Interreg
North-West Europe
WOW!
European Regional Development Fund

EUROPEAN UNION

TEA BIODIESEL

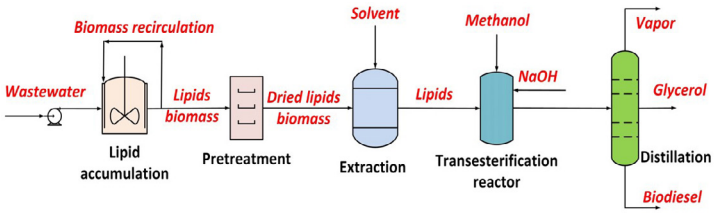
BIODIESEL FROM SEWAGE

WHAT IS A TEA?

Techno-economic assessment (TEA) is an integrated evaluation of the technological performance and economic feasibility of a (new) process or value chain with the aim to identify the most important underlying parameters for its economic feasibility. As such a TEA helps decision makers in steering research and developments or investments. For the WOW! project we performed a TEA for cellulose, PHA and lipids from sewage.

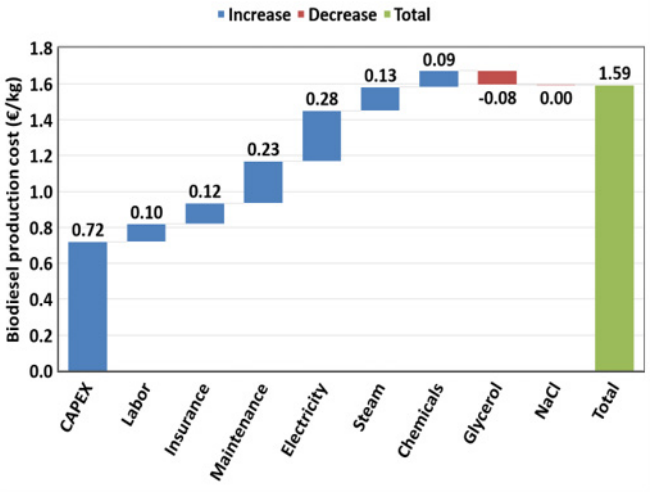
BIODIESEL PRODUCTION PLANT

The biodiesel production plant uses wastewater sludge as substrate. The value chain consists of several steps including wastewater screening to remove large debris, mixing for homogeneity, lipids accumulation and microbial growth, separation by centrifuge, drying by vacuum dryer, lipids extraction in a column, solvent recovery, transesterification, separation by centrifuge, catalyst neutralization, and separation/purification of products by distillation.



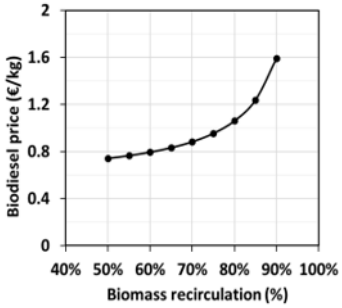
PRODUCTION COST

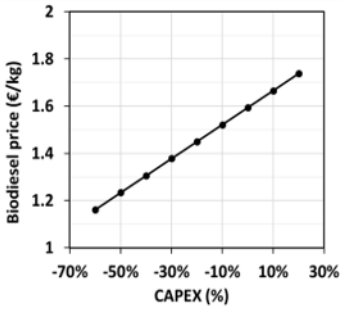
WWTP capacity = 200,000 Population Equivalent (only 12% flow is considered)
Biodiesel capacity = 7960 t/y

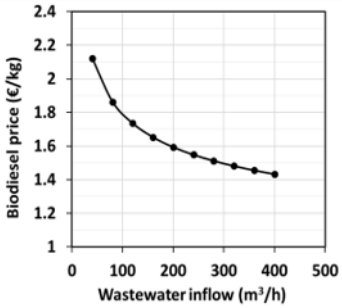


KEY PARAMETERS

- Biomass recirculation
- CAPEX
- Wastewater inflow
- Drying energy







CONCLUSIONS & FUTURE PERSPECTIVES

- Production cost of PHA (bioplastics) estimated was €1594/ton, which is 43% more than the market price.
- Biomass recirculation back to the anoxic tank is the most influential variable. Lowering the recirculation from 90% to about 72% will result in a biodiesel price similar to the market price.
- An optimum recirculation strategy should be developed without compromising the biomass requirement in the anoxic tank.

MORE INFORMATION:

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