



**ExxonMobil**

# Plastic Pellet Loss Prevention

Journée Technique du Cedre – Nov'23

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**European Environment Regulatory Advisor (ExxonMobil)**



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# Agenda

- **Overview of legislative initiatives**
- **Plastic pellets value chain**
- **Operation Clean Sweep (OCS) & OCS Europe Certification scheme**
- **OCS at ExxonMobil**
- **Work at IMO on plastic pellets carried at sea in freight containers**
- **EU Regulation proposal on plastic pellet loss prevention**
- **Pellet loss monitoring campaign by University of Antwerp**
- **Truck blowing installation at ExxonMobil Meerhout Polymers Plant**

# Overview of legislative initiatives



# Legislative initiatives to reduce plastic pellet loss

French ministerial decree to prevent plastic pellet losses to the environment – April 2021

IMO Circular with recommendations for the carriage of plastic pellets by sea in freight containers – April 2024

UN Global Plastics Treaty to end plastic pollution – mid 2025

Flemish BAT study to prevent and reduce plastic pellet losses – Publication 2024

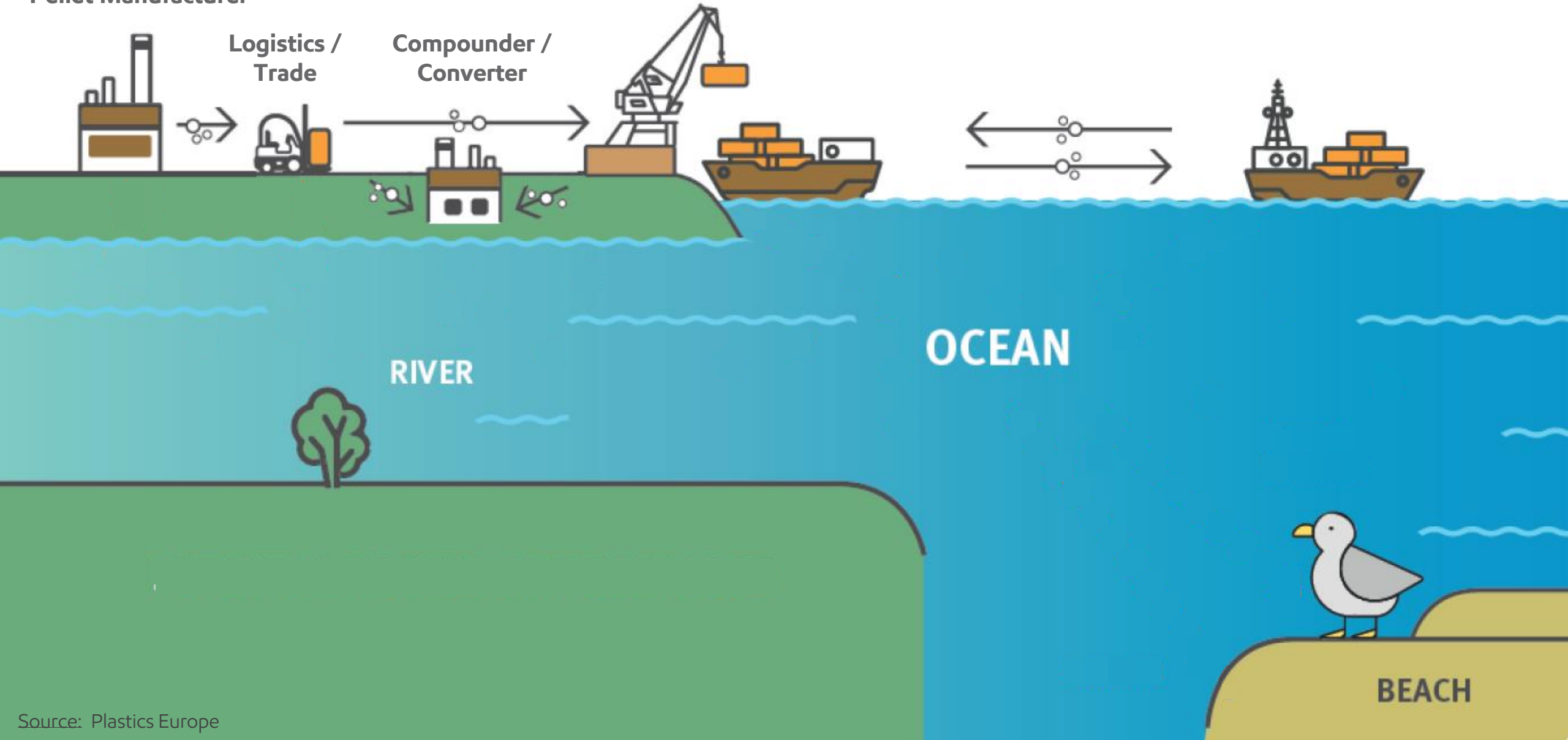
European Commission proposal for a Regulation on preventing pellet losses to reduce microplastic pollution – October 2023

REACH restriction on synthetic polymer microparticles – September 2023

# Plastic pellets value chain

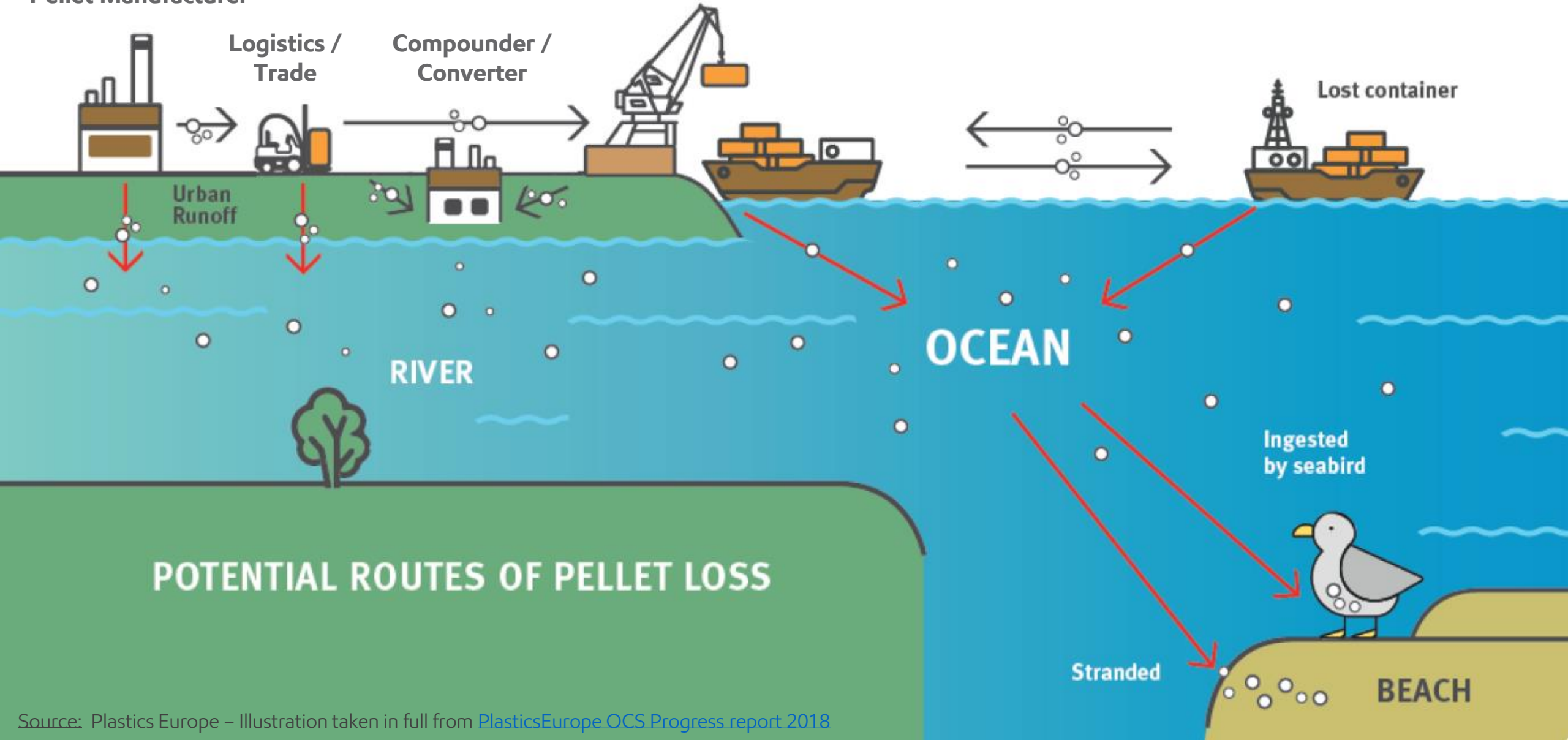
# Plastic pellets – A complex value chain

Pellet Manufacturer



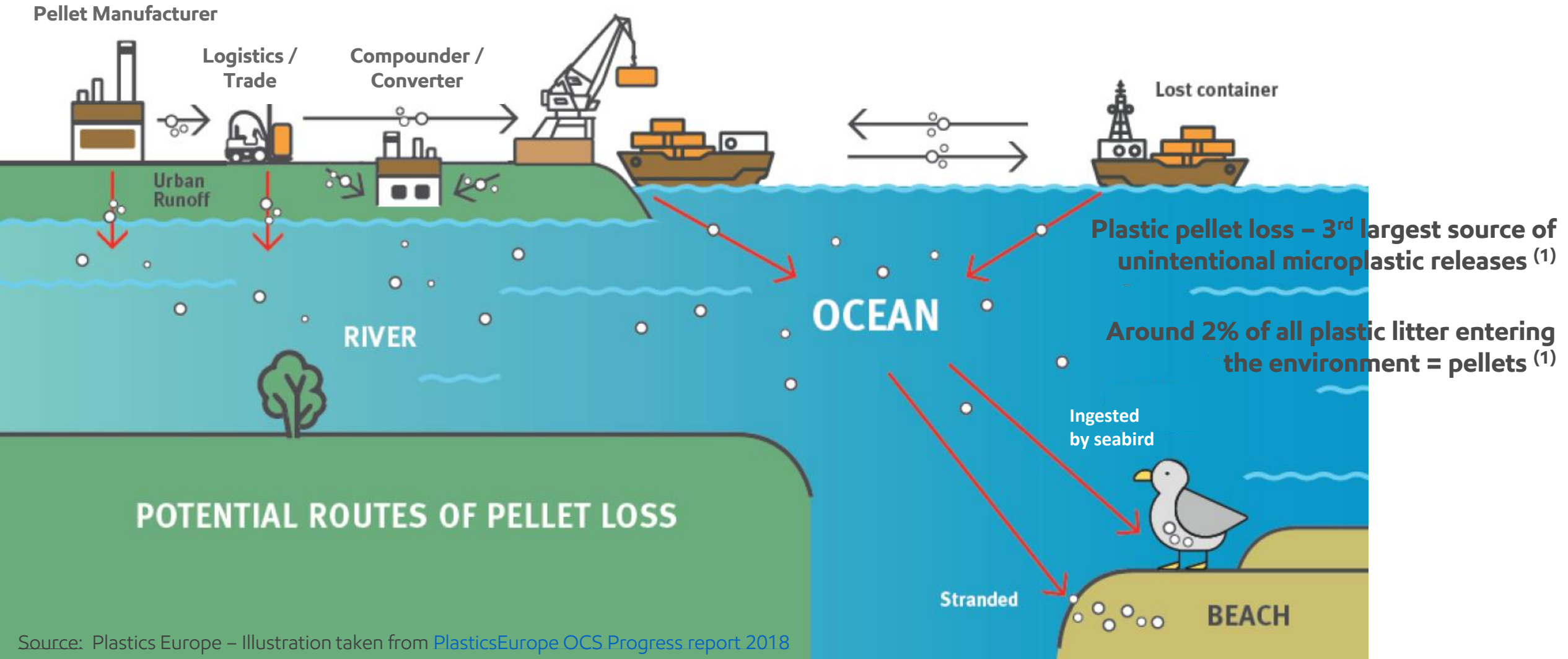
# Potential plastic pellet losses along the value chain

Pellet Manufacturer





# Plastic pellet loss – A challenge at global scale



**In EU alone, 52 140 – 184 290 tonnes of plastic pellets were lost to the environment in 2019 <sup>(1)</sup>**

<sup>(1)</sup> Source: European Commission Regulation proposal on preventing plastic pellet losses to reduce microplastic pollution

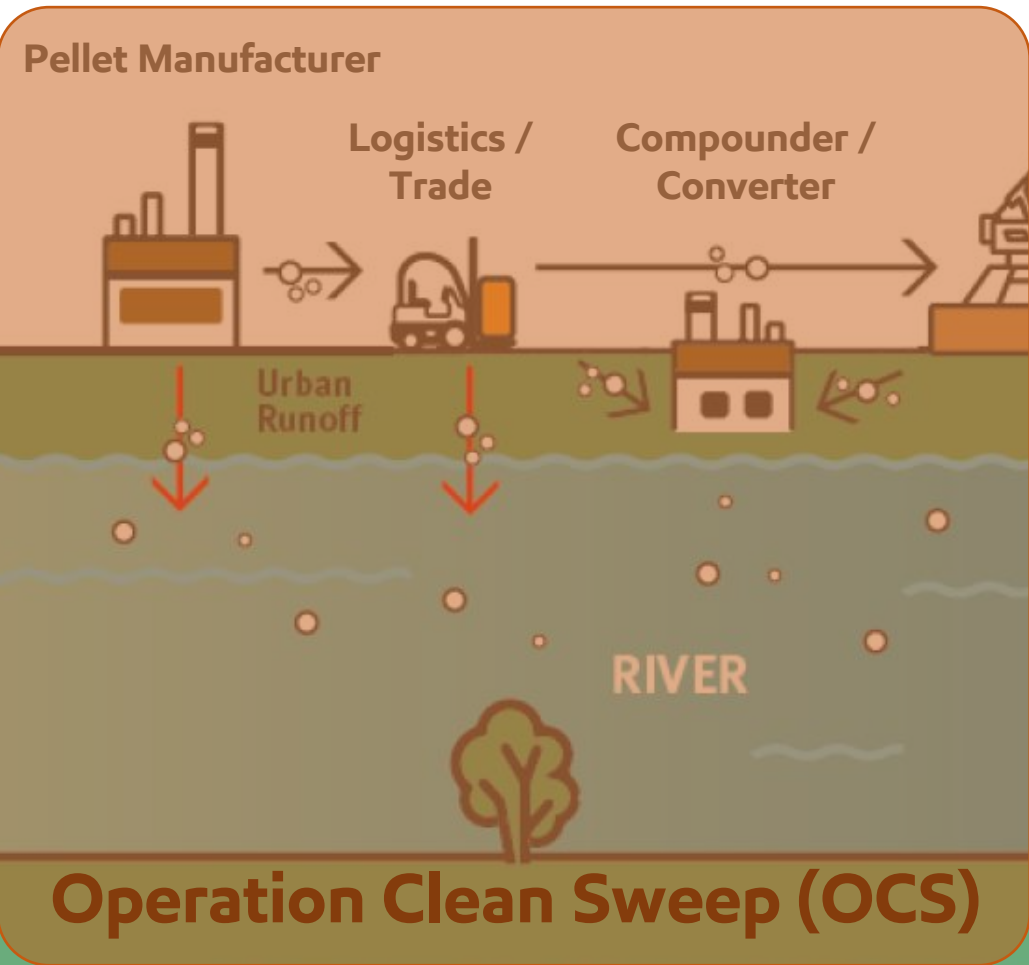
# **Operation Clean Sweep & OCS Europe Certification scheme**

# Pellet loss prevention – A responsibility for the whole value chain

Pellet Manufacturer

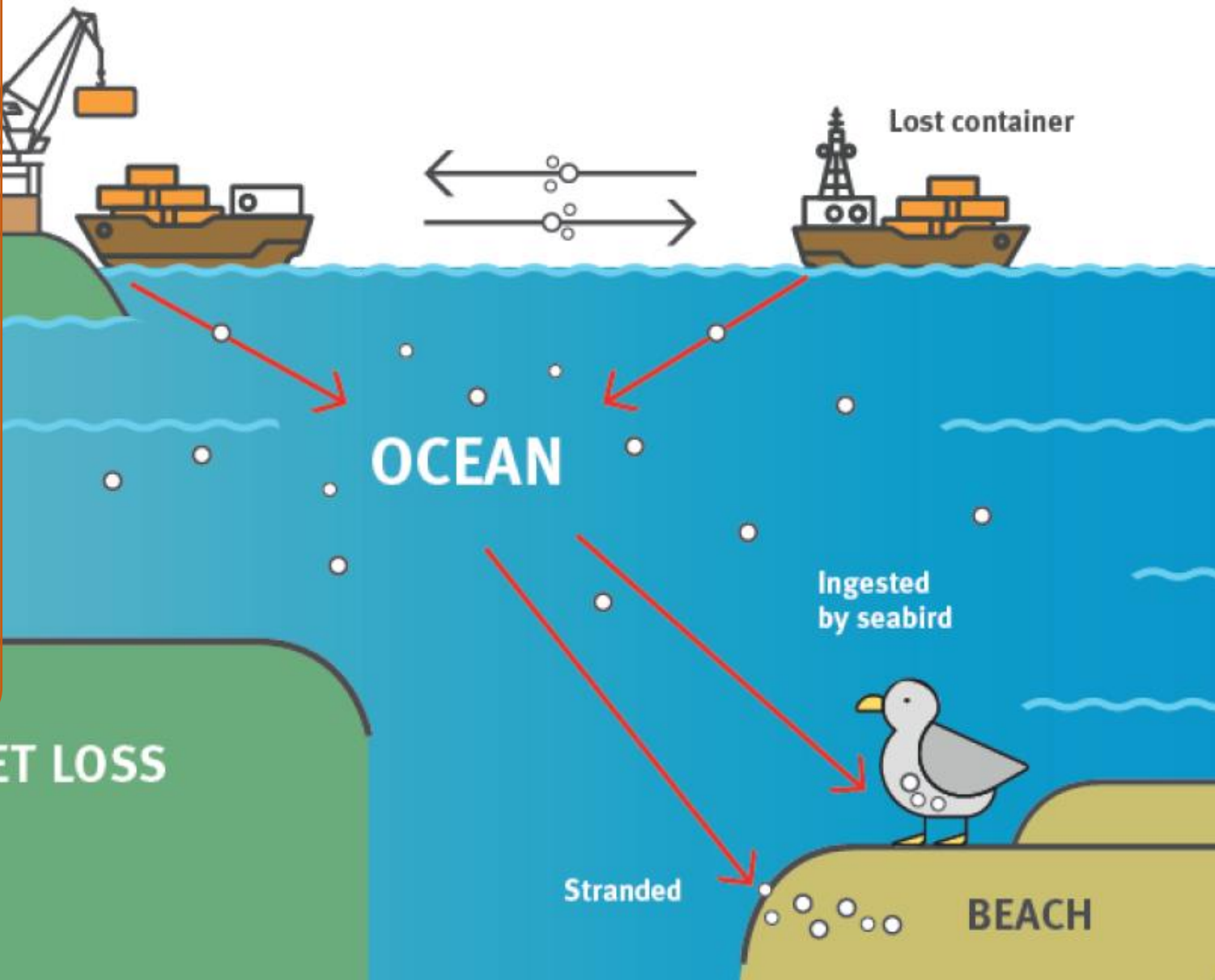
Logistics /  
Trade

Compounder /  
Converter



Operation Clean Sweep (OCS)

POTENTIAL ROUTES OF PELLETT LOSS



Stranded

Ingested  
by seabird

BEACH



# Operation Clean Sweep<sup>®</sup>

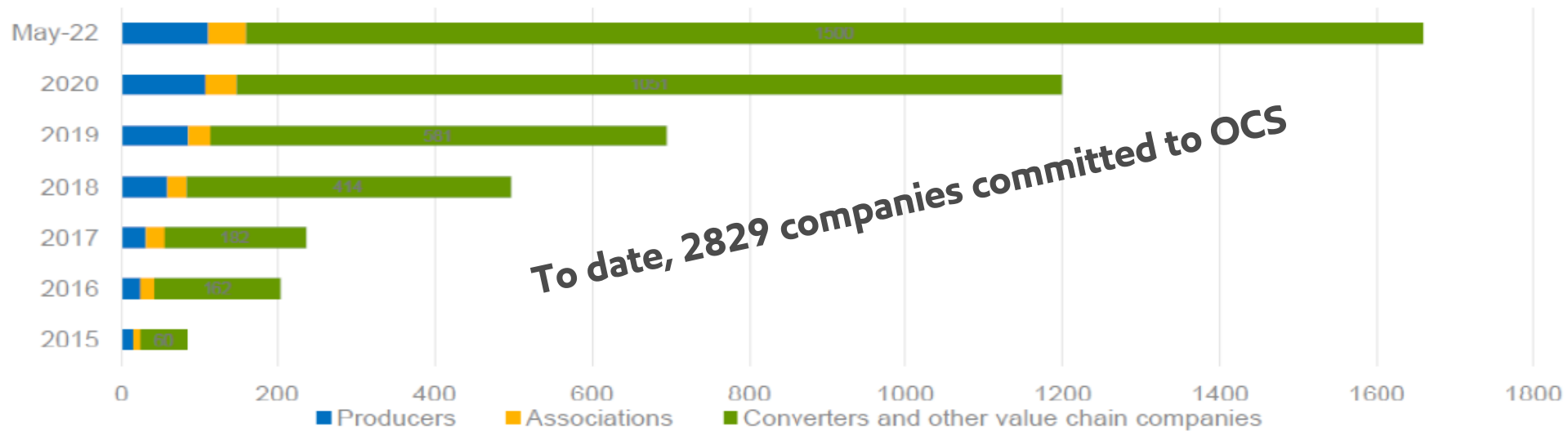
## OCS principles:

- 0. Management commitment towards zero pellet loss**
- 1. Improve worksite set-up to prevent and address spills**
- 2. Implement adequate operational procedures and practices**
- 3. Provide employee training and accountability**
- 4. Audit performance regularly**
- 5. Comply with all applicable regulations governing pellet containment**
- 6. Engage partners**



# Operation Clean Sweep®

## Number of OCS Signatories in Europe

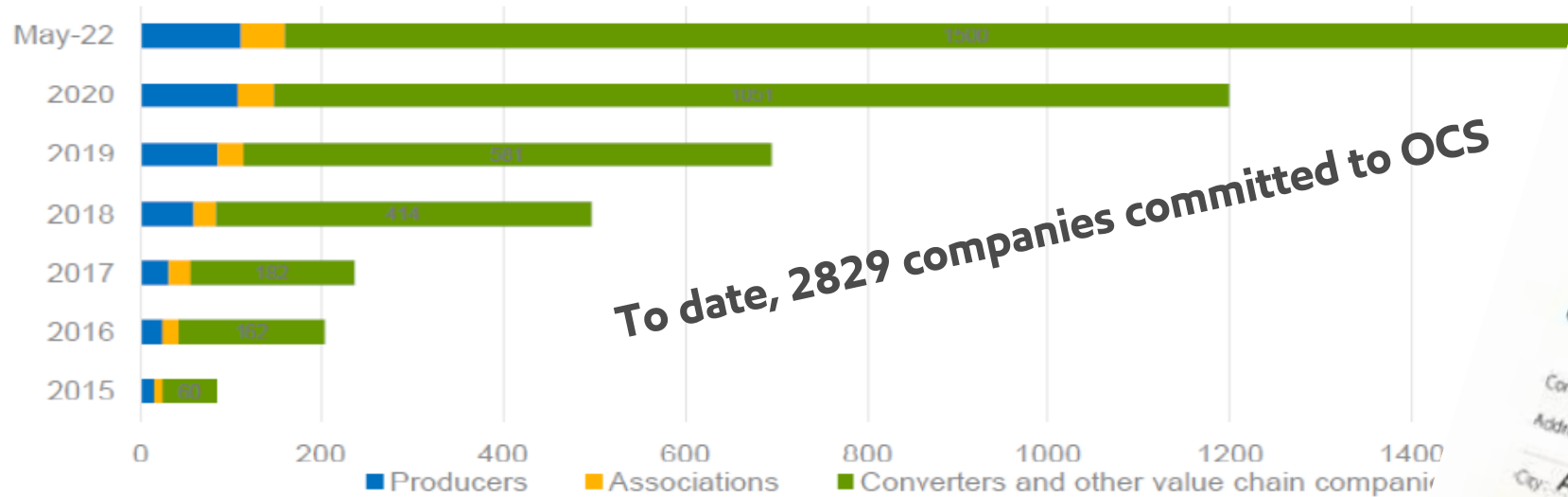


Source: Plastics Europe



# Operation Clean Sweep®

Number of OCS Signatories in Europe



To date, 2829 companies committed to OCS

Source: Plastics Europe

**Operation Clean Sweep**

## Company Pledge to Prevent Resin Pellet Loss

Our company recognises the importance of preventing the loss of resin pellets into the environment and is committed to implementing the Operation Clean Sweep® programme. We will be an OCS Programme Partner, strive towards "Zero Pellet Loss" and make changes to:

1. Improve our worksite(s) set-up to prevent and address spills.
2. Create and publish internal procedures to achieve zero pellet loss goals.
3. Provide employee training and accountability for spill prevention, containment, clean-up and disposal.
4. Audit our performance regularly.
5. Comply with all applicable local and national regulations governing pellets containment, etc.) to pursue the same objectives.
6. Encourage our partners (contractors, transporters, etc.) to pursue the same objectives.

Operation Clean Sweep® is trademarked by OCS

**Company Pledge to Prevent Resin Pellet Loss**

Company name: ExxonMobil Petroleum & Chemical BVBA

Address: Polderdijkweg

City: Antwerp

Zip Code: B 2030 Country: BELGIUM

Company / See Manager

Name and Title: Jan Michielsens, Director / Thierry Cornu, Director

Email Address: c/o andy.j.west@exxonmobil.com

Phone: +32 2722 2345 Fax: \_\_\_\_\_

Date: 02 February 2015

Signature: J. MICHELSENS

(Company stamp)  
**ExxonMobil Petroleum & Chemical bvba**  
 Herestraat 2  
 B-1831 Machelen, Belgium

Company pledge originally signed by ExxonMobil Petroleum & Chemical BVBA (2015)

# Is OCS delivering results ?

“ Operation Clean Sweep (OCS) has proven its inefficiency, as there is still a colossal amount of pellets found on beaches ”

“ OCS is a voluntary initiative and no means to check if the pledges signed are effectively being implemented ”

This industrial pollution is not anecdotal. The issue is massive and chronic in Europe and globally, with no signs of improvements. The first instances of pellet pollution were in the 1970s, and the industries manufacturing and handling pellets hold full responsibility for this pollution.

Yet for decades, they have only offered a false solution: Operation Clean Sweep

**PLASTIC FAKE OUT**

**OPERATION CLEAN SWEEP**

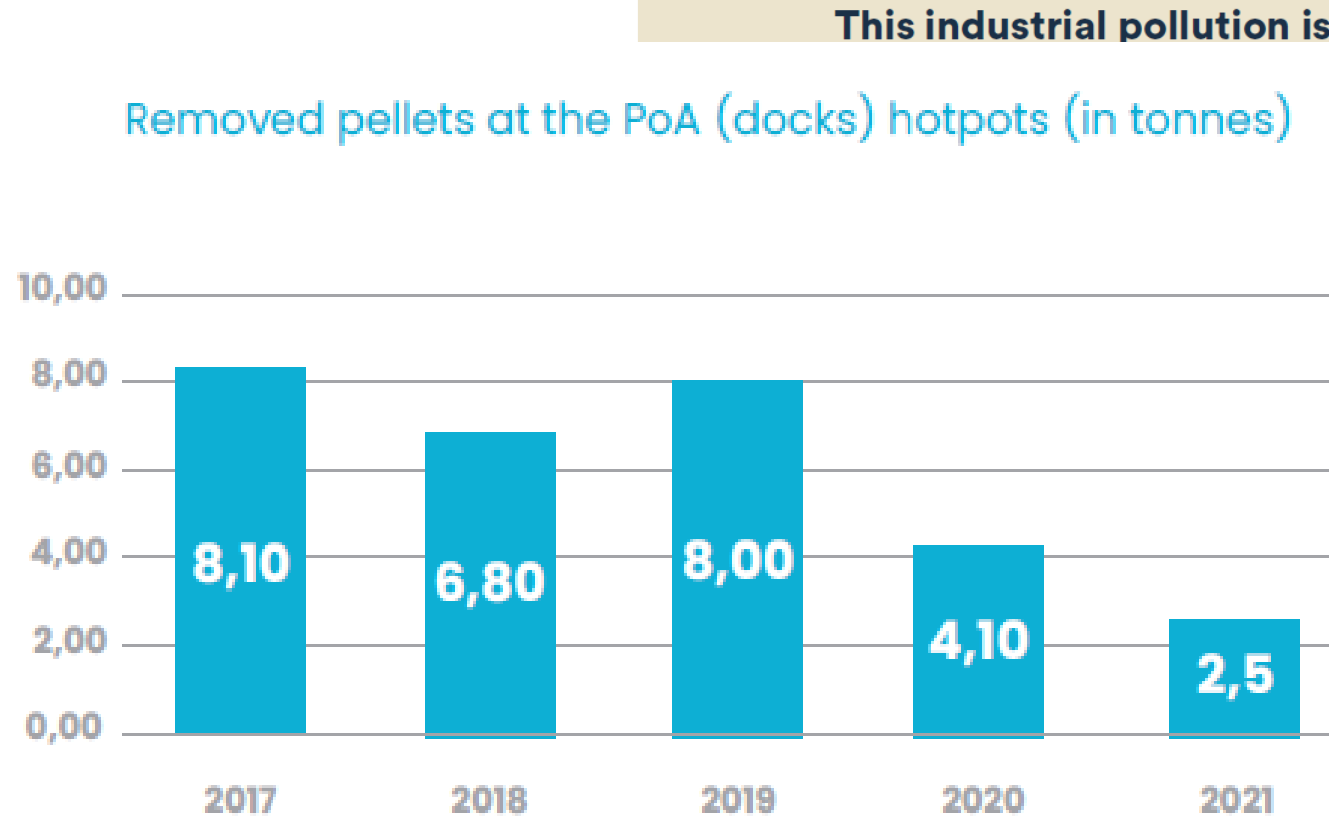


**If you are willing to take action, why are you not willing to have that action written in the law?**

# Is OCS delivering results ?

“ Operation Clean Sweep is inefficient, as the amount of pellets

“ OCS is a voluntary check if the pledge being implemented



Source: Port of Antwerp Activity report 2021

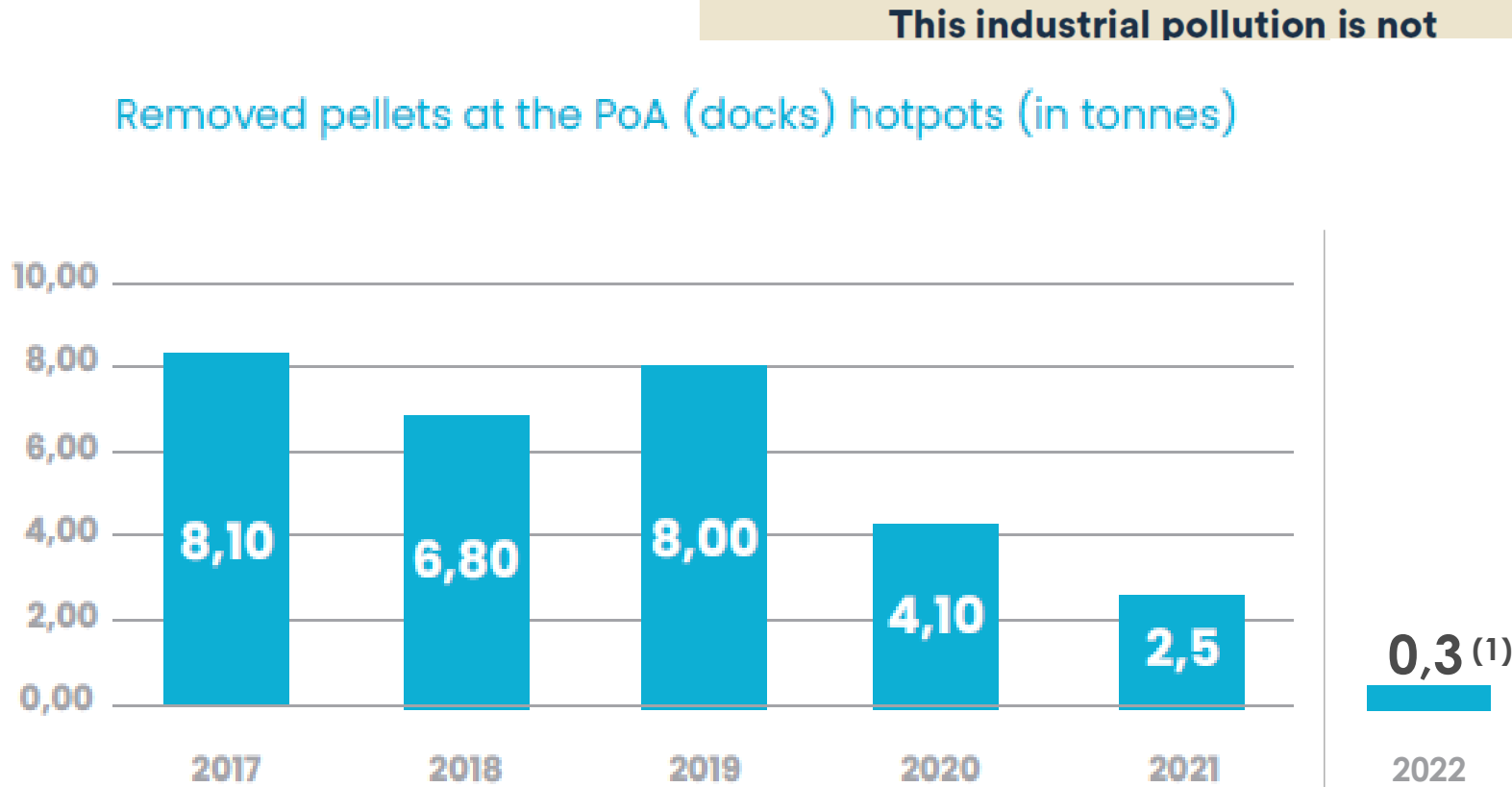


**If you are willing to take action, why are you not willing to have that action written in the law?**

Source: Surfrider Europe report Oct'22 - "Plastic Fake Out" campaign

# Is OCS delivering results ?

“ Operation Clean Sweep is a voluntary initiative, not a law. It is a good practice, but it is not a guarantee of efficiency, and the amount of pellets removed is still too high. OCS is a voluntary initiative, not a law. It is a good practice, but it is not a guarantee of efficiency, and the amount of pellets removed is still too high. OCS is a voluntary initiative, not a law. It is a good practice, but it is not a guarantee of efficiency, and the amount of pellets removed is still too high.”



Source: Port of Antwerp Activity report 2021

**If you are willing to take action, why are you not willing to have that action written in the law?**

Source: Surfrider Europe report Oct'22 - "Plastic Fake Out" campaign

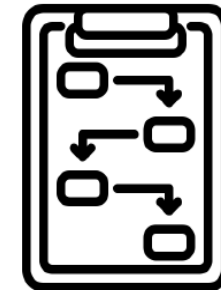
<sup>(1)</sup> Source: 2022 number is tentative and was mentioned orally during 'Antwerp Zero Pellet Loss Taskforce' meeting of Port of Antwerp Bruges on 6 February 2023

# Enhanced transparency with new OCS Europe Certification Scheme

- **Transparent, auditable scheme for the management of pellet loss in Europe**
- **Unified solution for any company involved in pellet handling**
- **Developed in consultation with industry experts, trade associations, NGOs, policy makers and certification bodies**
- **OCS requirements = Core requirements + Sector specific requirements**
- **External auditing every 3 years + annual reporting elements**
- **Launched by EuPC and Plastics Europe in Jan '23**
- **Members of Plastics Europe committed to be OCS certified by YE '24**



1. Company signs OCS Pledge



2. Facility implements OCS requirements



3. External OCS audit of facility

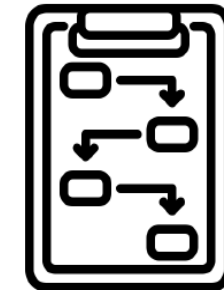


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# OCS at ExxonMobil (Europe)

# Awareness & Engagement





# Effective procedures and practices





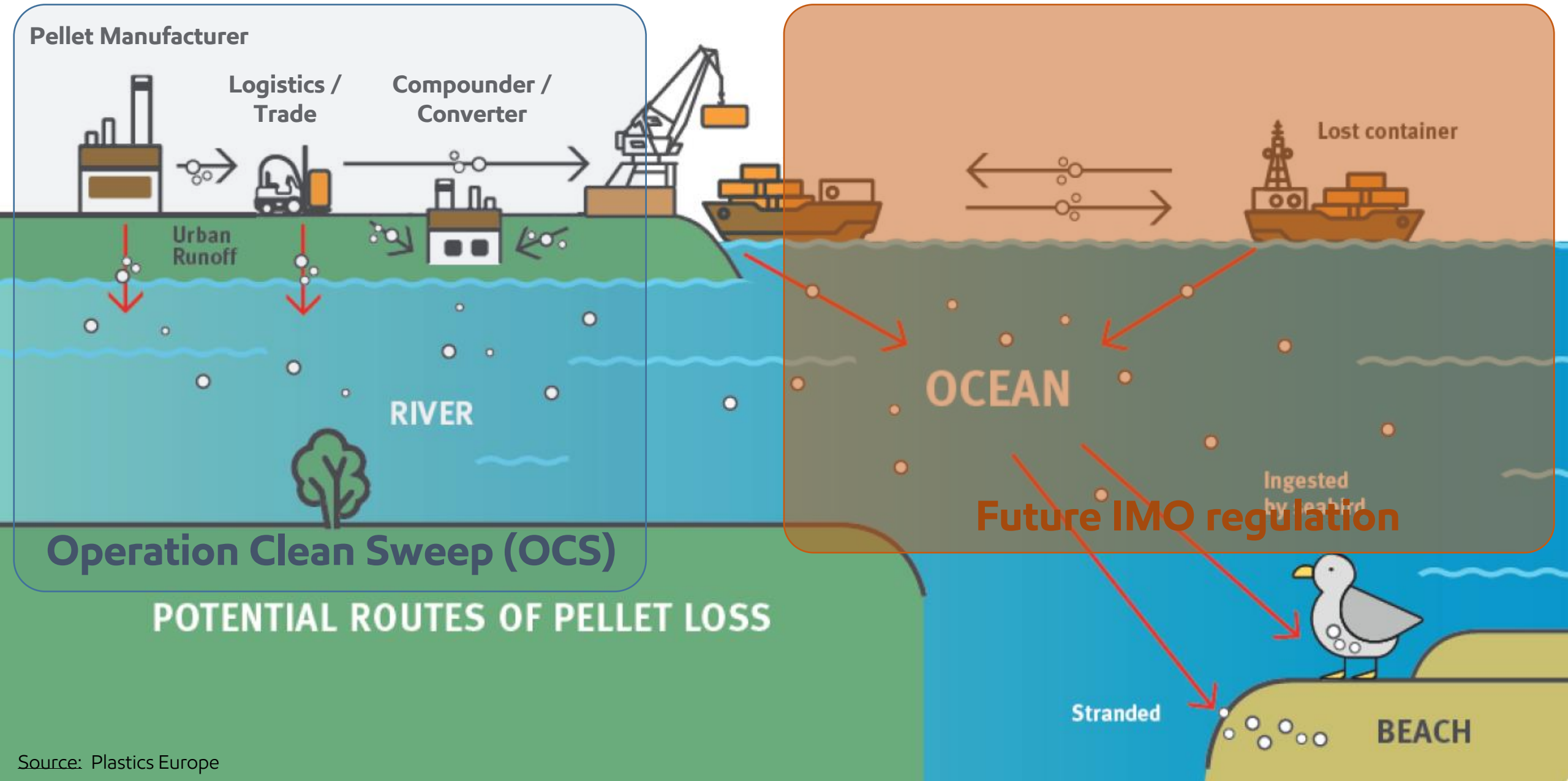
# Upgrading the last line of defense...





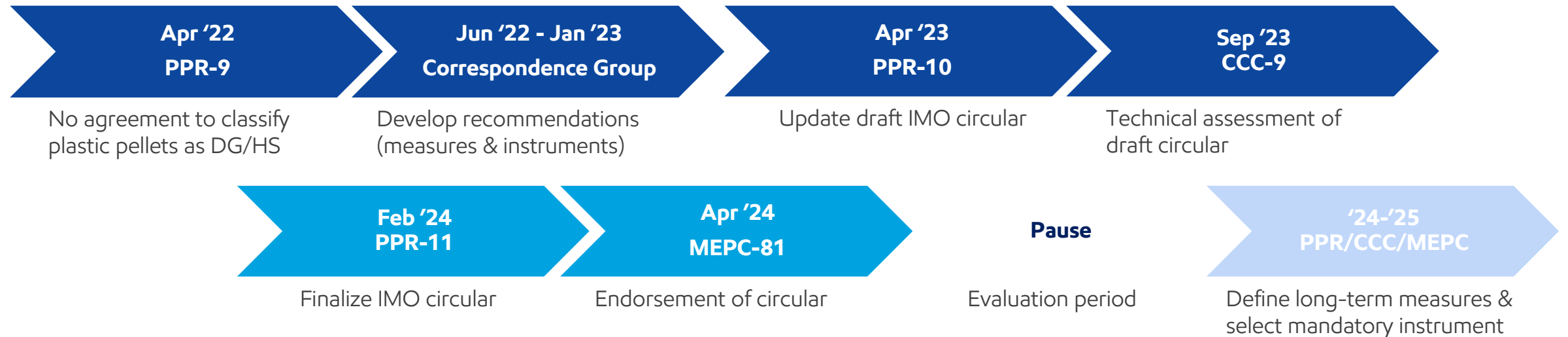
**Work at IMO on plastic pellets  
carried at sea in freight containers**

# Pellet loss prevention – A responsibility for the whole value chain



# Reduce environmental risk of maritime transport of plastic pellets

- Incidents with ships carrying containers with plastic pellets triggered countries to propose regulations to the IMO in 2021
- Proposals to classify plastic pellets as dangerous goods (DG) in IMDG Code and/or harmful substances (HS) under IMO MARPOL
- DG or HS classification would result in significant supply chain disruptions with limited effect to resolve the root cause of container loss

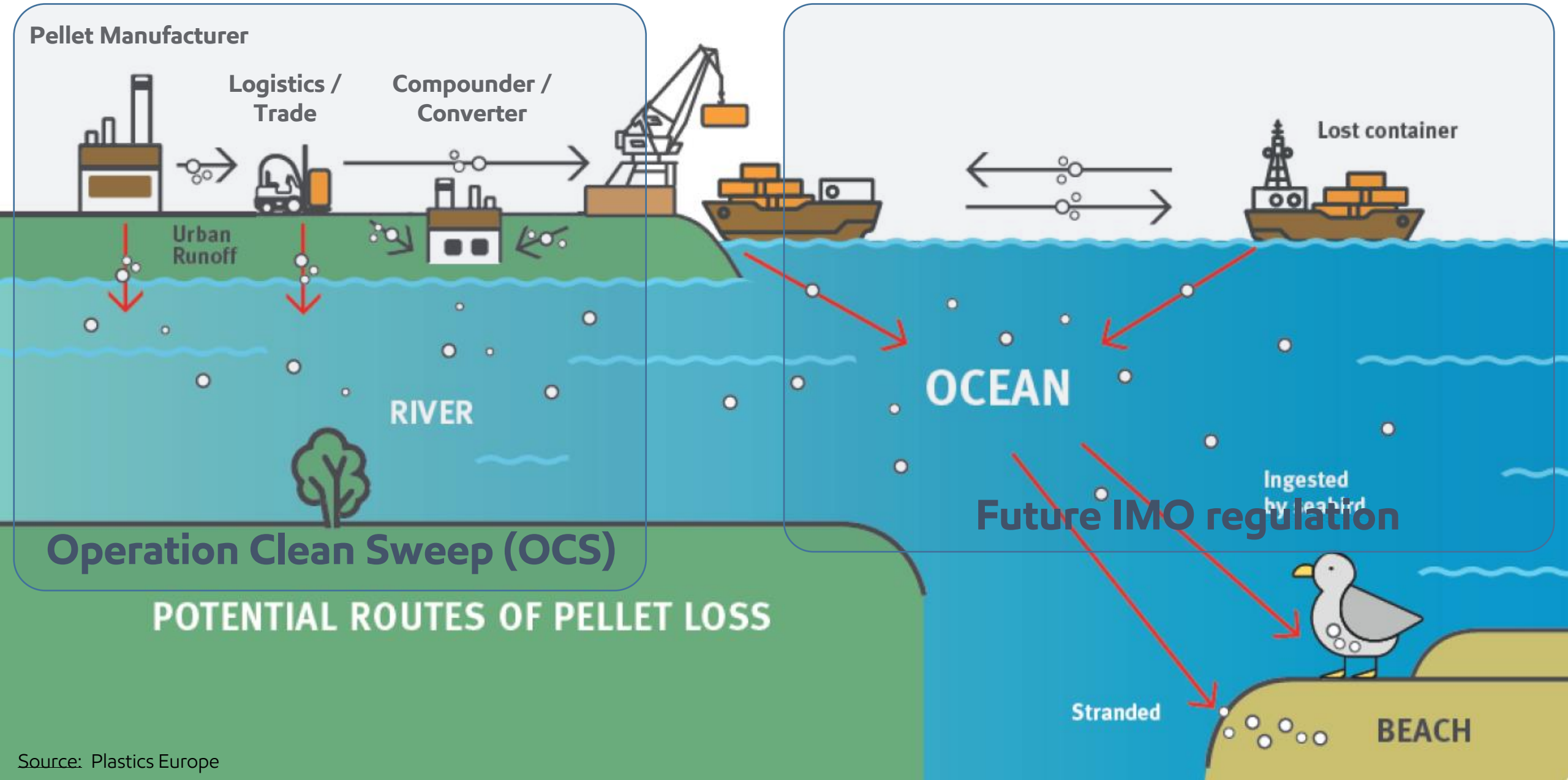


- Draft IMO circular containing 3 measures: (1) Packaging | (2) Notification to the carrier | (3) Protected stowage
- Two-stage approach:
  1. Adoption of recommendatory measures via IMO circular
  2. Development of mandatory measures and selection of most suitable mandatory instrument (*no specific timeline*)
- At PPR-10, broad support to prohibit transportation of plastic pellets in break bulk carriers (like grain, coal, ore)
- Development of a draft guide for addressing pellet spills from ships by a new Correspondence Group for review at PPR-11

# **EU Regulation proposal on plastic pellet loss prevention**



# Pellet loss prevention – A responsibility for the whole value chain

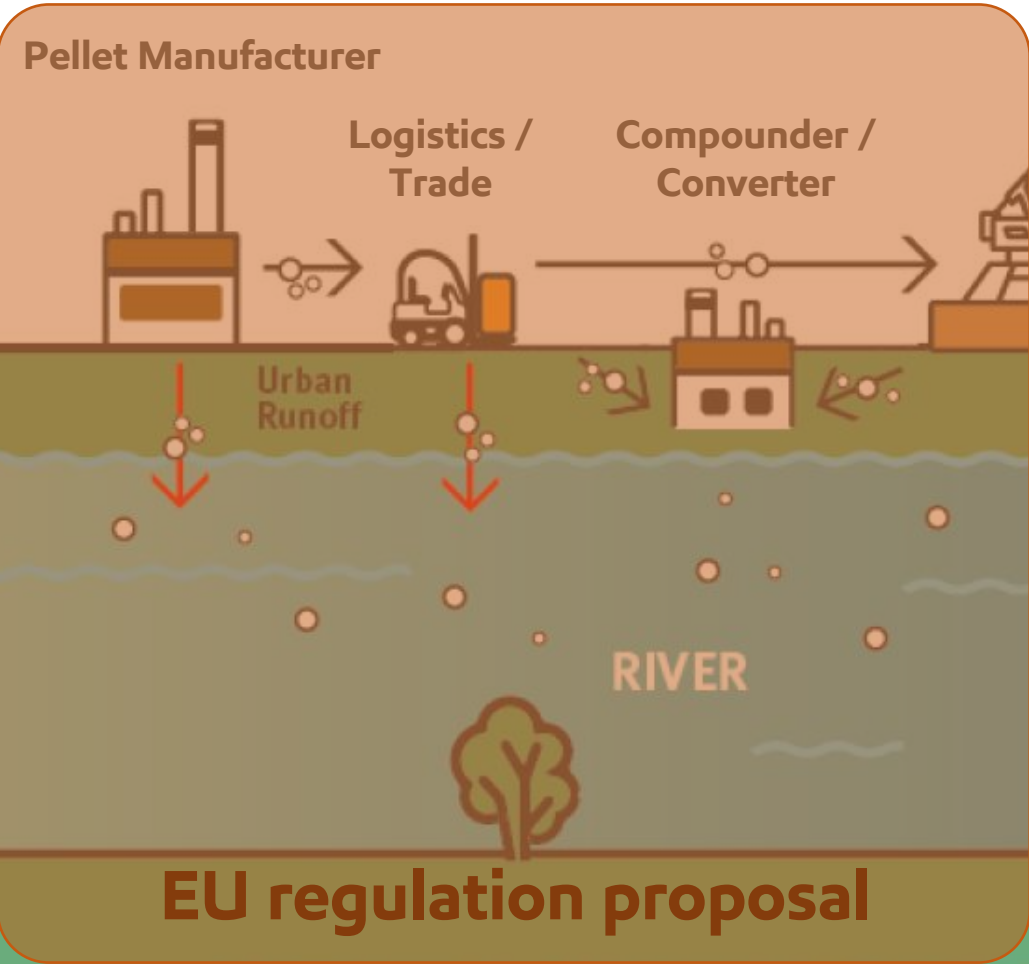


# Pellet loss prevention – A responsibility for the whole value chain

Pellet Manufacturer

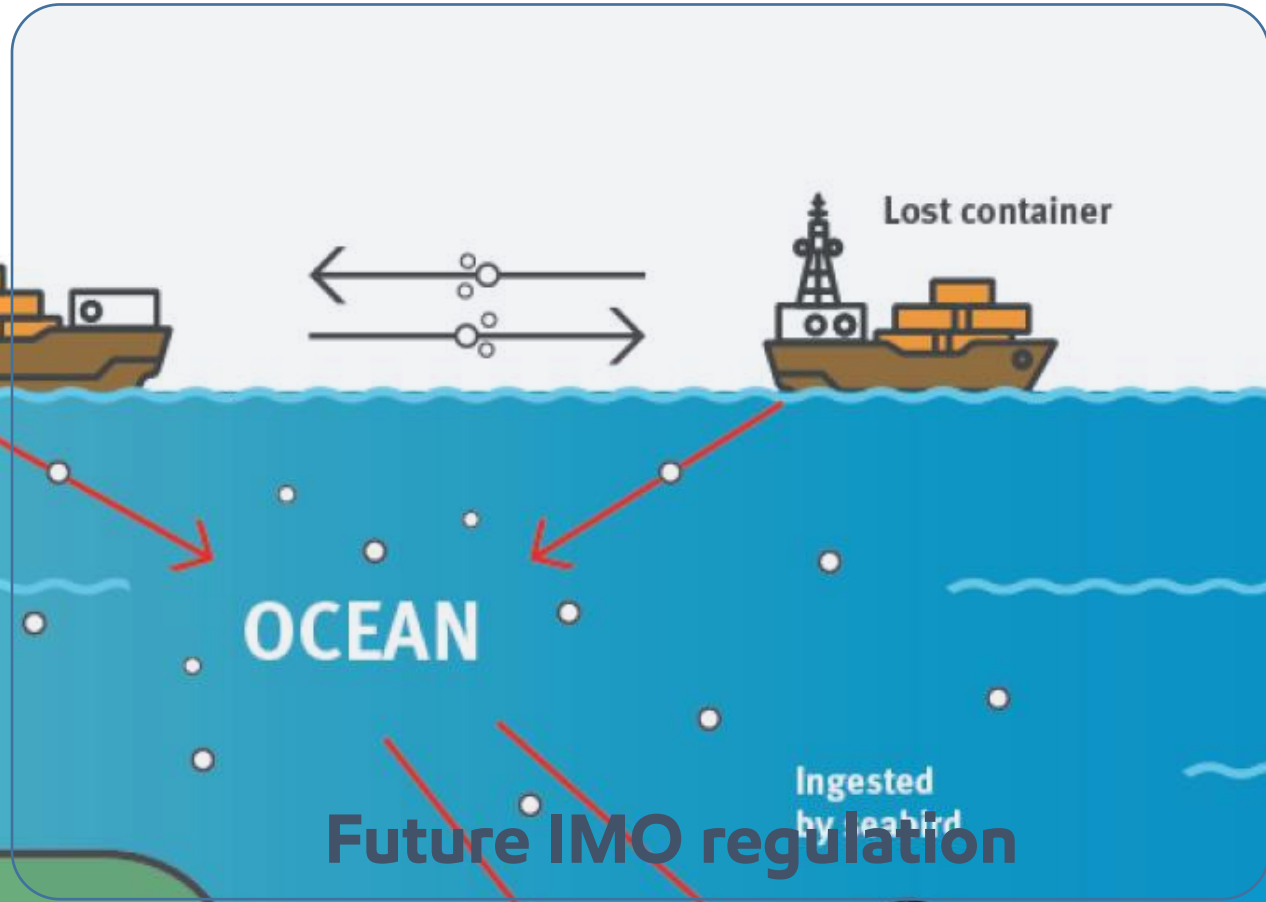
Logistics /  
Trade

Compounder /  
Converter



**EU regulation proposal**

**POTENTIAL ROUTES OF PELLETS LOSS**

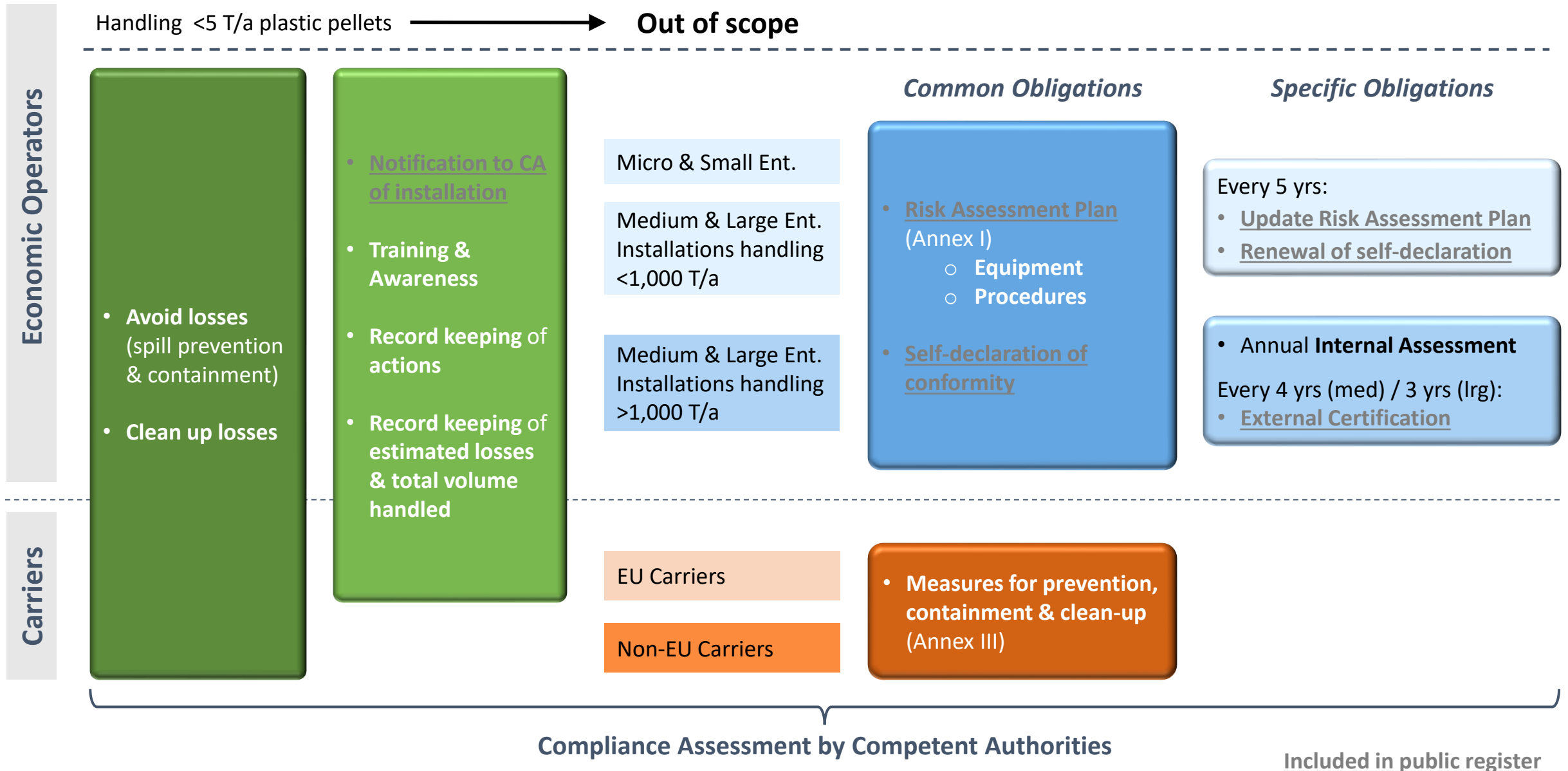


**Future IMO regulation**

Stranded

BEACH

# EU Regulation proposal <sup>(1)</sup> covering the full plastic pellets value chain

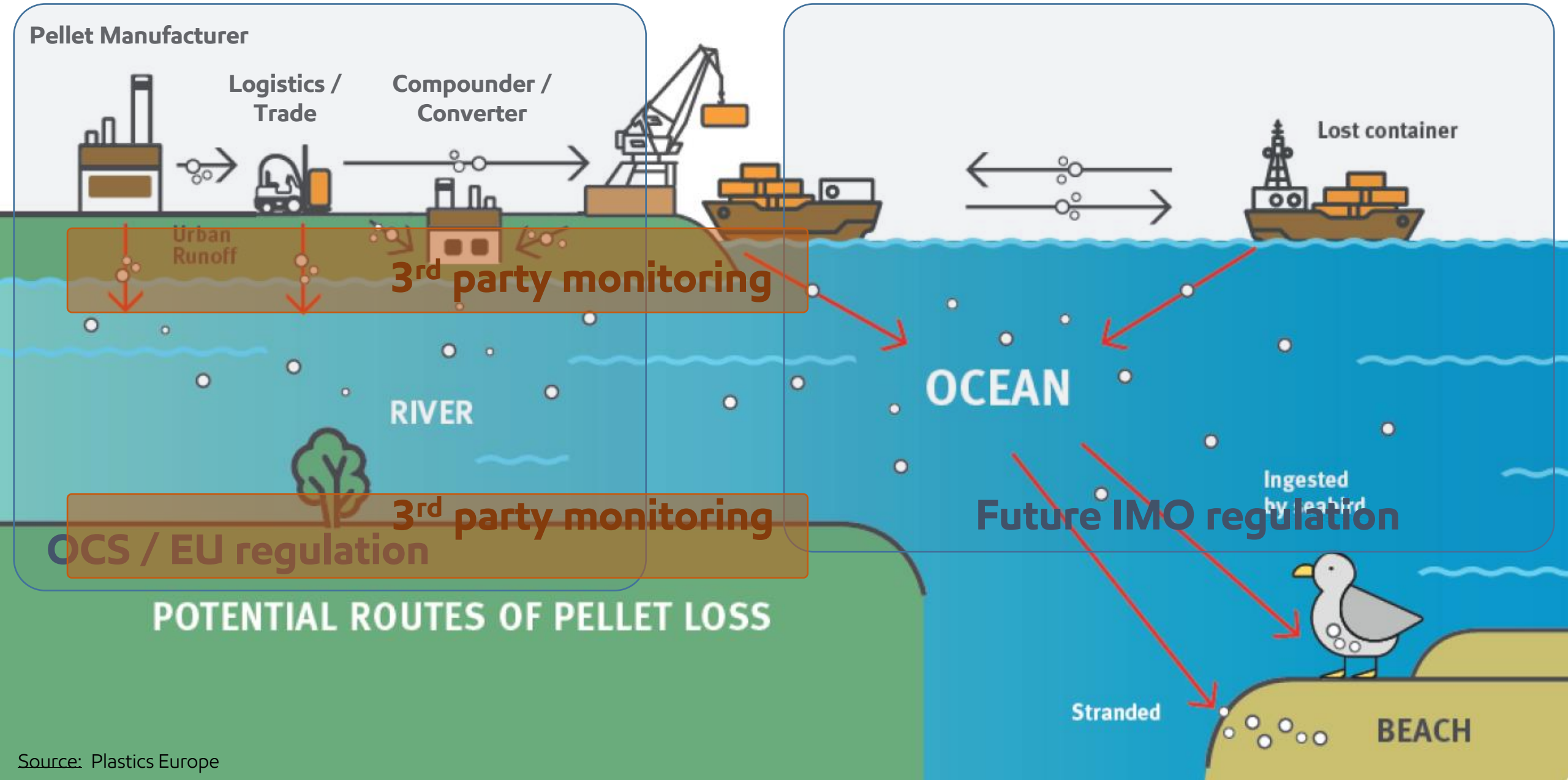


<sup>(1)</sup> Source: [Proposal for a Regulation on preventing pellet losses to reduce microplastic pollution](#)

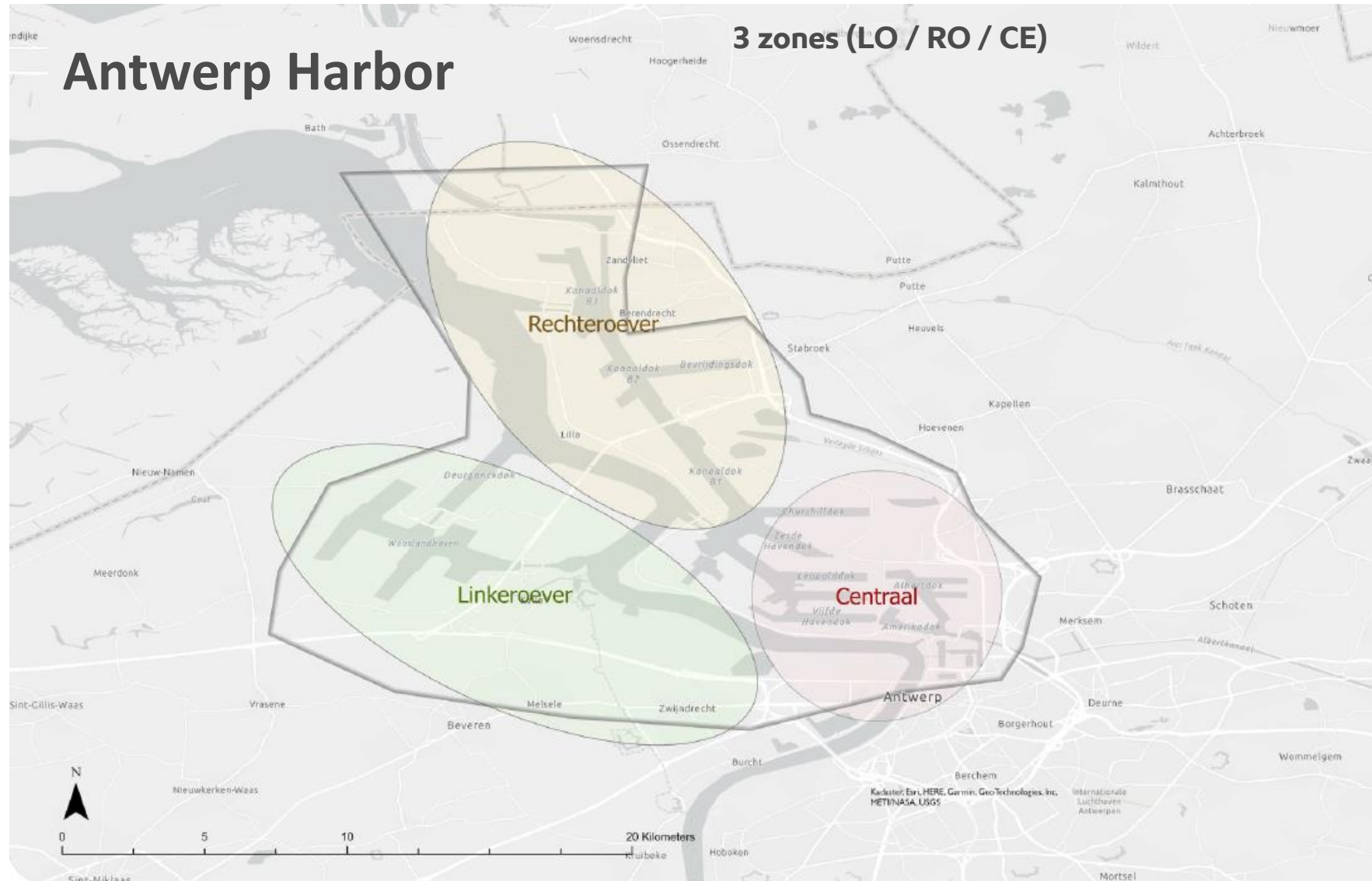


# **Pellet loss monitoring campaign by University of Antwerp**

# Pellet loss prevention – A responsibility for the whole value chain



# Pellet loss monitoring in Antwerp harbor – Methodology



## 3 zones

Rechteroever

River right bank

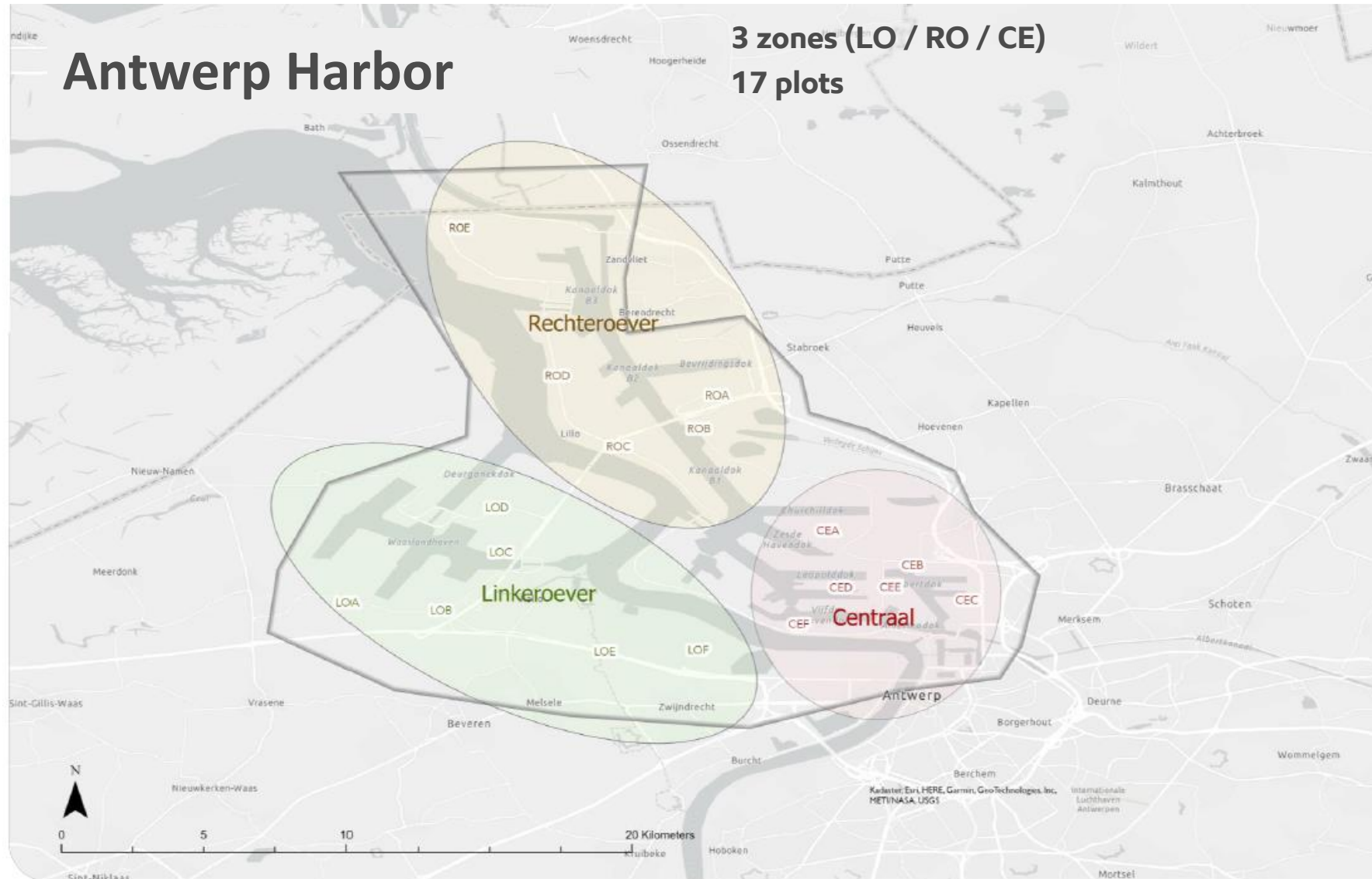
Centraal

Central zone

Linkeroever

River left bank

# Pellet loss monitoring in Antwerp harbor – Methodology



**3 zones**

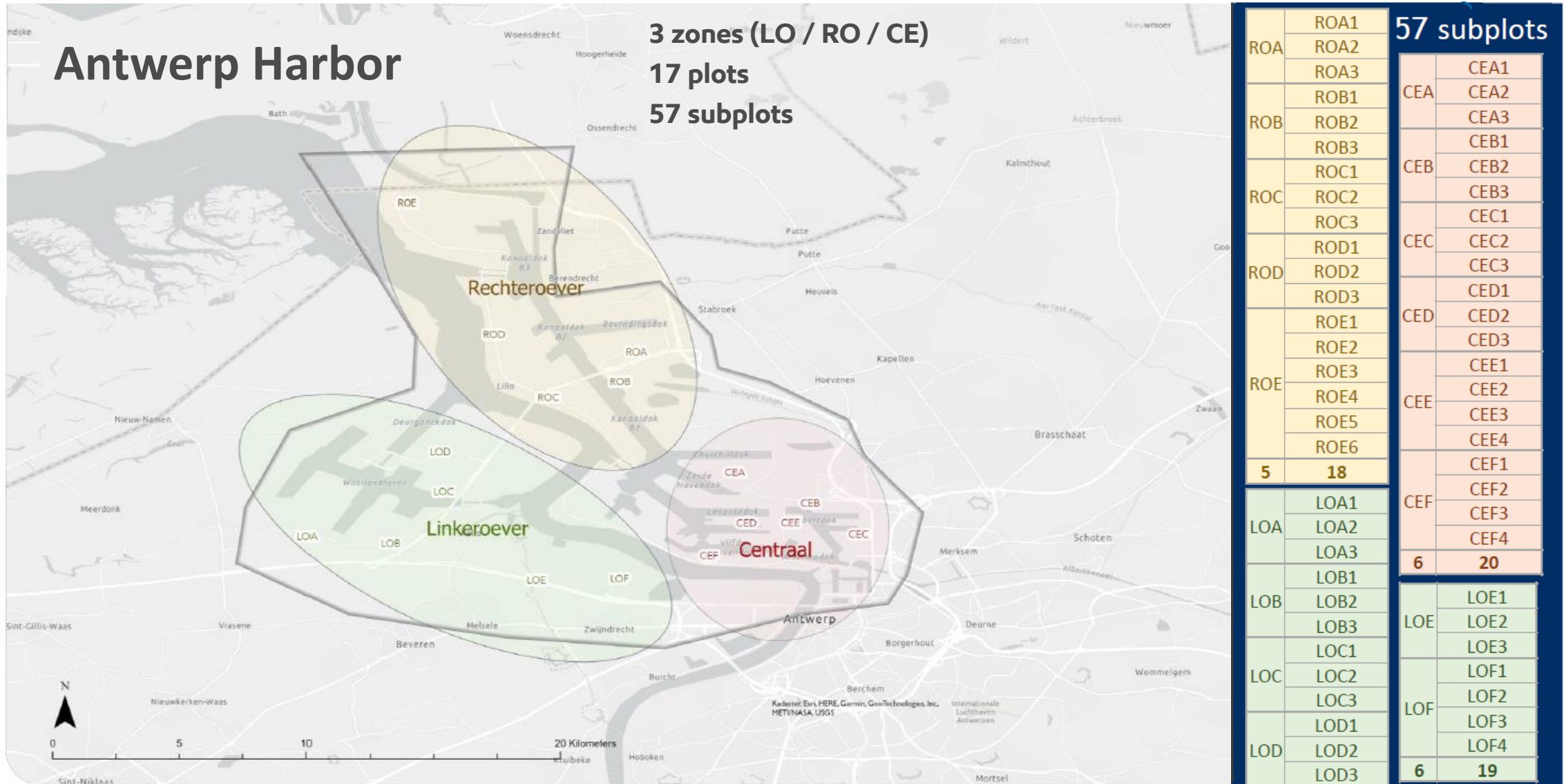
Rechteroever	River right bank
Centraal	Central zone
Linkeroever	River left bank

**17 plots**

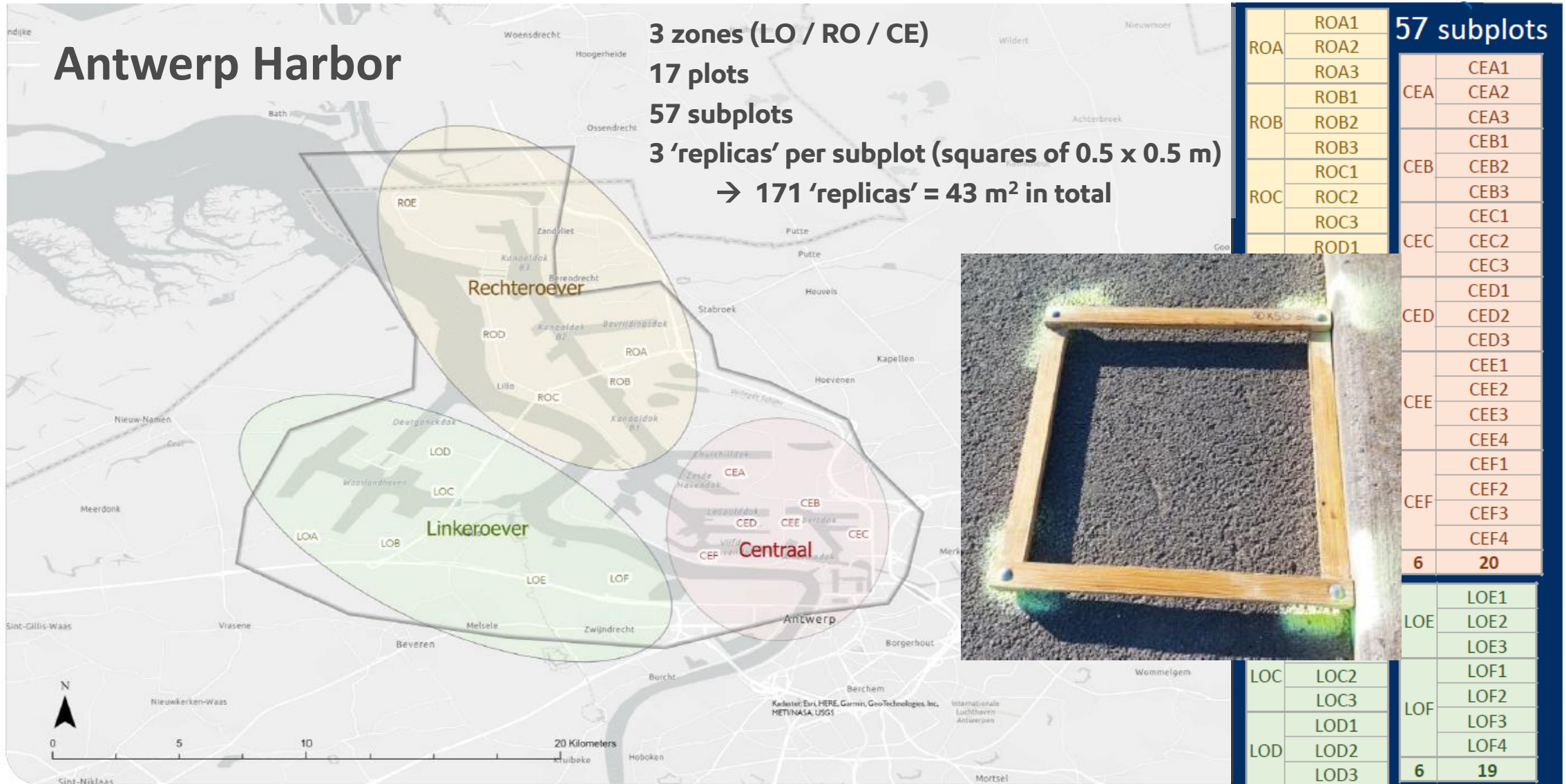
ROA
ROB
ROC
ROD
ROE
CEA
CEB
CEC
CED
CEE
CEF
LOA
LOB
LOC
LOD
LOE
LOF



# Pellet loss monitoring in Antwerp harbor – Methodology

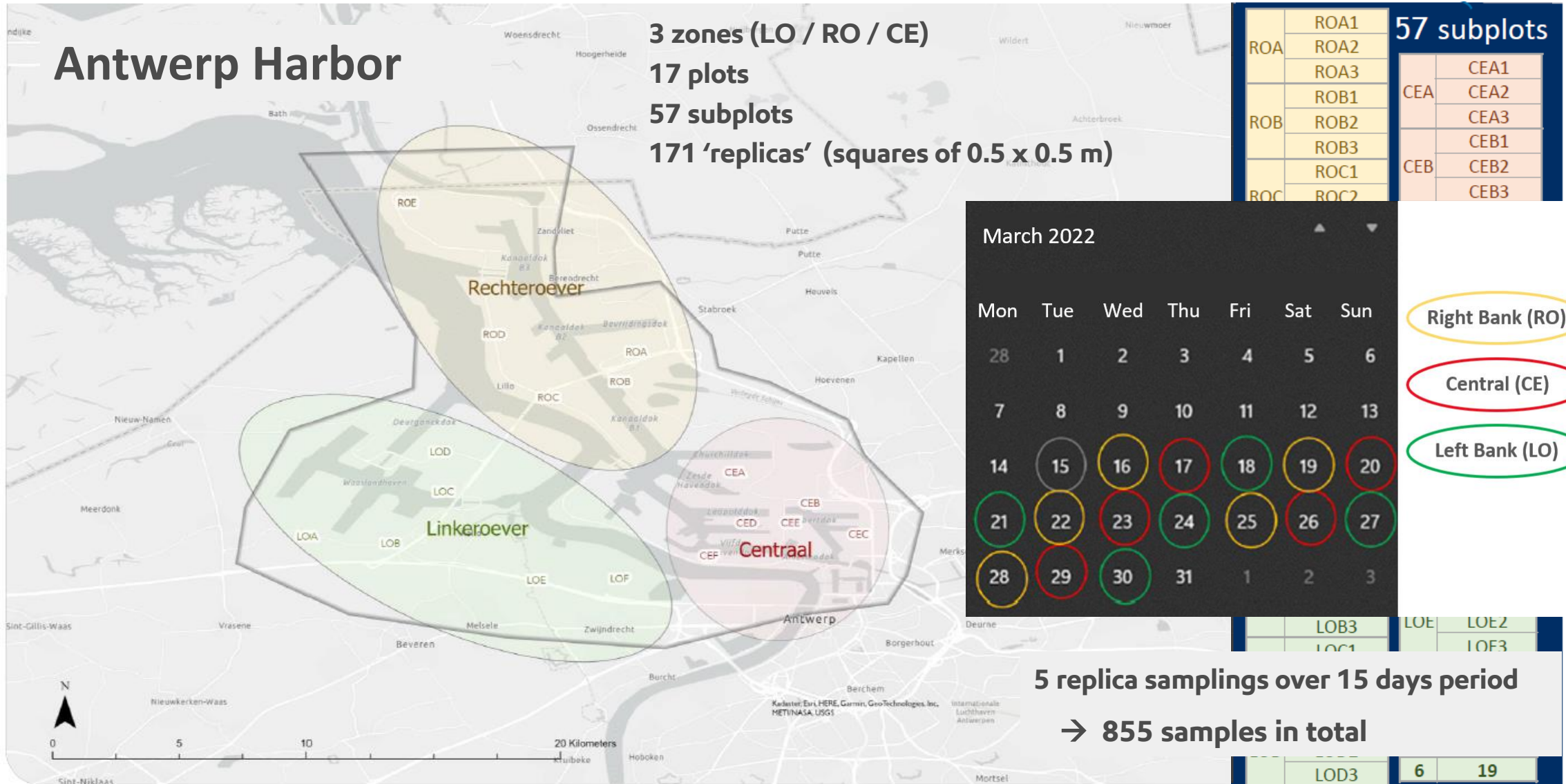


# Pellet loss monitoring in Antwerp harbor – Methodology

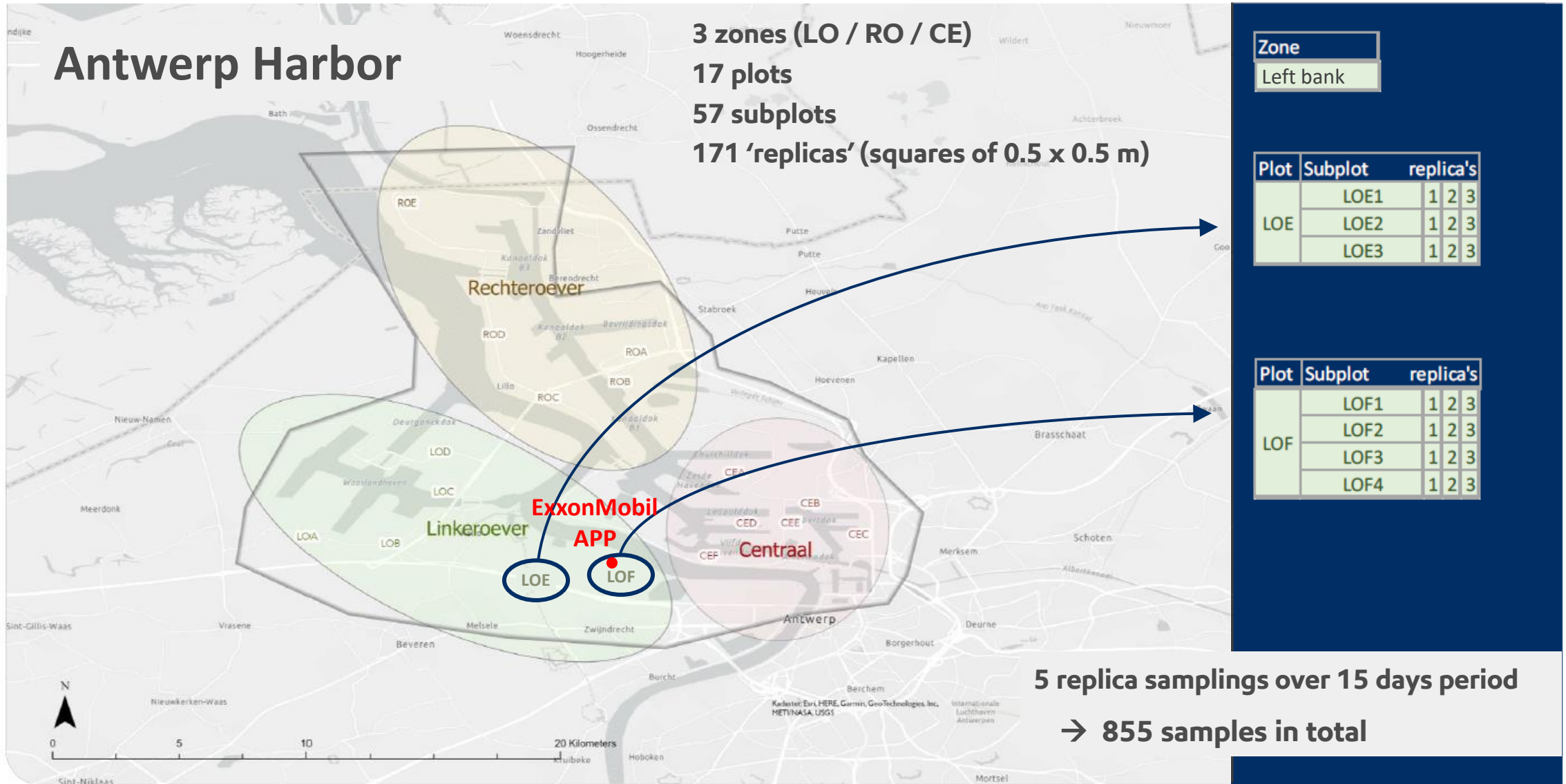




# Pellet loss monitoring in Antwerp harbor – Methodology

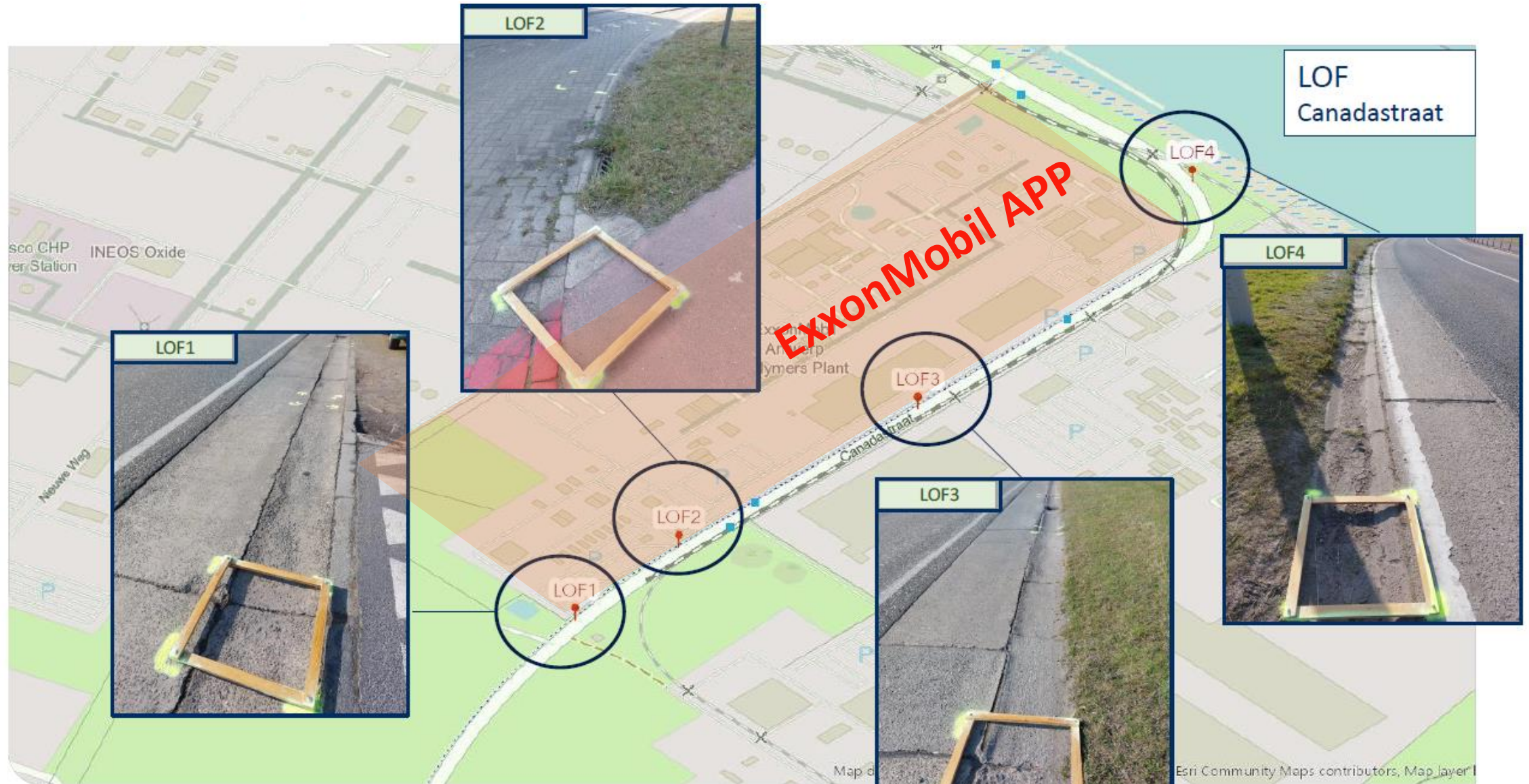


# Pellet loss monitoring in Antwerp harbor – Methodology





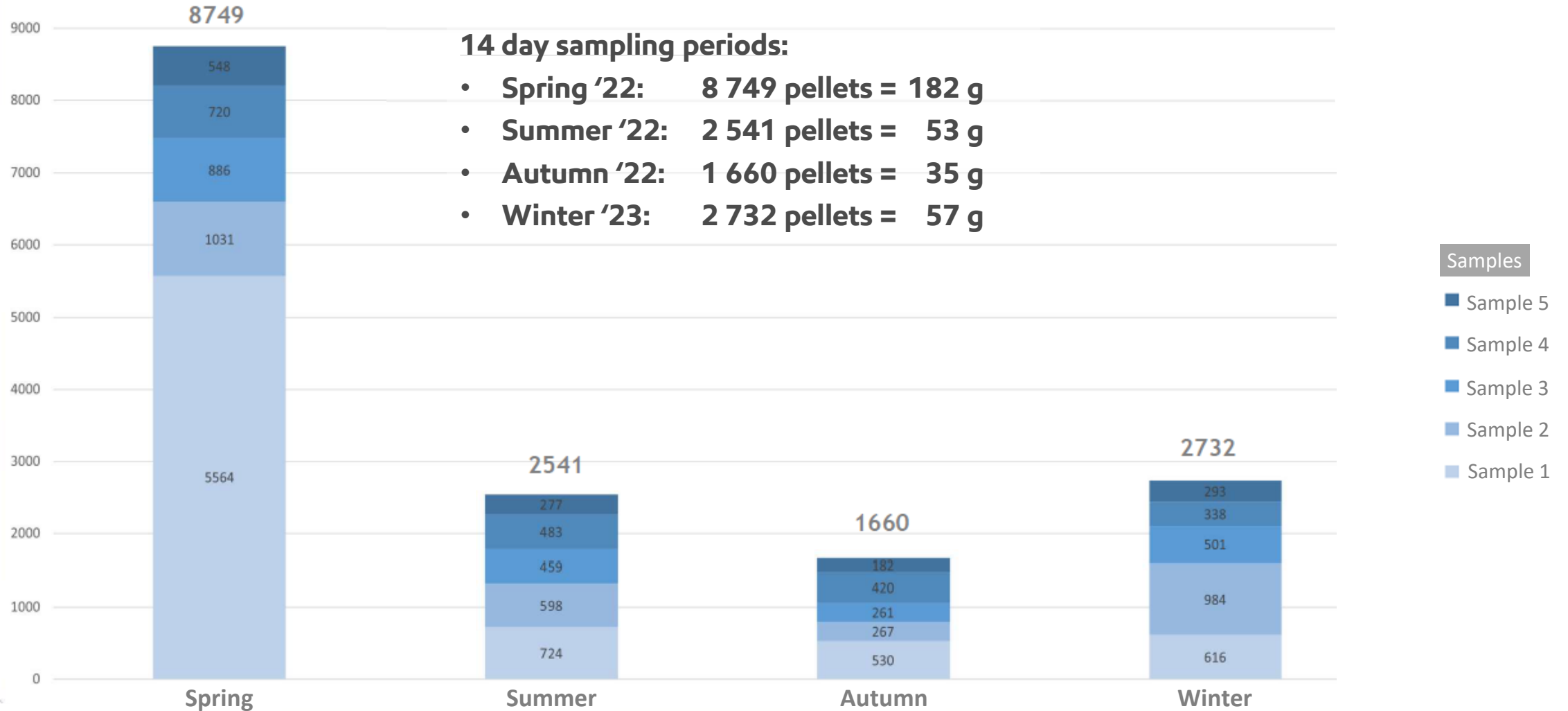
# Methodology – APP (Antwerp Polymers Plant), subplot LOF



# Pellet loss monitoring results 2022-2023 – All plots (43 m<sup>2</sup>)

Total number of pellets

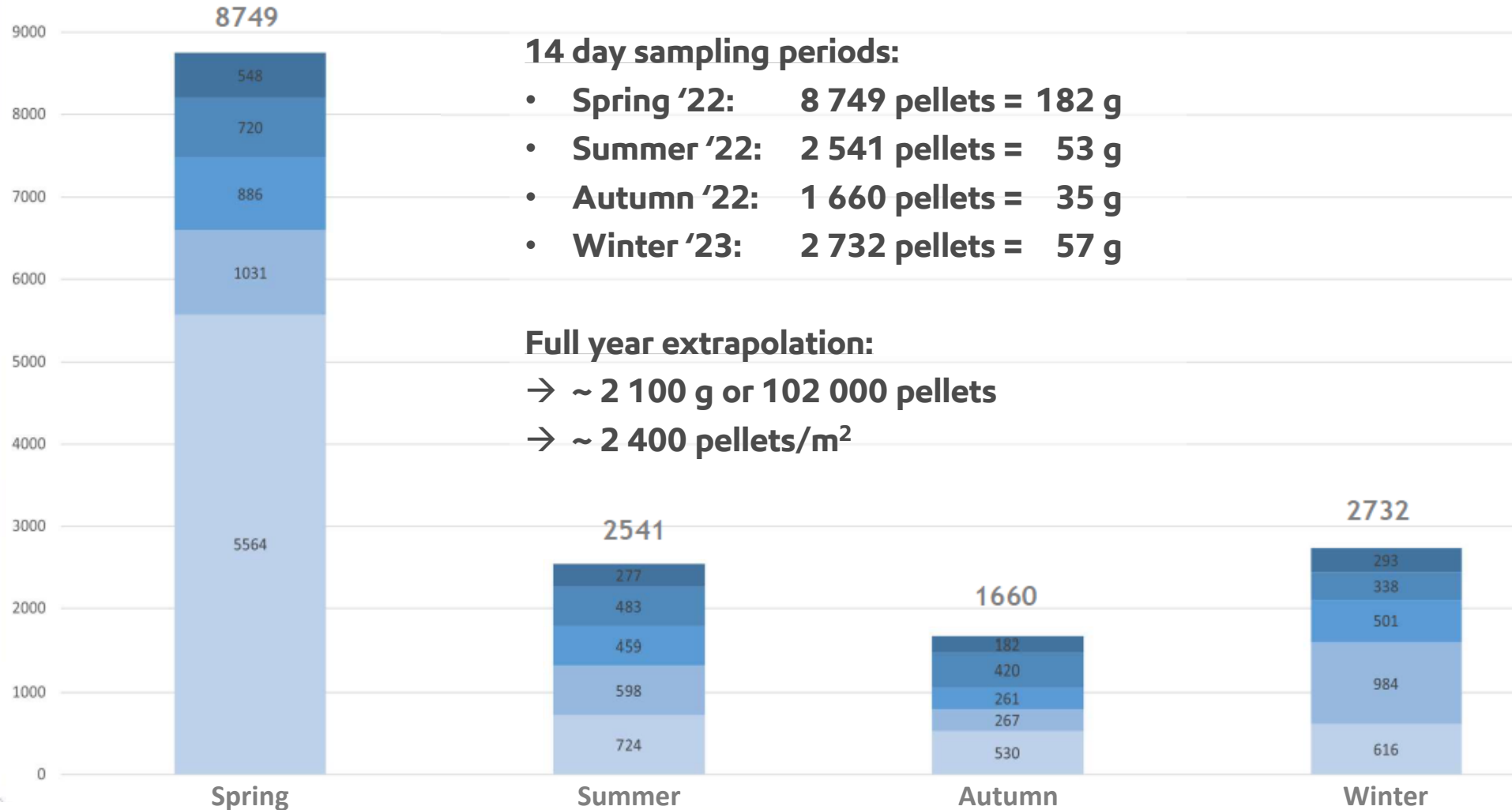
4 measurement campaigns: Spring - Summer - Autumn - Winter



# Pellet loss monitoring results 2022-2023 – All plots (43 m<sup>2</sup>)

Total number of pellets

4 measurement campaigns: Spring - Summer - Autumn - Winter



## 14 day sampling periods:

- Spring '22: 8 749 pellets = 182 g
- Summer '22: 2 541 pellets = 53 g
- Autumn '22: 1 660 pellets = 35 g
- Winter '23: 2 732 pellets = 57 g

## Full year extrapolation:

- ~ 2 100 g or 102 000 pellets
- ~ 2 400 pellets/m<sup>2</sup>

Samples

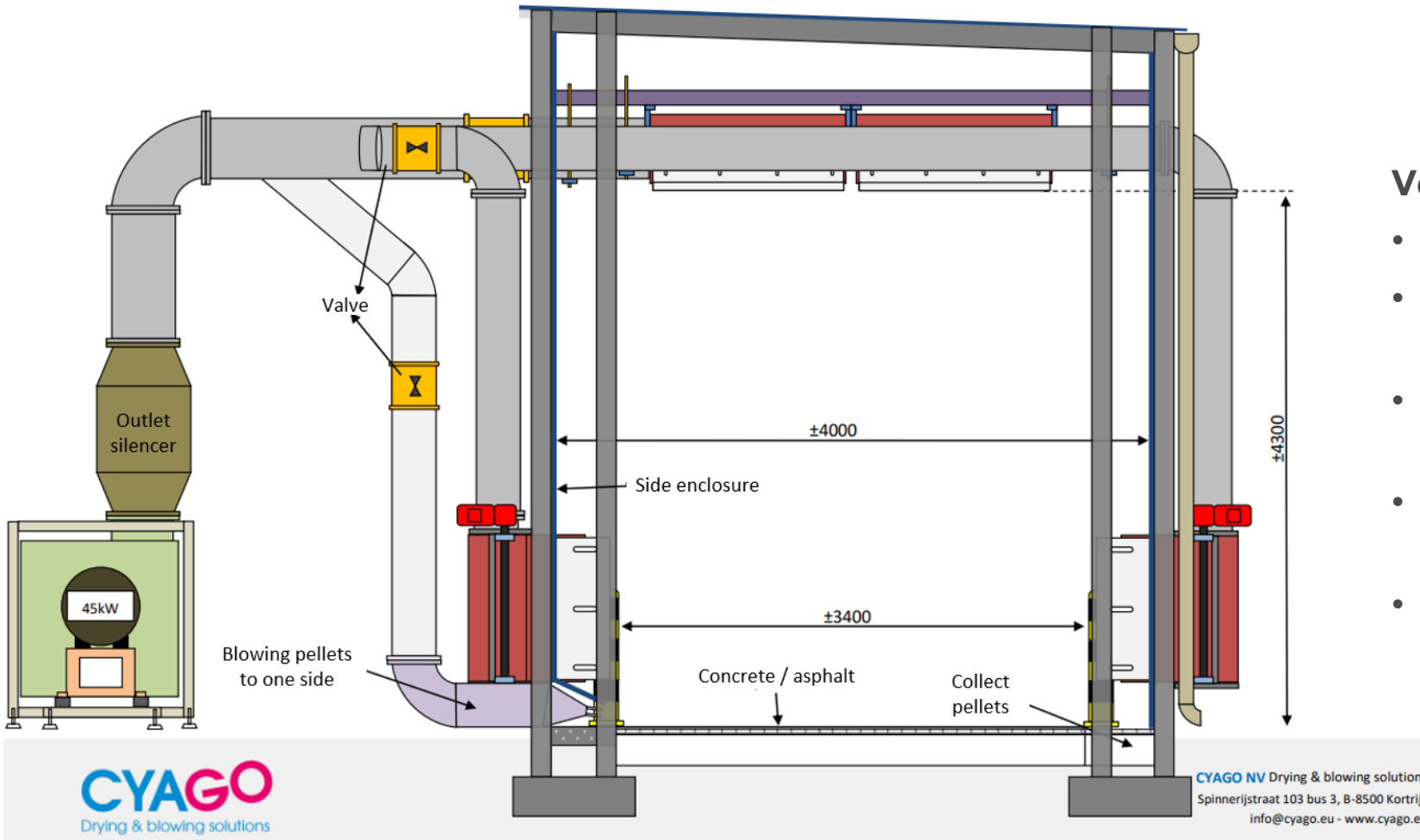
- Sample 5
- Sample 4
- Sample 3
- Sample 2
- Sample 1

# **Truck blowing installation at ExxonMobil – MPP (BE)**



# Truck blowing station MPP (Meerhout Polymers Plant)

Final cleaning of bulk trucks / sea freight containers after loading, prior to driving onto public roads



## Vendor design:

- Packaged stand-alone unit
- Works fully automatic (PLC-controlled), only electrical power required for blowers
- Units can be used for different types and sizes of trucks
- Speed truck when passing through Air Cleaning Unit = max 5 km/h
- Claimed pellet removal efficiency of 95%

# Truck blowing station MPP





# Truck blowing station MPP – Test









# Truck blowing station MPP – Test



## Further installation improvements following test:

- Modified inclination of air blades to increase blowing efficiency
- Installation of speed reduction road bumps to reduce truck passage speed



# Truck blowing station MPP – Results



Evaluation after 3 months of operation:

- 1503 bulk trucks passed through blowing station
- +/- 6 kg of pellets recovered
- +/- 4 grammes per truck = 150 pellets



*4 grammes of pellets*

- ➔ Loose pellets on trucks identified as largest source of unmitigated plastic pellets to the environment (large multiplying factor)
- ➔ Installation is an extra barrier; procedures related to manual cleaning of truck at loading point remain
- ➔ Project ongoing to install similar installation at APP