

FORUM ON THE MULTI-STAKEHOLDER PLATFORM ON MARINE LITTER AND MICROPLASTICS

ISWA MARINE LITTER TASK FORCE

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13 JULY 2021

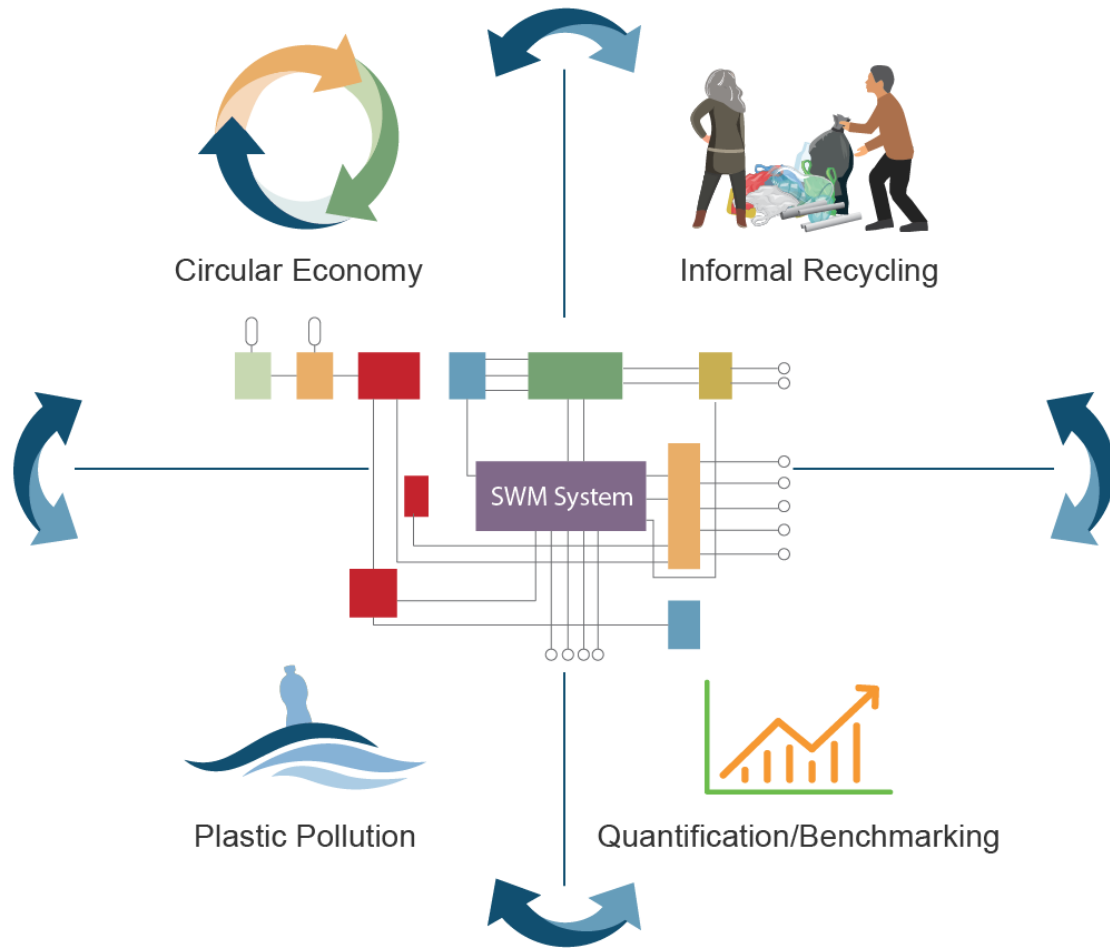
The Ministry of the Environment Japan (MoEJ)
United Nations Environment Programme (UNEP)



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plasticpollution.leeds.ac.uk



2nd

in the UK for research power
Latest Research Excellence Framework

44th

in the world for Civil and Structural Engineering

QS World University Rankings 2021

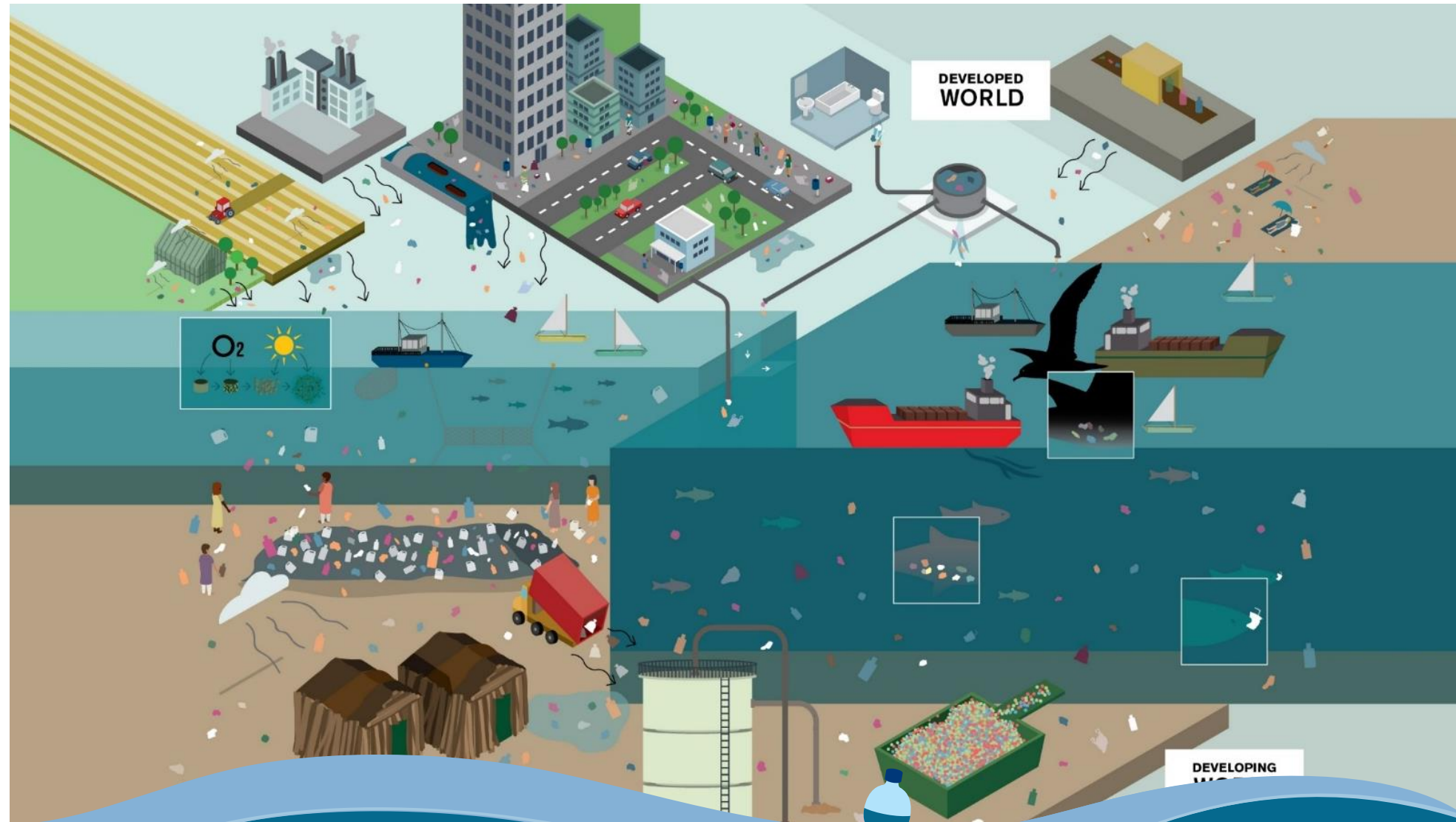
3rd

in the UK for Civil Engineering

Guardian University Guide 2021

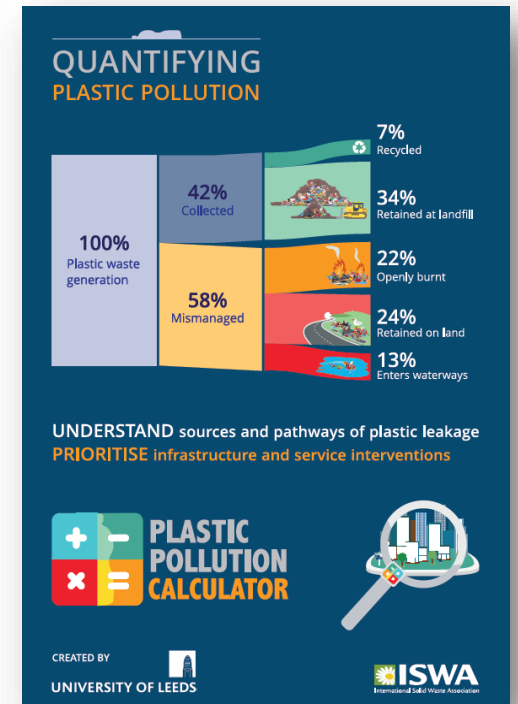
PLASTIC POLLUTION SOURCES

COMPLEX
DISPERSED
DIFFERENTIATED
SOURCES
PATHWAYS
AND SINKS





PLASTIC POLLUTION CALCULATOR



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ISWA MARINE LITTER TASK FORCE

IN PARTNERSHIP WITH



City of Rotterdam



AVFALL SVERIGE



SUPPORTED BY



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AN INITIATIVE OF



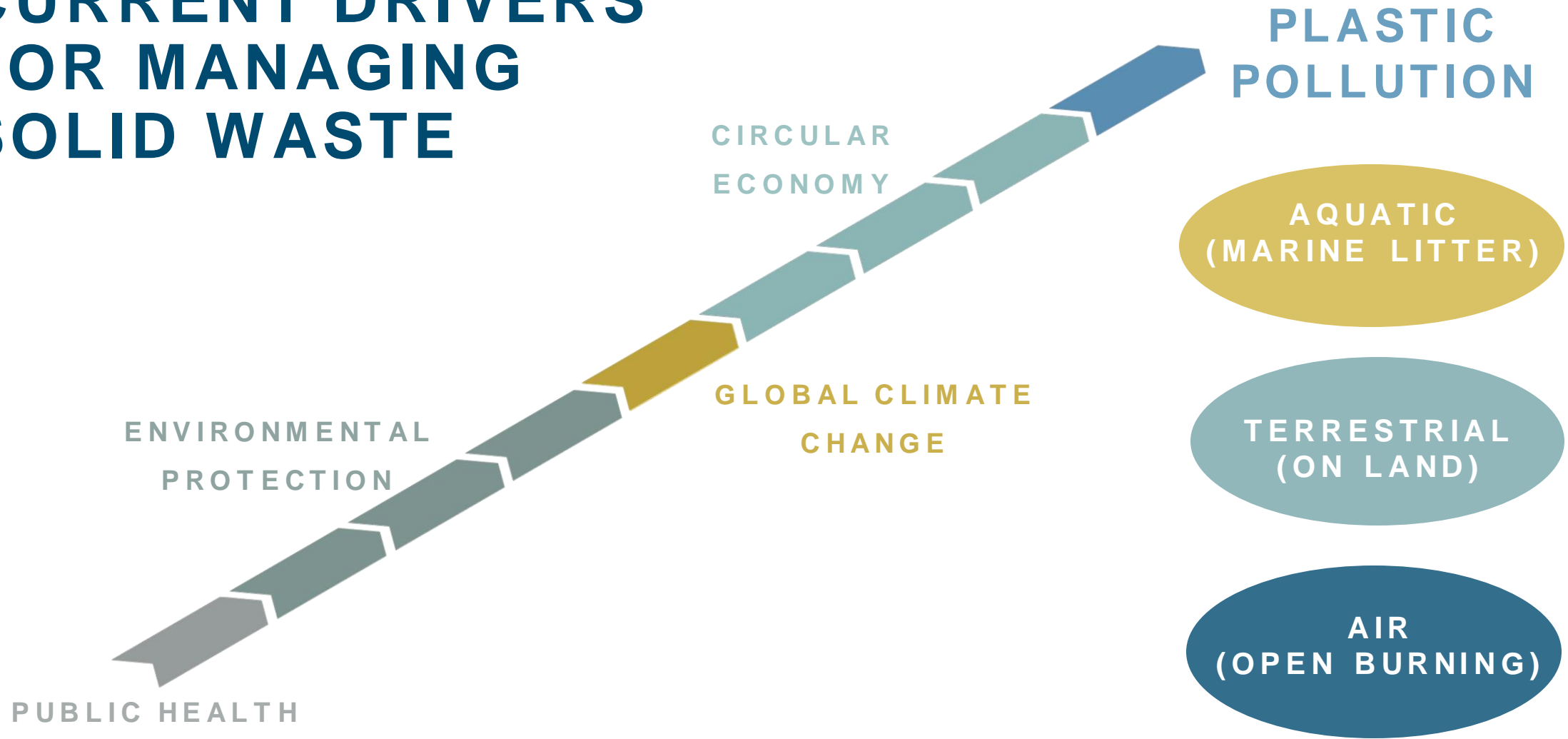


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CURRENT DRIVERS FOR MANAGING SOLID WASTE

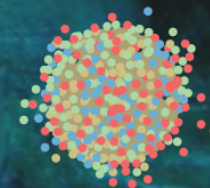


INTERVENE BEFORE MACROPLASTICS TRANSFORM INTO MICROPLASTICS

MACROPLASTIC



MICROPLASTIC



3 KEY STATEMENTS

PLASTIC POLLUTION
A KEY DRIVER

NOW

FOR
WASTE &
RESOURCES
MANAGEMENT

PREVENTING
PLASTIC POLLUTION
IS POSSIBLE

VIA

IMMEDIATE
DECISIVE AND
CONCERTED
EFFORTS

QUANTIFICATION
BASELINE AND
BENCHMARK
TOOLS

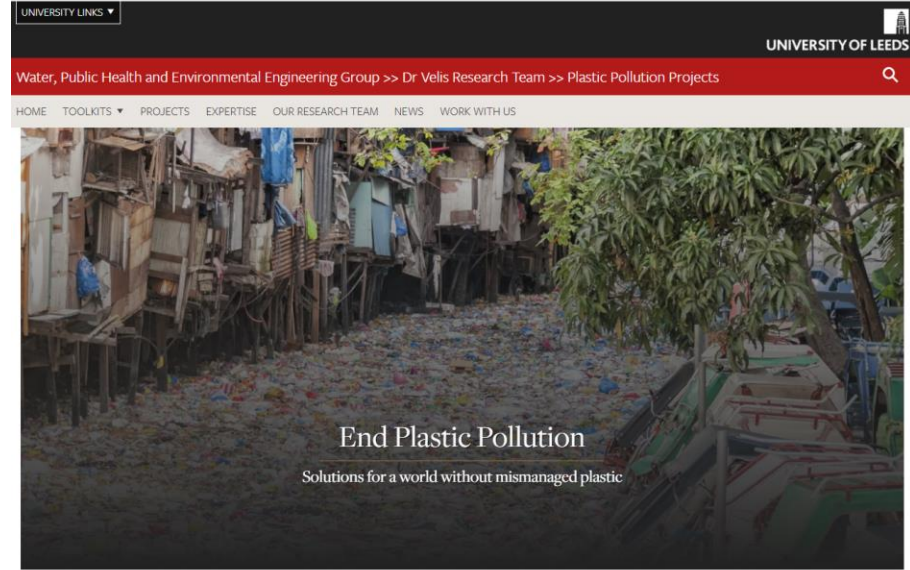
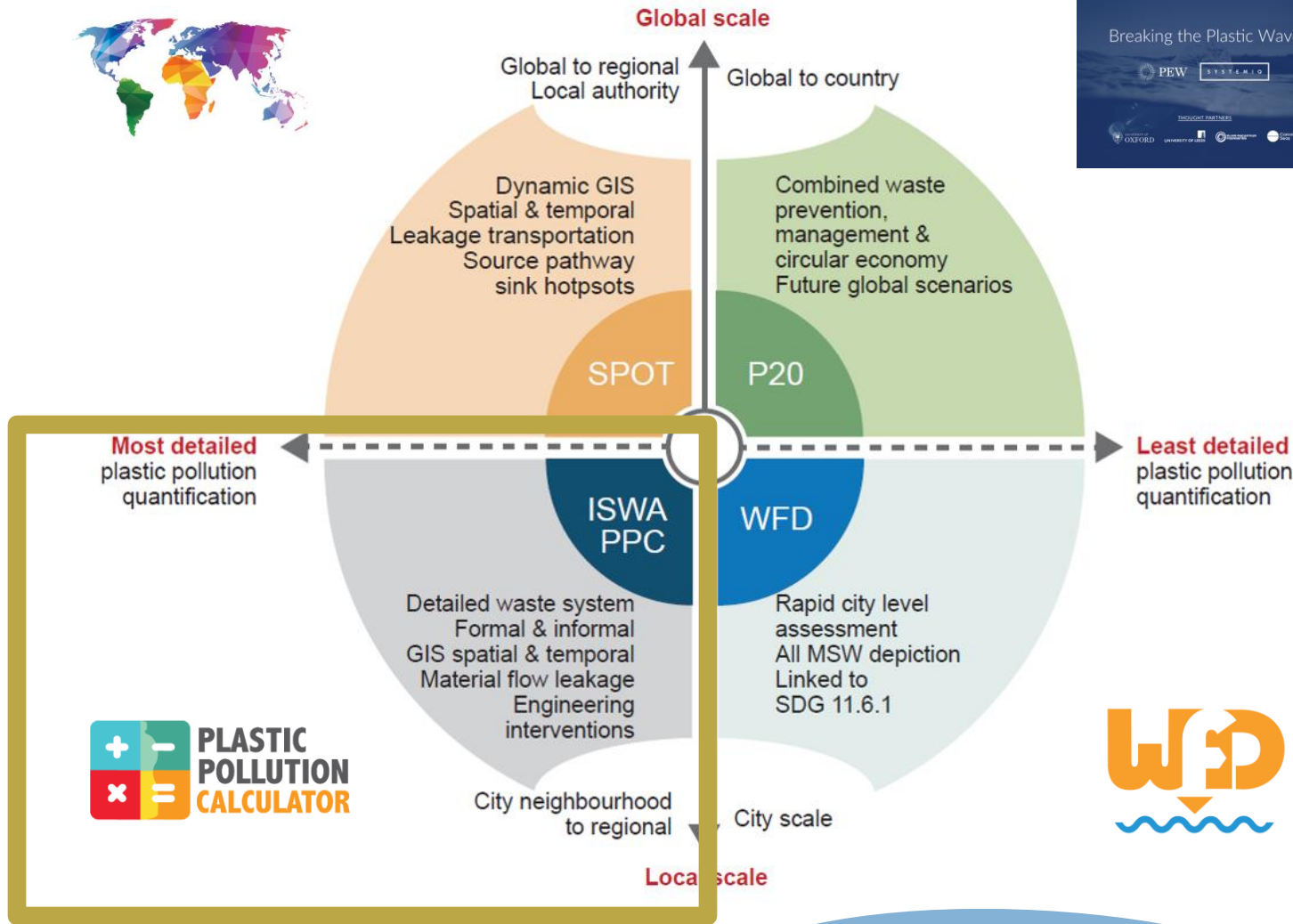
ALLOW FOR

EVIDENCE-BASED
AND EFFECTIVE
ACTION



WHERE TO START?

TOOLKITS TO QUANTIFY PLASTIC POLLUTION



NEW! – Check out our recently published research & global model P20

We conduct interdisciplinary research and innovate to resolve some of the grand challenges of our times: plastic pollution is largely due to failures of waste and resource management systems and limited circular economy opportunities for after-use items and materials. In particular across the Global South, 2-3 billion of people do not have access to waste collection and safe disposal services and infrastructure – as our analysis for the seminal UNEP Global Waste Management Outlook elaborated.

“Here, we showcase research efforts to understand, conceptualise and quantitatively model plastics pollution from solid waste across the world, with emphasis in the Global South.”

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Plastic in drains to waterways																								
Item ID	TOTALS			Carrier bags			Refuse sacks			Packaging wrap			Other films and bags			Beverage bottles			Chemical bottles			Food containers		
	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.			
31 1 January	3	8	12	0	1	1	0	0	0	1	2	3	0	1	1	0	1	1	0	0	0	0		
28 2 February	2	5	9	0	1	0	0	0	0	1	1	3	0	1	0	1	1	0	0	0	0	0		
31 3 March	3	5	11	0	1	1	0	0	0	1	2	3	0	1	1	0	1	1	0	0	0	0		
30 4 April	2	5	11	0	1	1	0	0	0	1	1	3	0	1	1	0	1	1	0	0	0	0		
31 5 May	3	6	11	0	1	1	0	0	0	1	2	3	0	1	1	0	1	1	0	0	0	0		
30 6 June	2	5	10	0	1	1	0	0	0	1	1	3	0	1	0	1	1	0	0	0	0	0		
31 7 July	2	5	9	0	1	1	0	0	0	1	1	3	0	1	0	1	1	0	0	0	0	0		
31 8 August	2	5	10	0	1	1	0	0	0	1	1	3	0	1	1	0	1	1	0	0	0	0		
30 9 September	3	5	11	0	1	1	0	0	0	1	2	3	0	1	1	0	1	1	0	0	0	0		
31 10 October	3	6	13	0	1	1	0	0	0	1	2	4	0	1	1	0	1	1	0	0	0	0		
30 11 November	3	7	14	0	1	2	0	0	0	1	2	4	0	1	1	0	1	2	0	0	0	0		
31 12 December	3	7	15	0	1	2	0	0	0	1	2	4	0	1	2	0	1	2	0	0	0	0		

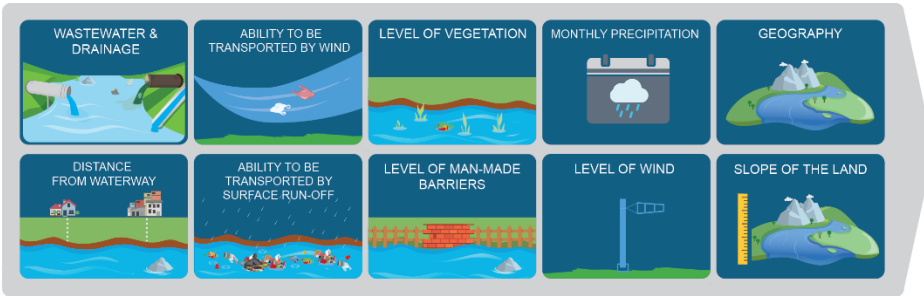
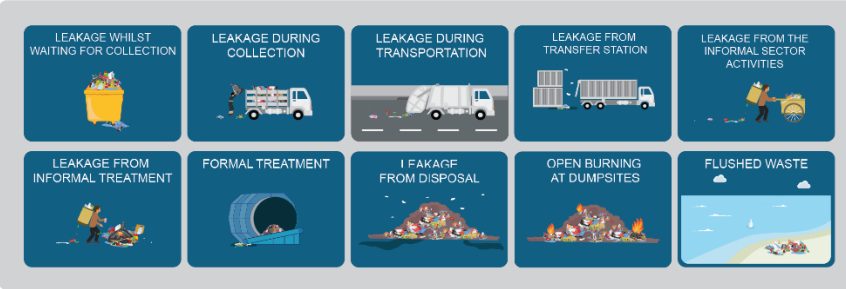
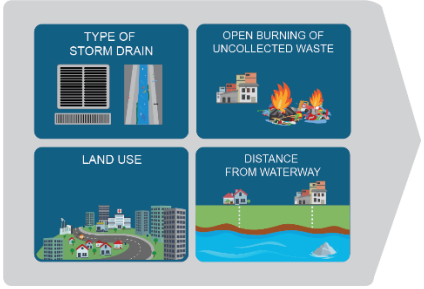


PLASTIC POLLUTION CALCULATOR

ESTABLISH
BASELINE AND
BENCHMARK

QUANTIFY
SOURCES AND
HOTSPOTS

PRIORITISE
AREAS AND
INTERVENTIONS



PLASTIC POLLUTION CALCULATOR





FROM INFORMAL SETTLEMENTS

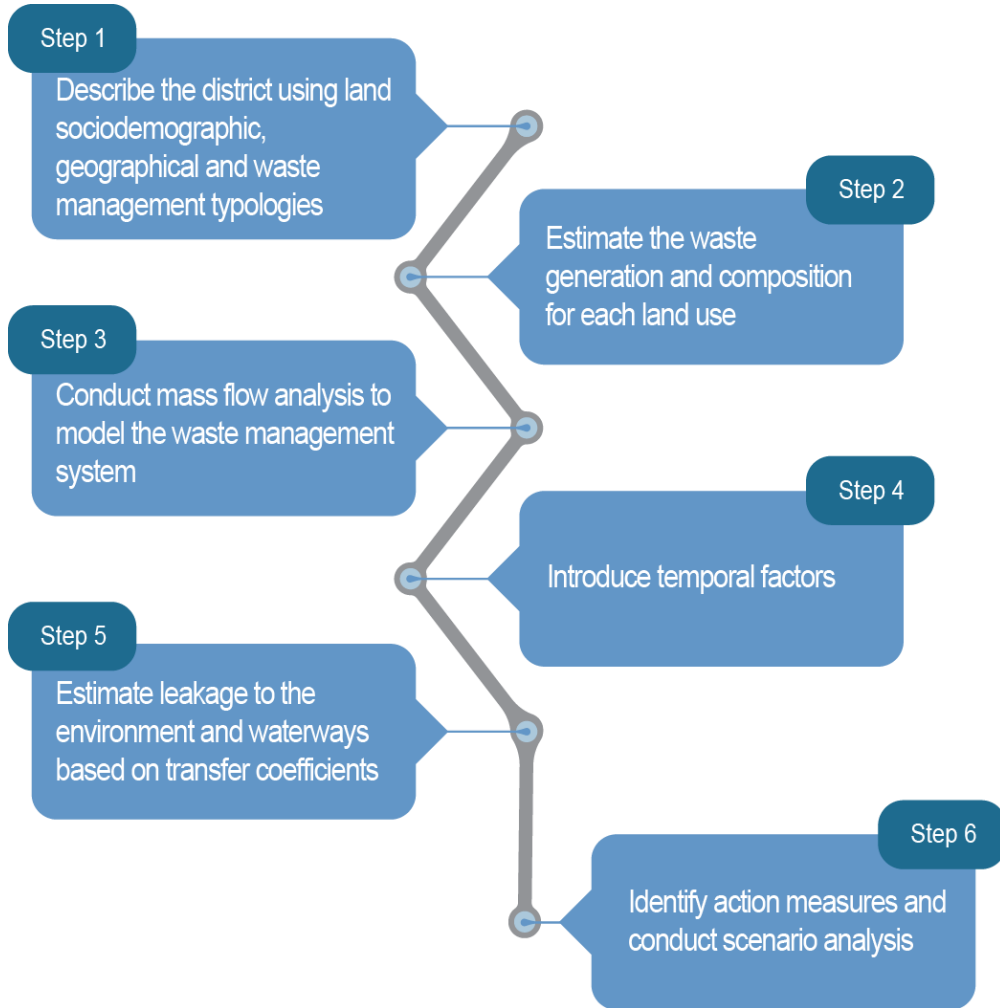
Uncollected waste, open burning, indiscriminate dumping and open sewers



TO DOWNTOWN CITY DISTRICTS

Littering and increased tourism activities

HOW DOES IT WORK?



CRITICAL TO QUANTIFY

WASTE GENERATION

An illustration showing three blue trash bins filled with various types of waste, including plastic bottles, paper, and food scraps.



OPEN BURNING OF UNCOLLECTED WASTE

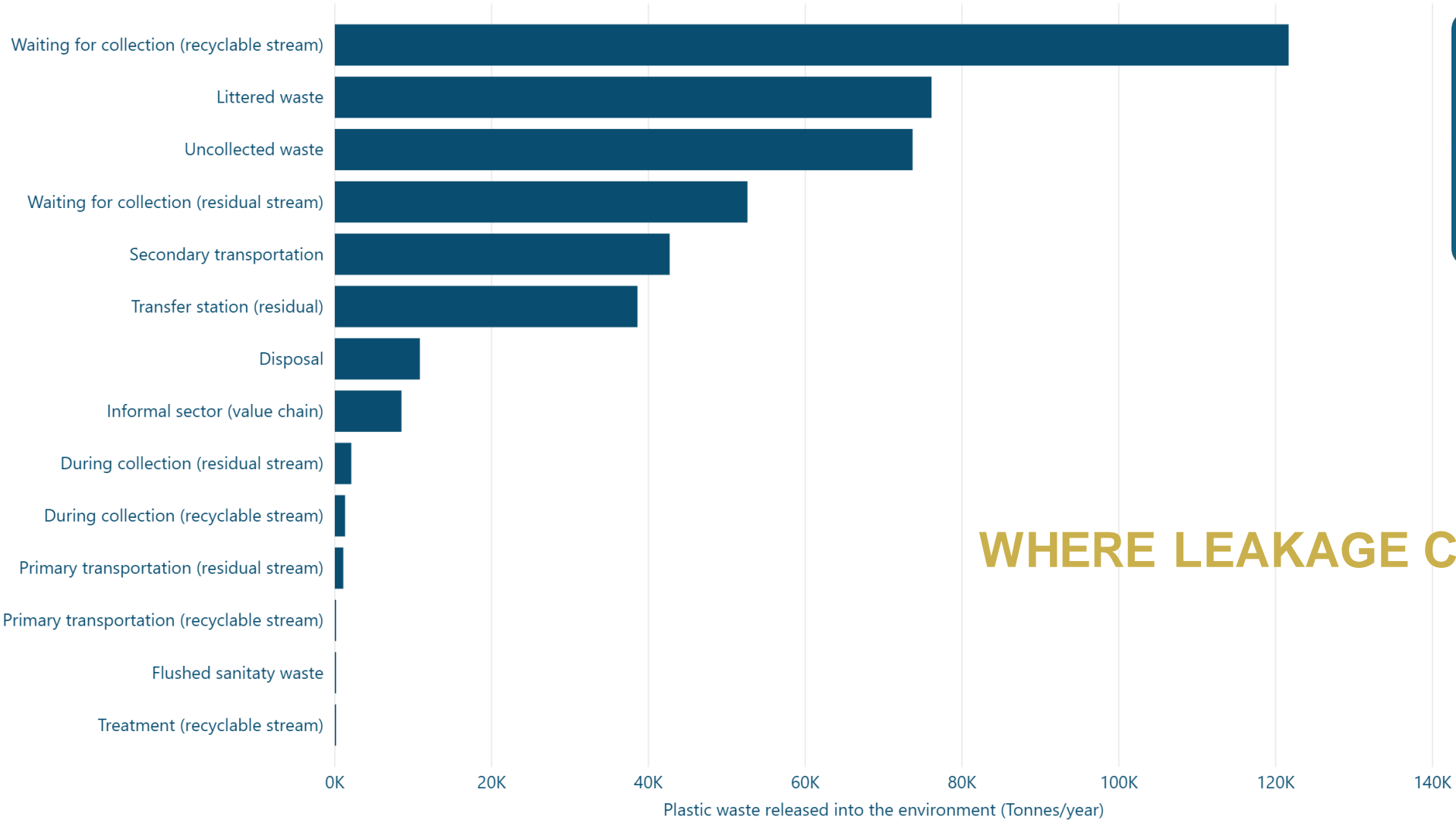
An illustration showing a residential building on the left and a pile of waste on the right that is being burned, with large flames rising from the pile.



INFORMAL SECTOR

An illustration of a person pushing a yellow cart filled with various items, including a large yellow bag, representing the informal waste sector.





WHERE LEAKAGE COMES FROM?



IMPORTANT TO MEASURE AT AN ITEM-LEVEL



IMPORTANT TO CONSIDER PLASTIC POLLUTION AT AN ITEM-LEVEL

DIFFERENT:

- Value (chance of targeted for recycling/ informal collection)
- Probability of emission
- Probability of movement

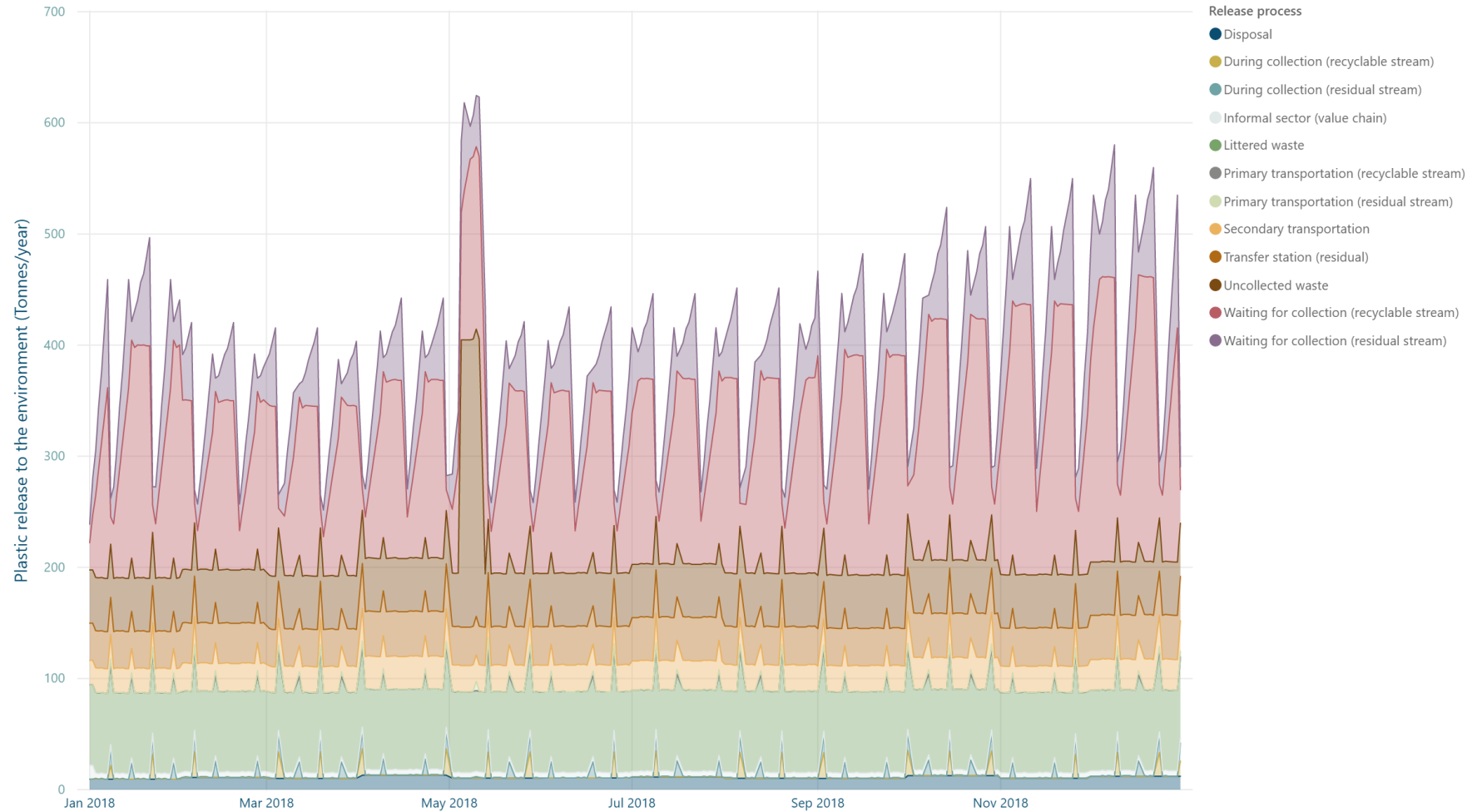
WHICH PLASTIC ITEMS POLLUTE MOST?



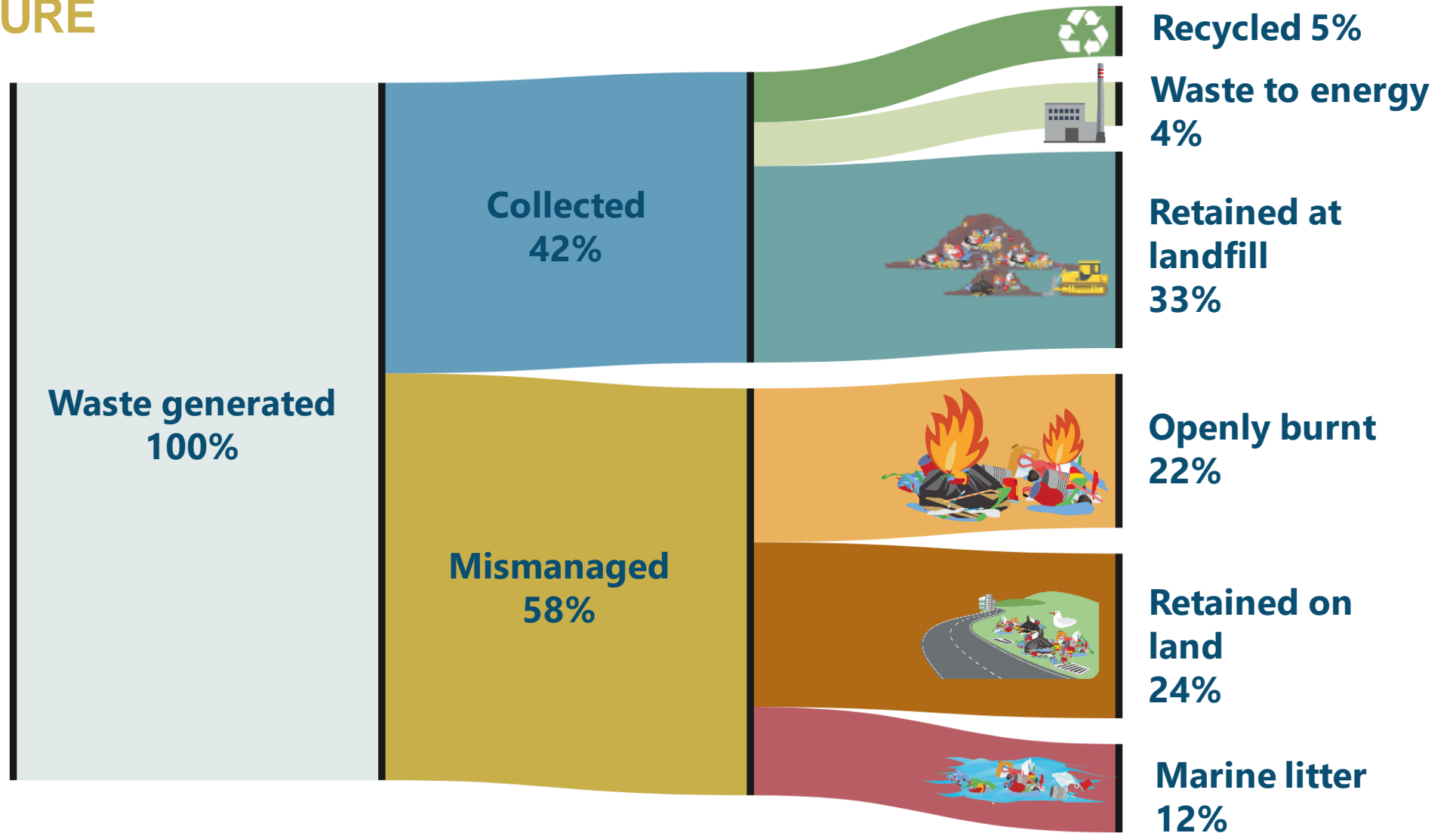
Waste Type	Littered waste	Fly-tipped waste	Flushed sanitary waste	Waiting for collection (residual)	Waiting for collection (recyclables)	During collection (residual)	During collection (recyclables)	Informal collection (wind)	Informal collection (dumped)	Primary transportation (residual)	Primary transportation (recyclables)	Transfer station (residual)	Transfer station (recyclables)	Transportation to treatment (res)	Transportation to treatment (recyc)	Treatment (residual)	Treatment (recyclables)	Secondary transportation	Disposal
Plastic bags	Large			Large	Very Large	Small	Small	Small	Small	Small		Large						Large	Small
Gloves			Large	Large	Large	Small	Small			Small		Small						Small	Small
Sponges	Small			Large	Large	Small	Small	Small	Small	Small		Large						Large	Small
Bottles	Large			Small	Small	Small	Small	Small	Large	Small		Small						Small	Small
Cleaning products				Small	Small	Small	Small			Small		Small						Small	Small
Food containers	Large			Large	Large	Small	Small	Small	Large	Small		Small						Large	Small
Dishes	Large			Large	Very Large	Small	Small			Small		Large						Small	Small
Cutlery	Large			Large	Large	Small	Small			Small		Small						Small	Small
Other	Small			Small	Small													Small	
Bucket	Large			Small	Small					Small		Small						Large	Small



**TIME EVOLUTION:
(TAKING CLIMATE
AND EVENTS
INTO ACCOUNT)**

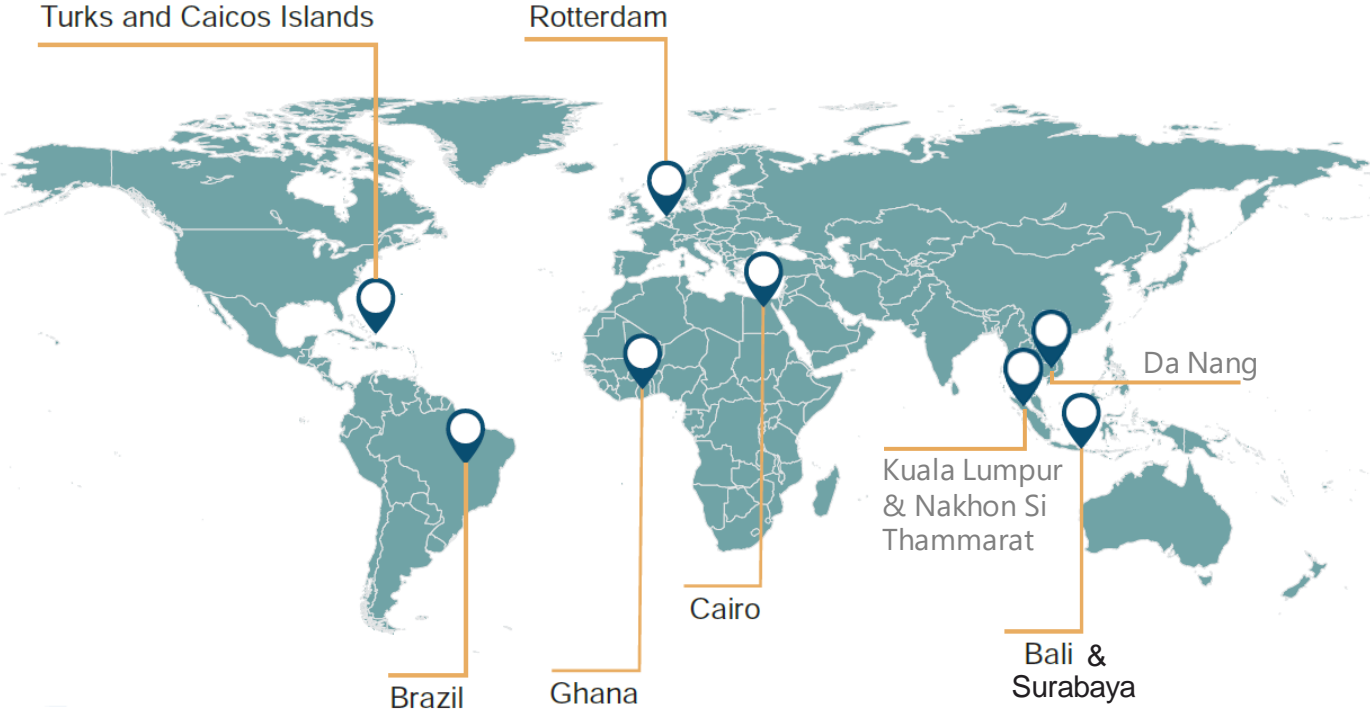


THE BIG PICTURE



4

Existing collaborations / projects



Applied by major organisations all across the world in successful case studies



SWEDISH ENVIRONMENTAL PROTECTION AGENCY



City of Rotterdam



Norwegian Ministry of Foreign Affairs



Developed on world-leading science by experts on waste and resource management at University of Leeds

With calibration via expert elicitation and on-going validation



TARGETING KEY EVENTS & FORA TO SPREAD THE WORD



PERMANENT MISSION
OF ESTONIA TO THE UN



WORLD CONGRESS
ISWA 2019
7-9 October Bilbao, Spain

SIWI WORLD
WATER
WEEK



WILL YOU BE THE NEXT?

KFW DEVELOPMENT FINANCE FORUM - OCEAN'S 21 SOLUTIONS
FRANKFURT, GERMANY 21-22 NOVEMBER 2017

BUSINESS TACKLING OCEAN PLASTIC POLLUTION
LONDON, UK 26-27 OCTOBER 2017



UN
environment

GLOC-3
BALI, INDONESIA 23-27 OCTOBER 2017

LIFE BELOW WATER
MALMÖ, SWEDEN 12-14 OCTOBER 2017

ISWA
2018

SWANA-ISWA WORLD CONGRESS
BALTIMORE, US 22 SEPTEMBER 2017



WORLD WATER WEEK
STOCKHOLM, SWEDEN 26-31 AUGUST 2017



ISWA WORKSHOP
COPENHAGEN, DENMARK 29TH OF JUNE 2017



SUSTAINABLE
DEVELOPMENT **GOALS**

THE OCEAN CONFERENCE
NEW YORK, UN 5-9 JUNE 2017

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MARINE
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ISWA



**PLASTIC
POLLUTION
CALCULATOR**

HOW TO PREVENT PLASTIC POLLUTION IN 4 SEQUENTIAL STEPS

1

UNDERSTAND YOUR
SOURCES AND
AFTER-USE
PRODUCTS

2

QUANTIFY LEAKAGE IN
THE ENVIRONMENT AND
MAIN HOTSPOTS

3

IDENTIFY, RANK AND
PRIORITISE ACTIONABLE
INTERVENTIONS

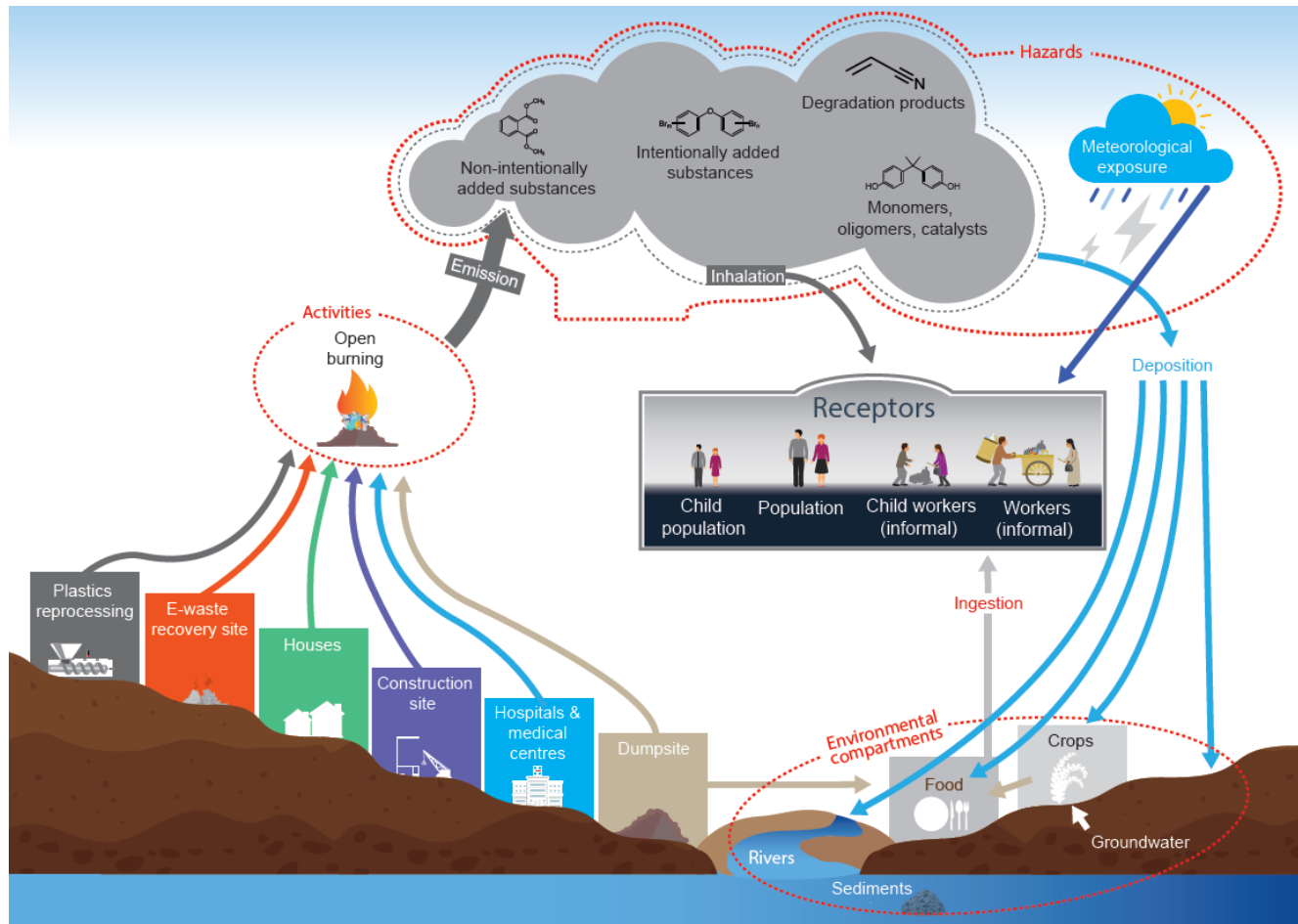
4

BENCHMARK ALL 1-3
STEPS OVER TIME
AND SPACE



NEED TO STOP OPEN BURNING OF PLASTICS

<https://pubs.acs.org/doi/abs/10.1021/acs.est.0c08536>





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