

# The Global Scene

A global perspective on understanding the sources,  
distribution, fate & effects of microplastics

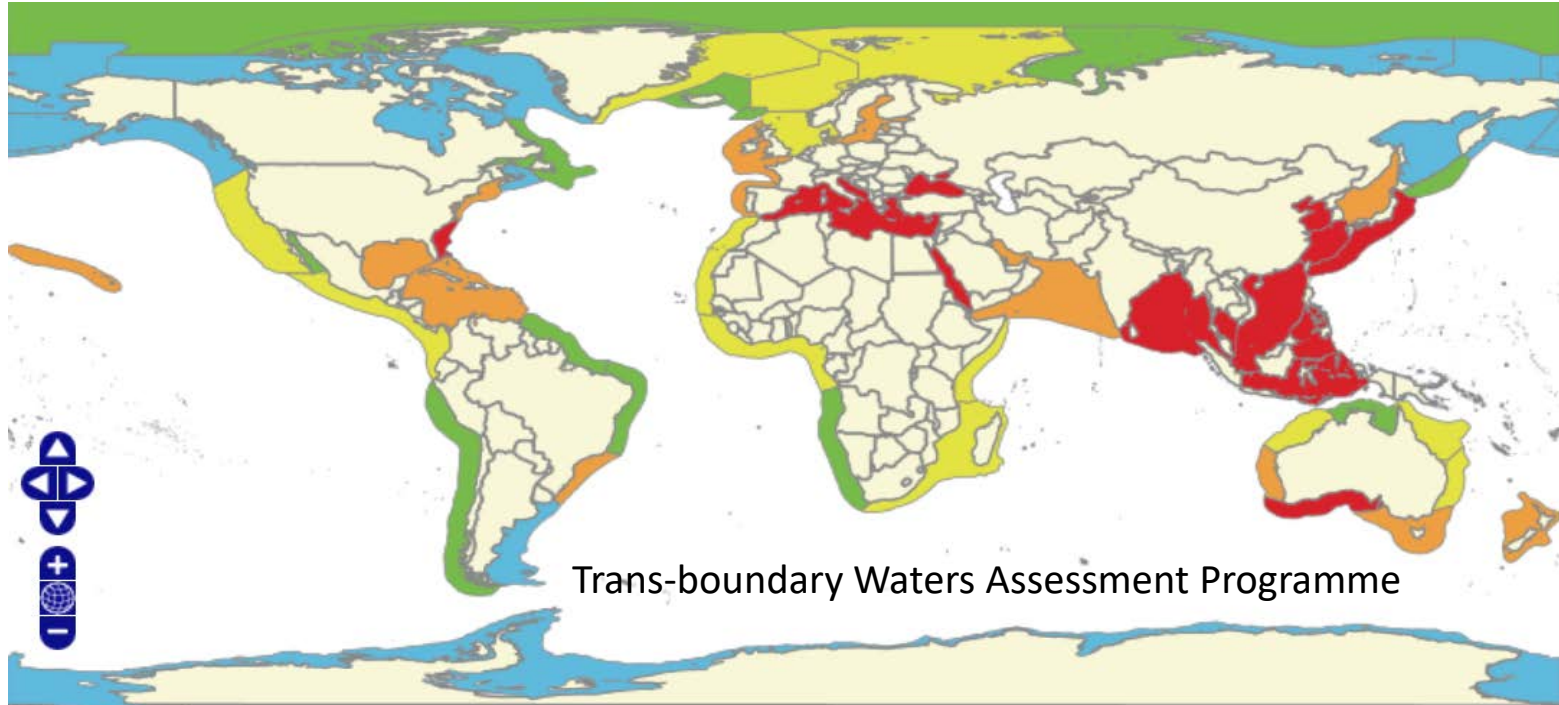
Peter Kershaw

UK-based independent consultant – marine environmental protection

Co-chair GESAMP Working Group 40 – Sources, fate and effect of  
marine plastic litter and microplastics, 2012 - present

# The global distribution of microplastics

Relative contamination of 64 Large Marine Ecosystems – based on estimates inputs



Input estimates based partly on population density & river flows, Lebreton et al. 2012

Reproduced in UNEP 2016



# WG40 next steps– creating a risk assessment framework to support evidence-based decision-making – 2021 - 2023

## Terms of Reference:

1. Review and further develop risk assessment methods for marine litter and microplastics & identify data needs – based on the outcome of the 2019 GESAMP risk workshop\*
2. Assess the effects of marine litter and macro-plastics – e.g. human wellbeing, biodiversity & animal welfare, food security, direct & indirect cost to different sectors, risk perception & communication
3. Assess the effects of nano- & micro-plastics – e.g. chemical contaminants, biodiversity, human health, risk perception & communication
4. Assess the effects of transfer of biota – e.g. human welfare, biodiversity, direct & indirect costs, pathogens, risk perception & communication
5. Carry out initial risk assessment (based on ToRs 1 -4)

\*to include social, environmental and economic aspects

# Agenda 2020 and the Sustainable Development goals



14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, including marine debris and nutrient pollution

Indicator 14.1.1a –marine plastic litter:

- Shorelines
- Water column
- Seafloor
- Ingested by biota



# Agenda 2020 and the Sustainable Development goals

## Essential goals to achieve SDG 14.1.1b



**Goal 6** - ensure availability & sustainable management of water & sanitation for all

- 6.3 By 2030, the **proportion of untreated wastewater should be halved**



**Goal 9** – build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation

- 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with ..... greater **adoption of clean and environmentally sound technologies** and industrial processes .....



**Goal 11** – make cities and human settlements inclusive, safe, resilient and sustainable

- 11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and **municipal and other waste management**



**Goal 12** – ensure sustainable consumption and production patterns

- 12.4 By 2020, achieve the environmentally **sound management of chemicals and all wastes** throughout their life cycle,

# United Nations Environment Assembly

## Resolutions:

### UNEA-1 2014

- 1/6 Marine plastic debris and microplastics

### UNEA-2 2016

- 2/11 Marine plastic litter and microplastics

### UNEA-3 2018

- 3/7 Marine litter and microplastics

### UNEA-4 2019

- 4/7 2020 Marine plastic litter and microplastics

## Outcomes:

- Study on marine plastic debris & marine microplastics
- Assess effectiveness of governance mechanisms
- AHEG\* convened
- Barriers to combating marine litter & microplastics
- AHEG extended to UNEA-5
- Stock-taking of existing activities/actions
- Assessment of effectiveness of existing & potential response options

\*AHEG – ad hoc open-ended expert group – ‘to further examine the barriers to and options for combating marine plastic litter and microplastics from all sources, especially land-based sources’

## Global Plastics Agreement?

- Ministerial Statement (2<sup>nd</sup> September 2021):



Federal Ministry  
for the Environment, Nature Conservation  
and Nuclear Safety

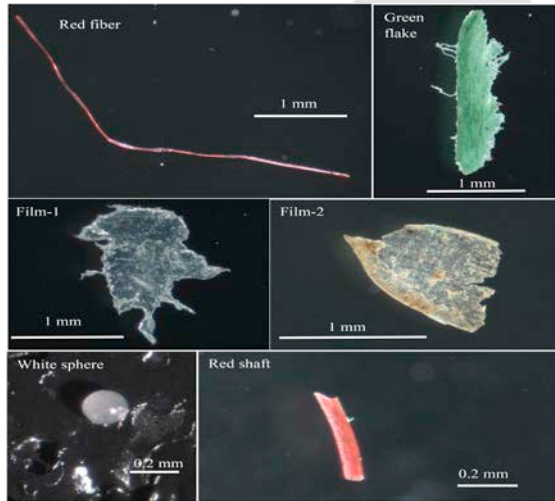


*'...we recognize the need for urgent action and affirm our commitment to take the next decisive steps by working towards the timely establishment of an Intergovernmental Negotiating Committee on Marine Litter and Plastic Pollution at UNEA-5.2, with the aim of achieving a new Global Agreement with ambitious goals, wide participation and means of implementation.'* (Ecuador, Germany, Ghana & Vietnam – endorsed by other governments)

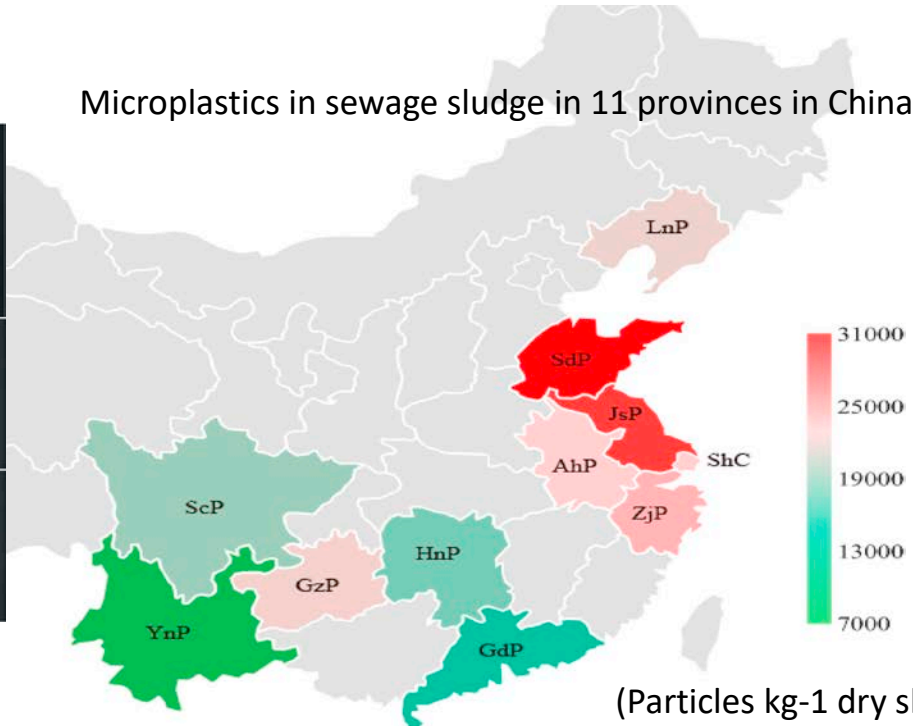
- Draft resolution on an internationally legally binding instrument on plastic pollution – proposed by the Governments of Peru & Rwanda

# Some final thoughts/questions

- Justification for improving wastewater collection & treatment? – human health, disease prevention, removal of nutrients, re-use of organic matter?
- Fate of microplastics in sewage sludge - implications for use on agricultural land?



Microplastics in sewage sludge in 11 provinces in China



(Li et al. 2018)

(Particles kg<sup>-1</sup> dry sludge)



Thank you!