Mediterranean Action Plan Coordinating Unit
Barcelona Convention Secretariat

UN environment

Proposal for the development of improvements on the solid waste management indicators in use

Webinar on the implementation of the Shared Environmental Information System (SEIS) principles and practices on the ENP Sought region" (ENP-SEIS)

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Antonis Mavropoulos
SEIS Project expert – *Waste*

Contents

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Scope of work

- To open the discussion on the use of proper indicators that will link marine litter (ML) and municipal solid waste management (SWM).
- To identify the improvements required in order to have indicators that will be:
  - Better describe and reflect the linkages between SWM and ML
  - Representative of the recent findings on ML quantities and composition
  - Linked with the shift to Circular Economy (CE)
  - Suitable for decision makers and decision takers

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A. Indicators in use in H2020

IND 1 - Municipal waste generation

- IND 1.A Municipal waste composition

IND 2 - Collected and treated municipal waste

- IND 2.A Number, type and location of landfills

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Indicators in use in NAPs

EO	Proposed core NAPs indicators	NAPs Update Guideline Indicator /H2002 Ref. No	IMAP Indicator Ref. No	SDG Indicator Ref. No	Common priority measures
EO10	11. Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities			11.6.1	Establish/ reinforce collection of municipal waste
					Construct/ upgrade municipal solid waste landfills
	12. Share of recycled, landfilled and incinerated municipal waste with respect to collected amount	MW05		12.5.1	Strengthen waste collection and disposal systems
	13. Amounts/trends of marine litter washed ashore and/or deposited on coastlines, including analysis of its composition, spatial distribution and, where possible, source.	MW01	22 (10.1.1)		
	14. Index of coastal eutrophication and floating plastic debris density			14.1.1	
	15. Share of existing illegal solid waste dumpsites on land that have been closed (in past 10 years) with respect to the total number	MW07			Close and rehabilitate illegal dump sites

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INDICATORS	Drivers	Pressures	State	Impacts	Responses
IND 1 - Municipal waste generation IND 1.A Municipal waste composition		X			
IND 2 - Collected and treated municipal waste IND 2.A Number, type and location of landfills		X	X		
NAP 11: Proportion of urban SW regularly collected and with appropriate final discharge out of total urban waste generated by cities		X	X		
NAP 12: Share of recycled, landfilled or incinerated municipal waste with respect to collected amount			X		
NAP 13: Amounts /trends of marine litter washed ashore and or deposited in coastlines, including analysis of composition, spatial distribution and where possible, source			X	X	
NAP 14: Index of coastal eutrophication and floating plastic debris density			X	X	
NAP 15: Share of existing illegal solid waste dumpsites on land that have been closed (in past 10 years) with respect to the total number			X		

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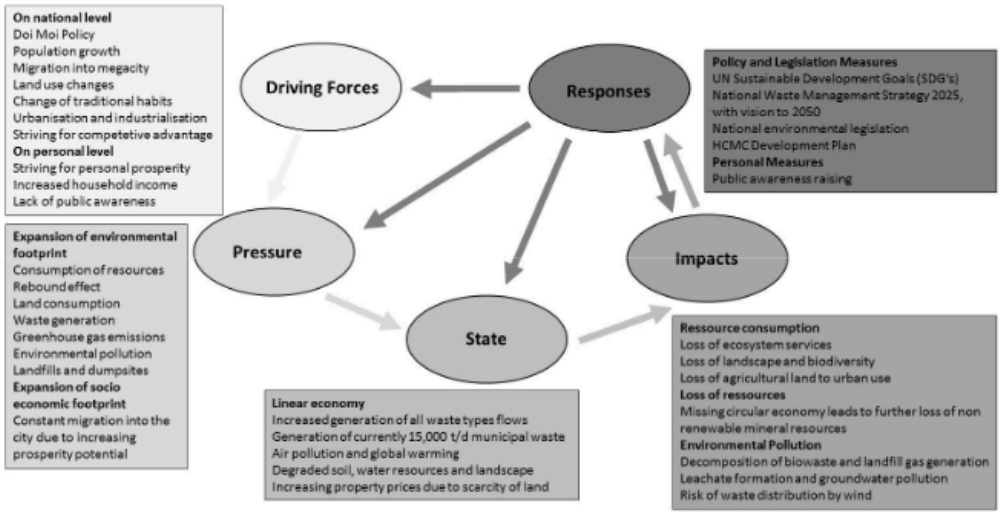

SOURCE: Schneider et al, Solid Waste Management in Ho Chi Minh City, Vietnam: Moving towards a Circular Economy? Sustainability 9(2):286 · February 2017

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B. Experiences gained

INSIGHTS	COMMENTS
IND 1: Concerns on the lack of data on waste generation -the indicator is currently based on estimation. **Need to have project support to develop waste surveys** **Need to have data on plastics reaching the sea (using existing marine litter projects).**	1. The concerns are right. Besides the surveys, there is another way to cross-check the results by adjusted them using the much more reliable and accountable economic statistics like the GDP/cap etc. 2. There is definitely a need to measure and monitor plastics as they are the most important element of ML
Participants proposed to split IND 2 in • **Municipal waste collected;** • **Municipal waste treated** **Reference should be made to the type of treatment. Suggestion was made to integrate the NAP common indicator 12 (and SDG 12.5.1). New indicator could be labelled as Municipal waste treated, by type of treatment (recycle, landfill, incineration) and share of treatment with respect to collected amount.**	1. It seems that mechanical biological treatment and composting are missing from the proposed typology of treatment. 2. Usually, collection efficiency is measured separately from treatment and disposal – the reason is that in many cases there is regular waste collection but uncontrolled disposal. 3. Do we have a clear definition on recycling? Do we consider informal recycling systems too?

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INSIGHTS	COMMENTS
To consider having a separate indicator on recycling. **Specific information can be requested for plastics**	Recycling is necessary to be measured as a separate indicator, especially for plastics. However, besides a common definition, we need to consider other elements like • Informal Recycling Systems, • Reuse, • Energy recovery • Waste prevention
The existing H2020 sub-indicator "number, type and location of landfills" should be a separate Indicator "Number, type and location of landfills". **Under this indicator, the NAP common indicator 15 could be a sub-indicator "share of existing illegal solid waste dumpsites on land that have been closed (in the past 10 years) with respect to the total number. Some countries expressed concerns as regards data availability for this indicator.**	There is a need to clarify what is a sanitary landfill and what is a dumpsite. Sanitary landfills are considered legal and safe disposal options. Dumpsites are uncontrolled disposal sites, with no environmental protection. The problem is that in many Mediterranean countries we have an intermediate solution, usually called "engineered landfill" (in contrast with sanitary). I believe that the number of dumpsites in coastal areas is straightforward linked with the ML quantities.

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INSIGHTS	COMMENTS
The countries supported the idea of having an indicator on waste collection efficiency. In this respect, the use of NAP common indicator 11 was suggested for further consideration "Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated by cities".	There is a need to paint the full picture of waste flows and see where are the most important leakages – collection efficiency is an important factor, but the usual problem is to answer what happens with the non-collected waste. In addition, imagine a case where the collection efficiency might be 100% and then the collected waste is brought to a dumpsite nearby a river or the seashore.
Countries confirmed the usefulness of having waste indicators at coastal level, which require sound statistics of population in coastal areas.	I believe this is a very important point. National figures say very few things for the leakages of waste that is transformed to ML. What we mainly need is to map the coastal cities and their performance, to assess their leakages and provide them suggestions for improvement.
Regarding marine litter, the countries expressed concerns on data availability to properly develop indicators, indicating that further work is needed. It was suggested to consider as well the NAP common indicator 14 (SDG indicator 14.1.1) "Index of coastal eutrophication and floating plastic debris density". The country representatives questioned the geographical scale to be applied for marine litter.	The link with the SDGs is a very important point. In addition, we must consider the necessity to link the indicators with the Circular Economy concept, which means to move from the waste view to the resources perspective. This means that we have to consider not only waste, but also Production and Consumption patterns, for a meaningful analysis.

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C. Marine Litter and Solid Waste Linkages

ML is the result of a systemic failure in:

(I) Uncontrolled plastic use

(II) Poor SWM services &infrastructure (mainly in the Med South), and insufficient monitoring & law enforcement (mainly in the Med North)

(III) Problematic and vulnerable markets for secondary plastics

(IV) Lack of a systemic and in-depth understanding of:

- The challenges &restrictions of material properties and flows
- The effects of social consumption patterns and littering behaviours on solid waste generation
- The impacts of unplanned tourist developments and of the fishing industry.

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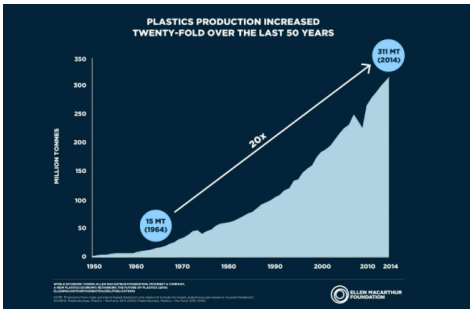
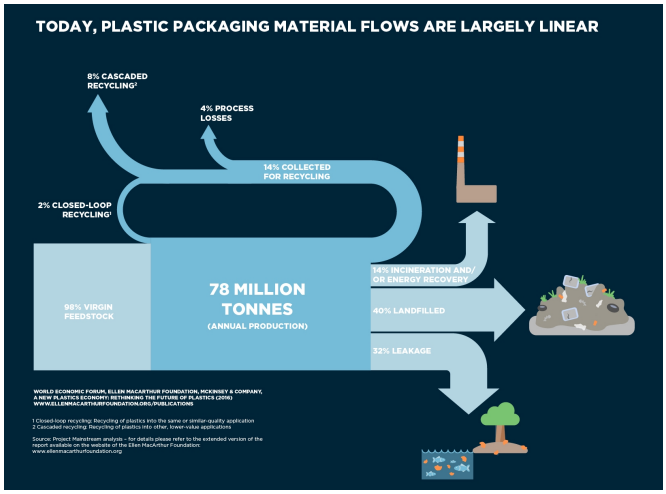
Plastic Generation & Flows





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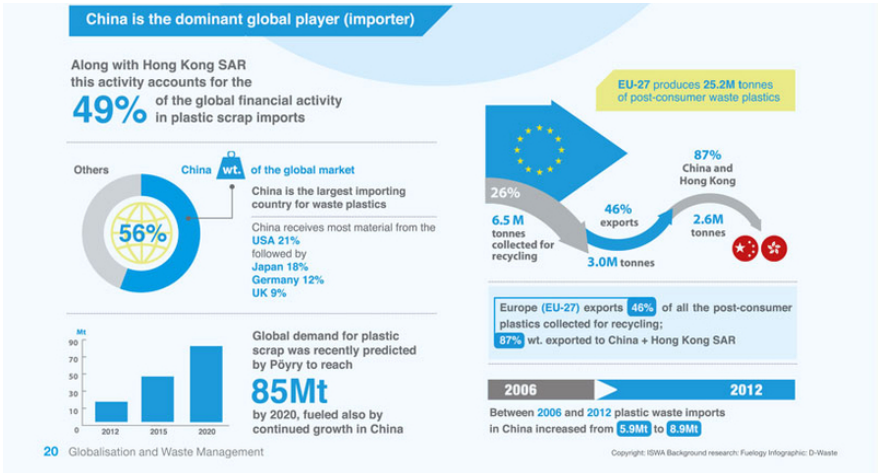
The role of secondary materials markets



SOURCE: ISWA TFGSWM, **GLOBAL RECYCLING MARKETS: PLASTIC WASTE, A STORY FOR ONE PLAYER - CHINA, 2013**

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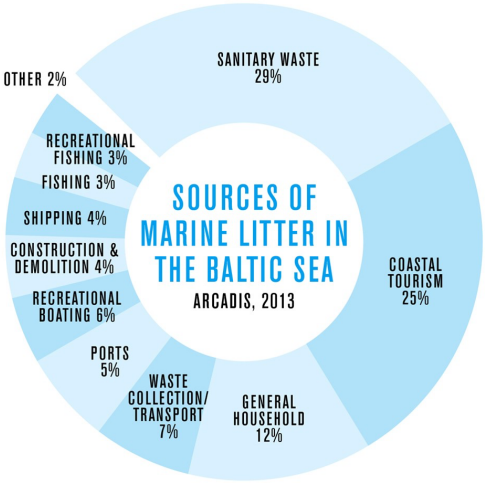
The role of tourism



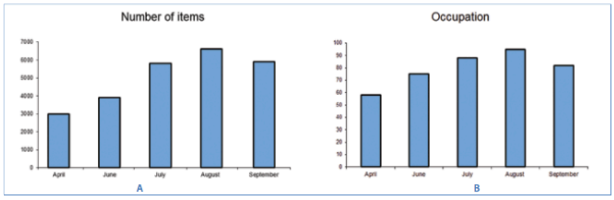


Figure 2.1.1e: Monthly variation of debris items (A) and percentage of hotel occupation for the corresponding date (B) in the Balearic Islands (Source Martinez-Ribes et al., 2007).

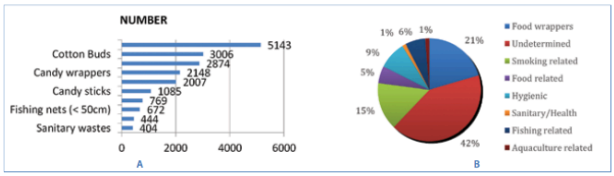


Figure 2.1.1f: Top ten items (A) and main sources of litter (B) collected on 52 beach samples around Marseille between 2008 and 2014 (Source Mer-terre.org).

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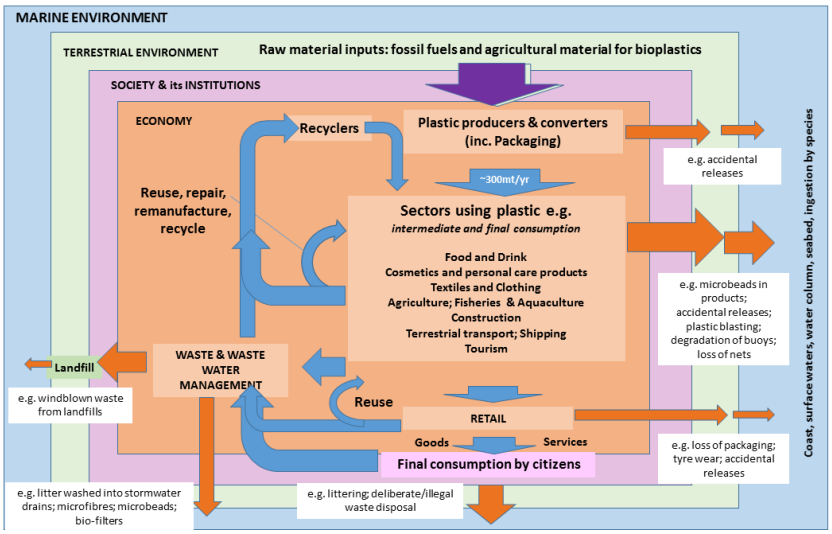
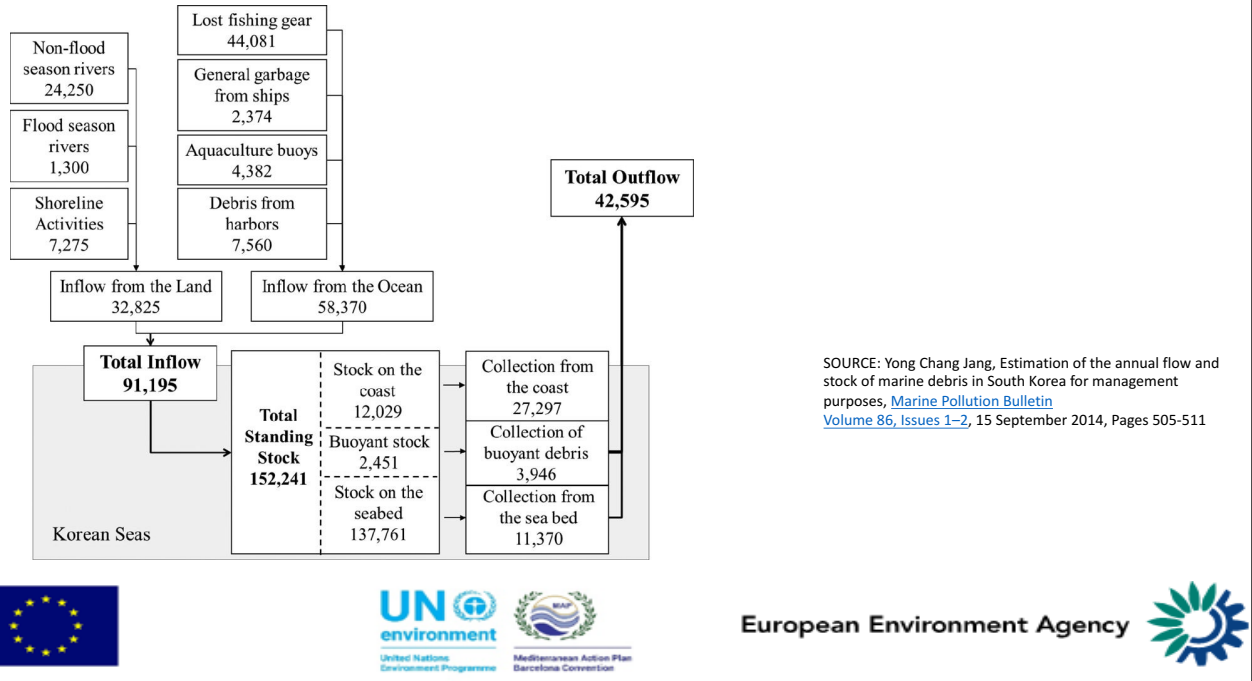
Understanding solid waste flows

SOURCE: Patrick ten Brink et al, Circular economy measures to keep plastics and their value in the economy, avoid waste and reduce marine litter, G20 INSIGHTS, May 2017





SOURCE: Yong Chang Jang, Estimation of the annual flow and stock of marine debris in South Korea for management purposes, Marine Pollution Bulletin Volume 86, Issues 1–2, 15 September 2014, Pages 505-511

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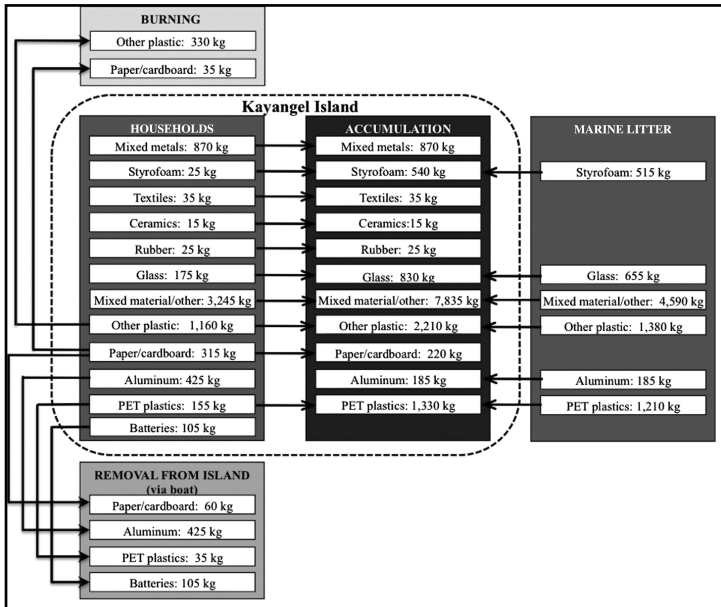

Source: Emily L. Owens; Qiong Zhang; and James R. Mihelcic, Material Flow Analysis Applied to Household Solid Waste and Marine Litter on a Small Island Developing State Journal of Environmental Engineering /Volume 137 Issue 10 - October 2011

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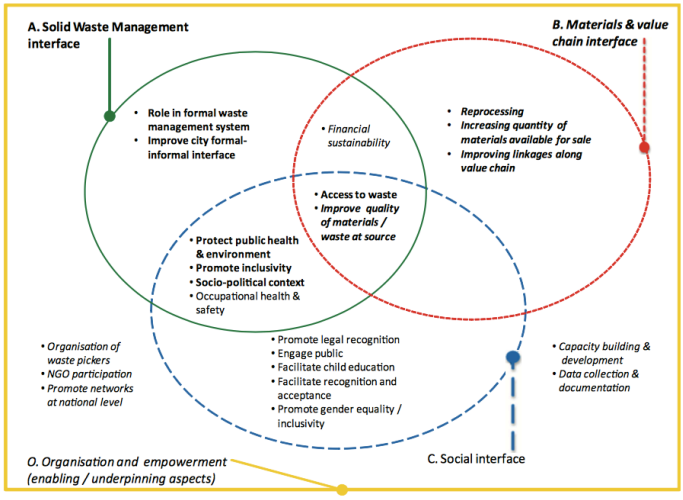
About the informal sector

SOURCE: Costas A Velis, David C Wilson, Ondina Rocca, Stephen R Smith, Antonis Mavropoulos and Chris R Cheeseman, An analytical framework and tool ('InteRa') for integrating the informal recycling sector in waste and resource management systems in developing countries, Waste Management & Research 30(9) Supplement 43–66



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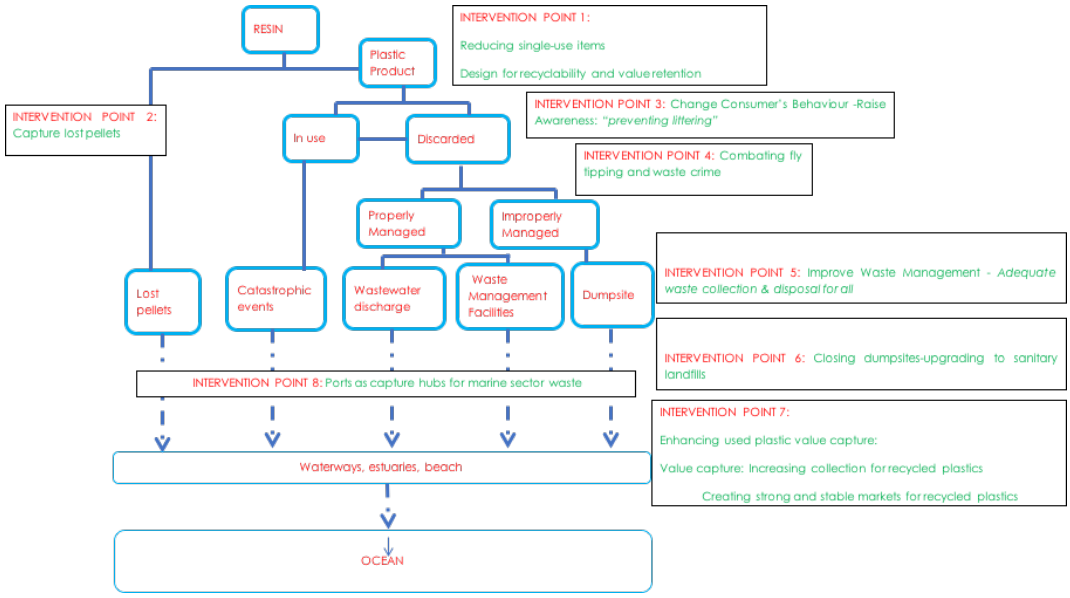
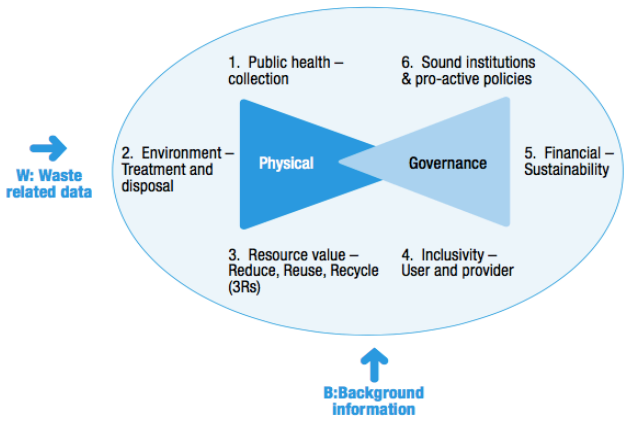
Points of intervention



D. The evolution of indicators



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No.	CATEGORY	BENCHMARK INDICATOR (DATA POINT)	RESULTS	'TRAFFIC LIGHTS'
Background information		**Data point**		
B1	Country income category	Gross National Income (GNI) per capita	$470	
		World Bank income category	Low income	
B2	Population of city	Total population of the city	1,131,149	
B3	Waste generation	Total municipal solid waste (MSW) generation (tonnes/year)	508,000	
Key Waste-related data		**Data point**		
W1	Waste per capita	MSW per capita kg per year	316	
		MSW per capita kg per day	0.9	
W2	Waste composition:	Summary composition of MSW for four key fractions – all as % by weight of total waste generated		
W2.1	Organic	Organics (food and green wastes)	65%	
W2.2	Paper	Paper	8.5%	
W2.3	Plastics	Plastics	8%	
W2.4	Metals	Metals	2.5%	
Physical components		**Benchmark indicator**		
1	Public health – Waste collection	1.1 Waste collection coverage (% households who have access to a reliable waste collection service)	82% (Medium)	
		1.2 Waste Captured by the System (% of MSW generated that is handled completely by the waste management and recycling system)	75% (Medium)	
1C		Quality of waste collection service	Medium/High	
2	Environmental control – waste treatment and disposal (T&D)	Controlled treatment & disposal (% of MSW for T&D which goes to at least a 'controlled' site)	0% (Low)	
2E		Quality of environmental protection in waste treatment and disposal	Low/Medium	
3	Resource Value – 3Rs: Reduce, Reuse, Recycle	Recycling rate (% of total MSW generated that is recycled as materials or as organic products)	<5% (Low)	
3R		Quality of 3Rs – Reduce, reuse, recycle – provision	Low/Medium	
Governance factors		**Benchmark indicator**		
4U	Inclusivity	User inclusivity	Medium	
4P		Provider inclusivity	Medium	
5F	Financial sustainability	Financial sustainability	Medium/High	
6N	Sound institutions, proactive policies	Adequacy of national solid waste management framework	Low/Medium	
6L		Local institutional coherence	Medium	

Key for abbreviations

B	Background information	4U	User inclusivity
W	Waste information	4P	Provider inclusivity
1, 1C	Public health	5F	Financial sustainability
2, 2E	Environmental control	6N	National framework
3, 3R	Resource value – 3Rs	6L	Local institutions

Key for colour coding

Low · Low/Medium · Medium · Medium/High · High

For details of how the colour coding has been assigned to the different indicators, see the original source paper

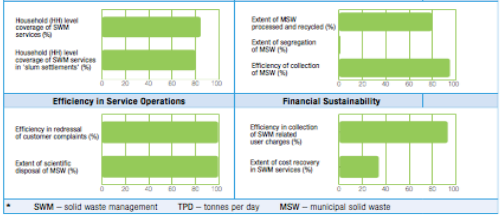
GENERAL INFORMATION

Parameters	2014
Area (Km²)	110
Population (1000s)	1244
Households (1000s)	293
Slum population (1000s)	280
Slum households (1000s)	47
Establishments (1000s)	7.3
Financial Information	
Total revenue income (Million Rs) 1 USD = 60 Rs	11896
Total revenue expenditure (Million Rs)	14612
Total Capital receipts (Million Rs)	250
Total Capital expenditure (Million Rs)	7642

Solid Waste Management

Parameters	2014
Waste generated (metric tonnes per day (TPD)*)	778.5
Waste collected/ transported to disposal site (TPD)	755.0
Waste at all type of processing facilities (TPD)	583.3
Waste disposed at compliant landfill sites (TPD)	150.0
Waste disposed at open dump sites (TPD)	ND
Door to door collection – Households and establishments (1000s)	294.8
Door to door collection – Slum households (1000s)	27.3
Financial Information	
Revenue expenditure on SWM* (Million Rs)	890
Revenue receipts from SWM (Million Rs)	582
Capital expenditure on SWM (Million Rs)	47

Service Level Benchmarking (SLB) Indicator Values



* SWM – solid waste management TPD – tonnes per day MSW – municipal solid waste

SOURCE: UNEP – ISWA, Global Waste Management Outlook, 2015, ISBN: 978-92-807-3479-9

E. Proposed Indicators

IND 1 Municipal Waste Generation stays as it is, but special emphasis should be given to:

- Plastic Waste Generation per capita
- Touristic activities, and
- Coastal Areas.

IND 1 - Municipal waste generation

IND 1.A Municipal waste composition

IND 1.B Plastic waste generation per capita

IND 1.C % of population living in Coastal Areas / Total Population

IND 1.D % of Tourists / population living in Coastal Areas

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IND 2 – "Hardware" of waste management

IND 2.A Waste Collection

Waste Collection Coverage: % households who have access to a reliable waste collection service.

Waste Captured by the solid waste management and recycling system: % of waste generated that is collected and delivered to an official facility.

IND 2.B Environmental Control

Controlled treatment or disposal: % of the total municipal solid waste destined for treatment or disposal which goes to either a waste treatment facility (MRF, thermal, mechanical-biological) or sanitary landfill.

IND 2.B.1 % of waste that goes to uncontrolled dumpsites

IND 2.B.2 Number of uncontrolled dumpsites in Coastal Areas

IND 2.B.3 Quantities of waste going to uncontrolled dumpsites in Coastal Areas

IND 2.C Resource Recovery

% of total municipal solid waste generated that is recycled. Includes materials recycling and organics valorization (composting, animal feed, anaerobic digestion).

IND 2.C.1 % % of plastic solid waste generated that is recycled. Includes plastic recycled in formal and informal systems, both through source separation and MRFs.

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IND 3 "Software" of waste management

IND 3.A Is there a National Plan for ML? (Yes or No)

IND 3.B Are there mandatory targets for source separation of plastics? (Yes or No)

IND 3.C Are there Extended Producer Responsibility obligations and schemes for plastics? (Yes or No)

IND 3.D Is there legislation to stop the use of single-use plastics? (Yes or No)

IND 3.E Is there a national plan to close the dumpsites within next 10 years? (Yes or No)

IND 3.F Is there a government budget for investments in waste management infrastructure for closing the dumpsites, reducing landfilling and promoting recycling and waste treatment? (Yes or No)

IND 3.G Is there a legal framework for the creation of waste management authorities by municipalities?

IND 3.H Are there waste management authorities in the Coastal Areas? (Yes or No)

IND 3.H Are there green procurement rules in place? (Yes or No)

IND 3.I Are there policies to support sustainable tourism? (Yes or No)

IND 3.J Are there eco-labelling and eco-design procedures? (Yes or No)

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Thank you

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Antonis Mavropoulos
SEIS Project expert – Wastte

amavrop@gmail.com