Policy Learning Platform Online discussion
15 June 2020

Financing & business models for biogas plants: concepts

Katharina Krell & Astrid Severin
Interreg Europe
Policy Learning Platform

Interreg Europe
European Union | European Regional Development Fund

Separate collection of bio-waste enables recycling

- **Bio-waste has to be collected separately by 2023 by EU Directive**
- **Currently, large differences exist in the provision of separate collection and treatment capacity for bio-waste across Europe**
  - Frontrunners: Austria, Switzerland, Germany, the Netherlands, Flanders (Belgium), Sweden and Norway
  - Catching up: UK, Italy, Finland, Ireland, Slovenia, Estonia and France
  - Expansion potential: Bulgaria, **Greece**, **Croatia**, **Latvia**, Lithuania, **Malta**, Poland, **Portugal**, **Romania**, Slovakia, **Spain**, Czech Republic, **Hungary** and Cyprus.
- **Potential for expansion in countries with established bio-waste collections**
  - Predominant collection and composting of green waste; potential for separate household food waste collections.
  - High proportion of bio-waste (60-70 kg per inhabitant / year) remains within the residual waste stream

Source: European Compost Network

Status on Separate Collection of Biowaste in Europe

Sweden:
67 sites, 1.07 million tons of biowaste

Finland:
259 sites, 0.48 million tons of biowaste

United Kingdom:
199 sites, 2.95 million tons of biowaste

Netherlands:
135 sites, 4.20 million tons of biowaste

Belgium:
81 sites, 2.03 million tons of biowaste

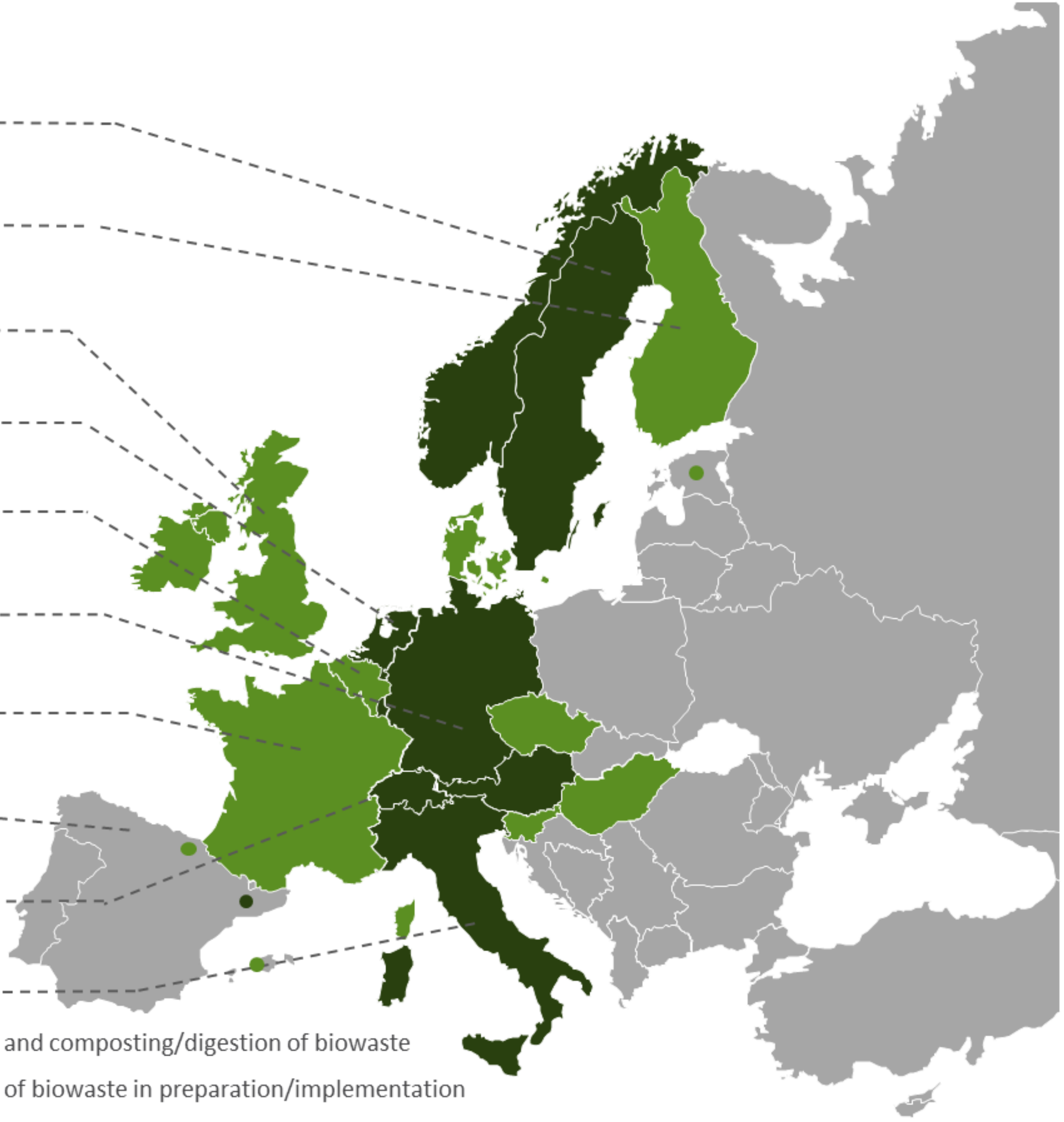
Germany:
912 sites, 8.87 million tons of biowaste

France:
692 sites, 4.62 million tons of biowaste

Spain:
67 sites, 0.87 million tons of biowaste

Switzerland:
287 sites, 1.00 million tons of biowaste

Italy:
298 sites, 5.30 million tons of biowaste

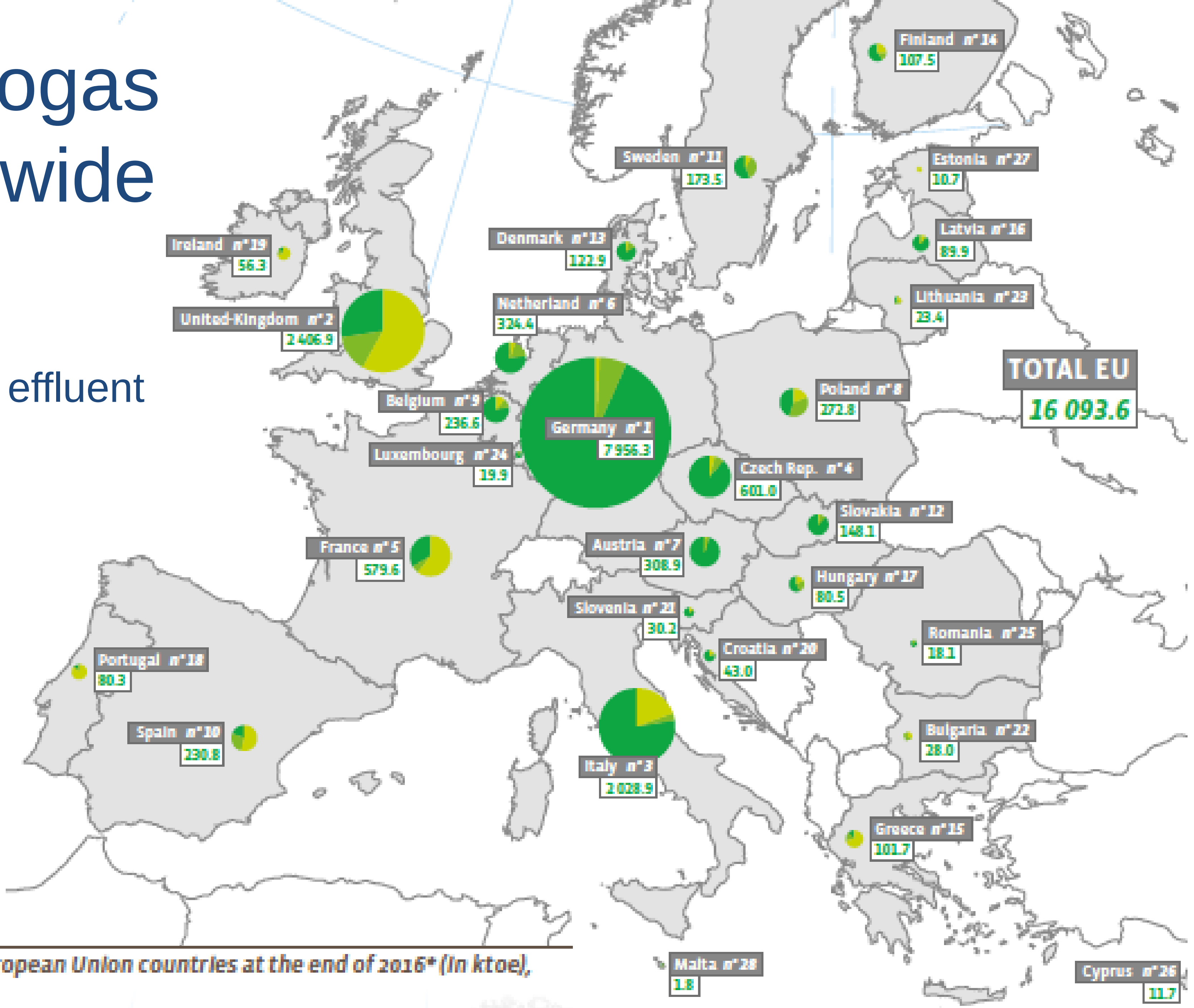


- Separate collection and composting/digestion of biowaste
- Separate collection of biowaste in preparation/implementation
- Only limited collection of biowaste

Source: European Compost Network

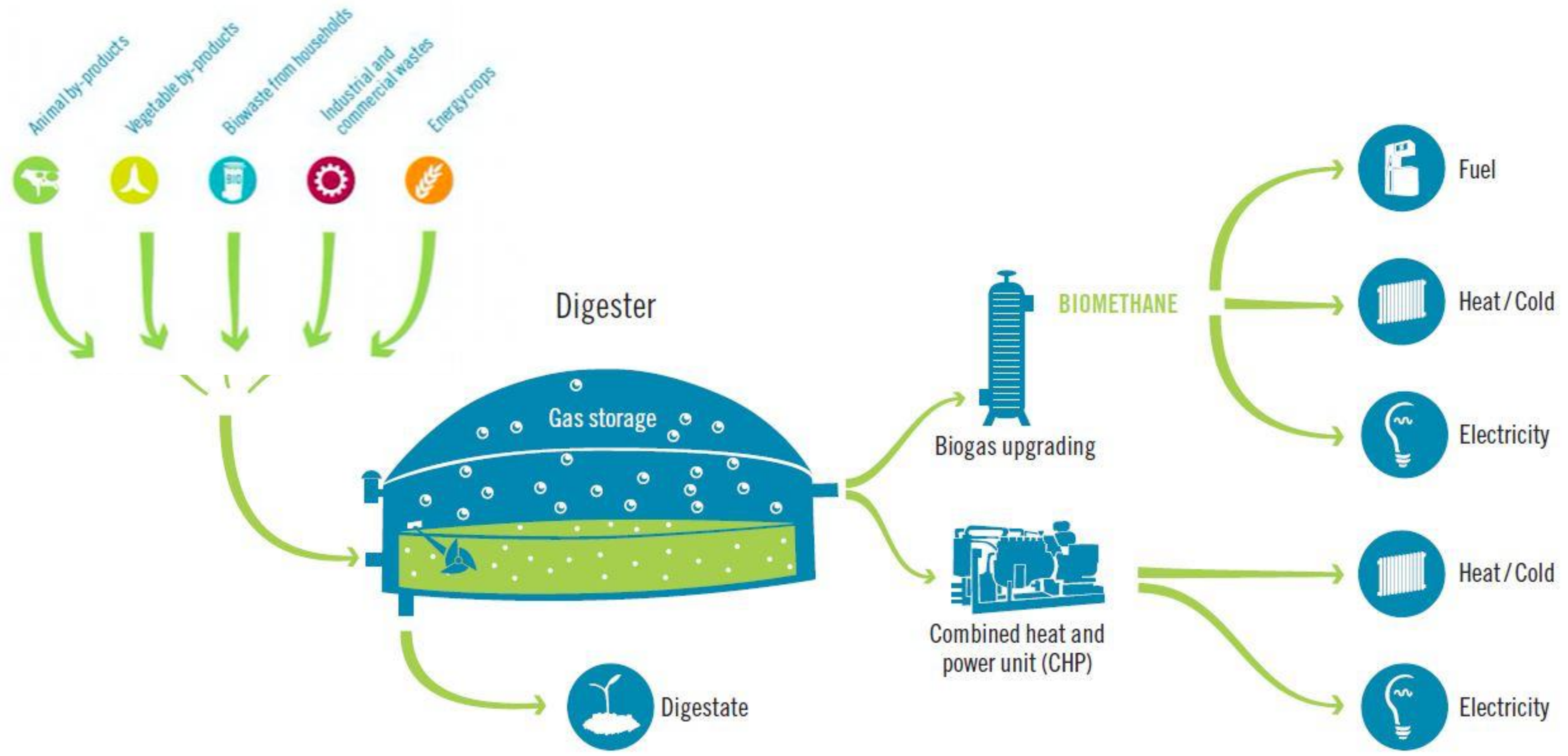
Energy from Biogas production EU-wide

- Urban sewage & industrial effluent biogas
- Landfill biogas
- Other biogas from AD (Agri-waste, MSW, etc)



Primary energy production from biogas in the European Union countries at the end of 2016 (in ktoe), with the respective shares of each sub-sector.*

Anaerobic digestion



Source: Biomethane from biogas, Fachverband Biogas

Different biogas scenarios / Implications on CAPEX and OPEX

Feedstock	
Agricultural wastes Energy crops	Baseline scenario: These plants have emerged because a farmer had the agricultural waste feedstock anyway, and the biogas plant was financed through the subsidised sale of electricity and heat produced (RE feed-in tariff, CHP bonus, RE heat incentive, etc.)
Agricultural wastes Energy crops	Community-owned plants + district heating The biogas plant itself is financed via the sale of electricity and heat (as above) The district heating is financed by fix and variable fees by its users
Separately collected bio-waste (households, canteens, restaurants,…)	These plants only emerge upon public decision of a municipality (as owner of household waste and responsible for its treatment). The extra costs of handling partially contaminated organic waste are paid for by the gate fee, and the biogas plant itself is financed through sale of renewable energy.

Feedstock

Agricultural waste: almost purely organic. Contaminants: stones, sand, if any

Separately collected bio-waste: systematically contaminated with plastic and other non-organic items

Cost implication of our 3 scenarios

Feedstock	Feedstock costs	Pre-treatment costs	District heating costs
Agricultural wastes Energy crops	for free at a cost - €	CAPEX and OPEX: - €	n/a
Agricultural wastes Energy crops	for free at a cost - €	CAPEX and OPEX: - €	CAPEX and OPEX: - €
Separately collected bio-waste (households, canteens, restaurants,…)	for a 'gate fee' + €	CAPEX and OPEX: **- €€ (tear & wear, electricity use)**	n/a

Revenue streams for our 3 scenarios

Feedstock	Gate fee for the treatment of waste	Revenue for the sale of renewable energy	Revenue from heat delivery to district heating clients
Agricultural wastes Energy crops	No	Yes But RE subsidies are running out all over the EU	No
Agricultural wastes Energy crops	No	Yes But RE subsidies are running out all over the EU	Yes
Separately collected bio-waste (households, canteens, restaurants,…)	Yes	Yes But RE subsidies are running out all over the EU	No

Creating a win-win situation

- **For public authorities**

✓ to get away from using public funds to finance entire projects;

✓ to achieve the transformation of an entire sector

✓ to attract private sector investments into a policy area;

✓ to create enabling framework conditions for business to thrive.

- **For private investors**

✓ To create a predictable long-term framework

✓ To allow private investors to earn an ‘acceptable’ return on their investment in a low-risk environment.

Policy Learning Platform Online discussion
15 June 2020

Financing & business models for biogas plants: concepts

Katharina Krell & Astrid Severin
Interreg Europe
Policy Learning Platform

Thank you!