Ólafur Ögmundarson
Adjunct Professor

Faculty of Food Science and Nutrition

07/02/2020

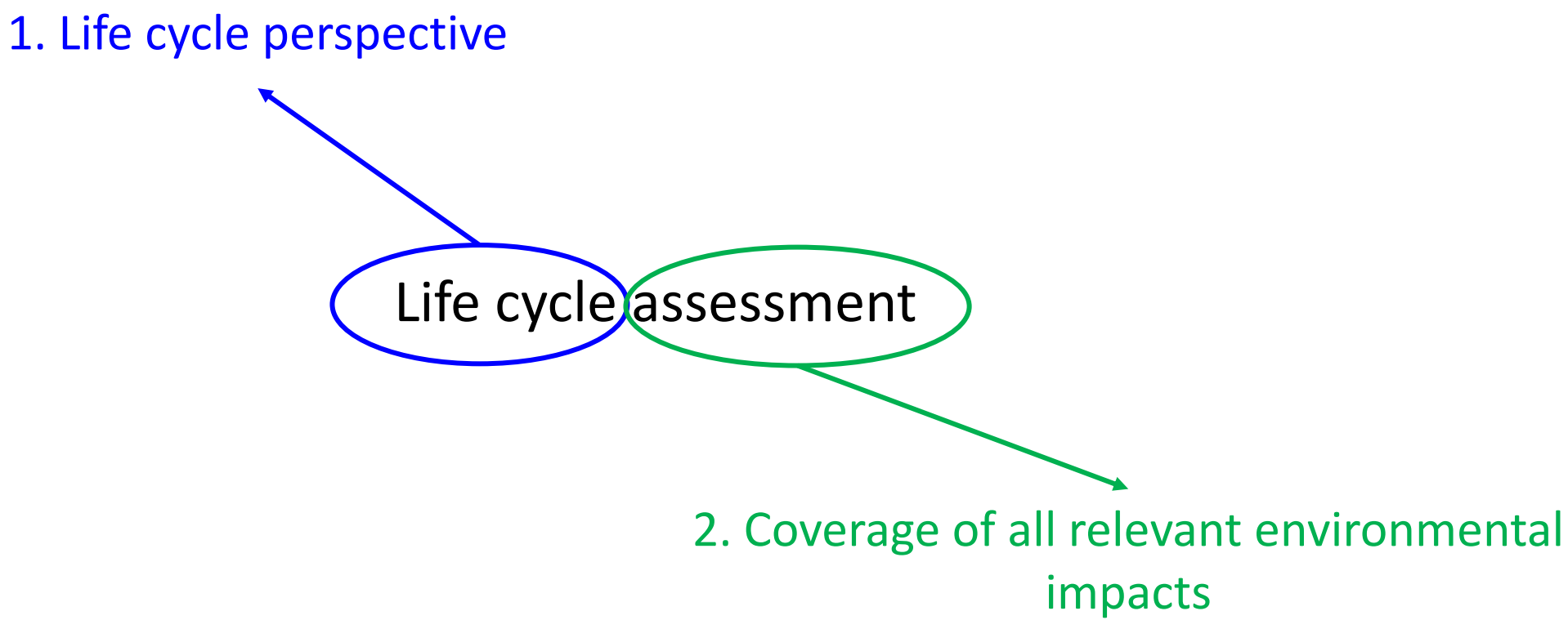
Educational background

- Bachelor in business German from the University of Iceland (2002)
- Diploma in aquaculture from Hólar University College (2004)
- Masters degree in Environment and Natural resource management at the University of Iceland (2009)
- PhD from the Technical Danish University, School of Management Engineering, Division of Quantitative Sustainability Assessments and the Novo Nordisk Foundation Center for Biosustainability (DTU Biosustain)
  Thesis title: Life Cycle Assessment (LCA) of chosen Biochemicals and Bio-Based Polymers (2019)

Work experience

- Aquaculture specialist at Hólar University College 2003-2006
- Project manager at Matís Ltd. In Iceland from 2009-2013
- Project administrator at DTU Biosustain from 2014-2015
- PhD student ant DTU Biosustain and DTU Management, QSA, 2015-2018
- Senior Sustainable-Innovation Manager at The Novo Nordisk Foundation Center for Biosustainability (DTU Biosustain), 2019
- From 1st of January 2020 - Adjunct at the University of Iceland, Faculty of Food Science and Nutrition

What is Life Cycle Assessment (LCA)?



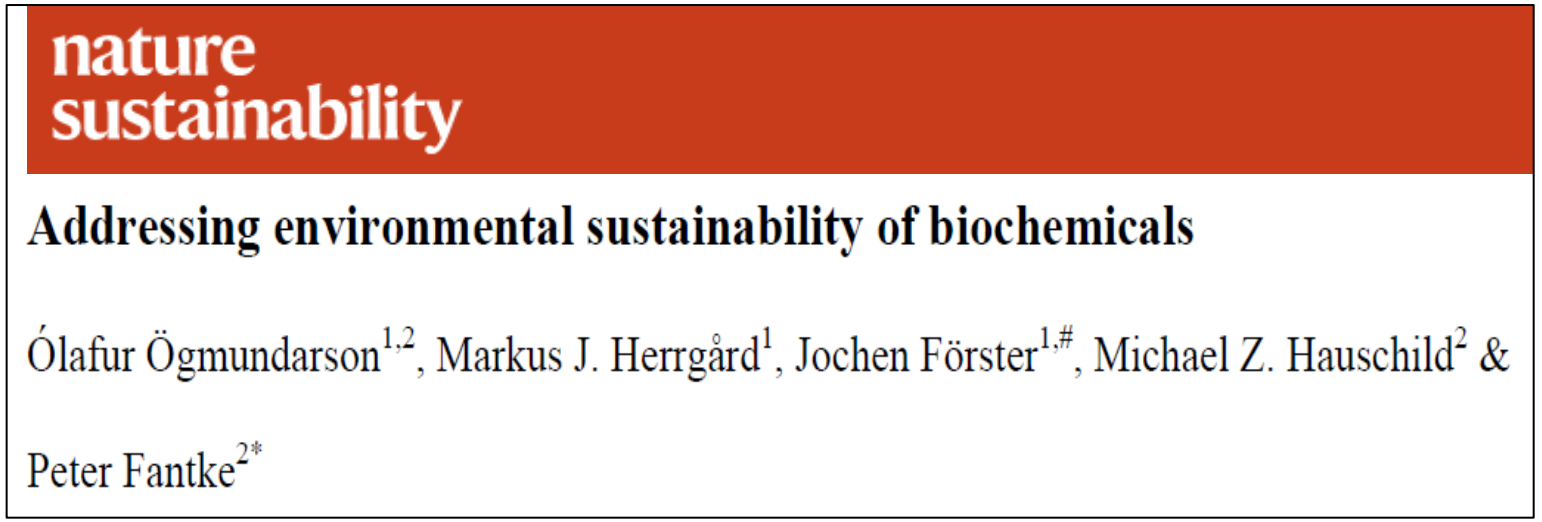
Research focus to date

- How can **environmental sustainability of products, processes and services** be consistently and comprehensively **quantified, optimized, and ultimately included in decision making**?”
- How to increase environmental sustainability of biochemicals?
- Sustainable dyes – Indigo blue
- Quantification of impacts affecting the UN SDGs
- Sustainability in aquaculture (feed)
- Fisheries management

Research focus at F&N

- Diets and environmental impacts vs. nutritional trends and norms
- Application of LCA to assess environmental benefits of full utilization of Mackerel
- Application of LCA to assess environmental benefits of utilizing side material or by-catch during pelagic fishing
- New packaging for fresh fish sea-way export
- Merging of methodologies of LCA, Economic assessments and Ecosystem services
- Hopefully work with some of you on your MSc projects assessing environmental benefits of your work and use that knowledge to make it even more environmentally sustainable with process optimization and fx. assess their contribution toward the UN SDGs

How to apply LCA?



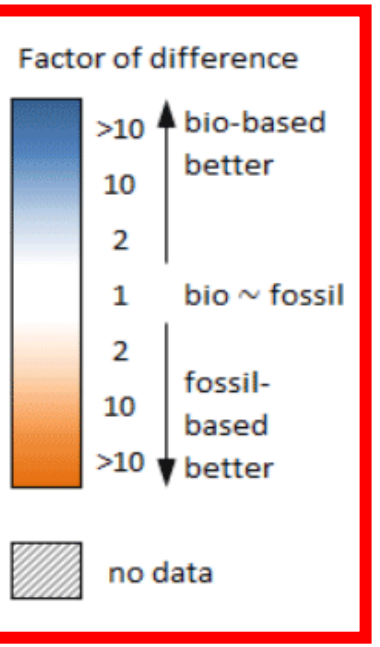
Broad overview of the field and recommendations for improvement

Application of LCA

Meta analysis of application of LCA in different biochemical production systems and comparison of environmental performance compared to fossil-based chemicals

Bio vs. fossil:

	Lactic acid			Succinic acid			1,3 Propanediol		1,4 Butanediol	
Impact category*	acid production	polymeri-zation	end-of-life scenario	acid production	polymeri-zation	end-of-life scenario	diol production	end-of-life scenario	diol production	end-of-life scenario
GW	2	11	11	4	1	2	4	2	1	2
OF	1	1	1	1		1	1		1	
OD	1	1	2	1		1			1	
IR	1									
PM	1	1	1	1			1		1	
HT	1	2	1	1		1	1			
ET	1	1	2	1		1	1			
AC	1	4	3			1	2		1	
EU	1	3	3	1		1	1		1	
LU	1		1			1	1	1		
WU	1	3		1					1	
RU	1		1	1		1			1	
ED		9	3	3	1	1	4	2		2



Global Change Biology: Bioenergy

DOI: 10.1111/gcbb.12652

ORIGINAL RESEARCH

WILEY

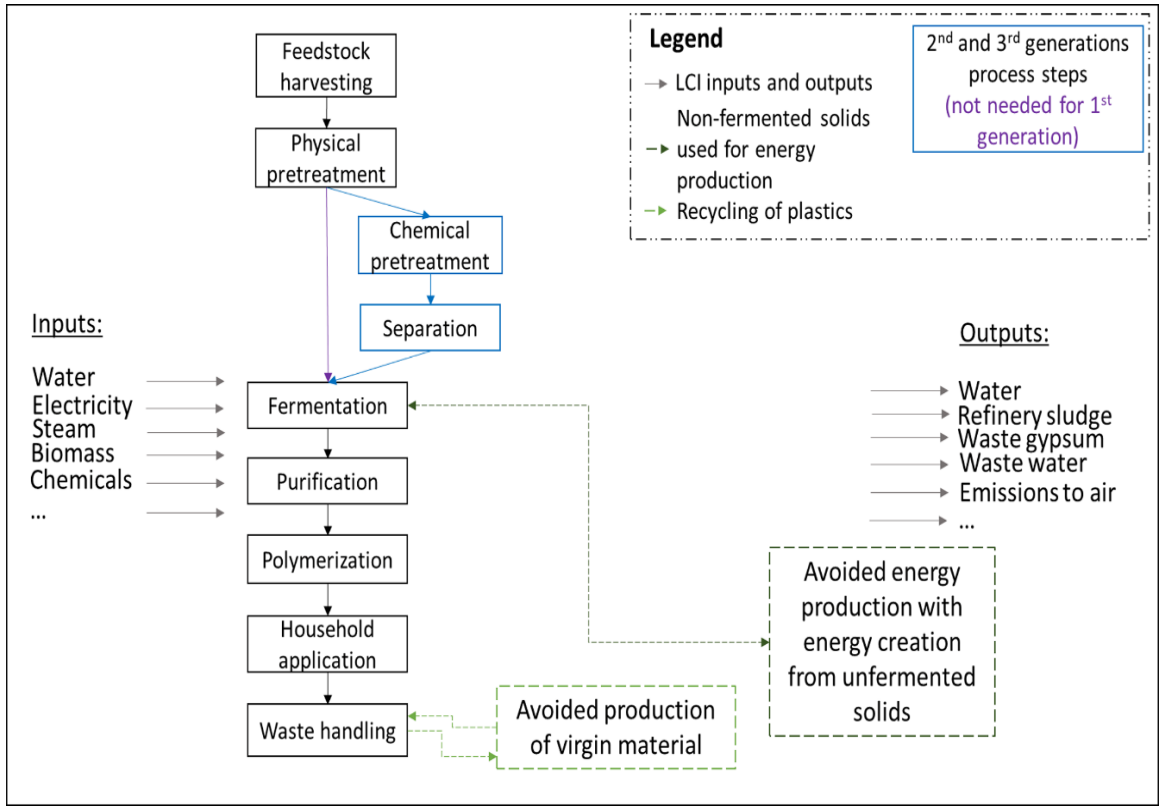
Environmental hotspots of lactic acid production systems

Ólafur Ögmundarson[1,2] | Sumesh Sukumara[2] | Alexis Laurent[1] | Peter Fantke[1]

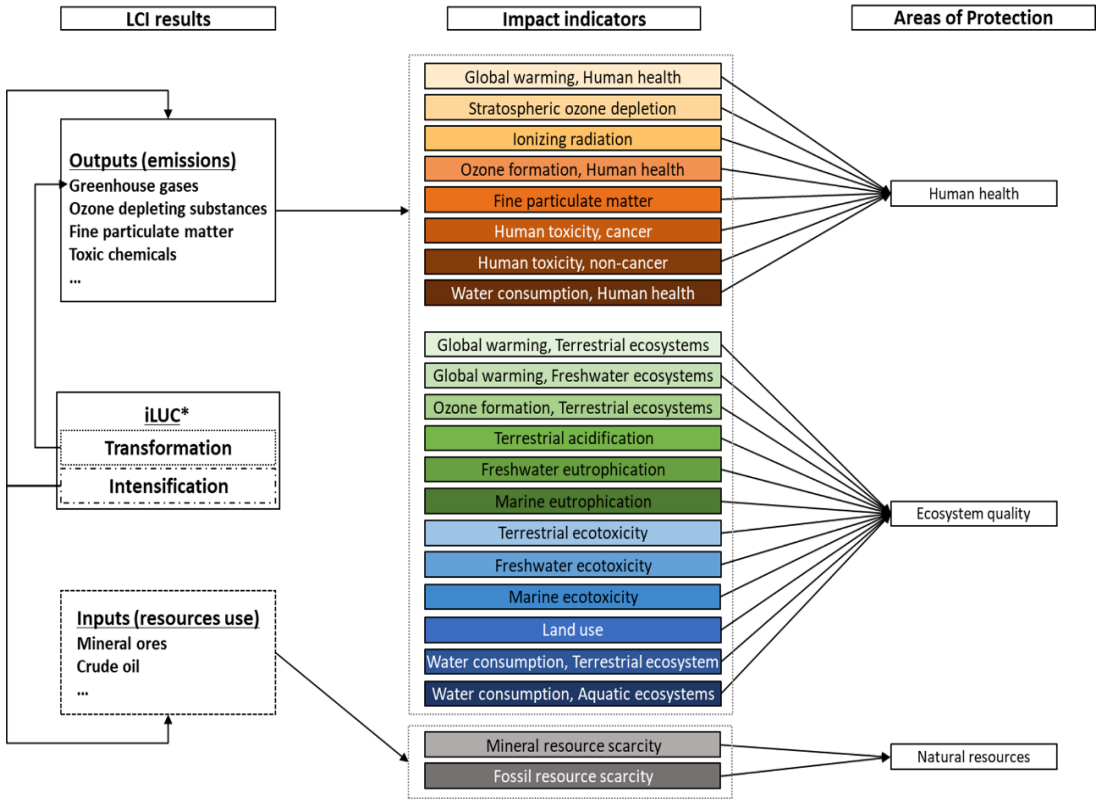
Application of LCA

Application of LCA for identifying environmental impact hotspots at an early stage of technological development across biochemical production systems

LCI model:



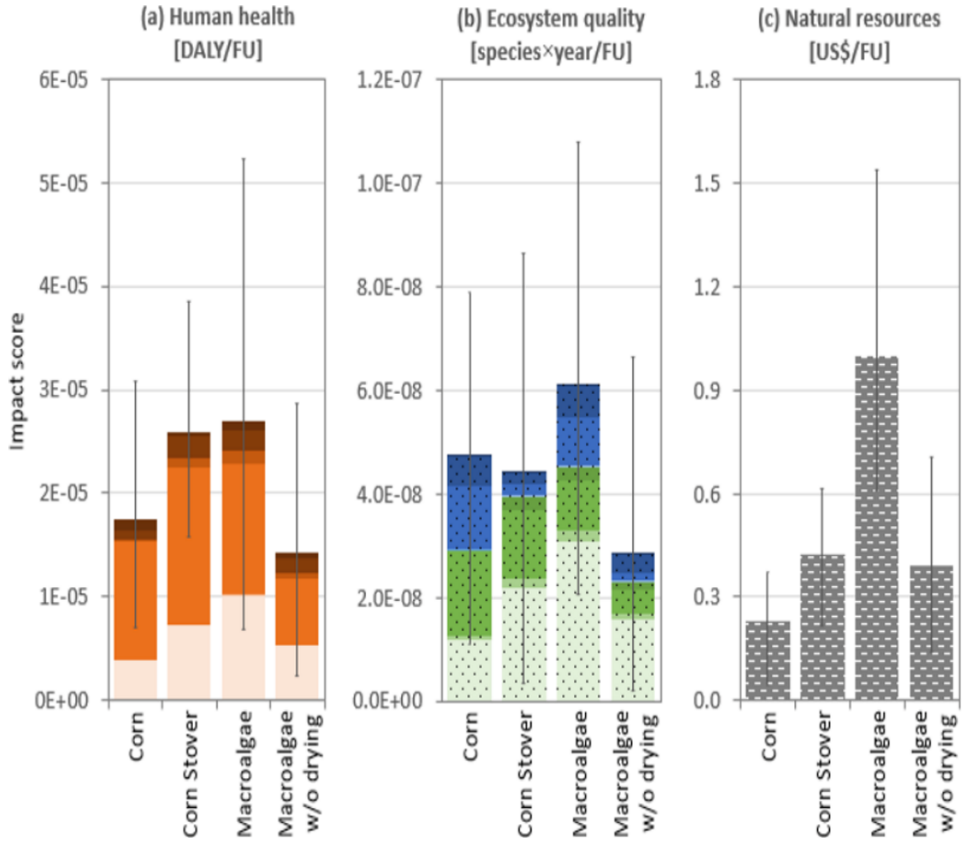
LCIA framework:



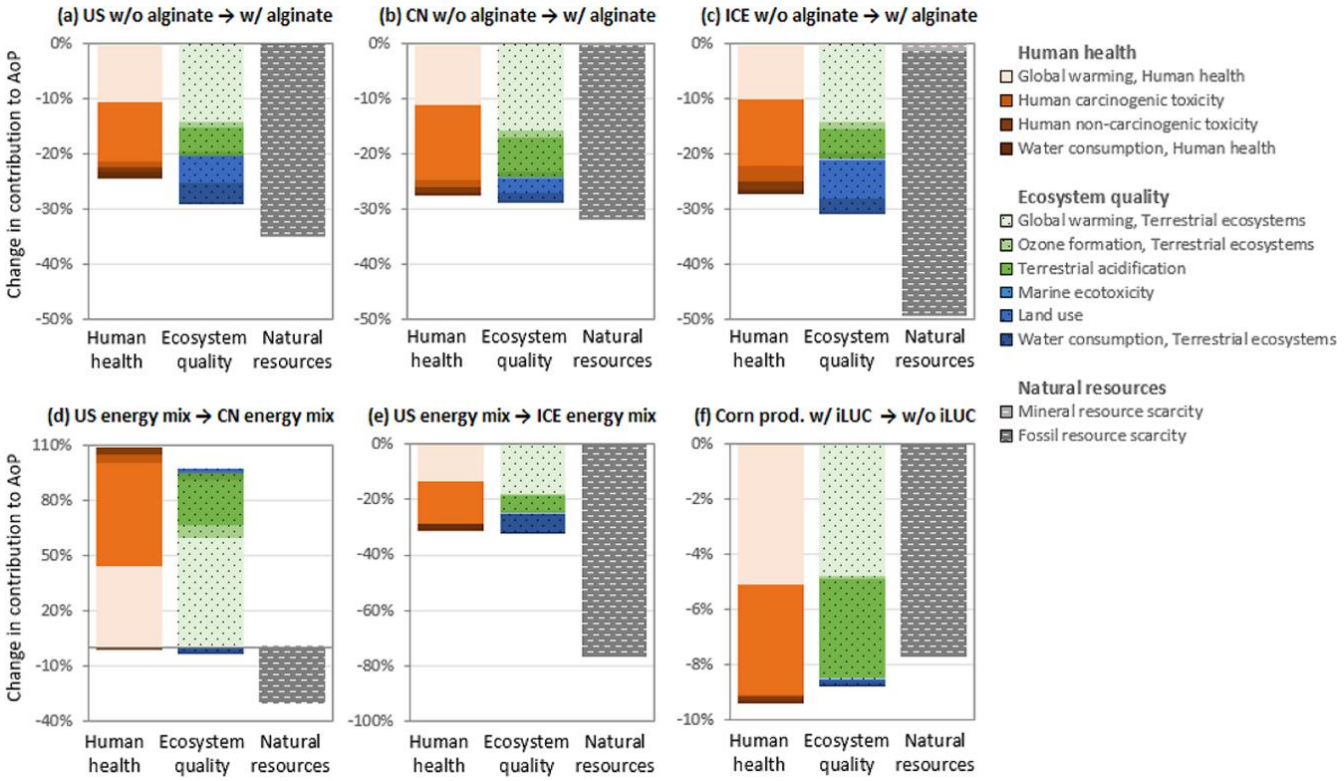
Application of LCA

Application of LCA for identifying environmental impact hotspots at an early stage of technological development across biochemical production systems

Impact scores:

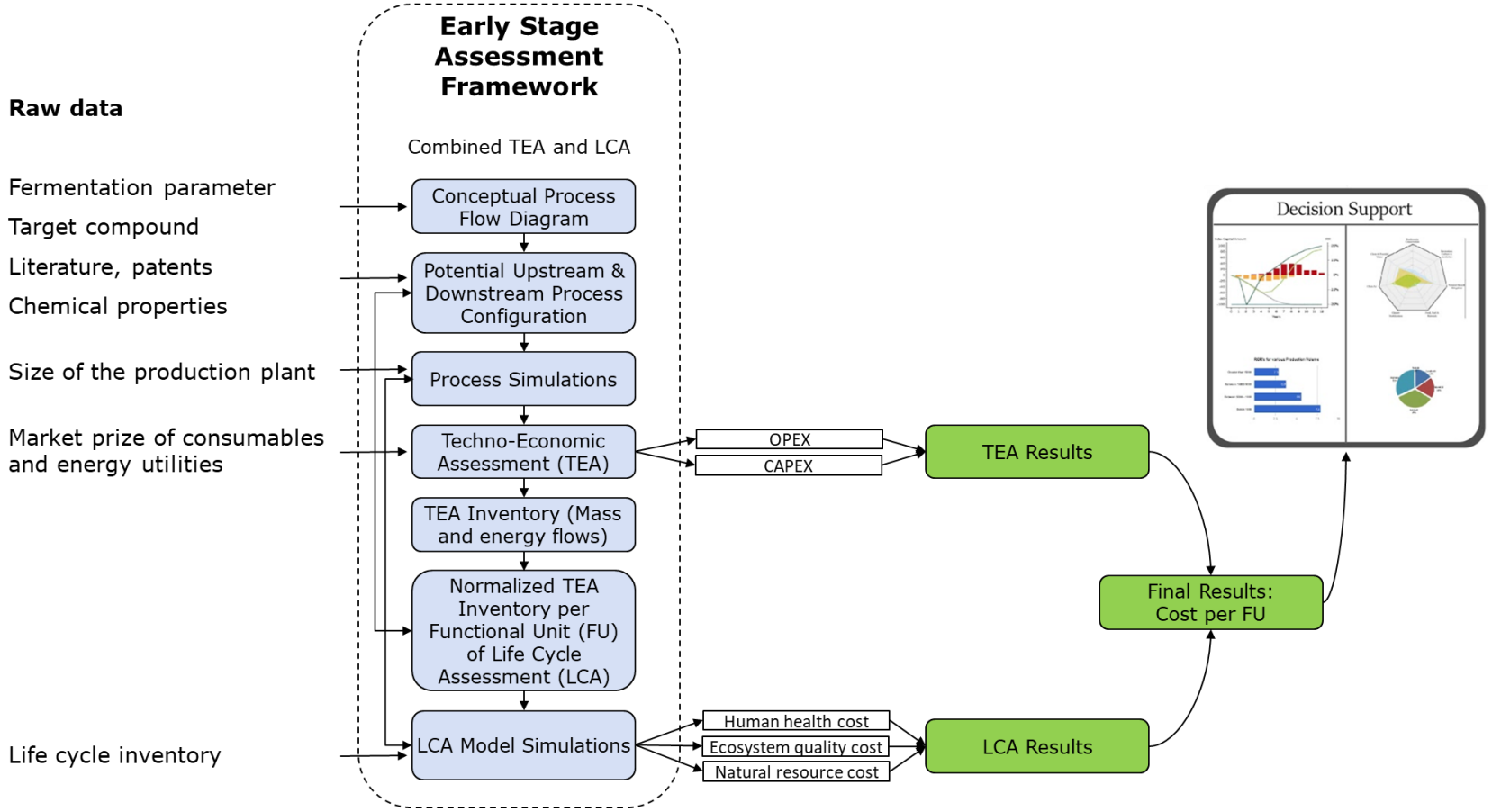


Scenario analysis:



Invited manuscript under revision in Trends in Biotechnology.

‘Coupled environmental and economic performance indicators for bioprocess optimization’.



BII BioInnovation Institute

novo nordisk fonden

- Proof of concept (1M DKK to a university for 12 mo) - requires substantial connection to DK (e.g. joint faculty position)
- Pre-seed (exact amount TBD to a company for 18 mo) - can be from any Nordic country, but requires starting a DK company and the research will take place at BII in Copenhagen
- Business acceleration academy (350k DKK to a company for 3 mo) - can be from any Nordic country, but requires starting a DK company and the acceleration program will take place at BII in Copenhagen
- Creation house (10M DKK to a company for 18 mo) - can be from any Nordic country, but requires starting a DK company and the research will take place at BII in Copenhagen
- BII faculty program (18M DKK to a university for up to 36 mo) – currently requires an affiliation with DTU (joint position is ok) and the research will take place at BII in Copenhagen https://bioinnovationinstitute.com/faculty/

- LCA course: UAU215F Life Cycle Assessment
- Contact information
  - olafuro@hi.is