

Plastics in the Ocean

Briefing to the Portfolio Committee on Environmental Affairs



Oceans and Coasts



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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Context

- Globally, plastic production has reached 322 million tons, with an increase of 4% annually.
- South Africa: 1.518 million tons of plastic produced per year.
- Only 329,099 tons (21%) are diverted from landfills (recycled) annually.
 - *Up to 40% of used plastics are scrapped & rejected from recycling due to impurities & additives that prevent economical recycling.*
- DEA Plastic Material Flow Study:
 - “15 - 25% of unrecovered plastic is estimated to be in informally managed waste streams, with a high likelihood of becoming litter.”*
- UNEP (2016): Globally, over 30% of plastic bags produced ends up in the environment.



Plastic and our oceans

Plastic waste inputs from land into the ocean

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- Between **4.8 – 12.7 million tons** enters the world's oceans per year from 192 coastal countries.
- Volume of plastic entering oceans is **1-3 times greater** than the estimated mass of plastic already at sea.
- Largest quantities estimated to be coming from **relatively small number of countries** in Asia and other middle income, rapidly developing countries.
- With no improvements to waste management infrastructure, the cumulative input of plastic will **increase to 250 million tons by 2025**.



Plastic and our oceans

A CLOSER LOOK AT JAMBECK ET. AL'S FINDINGS

Top 20 countries for mismanaged waste

Rank	Country	Econ. classif.	Coastal pop. [millions]	Waste gen. rate [kg/ ppd]	% plastic waste	% mismanaged waste	Mismanaged plastic waste [MMT/ year]	% of total mismanaged plastic waste	Plastic marine debris [MMT/ year]
1	China	UMI	262.9	1.10	11	76	8.82	27.7	1.32–3.53
2	Indonesia	LMI	187.2	0.52	11	83	3.22	10.1	0.48–1.29
3	Philippines	LMI	83.4	0.5	15	83	1.88	5.9	0.28–0.75
4	Vietnam	LMI	55.9	0.79	13	88	1.83	5.8	0.28–0.73
5	Sri Lanka	LMI	14.6	5.1	7	84	1.59	5.0	0.24–0.64
6	Thailand	UMI	26.0	1.2	12	75	1.03	3.2	0.15–0.41
7	<u>Egypt</u>	LMI	21.8	1.37	13	69	0.97	3.0	0.15–0.39
8	<u>Malaysia</u>	UMI	22.9	1.52	13	57	0.94	2.9	0.14–0.37
9	<u>Nigeria</u>	LMI	27.5	0.79	13	83	0.85	2.7	0.13–0.34
10	Bangladesh	LI	70.9	0.43	8	89	0.79	2.5	0.12–0.31
11	South Africa	UMI	12.9	2.0	12	56	0.63	2.0	0.09–0.25
12	India	LMI	187.5	0.34	3	87	0.60	1.9	0.09–0.24
13	<u>Algeria</u>	UMI	16.6	1.2	12	60	0.52	1.6	0.08–0.21
14	<u>Turkey</u>	UMI	34.0	1.77	12	18	0.49	1.5	0.07–0.19
15	Pakistan	LMI	14.6	0.79	13	88	0.48	1.5	0.07–0.19
16	Brazil	UMI	74.7	1.03	16	11	0.47	1.5	0.07–0.19
17	Burma	LI	19.0	0.44	17	89	0.46	1.4	0.07–0.18
18*	<u>Morocco</u>	LMI	17.3	1.46	5	68	0.31	1.0	0.05–0.12
19	North Korea	LI	17.3	0.6	9	90	0.30	1.0	0.05–0.12
20	United States	HIC	112.9	2.58	13	2	0.28	0.9	0.04–0.11

Plastic and our oceans

FINDINGS: SOUTH AFRICA

- We produce 2.0 kg of waste per person per day:
 - *We're 2nd only to the USA which has a much larger coastal population of over 100 million.*
- 56% of our waste is mismanaged & potentially becomes litter.
- Mismanaged plastic waste = 630 000 metric tons.
- Plastic marine litter entering the sea:
 - *90 000 – 250 000 tons per year.*



Plastic and our oceans

THE BIGGER PICTURE...

- Litter forms mega 'garbage patches' in the world's ocean gyres
- Of interest to RSA: South Atlantic Gyre, Indian Ocean Gyre



The image shows a screenshot of a web browser displaying a news article. The browser's address bar shows the URL: <http://mgafrika.com/article/2015-11-04-worlds-first-ocean-cleaning-system>. The page features the Mail & Guardian Africa logo at the top. Below the logo is a navigation menu with links for HOME, BIG POLITICS, BUSINESS, SPECIAL REPORTS, DEVELOPMENT, EDUCATION, SCI-TECH, and HEALTH. The main headline reads: "Garbage patches larger than area of Ethiopia and South Africa combined are floating in Africa's waters". Below the headline, the date and time are listed as "04 NOV 2015 17:45" and the author as "M&G AFRICA REPORTER". The article is flanked by two maps of the world, one on the left and one on the right, both showing dashed lines representing ocean gyres. Social media sharing icons for Facebook, Twitter, Google+, and LinkedIn are visible on the left side of the article. The browser's menu bar includes File, Edit, View, Favorites, Tools, and Help. The browser's title bar shows "Garba".

Mail & Guardian Africa

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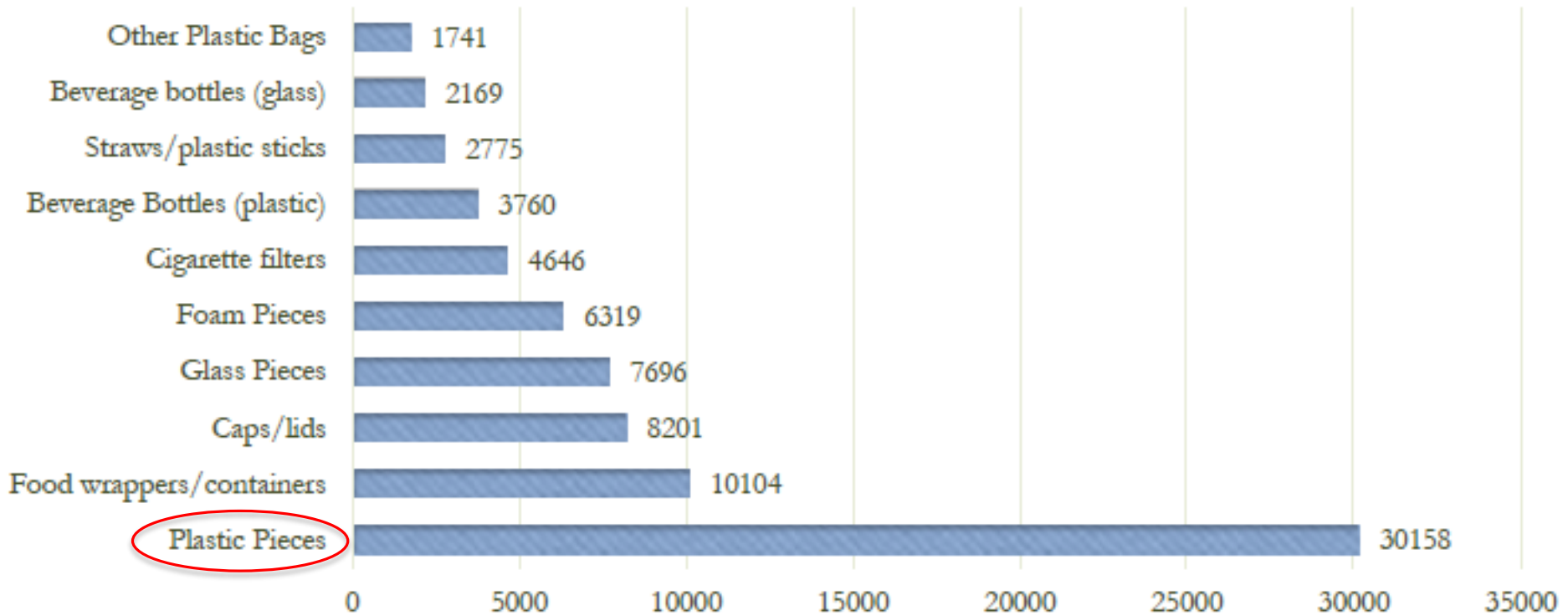
Garbage patches larger than area of Ethiopia and South Africa combined are floating in Africa's waters

04 NOV 2015 17:45 | M&G AFRICA REPORTER

Plastic inputs into the oceans

INTERNATIONAL COASTAL CLEAN-UP – SOUTH AFRICA'S LITTER TRENDS

Top ten items collected in 2017



Impacts of plastic litter

- Entanglement
 - *especially from fishing gear, may cause injury or death by drowning, suffocation, strangulation, starvation through reduced feeding efficiency.*
- Ingestion
 - *litter, especially plastic mistaken for food, blocks the digestive system causing malnutrition, starvation and possibly death.*
 - *may cause diseases or reproductive problems if contaminated with chemical compounds.*
- In general:
 - *frequency of impacts varies according to the type & shape of the litter.*
 - *Over 80% of recorded encounters involved plastic litter as opposed to other litter.*



Impacts of plastic litter

- Transfer of alien/invasive species
 - *act as rafts for small sea creatures to grow and travel where they are non-native.*
- Chemical transfer
 - *litter may contain chemical additives or may absorb chemicals such as POPs, which if injected, can contaminate marine organisms.*

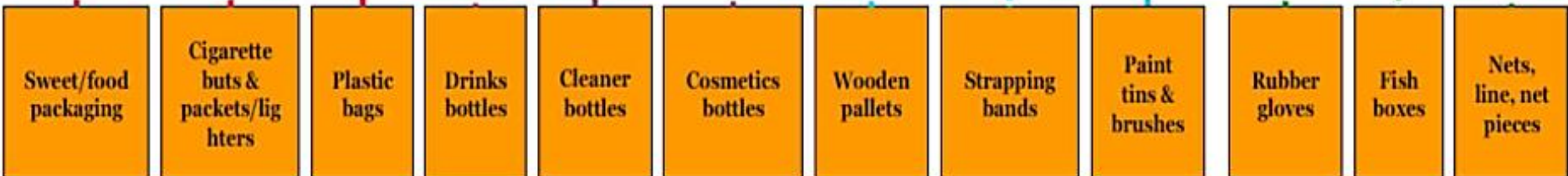
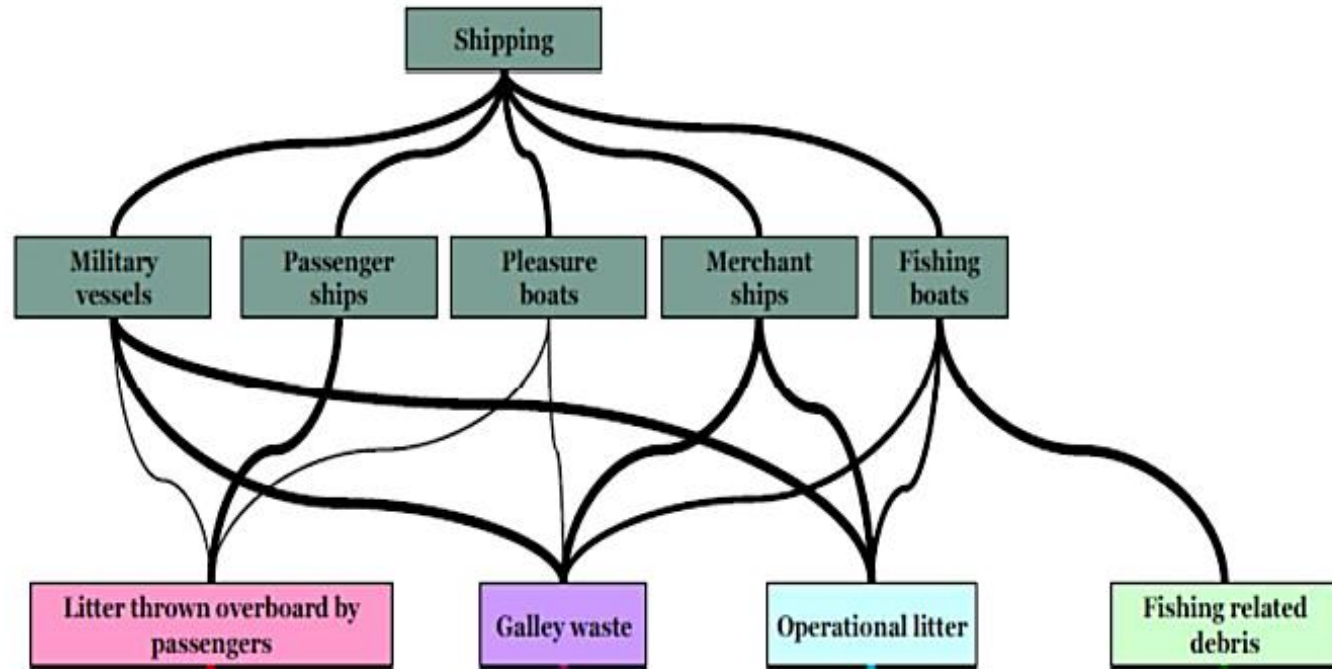


MICRO-PLASTICS IN COSMETIC PRODUCTS

- Small enough to **escape sewage treatment & enter freshwater and marine environment.**
- Ingested by marine organisms and may **accumulate in digestive tracts**, causing malnutrition.
- Known to attract **harmful chemical compounds**, which can be absorbed by organisms.

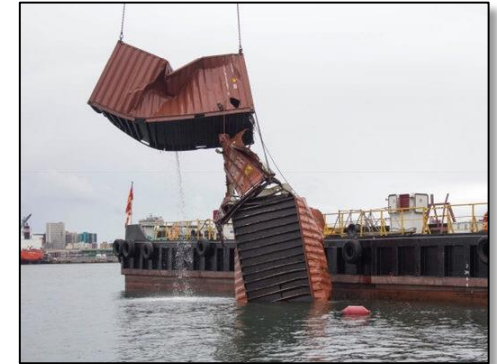


Plastics & ships



Plastics & ships – plastic cargo spill

- Port of Durban – October 2017
 - *Severe storm event, 2 vessels collide.*
 - *49 tons of plastics “nurdles” spilled into sea.*
- Significant risk of ingestion by marine species.
- Incident sparked major nurdle clean-up involving DEA, key authorities, commercial service providers, NGOs, members of public.
- Within weeks – nurdles carried by ocean currents to coastlines of Northern KZN, Eastern Cape, Western Cape.
- Less than 25% recovered to date.
- Incident highlighted:
 - *Need for safer packaging & storage for industrial pellets transported at sea;*
 - *Coastline inundated with nurdles from many other sources.*



DEA Working for the Coast Project

- An Environmental Protection and Infrastructure Programme (EPIP) project aimed at **cleaning** and **rehabilitating** the coastline, while at the same time **creating jobs** and **skills development**.
- Covers **entire South African coastline** from Alexander Bay to Kosi Bay, working with municipalities & conservation agencies.
- **2-year** implementation **cycle** (July 2016- June 2018).

Number of people employed	Women	Youth	People with disability
2407	1,320	1,560	48

- **Several successes** have been **reported**, notably an increase in number of beaches with internationally renowned Blue Flag status: increase from 3 (2001) to 44 beaches (2017).



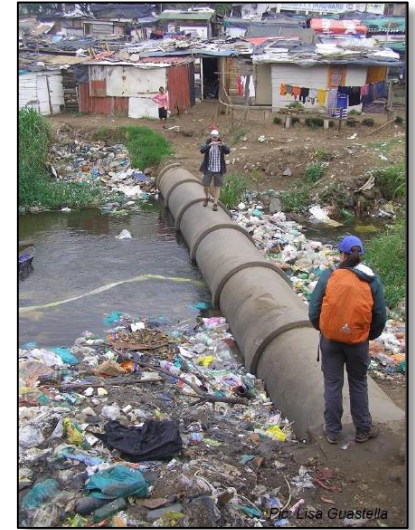
DEA Source 2 Sea initiative

- Rationale:
Despite ongoing efforts to clean RSA's beaches, litter continues to flow to the coast through rivers & waterways from inland sources.
- Objectives:
 - *Implement an initiative aimed at removing litter 'at source' in catchments before it reaches the coast.*
 - *Focus especially on informal & un-serviced settlements.*
 - *Pursue opportunities for litter/waste sorting, recycling, provision of low-cost waste collection facilities etc.*
 - *Significantly improve public awareness of marine litter problem in catchment areas.*
- Envisaged medium – long-term outcome:
 - *Reduction of marine litter from mismanaged waste.*



DEA Source 2 Sea initiative

- Established a **DEA Source 2 Sea Task Team** with key branches: Oceans & Coasts, Chemicals & Waste, Environmental Programmes, LACE.
- **Key opportunities identified for further investigation** (e.g. recycling, waste sorting).
- **Initial engagements held** with key private sector groups: PlasticsSA, recycling associations – positive response.
- Further consultations to be undertaken at a **stakeholder co-ordination workshop** (May 2018).
- Given potential enormous scale of task, initiative will initially focus on **5 priority river systems in KZN**, where recurring marine litter problems are experienced.



**clean
seas**
turn the tide
on plastic



Thank You



environmental affairs

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