

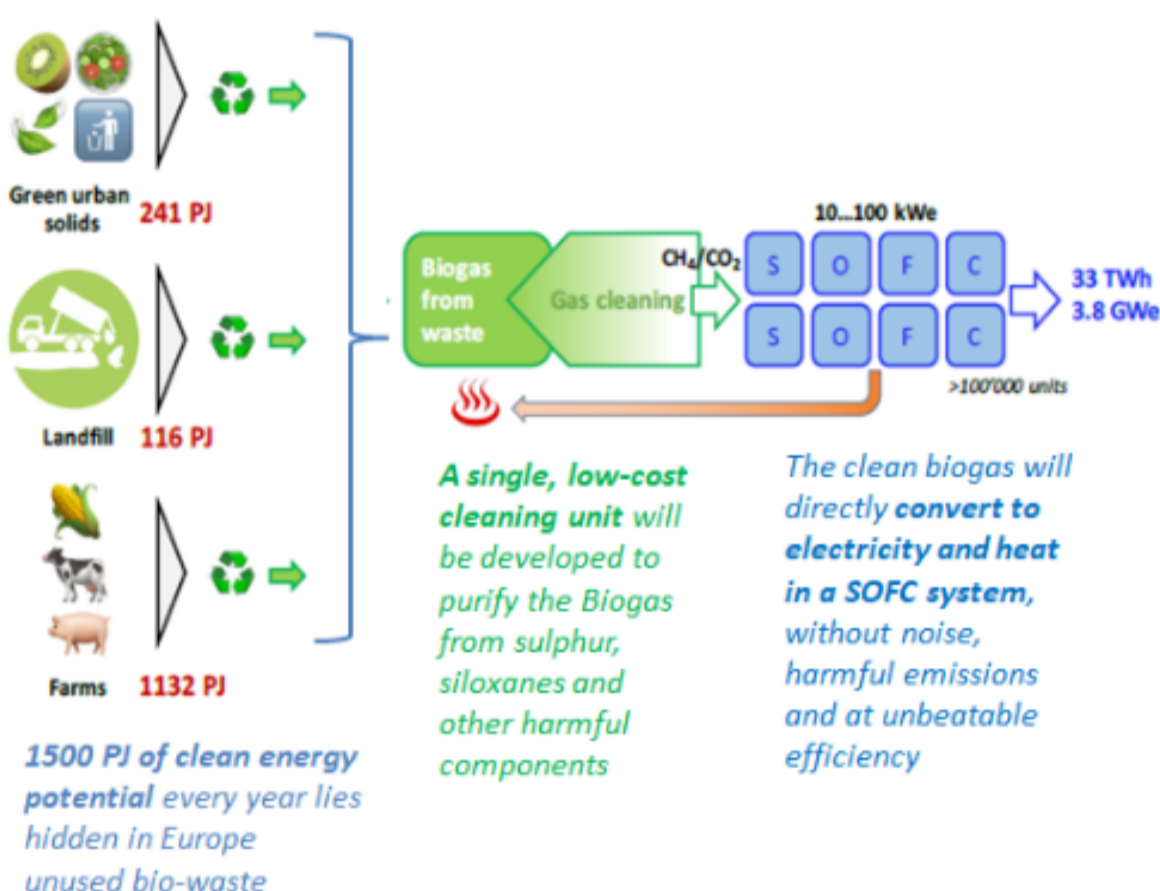


Waste2Watts



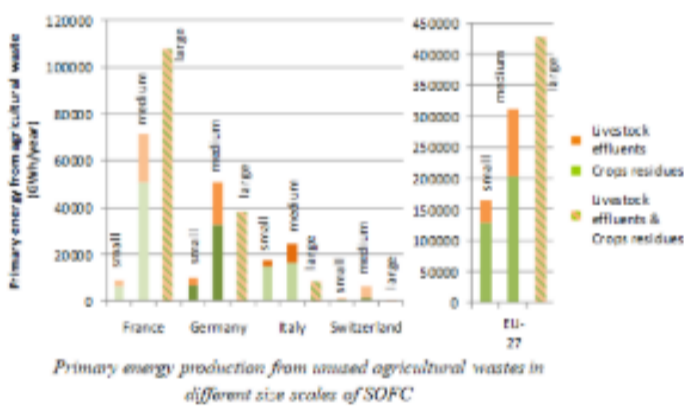
Unlocking unused bio-WASTE resources with loW cost cleAning and Thermal inTEgration with Solid oxide fuel cells *

The FCH JU-project "Waste2Watts" aims to develop a one-step solution for the conversion of Biogas, produced from under-utilised bio-waste resources (mainly agricultural, organic municipal solid and landfill waste), into electricity and heat. A turn-key solution based on SOFCs for CHP exploitation of small-scale digester gas-producing sites, providing farmers and municipalities with a competitive edge in efficiency at low impact.

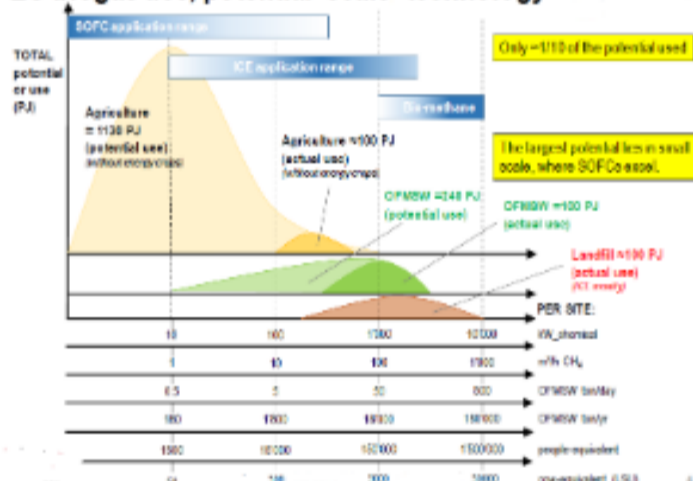


European bio-waste catalogue for SOFC exploitation potential

Waste2Watts is compiling a bio-waste inventory of the European territory, assessing potential Biogas production in farms, facilities treating the organic fraction of municipal solid waste (OFMSW) and landfill sites, including regional variations and seasonal fluctuations of the Biogas composition.



EU biogas use, potential scale technology



Gas Cleaning & on-site testing

A crucial task is to develop an optimised low-cost cleaning system for two typical plant sizes, coupling the expertise of industrial partners (Bio-Komp and Arol) and the experimental capacities of the academic partners (Politecnico Torino, ENEA, PSI).

First results:

Small-scale system (for Farmers)

- Experimental campaign and a short-list of sorbents have been defined
- Target contaminants (H₂S-COS-DMS-CH₄S) have been determined on the basis of measurements in a real demo site (PSI)
- A draft P&ID is proposed for process quantification
- An economic evaluation (CAPEX and OPEX) and realization of the final solution will be carried out by Arol.

Meso-scale system (OFMSW treatment)

- Desulphurization will be cryogenic-based, where the challenge is to precipitate contaminants without freezing the CO₂ in the biogas (Biokomp and Politecnico Torino).
- Biokomp is in contact with different suppliers to arrange the entire system construction.
- By cutting OPEX, Biokomp aims to reduce the cost of the cryogenic system vs. a standard desulphurization unit.

Proposed Layout for the Agro-Biogas Plant



- Optimal layout would be to find low-cost H₂S sorbents able to work with good performance with 100%RH.
- Otherwise we will move the H₂S sorbents after the dehumidification and blower system.
- Dehumidification system is considered to be anyway already available on-site.

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