



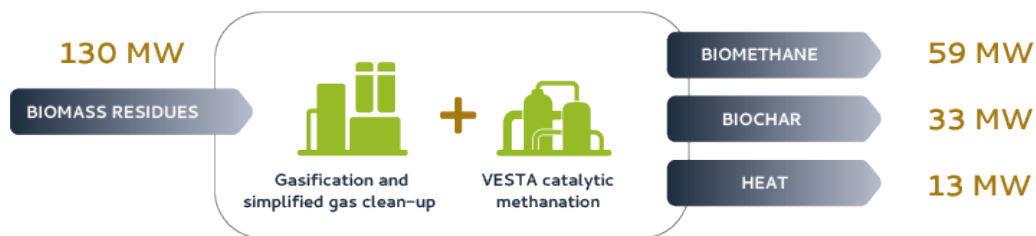
FlexSNG is an EU-Canada jointly funded **Horizon 2020** project that aims at fostering international collaboration between the **European Union** and **Canada** in the strategic sectors of bioenergy and **biofuels**.

The FlexSNG concept

The objective is to develop and validate to TRL5 a flexible and cost-effective gasification-based process for the production of pipeline-quality biomethane, high-value biochar and renewable heat from a wide variety of biomass residues and biogenic waste feedstocks. The FlexSNG gasification concept is based on the “one plant, two modes” approach where the plant can switch between:

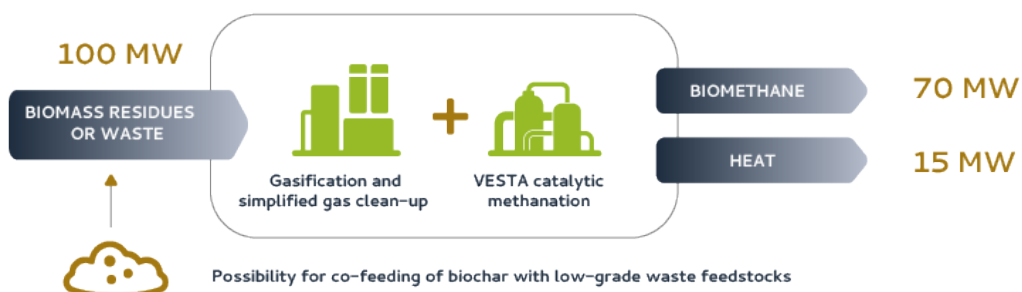
1 Co-production of biomethane, biochar and heat

The feedstock carbon conversion into gas is restricted to a level of 70-80% to enable the production of solid biochar alongside synthesis-quality gas. This is accomplished by lowering the gasification temperature to around 700-800 °C.



2 Maximised production of biomethane and heat

The feedstock conversion into syngas is maximized in the gasifier by increasing the gasification temperature to ca. 850-900 °C and lowering the biomass throughput of the plant so that also the biomass charcoal is gasified. One key innovative feature in this operation mode is the possibility to switch to using lower-grade waste feedstocks. This is accomplished by co-feeding biochar: mixing biochar with waste improves the gasification performance of these challenging feeds (e.g. reduces ash sintering tendency, induces tar decomposition).



Key innovations

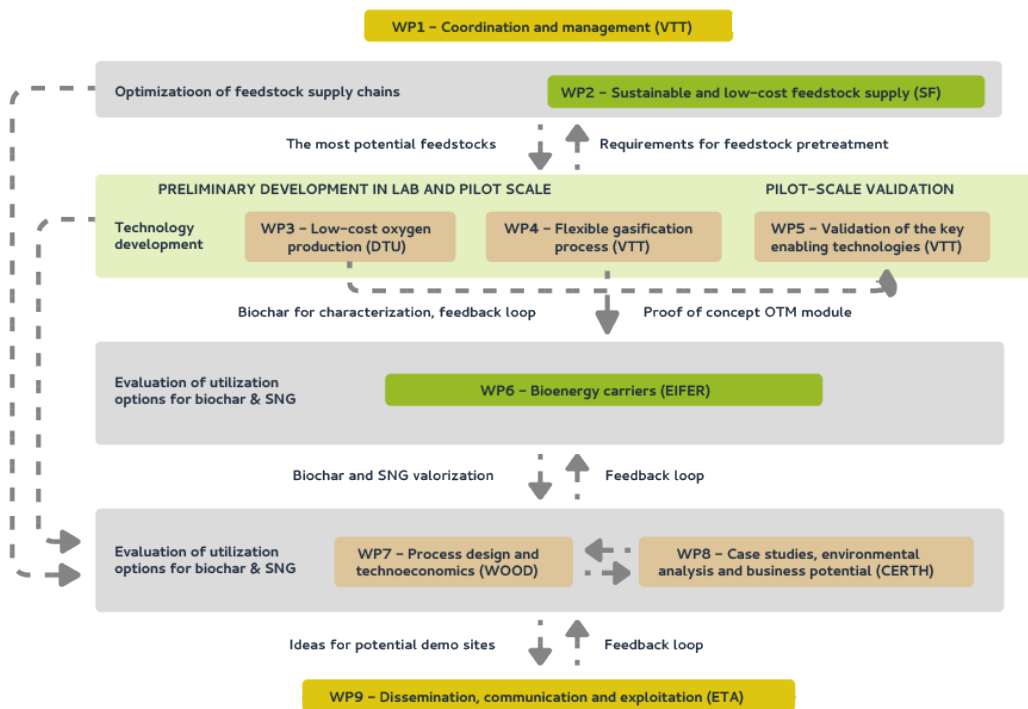
Owing to the new technology innovations adopted in the conversion process and the optimization of feedstock supply chain and logistics, the FlexSNG concept is expected to reduce **biomethane production costs by 30%** compared to state-of-the-art biomass-to-SNG designs. The target is at medium-scale conversion plants, corresponding to 50-150 MWth feedstock input, that enables the use of local biomass residues and biogenic waste fractions without heavy transport logistics.

The main technologies and innovations at the heart of the FlexSNG project are:

- Bubbling Circulating Fluidised-Bed (BCFB) gasifier;
- VESTA catalytic methanation;
- Oxygen transport membranes (OTMs) for low-cost oxygen production;
- Simplified gas clean-up;
- Optimized feedstock supply chains using sophisticated modelling tools.

Project activities

The project is organised into nine interconnected work packages:



Consortium



Contacts

www.flexsng.eu

[✉ info@flexsng.eu](mailto:info@flexsng.eu)

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