UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

Wastewater Management & Development

Wednesday 11 December 2025

David Vivas Eugui

Elizabeth Dewar

Trade, Environment, Climate Change and Sustainable Development, UNCTAD

UN trade & development UNCTAD | 60 years

Urbanization is accelerating

- By 2050, nearly **70%** of the global population is expected to live in urban areas. (UN Stats, 2024)
- **Over 80%** of **all** waste is currently disposed of improperly. (UN-Habitat, 2023)
- Traditional wastewater collection and treatment systems are often outdated, insufficient, and unable to keep up with the increasing demand, particularly in developing countries.

UN trade & development
UNCTAD

Inadequate wastewater management extends beyond environmental damage

Environmental Health

- Habitat degradation
- Eutrophication
- Pollution from hazardous substances
- Water and soil toxicity

Human Health

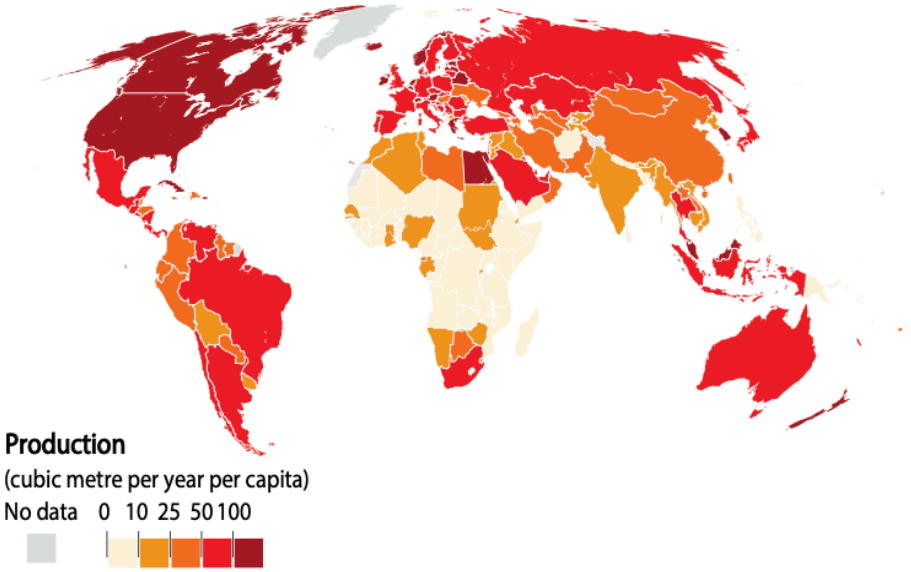
- Unsafe drinking water
- Increased diseases
- Food contamination
- Bioaccumulation of pollutants

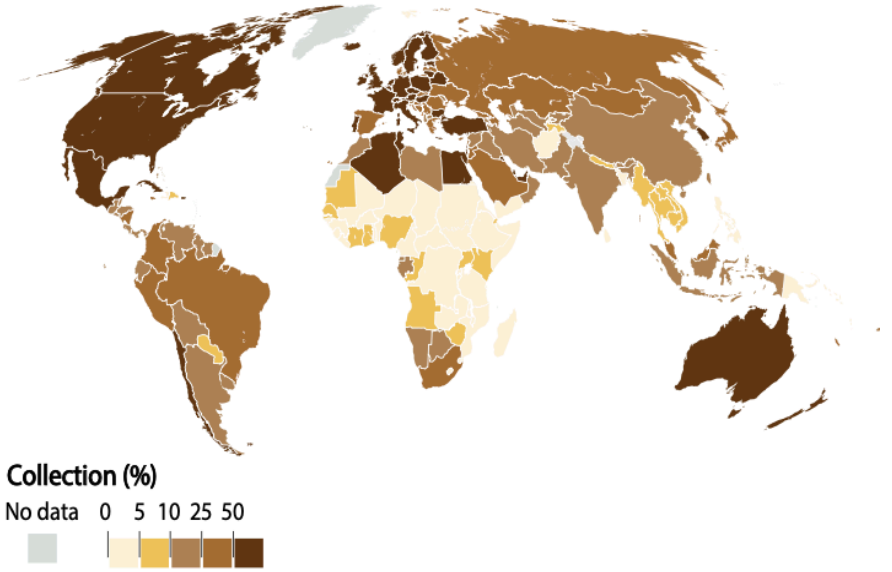
Food Security

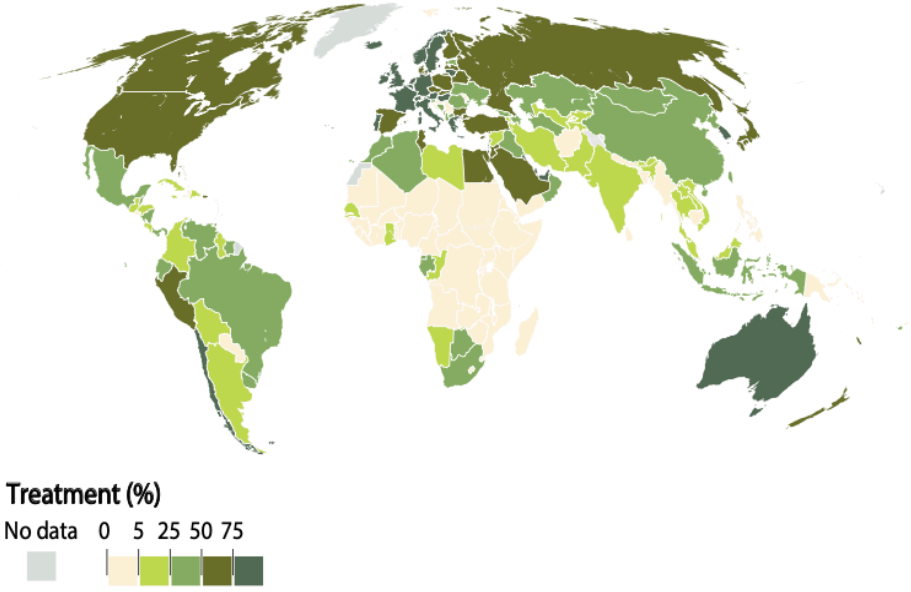
- Contaminated water sources
- Contamination of food
- Dehydration of soil
- Lower fish catch yield

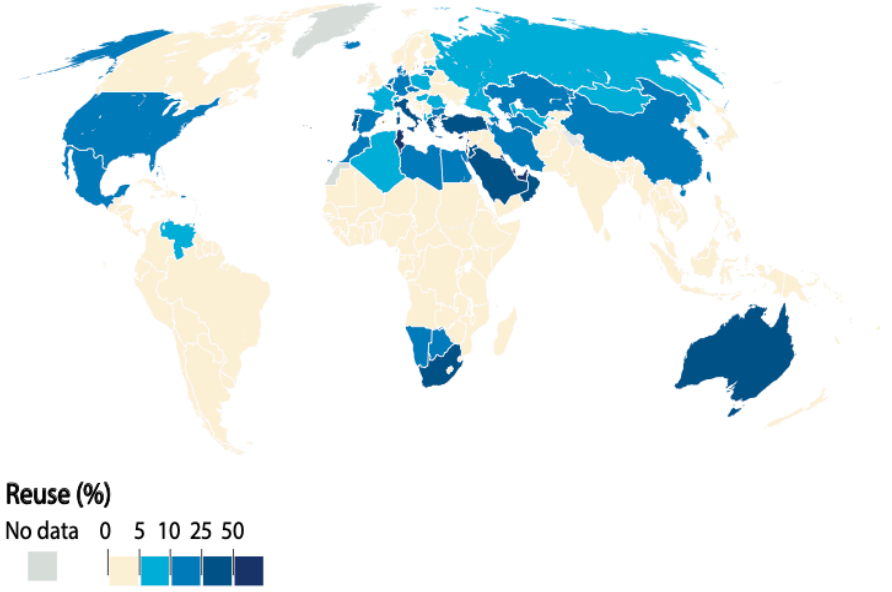
Plastics/microplastic pollution

UNEP (2023a)









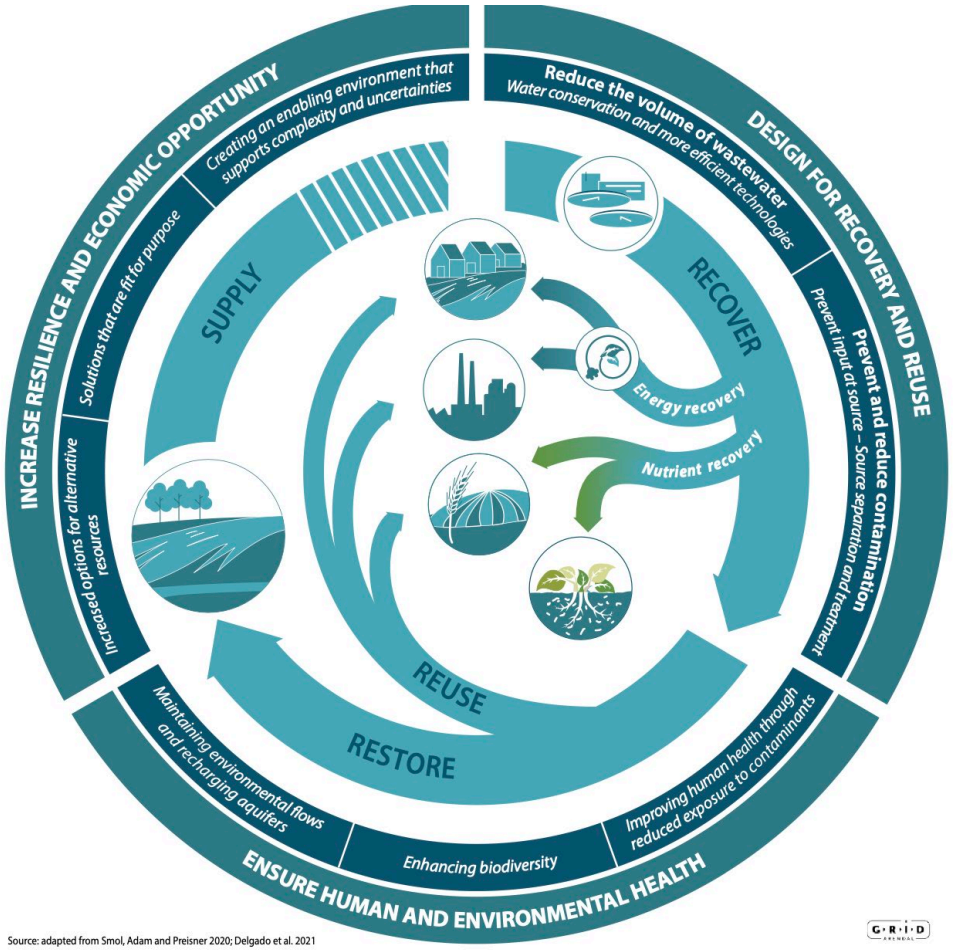
Source: UNEP, 2023a

Estimates of wastewater production, collection, treatment & reuse, 2021

- Globally, **11%** of domestic and manufacturing wastewater is reused. (UNEP, 2023a)
- Reuse of treated wastewater projected to grow **271%** (7 to 26 billion m^3/year by 2030). (UNEP, 2023a)
- Untapped potential: **320 billion m^3/year**, over **10x** global desalination capacity. (UNEP, 2023a)

Circular economy

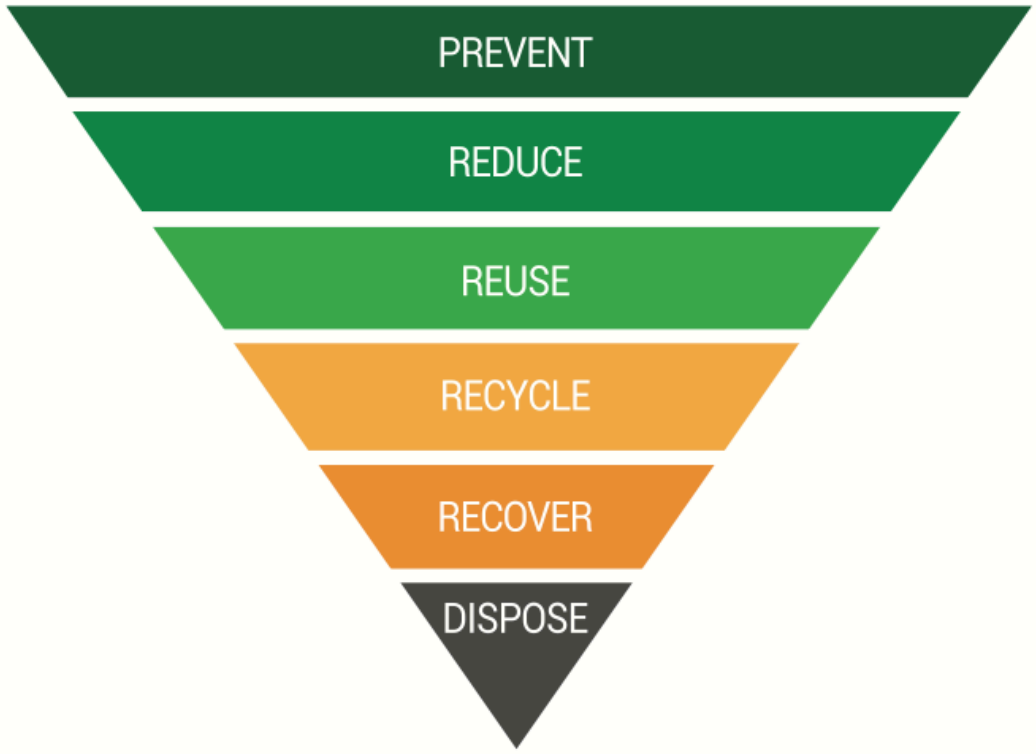
A circular economy *"entails markets that give incentives to reusing products, rather than scrapping them and then extracting new resources". (UNCTAD, 2024a)*



Source: UNEP (2023a)

Zero waste

" The conservation of all resources by means of responsible production, consumption, reuse and recovery of products, packaging and materials without burning and with no discharges to land, water or air, that threaten the environment or human health". (Zero Waste Alliance, 2018)



Source: UNEP (2023b)

Wastewater collection, treatment & reuse

A parallel responsibility of local and national entities

	Local (municipalities and regional)	National (ministries of environment and infrastructure)	Pathway (e.g. utilities, public, PPPs or private)
Level of Regulation	Local wastewater management and pollution control	National wastewater policies and regulations	Creation & regulation of national utilities (usually by law)
Pricing Strategy	Local fees regulations to cover local wastewater services provision	Tariff setting, cost sharing & cross subsidies policies	Application of pricing policies
Ownership and Participation	Concessions and licensing for local services operators	Regulations on PPPs and private sector participation (if any)	Variable ownership structure
Monetary and Control Measures	Waste Management and Pollution Control (Solid, air and used waters)	Industrial chemicals regulation & commercial use authorization	Application of wastewater regulations if collection, treatment & reuse competence
Sanitary Policies	Local wastewater treatment & river pollution prevention	National Water and Sanitation Guidelines and Monitoring	Monitoring and control systems for wastewater collection and level of pollution
Scope	Local Infrastructure	Significant infrastructure projects & funding	Sectoral infrastructure within its competence

Prioritizing wastewater management according to the waste hierarchy

- The lack of proper pricing for water delivery (even if a public good) & wastewater discharge creates **significant market failures and negative externalities**
- Compounding this, many **governments fall short in providing wastewater treatment services (tradeable sector),** and **lacking pricing policies for treated water.**
- The **waste hierarchy** offers a structure approach, outlining responsibilities across supply chains and society.

The waste hierarchy and the role of different parts of society in controlling the generation and management of municipal waste

		Governments	Producers	Retailers	Waste management sector	Consumers
UPSTREAM	Prevent	✓	✓	-	-	✓
	Reduce	✓	✓	✓	-	✓
	Reuse	✓	✓	✓	-	✓
DOWNSTREAM	Recycle	✓	✓	-	✓	✓
	Recover energy, heat and control emissions	✓	-	-	✓	✓
	Dispose	✓	-	-	✓	✓

Source: UNEP (2024)

Moving forward: solutions for wastewater management

UN trade & development
UNCTAD

Collaborative Treatment Plans

Mr Green Africa reuses 80% of the treated water in its plastic recycling operations. (SMEP, 2024a)

Interceptors

Collected an average of 5 tonnes of waste from Kepshi Lagoon, Ghana, every month since March 2024. (SMEP, 2024b)

Seaweed-Based Filters

Can absorb up to 90% of heavy metals from wastewater. (UNCTAD, 2024b)

Constructed Wetlands

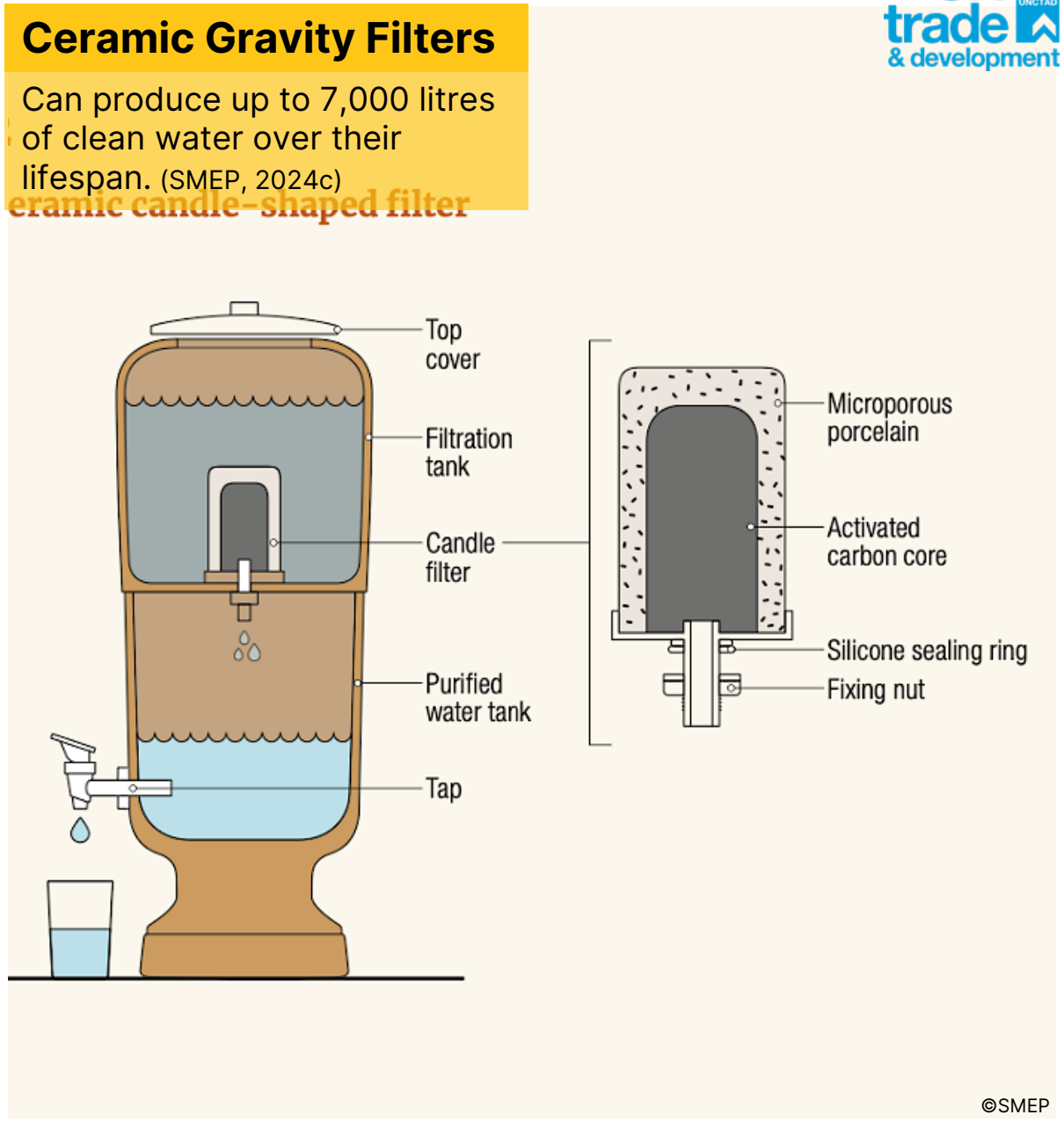
16 wetlands treat 250,000 m^3/year of water in Santiago, Dominican Republic. (UNEP, 2021)

Financial Tools

E.g. green bonds, climate financing, impact investments and warranties to prevent technological failure.

Ceramic Gravity Filters

Can produce up to 7,000 litres of clean water over their lifespan. (SMEP, 2024c)



By prioritizing wastewater co-management & co-financing solutions, we can protect the environment and public health and create sustainable pathways for economic growth and resilience.

UN trade & development
UNCTAD

Thank you

References

Ocean Cleanup (2024). https://theoceancleanup.com/

UNCTAD (2024a). The Circular Economy. Available at: https://unctad.org/topic/trade-and-environment/circular-economy

UNCTAD(2024b). An ocean of opportunities: The potential of seaweed to advance food, environmental and gender dimensions of the SDGs Available at: https://unctad.org/publication/ocean-opportunities-potential-seaweed-advance-food-environmental-and-gender-dimensions

UNEP (2021). Nature-based Solutions for Wastewater Management: Barriers and Opportunities in the Caribbean. Available at: https://wedocs.unep.org/handle/20.500.11822/36282

UNEP (2023a). Wastewater Turning Problem to Solution. Available at: https://www.unep.org/resources/report/wastewater-turning-problem-solution

UNEP (2023b). Towards Zero Waste. Available at: https://wedocs.unep.org/bitstream/handle/20.500.11822/44102/towards_zero_waste.pdf

UNEP (2024). Global Waste Management Outlook 2024. Available at: https://www.unep.org/resources/global-waste-management-outlook-2024

UN-Habitat (2023). Global Report on Sanitation and Wastewater Management in Cities and Human Settlements. Available at: https://unhabitat.org/global-report-on-sanitation-and-wastewater-management-in-cities-and-human-settlements

UN Stats (2024). Available at: https://unstats.un.org/sdgs/report/2023/Goal-11/#:~:text=The%20world%E2%80%99s%20population%20reached%208%20billion%20in%20November,and%20intermediate%20towns%2C%20exacerbating%20inequalities%20and%20urban%20poverty

SMEP (2024a). Advanced wastewater treatment technology for the plastics recycling industry.
Available at: https://smepprogramme.org/project/mr-green-africa/

SMEP (2024b). The Ghana clean-up project. Available at: The Ghana Clean-up Project – SMEP

SMEP (2024c). Solutions in Traditional Knowledge. Available at: https://unctad.org/system/files/information-document/gravity-filters-reducing-plastics-usage-in-water-delivery-smep-2024.pdf

Zerowaste Alliance (2018). Zerowaste Definition. Available at: https://zwia.org/zero-waste-definition/