EUCAN Win!
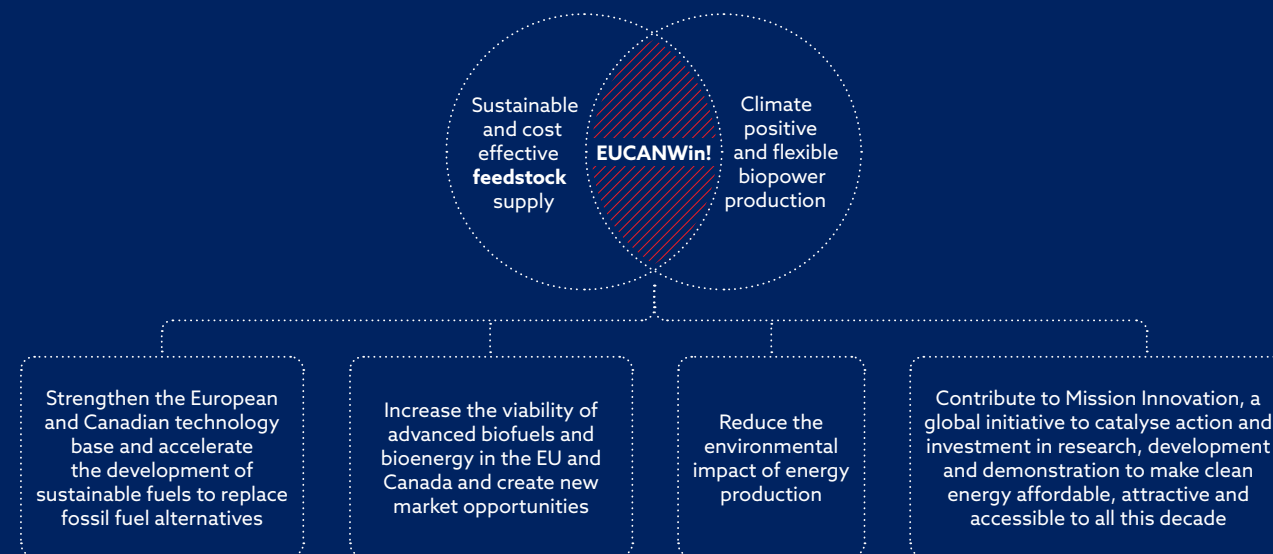
European-Canadian partnership for climate-positive heat and power generation through improved biomass feedstock supply and innovative conversion technologies

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Climate change is recognised as one of the most significant challenge facing humanity today, with a strong push needed for uptake of renewable energy. Bioenergy will play an essential role in the energy mix, being one of the few renewables that is not intermittent, but further work is needed in sustainable resource evaluation and cost-efficient mobilisation. Further, to meet our climate obligations, biomass energy with improved conversion efficiency and carbon capture are needed.

The EUCANWin! project aims to contribute to tackling these challenges by improving forestry biomass harvesting and developing more efficient conversion technologies in combination with CO_2 capture. The project is enabled by co-operation between five European countries (Sweden, Finland, Spain, Belgium, Hungary) and Canada.

Sustainable and cost effective **feedstock** supply

EUCANWin!

Climate positive and flexible biopower production

Strengthen the European and Canadian technology base and accelerate the development of sustainable fuels to replace fossil fuel alternatives

Increase the viability of advanced biofuels and bioenergy in the EU and Canada and create new market opportunities

Reduce the environmental impact of energy production

Contribute to Mission Innovation, a global initiative to catalyse action and investment in research, development and demonstration to make clean energy affordable, attractive and accessible to all this decade

Mission innovation

EUCANWin! will provide benefits on both sides of the Atlantic and give valuable inputs into the policy-making process. It will provide data and results on sustainable and cost-efficient value chains to inform Research & Development and Energy Policies, in support of the European Green Deal and the Canada's Climate Plan. The project takes place in the frame of Mission Innovation, a global initiative of twenty-four countries and the European Commission, which seeks to double public investment in clean energy Research, Development & Demonstration (RDD) by engaging with the private sector and fostering international collaboration.

FEEDSTOCK SUPPLY

Challenge

Despite ongoing research efforts, harvesting, quality and cost of forest biomass remains a significant challenge for the bioenergy sector due to the lack of accurate volume estimations, minimal operational experience of practitioners, challenging economics and a lack of transparency in the supply chain.

EUCANWin! solutions

EUCANWin! will build a prototype **Forest Biomass Atlas** that can be applied across Canada as an open internet service, enabling a more accurate evaluation of forest biomass resources. This will build on an existing European Biomass Atlas that has been developed and preliminarily validated for the Nordic and Baltic countries.

Partners will analyse the feasibility of **tree-length harvesting** in Nordic conditions, as a technology transfer from Canada. This approach is a very effective harvesting method, particularly for the large-scale production of biomass, but more research is needed to determine the suitability of tree length harvesting in Europe.

EUCANWin! will develop and test a prototype **On-Board Intelligent Biomass Analyser**. The device, with artificial intelligence and self-learning capabilities, automatically measures biomass quality parameters to facilitate decision making concerning the allocation of cargo.

BIOPOWER PRODUCTION

Challenge

Conventional technologies for power production from biomass (biopower) suffer from low electricity efficiencies. Europe and Canada need improved technologies that are more cost-efficient and open the possibility for carbon capture and storage.

EUCANWin! solutions

EUCANWin! will develop and validate the Biomass fired Top Cycle (BTC) concept for high-performance combined heat and power production. This unique concept integrates the gasification of biomass residues with a novel steam-injected gas turbine (Top Cycle).

Partners will develop and validate tools to optimise combustion conditions for minimal NOx formation from fuel bound nitrogen in the BTC's steam-injected gas turbine.

To meet the need for negative CO_2 emissions, EUCANWin! will quantify the CO_2 capture cost for the conditions in the BTC process by carrying out simulations to find an optimal configuration.