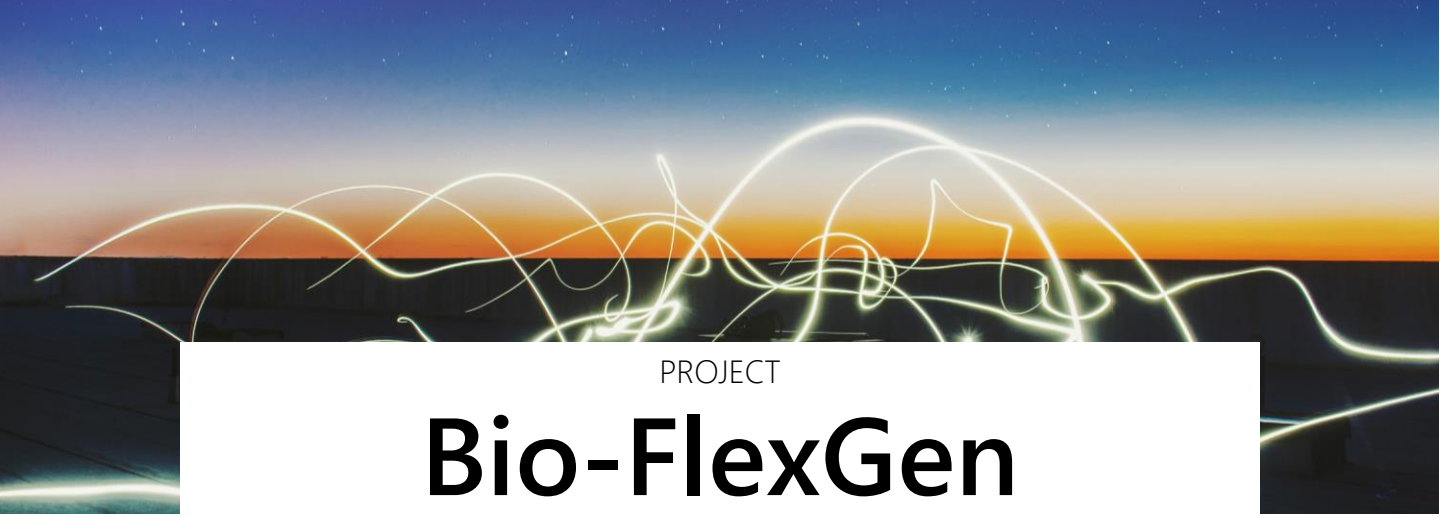

PROJECT

Bio-FlexGen

Highly-efficient and flexible integration of biomass and renewable hydrogen for low-cost combined heat and power generation to the energy system

The aim of Bio-FlexGen is to develop and validate a reliable, cost-efficient, secure, and flexible CHP system based on the combination of highly-efficient utilisation of local biomass with renewable hydrogen production.

This project has received funding from the European Union's Horizon 2020 Research And Innovation programme under Grant Agreement Nº 952979

14	5	€6M	3
PARTNERS	COUNTRIES	TOTAL BUDGET	YEARS

Bio-FlexGen

IN ONE CLICK		
Coordinator	**Programme**	**Period**
RISE Research Institutes of Sweden	Horizon2020	2021-2024
	Sector	**Web**
	ENERGY	http://www.bioflexgen.eu/

01

Challenge

The European Green Deal promises to deliver on a net-zero energy system by 2050, through higher ambition on energy efficiency, system integration and renewable energy. The cost effective potential for cogeneration in all sectors will maximise energy efficiency and integration of the European energy system at the lowest cost, while bringing key benefits to end consumers. Climate change is the most significant challenge for humanity today. For this reason, fossil fuels must be replaced utilising renewables, improved energy efficiency and more flexible energy systems. An optimal combination of several renewable sources is needed to satisfy society's energy needs.

02

Solution

A new solution, termed Bio-FlexGen is proposed in this project that utilises two renewable energy sources: green hydrogen from variable renewables, and biomass. Bio-FlexGen meets the need for a higher fuel, product and load flexibility, plus a significantly higher electrical efficiency and power output, all with high reliability and robustness. This is achieved with a unique combination of gasification and gas turbine technology that allows the plant to utilise hydrogen for fast dispatch and biomass for low operating costs over time. Due to the high efficiency, three times more power can be generated from biomass for the same heat load, and the plant can quickly achieve full load by starting and operating on 100% hydrogen.

03

Impacts

This project expects to decarbonise the economy. The Energy Roadmap 2050 explores the possible routes to achieve it, ensuring at the same time security of supply and competitiveness. In this sense, European approach is expected to result in lower costs and more secure energy supplies when compared to individual national schemes. On the other hand, the energy transition should not be considered as a simple technological process, but should be accompanied by a political societal process.