



LOOP·Ports
Circular Economy Network of Ports

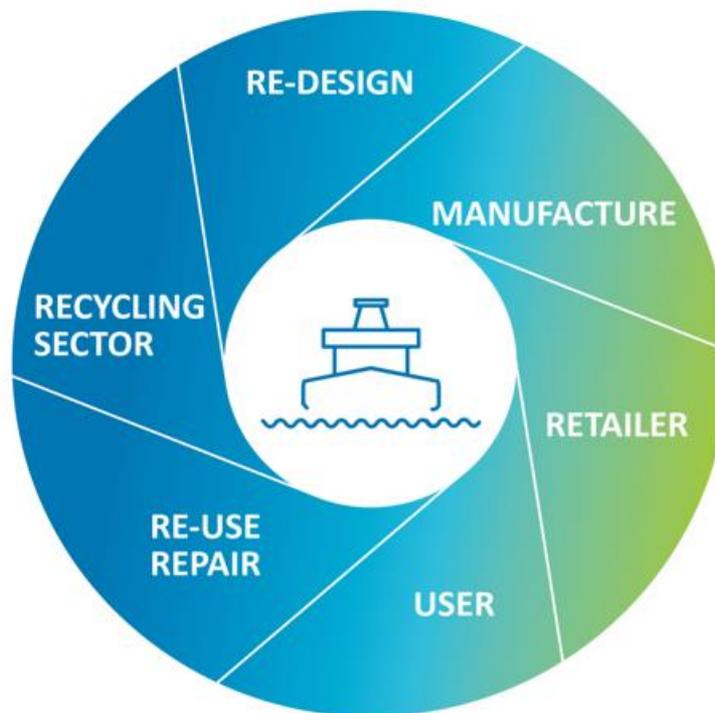
**CIRCULAR
ECONOMY
PANEUROPEAN**
Online Workshop
7th October 2020



How ports can work with circular economy

Prof Dr Fenna Blomsma

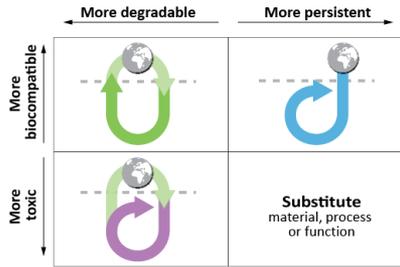
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“An economy that provides multiple value creation mechanisms, which are decoupled from consumption of finite resources”

[Ellen MacArthur Foundation]

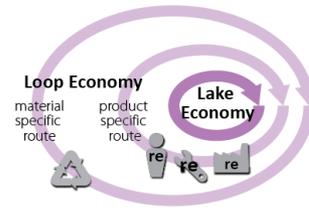
Source: Blomsma and Brennan (2017)



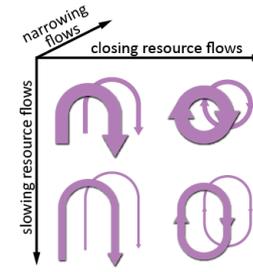
Geiser 2001



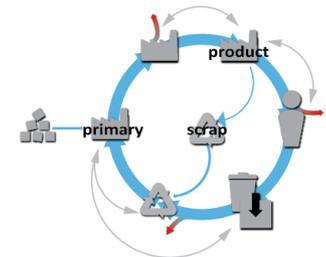
The New Economics Foundation 1994



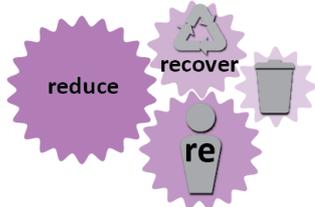
Stahel 2013



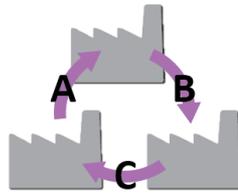
Bocken et al. 2015



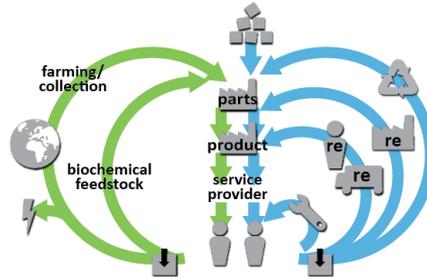
Novelis 2014



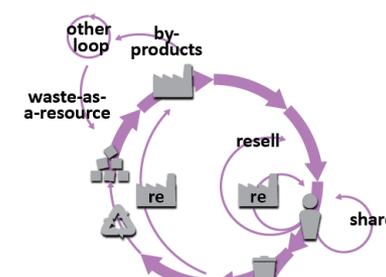
DotE 1995



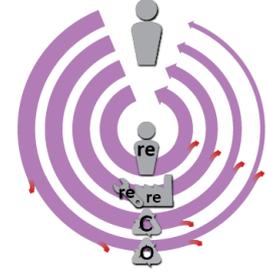
e.g. Chertow 2000



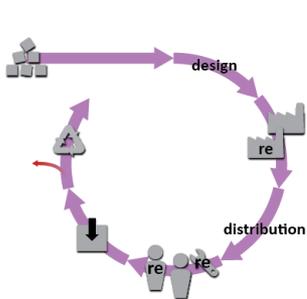
Ellen MacArthur Foundation 2013



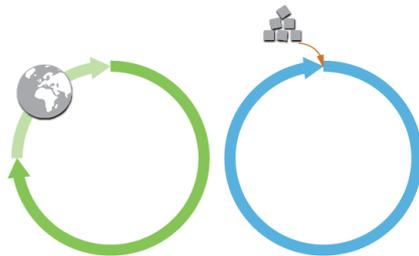
Accenture 2014



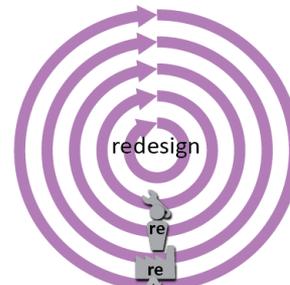
Green Alliance 2014



European Commission 2014



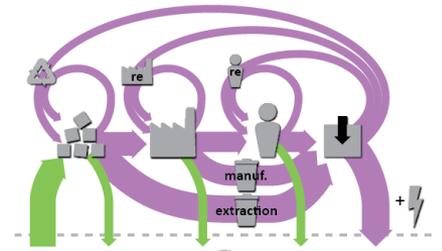
Braungart and McDonough 2002



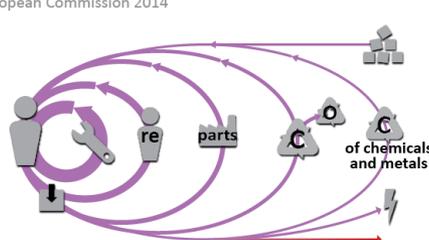
PwC 2014



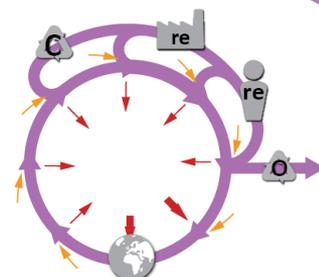
Pauli 2010



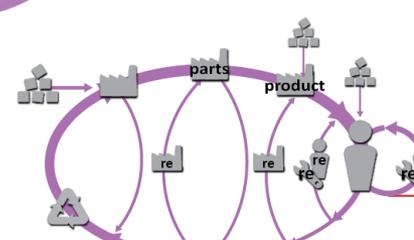
Singh and Jeez 2015



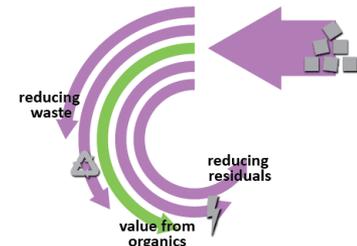
Ricoh 1994



Environmental Protection Agency 1993

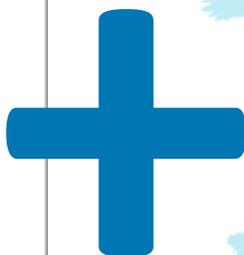
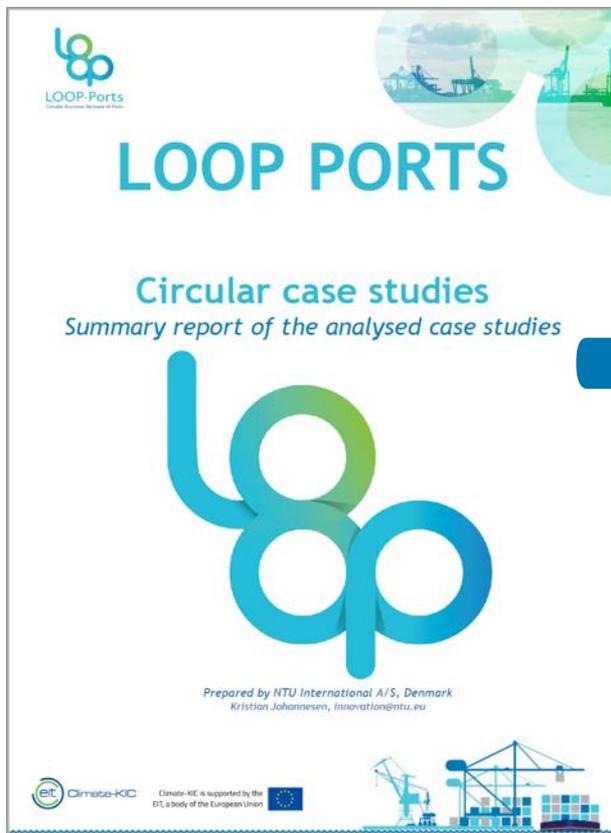


Allwood et al. 2011



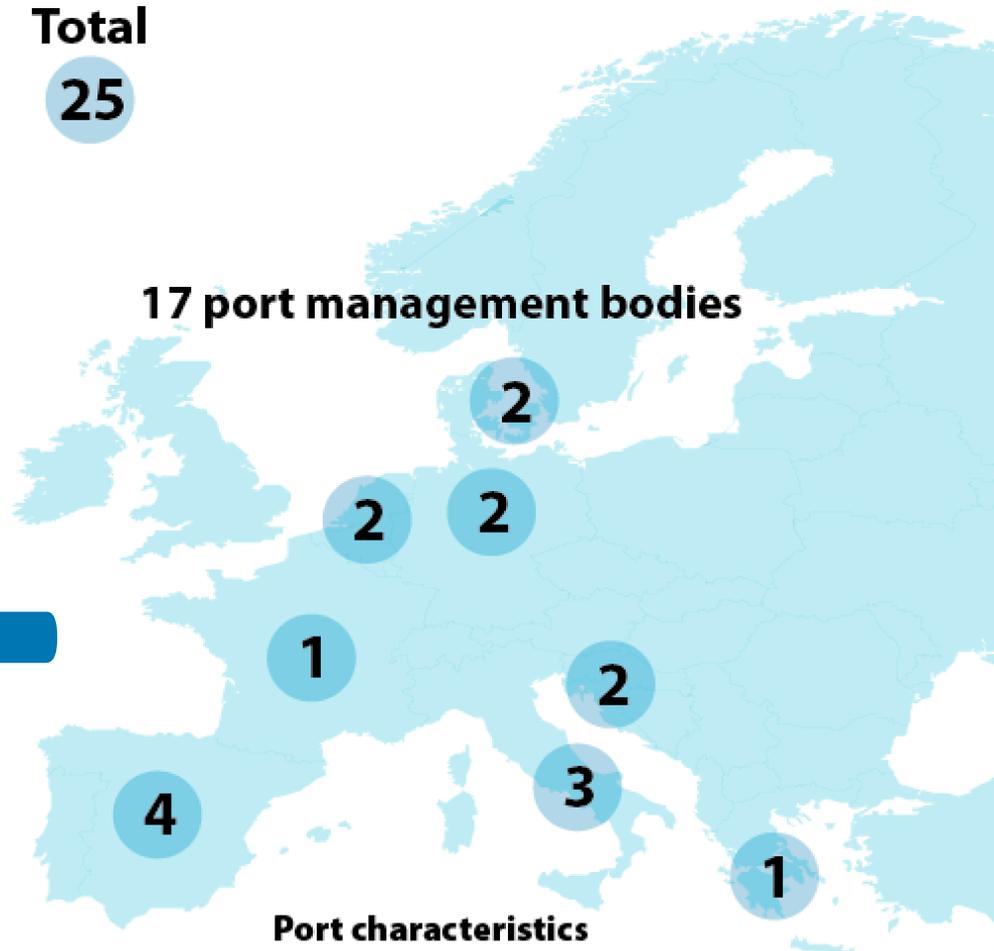
Waste Management 2015

- | | | | | | | |
|---|----------------------------------|--|------------------------------|-----------|--|---|
| technical | losses or residuals | raw materials input
extraction, supplier, procurement or materials manufacturer | consumer or user | biosphere | recycling
c = closed loop, o = open loop | reconditioning
remanufacture, refurbishment |
| biological
incl. return to biosphere | material, energy or labor inputs | manufacturing
production and/ or assembly | reuse | maintain | collection
reverse distribution or waste management | product life extension?
reverse distribution or waste management |
| biological or technical | knowledge | | disposal, trash, end-of-life | repair | | redistribute |



Total
25

17 port management bodies



Port characteristics

Type		Ownership		Governance	
Core	14	Municipal	5	Tool port	2
Comprehensive	2	Regional	2	Corporatised	2
Mix	1	State	9	Landlord	11
		Private	1	Private service	2

+ 2 (inter)national port bodies



Metals



Plastics



Construction
materials



Biomass



Gases



Water



Energy



Dredging



Mixed
waste



Other



1
Circular port assets & equipment

Optimisation of capacity and life-time extension of port assets, such as buildings, cranes, quays, buoys and other equipment through smarter use (e.g. renting, sharing) and smarter maintenance.



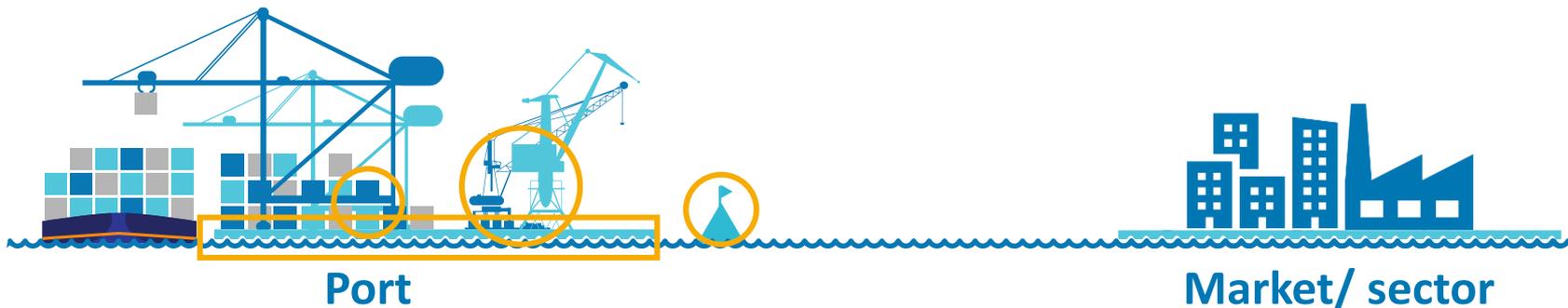
2
Circular flows within ports

(and between ports & surrounding area)
New uses for would-be wastes generated by port activities, such as ship waste and by-products of industries within ports and port activities.



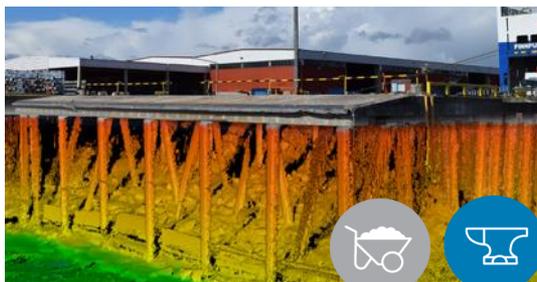
3
Ports & circular markets

Ports enabling other industries – both on and offshore – to become more circular by developing new activities that connect supply and demand for circular resources (targeted at resource flows through ports).



CIRCULAR ASSETS & EQUIPMENT

For example...



HAMINAKOTHA, FI

Digitalisation for better use of port assets

Digitalisation through 3D operating system - this allows intensification of daily port operations, as well as effective maintenance and repair of port facilities.



RAMSGATE, UK

Efficient maintenance through modular design

A new light-weight and modular design enables quicker buoy maintenance, with less stock in reserve, and executed by smaller ships enables more cost-effective maintenance.



Port of Kristiansand, NO

PSS for reducing in-harbour emissions

Product/service system for reducing in-harbour emissions through onshore power supply.



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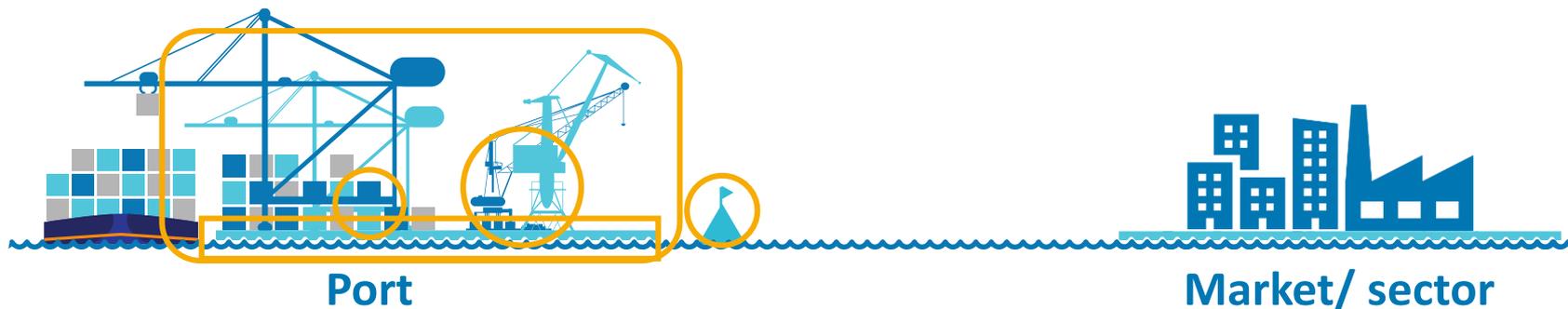
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CIRCULAR FLOWS WITHIN PORTS

(AND BETWEEN PORTS AND SURROUNDING AREA) For example...



Port of Marseille, FR

Capture of greenhouse gases in microalgae

The VASCO project is using state-of-the-art green chemistry to transform industrial fumes such as CO₂ into a production microalgae.



AALBORG, DK

Circular sourcing for cement production

Dredging has become a value adding activity - the sands are used as a raw material in the production of grey cement in the co-located cement plant. Ongoing for 30+ years. Linked with various industrial symbiosis flows: exchange of waste heat with city, mixed waste of households as input for energy production, etc.



BOULOGNE-SUR-MER, FR

Valorisation of fish by-products

Fish by-products used as raw materials and ingredients for high value products such as the nutraceuticals, functional food, cosmetics and animal nutrition markets.



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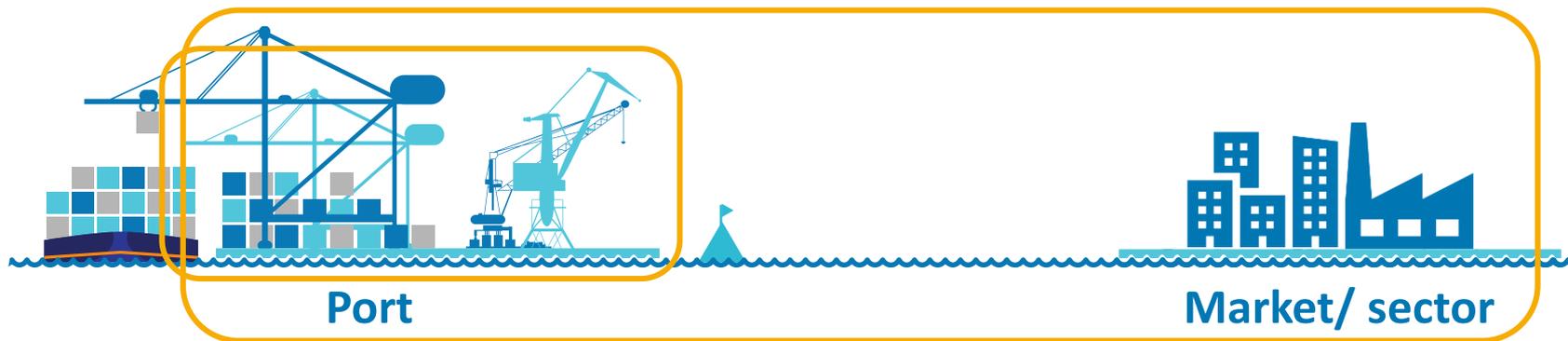
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FREDERIKSHAVN, DK

Circular Decommissioning of ships and rigs

The port of Frederikshavn have established a dedicated infrastructure for decommissioning of offshore structures – ships, rigs and other structures - enabling reuse and refurbishment of machinery and equipment. Together with recycler M.A.R.S.



MOERDIJK, NL

Valorisation of waste tires through pyrolysis

A logistics hub for tires already, the port is piloting return logistics to valorize waste tires through pyrolysis - replacing incineration to obtain gas, oil and biochar for producing new goods and generation of energy.



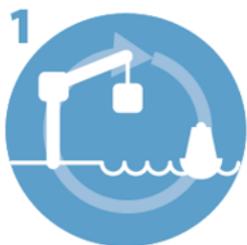
ANTWERP, BE

Linking Circular Markets in the Carloop Project

Building on the current export flows, Antwerp Port Authority has set up a pilot project to bring back used car parts. The usable parts are sorted at local partners in West Africa and sent back to Antwerp for recycling or refurbishment.

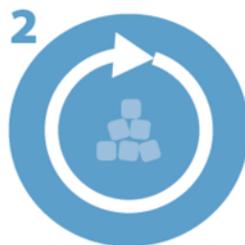
Circular Economy as a way to develop a systematic sustainability agenda

In the next sessions we will go more in depth on each theme...



1 Circular port assets & equipment

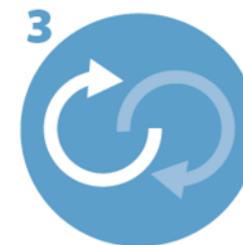
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2 Circular flows within ports

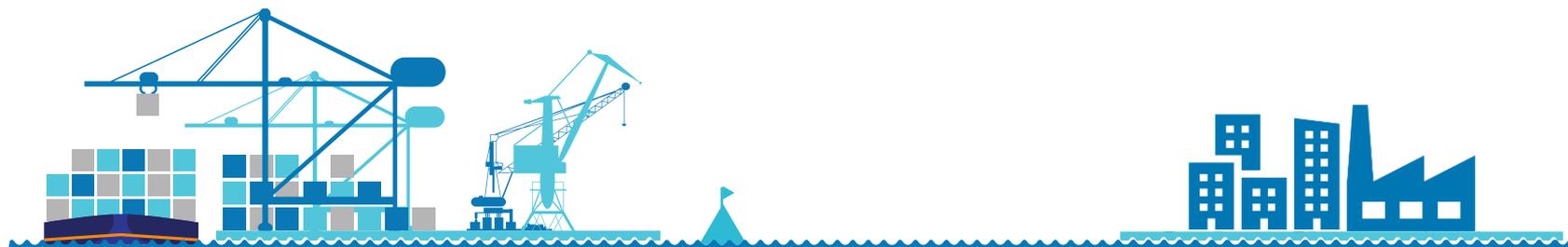
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Port

Market/ sector

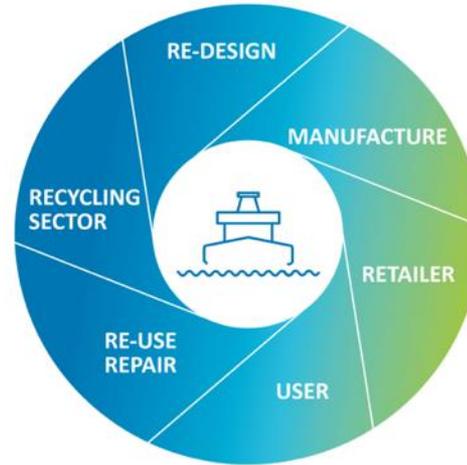
How & what of today...

Some practical announcements...

08:45 - 09:00	WELCOME AND CONNECTION TO THE PLENARY MEETING ROOM
09:00 - 09:40	SETTING THE SCENE (PLENARY SESSION)
09:00 - 09:10	LOOP-Ports project presentation - Jorge Lara - Fundación Valenciaport
09:10 - 09:20	Maritime projects linked with circularity - Maria Loloni - EIT Climate-KIC
09:20 - 09:35	How ports can work with circular economy? - Fenna Blomsma - Uni. Hamburg
09:35 - 09:45	DIVISION OF PARTICIPANTS INTO GROUPS FOR SESSIONS
09:45 - 12:00	WORK SESSIONS (EACH PARTICIPANT WILL BE IN THE SAME ROOM)
09:45 - 10:20	Topic discussion: Circular economy barriers and challenges <i>Collect ideas, good practices and concerns from the participants on Circular economy (fixed working tables) (Group 1 - Group 2 - Group 3)</i> (moderators will move through the groups for each session)
10:20 - 11:00	Topic #1 - Circular Port Assets - Group 1 SESSION 1 Topic #2 - Circular Flows within ports - Group 2 Topic #3 - Ports and circular markets) - Group 3
11:00 - 11:30	Topic #1 - Circular Port Assets - Group 2 SESSION 2 Topic #2 - Circular Flows within ports - Group 3 Topic #3 - Ports and circular markets) - Group 1
11:30 - 12:00	Topic #1 - Circular Port Assets - Group 3 SESSION 3 Topic #2 - Circular Flows within ports - Group 1 Topic #3 - Ports and circular markets) - Group 2
12:00 - 12:30	BREAK TIME
12:30 - 13:05	CONCLUSIONS (PLENARY SESSION)
12:30 - 13:00	Key findings and next steps - All moderators
13:00 - 13:05	Next workshop and closure - Jorge Lara - Fundación Valenciaport
13:05	END OF THE PANEUROPEAN WORKSHOP

On the topic of 'circular economy'

For the overall topic...



1. Briefly (!) introduce yourself:

- Which port? What role?
- Experience with CE? (None (yet), somewhat, very experienced...?)
- What do you hope to get out of today?

2. What is your connection to or experience with Circular Economy?

- If new to CE: what attracts you? Which directions are you exploring?
- If experienced: what have you already learned?



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Name speaker

Email and Company