



Ministerie van Infrastructuur  
en Waterstaat

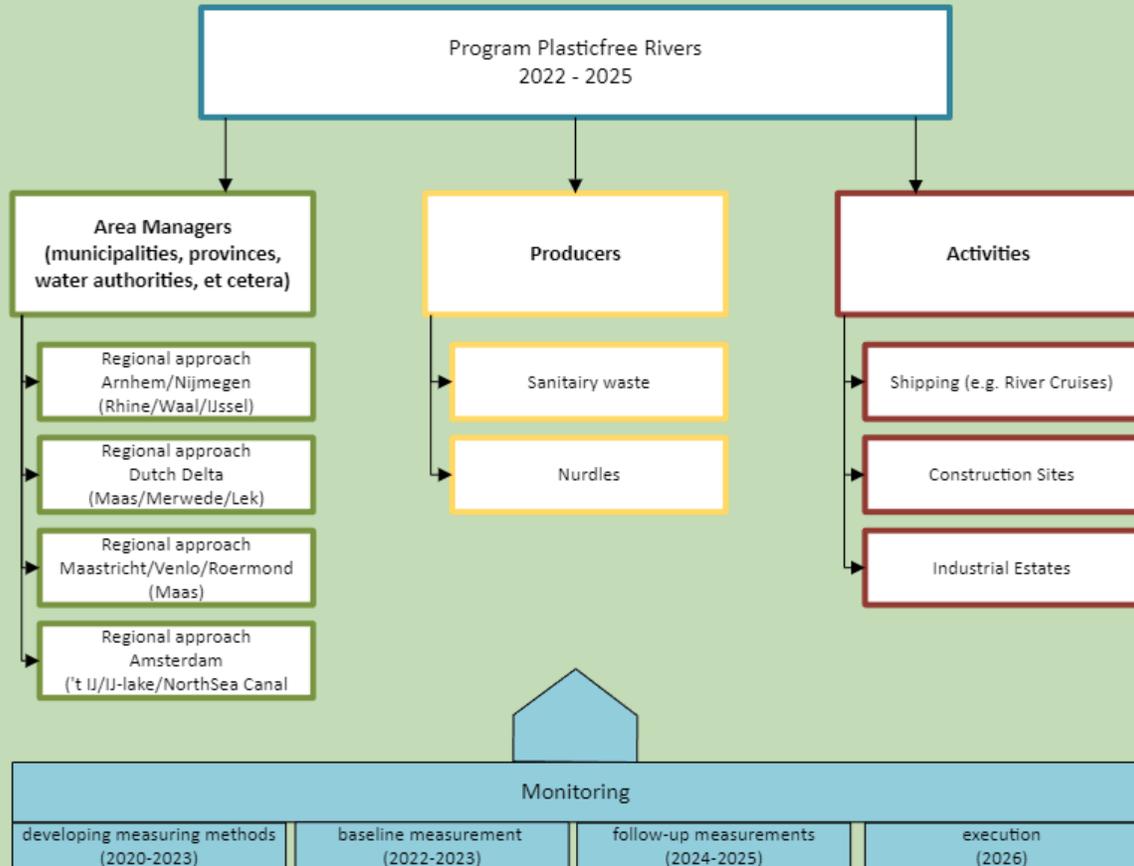
# Plasticfree rivers



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## Plastic-free rivers program along three lines:

- Approach with area managers
- Producer approach
- Approach for specific activities (companies and public services)



# National approach, international anchors

- EU Marine Strategy Framework Directive (MSFD): reducing the input of pollutants and waste/litter.
- OSPAR regional action plan (article A3.1), lead & support F, B & NL: Monitor, prevent and reduce riverine inputs of macro litter to the marine environment and share knowledge on micro litter monitoring
- Water Framework Directive (WFD): no specific provisions on plastic pollution, but relevant bodies are paying attention to the issue in this regard.



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# Riverine litter monitoring

## macroplastic and microplastic

Since 2021



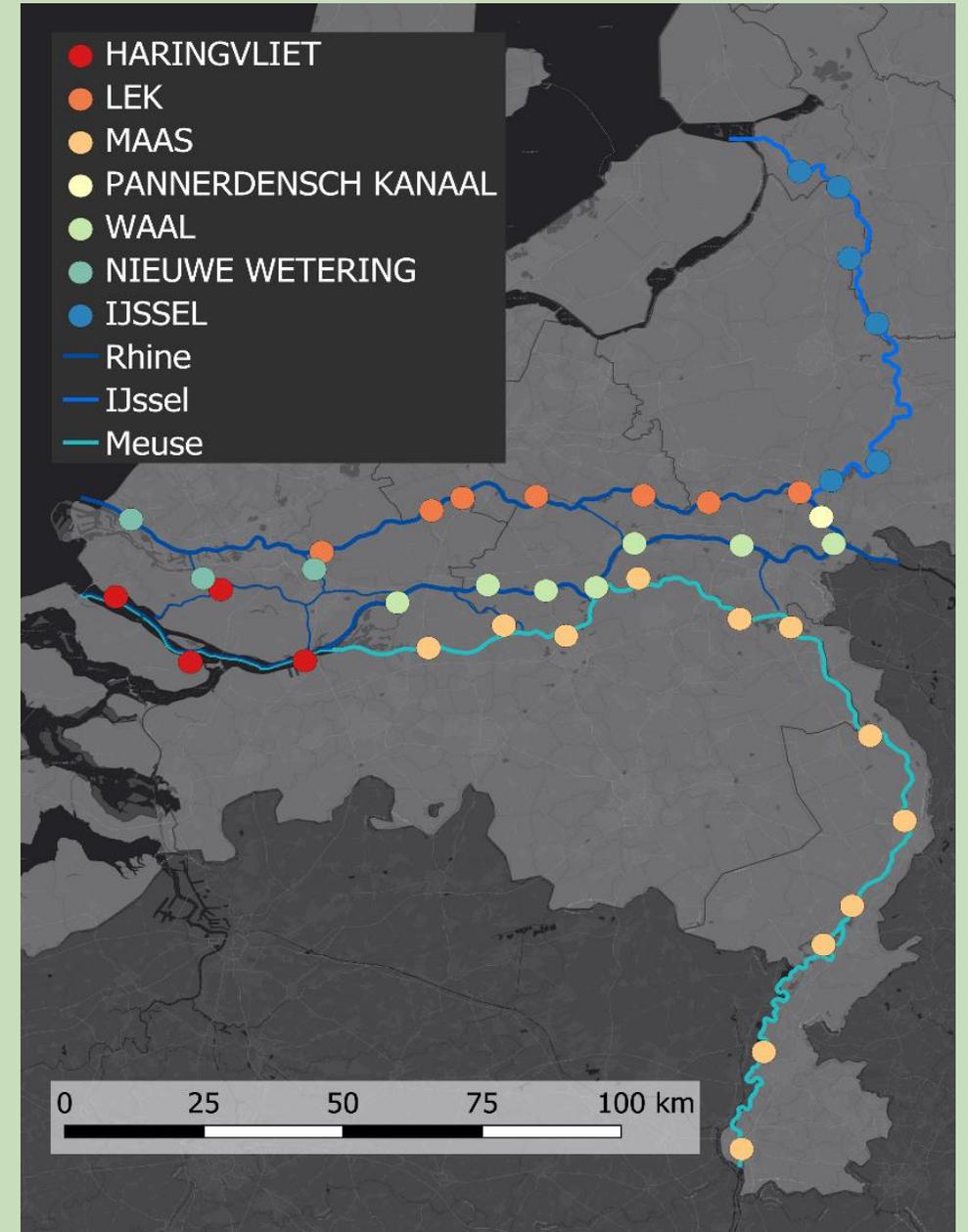
## Water surface

- Visual observation method from bridges (since 2021)
- 10 locations in the Meuse, Rhine and IJssel rivers. Monthly frequency
- Mean 80 items/hour, 85-95% plastic
- First crude estimate: 6000 kg/year from Meuse and Rhine discharged in estuary



# Riverbanks

- Sample area of 100x25 meter (since 2022)
- OSPAR protocol, sampled by 2 people (citizen science possible)
- 40 evenly distributed sample location along the Meuse, Rhine and IJssel
- Frequency: once every 3 months
- Median: 65 items per 100 m riverbank (max 900)





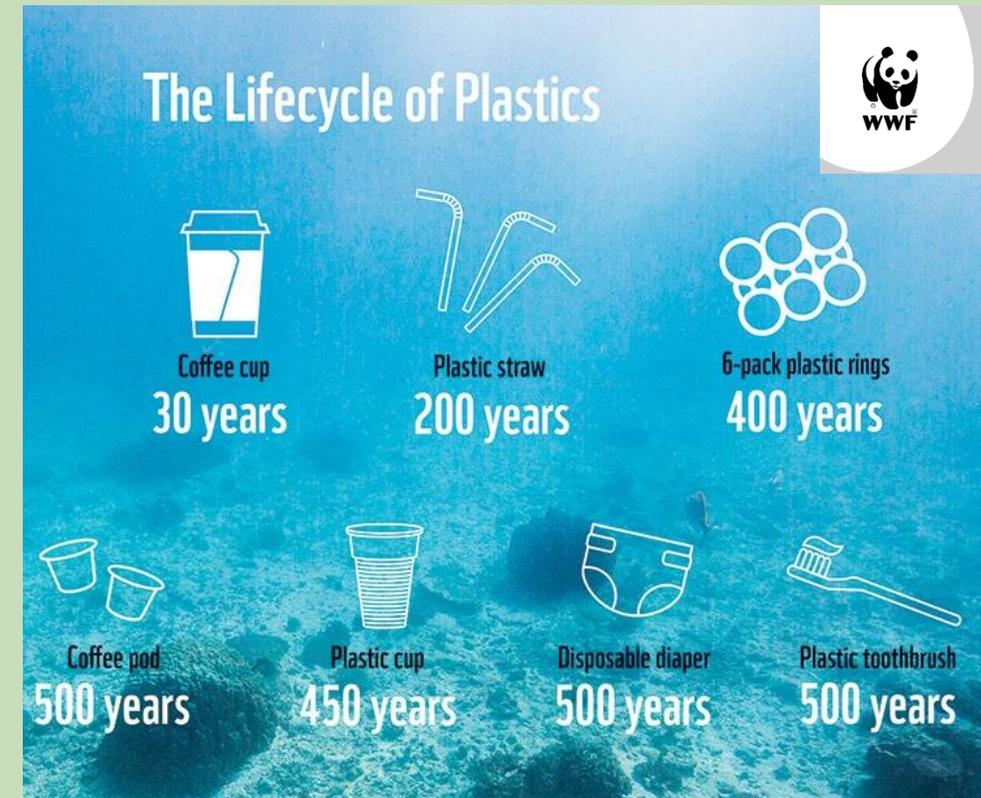
## Water column

- Net measurements using trawling nets
- Currently in developmental stage
- Tested in Meuse, Rhine and IJssel (2022-2024)
- 2025: protocol development, followed by first baseline assessment
  
- First insights:
  - Significantly more important in total transport compared to floating
  - Mostly degraded smaller pieces
  - Sanitary items are common
  - Correlation between discharge and concentrations

# Microplastics monitoring

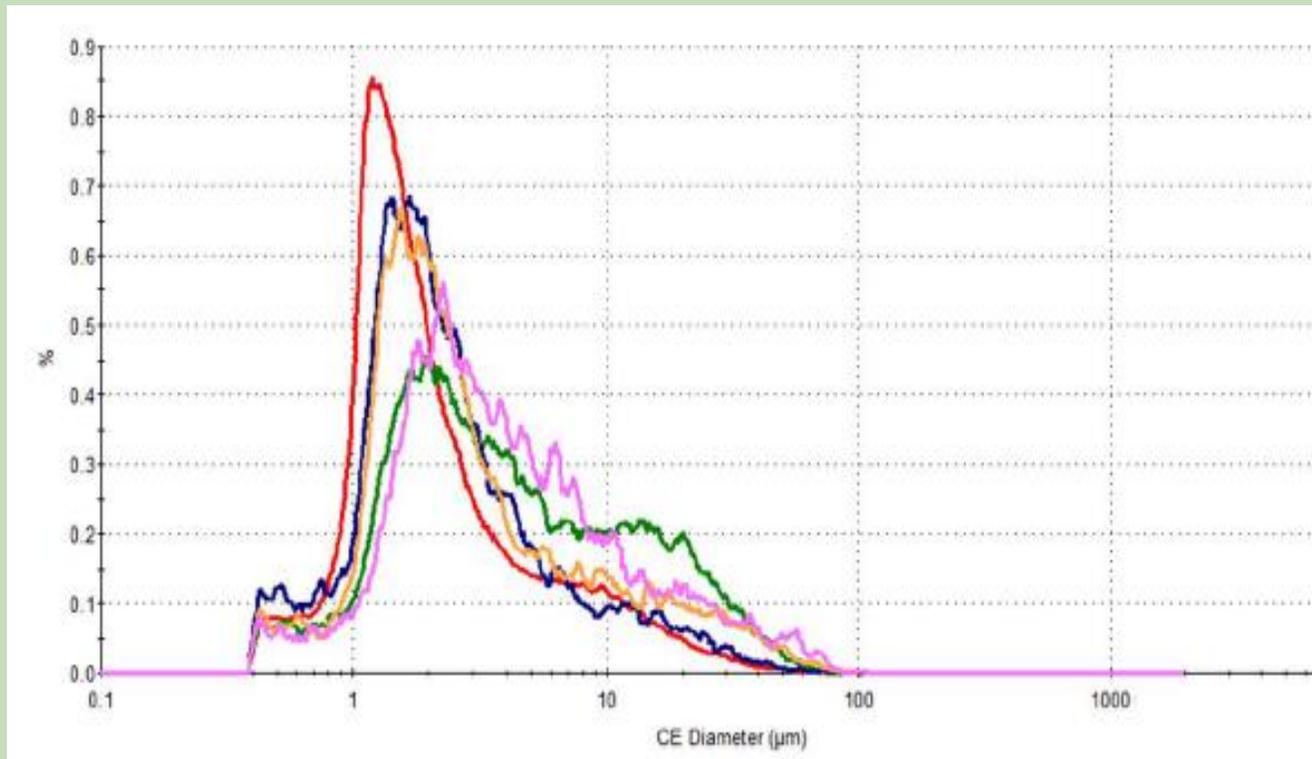


- Plastic and rubber particles with a size between 1  $\mu\text{m}$  to 5 mm.
1. **Sampling** of suspended particulate matter (SPM) of 1  $\mu\text{m}$  to 5 mm in surface water
  2. **Identification** of microplastics in SPM
  3. **Quantify** individual microplastics concentration in SPM (g/kg)
  4. **Freight calculations** (“kg”) How much MiPs enter the Netherlands via the rivers
  5. **Model** for the distribution of microplastics in Rhine and Meuse (RIVM/WUR)





Microscopic analysis: >90% of the sampled SPM particles have a diameter < 20  $\mu\text{m}$



- Particle size distribution for time-integrated samples from different rivers in NL, sampling periods, locations and flow conditions are alike
- Rhine: estimated 2.2 Mn kilo per year at Lobith

# A ballpark estimate:



# Microplastics entering NL via Rhine and Meuse

Microplastics (mainly <0,1 mm) amounts based on 8 target MP

	Rhine	Meuse	Unit
Flow rate	2.350	230	m <sup>3</sup> /s
	74.110	7.253	million m <sup>3</sup> /yr
SPM	20	15	mg/l (=g/m <sup>3</sup> )
	1.482	109	million kg/yr
Microplastics	1,5	1,5	g/kg
	<b>2.2 million</b>	<b>160.000</b>	kg/yr

## Actual kg MP/yr could be higher:

- The 8 microplastics analysed by RWS represent ~75% (mass) of most used plastics and rubbers.
- Floating MP were not sampled and are therefore not included. Since floating material will contain larger MP than river water, this could significantly increase the estimation of kg MP/yr

## Actual kg MP/yr will be lower:

- Measured PE concentrations too high due to natural occurring substances with similar structure

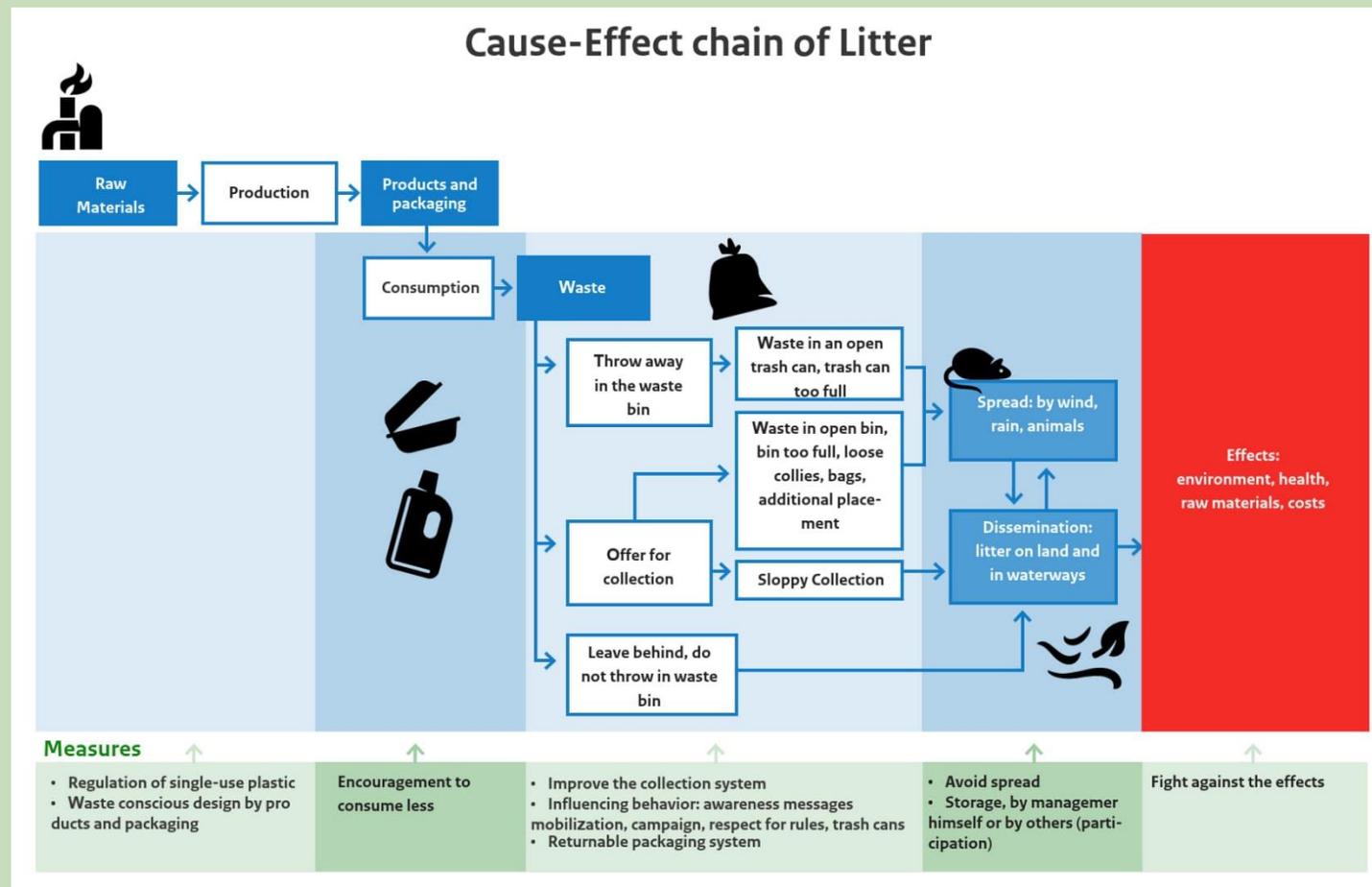


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# source approach



# What is considered a source?





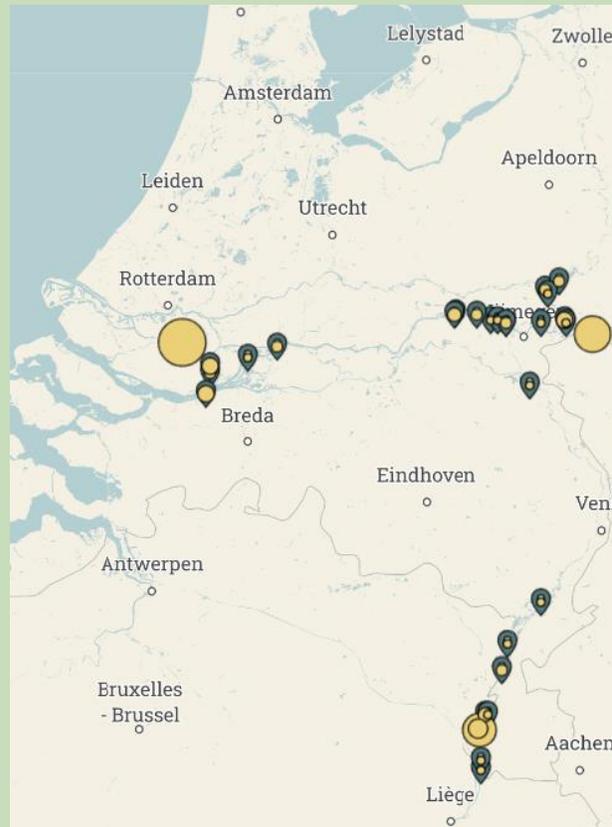
# Hotspots help to define source

Data obtained from citizen science projects by IVN ([program clean rivers](#)):

Recreational Waste hotspot  
(2017-2020)



Sanitary Waste hotspot  
(2020)



Sport Fishing Waste hotspot  
(2017-2020)





# Activities and reach

## 1. Knowledge tools for interventions

- Technical facilities
- Influencing behavior

## 2. Collaboration on area management approach

- 4 regions inflow and outflow areas
- Plus: Local Customized Advice

## 3. Agreements with companies

- O.a. construction, river cruises, nurdles

## 4. Public service collaboration

- O.a. sewer overflows, recreational boating drop-off points





# 1. knowledge tools

**Een schone woonwijk**  
Voorkom verwaaiing van bouwafval

Tijdens verbouwingen in woonwijken kan bouwafval, zoals timmer en folie, gemakkelijk verwaaien en in de openbare ruimte of waterwegen terecht komen, wat schadelijk is voor mens, dier en milieu. Om dit te voorkomen is het belangrijk om afval goed te beheersen, bouwmaterialen af te dekken en af te sluiten, en regelmatig schoon te maken. Onderstaande maatregelen helpen om onze woonwijken schoon en veilig te houden, zelfs tijdens bouwactiviteiten.

1. Maak gebruik van een scheidingsprofiel tussen je rekening houdt met verwaaiing van bouwmaterialen.
2. Door isolatiemateriaal en (zwaar) PIR te afschermen te voorkomen dat het wegwaait, komt er minder stof vrij.
3. Laat verpakkingsmateriaal, inclusief kleine onderdelen, in afvalzakken achter. Controleer de bus en ruim 3 meter ervoor op voor vertrek.
4. Houde puilmantels gesloten om verwaaiing in de omgeving te voorkomen.
5. Het verwaaien van materialen kan worden voorkomen door de afvalzakken af te sluiten met een afsluiting die niet te gemakkelijk open te maken is.
6. Het verwaaien van materialen kan worden voorkomen door de afvalzakken af te sluiten met een afsluiting die niet te gemakkelijk open te maken is.

Wille Wegens  
Rijkswaterstaat  
Ministerie van en Waterstaat

**A clean and litter-free construction site**  
Prevent littering of construction waste into the environment

One of the sources of litter on land and in rivers is construction waste from construction sites. Especially lightweight materials, such as EPS (expanded polystyrene) and foils, are prone to scattering by wind and water. These materials are often found in water bodies and public spaces. The municipality considers it essential that these materials do not end up in the environment, as they can be harmful to humans, animals, and the environment. This leaflet provides tips for measures you can take to prevent the scattering of construction waste.

**Duty of Care Article 1.1**

1. Anyone who carries out or refrains from activities related to waste and/or who could reasonably be known that this could lead to adverse effects on the environment is obliged to take or refrain from taking all measures that can reasonably be expected of them to prevent or limit those effects as much as possible.
2. It is prohibited for anyone from whom waste is generated to carry out or refrain from actions regarding that waste, knowing or reasonably should have known that this could lead to adverse effects on the environment.

1. Implement a bad weather protocol that takes into account the scattering of construction materials by wind and water.
2. Use lockable waste containers for lightweight materials.
3. Keep the construction site clean at all times to prevent (lightweight) materials from scattering.
4. Install fully enclosed fences (including at the bottom) around construction sites near water bodies.
5. Keep the surroundings of the construction site clean and remove any litter lying around. This is also good for your image and helps to prevent complaints from the neighborhood.
6. Use a hot wire instead of a saw when cutting EPS products (also known as styrofoam). This reduces the risk of pieces flying off.

More information? Check [afvaltoesla.nl/overheid](http://afvaltoesla.nl/overheid)

an veranderd bij het veranderende zwaartekracht

afvaltoesla.nl/overheid

Rijkswaterstaat  
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**Best practices for litter free riverbanks**

Water. Wegen. Werken. Rijkswaterstaat.

**SAMEN VOOR EEN SCHONE BUURT HELP JIJ OOK MEE?**

**MAAK MIJ UIT GOOI MIJ IN**

**Working method for clean city quays**  
Best practices for litter free urban water systems

Together we keep Rotterdam clean

**Introduction**

Waste, especially microplastics, in the water pose a significant problem. Analyses show that it often starts as litter on or around the city quay and then ends up in the water by wind or rain. By developing measures for city quays focused on reducing litter, the likelihood of water and environmental pollution decreases.

In the Netherlands, we have identified various sources of waste issues around the quay:

1. Recreation on the quay
2. Recreation in squares near quays
3. Underground containers
4. Waste collection with bags.

Below, we outline different situations and provide tips and interventions.

The goal of this approach is to motivate and enable municipalities with city quays to prevent litter by specifically addressing people's littering behaviour. This method can be used by departments such as public space management and waste collection.

**How to use this document?**

First, determine the source(s) of the litter in the water, and then respond with specific behavioural interventions for that source. We provide guidelines for multiple sources:

- If it originates from recreation on the quay, go to page 3 to page 7
- If it originates from recreation in a square along the quay, go to page 7
- If it originates from an underground container on the quay, go to page 11
- If it originates from waste bags collected on the quay, go to page 15

**Approach to Recreation on the Quays**

**Introduction**

Litter is a problem in many places, including recreational areas along city quays. By developing measures for city quays aimed at reducing litter, the chances of water pollution decrease.

City quays are often popular places for people to sit. Especially during good weather conditions, we see a lot of recreation on city quays both during the day and in the evenings. Unfortunately, litter is often left (unknowingly) on the quays. There is a high probability that this litter ends up in the water, for example, due to the wind or rain. The litter issue we encounter is primarily passive pollution: people leave waste on the quay, mostly packaging materials from food/drinks.

There are various behavioural interventions that can counter litter issues caused by recreation along city quays. Below, we briefly summarise them, categorising them into the basics in order and additional interventions.

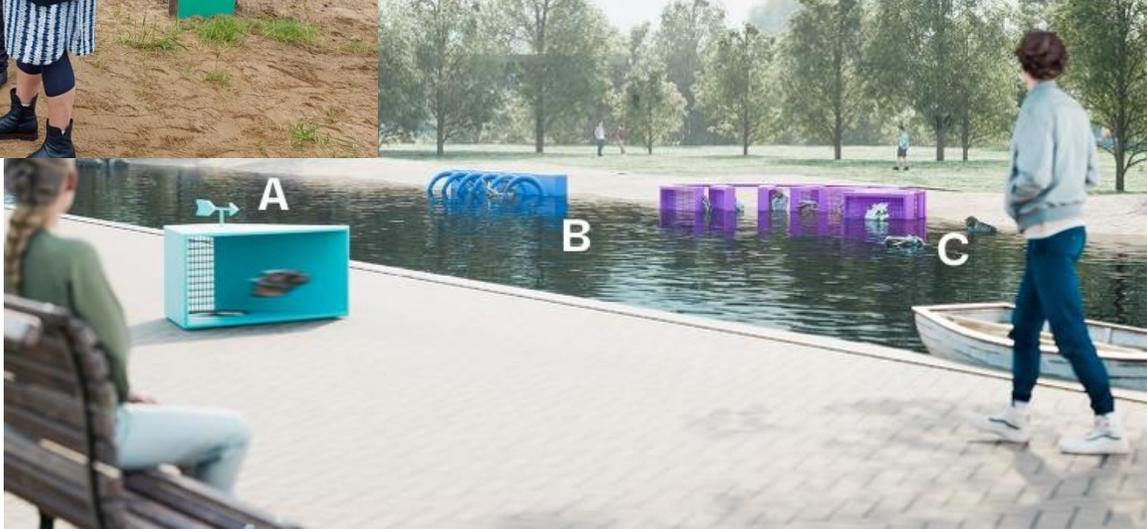
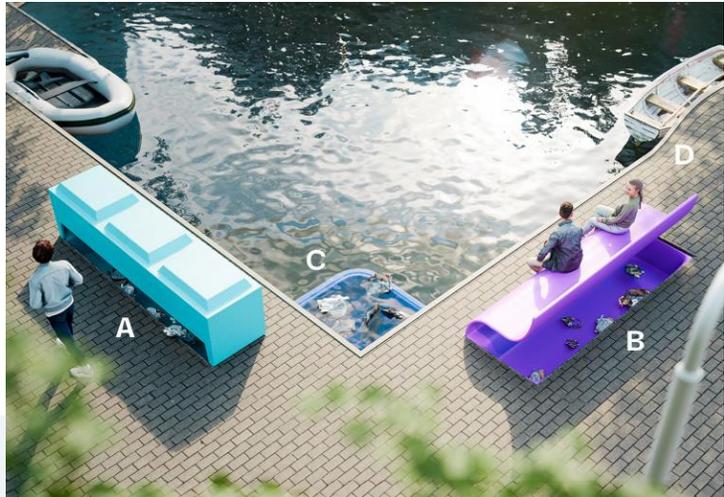
**Getting the Basics in Order**

Litter is a problem. It is essential to ensure that the foundation in the area is in order. The environment and layout of an area unconsciously influence human behaviour. The way an area is designed can make it attractive, challenging, or even impossible for people to exhibit the desired waste behaviour. Below, we describe three ways to get the basics in order.

Rijkswaterstaat



# 2. Area management approach





# 3a. Nurdles

## Hotspots analyses



## Checklists certification, oversight and enforcement



### Stap 1 Inventariseer je bedrijfs

Bekijk of er bedrijven voorkomen in jouw bes

- productiebedrijven die pellets gebruiken on
- transportbedrijven
- bedrijven die werken met containers (op-er
- afvalverwerkende bedrijven die van afvalpla
- opslagbedrijven die pellets opslaan in een d

Bekijk welke voorschriften gelden

Zijn er voorschriften/artikelen voor de opslag, p  
verwerking van plastic korrels opgenomen in d  
in algemene regels in het ActiviteitenBesluit (Al  
a. Type a en b inrichting – voorschriften AB  
b. Type c inrichting – voorschriften in vergunnin  
c. Type c inrichting – voorschriften in vergunnin





# 3b. Rivercruises on board

## Interventions (behavior) Toolkit for River Cruises

How you, as a cruise operator, can contribute to solving the plastic problem in rivers

This guide provides tips for interventions that you can apply on your river cruise. With behavioural interventions, you can influence passengers' habits regarding their use of wet wipes and how they dispose of them. Ready to get started? Scan the QR code and download the toolkit for river cruises!

Wet wipes are a popular product. They are convenient and hygienic to use. However, they also cause problems, as wet wipes often contain plastic fibres. After usage, many wipes end up in the environment, posing a danger to flora and fauna.

It often goes wrong during disposal: used wet wipes are often flushed down the toilet instead of being thrown in the bin. This can cause blockages in the sewage system. However, not all problems are immediately visible. The plastic fibres in wet wipes break down and enter the environment as microplastics. These issues occur both by use of wet wipes on land and on water, for example, during river cruises.

The improper disposal of wet wipes calls for both policy adjustments and consumer education. As a cruise operator, you can also help reduce the flow of wet wipes into rivers, by implementing this toolkit.

- The captain, the figurehead of the cruise ship, should include in their welcome speech the importance of disposing of wet wipes in the bin and not flushing them down the toilet.
- Invite all passengers who are checking in to sign a pledge promising that they will dispose of their wet wipes in the bin.
- After submitting the signed pledge at the reception, passengers receive a branded cardholder to keep their room key in.
- Place a commitment counter at the reception showing how many passengers have committed to the pledge.
- Hold a raffle with fun prizes for all passengers who submit the signed pledge.
- Display a poster with a poem opposite the toilets and in private cabins. The text reminds passengers to dispose of wet wipes properly. In public toilets, place a sticker on the bins that says "Dispose of your wet wipes here."

Scan the QR code to download the toolkit or visit [www.schoouderoerderschoon.nl/toolkiten](http://www.schoouderoerderschoon.nl/toolkiten)



Amidst these river's tranquil flow,  
A gentle reminder, so you know,  
Wet wipes belong in the waste bin's embrace  
Keep our fragile sewer clean, our cruise in grace.

Wet wipes too, with no disdain,  
In the bin, it's completely sane  
Because on river cruises we all agree  
We want our holiday problem-free.

An diesem wunderschönen Fluss  
erfreuen wir uns gern auch morgen,  
weswegen jeder wissen muss  
wie wir den Abfall hier entsorgen.

Feuchte Tücher schaden der See,  
verschmutzen Flüsse, verstopfen Röhren,  
weshalb sie auf keinen Fall ins WC  
sondern in den Restmüll gehören.  
So mach dir dies zur guten Sitze  
zum Schutze unserer Umwelt. Bitte!

Dispose of your wet wipes in the bin.  
Entsorgen Sie Ihre Feuchttücher im Müllimer.

Ministry of Infrastructure and Water Management

**VIVA Cruises Pledge**

The river and the cruise thank you.  
Der Fluss und die Kreuzfahrt danken Ihnen.

Ich werde nur trockenes Toilettenpapier in die Toilette spülen.

In Ausnahmefällen, wenn ich feuchte Toilettenwischtücher verwenden muss, werde ich sie in den Mülleimer entsorgen.

I will only flush dry toilet paper down the toilet.

In the exceptional occasion that I need to use wet toilet wipes, I will dispose of them into the bin.



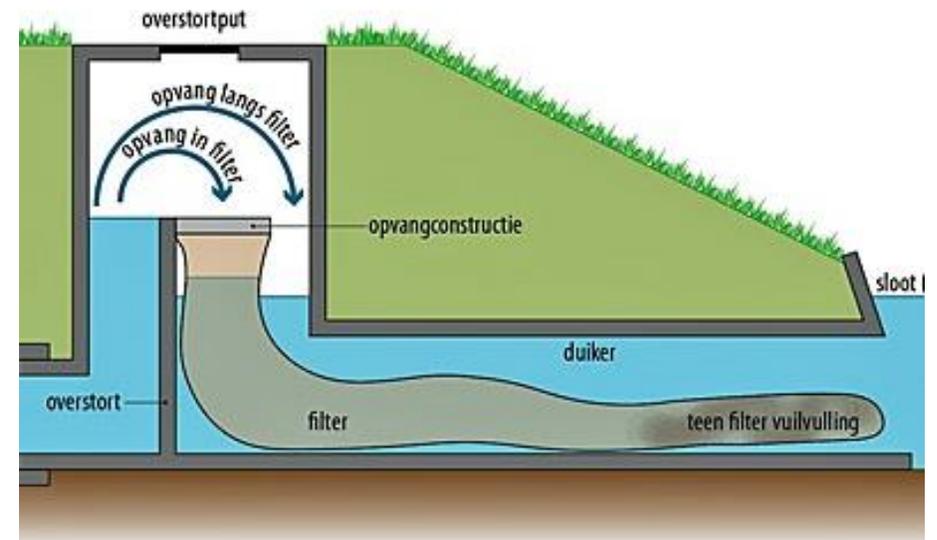
# 4a. Waste water discharge

Interventions (physical)





## 4b. Sewer overflow





# Sharing is caring

Questions:

- What are solutions for your situation?
- What are your experiences?
- How can we collaborate?

## Online

- [Plastikfreie Flüsse: Überwachung und Quellenansatz](#)
- [Des rivières sans plastique : surveillance et traitement à la source](#)
- [Programma plasticvrije rivieren - Afval Circulair](#)
- E-mail: [zwerfafval@rws.nl](mailto:zwerfafval@rws.nl)

