

Introduction of ChemE 143-144 Topics 2021

16 Nov 2020

What we do

VISION

SPaRC will be a hub for collaborative activities that enable businesses, consumers and policy makers to create sustainable actions and strategies



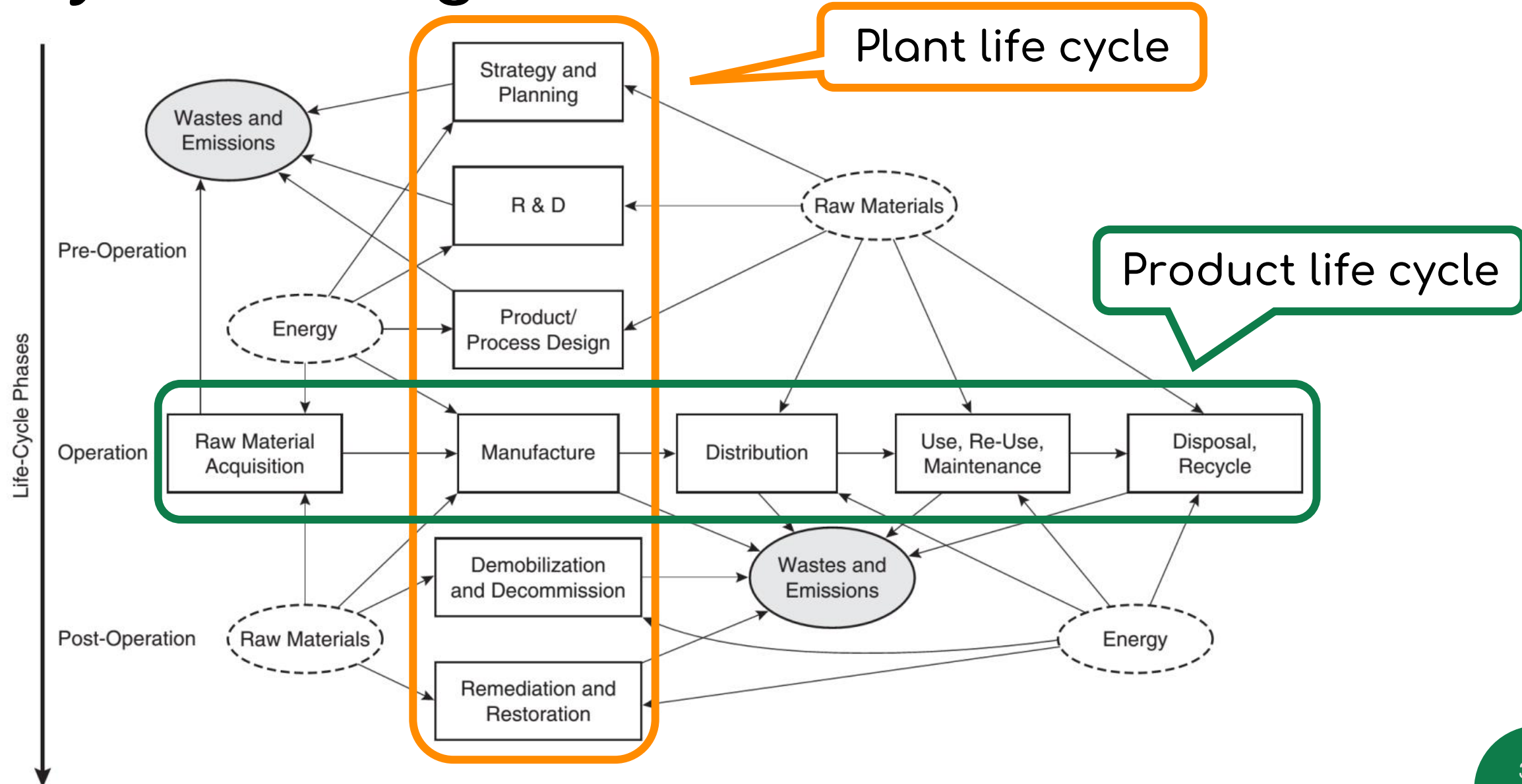
Life cycle sustainability assessment

Systems modeling and decision analysis

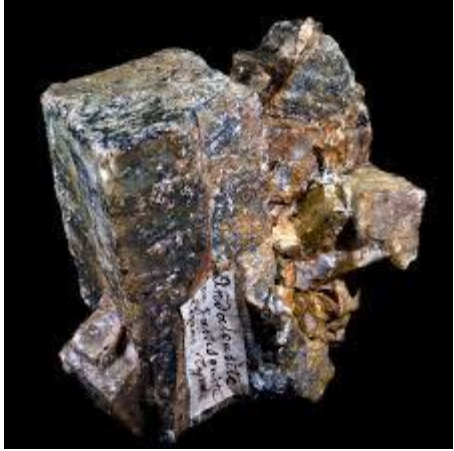


Sustainability in engineering education and policy

Life Cycle Thinking in ChE



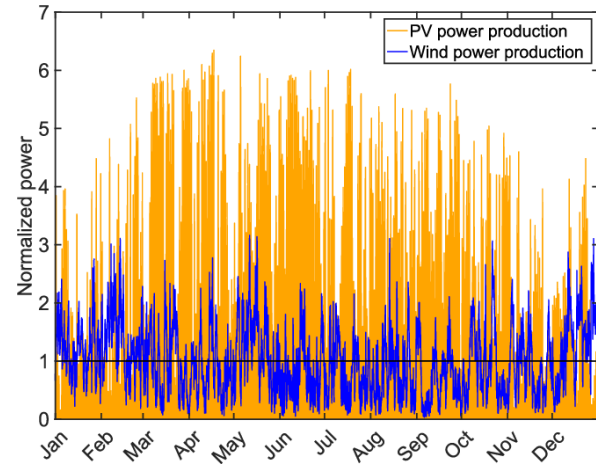
Topic 1: Sustainability assessment of air purification technologies



- Part of a DOST CRADLE project
 - PI: Dr Alamani
- Comparison of various materials for air purification
 - Aluminosilicate
 - Activated carbon
 - Photocatalysts
- Sustainability indicators
 - Environmental (LCA)
 - Economic
- Related studies:
 - <https://doi.org/10.1002/ieam.1786>
 - <https://doi.org/10.1016/j.jclepro.2014.01.041>



Topic 2: Uncertainty and variability in LCA of renewable energy



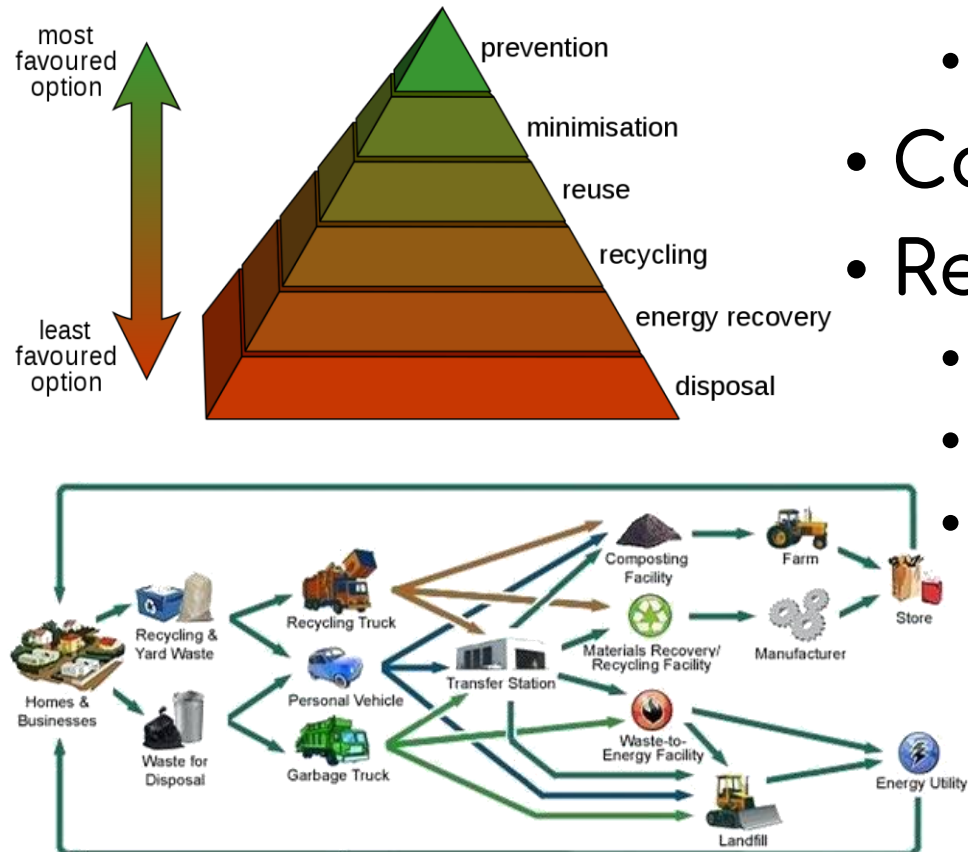
- Inherent variability of energy resource availability and power production from solar PV and wind turbines
- Other parameters contributing to uncertainty and variability of environmental impacts of solar PV and wind turbines
 - Lifetime
 - Capacity/size
 - Material weight
- Related studies:
 - <https://doi.org/10.1021/es303435e>
 - <https://doi.org/10.3390/en12214214>
 - <https://doi.org/10.1016/j.apenergy.2018.02.024>



Topic 3: Sustainability assessment of resource recovery from MSW

- Material flow accounting of solid wastes
- Resource recovery technologies
 - Recycling and upcycling
 - Waste-to-energy
- Comparison with current practices
- Related studies:

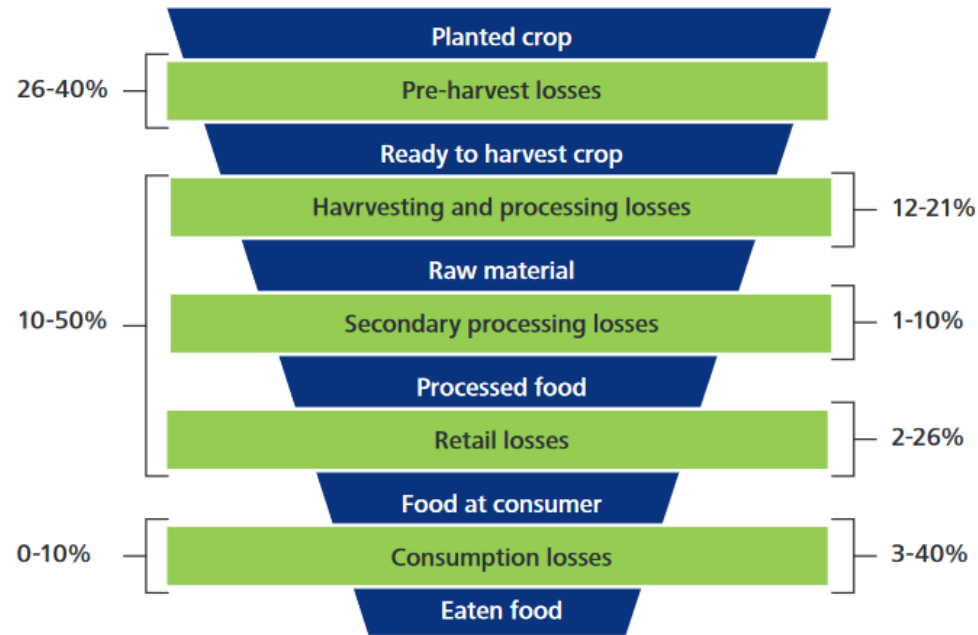
- <https://doi.org/10.1016/j.jclepro.2018.02.298>
- <https://doi.org/10.1016/j.coche.2017.08.004>
- <https://doi.org/10.1016/j.jclepro.2015.12.041>



Topic 4: Material and energy flow accounting across the food value chain

Developing countries

Developed countries



- Food loss along the value chain
- Energy and water consumption
- Environmental and economic impacts of food production

Related studies:

- <https://doi.org/10.1016/j.jclepro.2016.06.071>
- [https://doi.org/10.1016/S0308-521X\(02\)00027-6](https://doi.org/10.1016/S0308-521X(02)00027-6)
- <https://doi.org/10.1016/j.wasman.2017.01.021>



SPaRC is looking for affiliates!

Get in touch via email: [joaberilla\[at\]up.edu.ph](mailto:joaberilla[at]up.edu.ph)
Visit our website: pages.upd.edu.ph/jmaberilla



Who are we looking for?

- Strong interest in sustainability
- Strong background in material and energy balances (ChemE 101 and 102)
- Familiarity with process industries related to the topic
- Understanding of environmental, economic and social issues
 - Preferably with advanced study of ChemE 145 and 151
- Excellent communication skills
 - Comes handy when dealing with external partners and stakeholders
- Preferably can work during the midyear term
 - Preferably can apply to intern in a related industry