



# REDII Ports

REDII Ports

**Interreg**  
North Sea



Co-funded by  
the European Union

# REDII Ports



## Port Partners

- Port of Skagen, DK
- Port of Korsør, DK
- Port of Brussel, BE
- Nports, DE
- Port of Brest/Brittany Region, FR
- Port of Moss, NO
- Port of Egersund, NO
- Port of Zwolle, NL
- Port of Trelleborg, SV

## Supporting Partners

- European Federation of Inland Ports - EU
- Danske Havne - DK
- Mariko Maritimes - DE
- Norsker Havner – NO
- Østfold Energi - NO
- Senate of the Free and Hanseatic City of Hamburg Senate Chancellery - DE
- Ports de Lille - FR
- France Hydrogene - FR
- France Maritime Cluster – FR

REDII Ports

**Interreg**  
**North Sea**



Co-funded by  
the European Union

# In a Nutshell

The project aims to exploit resources for a technically feasible and economically affordable generation, storage and consumption of cleaner energy and fuels with specific reference to 5 alternatives promoted by the REDII 2018/200+AFID 2014/94 Directives that are relevant for a Port Community: ELECTRICITY (SHORE/HYDRO POWER/BATTERY), WIND / LOCK / TIDE / SOLAR, BIODIESEL, HYDROGEN, AMMONIA/METHANOL.

REDII PORTS will determine the conditions for blueprinting a medium-to-long term strategy that enables ports to become springboard for new green energy developments in the said fields. It will:

- identify local excess green resources/feedstock/waste via a CE approach & share them through online tools;
- define gaps/challenges/possibilities for ports;
- estimate the demand/potential trading volume of the type of energy considering multiple factors, e.g. price, grid.

REDII Ports

Interreg  
North Sea



Co-funded by  
the European Union

# In a Nutshell

This will allow at least 250 ports/involved external organisations to increase their capacity to take informed decisions on the matter.

After setting the framework the partners will test their effective capacity to convert the resources into the selected power/fuel options and/or facilitate other companies' renewable energy initiatives in their site. To this purpose they will pilot transnationally 13 technology solutions tailored for onshore-sea/inland waterways-the hinterland, with public/private stakeholders.

Finally, REDII PORTS will strive to ensure that the energy is supplied to the wide Port Community (incl. end-users/businesses in the harbour/citizens) and similar actions are replicated. Upscaling/engaging mechanisms will be deployed, e.g. B2B, good practices, a trading hub, a RE business opportunity

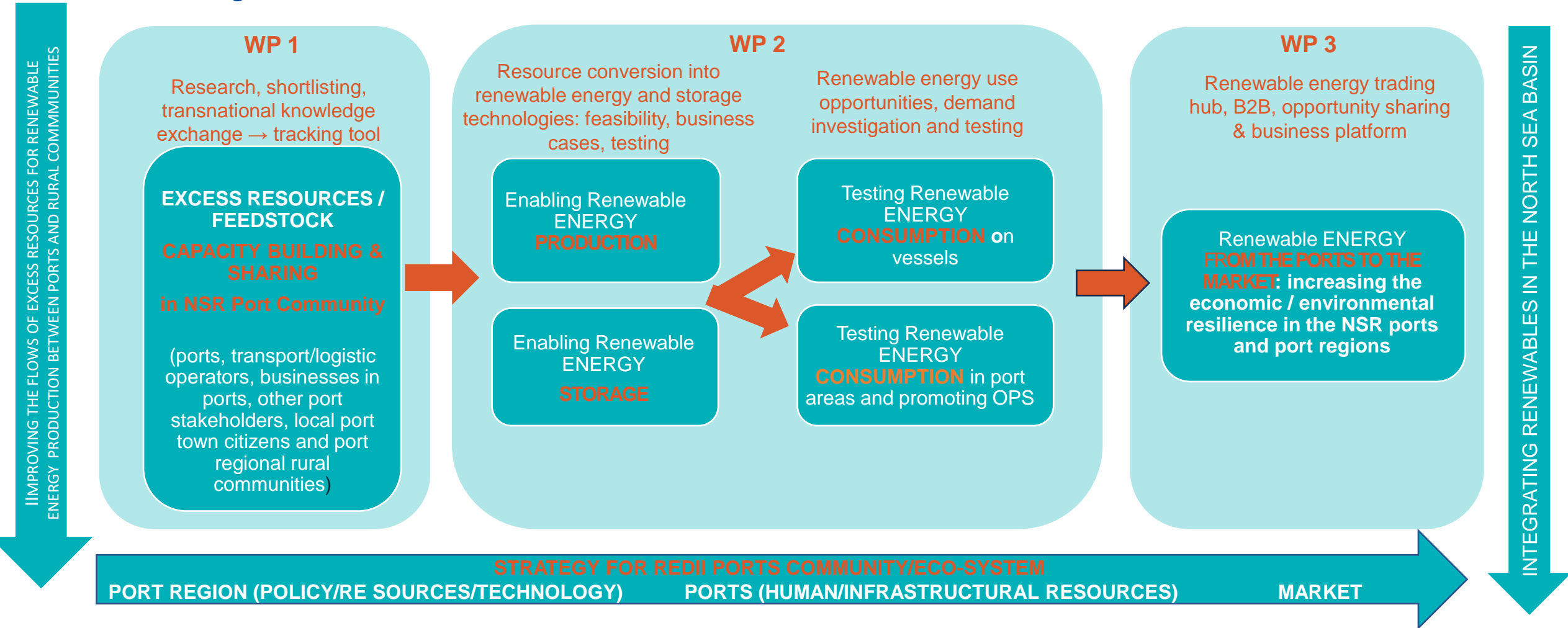
REDII Ports

Interreg  
North Sea



Co-funded by  
the European Union

# Project Structure



REDII Ports

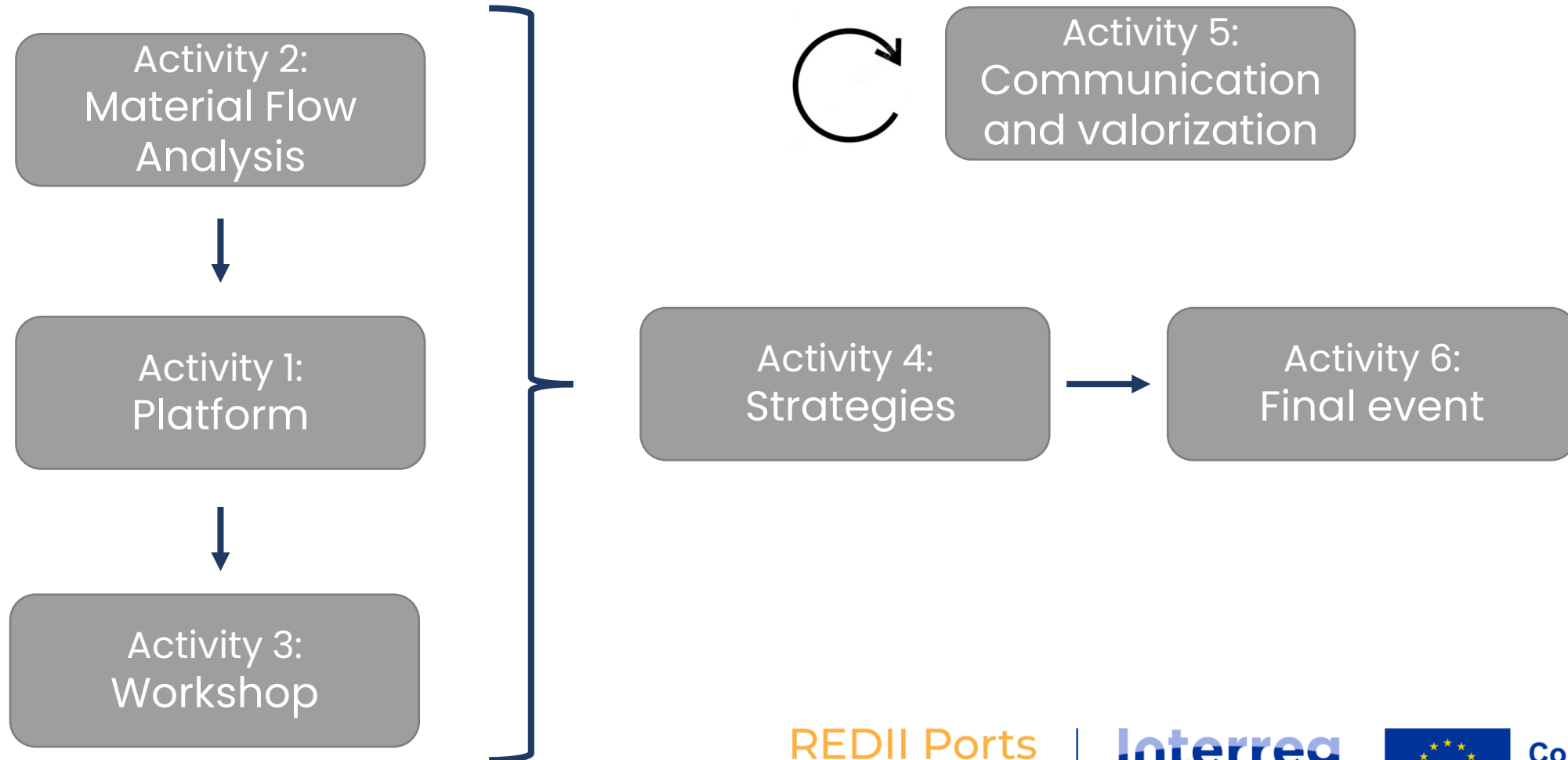
Interreg  
North Sea



Co-funded by  
the European Union

# WP 1 in short

## WORKFLOW



# WP 1 in Short – Pilot Regions



REDII Ports

Interreg  
North Sea



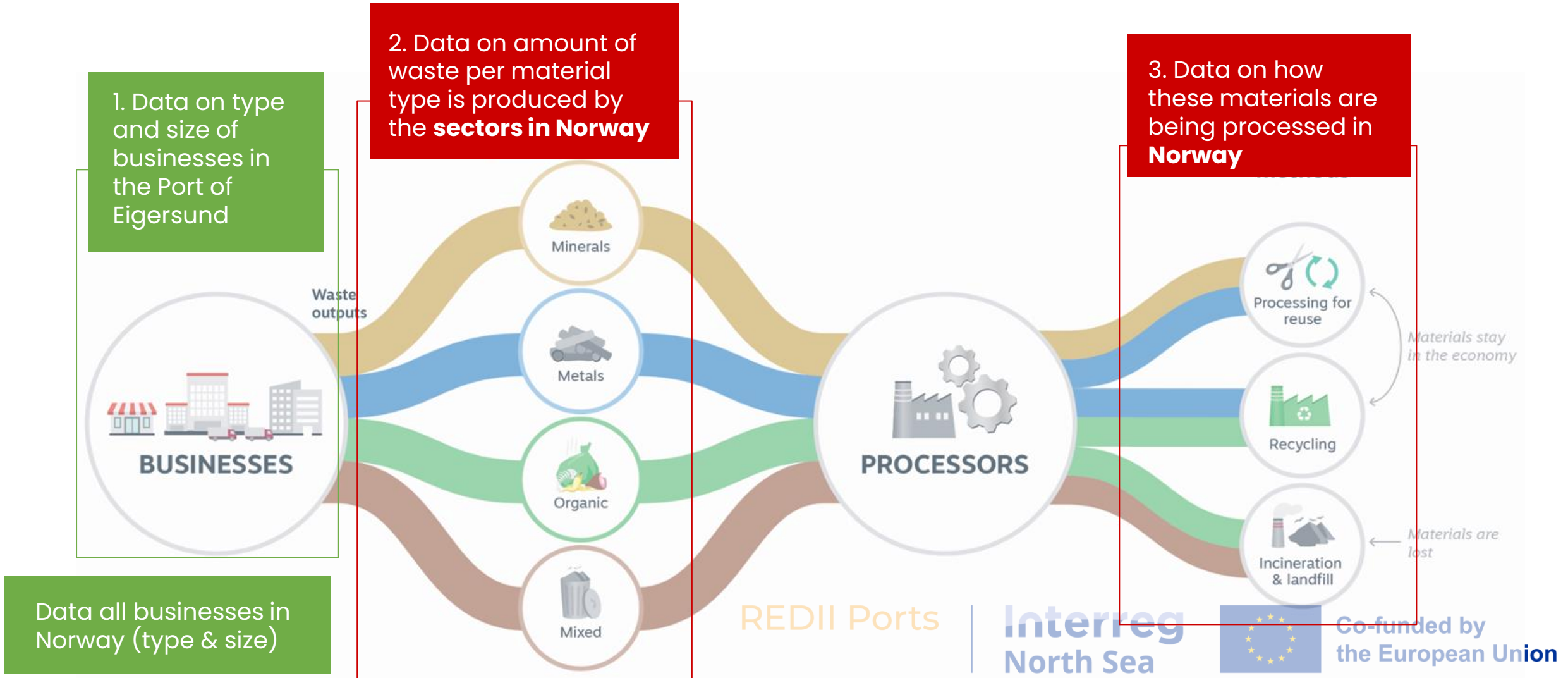
Co-funded by  
the European Union

# WP 1 in Short: (waste) material flow analyses

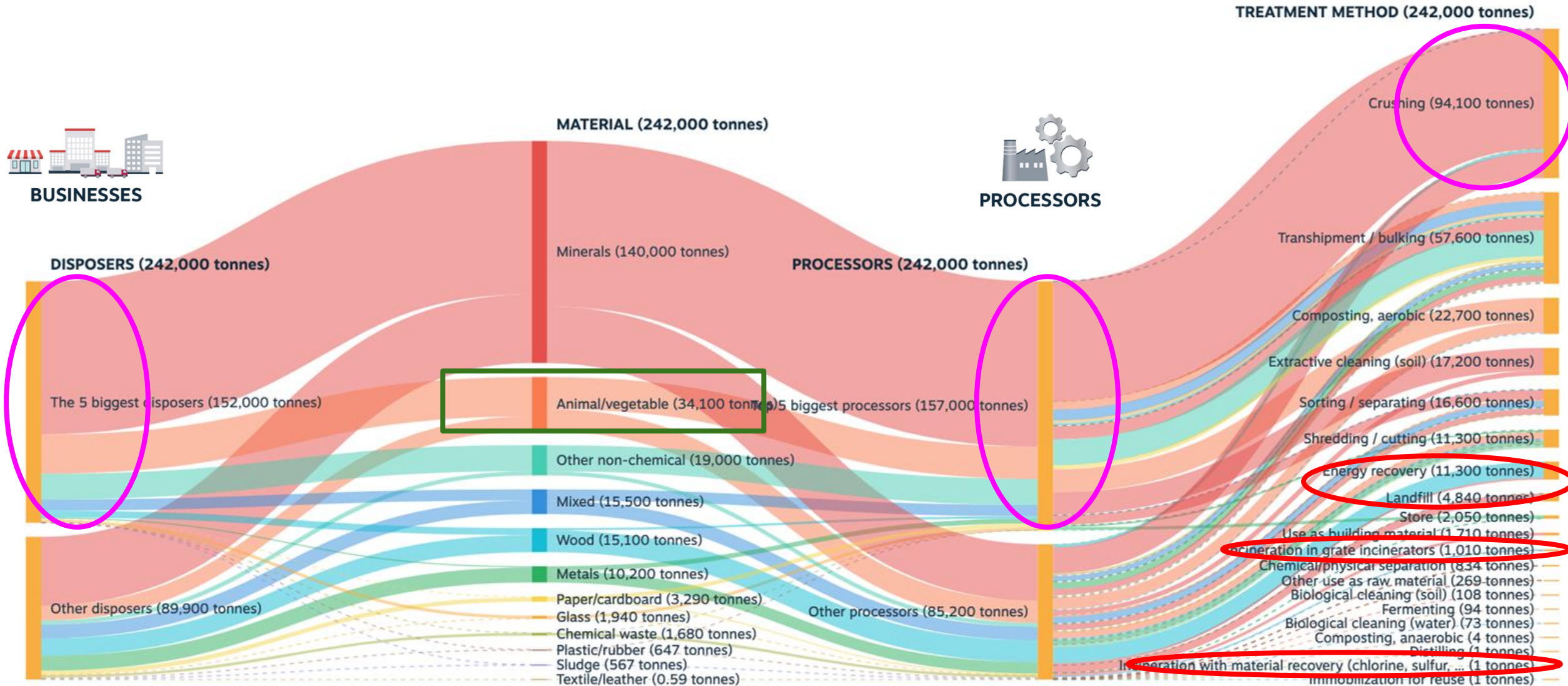




# WP 1 - Port of Egersund - Estimates based on National data

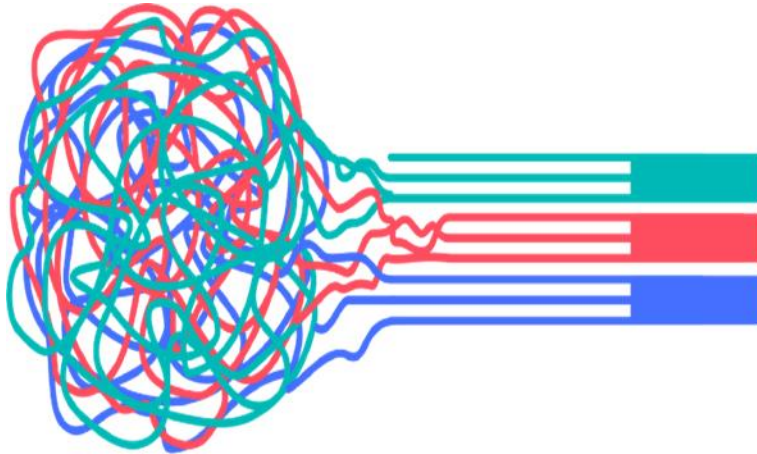


# WP 1 – Port of Zwolle



## WP 2: PRODUCTION/MIX/STORAGE/CONSUMPTION OF REDII RENEWABLE ENERGY IN PORTS: Testing 5 alternative groups of solutions from the Directive (EU) 2018/2001

To evidence that targeted small scale local renewable energy production is possible and necessary for ports to deliver the right fuel options for the future by utilizing local (excess) resources/feedstock/waste.



Workpackage leader: BRITTANY REGION

### PILOT 1: ENERGY CONSUMPTION ON PORT AREA AND VESSELS

#### Component 1: Bio-fuel

- Port of Skagen – DK
- Port of Zwolle – NL
- Port of Egersund - NO

#### Component 2: Shore power - Battery

- Port of Skagen – DK
- Port of Zwolle – NL
- Port of Brussels - BE
- Port of Korsør – DK
- Port of Moss – NO

#### Component 3: Hydrogen

- Port of Brest – FR
- Port of Zwolle - NL
- Port of Moss – NO

#### Component 4: Ammoniac - Methanol

- Brittany Region - FR
- Port of Egersund - NO

#### Component 5: LOCK/TIDAL/SOLAR/WAVE/WIND

- Port of Brussels –BE
- Nport – DE
- Port of Trelleborg

#### Component 6: Lab test for renewable methanol generation from various sustainable raw materials

- VIVES - BE

#### Component 7: 3 workshops on application of RE from different sources (waste/garbage/CCU/...) to energy storage systems in ports

- VIVES - BE

#### Component 8: REDII renewable energy in shipping

- MEQ Partners – DK
- LAUME - DE

REDII Ports

Interreg  
North Sea



Co-funded by  
the European Union

# Port of Skagen – Shore Side Electricity

## Pilot progress

- Interviews with end users
- Meetings with Shore Power system providers
- Preparation of technical specifications
- Preparation of request for proposal

## What's next

- Contracting with Shore Power System provider Q1 2024
- System delivery Q2-Q3 2024
- Commissioning and test Q3-Q4 2024
- Live test Q4 2024 (Fingers Crossed)
- Test period with data collection experience gain



# Port of Skagen – Circular Fuels Study

## Study progress

- Fishing fleet depending on MGO
- Methanol, Bio-LNG, H2, Ammonia, need 2,5-7 times the volume of MGO.
- Local resource mapping - Ongoing
- Investigate how to get green fuel with the same characteristics as MGO. - Ongoing (BioGTL)

## Next Steps

- Feasibility study of production and storage
- Business case: Resource is necessary, Investment costs, Demand, operator/investor matchmaking etc.



# Niedersachsen Ports – Small Scale Solutions for Renewable Energy Production

Large-scale solutions make sense, but are not feasible everywhere



How can small-scale solutions fill the gap?



- Difficult to approve (noise, distances etc.)
- require high investments
- Statics on old buildings not sufficient

- Every kw needed
- Bridging the experience gap
- Overview about best solutions
- Integrate solutions into port infrastructure

REDII Ports

Interreg  
North Sea



Co-funded by  
the European Union

# Niedersachsen Ports

## Power consumption hotspots



## Natural Gas consumption hotspots



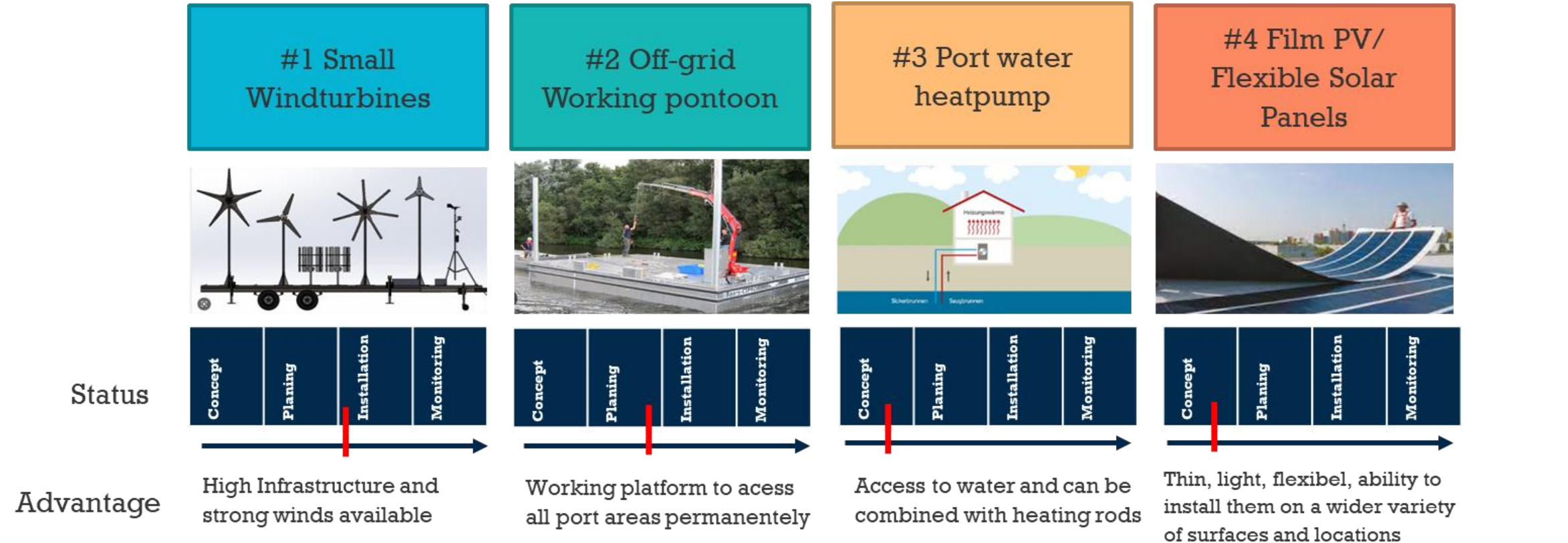
REDII Ports

Interreg  
North Sea



Co-funded by  
the European Union

# Niedersachsen Ports - Testfields





# Niedersachsen Ports – Next Steps

## Potential Study

- Accomplish study
- Present study to customers Nov. 13th
- Publish study results as website/interactive

## #1 Small Windturbines

- Finish statics
- Install turbines
- Install monitoring hard- and software

## #2 Off-grid Working pontoon

- Purchas components
- Install components on pontoon
- Put into service

## #3 Port water heatpump

- Check feasibility
- Develop concept
- Find location
- Investment decision

## #4 Film PV/ Flexible Solar Panels

- Check feasibility
- Develop concept
- Find location
- Investment decision

REDII Ports

Interreg  
North Sea

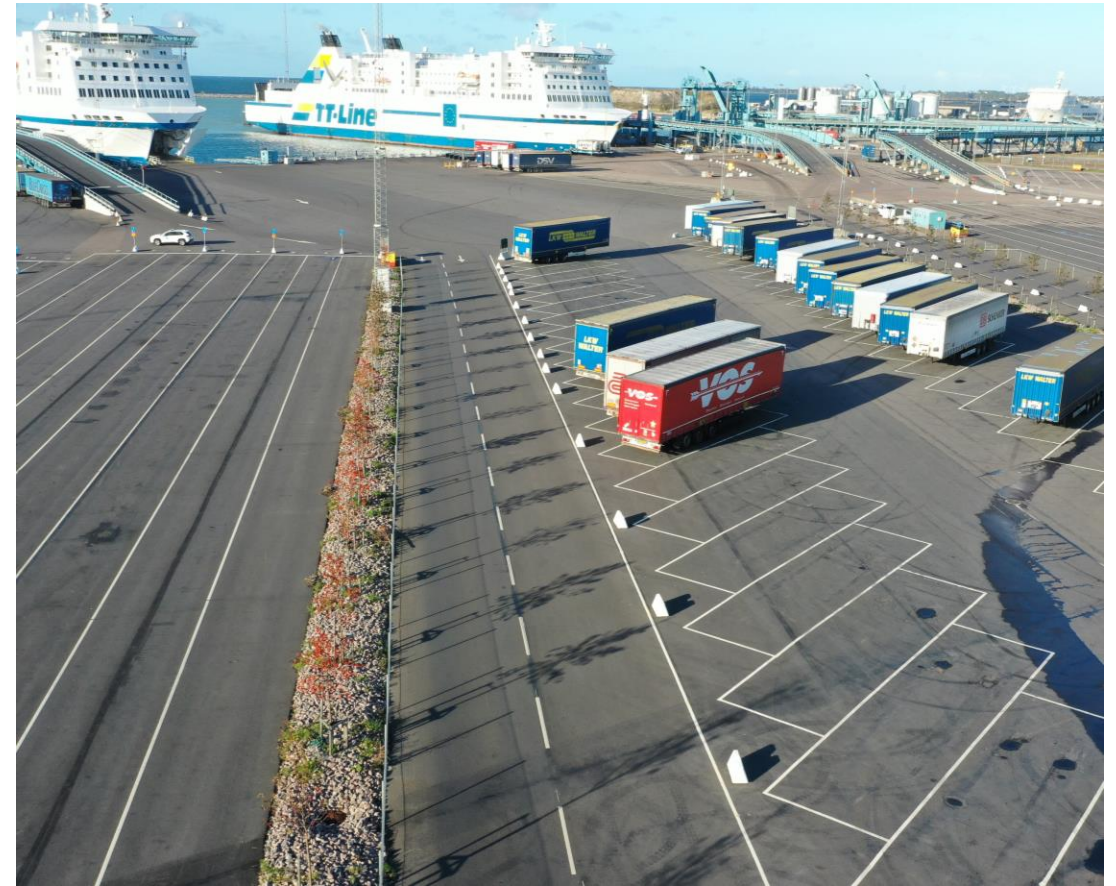


Co-funded by  
the European Union

# Port of Trelleborg

## Status and current state:

- Procurement with SWECO is finalized and work has started
- The external expertise analyze is divided into 3 steps including interviews with the vehicle manufacturers:
  - Step 1 - Current situation and the future distribution 2030
  - Step 2 – Future in a longer perspective (2050)
  - Step 3 – Forecast 2030, forecast 2050, Documentation



# Egersund Industry and Port

## WP 2 -“Hydrogen/ Ammonia/ Methanol Pilot”

### Scope of the Feasibility Study

- Mapping of the CO2 resources
- Evaluation of the means of transportation of CO2
- Identification of potential storage site
- Identification of the potential production site
- Assessment of the expenses for the mapping, transportation, and storage



# Port of Brussels – Shore Side Electricity

- Specifications for the installation of the shore-side electricity facilities (preparation tender procedure ongoing – awarding foreseen end 2023)
- Installation of 2 boxes for inland waterway transport of cargo and cruise ships (South of Brussels), foreseen mid 2024
- Standardization hardware & management platform & interoperability for payment



# Port of Brussels

## Hydroelectric Power Generation

- 2 locks in the Port of Brussels -> investigate ability to create a sufficient flow to power turbines producing renewable energy to:
  - Be consumed directly on site (operation of the locks)
  - Injected into the distribution network or shared via energy community
- Technical feasibility and economic opportunity study (tender preparation ongoing – award foreseen end 2023):
  - Define sites for the installation of the hydroelectric turbine (taking into account technical constraints linked to the sites as well as waterway safety)
  - Cost-benefit analysis/ economic feasibility study
  - Installation of hydropower turbine (s) (foreseen end 2024)

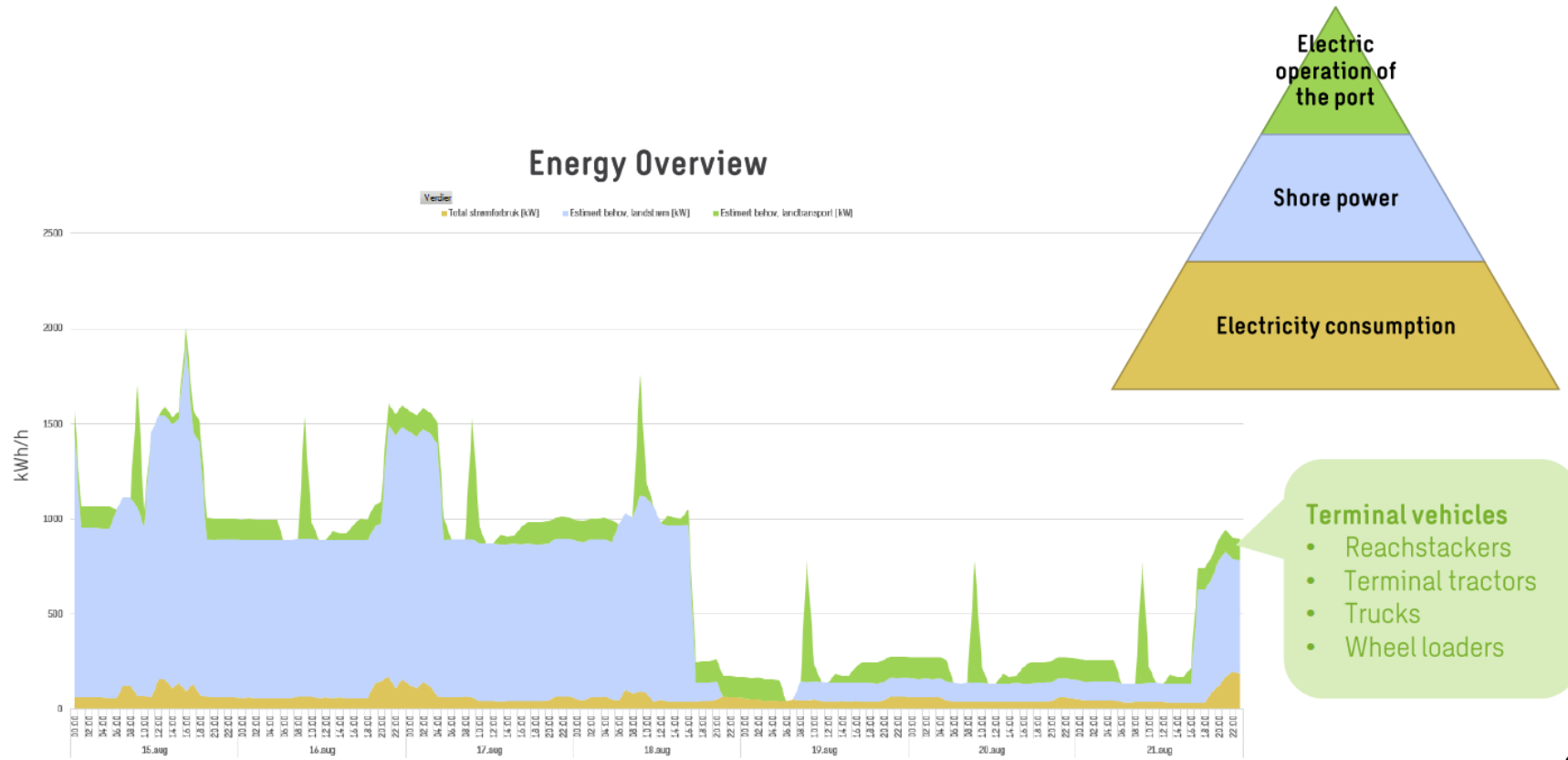


# Port of Moss – Electrification

- Analyses to identify the opportunities that arise in the development and implementation of a battery system on the port of Moss.
- Decision making on the procurement and implementation of the battery storage solution system



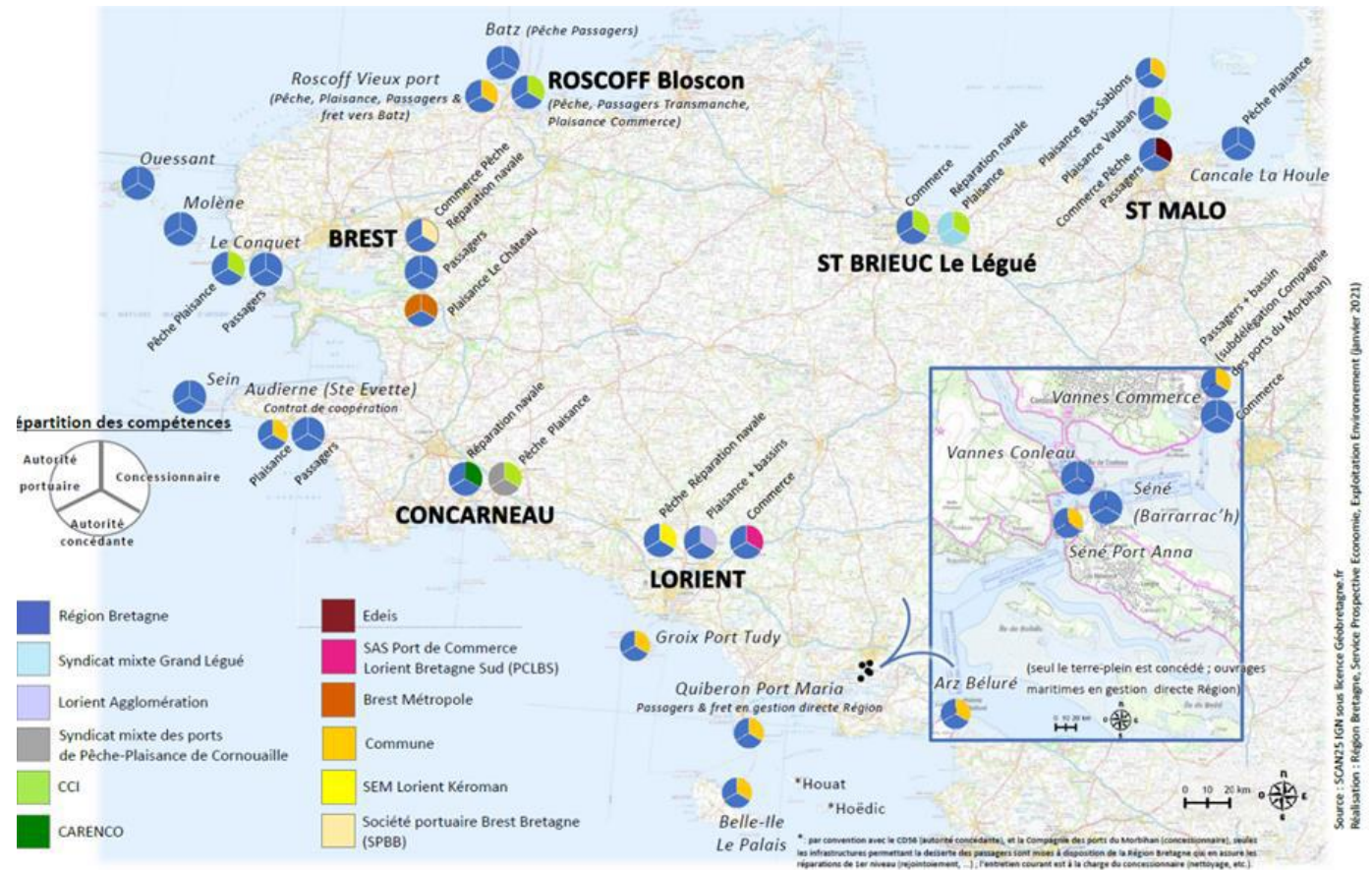
# Port of Moss – Preliminary analyses of the Port of Moss



# Région Bretagne Hydrogen & Ammonia Cluster

Study on energy needs within a larger stakeholder group and potential use cases in Région Bretagne:

- Local actors meeting in Brest the 07/11/2023
- Indepth interview with ~40 of them during November Understanding their energy needs
- Define the irfutur decarbonized energy need



REDII Ports

Interreg  
North Sea



Co-funded by  
the European Union





# REDII Ports

REDII Ports

**Interreg**  
North Sea



Co-funded by  
the European Union