

# Inclusive biobased innovations

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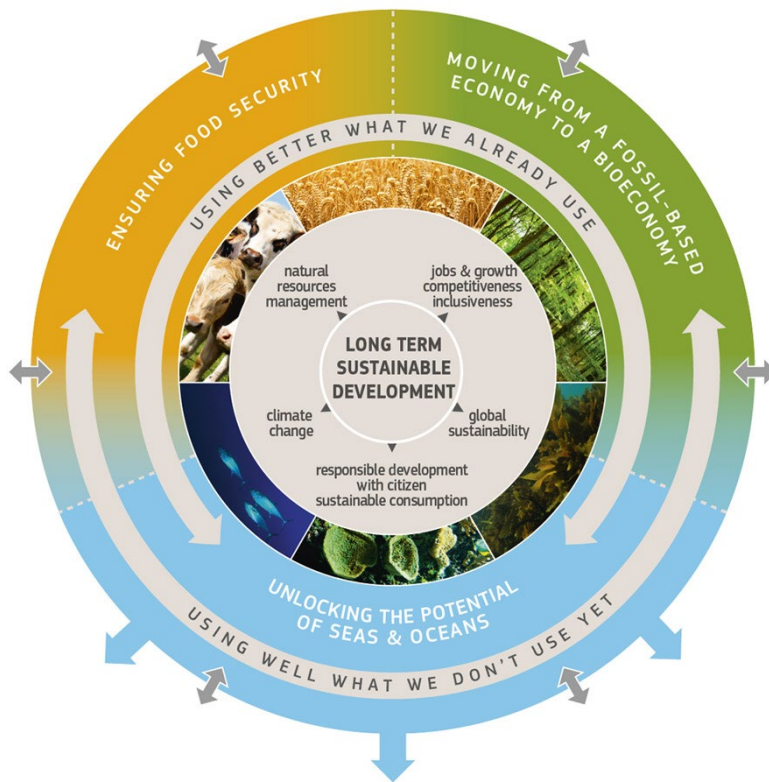
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# The Bioeconomy: Technologies for sustainability

Using better  
what we already use



Using well  
what we don't use

# What is inclusion?



An important pillar in responsible innovation



A design principle for improved accessibility



Policies for farmers to have access to equipment, training, and improved livelihoods

# Case study: Jamaican sugar cane



Juice extraction by dilution with water - followed by pressing



# Understanding the context - Technology Innovation Systems (TIS)

Table 3.2: List of TIS system functions as used in this thesis [13, 63, 73–75].

<b>Function</b>	<b>...is the process of</b>
Knowledge development and diffusion	...learning by searching, learning by doing and learning by interacting. ...the breadth and depth of the current knowledge base, how that changes over time and how that is diffused and combined in the system.
Entrepreneurial experimentation	...turning the potential of new knowledge, networks and markets into concrete actions to generate and take advantage of new business opportunities. ...taking risky experiments which are necessary to cope with the uncertainties of innovation.
Influence on the direction of search	...incentives and pressures which push and pull actors into a new technological field, as well as set the agenda within the field. ...perceived opportunities for business related to the emerging technologies.
Market formation	...identifying and articulating demand and supply. ...creation of market places, as well as trade and support related to the new technology.
Resource mobilization	...obtaining financial resources needed for investments, human resources needed for skilled tasks and material resources needed for construction and operation of the new technology. ...partnering.
Legitimation	...gaining social acceptance and support. ...relevant actors considering the new technology as appropriate and desirable.

# Five design constraints for context-sensitivity

Each constraint addresses the following questions:

- For whom is this choice?
- How does it build on local knowledge, values, and interests?

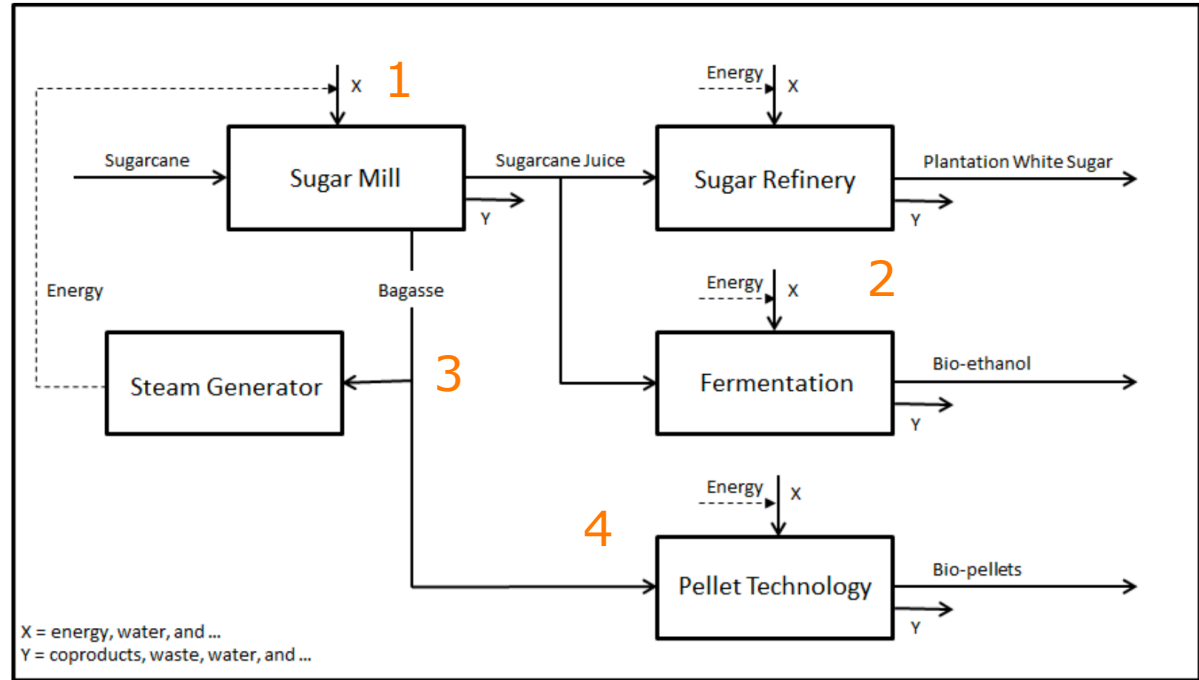


Figure 4.5: Schematic overview of the conceptual process design including plantation white sugar, bio-ethanol, energy generation from bagasse and bio-pellets.

# Using better what we use, and using well what we don't use - for the benefit of people

## Inclusion is: Making context sensitive choices

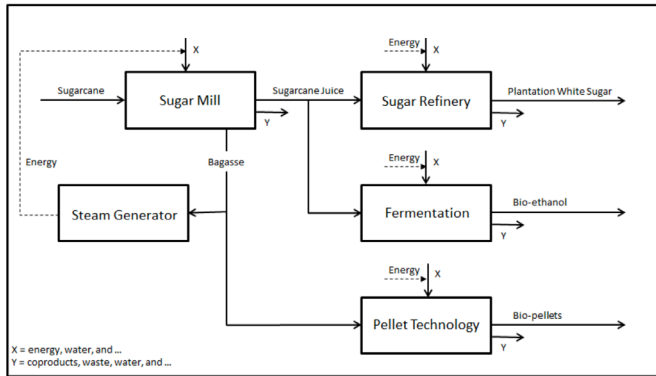
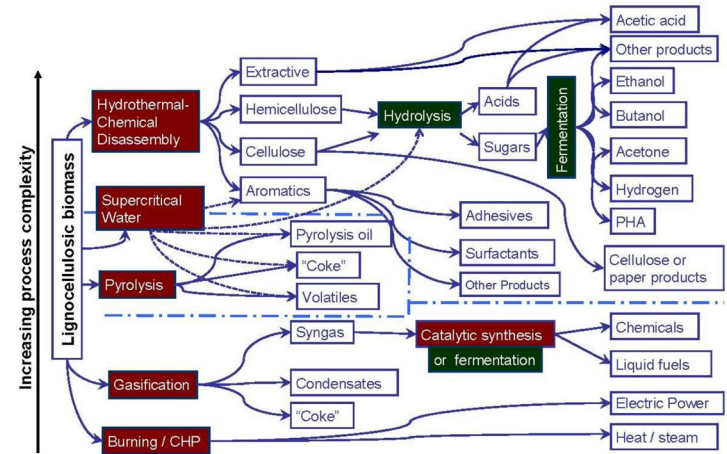


Figure 4.5: Schematic overview of the conceptual process design including plantation white sugar, bio-ethanol, energy generation from bagasse and bio-pellets.

Francke, 2018

Instead of  
for example



\*Amidon et al. 2011

\*Note that this example concerns an unrelated process in a different context to illustrate the complexity that biorefinery processes can offer.

# Inclusion - a definition grounded in ethics

- Inclusion can be implemented in many ways in practice: policies, design, technology.
- Inclusion is making choices for people.
- This means:
  - supporting the development of their capabilities,
  - helping them uphold their values,
  - and cultivate their local knowledge.





# Thank you for your attention

<https://www.researchgate.net/project/Inclusive-Biobased-Innovation-Securing-sustainability-and-supply-through-farmers-involvement>

