

Working to protect, preserve and enhance our marine and coastal environment

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Marine litter from a spatial perspective: local solutions to a global problem

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What is Marine Litter?

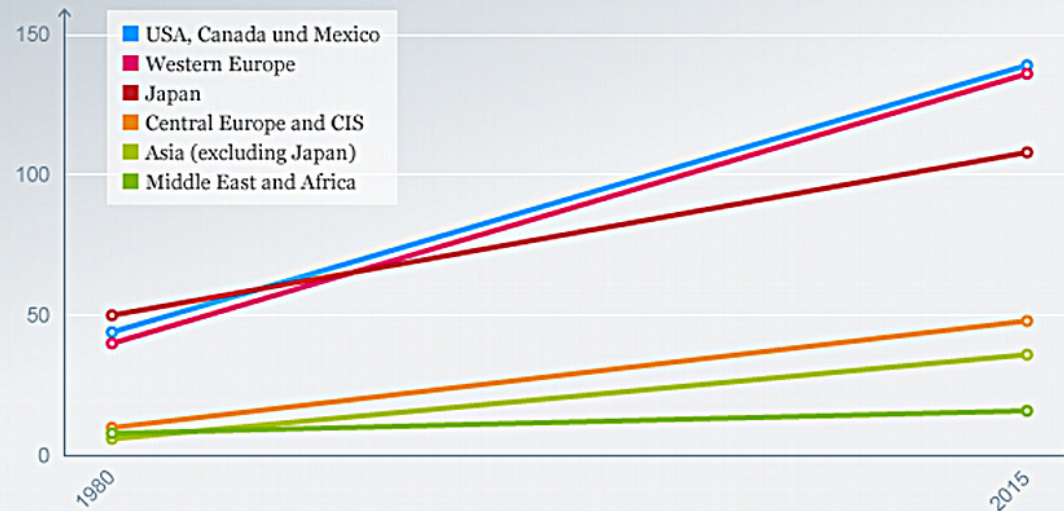


- ❖ Any persistent, manufactured or processed solid material deliberately discarded or unintentionally lost in the marine or coastal environment, or transported into the marine environment from land
- ❖ Plastics (>80%), metal, wood, rubber, textiles, glass, solidified floating chemicals

Where's the plastic coming from?

Plastic use: Industrial nations top the charts

Kilograms per capita



Source: Statista, PlasticsEurope

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Global plastic production...

Million tonnes, 2013



...and future trends

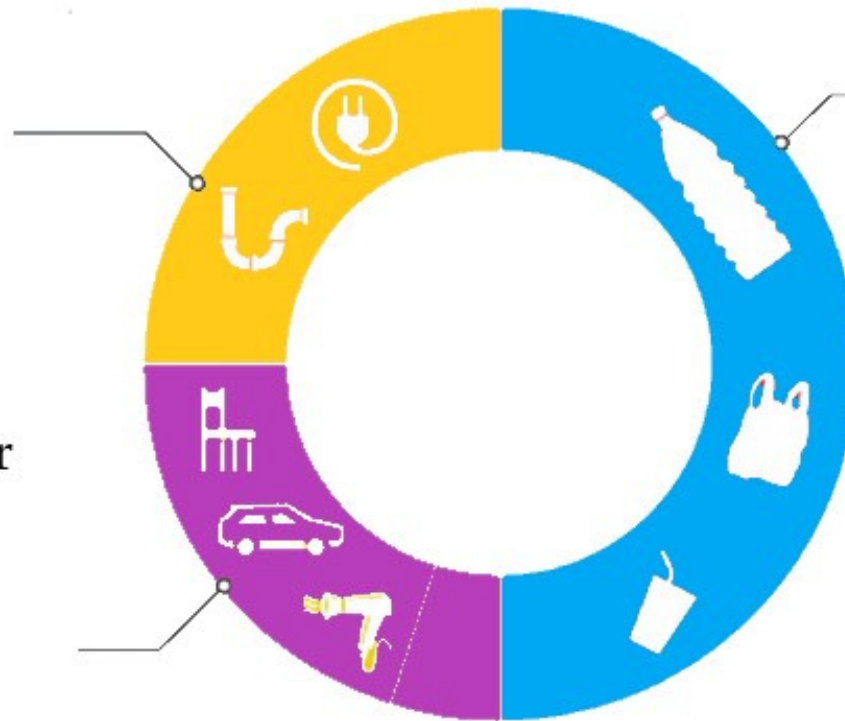
Million tonnes

Source: Ryan, A Brief History of Marine Litter Research, in M. Bergmann, L. Gutow, M. Klages (Eds.), Marine Anthropogenic Litter, Berlin Springer, 2015; Plastics Europe

What is plastic used for?

Highly durable infrastructure products like cables and pipes

Durable consumer products with a medium lifespan such as electric devices, furniture and car accessories



Single-use products such as bags, bottles and packaging



So what's the problem?

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Problem #1 – Persistence

MARINE DEBRIS

HOW LONG DOES IT TAKE TO BREAK DOWN?

*Estimates vary depending on environmental influences

Plastic Water
Bottle: 450 Years



Microfilament
Fishing Line:
600 Years



Disposable
Diapers:
450 Years



Glass Bottle: 1
Million Years

Aluminum Can:
200 Years



Foam Cup:
50 Years



Cigarette Butts
(the most
common trash
item on
beaches): 1-5
Years



Photodegradable
6-pack Plastic
Ring: 35 Days



Styrofoam
Buoy: 80
Years

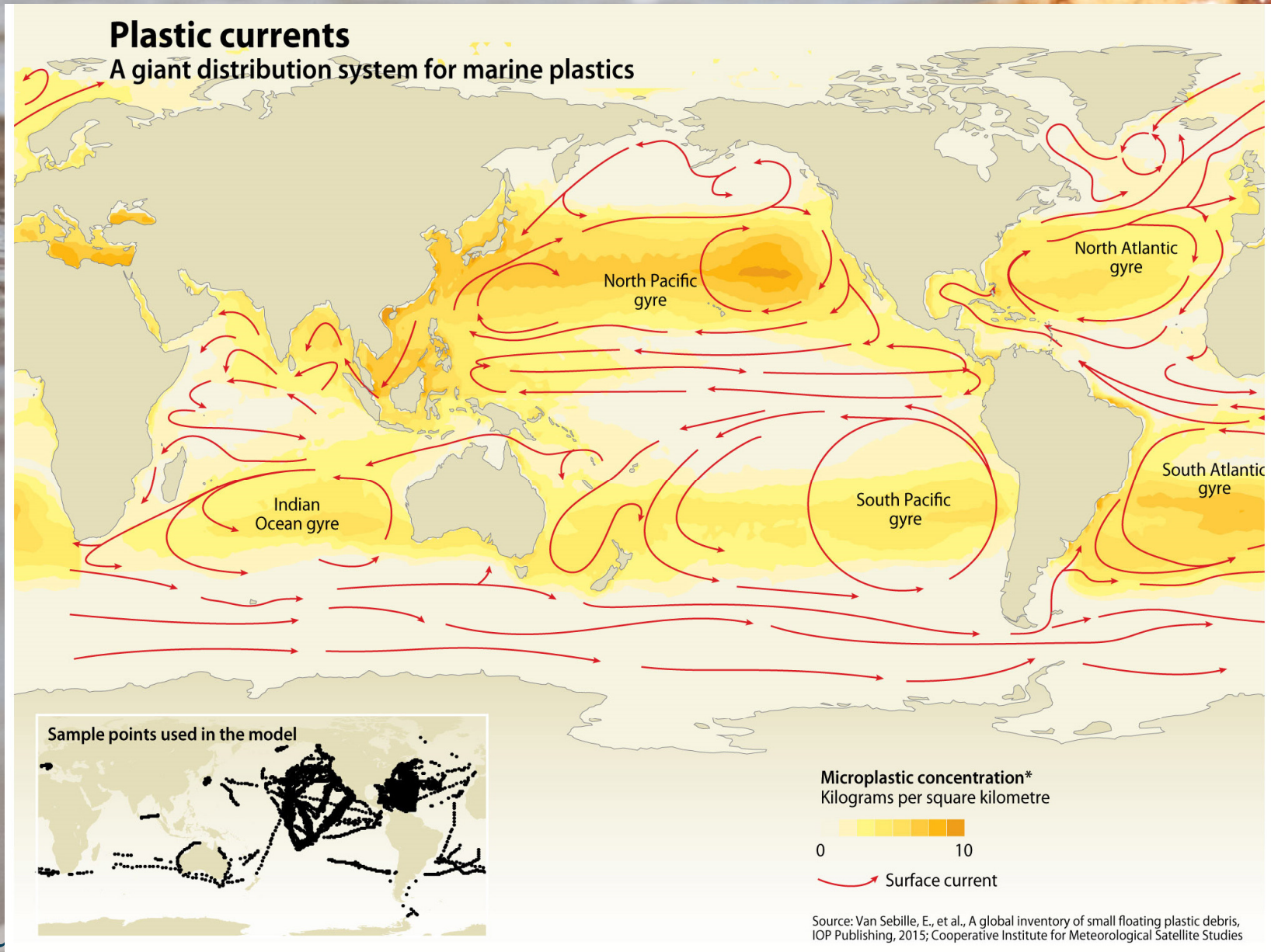


Plastic Bags:
10-20 Years

Problem #2 Fragmentation



Problem #3 – Mobility



How big is the problem?



- ❖ 5.25 trillion pieces of plastic in the oceans
- ❖ 8 million tonnes of plastic debris enters the oceans from land each year – enough to cover every metre of coastline in the world
- ❖ By 2025 the ocean is expected to contain 1 tonne of plastic for every 3 tonnes of fish and by 2050 more plastics than fish.

Impacts of Marine Litter

Environmental

Economic

Social

**Health and
Safety**



What does marine litter cost?



- ❖ Annual cost to Scottish fishing fleet: €10 million
- ❖ Loss of revenue to EU fisheries: €300 million (5% of turnover)
- ❖ Cost of damage to the ocean by plastic pollution from the consumer goods sector: \$13 billion per year



How to address marine litter?



Prevention

Sustainable production/closing the loop:

- ❖ Alter the value chain from linear to circular
- ❖ Product redesign
- ❖ Lifecycle management – improved collection and (re)processing



Last resort: clean up



How to address marine litter?

Cooperation is key

- ❖ Locally & Regionally
- ❖ Nationally
- ❖ Internationally

Legislation (including):

Internationally

- ❖ UN Sustainable Development Goals
- ❖ IMO MARPOL – International Convention for the Prevention of Marine Pollution from Ships

European

- ❖ Marine Strategy Framework Directive
- ❖ Port Reception Facilities Directive
- ❖ Circular Economy Package
- ❖ Plastics Strategy
- ❖ Maritime Spatial Planning Directive

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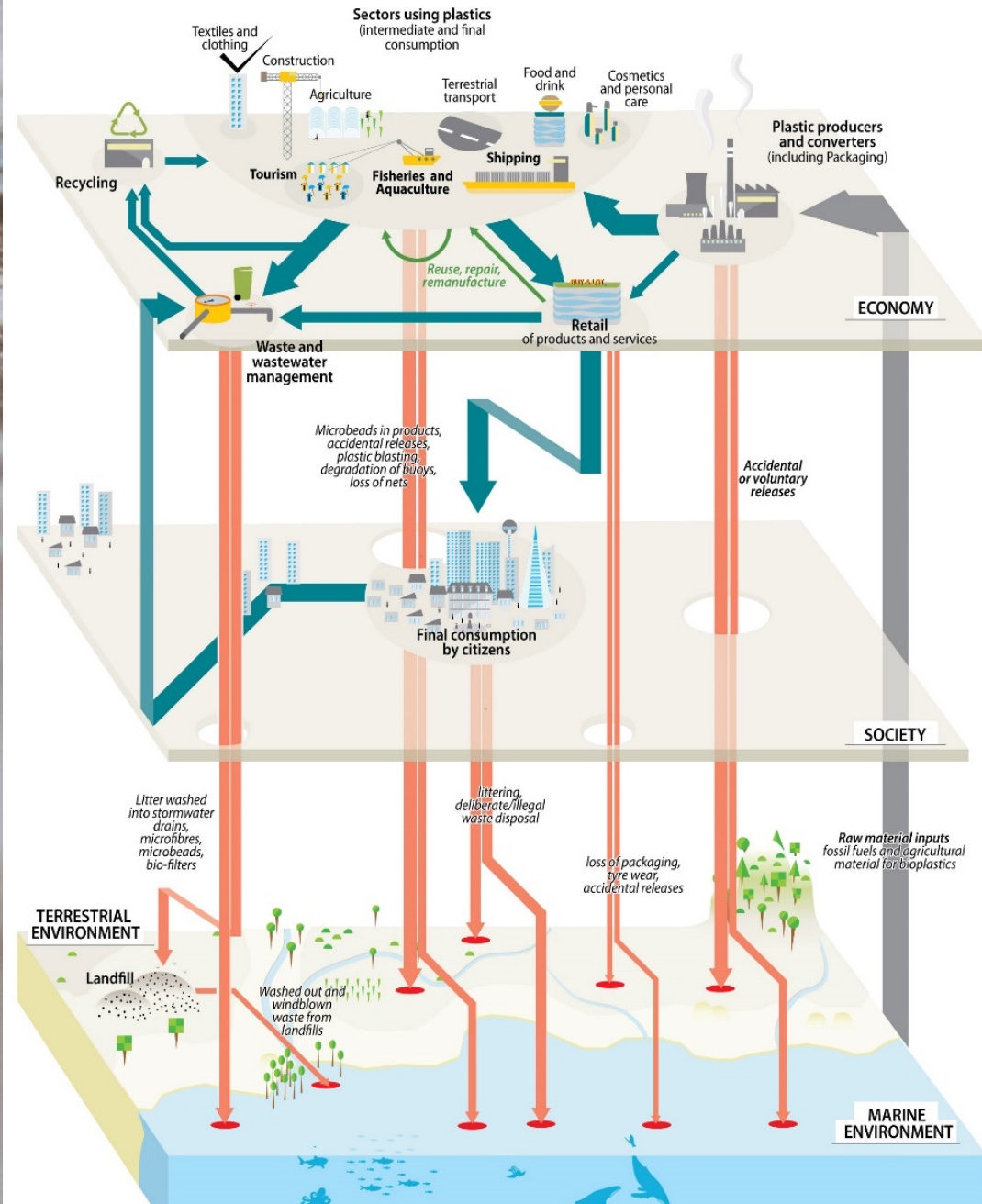


Spatial Aspects: Sources

- ❖ Sectoral (tourism, shipping, fishing)
- ❖ Regional & local (landfills, rivers as means of transport, ports, aquaculture, mariculture)
- ❖ Transnational (waste has no boundaries)

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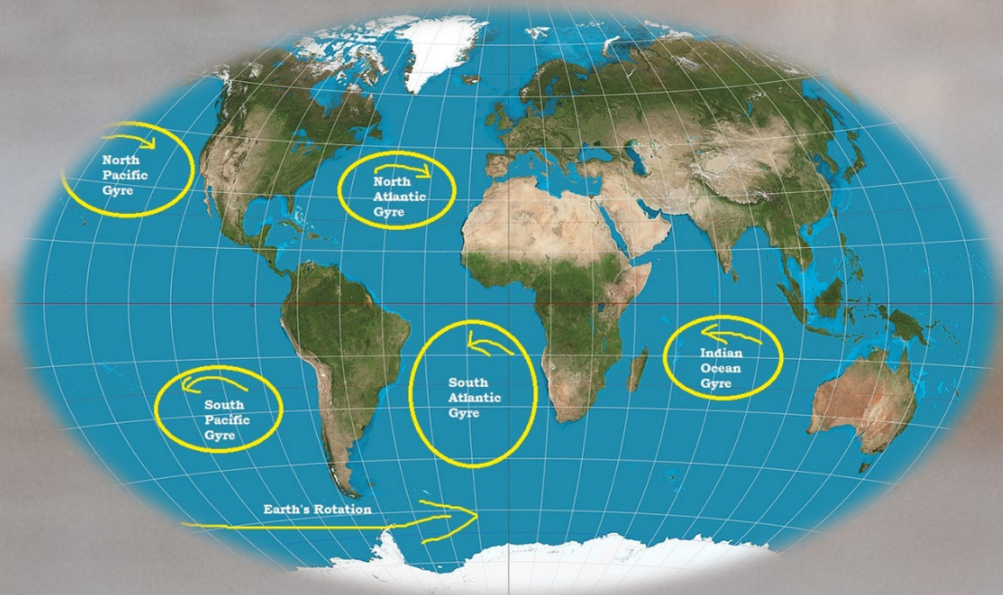
How plastic moves from the economy to the environment



Spatial Aspects: Impact



- ❖ Parts of the Riverine & Marine Environment that are barriers of waste hampering marine life and economic activities (e.g. the 5 large gyres)
- ❖ Coastal areas that are full of waste and that are not attractive for tourism anymore



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What can regional/local authorities do to combat marine litter?



- ❖ Zoning (e.g. in nature reserves)
- ❖ Physical River Barriers to stop marine litter entering the sea
- ❖ Encourage enhanced port reception (inland & at marinas)

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What can regional/local authorities do to combat marine litter?



- ❖ Strength of local actions lies in public engagement and awareness raising: Fishing for Litter, Green Deal, Beach clean-ups, plastic waste recycling projects
- ❖ Encourage green procurement (no single use plastics no microplastics!)
- ❖ Encourage waste segregation and enhanced collection

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Fishing for Litter

- ❖ A simple yet effective initiative that aims to reduce marine litter through involvement of key stakeholders – the fishing industry
- ❖ Raises awareness and educates stakeholders
- ❖ Gives a sense of achievement and ownership

Fishing For Litter



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Green Deals



Characteristics:

- ❖ about 6 years duration
- ❖ An essential aspect of this approach is that there is shared ownership
- ❖ The stakeholders are the “owners” of the initiative and therefore responsible for its outcome
- ❖ A small group of frontrunners can create a transition in society - awareness and the will to take responsibility are key elements

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Green Deals: Results



- ❖ Improved integrated collection of fisheries related wastes in ports like: waste nets, dolly rope, galley waste, oily waste and waste passively collected during fishing (the so called “Fishing for Litter waste”).
- ❖ On beaches new ways of litter prevention have been launched for beach visitors:
 - ❖ Well sited new types of waste bins encourage the public to deliver and separate waste.



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Green Deals: Results

- ❖ Owners of beach pavilions and restaurants take responsibility for the litter on their terrace and the surrounding beach (the “My Beach project”)
- ❖ The Green Deals link all kind of initiatives to clean up beaches and to recycle or reuse materials.

Now it is your turn, the game is on!



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Our work has just begun.
Join us and be part of making a difference to our marine
environment.

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Thank you for listening

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