



Spotlight on the Land to Sea Continuum to Protect Marine Environments from Plastic Pollution



Who is the French Solid Waste Partnership?

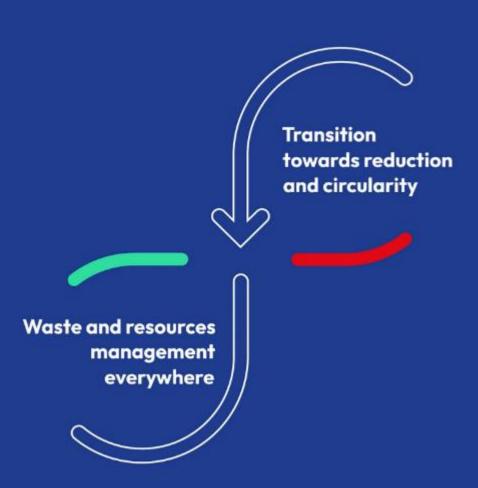
OUR MISSION



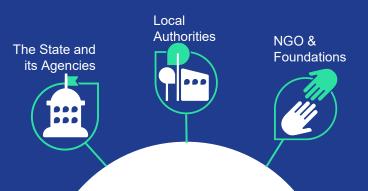
Coordinate and amplify

The voice of french waste stakeholders on the international stage

OUR VISION



MULTI-STAKEHOLDERS



Our platform

Brings together all French waste sector stakeholders





Research & Education

Private companies



Spotlight on the Land to Sea Continuum to Protect Marine Environments from Plastic Pollution

- Part 1: Global perspective on waste management and the transition to circularity
- Part 2 : The transfer of plastic waste from land to sea
- Part 3: The case of the Mediterranean Region
- Part 4 : The case of Small Island States





Spotlight on the Land to Sea Continuum to Protect Marine Environments from Plastic Pollution

Introduction



Alexandra Monteiro Solid waste Senior Coordinator, Agence Française de Développement







Spotlight on the Land to Sea Continuum to Protect Marine Environments from Plastic Pollution

Part 1: Global perspective on waste management and the transition to circularity

Moderated by:



Corinne Trommsdorff
Executive Director French
Solid Waste Partnership



Pierre-Yves
Pouliquen
Sustainable Development
Director, VEOLIA



Alexandra Monteiro
Solid waste Senior
Coordinator, Agence Française
de Développement



Dr. Mostafa AhmedTechnical Lead, ISWA







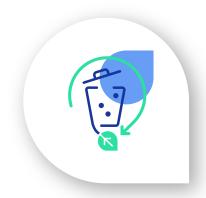












WASTE & POLLUTION

LANDFILL CLOSURE



IVORY COAST - Akouedo





Landfill Closure & Rehabilitation











90 hectares of landfill in Abidjan suburbs closed after 53 years of operation

- Remodeling the landfill surface and slopes;
- · Development of a watertight covering;
- Collection of water, leachate, and biogas;
- · Treatment of leachate;
- Energy recovery from the biogas.

BENEFIT:

- Air quality improvement
- 6 hectares of green spaces with sport and education infrastructures
- 80 000 m3 of treated leachate/year
- 2 MW produced energy (electrical and thermal)

CO-BENEFIT:

- Avoided GHG emissions:
 - 76 000 tons/year CO₂eq
- Soil and lagoon protection
- Reduced odors nuisance
- Improved neighborhood's quality of life
- Appropriation of the area around the site by the local population
- Biodiversity protection
- Tourism development

➡ Biogaz de décharge: quand la pollution devient solution



WASTE FOR ALL SDG

HOLISTIC WASTE MANAGEMENT



TOGO - Lomé









Improving household waste management





An ongoing multitranch project since 2006:



- Improvement of the holistic solid waste management system and capacity building support
- Implementation of engineered landfills with long term biogas and leachate management
- Strengthening recovery & recycling initiatives
- Improvement of the sector financial resources
- Gradual increase of performance requirements



> Reduced GHG emissions through improved collection and landfill operation conditions.

Partenariat français pour

les déchets

French

solid waste partnership

CO-BENEFIT:

- > Improved hygiene.
- > Reduced pollution and drainage blockages causing chronic flooding.
- > Capacity building.



International Solid Waste Association

ISWA is the world's leading network promoting professional and sustainable waste- and resource management.

ISWA represents all aspects and stakeholders within the waste management sector: the public, the private and the academic.

With more than 1,300 Members in 109 countries, ISWA has a unique global network.

To Promote and
Develop Sustainable
and Professional Waste
Management Worldwide
and the transition to a
Circular Economy

- Our mission

Waste Isn't Just Waste; It Fuels the Triple Crisis

Climate Change

 Waste transport, processing, and disposal release greenhouse gases and pollutants that worsen global warming

Biodiversity Loss

 Improper waste disposal contaminates ecosystems, causing irreversible harm to wildlife and disrupting the food chain.

Pollution

 Mismanaged waste contributes to between 400,000 and 1 million deaths annually due to diseases.



Three Futures, One Choice!



Waste Management as usual

- Waste rises with economic growth and weak infrastructure
- Dumping and open burning continue due to underinvestment



Waste Under Control

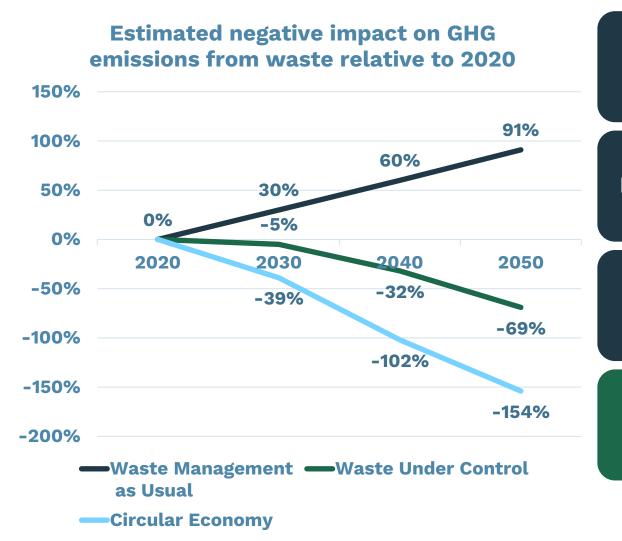
- Waste stabilizes by 2030 through moderate reforms
- Better collection and recycling; uncontrolled disposal ends by 2050



Circular Economy

- Waste is reduced & decoupled from economic growth
- 100% collection, 60% recycling & zero uncontrolled disposal by 2050

Linear Economy = Linear Pollution



2020 Baseline

Full net cost: US\$361.0 billion

2050 Waste Management As Usual

Full net cost: US\$640.3 billion

2050 Waste Under Control

Full net cost: US\$270.2 billion

2050 Circle Economy

Full net gain: US\$108.1 billion



The future costs less, if we act now!

- The externalities of poorly managed waste are borne by society at large.
- The cost of inaction is much higher than the funds required to address the current waste crisis.
- Transitioning to a circular economy is by far the most affordable solution for the future.









From Wasteful Systems to Circularity: How?



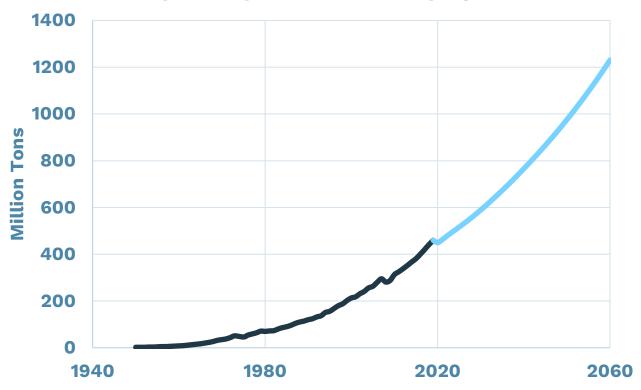
Circularity offers a toolbox, not a template.

Build circular economies that fit local realities.

Redesign upstream to recover value downstream.

Turning Theory into Impact: Start with Plastics

Global plastic production with projections



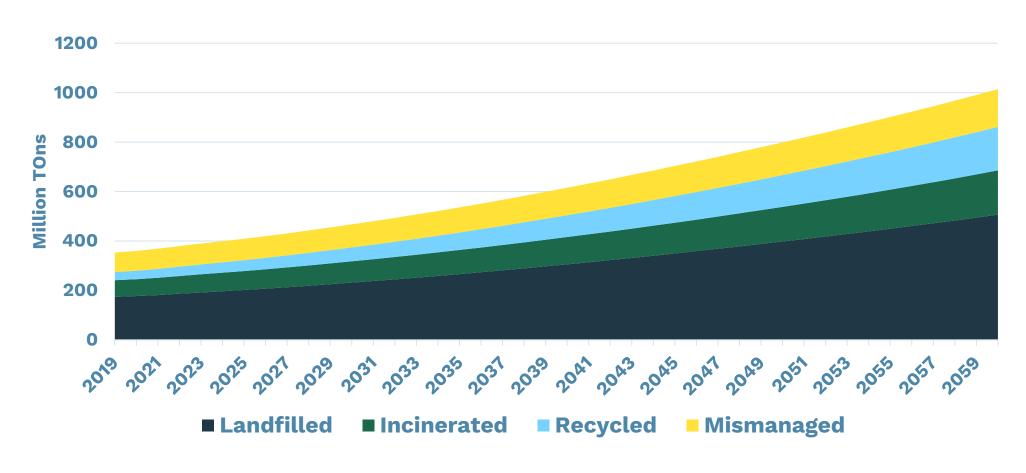
1/3 of all plastic is used for packaging with the shortest useful lifetime.

22% of plastic waste is mismanaged; nearly 50% ends up in disposal sites.

6% of plastics are circular and expected to reach just 12% by 2060.



More Recycling, More Waste: Ambition Must Rise



The Clock is Ticking on Plastic Pollution!

- 87% of plastic leakage into nature is microplastic, mostly from mismanaged waste.
- Once fragmented into microplastics, removal becomes nearly impossible.
- Plastic build-up in aquatic environments is projected to triple by 2060.

Managing macroplastic leakage through effective waste management systems is our best chance to prevent a permanent microplastic legacy.

Once plastic breaks down, there is no turning back.





CLOCC shows circularity starts at community level!

- Community-designed waste systems based on Integrated Solid Waste Management.
- Stakeholders, users and local institutions, decide and choose based on their needs and preferences.
- Improving waste systems in Indonesia and India

CLOCC is scalable, adaptable and ready to expand!



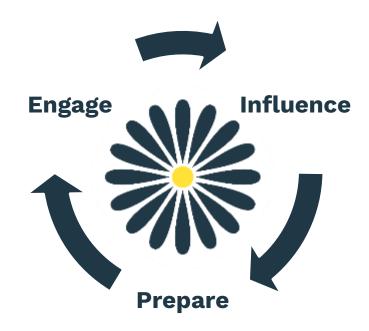
Clean Oceans through Clean Communities





ISWA Plastic Treaty Task Force: From Policy to Practice

- Coordinating ISWA's engagement in treaty negotiations
- Sharing policy insights and fostering stakeholder dialogue
- Supporting implementation through awareness, learning, and communication



Plastic Treaty Task Force



5 Key Messages and 5 Areas of Recommendations

ISWA stresses that a comprehensive approach must be taken to end plastic pollution, considering the entire life cycle of plastic!

Reduce plastic waste

Ensure collection of all waste, especially plastics

Upgrade illegal and open dumpsites & ban open burning of waste

Increase the role and accountability of extended producer responsibility schemes

Provide waste management solutions applicable to socio-economic & cultural conditions



Spotlight on the Land to Sea Continuum to Protect Marine Environments from Plastic Pollution

Part 3: The case of the Mediterranean Region



Philippe Masset

Director of European and International Affairs,

ADEME – French Environmental Transition Agency











Launched in 2024, Circe.med aims to become the leading Mediterranean network for scaling up innovative circular economy solutions.

In response to the urgency of the situation, it is currently focused on plastic pollution in all its forms and is committed to supporting key Mediterranean stakeholders in tackling plastic pollution at sea and establishing a regional circular economy.

More at the QR code!





Spotlight on the Land to Sea Continuum to Protect Marine Environments from Plastic Pollution

Part 2: The transfer of plastic waste from land to sea

Moderated by:



Ms. Corinne Trommsdorff
Executive Director French Solid
Waste Partnership



Mr. Eric Tardieu General Secretary, INBO



Ms. Busadee Santipitaks
Chief Executive Officer, Secretariat
of the Mekong River





HANDBOOK:

"TRANSFER OF WASTE AND PLASTICS IN AQUATIC ENVIRONMENTS"

Dr. Eric Tardieu, Secretary General International Network of Basin Organizations



















"Aquatic ecosystems are under threat from increasing pollution by waste, it is imperative to better understand the phenomenon in order to mitigate its impact"











Integrated Water Resources Management (IWRM) at Basin Scale: A Key Solution for Managing Solid Waste & Plastic Pollution

Solid waste (and especially plastic) pollution affects all environmental compartments: soil, air, and water are interconnected receptors of waste.

River basins play a central role in plastic transport: rivers are vectors, moving plastic from land to seas, especially during rainfall, floods.

Plastics accumulate along the water cycle:

- Washed off during heavy rain
- Deposited on riverbanks in flood/dry seasons
- Trapped in sediments or carried out to sea

Basin-scale management allows for targeted action:

- Identifying pollution hotspots
- Coordinating upstream-downstream solutions
- Engaging local stakeholders for territorial responses

IWRM provides a framework to integrate land use, waste management, and water governance to intercept solid waste before it reaches aquatic systems.





OBJECTIVES, TARGET AND SCOPE OF THE MANUAL



Guidance manual for basin managers and decision makers

- ✓Part 1 : How waste enters aquatic environment and is transported and how to characterise them.
- ✓Part 2: plastics from their generation to their journey in the environment, with a deep dive on the impact of plastics of different size on biodiversity and health
- ✓Part 3: How to prevent waste from entering the environment follows the «avoid then manage» principle. This section highlights the success factors and challenges of local waste management services and the importance of coordination across scales and sectors.



This handbook is a call to action, an invitation to work together for a future where aquatic environments are preserved and thrive for all.

CASE STUDIES

Lots of case studies to illustrate the different parts

1-Mapping macro-waste on a stretch of the Shkumbin river, Albania Surfrider



4 - Preserving aquatic ecosystems in Côte d'Ivoire: an initiative against electronic waste



7 - Impact of pneumatic micro-plastics on lakes in Europe



10 - The circular economy in action: when reusable crockery preserves the rivers in French Guiana's National Park



13 - The "Clean Oceans Through Clean Communities" (CLOCC) programme in Indonesia: Building sustainable waste systems for healthier oceans



15 - An eco-cultural solution in Senegal: culture at the service of the environment for a sustainable change in behaviour



2-Methodology for costeffective, long-term monitoring of transboundary plastic debris pollution in the Lower Mekong Basin



5 -Using artificial intelligence to combat plastic pollution in Australia



8 - Producina parliamentary reports and passing laws to limit plastic pollution



11 - Fly-tipping: the major threat to Lake Atitlán in Guatemala



14 - Support for the collection and recycling of plastic waste into plastic pavers a solution for combatting waste and plastics being transferred into aquatic environments in the province of South Kivu in the Democratic Republic of Congo



16 - Combating plastic pollution in the Danube



3-The Aa and Lys aquatic environment monitoring programme in France: findings and outlook



6 - Reducing microplastics in the Delaware River estuary



9 - The PROMISE project: Preventing marine litter in the Lakshadweep Sea (Maldives, Sri Lanka, India) – ADELPHI



12 - Urban Environment Programme in Lomé (PEUL), Togo



17 - The threat of plastic waste in the transboundary catchment areas of the Maroni and Oyapock rivers in French Guiana





P1: TRANSMISSION SOURCES AND VECTORS



Waste in waterways comes from

- ✓ rubbish abandoned on the banks or thrown directly into the waterway
- √ uncontrolled dumps close to waterways
- ✓ former waste dumps eroded by waterways or from rubbish bin overfl ows
- √ sloped terrain or roads
- ✓ often carried by the wind, either to the ground or directly to waterways
- ✓ urban drainage systems, which collect rainwater
- accumulation on urban surfaces before being transported by the wind or human activities

The transfer depends on:

- √ hydrological factors (such as water height, current speed and discharge)
- ✓ geomorphological factors (such as the shape of banks and vegetation, which can act as traps for macrowaste)
- physical factors (such as the type of waste and its shape)

Aggravation:

Extreme one-off events play a role in the diffusion of waste in aquatic environments.



P1: EXEMPLES OF COLLECTION TECHNICS



Eco-barriers or booms (passive)



The interception barrier in Guatemala – Ocean Cleanup® NGO website

o Retention nets (passive)



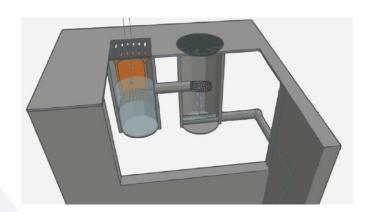




Retention nets in place in Brest Métropole in waterways, rainwater outlets and downspouts (Photos OiEau)

- The "River whale» waste collector or robot collector (passive/active)
- Harvesters or bank bins (active/passive)
- Screening and filtration systems (passive)
- Cleaning up waterways (active)

Float traps (siphonic walls) (passive)



Case studies

2-Methodology for cost-effective, longterm monitoring of transboundary plastic debris pollution in the Lower Mekong Basin MRCS



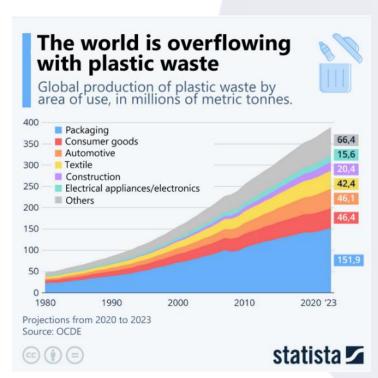
3-The Aa and Lys aquatic environment monitoring programme in France: findings and outlook





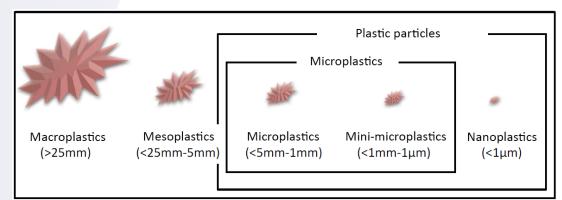
P2: A SPECIFIC WASTE: PLASTIC





Projection of global plastic waste production from 2020 to 2023, OECD

- √ a polymer (a resin) which provides the structure
- ✓ fillers, which modify the reinforcement, density and cost,
- ✓ plasticisers such as phthalates, which modify the flexibility or rigidity of the product
- other additives, which modify the colour, introduce flame retardants, anti oxidants, UV absorbers, biocides, etc
- ⇒ More than 13,000 molecules are thought to be involved



Plastic waste and downscaling, a possible terminology

Once in the environmental compartment, plastic degrades:

- ✓ Fragmentation by mechanical action,
- ✓ Fragmentation by the action of water,
- ✓ Photodegradation due to the action of UV rays, which break down the polymer's molecular chains
- ✓ Degradation by micro-organisms

Case studies

6 - Reducing microplastics in the Delaware River estuary





P2: IMPACTS OF MACRO WASTE ON AQUATIC ENVIRONNEMENTS



Risk of physical damage, choking or death Ingestion Physical contact Adverse health effects



Death Physical damage Loss of biodiversity Modification of the species assemblage Creation of a microbial habitat Invasive species

Human health Reduction in biological attractiveness Disruption of ecosystem processes Decrease in fish population



Economic impacts

Reduced productivity Reduced confidence in products Waste management Fishing bans Reduction in tourism



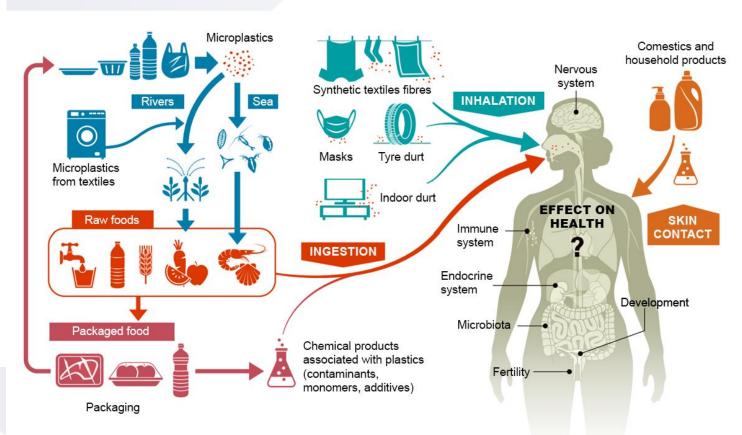


Impacts sociétaux

Decline in human well-being Reduction in recreational activities Loss of heritage



Risks and direct impacts of waste on aquatic environments



Case studies

4 - Preserving aquatic ecosystems in Côte d'Ivoire: an initiative against electronic



7 - Impact of pneumatic microplastics on lakes in



Focus plastics: Humans come into contact with micro-plastics and chemical molecules in a number of ways



P3: TO PREVENT WASTE BEING TRANSFERRED TO WATERWAYS



- ✓ Reduce waste at source by examining practices to minimise waste from human activities
 - Banning certain plastic products
 - Preventive practices: individual, collective, industrial
- ✓ Avoid storing waste in places where it can be transferred and leaked into aquatic environments
 - Reducing leaks
 - Combating <u>illegal dumping and abandoned waste</u>
- ✓ Organise the collection and treatment of waste so that it is eliminated from the natural environment
 - managing and treating waste, taking into account the level maturity of the waste management system
 - respect the international regulations which propose a framework for waste management
 - reduce the pollution of the natural environment by plastics and other harmful substances
 - set up <u>long-term financing systems</u>

Case studies

9 - The PROMISE project: Preventing marine litter in the Lakshadweep Sea (Maldives, Sri Lanka, India) – ADELPHI



10 - The circular economy in action: when reusable crockery preserves the rivers in French Guiana's National Park



11 - Fly-tipping: the major threat to Lake Atitlán in Guatemala



12 - Urban Environment Programme in Lomé (PEUL). Togo



8 - Producing parliamentary reports and passing laws to limit plastic pollution





P3: TO PREVENT WASTE BEING TRANSFERRED TO WATERWAYS



- ✓ Work with international donor support for public policies
 - support investment in specific waste management infrastructure
 - help local stakeholders implement the sustainable planning and governance structure

Support mechanisms include four pillars, which rely on a local political will and vision :

- > A regulatory framework
- A territorial network of infrastructure and organisations that allows waste to be collected and managed locally as much as possible
- Adequate funding mechanisms that allow the implementation of prevention, collection and treatment
- Adequate means for local authorities in charge of waste, with the necessary leeway to experiment with local solutions

Case studies

14 - Support for the collection and recycling of plastic waste into plastic pavers – a solution for combatting waste and plastics being transferred into aquatic environments in the province of South





P3: TO PREVENT WASTE BEING TRANSFERRED TO WATERWAYS



- ✓ Raise public awareness on all three action levers
 - Raise awareness of the problem of waste and its impact on aquatic environments and human life
 - Encourage people to change their practices to reduce waste as much as possible and to dispose of it properly, including segregating at source when infrastructures are in place
 - Proposing solutions that make life easier for residents

- ✓ Levels of territorial commitment to be coordinated
 - Changes in individual practices to reduce plastic consumption and the use of alternative solutions
 - Combined action on a territorial scale.
 - National or international regulations which can be applied on a large scale.

Case studies

13 - The "Clean Oceans Through Clean Communities" (CLOCC) programme in Indonesia: Building sustainable waste systems for healthier oceans



15 - An eco-cultural solution in Senegal: culture at the service of the environment for a sustainable change in behaviour



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17 - The threat of plastic waste in the transboundary catchment areas of the Maroni and Oyapock rivers in French Guiana





CONCLUSION



Most of the macro-waste found in the water system is macro-plastic. Plastic are persistent in the environment, it transforms into micro- and nano-plastic, and have specific impacts on environment and on humans

To get involved in the fight against macro-waste, it is important to:

- ✓ <u>identify the sources and transfer routes</u> of waste along the land-river-sea continuum
- √ to quantify and characterise the flows
- √ to have a good understanding of public waste management policies (international, national and local)

What can be done to prevent waste being transferred to waterways?

- ✓ <u>reducing waste at source</u> by challenging practices to minimise its production.
- ✓ <u>setting up waste management systems</u> for all waste that exists and will continue to exist in the medium-term



Political will is the key to adressing these challenges Cooperation projects can be designed



THANKS



Thanks to all our partners for their contributions writing, case studies research and proofreading:



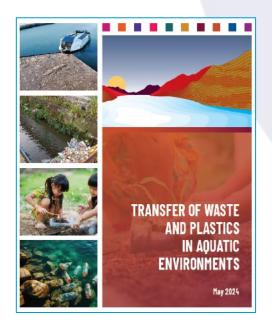




Corinne Trommsdorff

Aditi Ramola and Marc Tijhuis

Alexandra Monteiro, Mélanie Grignon and Fabien Mainguy







It has been the opportunity to reach out to decision makers on the importance of taking action to reduce and manage waste to prevent it from entering the environment.













Busadee Santipitaks Chief Executive Officer, MRC Secretariat



Introduction

- Mekong contributes between 17.4 tonnes/day and 101 tonnes/day of plastic debris to the ocean, which is the 10th largest amount contributed by rivers globally (Schmidt, 2017)
- CounterMEASURE II Project of UNEP surveys on plastic waste pollution status in the Lower

- **Mekong Basin** for: riverine macroplastics riverine microplastics
 - plastic leakage hotspots plastic accumulation hotspots
- With support from Japan Government, Mekong River Commission (MRC) has conducted the studies on frameworks and capacity of each Member Country (Cambodia, Lao PDR, Thailand, and Vietnam), with assessment of the status.
- The status and trends of plastic pollution in rivers across the Lower Mekong Basin were assessed to support better decision-making for its effective management
 - Considering nature of plastic pollution, institutional frameworks and capacities of each Member Country to address it.
 - With explanation of the situation, followed by challenges that require regional cooperation to overcome.

Example of plastic debris distribution in the Mekong River

Types of material of





PE



Others

Others

PS



Upstream

(Mesh size: 1-3 cm)

Phosai (Thailand)

Pieces/m²/h:

are collected per

unit area of net per

hour of collection

using net

Note:

Some of the units

for comparison.

shown are modified

The amount of plastic debris that (Mesh size: 1 cm)

0.039 Pieces/m²/h (Mesh size : 1 cm)

Can Tho (Viet Nam)

0.322 Pieces/m²/h (Mesh size : 0.7 cm)

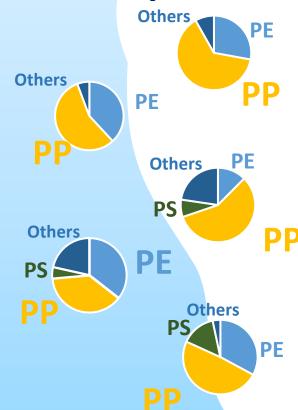
0.042 Pieces/m²/h

Khong Chiam (Thailand)

Downstream

Types of material of

Microplastics



Upstream

Chiang Rai (Thailand)

1.22 Pieces/m³

Vientiane (Lao PDR)

2.10 Pieces/m³

Ubon Ratchatani (Thailand)

2.25 Pieces/m³

Phnom Penh (Cambodia)

14.3 Pieces/m³

Can Tho (Viet Nam)

23.7 Pieces/m³

Downstream

Waste accumulation at 8 piers in Cambodia

8 kg / day

Quick Comparison on Amount of plastic debris

Can Tho (Viet Nam)

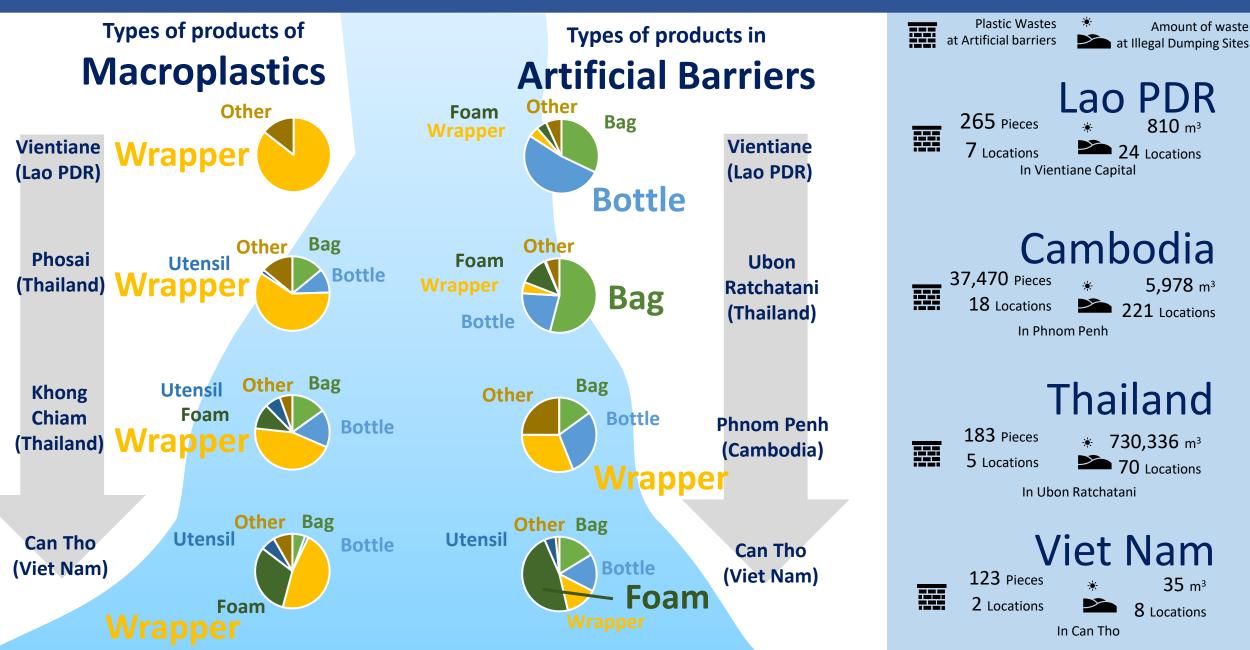
2.16 ton / day

17.4 - 101(Schmidt et al. 2017)

The Whole Mekong River

Calculated by estimated river width and depth

Example of plastic debris distribution in the Mekong River



Conclusion | Status of monitoring plastic waste/debris in LMB



Situations of monitoring are yet to improve, still goals are concrete

Lack of specific policy framework for riverine debris regarding management, nor monitoring

- Responsibility of riverine debris often gets ambiguous
- Needs to explicitly states the work and responsibility

Only limited capacity of riverine plastic debris monitoring available

Collaborations within governmental bodies, academia and institutions are necessary.

No regular monitoring activities by Governmental Bodies in LMB

- Introduction of regular monitoring activities in LMB based on CounterMEASURE and activities outside LMB.
- Establishment of harmonized data collection standards essential for more precise analysis.











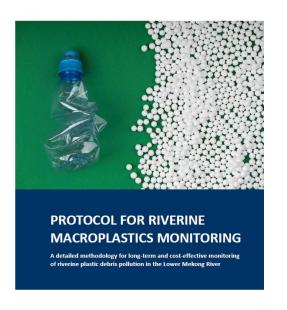
- 2022 2023: Development of detailed methodology for the long-term and cost-effective monitoring in Lower Mekong Bassin with technical collaboration and financial support from Japan Fund.
- 2023: Following rigorous process of pilots and consultations, 3 protocols were issued and agreed by Member Countries.



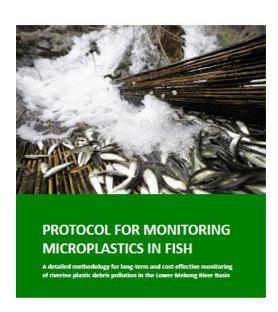












- MRC Secretariat continued:
 - strengthen capacity of MRC Member Countries, with the technical cooperation of GIZ
 - Procurement and set up the field and laboratory equipment and analysis
 - National and regional hands-on field and laboratory trainings.
- The protocols are being implemented as part of the Trial
 - Long-running routine under Water Quality Monitoring Network (WQMN) in 2025
 - Aim to full integration into the Core River Monitoring Network (CRMN) in 2027





Challenges

 River plastic monitoring depends not only on skilled human resources but also on long-term funding from Member Countries

 Projects on plastic pollution are still a relatively new in the Lower Mekong Basin (LMB). More data, knowledge, and regular updates on current practices and findings are needed

 With the serious challenges in the Mekong river and public expectations on the MRC, strong support from all partners is essential for the collaboration on these issues.



Opportunities

- Many opportunities for collaboration among governments, academia, and citizens, as they share concerns and a strong willingness to tackle the issue.
- So far, MRCS has partnered with UNEP, City Alliance, INBO, GIZ, and recently engaged with The Ocean Cleanup.
- Plastic pollution creates opportunities for collaboration across sectors - especially in water, food, and health security. It also supports the integration of policies and practices at all levels, from global to local, and highlights the importance of connecting land, rivers, deltas, and oceans.

Please visit mrcmekong.org for further information or download the publications directly as follow:



- Status and Trend of Riverine Plastic Pollution in the LMB https://www.mrcmekong.org/wp-content/uploads/2024/08/PlasticReport2022.pdf
- Protocol for Riverine Macroplastic Monitoring
 https://www.mrcmekong.org/wp-content/uploads/2024/09/P-RMM.pdf
- Protocol for Riverine Microplastic Monitoring
 https://www.mrcmekong.org/wp-content/uploads/2024/09/Protocols-for-Riverine-Macroplastic-Monitoring.pdf
- Protocol for Microplastic in Fish Monitoring
 https://www.mrcmekong.org/wp-content/uploads/2024/09/P-MM-Fish.pdf

Thank you!



Land & sea: island solutions for a waste-free ocean



Carla Worth Policy lead **Common Seas**



Susanna De Beauville-Scot Project manager **Recycle OECS project**



Nicolas Moulin Overseas territories manager Citeo



Tiana Eva Razafindrakoto International expert **Indian Ocean Commission**



Nicolas Chenet Director - Sustainable **Development Department Expertise France**









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