

# Plastic pollution in Indonesia and possible risks to coastal sea food species and human health

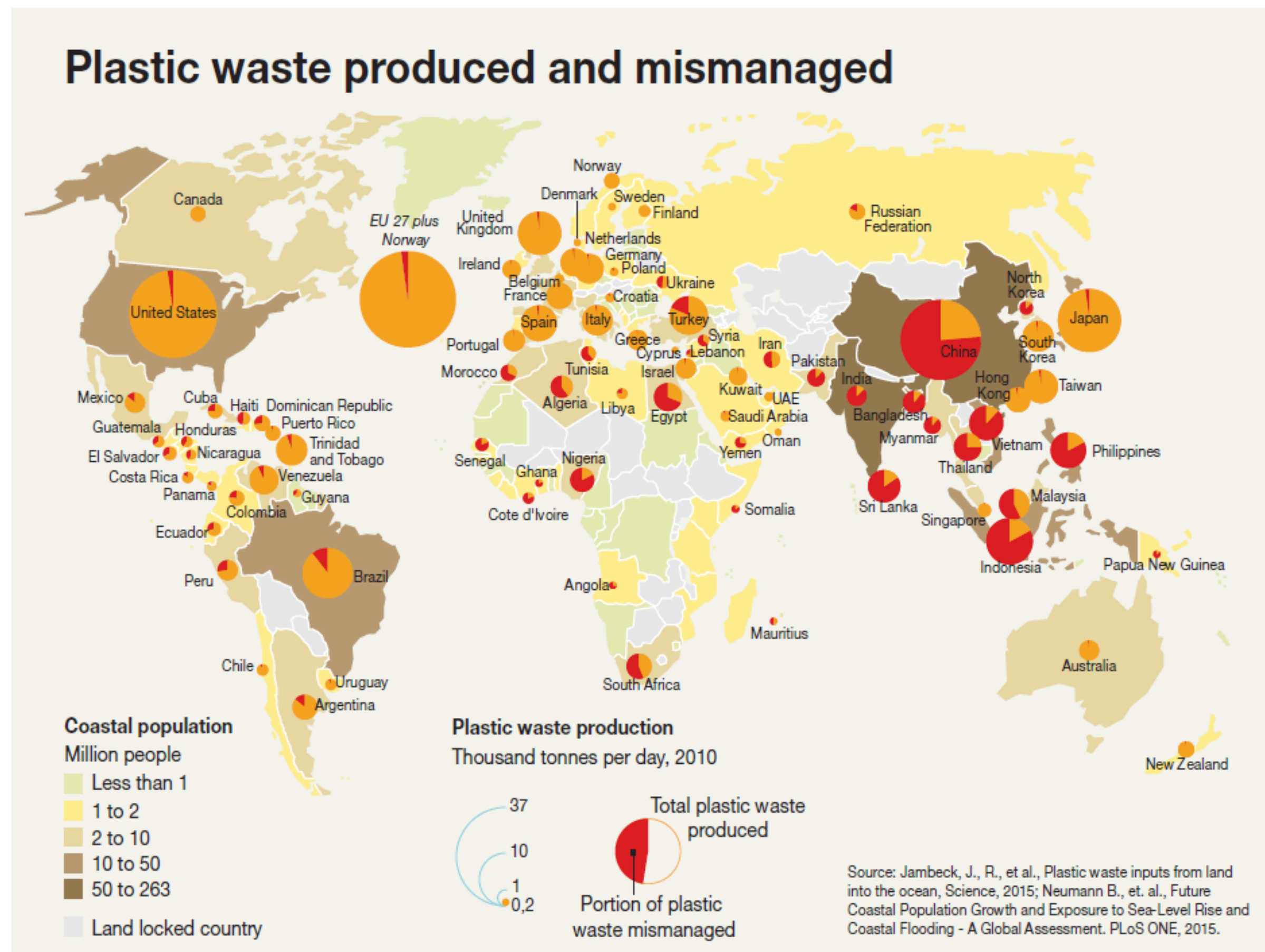
Inneke Hantoro<sup>1</sup>, Ansje Löhr<sup>2</sup>, Ad Ragas<sup>2</sup>, Budi Widianarko<sup>1</sup>, Frank Van Belleghem<sup>2</sup>

<sup>1</sup> Department of Food Science, Soegijapranata Catholic University, Semarang, Indonesia

<sup>2</sup> Faculty of Management, Science and Technology, Department of Science, Open Universiteit, The Netherlands

## Plastic pollution In Indonesia

Plastic pollution is a serious and growing issue in Indonesian rivers and coastal seas. A recent study by Jambeck *et al.* (2015) indicates that Indonesia is the second largest source of plastic waste dumped into the sea worldwide. Part of this waste originates from urbanized deltas, where it is transported by rivers to the coastal seas (Figure 1).



10 Marine Litter Vital Graphics

Figure 1. Estimated quantities of plastic waste produced and mismanaged in the world (Jambeck *et al.*, 2015)

## Research aim

1. To detect and characterize microplastics in three economically important seafood species from the northern coast of Central Java, Indonesia, i.e. blood cockle (*Anadara granosa*), milk fish (*Chanos chanos*) and Nile tilapia (*Oreochromis niloticus*)
2. To define microplastics as food contaminants by determining the action level in seafood species
3. To develop a risk assessment for the novel contaminant based on toxicological parameters relevant for food safety.



## Research questions

1. Are coastal seafood species in Indonesia been polluted by microplastics?
2. Can we consider microplastics in seafood as food contaminants?
3. What are the toxicokinetic characteristics of microplastics?
4. How to develop risk assessment of microplastics using food safety relevant toxicological parameters?

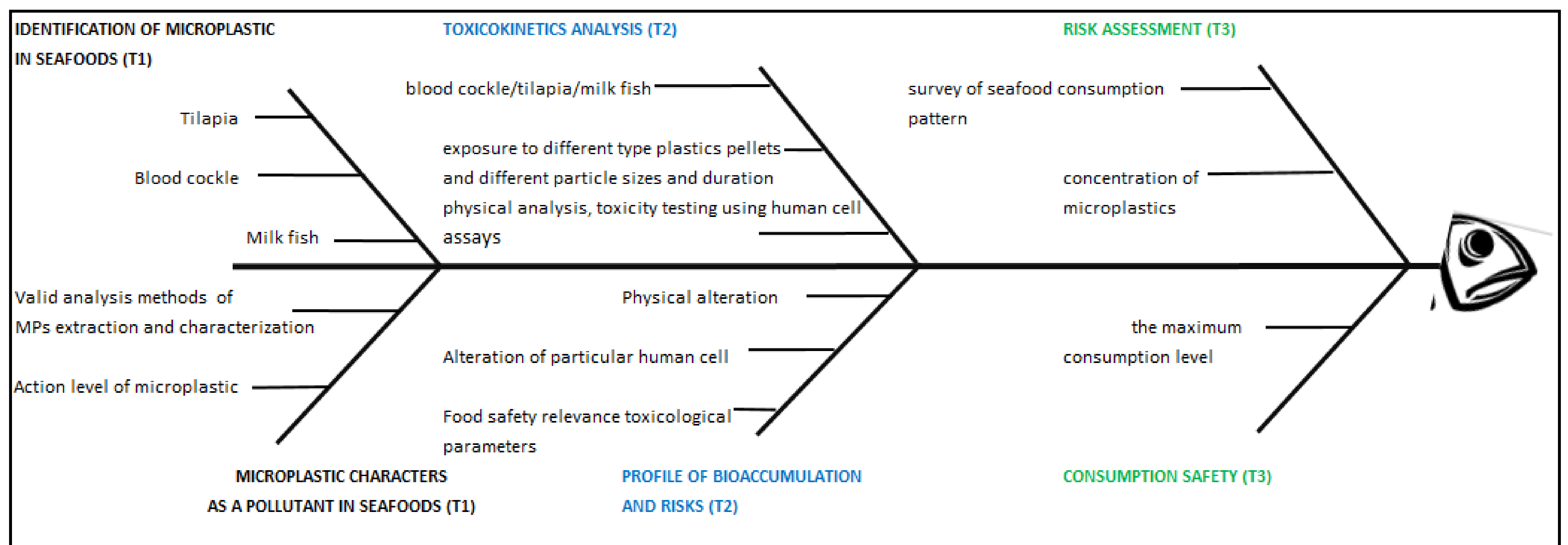


Figure 2. The three years scheme of the research

## Microplastic

The plastic fragments with size smaller than 5 mm are categorized as microplastics. Due to the small size of the particles, microplastics can be ingested by many seafood species (such as fish, bivalves, and shrimp) and lead to the various adverse effects to the organisms (GESAMP, 2016).



## References

- Jambeck, J.R., R. Geyer, C. Wilcox, T. R. Siegler, M. Perryman, A. Andrady, R. Narayan, K. L. Law. (2015). Plastic waste inputs from land into the ocean. *Science*, 347 (6223): 768-771.
- GESAMP. (2016). Sources, fate, and effects of microplastics in the marine environment: part two of global assessment. (Kershaw, P.J., and Rochman, C.M., eds). (IMO/FAO/UNESCO-IOC/UNIDO/WMO/IAEA/UN/UNEP/UNDP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection). Rep. Stud. GESAMP No. 93, 220p.

