

Sustainable Circular Economy Solutions

Luke provides expert services and solutions for circular economy, bioeconomy and bio-based industrial symbiosis:

- research based analyses and information services
- Development services and products
- Implementation support and services

Our core competence is based on valorization of biomass waste and side-streams for high value products. Optimization of nutrient cycles as a part of the entire valorization chain plays an essential role as well. Our services encompass environmentally sound refining, fractionation and extraction technologies for valorization of biomass as well as protein recovery and processing into high value products. For food and forest industry we offer comprehensive competence for value-added utilization of by-products.

Harnessing unused biomasses and assessment of biomass potential, availability and costs as well as assessment of sustainability are also examples of our high-quality services.

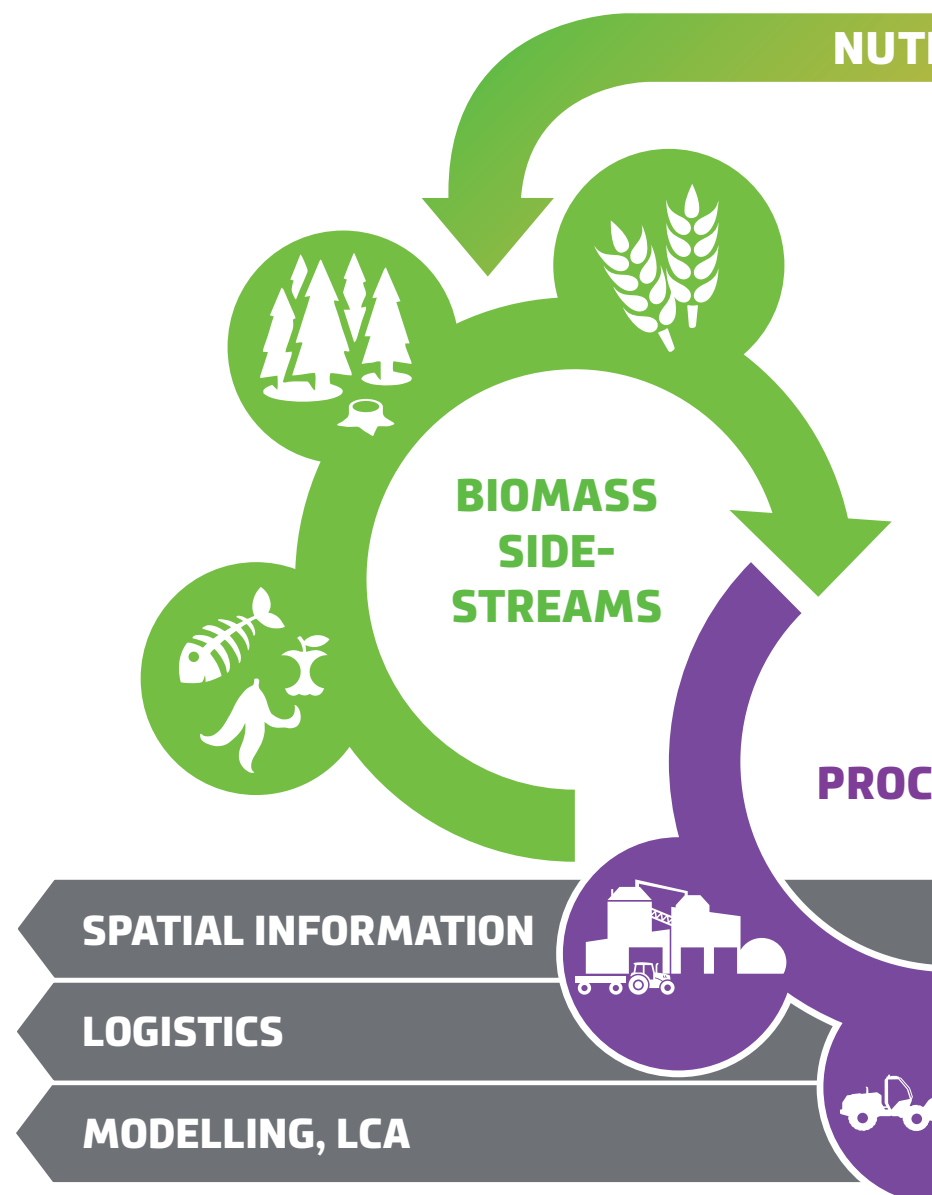


Why to cooperate with Luke?

- Scientific excellence
- Skilled and motivated experts
- Customer solutions based on research excellence
- Understanding of the entire values chains (e.g. biorefinery, agro, forest and aqua sectors and their symbiosis)
- Platforms for product development

Our services

- Utilization of Food Industry Side Streams for High Value Products
- Pilot laboratory for biotechnology to convert primary and residual biomaterials into added-value bio-products
- Slow pyrolysis solutions
- Use of side-streams in agriculture
- Bioenergy value chain solutions
- Biomass supply and feedstock availability assessment
- Environmental sustainability performance assessment
- Insect lab solutions



Luke's environmentally sound refining and modification processes and technologies for bio-circular economy:

Biochemical processing and conversion

- Microbiological processing
 - Anaerobic digestion
 - Fermentation
- Enzymatic processing
 - Biocatalytic processing, enzymatic hydrolysis
 - Enzyme-assisted extraction and separation

Extraction and fractionation

- Pressurized water/solvent extraction
- Supercritical fluid extraction and precipitation

Separation


- Preparative batch liquid chromatography
- Vacuum distillation
- Membrane filtration
- Ammonia stripper
- Centrifugal separation and filtration

Thermo-chemical processing

- Slow pyrolysis, biochar and pyrolysis liquids

RIENT RECYCLE





**World-class customer solutions
based on research excellence
and unique infra and resources
in the areas of:**

- Bio-circular economy
- Renewable resources
- Bioeconomy value chains
- Holistic approach to sustainability in bio-economy

Circular Economy Solutions contact

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