



Low Carbon and Circular Economy within a Port Context

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Content

- ❑ What is *Circular Economy*: focus on Carbon
- ❑ Circular Economy, Innovation & Sustainable Development
- ❑ Examples from Ports & Best Practices
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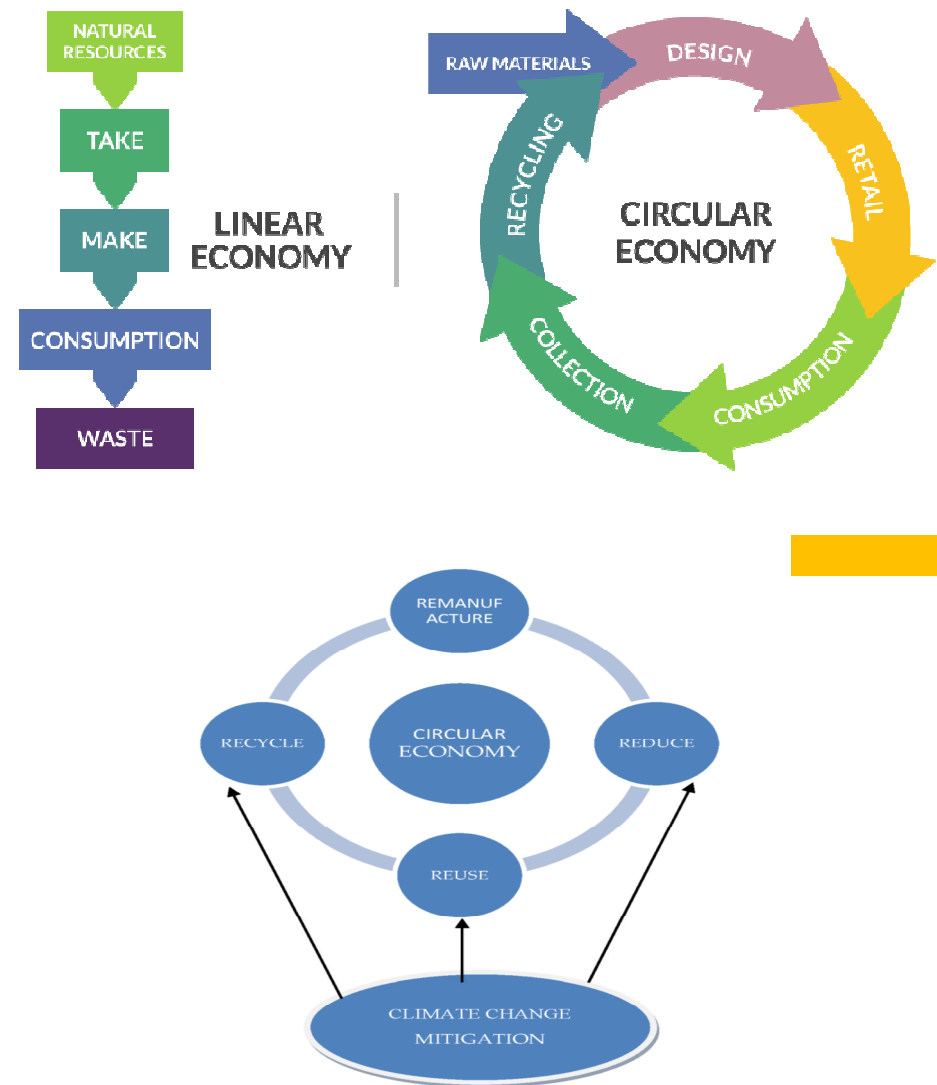
Circular Carbon Economy

Best Framework in reducing global emissions, while keeping economic growth.

Circular Systems - create a closed-loop system, minimizing the use of resource inputs and waste generation.

The *four principles* of a circular economy:

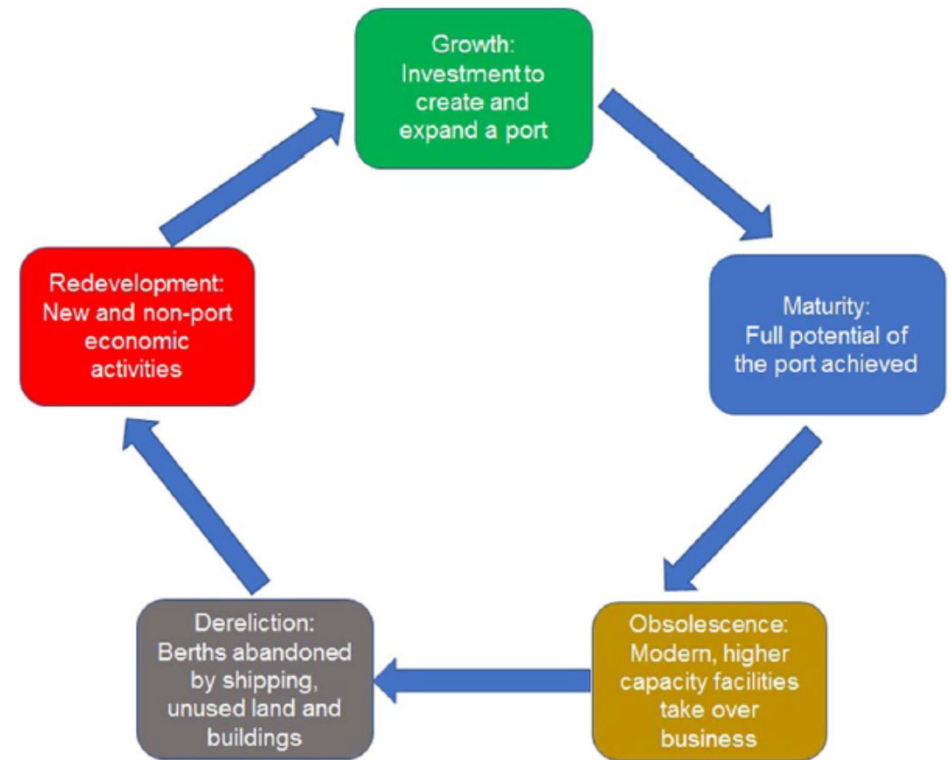
- 1) minimize waste
- 2) *use renewables* (!)
- 3) study feedback loop to *optimize* production and
- 4) *maximize* the usage value of products.



Circular Economy, Innovation & Sustainable Development



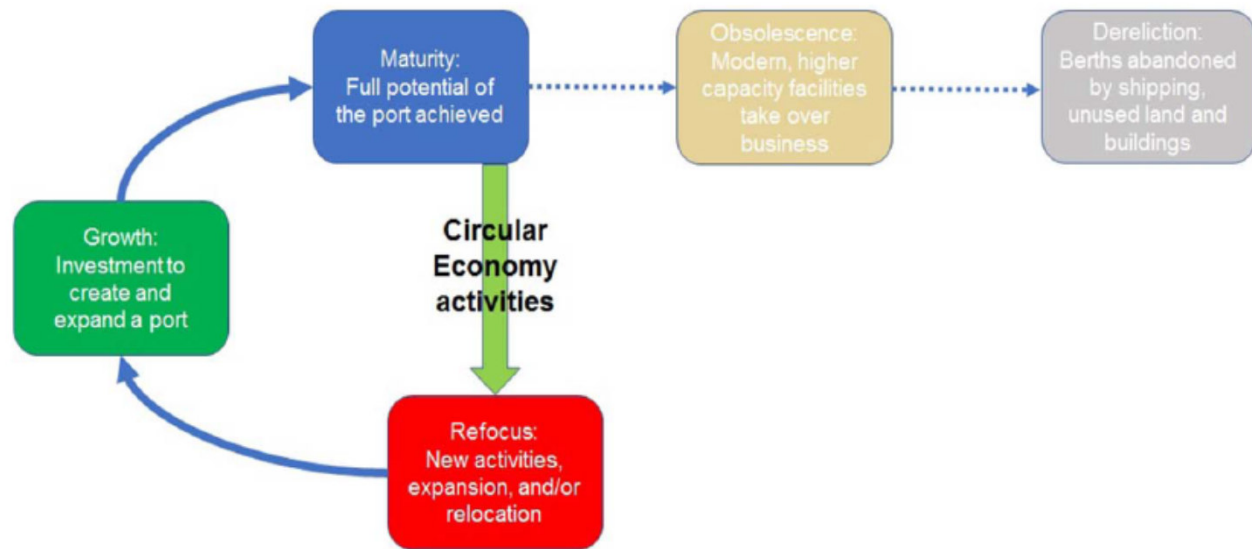
Port of Galve, Sweden



Port facilities- life cycle concept

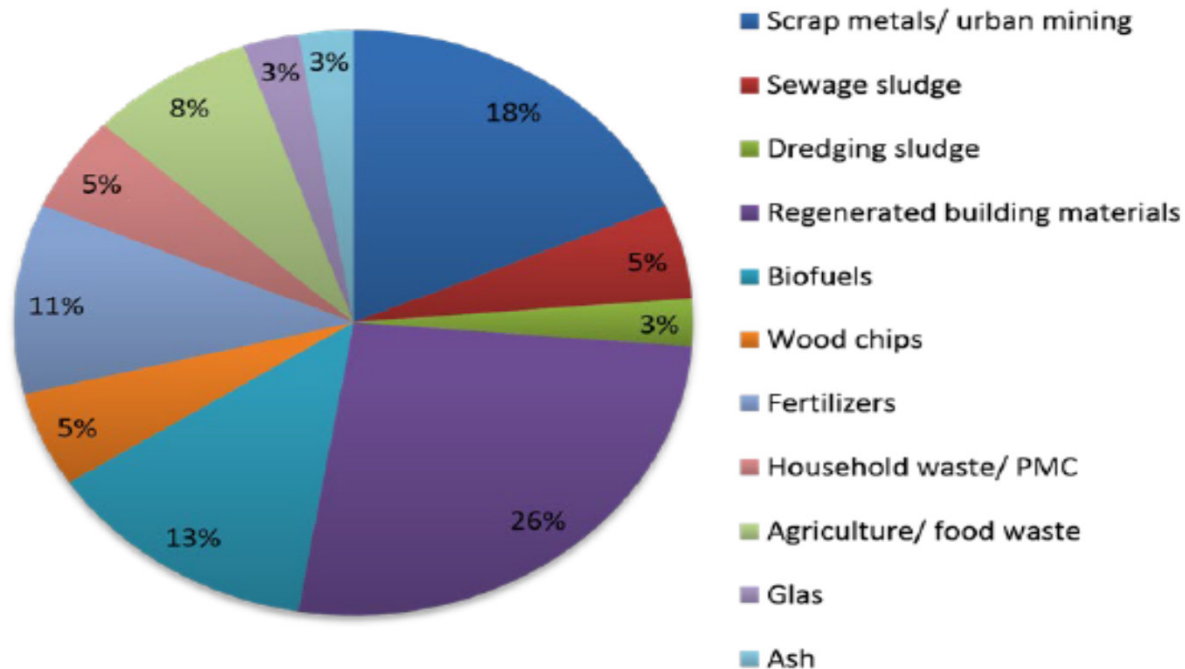
(Source: Carpenter et al., 2018)

Circular Economy & UN-SDGs



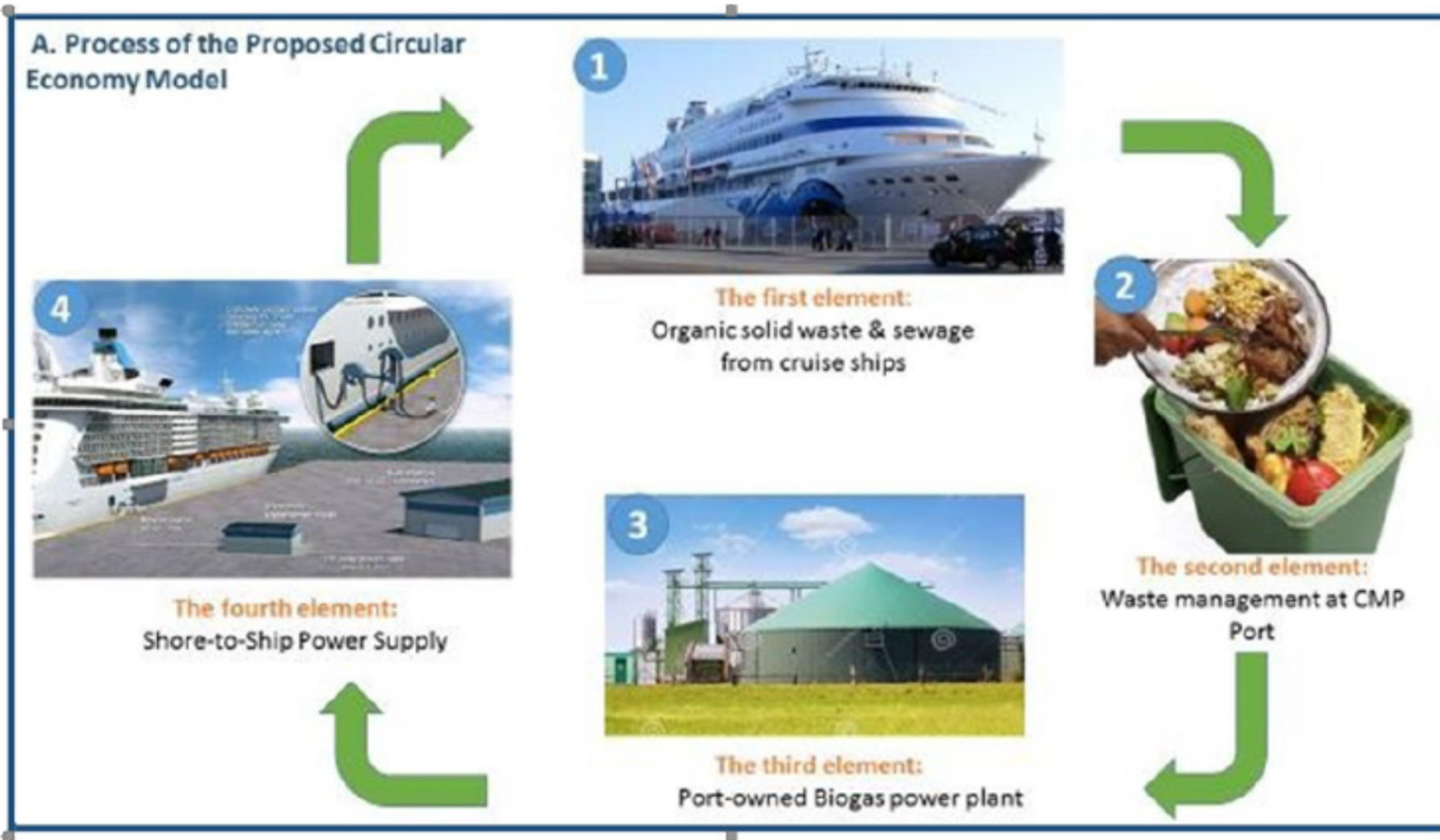
Inland Ports

Circular economy sectors - inland ports



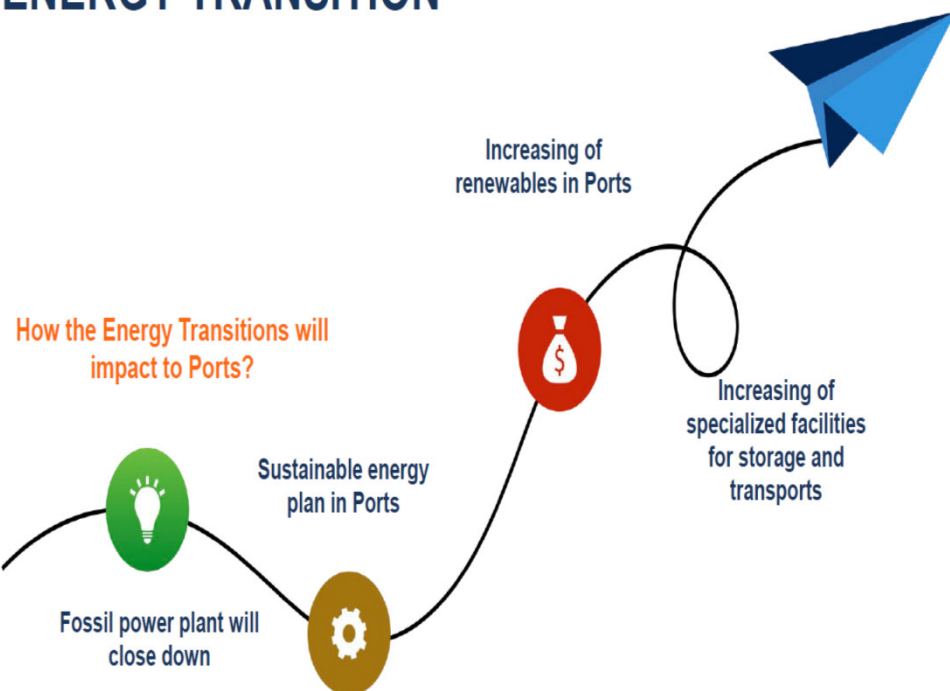
Source: EFIP, 2016

Circular Economy Model at Copenhagen Malmo Port



(World Maritime University, 2018)

ENERGY TRANSITION

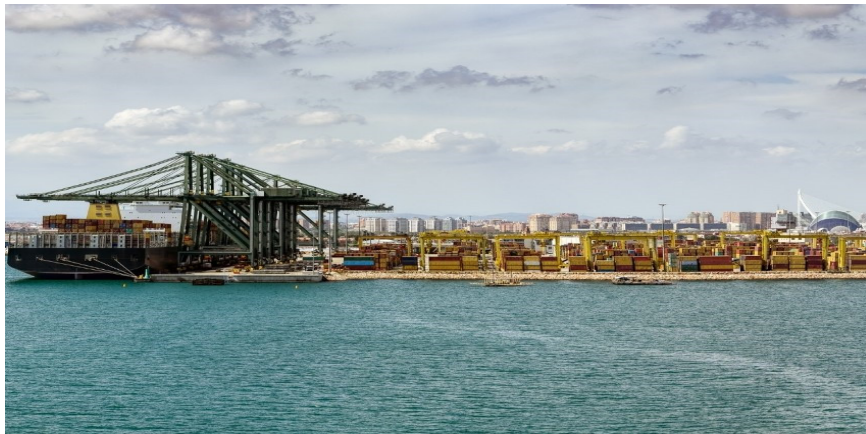


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Looking Forward

- Waste to energy
- Port cities



Port of Valencia



Waste to energy -Metso Outotec



Wind turbines at the Port of Hull

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- Thank you for your attention!
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