

**European Network of
Freshwater Research Organisations**



Plastics in freshwater ecosystems: Research priorities and possible solutions

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Outline of this presentation

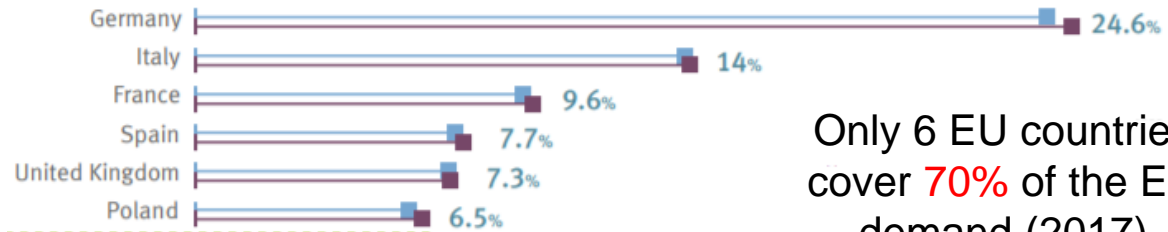


- **Why** a focus on plastics research?
 - Current challenges, opportunities
- **Research questions** to be addressed
- **Solutions** and strategies based upon good practices

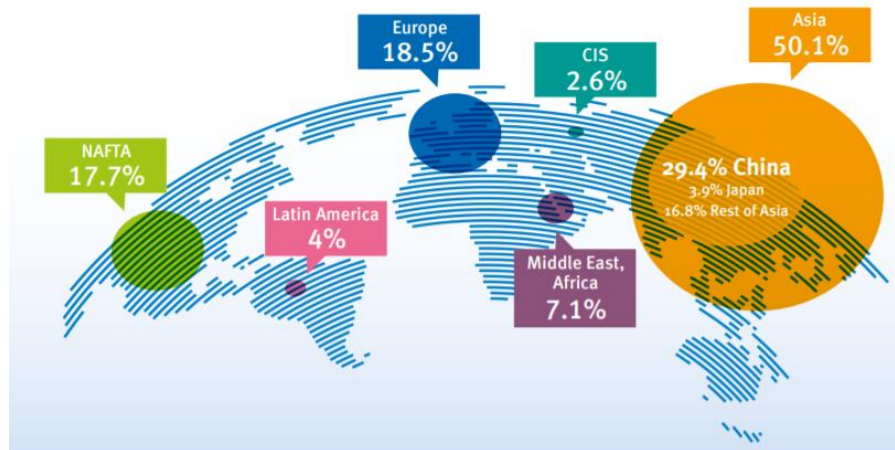
PLASTICS PRODUCTION AND WASTE GENERATION: SOME STRIKING FIGURES



Industrial turnover:
355 billion Euros



Only 6 EU countries cover **70%** of the EU demand (2017)



Plastic production in the world. Europe: **2nd** position. **26 million** tonnes of plastic debris/ year



More than **1,5 million** people employed in the plastic industry

Only **30%** of this waste is recycled



WHICH CONSEQUENCES?



- **Long persistence** in the environment due to the low biodegradability levels of plastics;
- Alarming **ecotoxicological effects**;
- **High environmental costs** (production dependent on fossil fuel-derived feedstocks);
- Accumulation of **plastic waste** (low levels of reuse and recycling)





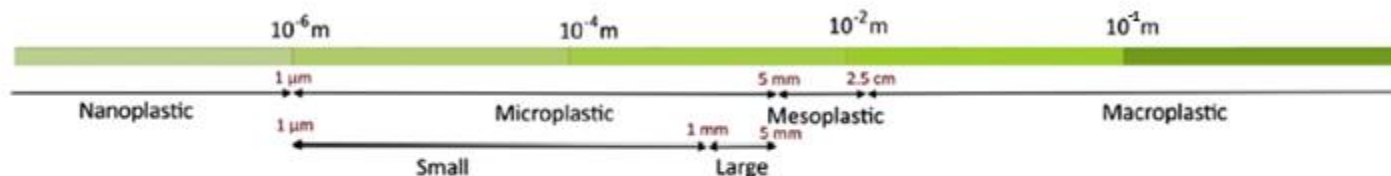
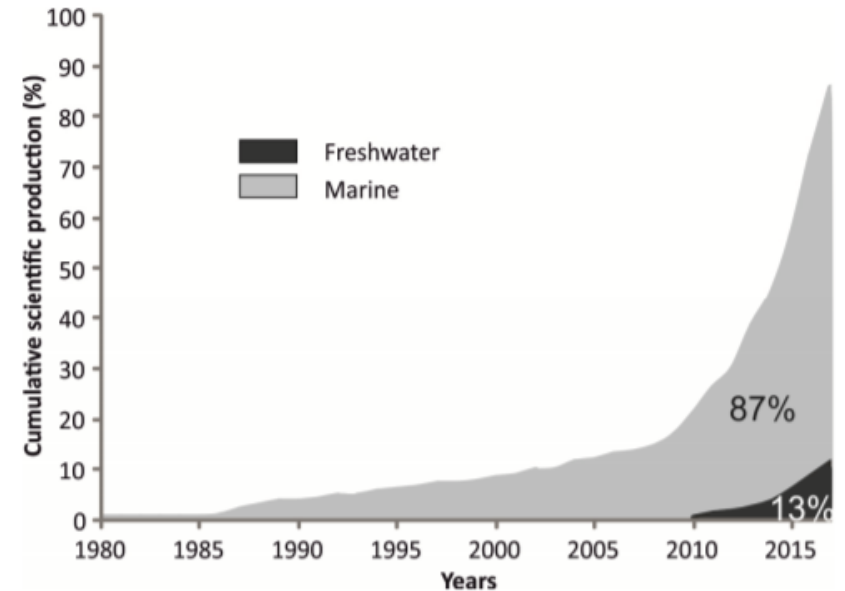
EurAqua's working group on plastics

- Established in **March 2019**
- Brings together experts from **9 centres**
(CEDEX, VUV, CEH, IRSA, IVL, GeoEcoMar, Deltares, Taltech, NIVA + Irstea as a coordinator)
- Covers a wide range of **disciplines**
(such as ecotoxicology, hydrology, geology, ecology, biology, chemistry)
- First joint action: Draft of a **position paper**.
Two objectives:
 - > To identify **relevant research questions**
 - > To outline **possible solutions**

EurAqua's working group on plastics – Key RDI questions



- Strong focus of research on marine areas
- Many efforts on microplastics research
 - Identified as one of the top 10 emerging issues by the UNEP
 - Ubiquitous presence and potential effects (reported even in remote areas with low direct anthropic impact)
 - **BUT** many questions remain around macroplastics



Size matters. Suggestion of plastic debris nomenclature based on size, as proposed by the European MSFD technical subgroup on Marine Litter ([MSFD GES Technical Subgroup on Marine Litter, 2013](#)). The overall term "microplastic" is composed of small microplastics (SMPs, smaller than 1 mm) and large microplastics (LMPs, 1–5 mm), to differentiate between two commonly used definitions of microplastics. L. Van Cauwenberghe et al. / *Marine Environmental Research* 111 (2015)



EurAqua's working group on plastics – Key RDI questions

- **Ecotoxicological effect of plastics on biota in freshwater ecosystems**
 - Many efforts have concentrated on marine areas
 - For freshwater: laboratory studies; not real conditions
- **Need to better understand sources and fate in order to characterise their spread in the environment and their potential ecotoxicological effect**
 - Difficult to discern sources of plastic debris
 - Lack of simulation models in freshwater ecosystems (spatio-temporal distribution and fate)
 - Lack of analytical tools
 - Insufficient knowledge on the fate of additives and other chemicals



EurAqua's working group on plastics – Key RDI questions

- **Sustaining the implementation of measures for the recycling and reuse of plastics, as well as the implementation of circular economy principles**
 - Essential contribution of **SHS experts**
- **Absence of standardised protocols, common reporting techniques and reference materials for the extraction and quantification of plastic particles**
- **Biodegradability of plastics**
 - Shortcomings in existing test procedures
 - Paucity of plastics' biodegradability research in freshwater ecosystems



EurAqua's working group on plastics: Solutions for current challenges

1. Support the research areas described previously

Whilst ensuring the sharing of knowledge, technologies, and good practices

2. Provide a strong educational framework

3. Enhance active participation of plastic manufacturers and communities in the implementation of policy measures

- Reduce plastic consumption
- Enhance reuse and recyclability
- Encourage the usage of alternative materials



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EurAqua's position on plastics research:

Knowledge gaps, research priorities and action roadmap.

Plastics research has been identified by EurAqua as one of the research priorities that will be addressed by the network in the coming years through in-kind and/ or external funding projects. As explained below, plastics pose serious environmental threats, leading to the pollution of ecosystems, consequences for biodiversity or even potential damages to human health. It is in this context that EurAqua welcomes the European Commission's report "A circular economy for plastics; insights from research and innovation to inform policy and funding decisions" and the "EU Plastics Strategy", where the Commission expresses its commitment towards the transition towards a more circular and environmentally-friendly economy through, amongst others, important investments in research for systemic innovation.

On the occasion of its 25th anniversary event, EurAqua wishes to express its full availability to support the Commission in the implementation of the EU Plastics Strategy through advocacy activities and the transfer of knowledge and technologies.

MEMBER ORGANISATIONS: CEDEX (FRANCE) - CEH (GERMANY) - CNR (ITALY) - DELTARES (NETHERLANDS) - GEOECOMAR (ROMANIA) - IVL (SWEDEN) - IRSA (ITALY) - NIVA (NORWAY) - TALTECH (CZE REPUBLIC) - VUV TGM (CZE REPUBLIC) - VUB (BELGIUM) - WRI (AUSTRIA) - ZEMR (SLOVAKIA)

