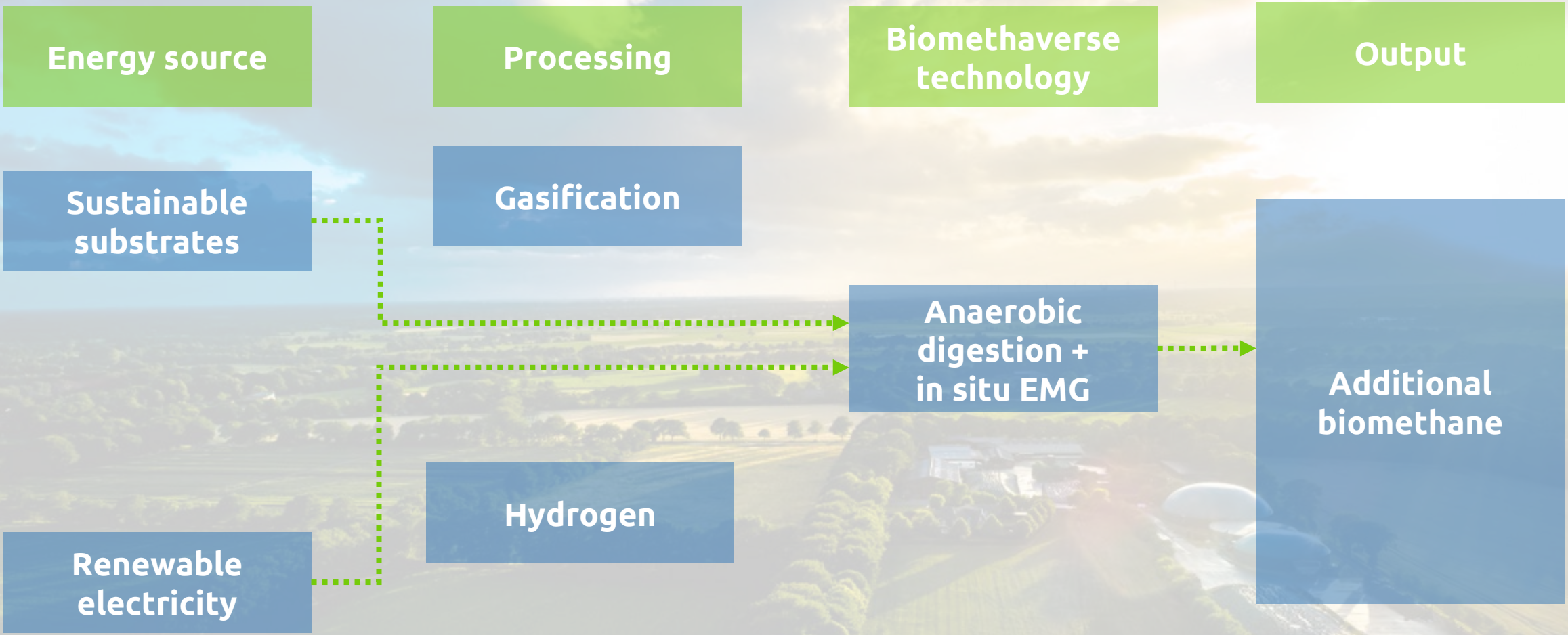
Innovative technological concepts in BIOMETHAVERSE

France, ENGIE: In-Situ and Ex-Situ Electromethanogenesis (EMG)



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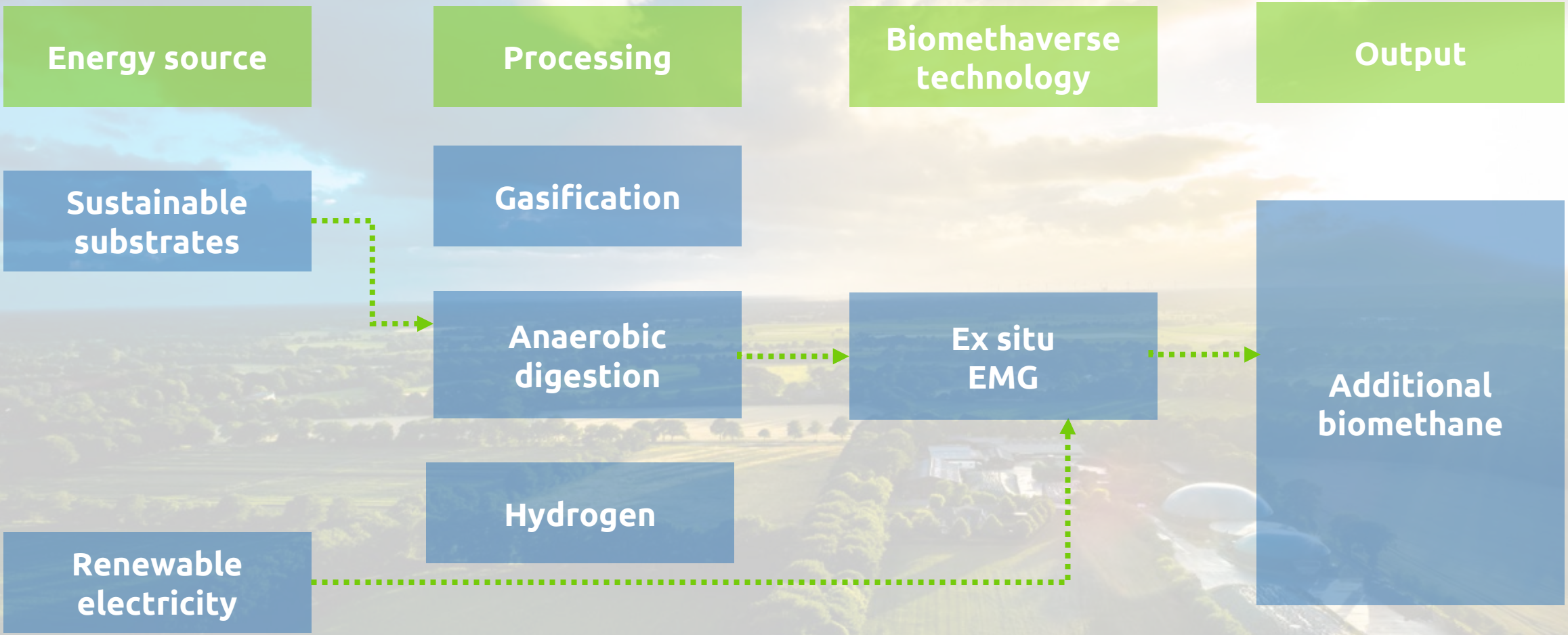

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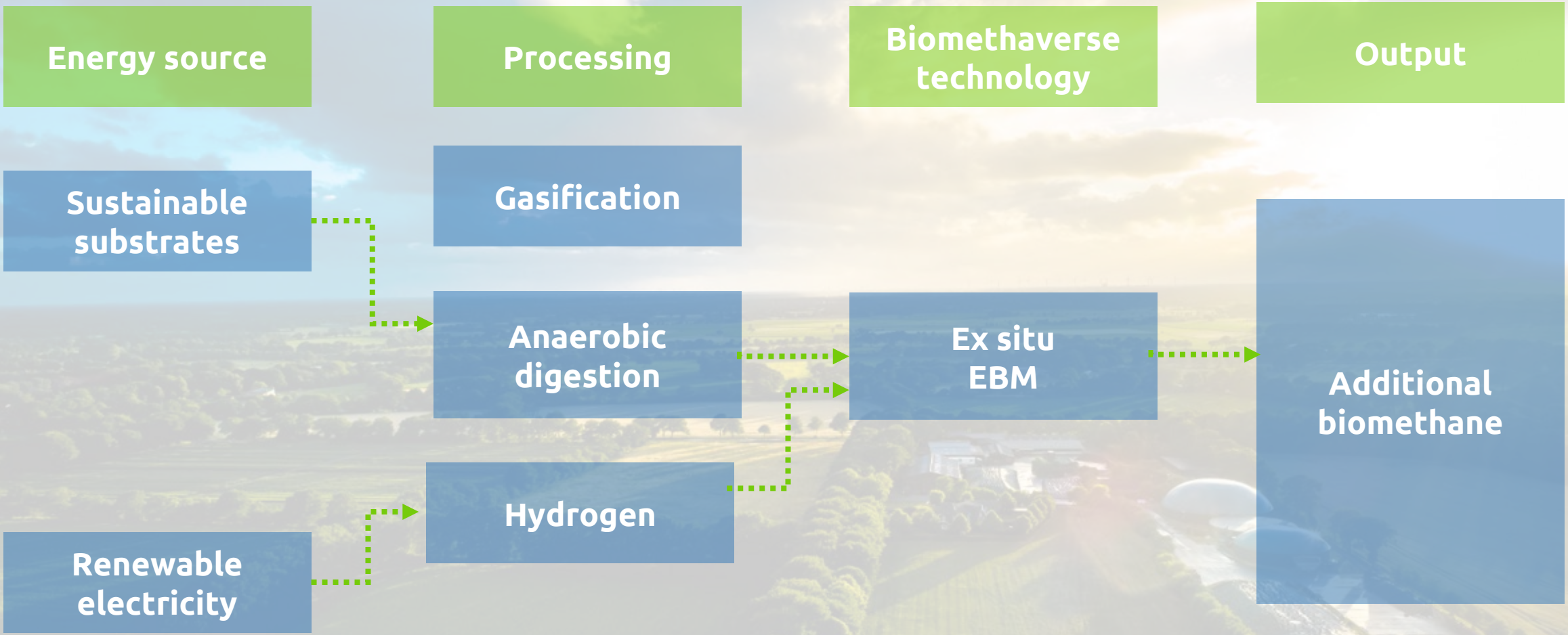
Italy, CAP: Ex-Situ Biological Methanation (EBM)



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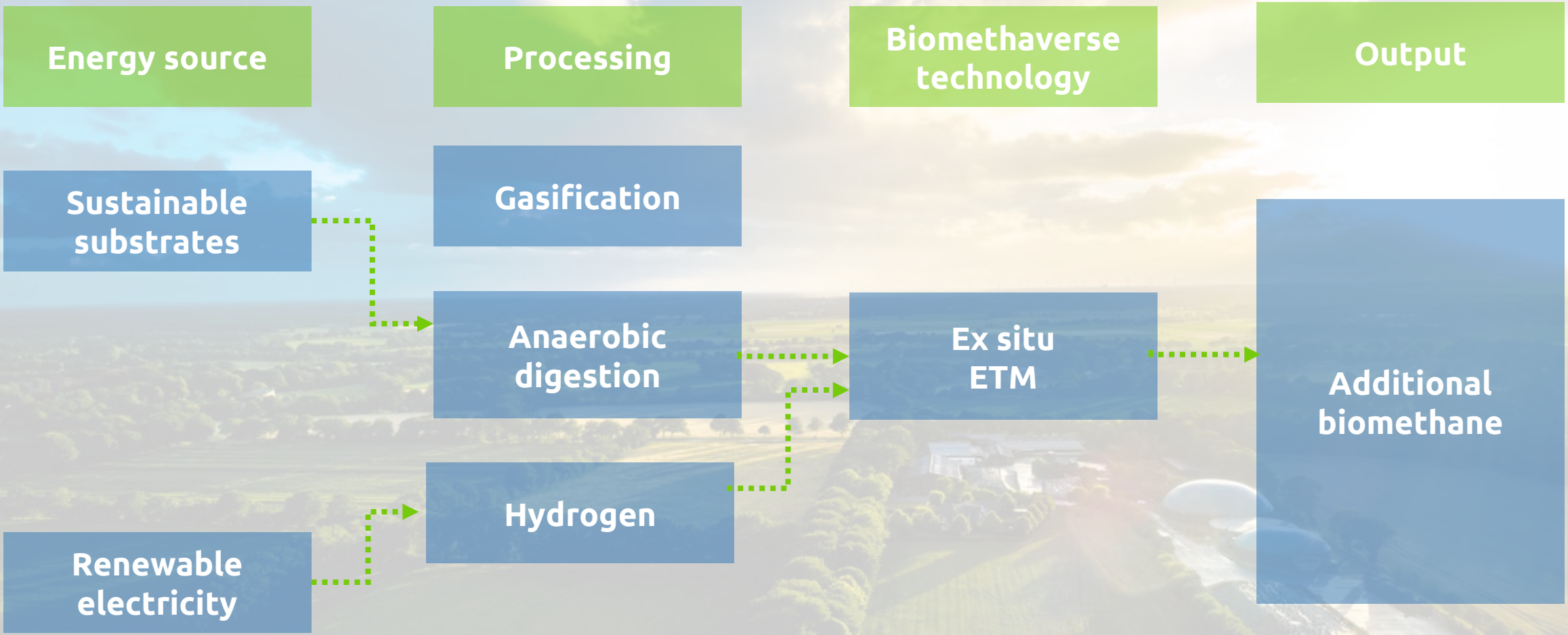
Greece, BLAG: Ex-Situ Thermochemical Methanation (ETM)



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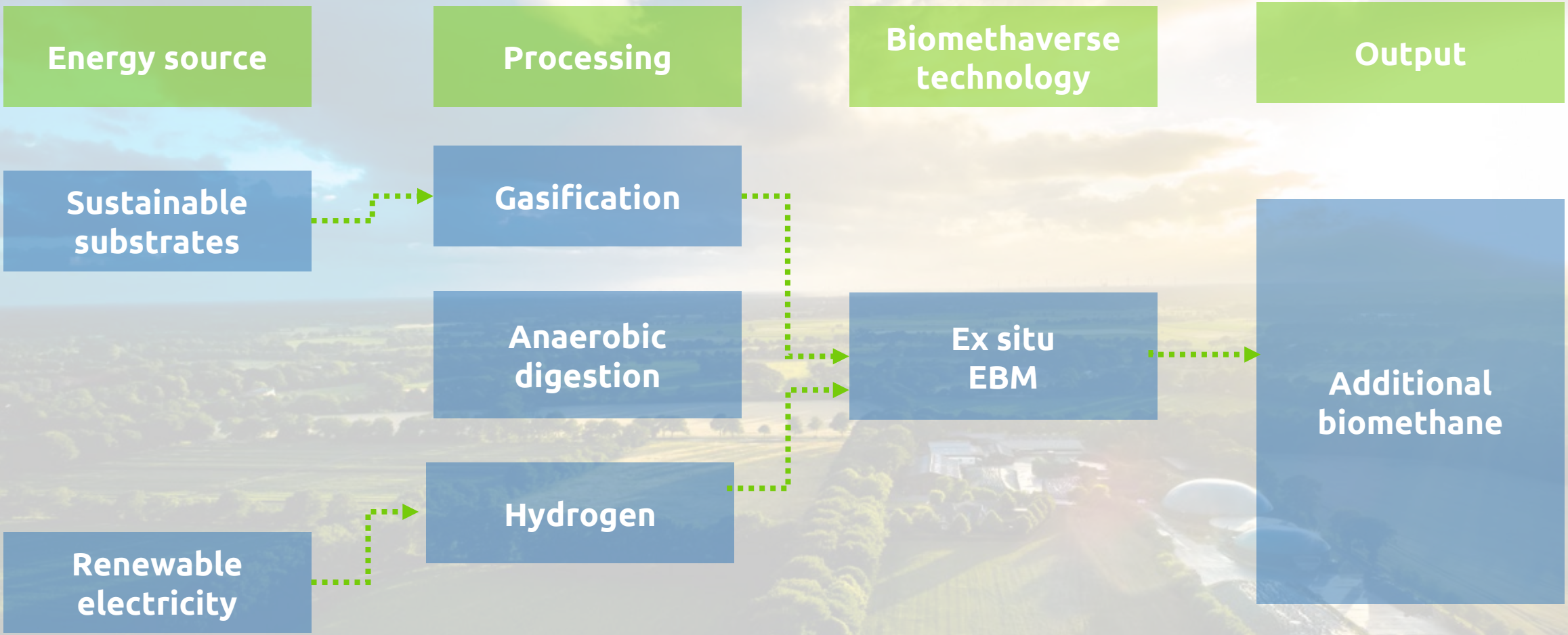
Sweden, RISE: Ex-Situ Syngas Biological Methanation (ESB)



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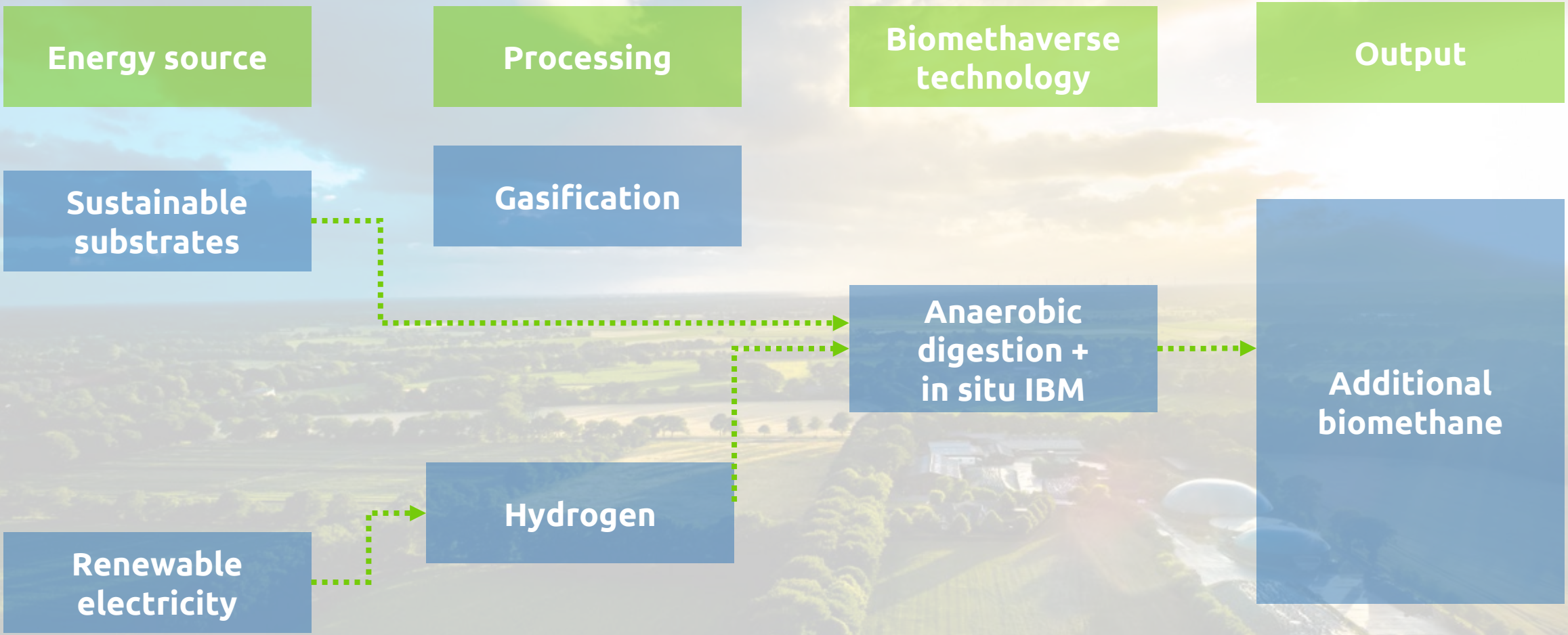
Ukraine, MHP: In-Situ Biological Methanation (IBM)



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BIOMETHAVERSE Impacts

+ + $BIOCH_4$ POTENTIAL

- - GHG EMISSIONS

++ JOBS & ECONOMICS

	2030	2050
BIOCH4 production	**+277 TWh**	**+ 700 TWh**
Mt CO2 saved	**-113**	**-287**
Jobs	**220 k**	**714 k**

Cost reduction: **13-44%** by the end of the project

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What done so far

- Summary on the **Design of the Pilot Plants**
- **Scenarios** and **Vision** for Market Penetration

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