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 **Università di Genova**

Presentazione del corso Jean Monnet:
EVA
"Environmental Valuation and Accounting"

28 GENNAIO 2022

Programma

ORE 10.00-10.15: Saluti istituzionali
ORE 10.15-11.00: Presentazione del corso (B. Cavalletti)
ORE 11.00-13.00: Tavola rotonda "Misurare ciò che conta per sostenere la transizione verde dell'UE e raggiungere gli obiettivi climatici"

Moderà

Gian Lorenzo Boracchia
Dirigente Settore Programmazione Finanziaria e Statistica, Autorità di Gestione FSC
Responsabile Nucleo Regionale Conti Pubblici Territoriali di Regione Liguria

Intervengono


Renato Paniccià
Dirigente di ricerca in Macroeconomia Regionale presso IRPET. Illustrerà i recenti lavori di IRPET sulla modellistica economico energetica in un quadro sintetico delle innovazioni apportate e dei principali risultati.

Alessandro Fabbrini
Economista della Sede di Genova della Banca d'Italia. Chiarirà la sfida del cambiamento climatico in relazione al mondo della finanza, portando l'esempio delle azioni interne di Banca d'Italia contro il cambiamento climatico.

Laura Nieri
Professore di Economia degli Intermediari Finanziari (UNIGE). Tratterà i temi della finanza green nelle sue molteplici declinazioni, confrontando il punto di vista macroeconomico con quello sulle singole imprese.

Stefano Aliani
Responsabile del gruppo sul "Cambiamento Globale" dell'Istituto di Scienze Marine del CNR Lerici. Porgerà la prospettiva ecologica sulla necessità e gli usi di misure e "conti" ai fini delle politiche di gestione di beni e servizi ambientali.

PER ACCEDERE ALL'EVENTO CLICCA QUI
PER ULTERIORI INFORMAZIONI: EVA.JEANMONNET.UNIGE.IT

 Cofinanziato dal programma Erasmus+ dell'Unione europea

Cara plastica, quanto mi costi?

Key Questions:

- 1. What is marine litter?**
- 2. Sources of marine litter?**
- 3. Where is marine litter?**
- 4. How much litter at sea?**
- 5. Ecology of litter at sea?**
- 6. How much money litter costs to you?**
- 7. What can we do against marine litter?**
- 8. Monitoring GES**

6. How much money litter costs to you?

6. How much money litter costs to you?

Or...

Economic Impacts of Marine Litter

Economic Impacts of Marine Litter

What is marine litter?

“Marine debris” is defined as any

anthropogenic, manufactured, or processed solid material (regardless of size)

discarded, disposed of, or **abandoned** in the environment,

including all materials discarded into the sea, on the **shore**, or

brought **indirectly** to the sea by rivers, sewage, storm water, waves, or winds.”

Economic Impacts of Marine Litter

Types of marine litter

- plastics including moulded, soft , foam, nets, ropes, buoys, monofilament line and other fisheries related equipment, smoking related items such as cigarette butt s or lighters, and microplastic particles
- metal including drink cans, aerosol cans, foil wrappers and disposable barbeques • glass including buoys, light globes, fluorescent globes and bottles
- processed timber including pallets, crates and particle board
- paper and cardboard including cartons, cups and bags
- rubber including tyres, balloons and gloves
- clothing and textiles including shoes, furnishings and towels
- sewage related debris (SRD) including cotton bud sticks, nappies, condoms and sanitary products





Is3: Ishmi, Fushëkrujë

Economic Impacts of Marine Litter

What is marine litter?

Plastics dominate marine litter and represent a significant threat to the marine environment due to their abundance, longevity in the marine environment and their ability to travel vast distances.

Despite representing only 10% of all waste produced (Thompson et al 2009a), plastics account for between 50-80% of marine litter (Barnes et al 2009) and this is expected to continue to grow for the foreseeable future

TOP 10 ITEMS FOUND



1 2,117,931
cigarettes / cigarette filters



6 692,767
cups, plates, forks,
knives, spoons



2 1,140,222
food wrappers / containers



7 611,048
straws, stirrers



3 1,065,171
beverage bottles (plastic)



8 521,730
beverage bottles (glass)



4 1,019,902
bags (plastic)



9 339,875
beverage cans



5 958,893
caps, lids



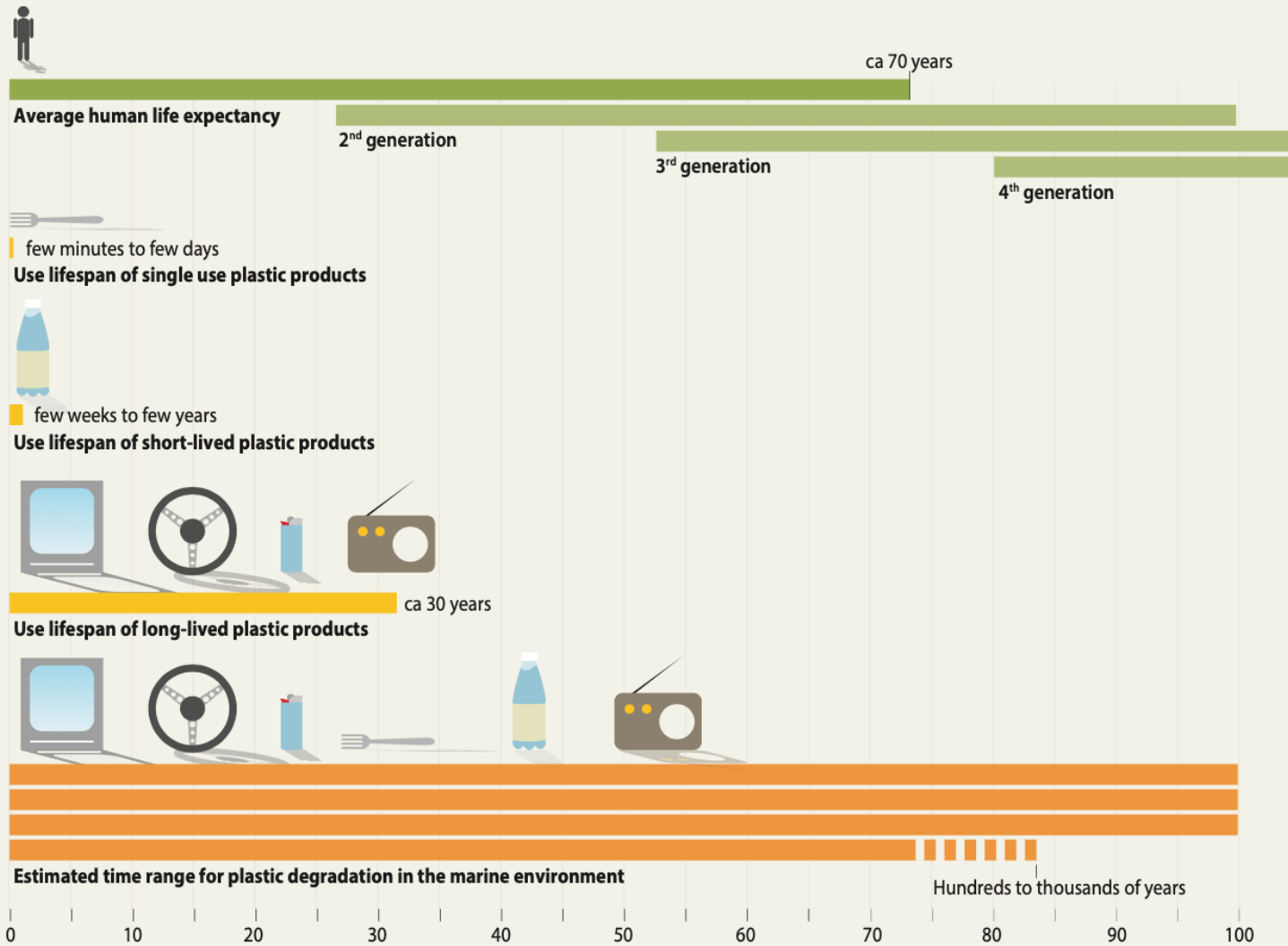
10 298,332
bags (paper)

6. How much money litter costs to you?

Material	Degradation Rate (years)	Reference
Cotton rope	1	Ten Brink 2009
Untreated plywood	1-3	Ten Brink 2009
Cigarette butts	1-5	Cheshire et al 2009
Plastic bag	10-20 20-30	Ten Brink 2009 Cheshire et al 2009
Commercial netting	30-40	Ten Brink 2009
Foamed plastic buoy	80	Ten Brink 2009
Aluminium can	80-200 80-500	Ten Brink 2009 Cheshire et al 2009
Plastic beverage bottle	450	Ten Brink 2009
Monofilament fishing line	600	Ten Brink 2009
Glass bottle	1 million	Ten Brink 2009

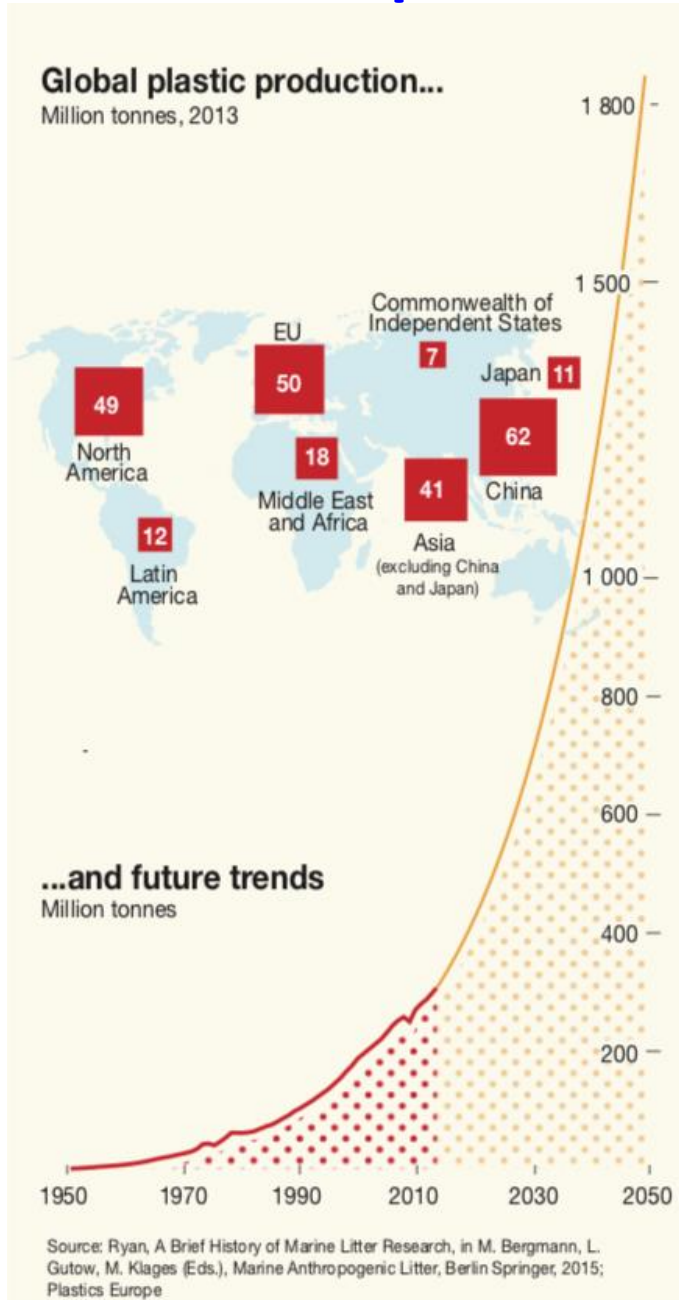
Economic Impacts of Marine Litter

Are most of the plastics produced still around?



Source: Barnes, D. K., et al., Accumulation and fragmentation of plastic debris in global environments, Biological Sciences

Economic Impacts of Marine Litter



6. How much money litter costs to you?

How much plastic waste is produced worldwide



Plastic waste generation rate

Kilograms per person per day

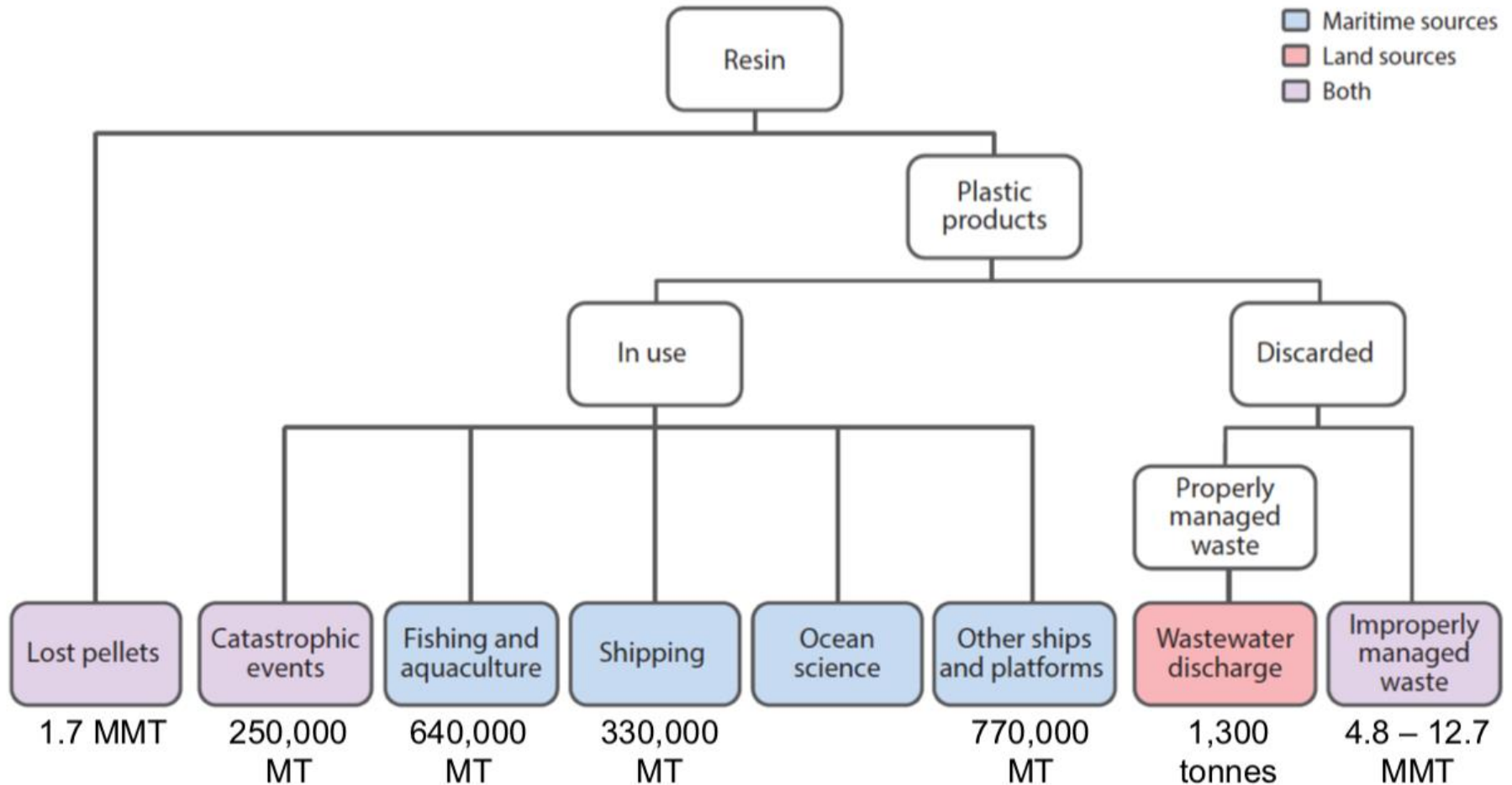


Source: Jambeck, J., R., et al, Plastic waste inputs from land into the ocean, Science, 2015



Economic Impacts of Marine Litter

6. How much money litter costs to you?



Economic Impacts of Marine Litter

6. How much money plastic litter costs to you?

We live in a throwaway culture

Most of what we eat, drink, or use in any way comes packaged in petroleum plastic - a material designed to last forever, yet used for products that we then throw away

Economic Impacts of Marine Litter

6. How much money plastic litter costs to you?

We live in a throwaway culture

This throwaway mentality is a relatively recent phenomenon. Just a generation ago, we packaged our products in reusable or recyclable materials – glass, metals, and paper, and designed products that would last.

Economic Impacts of Marine Litter

6. How much money plastic litter costs to you?

We live in a throwaway culture

The short-term convenience of using and throwing away plastic products carries a very inconvenient long-term risk.

We currently recover only 5% of the plastics we produce.

Economic Impacts of Marine Litter

6. How much money plastic litter costs to you?

We live in a throwaway culture

We currently recover only 5% of the plastics we produce.

Roughly 50% is buried in landfills, some is remade into durable goods, and much of it remains “unaccounted for”, lost in the environment where it ultimately washes out to sea.

Economic Impacts of Marine Litter



Economic Impacts of Marine Litter



At over **\$90 billion**, that **cost** includes programs to clean up ocean trash, better manage waste and improve wastewater treatment plants. It also means investing in research on biodegradable plastics, all while working to limit plastic pollution of any kind in the first place.

Economic Impacts of Marine Litter



\$90 billion sunglasses?

Economic Impacts of Marine Litter

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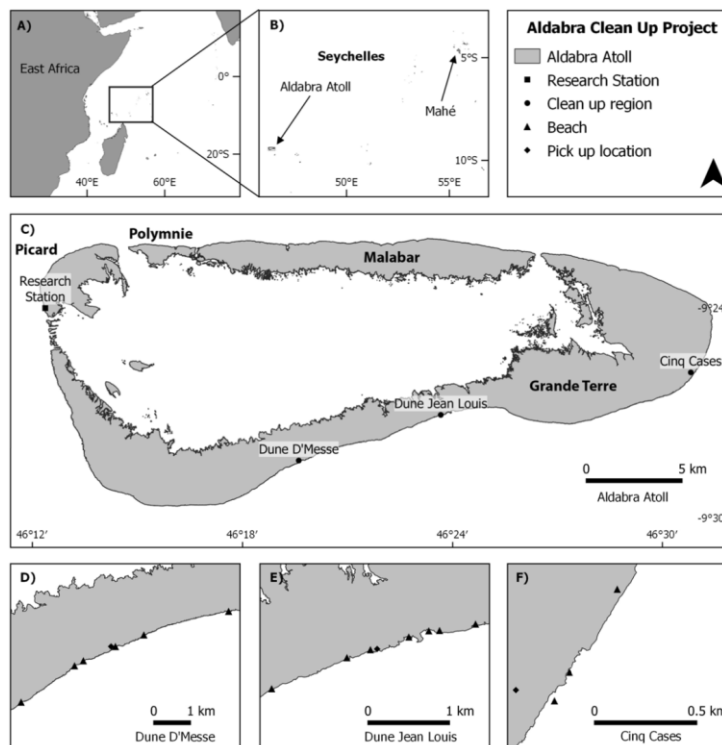


OPEN

The costs of removing the unsanctioned import of marine plastic litter to small island states

April J. Burt^{1,2}, Jeremy Raguain², Cheryl Sanchez², Jude Brice², Frauke Fleischer-Dogley², Rebecca Goldberg³, Sheena Talma², Martyna Syposz³, Josephine Mahony⁴, Jake Letori², Christina Quanz², Sam Ramkalawan², Craig Francourt², Ivan Capricieuse², Ash Antao², Kalsey Belle², Thomas Zillhardt⁵, Jessica Moumou², Marvin Roseline², Joel Bonne², Ronny Marie², Edward Constance², Jilani Suleman² & Lindsay A. Turnbull^{1,2,6}

6. How much money litter costs to you?



Economic Impacts of Marine Litter

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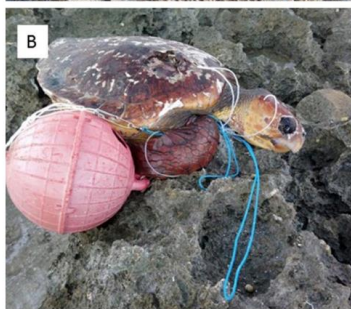
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Economic Impacts of Marine Litter

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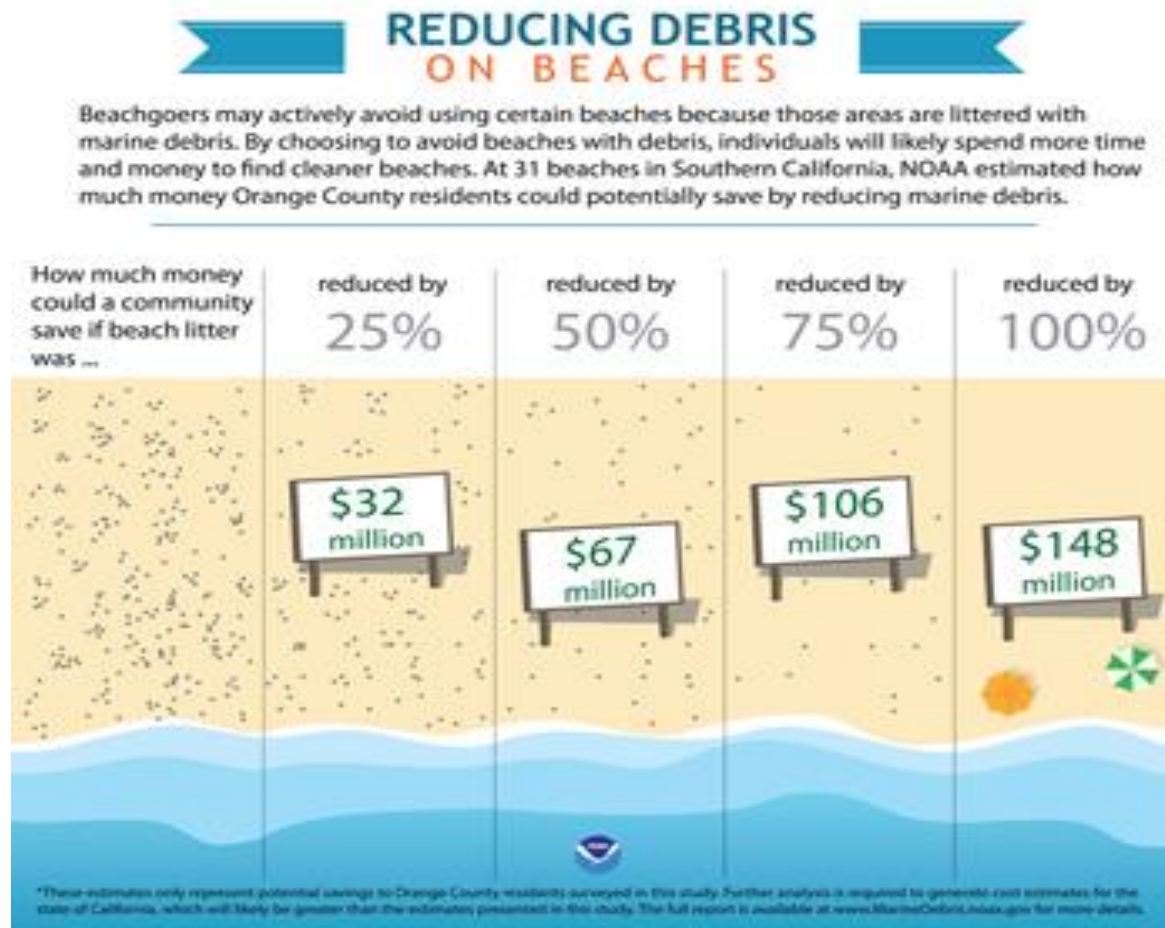
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Action	Cost in Seychelles Rupee	Cost in GB Pound	Cost in US Dollar	Average daily cost in US Dollar
Equipment (3,000 sacks and 825 slings)	SCR 184,350	£ 10,323	\$ 13,457	\$ 395
Team Food (12 people)	SCR 64,438.9	£ 3,678.83	\$ 4,703	\$ 138
Team Transport	SCR 669,313	£ 38,211	\$ 49,504	Not included
Cargo vessel (18 days in total)	SCR 2,057,318	£ 117,482	\$ 152,163	\$ 8,454
Small boats fuel (4 days of pick-up shuttles)	SCR 30,000	£ 1,694	\$ 2,191	\$ 547
SIF staff (based on average staff salary, daily rate for ten staff over 4 days for pick-up)	SCR 20,000	£ 1,129	\$ 1,461	\$ 365
Cost of coastguard deployment*	SCR 1,100,000	£ 62,111	\$ 80,372	Not included
Total	SCR 3,025,420	£ 172,722	\$232,588	\$ 9,899

Economic cost

6. How much money plastic litter costs to you?



Economic Impacts of Marine Litter

Beach Cleaning, Tourism and Recreation

In the U.K., the cost of removing **beach litter** to all coastal municipalities is estimated to be in the region of €18–19 million (Mouat et al. 2010).

This equates to an average cost per municipality of €146,000

Economic Impacts of Marine Litter

Shipping and Yachting

Harbors and marinas incur the cost of removing marine litter from their facilities in order to keep them safe and attractive to users, and vessels experiencing interference with propellers, anchors

Mouat et al. (2010) estimated that removing marine litter costs U.K. ports and harbors on average €2.4 million per year.

286 rescue operations to vessels with tangled propellers cost between €830,000 and €2,189,000

Economic Impacts of Marine Litter

Fisheries

45 % of the commercial fishers had their propellers caught, over 30 % had their gear fouled, and almost 40 % had their engine cooling system clogged

impact of loss and abandoned fishing gear on fish stocks

average marine litter costs **each** fishing vessel between €17,000 and €19,000 per year

Economic Impacts of Marine Litter

Aquaculture

marine litter costs the sector on average €156,000 per year

in comparison to other sectors such as fisheries, and even agriculture, the direct cost imposed by marine debris is relatively low

Economic Impacts of Marine Litter

Human Health

At a local level ocean beachgoers get cut by debris and access first aid.

Collisions with marine litter can seriously injure or kill mariners (Gold et al. 2013).

This is particularly the case with impacts between smaller vessels and larger objects, such as semi-submerged lost shipping containers, which is a known danger to recreational sailors and fishers.

Proper assessment at larger scale is very difficult

Economic Impacts of Marine Litter

Economical solution

- Incentivize industries to use less plastic (packaging) either through economic disincentives/subsidies (internalizing external cost);
 - Target waste arisings generally—such as with a landfill tax;
 - Target specific types of waste—such as plastic bags;
 - Target sources of waste most problematic for marine litter—such as shipping;
 - Target individual types of marine litter—such as to reduce ghost fishing;
 - Pay for the collection of litter;
 - Target the toxicity of litter;
 - Discourage polluting behavior

Economic Impacts of Marine Litter

6. How much money plastic litter costs to you?

Cost of managed litter

On average, cities spend an estimated 13euro per person to control litter.

Economic Impacts of Marine Litter

6. How much money plastic litter costs to you?

Cost of managed litter on land

City Size	Population Range	Range of Annual Costs	Average Annual Cost
Largest	250,000 or more	\$2,877,400 – \$20,672,266	\$10,054,805
Larger	75,000 – 249,999	\$342,000 – \$2,057,500	\$1,211,522
Mid-Sized	15,000–74,999	\$37,500 – \$2,330,000	\$557,597
Smaller	0–14,999	\$0 – \$890,000	\$95,345

Economic Impacts of Marine Litter

6. How much money plastic litter costs to you?

Beach And Waterway Cleanups

City Size	Population Range	Range of Annual Costs Reported	Average Annual Cost	Average Per Capita Cost
Largest	Over 250,000	\$0 - \$1,837,398	\$422,185	\$0.83
Larger	75,000-249,999	\$0 - \$17,500	\$3,329	\$0.03
Mid-Sized	15,000-74,999	\$0 - \$112,459	\$12,746	\$0.28
Smaller	Under 15,000	\$0 - \$114,005	\$6,418	\$1.28

Economic Impacts of Marine Litter

6. How much money plastic litter costs to you?

Street Sweeping

City Size	Population Range	Range of Annual Costs Reported	Average Annual Cost	Average Per Capita Cost
Largest	Over 250,000	\$245,000 – \$8,104,857	\$4,084,492	\$5.36
Larger	75,000–249,999	\$180,000–\$1,224,210	\$641,298	\$5.58
Mid-Sized	15,000–74,999	\$25,685–\$1,300,000	\$272,715	\$7.06
Smaller	Under 15,000	\$0 – \$160,301	\$36,314	\$5.48

Economic Impacts of Marine Litter

6. How much money plastic litter costs to you?

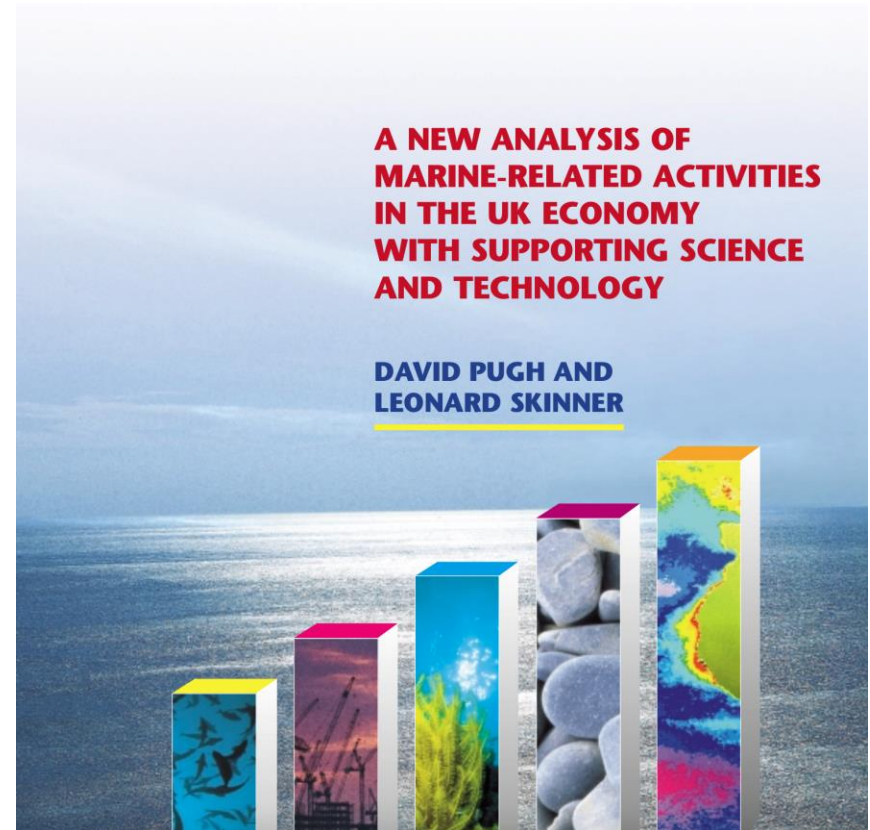
Manual Litter Cleanup

City Size	Population Range	Range of Annual Costs Reported	Average Annual Cost	Average Per Capita Cost
Largest	Over 250,000	\$48,000 – \$7,000,000	\$2,371,903	\$2.58
Larger	75,000–249,999	\$0 – \$150,000	\$50,141	\$0.48
Mid-Sized	15,000–74,999	\$0 – 200,000	\$46,188	\$1.09
Smaller	Under 15,000	\$0 – \$81,000	\$11,166	\$2.11

6. How much money plastic litter costs to you?

Loss of gain

In the UK, the marine environment contributed £38.9 billion to Gross Domestic Product in 2000, which accounts for almost 5% of GDP that year (Pugh and Skinner 2002).



6. How much money plastic litter costs to you?

Loss of gain

Marine litter can cause a broad spectrum of economic impacts that both reduce the economic benefits derived from marine and coastal activities, and/or increase the costs associated with them

Loss of gain - Hall200

Litter cleansing costs

Losses to tourism

Losses to fisheries

Losses to aquaculture

Costs to shipping US 269 rescues \$3 million property damage

Control and eradication invasive non-native species

£525,000 per species per year

No action cost £6,875,625

Costs to coastal agriculture

Shetland £400 a year

Costs to power stations

£50,000 per plant per year

Environmental damage and ecosystem degradation

6. How much money plastic litter costs to you?

UK £2,197,138 a year

USA \$379million and \$3.6billion

Shetland £30,000 a year per ship

£1,200 per entanglement

6. How much money plastic litter costs to you?

Loss of gain - Hall200

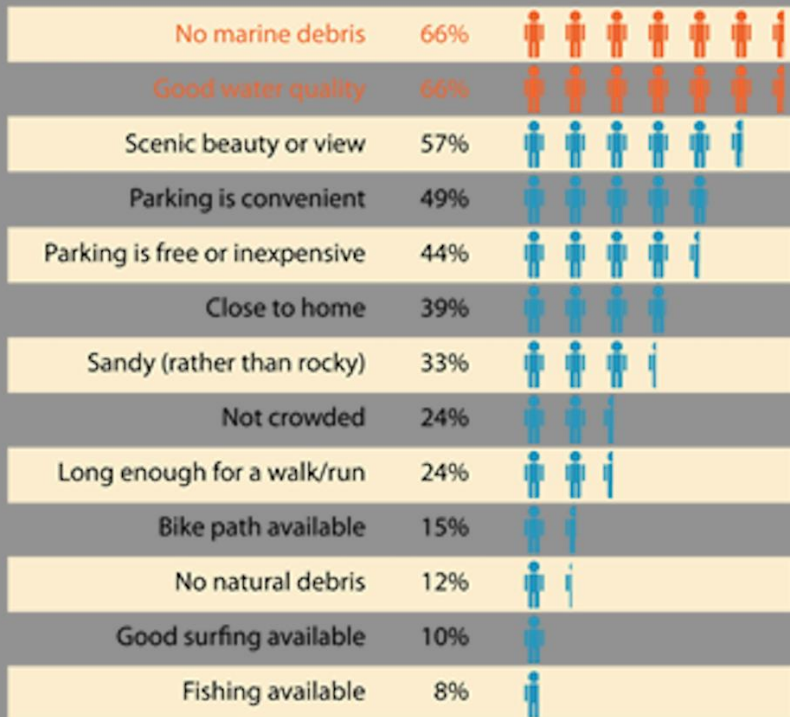
Environmental damage and ecosystem degradation – Priceless


Non market values when debris affect e.g. scenic views

Public perception of litter

6. How much money plastic litter costs to you?

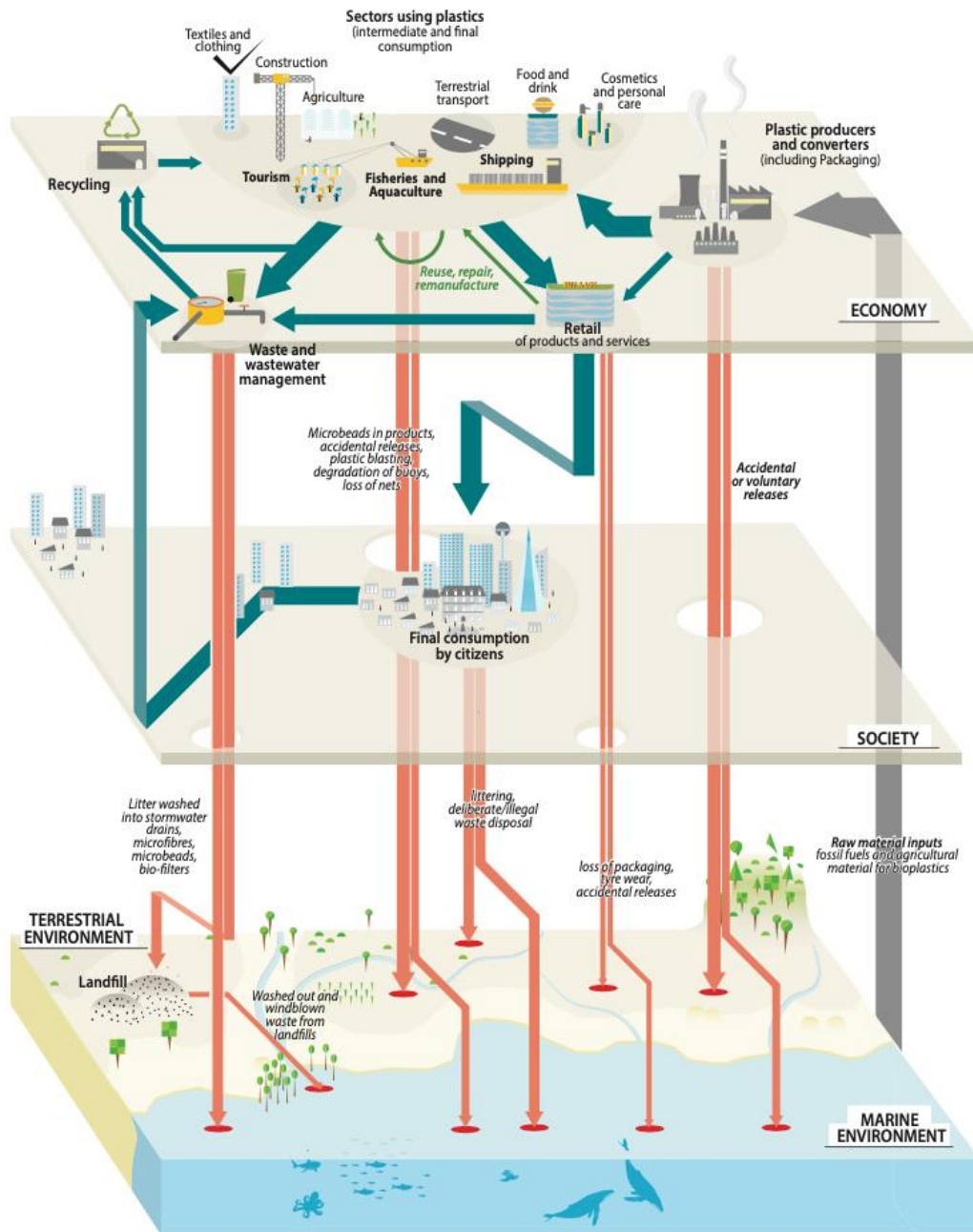
Percentage of people that ranked the following beach characteristics as very important



 = 10%



How plastic moves from the economy to the environment



Q. How much money plastic litter costs to you?

A. A lot, but difficult to fully assess, however low cost consumables not worth