

Techno-economic analysis

Pulp mill in a future bio-based economy

New, bio-based materials and fuels are often more expensive to produce compared with their fossil-based equivalents, especially if stand-alone plants are considered. The pulp mill offers an excellent platform for integrated biorefinery concepts, especially as utilities such as steam and waste handling are already in place and could be integrated for improved process economy. When considering a new biorefinery concept, a techno-economic evaluation is an excellent help to show possibilities, benefits and technical limits and to further develop the concept in an iterative process. The results can be used as a basis for LCA studies. Full value chains can also be studied, with both cost and carbon footprint evaluated from the forestry outtake to the finished product.

How is it done?

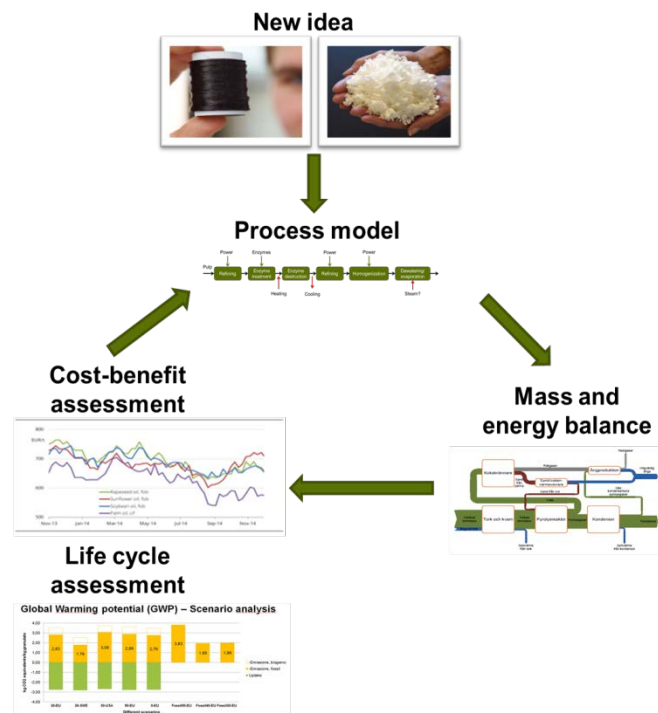
A techno-economic evaluation often starts with a technology review. Mass yields, energy yields and process efficiencies are evaluated and a suitable process layout is constructed, partly by building simple models to determine energy and mass balances. Innventia has a good insight in the technical maturity of different technologies and close contact with equipment suppliers which results in accurate estimates of investments, production cost, market volumes and profitability of new biorefinery concepts. Innventia can help companies interested in biorefinery with their business development leading to profitable investment decisions.

Examples of concepts

- Lignin extraction
- Pyrolysis of biomass
- Carbon fibre production
- Ethanol and lactic acid production
- Textile fibres
- Speciality chemicals & cellulose
- Xylan extraction

Examples of full value chains

- Forestry residues to pyrolysis oil or fuels
- Lignin to transportation fuel or biomaterial
- Xylan to barrier material



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