EC/UNEP project “Identifying and quantifying plastic contaminant sources and leakages into the aquatic environment”

WG Toolkit validation meeting

1. Project snapshot

2. Toolkit
- Development
- Final model

3. Open discussion
- Q&A
- Feedback
- Next steps

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12 Jun 2026

Overview

Period of implementation Sep/2023 – Aug/2027

Core objective Establish a practical methodology to identify and quantify sources of plastic pollution in the aquatic environment

Outputs

1. A toolkit to identify and quantify sources/leakages of plastic waste entering aquatic environment

2. Source/leakage inventory of plastics entering the aquatic environment in Kenya applying the toolkit

3. Communication and visibility of the project results through the existing water agreements and a future legally binding agreement on plastic pollution

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Vision

Expected outcome

Information on sources/leakages of plastics entering aquatic environment is available and used to establish baselines/targets/objectives within aquatic plastic pollution management programmes.

Underlying assumption

(i) there is a sufficient scientific basis to develop a practical toolkit

(ii) interests of Member States and communities to use the toolkit are well expressed and linked

External drivers

Increasing plastic waste and increased use of plastics

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Key updates

- Extension confirmed (up to Aug/2027)
- Output 1 completed (toolkit development)
- Output 2 starting (pilot application)
- Soon: toolkit online, outreach activities

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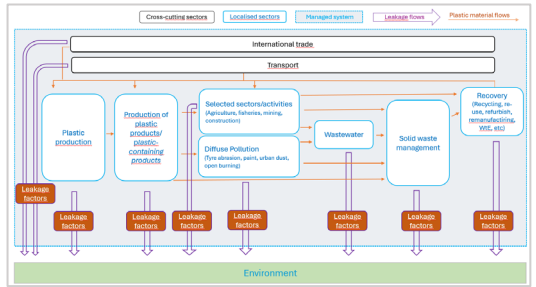
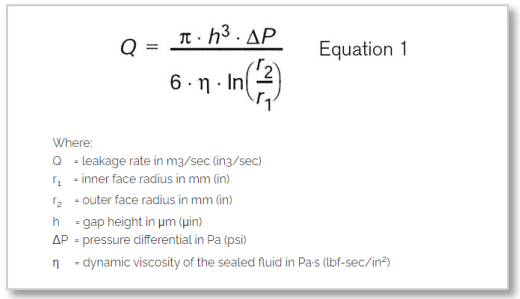
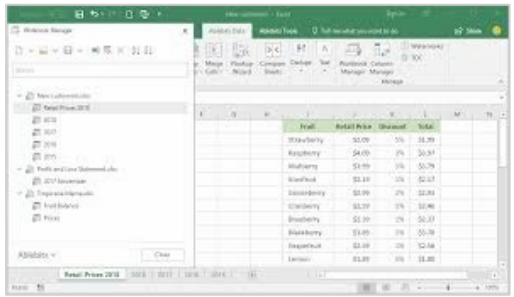
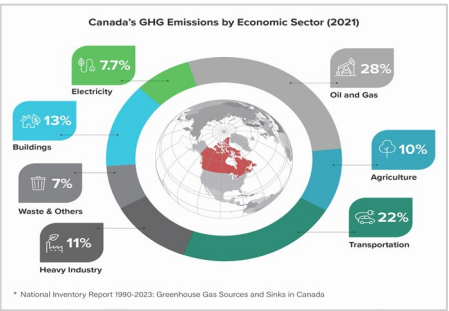
Project implementation

1 Project 2 Toolkit 3 Discussion

Project component	2024	2025	2026	2027
	Output 1 Toolkit development		**Op. 2** Plastic pollution inventory	**Op. 3** Outreach
Activities	**Conceptual framework**	**Toolkit development**	**Toolkit application**	**Follow-up actions**
	- WG establishment - Definition of scope - Toolkit prototype	- Leakage factors - Reference values - Final formulae - Operation mode	- Country coordination - Data collection - Output data - Recommendations	- Toolkit reinforcement - Monitoring data - Analysis reports - Dissemination
				
Documents	Scoping paper	Guiding docs. (v1, 2, 3)	Plastic pollution inventory	Project analysis reports

$$Q = \frac{\pi \cdot h^3 \cdot \Delta P}{6 \cdot \eta \cdot \ln\left(\frac{r_2}{r_1}\right)} \quad \text{Equation 1}$$

Where:
Q = leakage rate in m3/sec (in3/sec)
r_1 = inner face radius in mm (in)
r_2 = outer face radius in mm (in)
h = gap height in µm (µin)
ΔP = pressure differential in Pa (psi)
η = dynamic viscosity of the sealed fluid in Pa·s (lbf-sec/in²)

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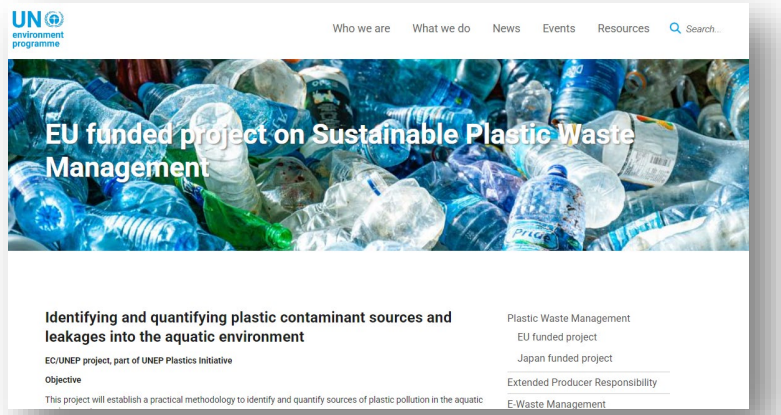
Visibility

Website
+2.3k views from almost 900 users

Social media
Over 8.2k views upon IETC's posts

Material repository
+25 documents uploaded



Total no. of views

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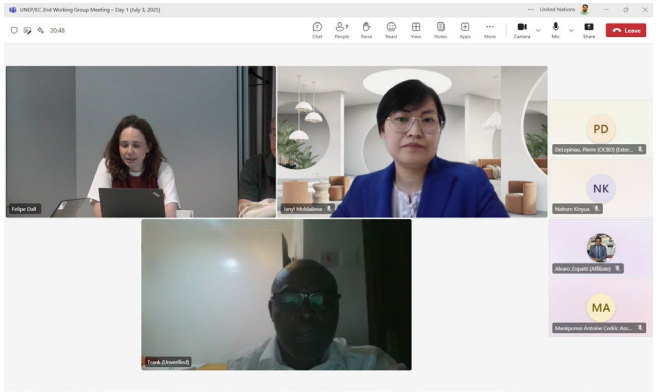
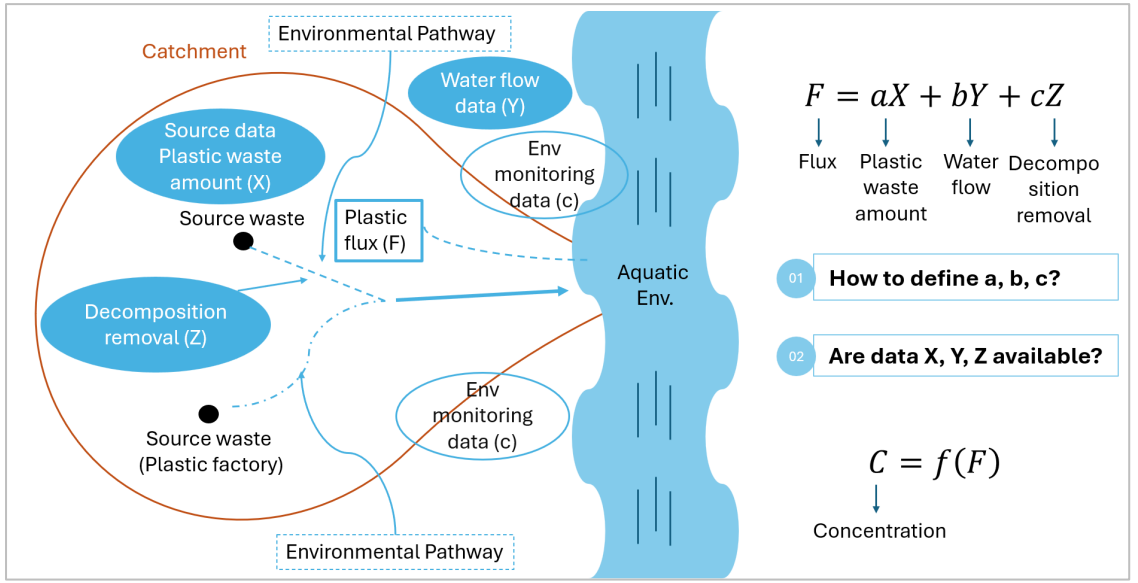
Toolkit development

- Initial conceptualization
- Working Group: two meetings + online iterations
- Further consultations
- Final materials for validation (Guiding document and operational spreadsheet)





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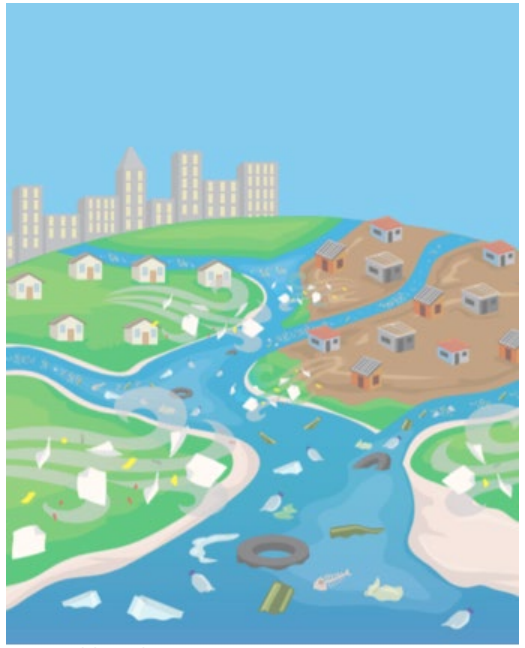
Conceptual framework



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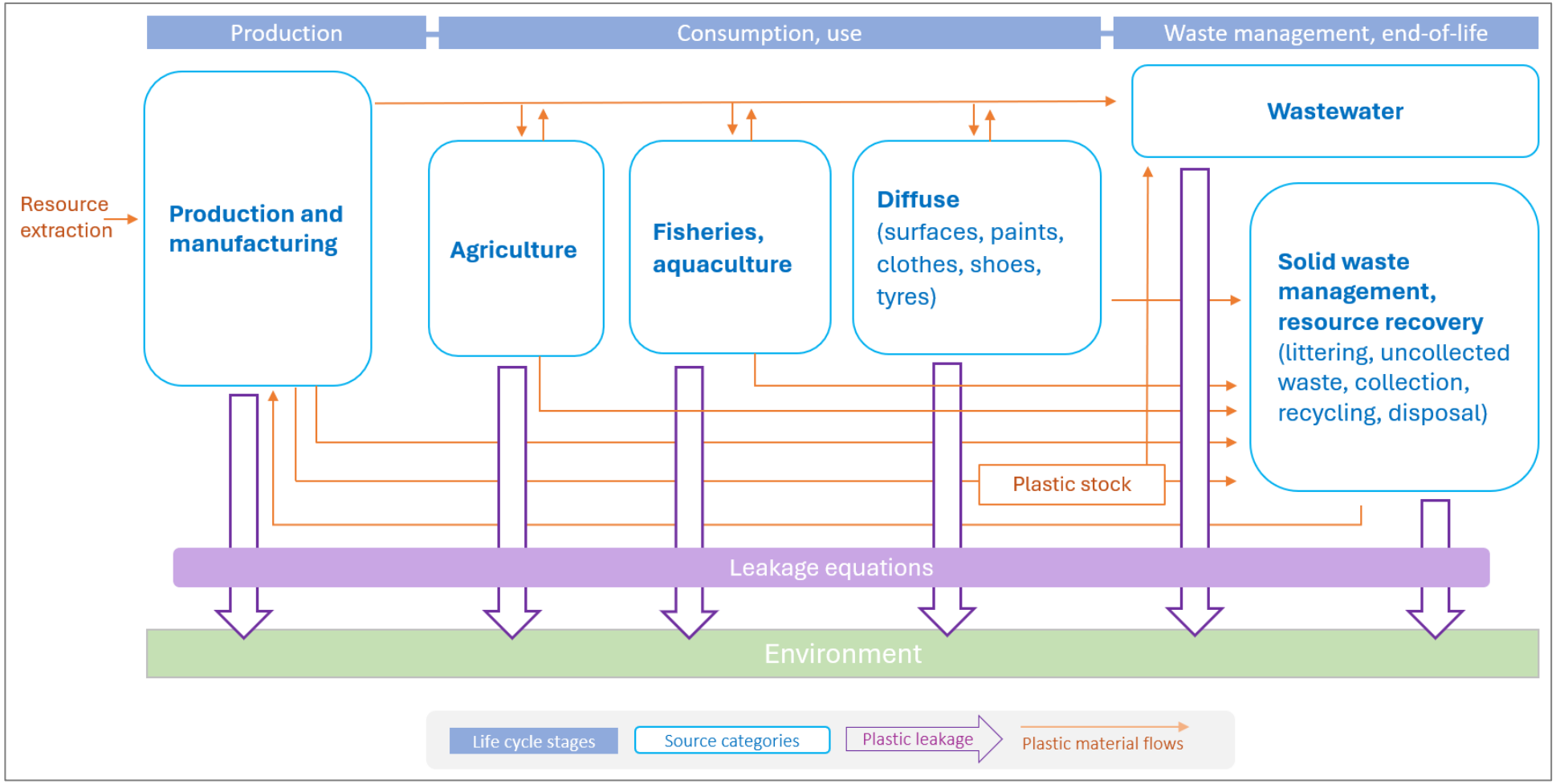

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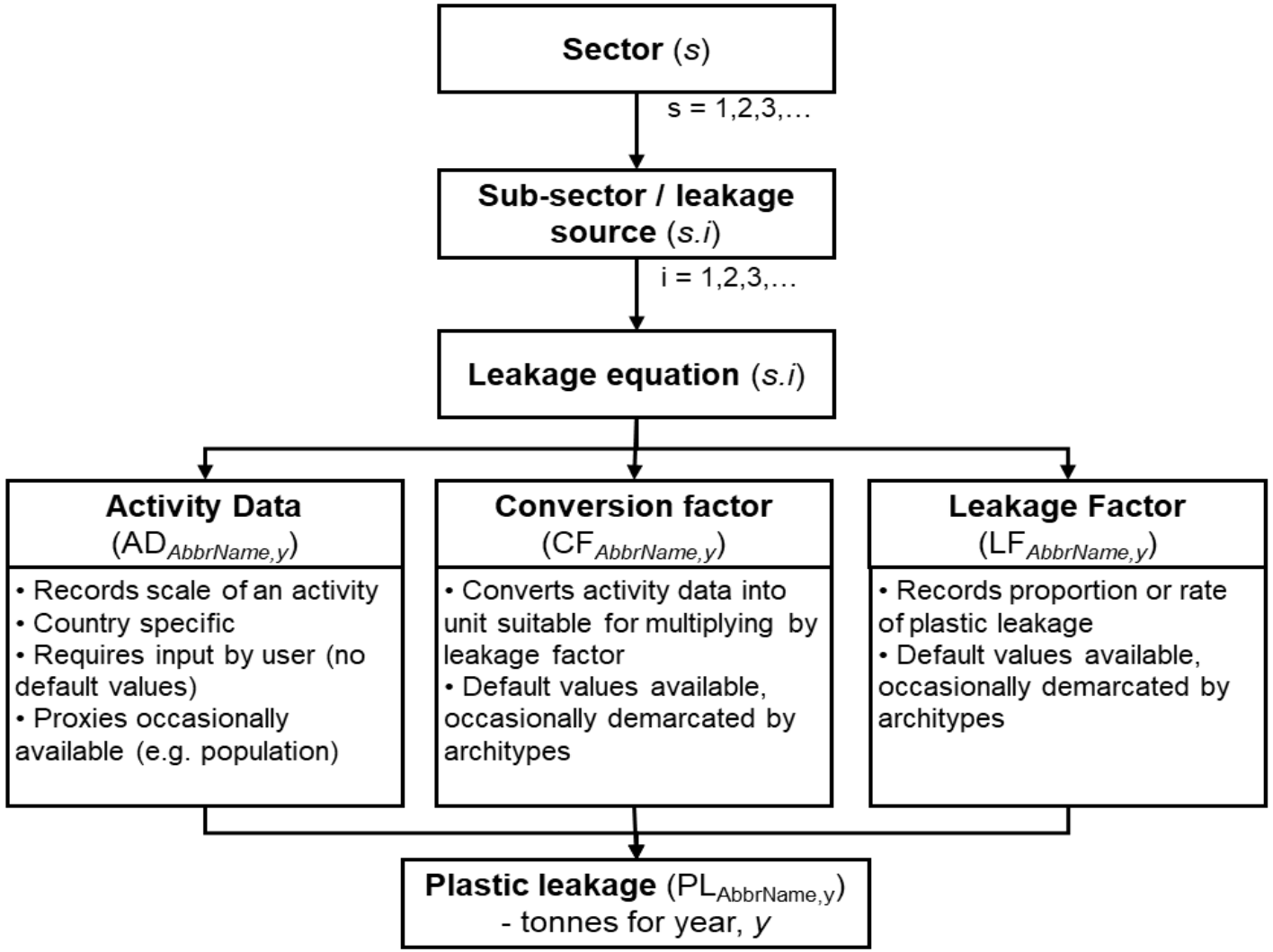
Leakage equations



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Source categories

Sector	Leakage source
1. Plastic production and manufacturing	1.1 Plastic production and manufacturing
2. Agriculture	2.1 Plastic mulching
	2.2 Greenhouses and tunnels
	2.3 Irrigation
	2.4 Silage film
	2.5 Polymer-coated seeds and fertilizers
3. Fisheries and aquaculture	3.1 Fisheries
	3.2 Aquaculture
4. Diffuse	4.1 Artificial sports surfaces
	4.2 Paints, markings and coatings
	4.3 Apparel - Washing synthetic clothes
	4.4 Apparel - Shoe soles
	4.5 Automotive – Tyre wear
5. Wastewater	5.1 Wastewater
6. Solid waste management and resource recovery	6.1 Littering
	6.2 Uncollected waste
	6.3 Collection
	6.4 Mechanical recycling
	6.5 Disposal

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Operational spreadsheet

Plastic Pollution Inventory Toolkit:

A rapid national-level quantification of plastic pollution sources

About | Instructions | Enter Input Data | Results Dashboard

Input the country name and year for the inventory:

Country: United Kingdom of Great Britain and Northern Ireland (the)

Inventory year: 2024

Data entry table:

Sector ID	Sector name	Source ID	Leakage source	Abbreviation	Enter data	Complete
1	Plastic production and manufacturing	1.1	Plastic production and manufacturing	ProdMan	Edit data	Complete
2	Agriculture	2.1	Plastic mulching	Mulch	Edit data	Complete
		2.2	Greenhouses and tunnels	GrnTun	Edit data	Complete
		2.3	Irrigation	Irg	Edit data	Complete
		2.4	Siliage film	Silage	Edit data	Complete
		2.5	Polymer-coated seeds and fertilizers	SeedFert	Edit data	Complete
3	Fisheries and aquaculture	3.1	Fisheries	Fisheries	Edit data	Complete
		3.2	Aquaculture	Aquacul	Edit data	Complete
4	Diffuse	4.1	Artificial sport surfaces	ArtSportSurf	Edit data	Complete
		4.2	Paints, markings and coatings	Paint	Edit data	Complete
		4.3	Apparel - Washing synthetic clothes	SynClothes	Edit data	Complete
		4.4	Apparel - Shoe soles	Shoe	Edit data	Complete
		4.5	Automotive - Tyre wear	Tyre	Edit data	Complete
5	Wastewater	5.1	Wastewater	Wastewater	Edit data	Complete
	Solid waste management and resource	6.1	Littering	Lit	Edit data	Complete

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Output information

Plastic Pollution Inventory Toolkit:
A rapid national-level quantification of plastic pollution sources

About | Instructions | Enter Input Data | Results Dashboard

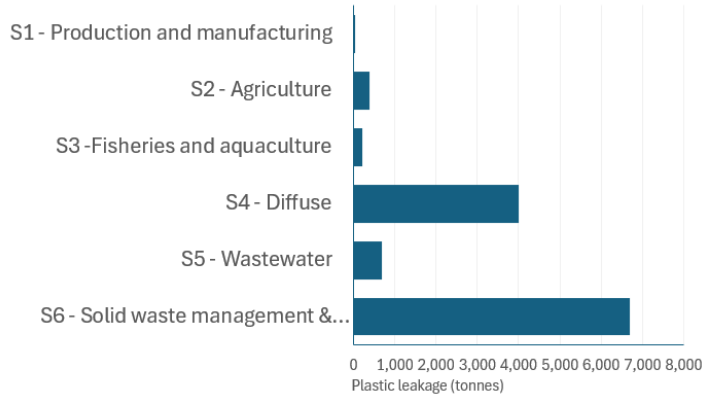
Results Dashboard

Leakage results based on currently entered inputs for United Kingdom of Great Britain and Northern Ireland (the) in 2024

Total leakage

Plastic leakage of 12,032 tonnes for United Kingdom of Great Britain and Northern Ireland (the)

Plastic leakage by sector

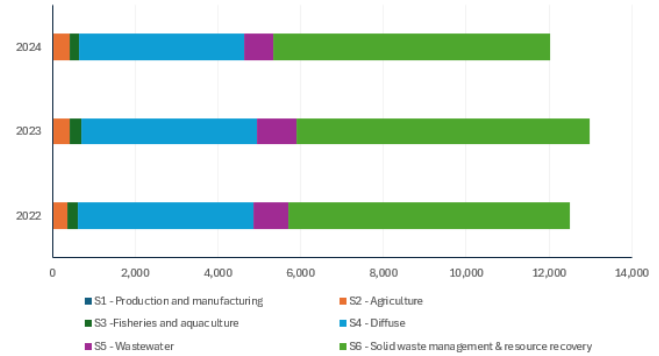


Plastic leakage by source

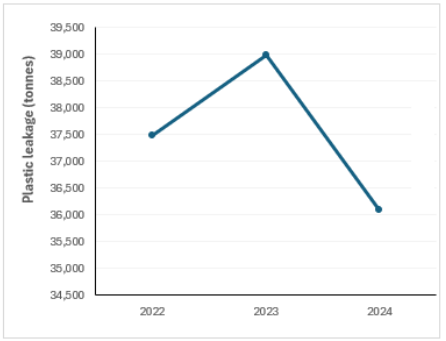
Country: United Kingdom of Great Britain an...

Years: 2022, 2023, 2024

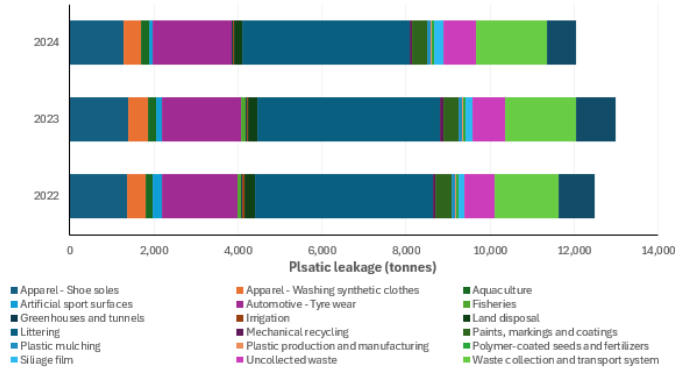
Plastic leakage by sector and year



Total plastic leakage by year



Plastic leakage by source and year



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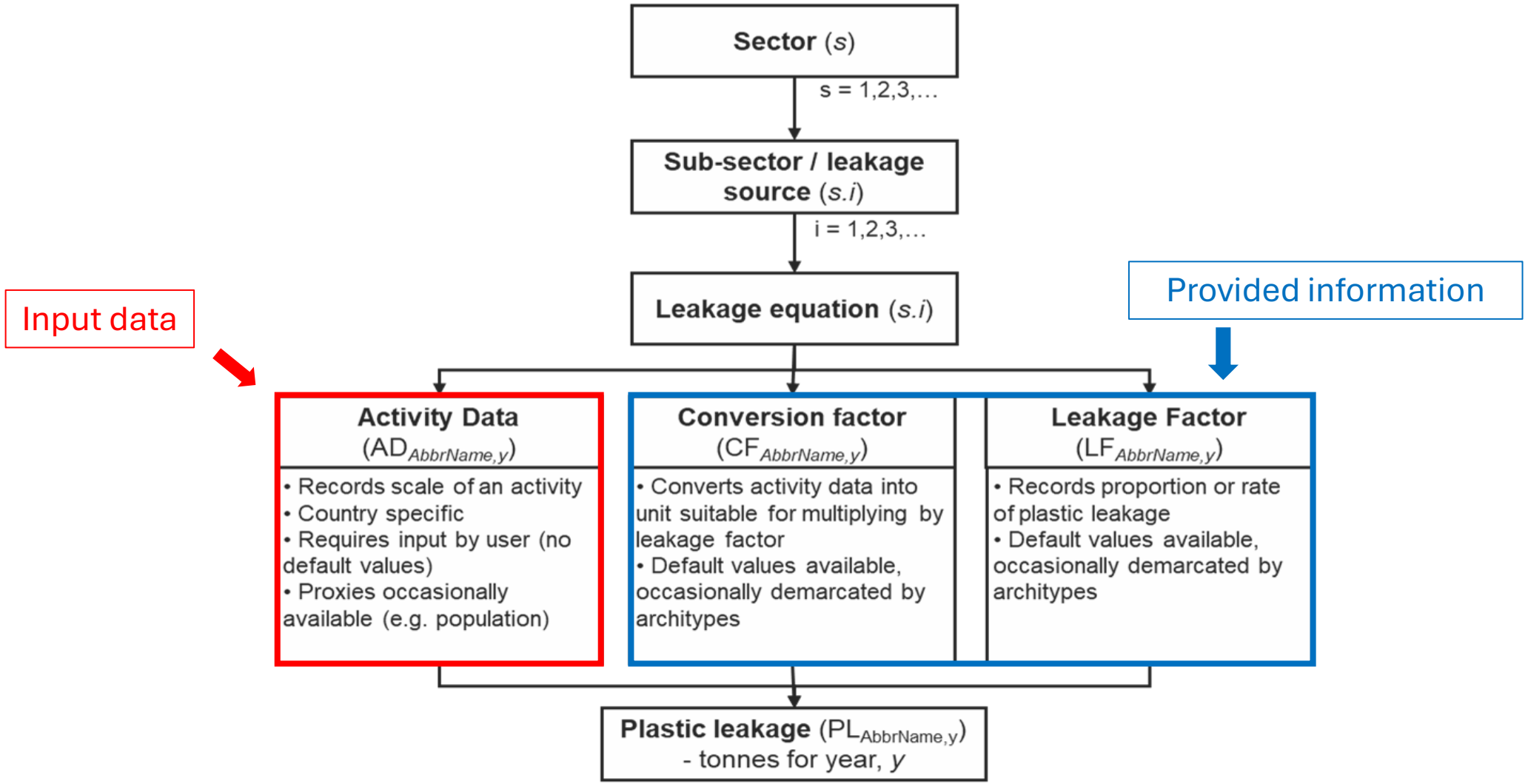
Data collection



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Input data

Equations	Sector	Data type	Typical units
1.1	Production and manufacturing	Production scale Intermediary handling Product processing and recycling Trade and waste handling	Tonnes
2.1 – 2.5	Agriculture (mulching, greenhouses, irrigation, silage, seeds)	Activity area Trade data Waste generation Retrieval rates	Ha or m^2 Tonnes Percentage
3.1 and 3.2	Fisheries and aquaculture	Fishing gear used Gear losses Fishing catch Output data	Counts or mass Percentage Tonnes
4.1 – 4.5	Diffuse (surfaces, paint, apparel, shoes, tyres)	Surface area Consumption, put on the market Demographic Travel distance	M^2 Tonnes Population, people/household Km
5.1	Wastewater	Wastewater treatment	Million m^3
6.1 – 6.5	Littering, collected and uncollected waste, recycling, disposal	Demographic Waste generation Waste management	Population Tonnes

Conversion factor

Sector	Sub-sector	Conversion factor
Plastic production and manufacturing	Plastic production and manufacturing	Exports shipped Plastic mass content
Agriculture	Plastic mulching	Application rate
	Greenhouses and tunnels	Waste generation rate
	Irrigation	
	Silage film	Usage per area
	Polymer-coated seeds & fertilizers	Plastic content
Fisheries and aquaculture	Fisheries	Plastic mass content
	Aquaculture	Plastic waste production rate
Diffuse	Artificial sports surfaces	Density of fibres and infill
	Paints, markings and coatings	Plastic content
	Apparel - Washing synthetic clothes	Laundry cycles, average size of laundry
	Apparel - Shoe soles	
	Automotive – Tyre wear	Plastic content
Wastewater	Wastewater	Microplastics concentration, WW collected and treated
Solid waste management and resource recovery	Littering	
	Uncollected waste	Plastic mass content
	Collection	Plastic mass content, waste collection rate
	Mechanical recycling	Plastic rejection rate (formal and informal)
	Disposal	Plastic mass content Uncontrolled disposal rate

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Leakage factor

Sector	Sub-sector	Leakage factor
Plastic production and manufacturing	Plastic production and manufacturing	0.025% (production) 0.0015% (shipping)
Agriculture	Plastic mulching	2 - 68% of plastic mulch not retrieved
	Greenhouses and tunnels	100% uncollected plastic
	Irrigation	1% (floor figure for unretrieved tubes)
	Silage film	1% (floor figure for unretrieved films)
	Polymer-coated seeds & fertilizers	100%
Fisheries and aquaculture	Fisheries	0.74 - 3.94% (mean values)
	Aquaculture	7% (conservative estimate)
Diffuse	Artificial sports surfaces	1.7% infill material + 0.6-48 g/m2 surface area
	Paints, markings and coatings	10%-73% of plastic content in paint
	Apparel - Washing synthetic clothes	0.1g/kg (machine washing), 0.02 g/kg (hand washing)
	Apparel - Shoe soles	20.7 g/capita/y
	Automotive – Tyre wear	45-658 mg/km (considering polymer fraction of tyres)
Wastewater	Wastewater	6-28% (of microplastics that pass treatment process)
Solid waste management and resource recovery	Littering	65-537 g/cap/y (mean values)
	Uncollected waste	100% uncollected plastic
	Collection	0.065-1.7% (mean values)
	Mechanical recycling	17.5-50% (estimates of rejected materials, informal and formal sectors)
	Disposal	0.006 -0.45% (debris) 0-80.2% (burned)

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Pilot application - workplan

1 Project 2 Toolkit 3 Discussion

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Pilot application - activities

1 Project 2 Toolkit 3 Discussion

	May/Jun	Jul/Aug	Sep/Oct	Nov/Dec	Q1 2027
Project manager	**Workplan** **Interim report v1**	**Final toolkit and guiding document**	**Interim report v2 and data compilation report**	**Data collection report** **Final report**	
NEMA	**Technical meeting, identification of local partner** (online)	**Support to data collection**	**Support to project mission**		**Discussion on finalization toolkit application**
Local partner		**Due diligence and recruitment** (IETC)	**6-month work agreement** (data collection, initial results, stakeholder consultation, draft inventory)		
Working Group	**Toolkit validation workshop** (online)			**Toolkit application workshop** (online)	
Project activities	**Steering Com. meeting** **Side-event OEWG**	**Rollout meeting pilot application** (online)	**Mission to Kenya**	**Steering Com. meeting** **UN Water Conference** (tbc)	**Outreach events, follow up initiatives**

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Thank
you WG!
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Comments
Feedback
Q&A

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Funded by
the European Union

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