

Turning the Tide

Ecosystem services, plastic pollution and the social business case for cleanup



Vince van 't Hoff

FSD – Senior Program Officer

Foundation for Sustainable Development



COP17



October 2026

Program

Time	Name	Organisation	Presentation
14:15	Vince van 't Hoff	Foundation for Sustainable Development (FSD)	Opening
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Goals of today

Implementation COP after all: Links with targets 7, 11, 14, 15, 19, 20

After this session, insights in:

- The issue of plastic pollution
- How economic valuation of ecosystem services brings hidden value to the surface
- How ecosystem services can indicate the social returns of plastic interventions & the social cost of plastic
- How do we move from evidence on social returns to decision-making and implementation at scale
- Move from global biodiversity commitments to actions on the ground and capacity-making



Crashcourse on **ES valuation** & plastic pollution

“The benefits nature provides to people”

SYSTEM THINKING

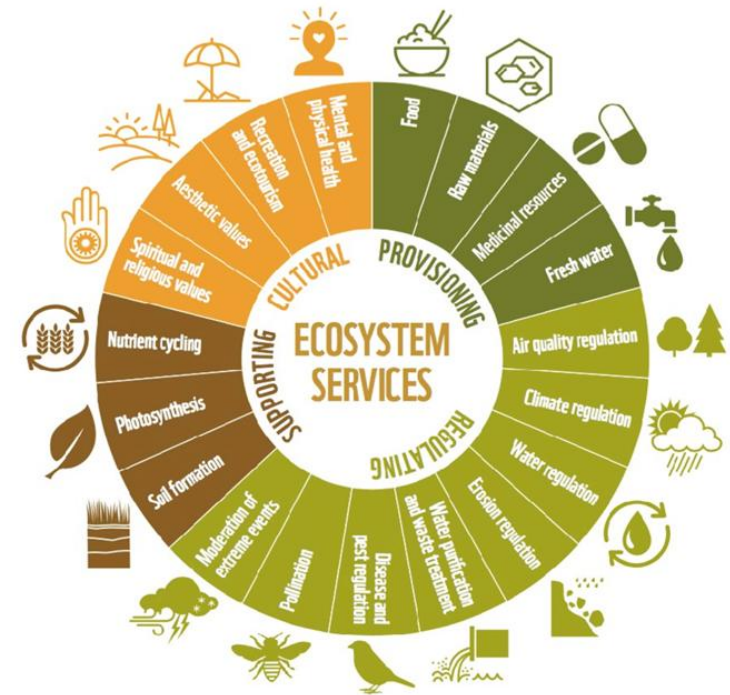
A landscape perspective

- Private and public benefits
- Identify beneficiaries
- See how benefits connect across a landscape

ECONOMIC VALUATION

Make hidden values visible

- Value, not price
- Show order of magnitude and direction of change
- Highlight trade-offs and identify stakeholders

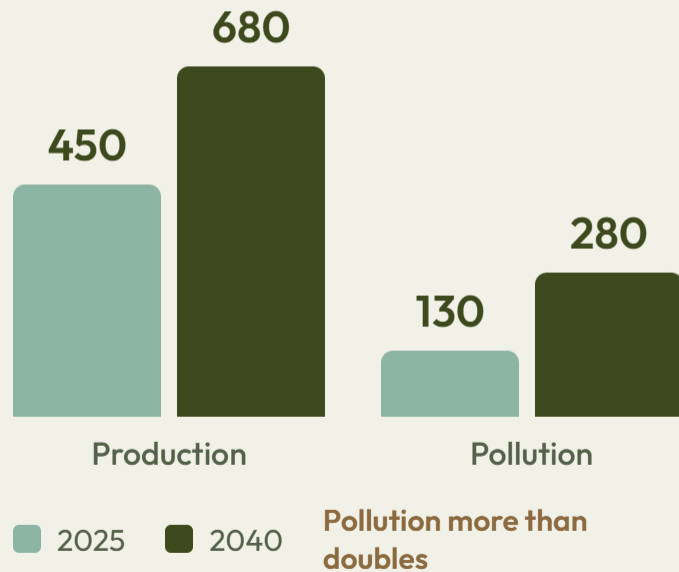


Behind every ecosystem service is a beneficiary.

Crashcourse on ES valuation & **plastic pollution**

PRODUCTION & POLLUTION

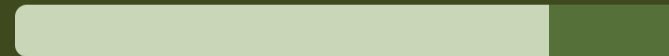
Million tonnes a year, business as usual



LEGACY STOCK

8 billion

tonnes of plastic waste already pollute the planet



≈ **80%** of all plastic ever made. Fewer than 10% is recycled.

INVISIBLE PLASTIC

27 Mt+

of nanoplastics in the North Atlantic alone

More plastic by mass than all the visible macro- and microplastic estimated in that ocean

Sources: Pew, Breaking the Plastic Wave 2025 · Lancet Countdown on Health and Plastics (2025) · Niemann et al., Nature (2025)

Crashcourse on ES valuation & **plastic pollution**

SPECIES AFFECTED

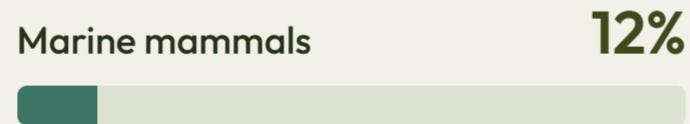
4,076

marine species documented
interacting with litter

From 1,956 scientific publications. Includes
entanglement, ingestion and colonisation.

INGESTION

Share of 10,412 necropsied animals with
plastic in the gut



Lethal dose is small: **6 pea-sized rubber pieces** give a seabird a 90% chance of death

CORAL REEFS



77 of 84

reefs surveyed worldwide had debris

88% of debris items were plastic, mostly
from fishing

Sources: AWI LITTERBASE (accessed Oct 2026) · Murphy et al., PNAS (2025) · Pinheiro et al., Nature (2023)

Crashcourse on ES valuation & **plastic pollution**

HEALTH COSTS

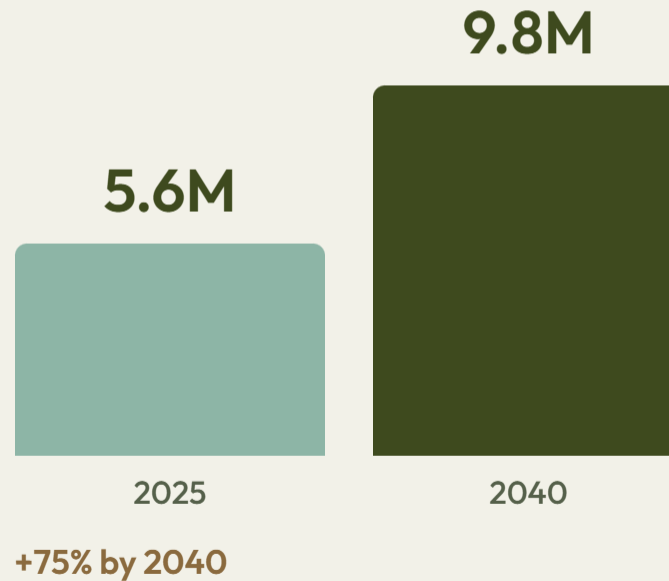
\$1.5T+

in health-related economic losses
every year

A lower bound: just 3 plastic chemicals,
measured in 38 countries

HEALTHY LIFE LOST

Healthy life-years lost each year to plastic,
business as usual



UNEQUAL BURDEN

**1.2
billion**

people live without any waste
collection

A horizontal progress bar with a dark olive green segment representing approximately 70% of the total length, followed by a light grey segment. Below the bar, the text '~70% of macroplastic pollution comes from just 20 countries' is displayed.

~70% of macroplastic pollution comes from just
20 countries

Sources: Lancet Countdown on Health and Plastics (2025) · Pew, Breaking the Plastic Wave 2025 · Cottom et al., Nature (2024)

Temperature check

According to you, where is the largest barrier to reducing aquatic plastics?

- A. The science is not there/no consensus on quantity and quality of the problem
- B. It's a funding/financing issue
- C. Public awareness on the issue is lacking
- D. There is good enough business case
- E. Our global/national/local institutions are the largest barrier

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An aerial photograph showing a large-scale river cleanup operation. A long line of green floating barriers stretches across a wide, muddy river. On the riverbank, a yellow excavator and a green truck are visible, along with a large pile of plastic waste. The background shows lush green vegetation.

An ecosystem services-based framework to estimate the social benefit-to-cost ratio of riverine and offshore plastic cleanup interventions

Foundation for Sustainable Development
The Ocean Cleanup

Background

Plastic pollution is widely recognized as a major threat to marine and coastal ecosystems

- Large quantities enter aquatic environments each year and can persist for 100s of years
- Additionally, Ocean circulation processes transport buoyant plastics across large spatial scales
- Strategies to address ocean plastic pollution typically focus on two complementary approaches
 - Reducing plastic emissions through waste management, innovation and policy
 - cleanup of plastic
- The ecological impacts of plastic pollution are increasingly well documented, yet their broader socio-economic implications remain less well quantified

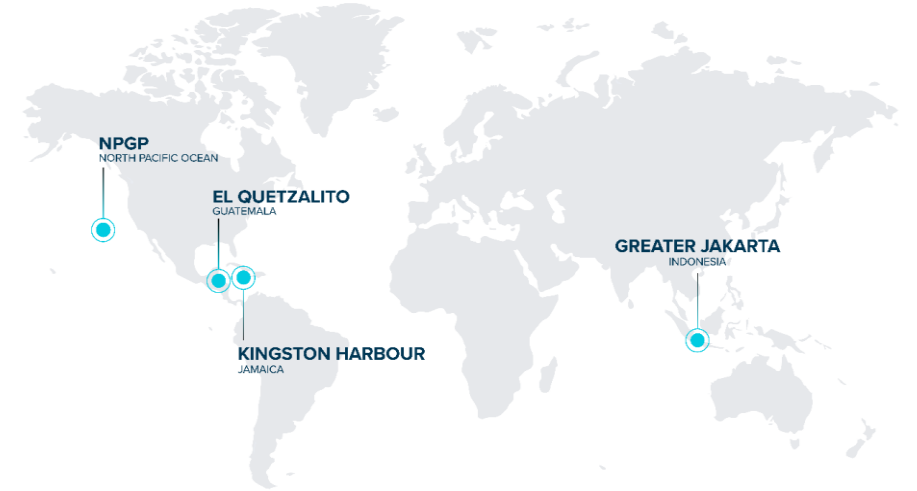
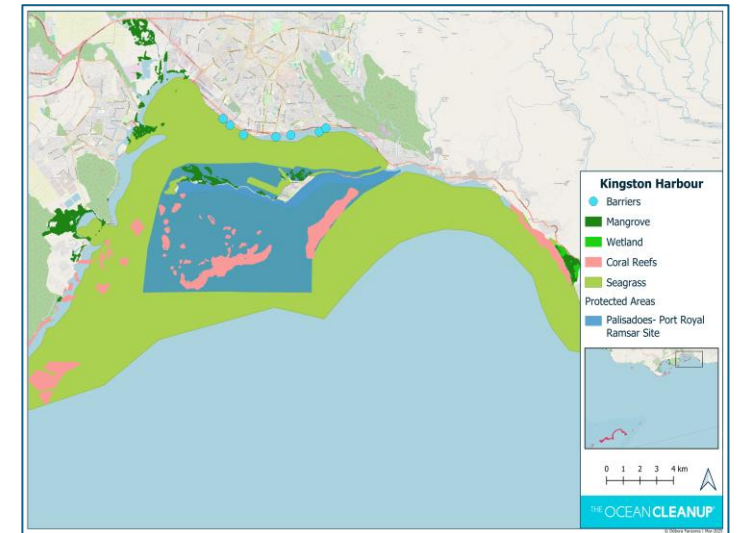
Introduction – The Current Returns

Project purpose

- Estimate the economic impacts of plastic on ES in 4 case studies: NPGP, Jakarta, Kingston and Guatemala City (variation in spatial scale)
- Five biomes: coral reefs, mangroves, seagrass meadows, beaches/coastal sea and open sea
- Estimate the economic benefits of removing plastic by interceptors using a social cost/benefit analysis

Novelty

- Importance of plastic pollution for societies in addition to biodiversity impacts
- Integrated framework from biophysical to socio-economic impact



Framework

Physical modelling of plastic stock and flow

Economic valuation of 16 ecosystem services in 5 ecosystems

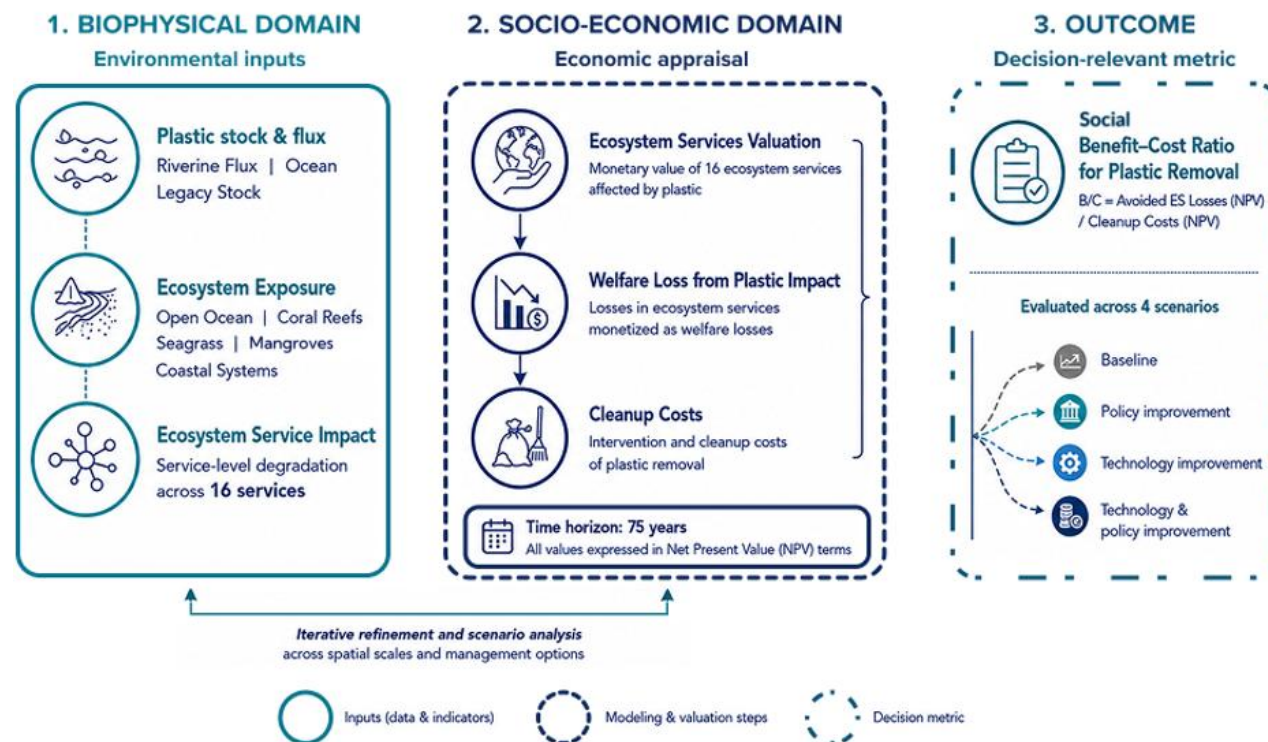
- Using various value transfer functions

Estimate welfare losses as a result of plastic pollution between (1-5% impact on ES)

Removal of plastic per case study location

Estimate associated costs of interception (CAPEX & OPEX)

Social benefit/cost ratio of 4 scenarios



Relevance of outcomes

- Plastic removal mostly yields **positive societal value**
- Prioritize riverine removal, also from a socio-economic perspective
- Ecosystem Services showcase **legacy effects of plastic** via **social cost of plastic (SCP)** (f.e. \$6–37 billion for the NPGP over)
- The value of ecosystem services is enormous and indicates social-economic importance of nature and measure a broader impact of plastic pollution
- Plastic removal is especially beneficial in locations with large quantities of plastic, higher levels of ecosystem services and a lower institutional capacity to reduce plastic pollution
- In a political and institutional climate where collective plastic removal strategies are not prioritized, our results prove the usefulness of societal and business initiatives in removing coastal plastics
- The paradox: Investment in conservation efforts while plastic keeps flooding coasts

To end

- The ES-based framework provides a transferable and quantitative basis for comparing different plastic mitigation strategies on a common societal footing
- Our results unveil that substantial value of plastic mitigation lies in the ecosystem services we protect
- Ultimately, our ecosystem-service framework can help bridge the gap between environmental objectives and policy decisions
- it points toward investment strategies and governance mechanisms that can mobilize capital at the scale needed to safeguard the ecosystem services on which economies and communities depend.



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From the FSD study to decision-making

STEP 1

Full study with FSD

The framework you just saw, applied in depth to three locations

Kingston

Guatemala

Jakarta

STEP 2

Results worth scaling

Benefit-cost ratios to 2100 varied widely by location

Guatemala

15:1

Kingston

11:1

Jakarta

1:1

STEP 3

A simplified internal tool

Built to extrapolate the method quickly to new locations

Ecosystems impacted around each city

Regional ecosystem-service values

Cost estimates available at the time

STEP 4

30 cities screened

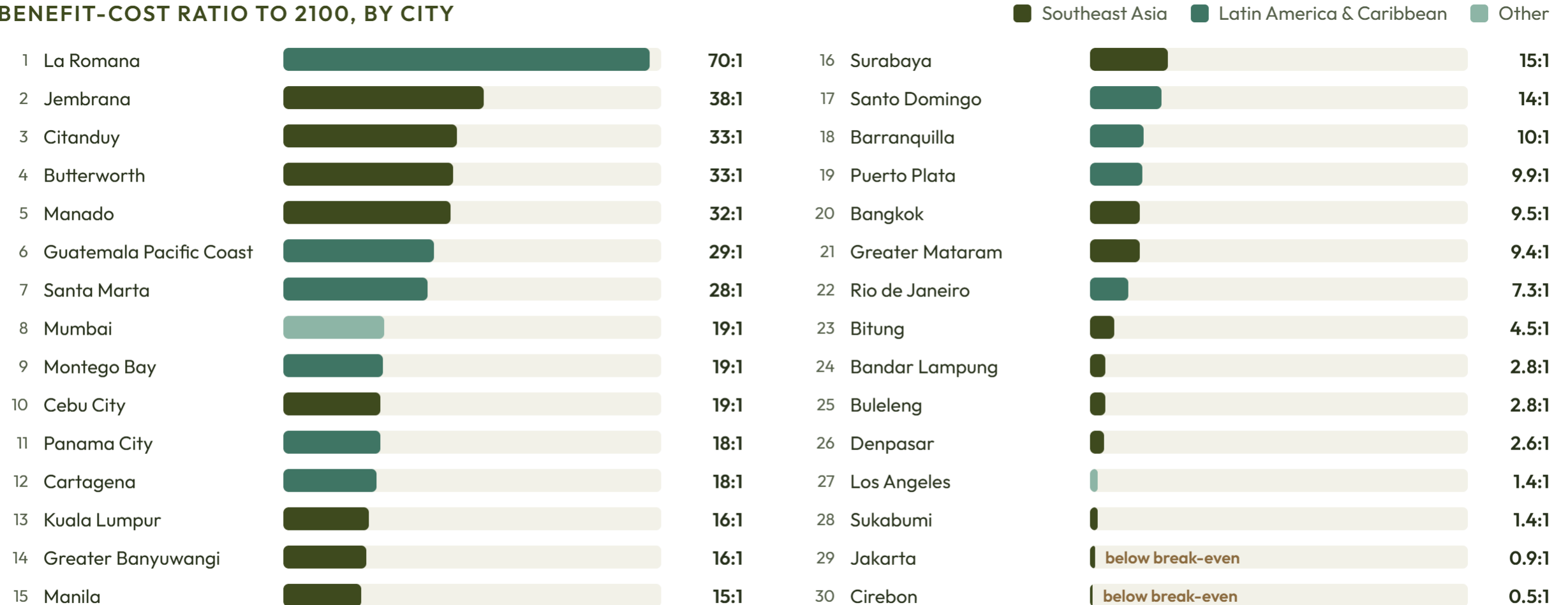
30

cities across Southeast Asia, Latin America, the Caribbean and beyond

CONSERVATIVE BY DESIGN Assumptions err on the low side throughout, so read the ratios that follow as lower-end estimates.

Social B/C in 30 cities – ranked

BENEFIT-COST RATIO TO 2100, BY CITY



Avoided ecosystem-service losses to 2100 divided by cleanup costs to 2100, both in NPV. Source: The Ocean Cleanup, 30 Cities study (2026).

THE OCEAN CLEANUP®

Social B/C in 30 cities – outcomes

THE FUNDER'S 5-YEAR TICKET

\$316M

invested over 5 years, all 30 cities



\$21.1B

avoided ecosystem-service losses to 2100

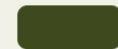
67:1

return on the 5-year investment

FULL LIFECYCLE TO 2100

\$3.3B

total cleanup costs, incl. 75 years of operations



Benefits Costs

6:1

even when the full operating cost is counted

BY SHARED WATER BODY

Cities that share a sea can be funded as one programme

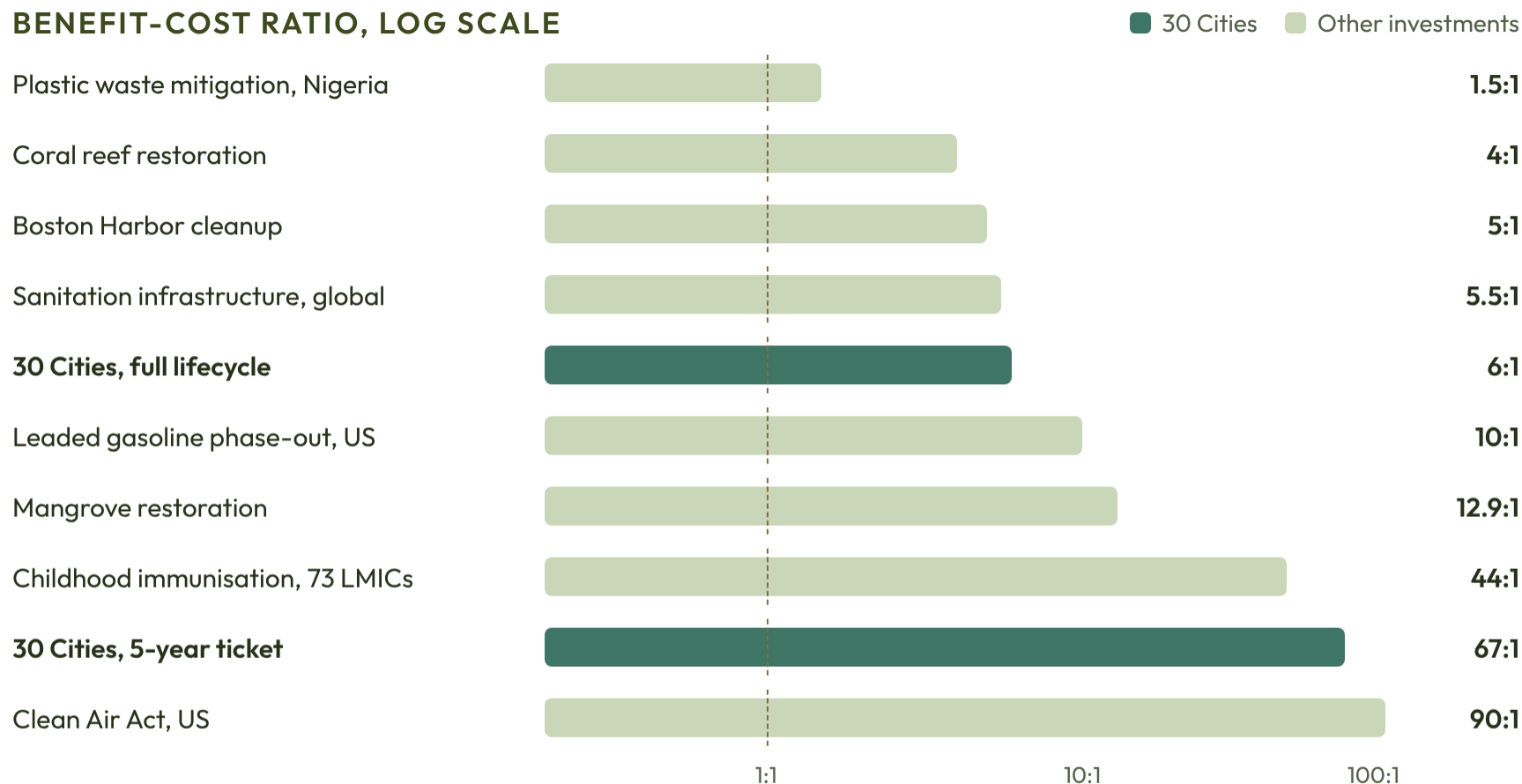
	to 2100	5-year
Caribbean Sea	14:1	89:1
Jakarta Bay	9:1	55:1

5-year ticket = benefits to 2100 ÷ the first 5 years of cleanup costs; assumes operations after year 5 are funded from other sources. All values NPV. Source: The Ocean Cleanup, 30 Cities study (2026).

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Social B/C in 30 cities – benchmark

BENEFIT-COST RATIO, LOG SCALE



WHERE IT LANDS

Over the full lifecycle, the portfolio already matches a harbour cleanup or sanitation investment.

On the funder's 5-year ticket, it sits alongside childhood immunisation.

Comparators are maximum reported ratios from separate studies with different methods and horizons; indicative only. Source: The Ocean Cleanup, 30 Cities study (2026), compiled literature.

THE OCEAN CLEANUP®

What changed for The Ocean Cleanup

FUNDRAISING

Sharper, evidence-based asks

Rivers lead our asks: open-ocean work proved harder to fund

The city ranking sets which locations we take to funders

Every ask states the 5-year return on the funder's money

IMPACT FINANCE

From donation to investment case

Quantified ecosystem benefits showed that our interventions can qualify for impact financing, not only philanthropy.

This is now the direction the organisation is taking.

INTERNAL PRIORITIES

Beyond tonnes removed

The analysis moved our thinking from plastic removal alone to the outcomes that removal creates.



FOR GBF TARGET 7 Benefit-cost evidence turns "reduce plastic pollution" into an investable pipeline of locations.

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Panel discussion



Liliane Geerling – Netherlands Enterprise Agency



Svanika Balasubramanian – rePurpose



Ingrid Coutzee – ICLEU



Ahmad Damaj – The Ocean Cleanup



Panel directions/questions

Broader story

We quantified hidden societal value → we showed that this can influence real intervention choices → we explored what happens locally → we asked what institutions and finance are needed to scale → and finally we ask how all of this contributes to implementing the GBF

Logic of session for panel

From evidence to implementation: how can policy, investment and local action turn societal returns from plastic interventions into lasting environmental and social outcomes? And How do we move from evidence about societal returns to implementation at scale — from global biodiversity commitments to investments and action on the ground?

Svanika (RePurpose)

Move towards bridging from science to implementation (Business example)

Q: From RePurpose's experience, what makes a plastic-recovery intervention deliver lasting environmental and social impact—not just tonnes collected? Could you share one example of the outcomes or partnerships that matter most, including for waste workers and local communities?

"We have just shown how this research can inform real decisions. Once you move from a societal business case to actually deploying an intervention, what other factors determine whether you invest, where you invest and whether an intervention can succeed? Local issues/value of waste management

Liliane (RVO)

System enabler (institutional perspective)

Q: From your experience with international water programmes and local partnerships, what most often determines whether a promising pilot becomes a sustained programme? What needs to be built in from the start to secure local ownership, institutional support and long-term funding?

Who takes responsibility for maintenance, monitoring and financing once the initial project or subsidy ends?

Ingrid (ICLEI)

Linking back to GBF Local/subnational implementation

Q: We've talked about projects, finance, business and policy. But the Global Biodiversity Framework ultimately has to be implemented in places — cities, regions and communities. From the perspective of local and subnational governments, what needs to happen to translate plastic and waste management fit into that broader biodiversity and resilience agenda for cities and how to bring these into integrated action on the ground?"

Local and subnational governments often bear the costs of plastic pollution, from waste management to blocked drainage and environmental damage, without controlling all the upstream drivers. From ICLEI's experience, what needs to change so that cities and regions can move beyond managing plastic waste to preventing pollution as part of broader biodiversity and resilience planning?

Panel directions/questions

Ahmad (The Ocean Cleanup)

AAA

Closing question

As COP17 reviews progress under the Global Biodiversity Framework, what is the one practical change—in business practice, policy, finance or local governance—that would most help turn evidence on the societal benefits of plastic interventions into lasting results on the ground?

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Audience interventions

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Audience intervention

Open discussion/questions from the audience to respond on/tackle

Questions for audience if not responding:

- X
- Y
- Z