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Quantifying Environmental Impacts of Port Activities

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Task 1 – Environmental impacts

Goal: create insight in environmental impact of inland ports, the role of legislation and possible measures to reduce emissions

1. Environmental impacts of port activities
2. Review existing legislation and identification of gaps and obstacles
3. Challenges for implementation of environmental legislation and measures
4. Overview of good practices
5. Environmental performance mapping

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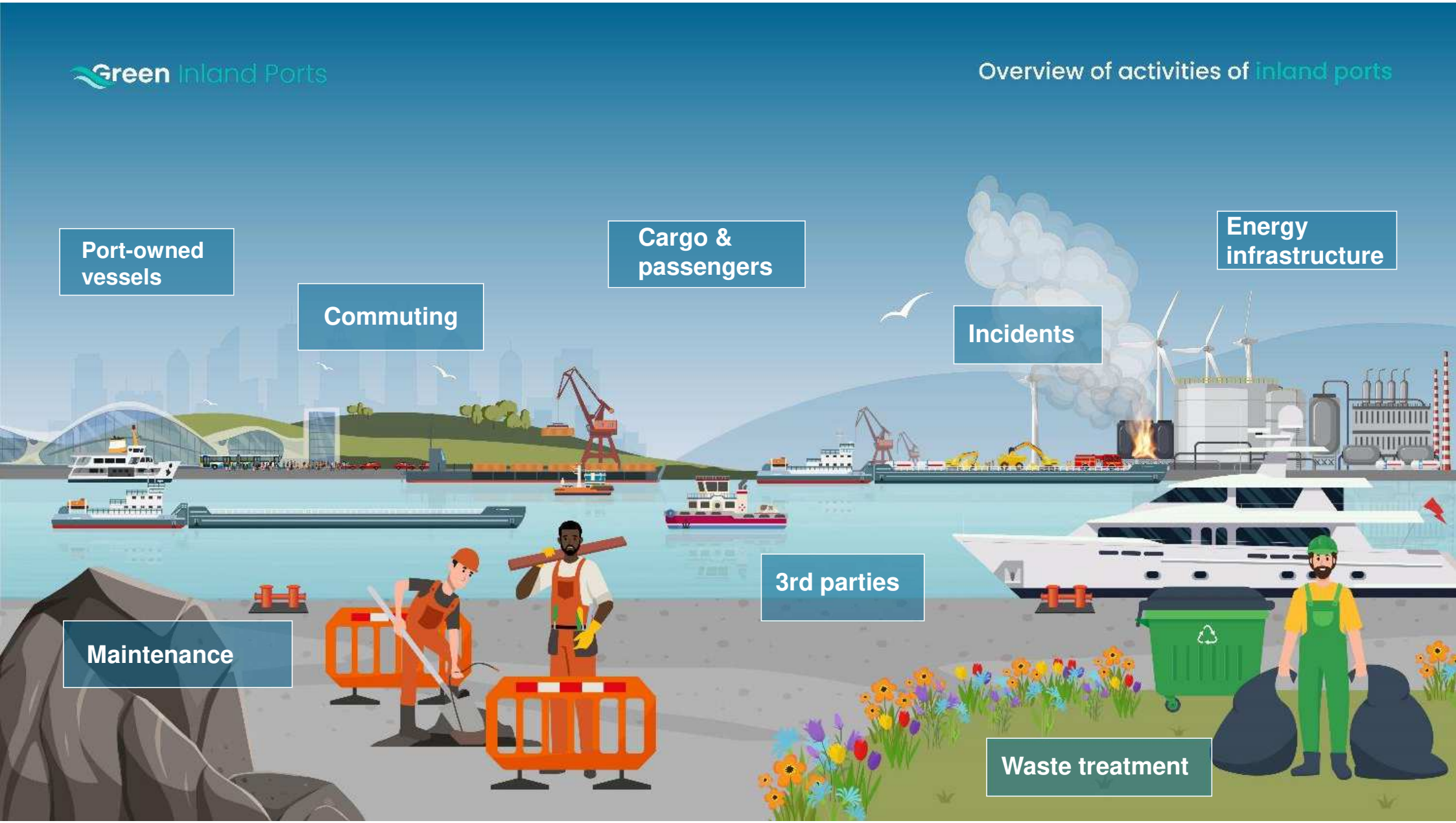
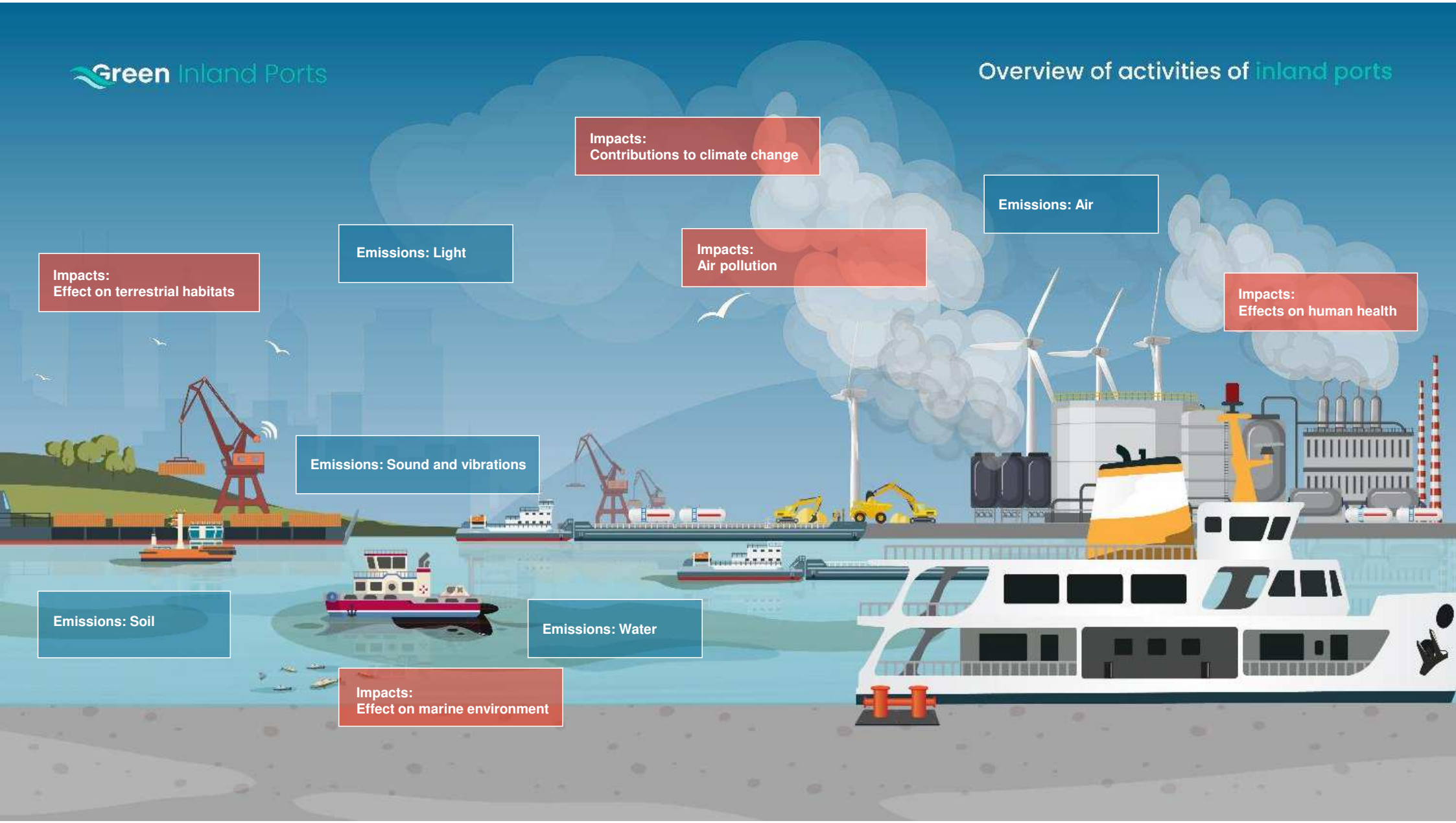

Green Inland Ports
Overview of activities of inland ports
Port-owned vessels
Commuting
Cargo & passengers
Incidents
Energy infrastructure
3rd parties
Maintenance
Waste treatment


Green Inland Ports
Overview of activities of inland ports
Impacts:
Contributions to climate change
Emissions: Air
Emissions: Light
Impacts:
Air pollution
Impacts:
Effect on terrestrial habitats
Impacts:
Effects on human health
Emissions: Sound and vibrations
Emissions: Soil
Emissions: Water
Impacts:
Effect on marine environment

Good practices

Identification of good practices through:

- Literature review;
- Interviews;
- Survey.

A factsheet will be made for each good practice

Categories factsheet
Description
Aim and goals
Ports where good practice has been implemented
Stakeholders involved
Realized/potential impact
Possible obstacles of good practice
Key learnings

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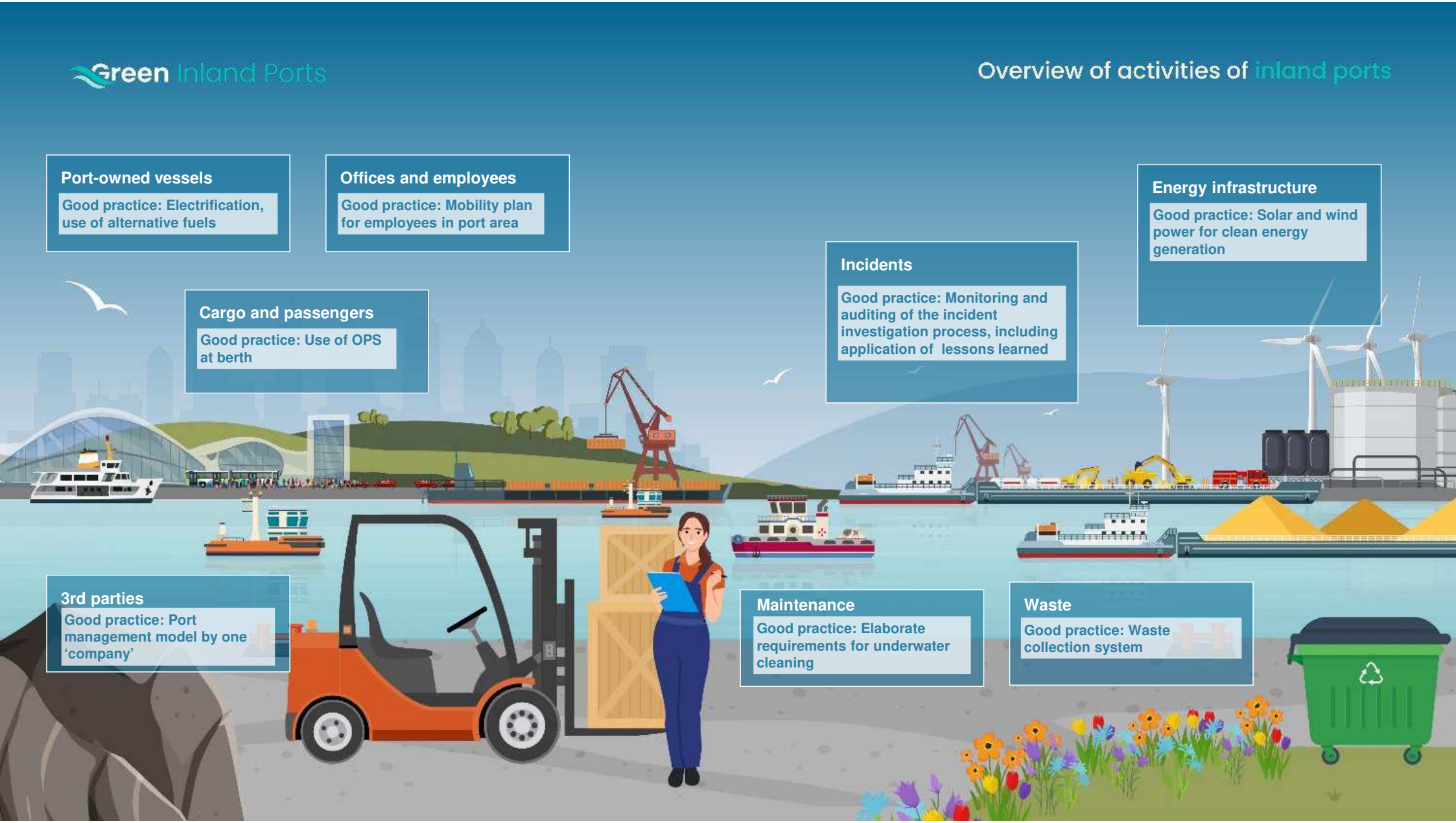
Overview of activities of inland ports



Port-owned vessels

Good practice: Electrification, use of alternative fuels

Offices and employees

Good practice: Mobility plan for employees in port area

Energy infrastructure

Good practice: Solar and wind power for clean energy generation

Cargo and passengers

Good practice: Use of OPS at berth

Incidents

Good practice: Monitoring and auditing of the incident investigation process, including application of lessons learned

3rd parties

Good practice: Port management model by one 'company'

Maintenance

Good practice: Elaborate requirements for underwater cleaning

Waste

Good practice: Waste collection system

Method for case study

Quantify environmental impacts using **Life Cycle Analysis**

- A structured method to quantify impact for the whole life cycle of a system or activity
- Emissions contribute to impact categories (global warming, ecotoxicity, acidification…)

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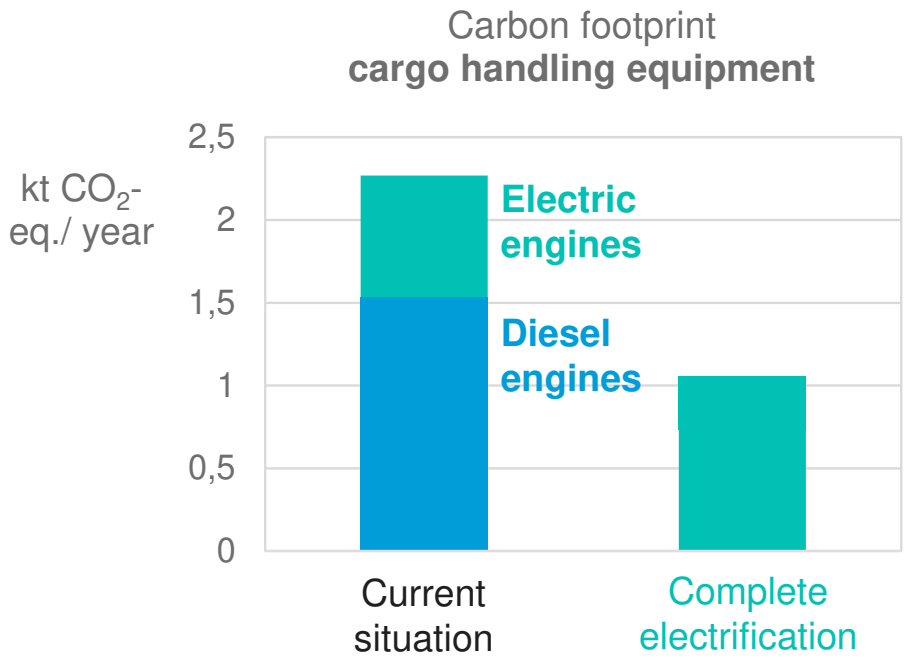
Preliminary results case study

- Danube inland port
- 5 electric cranes, 3 diesel cranes/forklifts
- Complete electrification reduces carbon footprint by 50%



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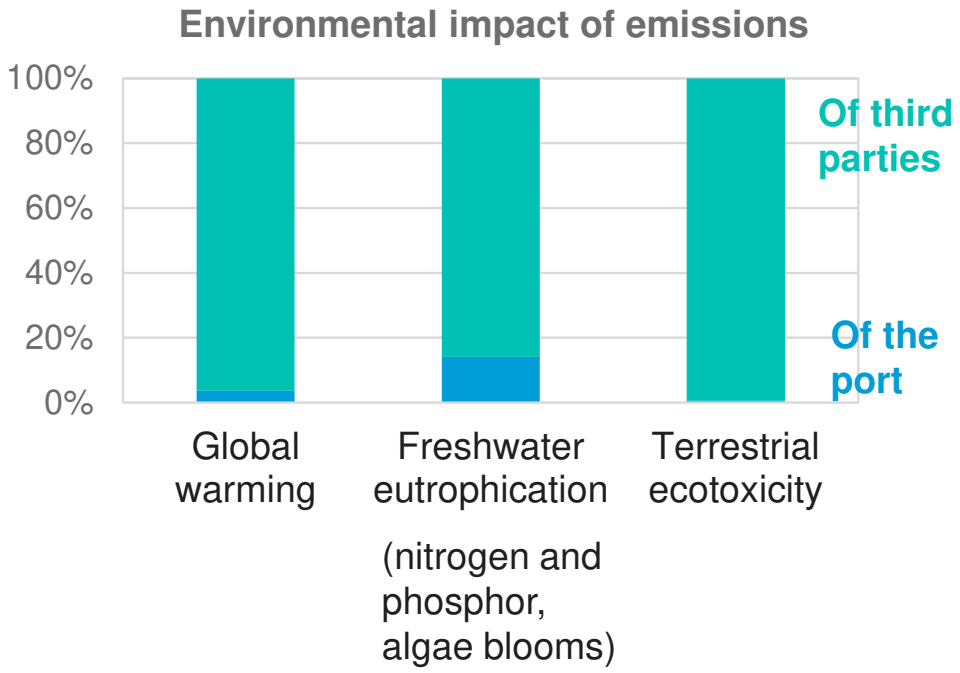
Preliminary results case study

- Danube inland port
- Port direct emissions (cargo handling equipment) vs. third parties' emissions (trucks, train, vessels)
- Reducing emissions of third parties can have a significant impact

Remark: inventory of port activities is incomplete



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The challenge for the case studies

Quantifying environmental impact is limited by data availability

- Activities (e.g. how much energy used per year)
- Emissions (e.g. how much is spilled)

With more data we could:

- Determine environmental hotspots
- Efficiently reduce emissions

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Challenges for Implementing Environmental Measures and Legislation

Frank Stevens, Associate Professor, Erasmus University Rotterdam, School of Law

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