

APEC WORKSHOP 2020
Capacity Building on Global Marine Debris Monitoring and Modeling:
Support Protection of The Marine Environment
 18 – 20 February 2020, Discovery Kartika Plaza Hotel, Bali, Indonesia

**OVERVIEW OF INDONESIA EFFORTS
 ON REDUCING MARINE DEBRIS POLLUTION**

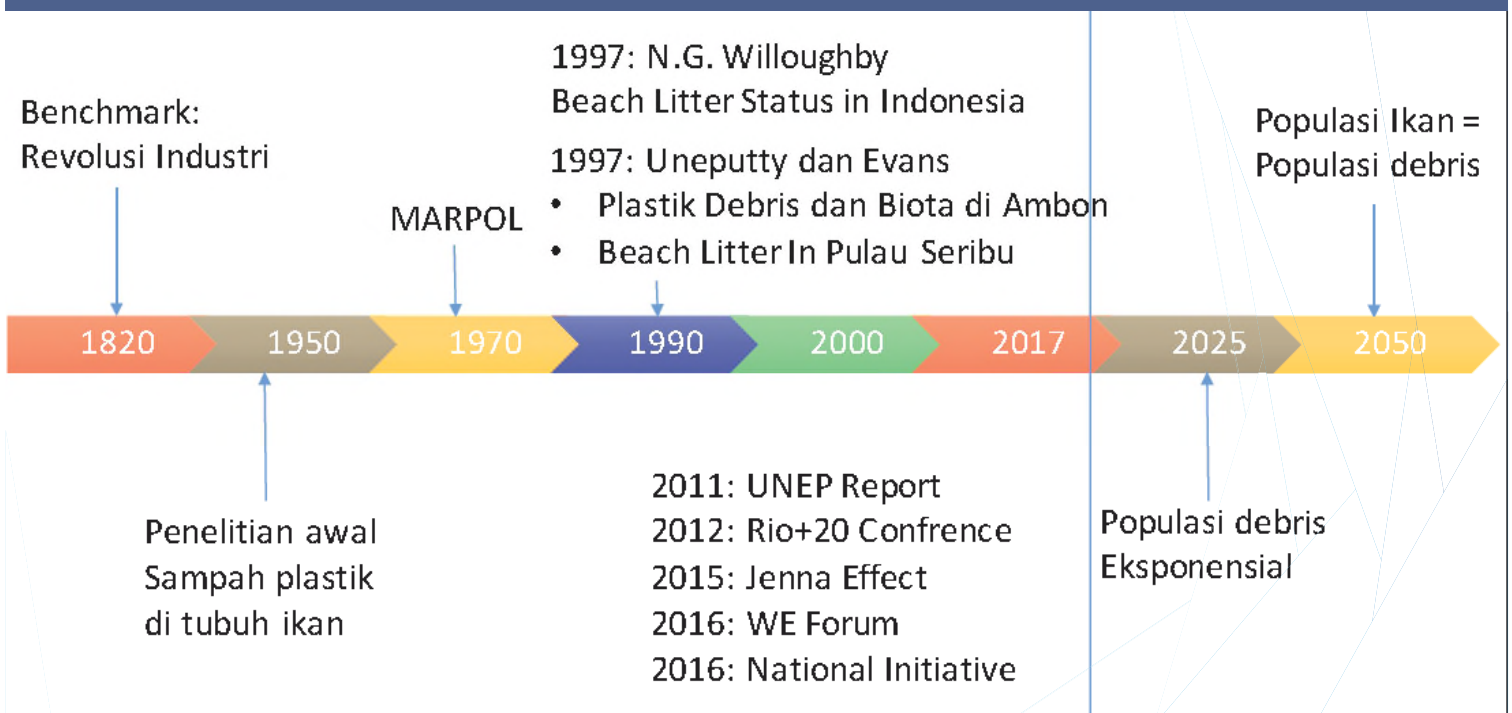
Devi Dwiyanti S



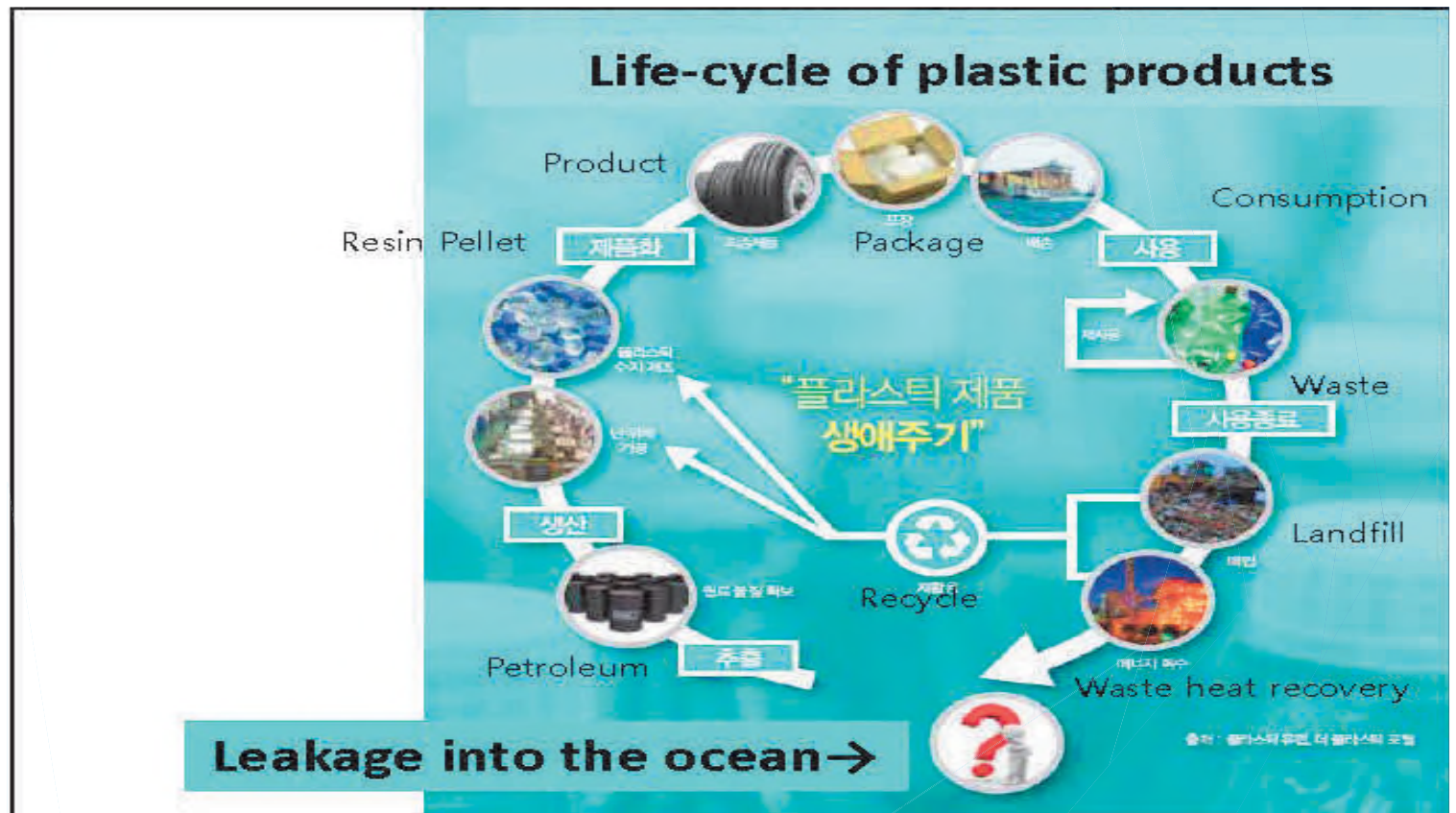
Marine Research Centre
 The Agency for Research and Human Resource Development
 Ministry of Marine Affairs and Fisheries – The Republic of Indonesia
www.pusriskel.litbang.kkp.go.id



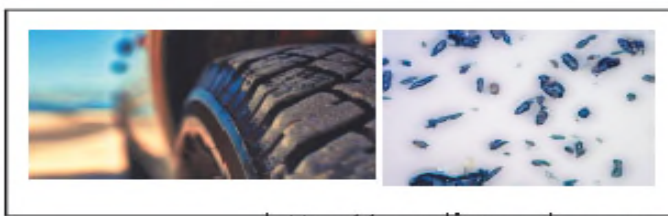
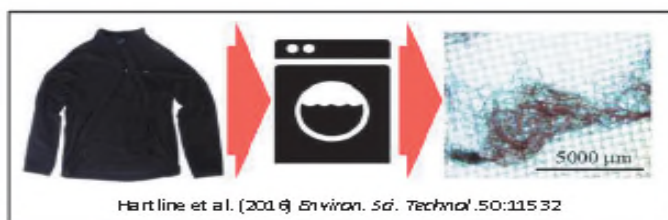
HISTORY



Source :Purba, P, N, dkk, 2017



Producing secondary micro- and nanoplastics



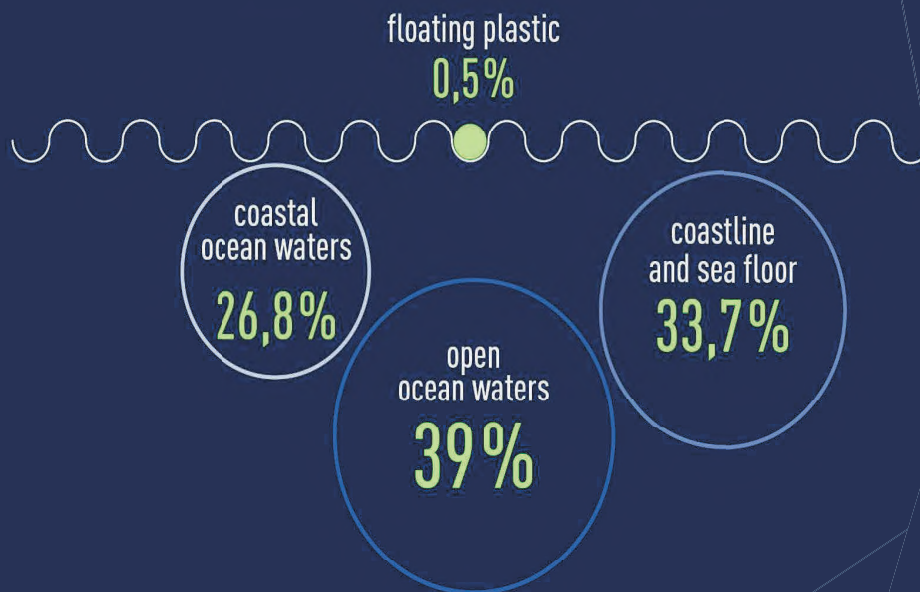
- **Textile**
- **Mechanical force** during laundry
- **Microfiber**
- Laundry discharge -> Sewage Treatment Plant -> River -> Ocean

- **Car tyre**
- **Mechanical force** during operation
- **Tyre wear particle**
- Road dust -> Surface runoff -> River -> Ocean

- **Plastics in the environment**
- **Photochemical oxidation**
- **Fragment and fiber** (rope, fishing net)
- **Direct input**

Source: Won Joon Shim (2019)

The allocation of plastic waste in the ocean



Mega- /Macro-/ Mesoplastic = effects are obvious

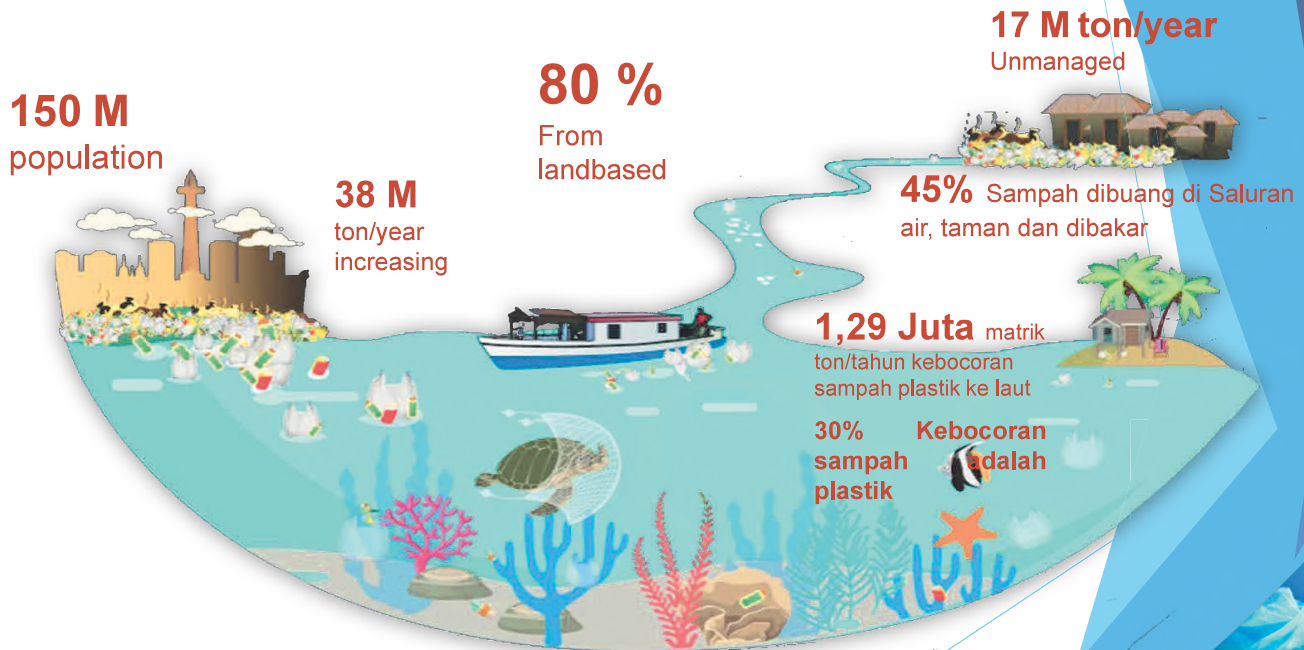
Plastic pieces > 5 mm



Quelle: www.occupyforanimals.org

- Physical impairment after swallowing, entanglement, etc.
- Clear environmental risks & consequences
- Ingestion of plastic proved for > 700 marine species,
- 100% of all beached seabirds have plastic in their stomach

PLASTIC LEACKAGE FROM LANDBASED INDONESIA



Sumber: Bank Dunia (2017); Analisa tim

Indonesia Marine Plastic Baseline models

0.48 - 1.29
Mil./year

(Jambeck, 2015)

NPAP
WB
KLHK

0.27-0.59
Mil./year
(LIPI*)

*Announced officially in Dec. 2019

REGULATION

1. UU 18/2008 (Pengelolaan Sampah)
2. UU 10/2009 (Kepariwisataaan)
3. UU 32/2014 (Kelautan)
4. UU 1/2014 (Pengelolaan wilayah pesisir dan pulau-pulau kecil)

1. UNCLOS 1982
2. MARPOL Conventions for the preventions of Pollution from Ships
3. SDG no 14

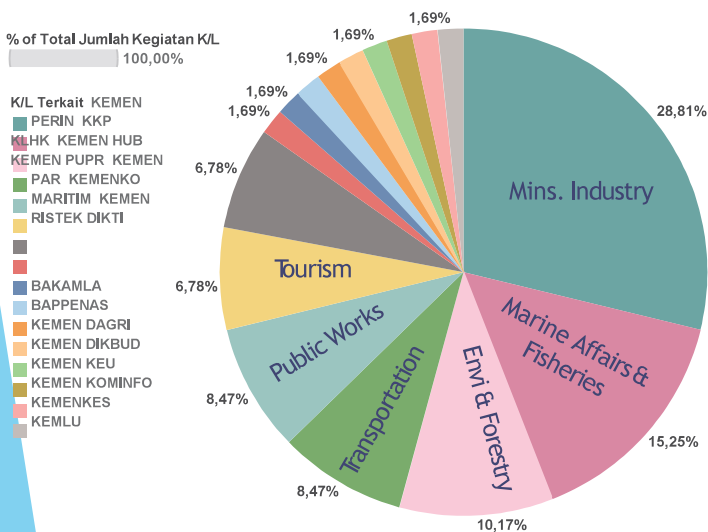
1. Peraturan Pemerintah Nomor 19 Tahun 1999 Tentang **Pengendalian Polusi Laut**;
2. Peraturan Pemerintah Nomor 81 Tahun 2012 tentang **Pengelolaan Sampah Rumah Tangga** dan Sampah Sejenis Sampah Rumah Tangga;
3. Peraturan Presiden Nomor 16 Tahun 2016 tentang **Revolusi Mental**;
4. Peraturan Presiden Nomor 16 tahun 2017 tentang **Kebijakan Kelautan Indonesia**
5. Peraturan Presiden No 97 Thn 2017 tentang **Kebijakan dan Strategi Nasional Pengelolaan Sampah Rumah Tangga dan Sampah Sejenis Sampah Rumah**

1. Peraturan Menteri Dalam Negeri No 33 Tahun 2010 Tentang **Pedoman Pengelolaan Sampah.**
2. Pedoman Menteri Lingkungan Hidup No 13 Tahun 2012 Tentang **Pedoman Pelaksanaan Reduce, Reuse, Recycle Melalui Bank Sampah**



Presidential Decree No. 83/2018 → Marine Debris Handling

National Action Plan : 5 Strategies & 59 Activities from 16 ministries



1

Behavioral Change

2

Reduced Land-based Leakage

3

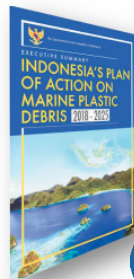
Reduced Sea-based Leakage

4

Enhanced Law Enforcement & Finance

5

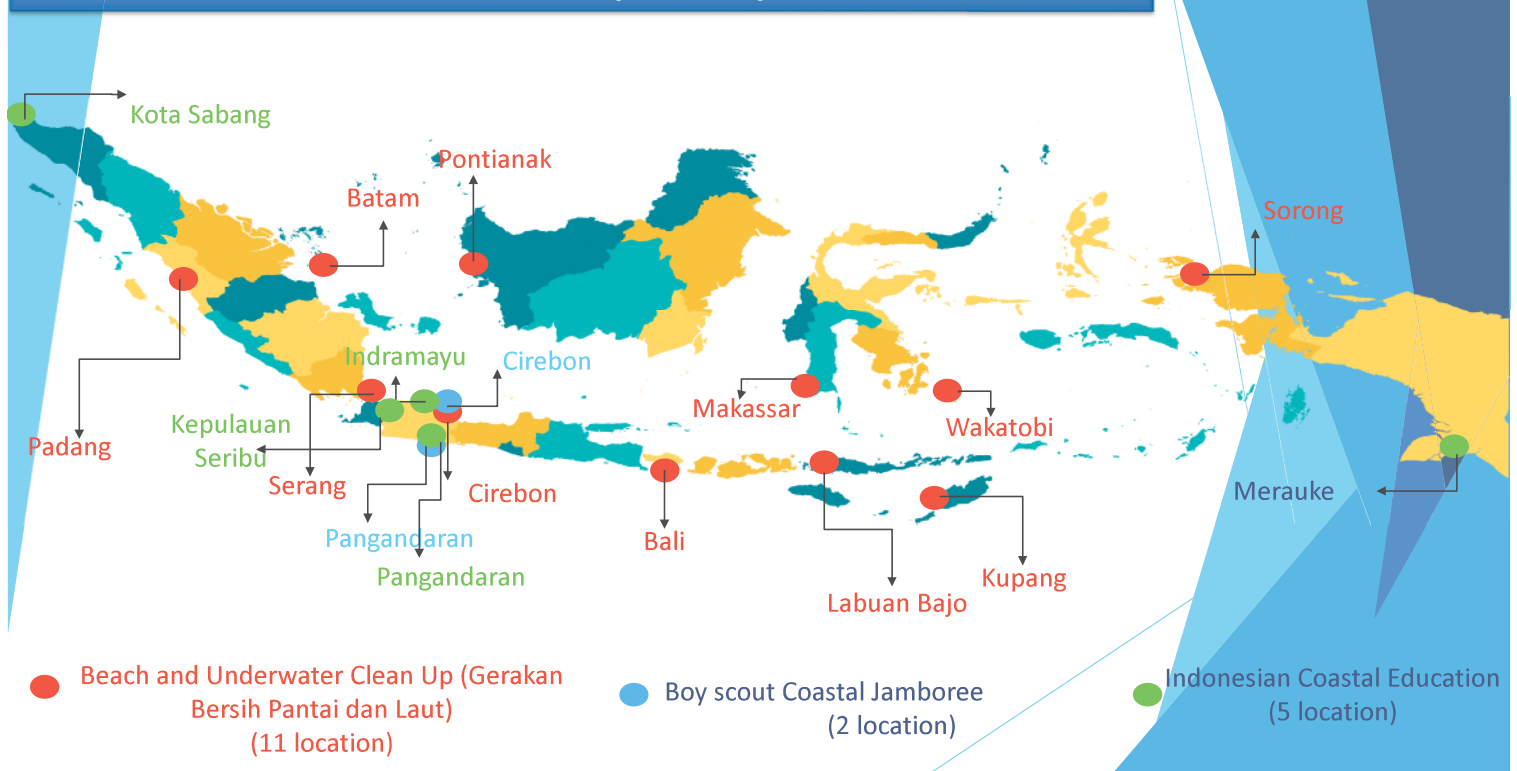
Research and Development



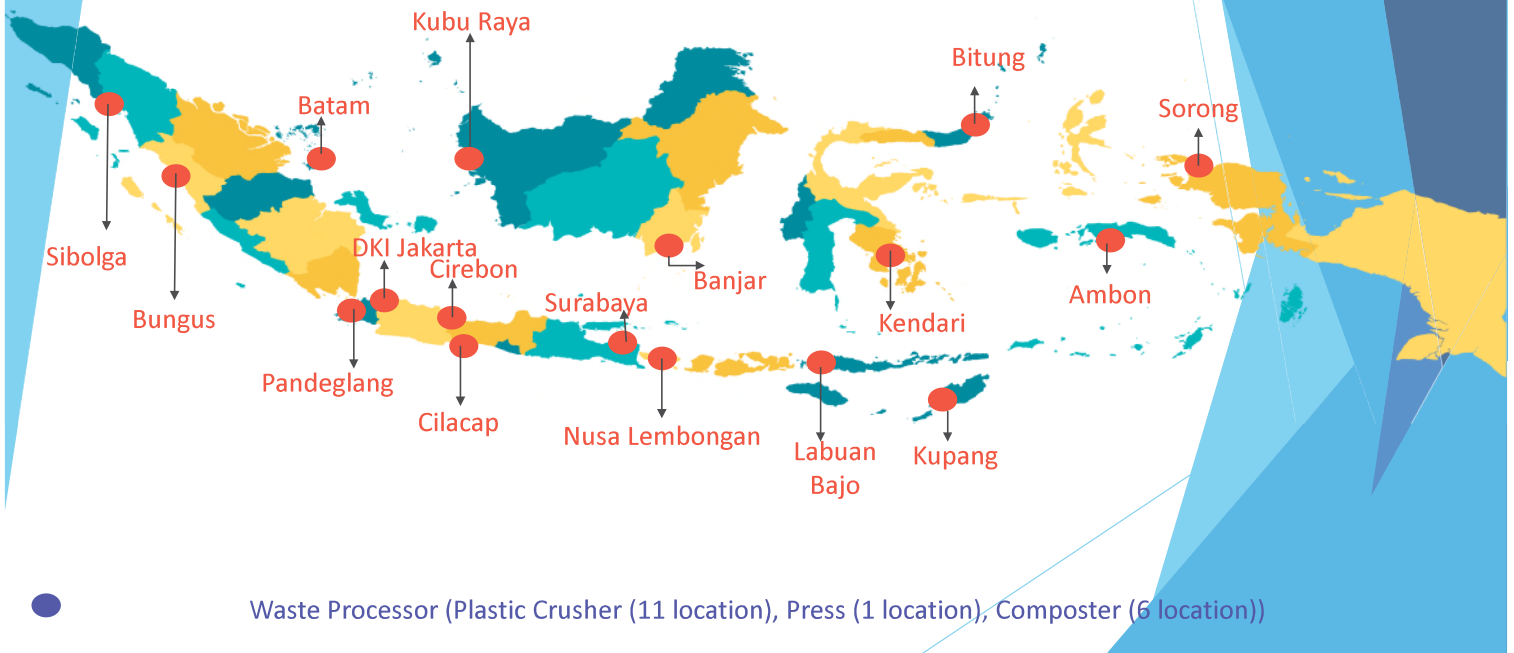
NATIONAL ACTION PLAN

- ▶ Document that consist of a masterplan about reducing and handling marine plastic debris
- ▶ Reduce of marine plastic
- ▶ Guidance for stakeholder to take control about marine debris

MMAF'S EFFORTS IN 2017 (DJPRL)



MMAF'S EFFORTS IN 2017 (DJPRL)



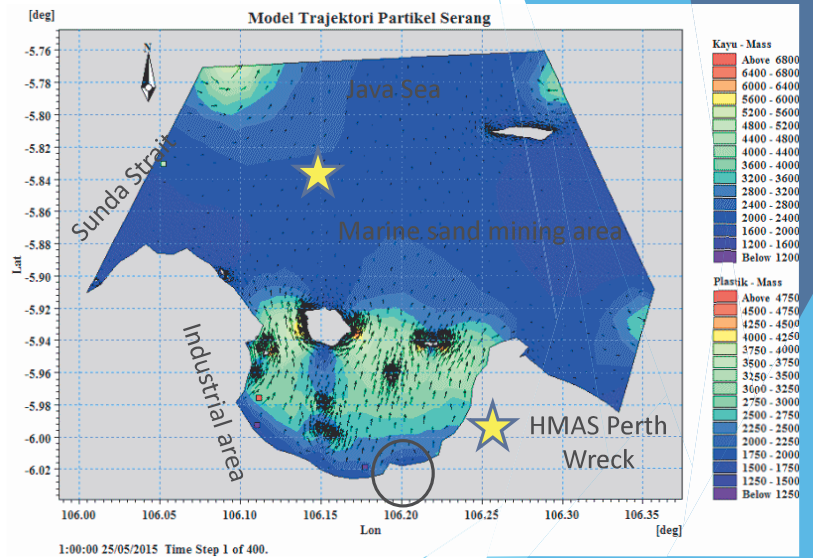
Preliminary Research on Marine Litters (MMAF)

Based on Data, categorized in 3 :

1. Marine litters in Banten (industrial area)
2. Marine litters in Bali (touristic area)
3. Marine Litters in Small Islands



1. Marine Litters in Banten Bay (Industrial)

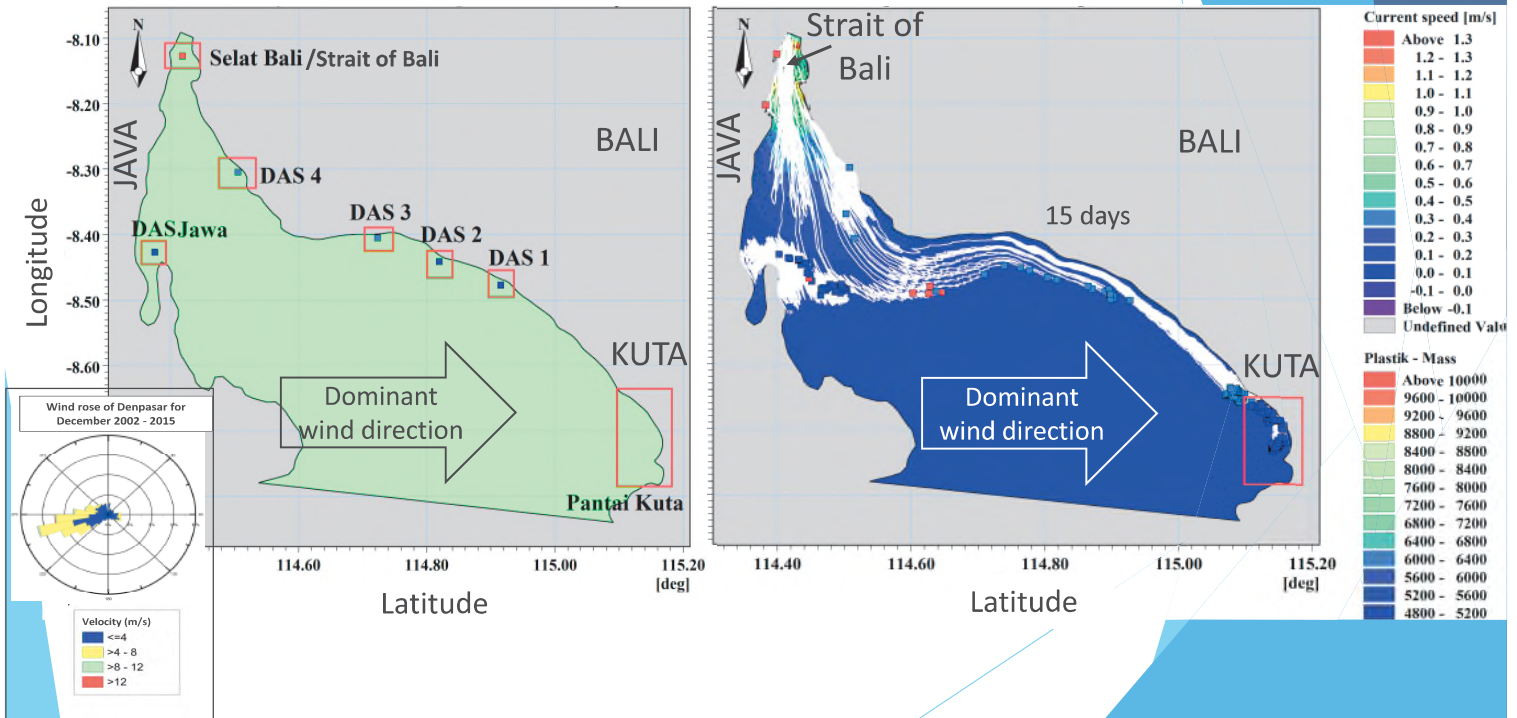


Litters accumulated during west monsoon and the following transitional seasons. During east monsoon and the following transitional seasons, marine litters were transported out of the bay

2. Marine Litters in Bali (Touristic area)



Modeling of Litter Transport and Distribution

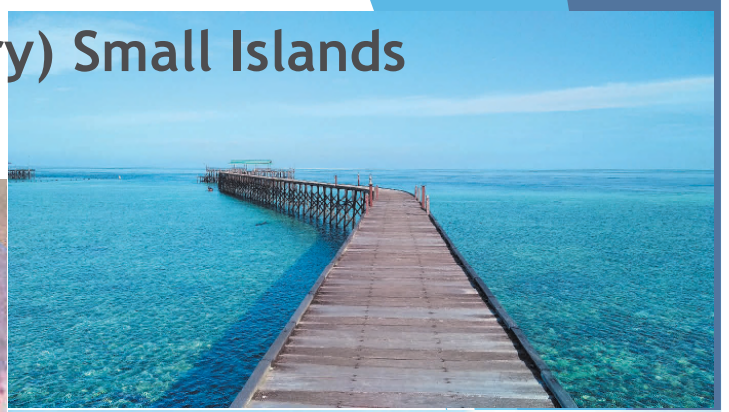


No	Name of the area	Location points				Environment		Litters identification				No	Name of the area	Location points				Environment		Litter identifications			
		P1	Lat/long	P2	Lat/long	sea condition	Tides	Code	Description	Amount	Weight (Kg)			P1	Lat/long	P2	Lat/long	sea condition	Tides	Code	Description	Amount	Weight (Kg)
1	Central Legian	K42	08°.41.11	K2	08°.41.95	Calm/Clo udy	ebb	R15	Plastics	5	0.05	1	Legian Tengah	K42	08°.41.119"	K2	08°.41.954"	calm/clou dy	Ebb	R15	Plastics	8	0.1
			115°.09.5											115°.09.4			115°.09.546"						
2	South Legian	K3	08°.42.59	K4	08°.42.60	calm/sun ny	ebb	R15	Plastics	10	0.15	2	Legian Selatan	K3	08°.42.590"	K4	08°.42.600"	calm/sun ny	Ebb	R15	Plastics	97	1.6
			115°.09.8					115°.09.7		115°.09.845"				115°.09.780"									
3	Kuta Beach	K5	08°.43.40	K6	08°.43.40	calm/sun ny	ebb	R15	Plastics	0.2	3	Kuta Beach	K5	08°.43.404"	K6	08°.43.408"	calm/sun ny	Ebb	R15	Plastics	143	1.55	
			115°.10.0					115°.09.9		115°.10.026"				115°.09.960"		R8			Pl. rope	4	0.05		
4	South Legian	K7	08°.42.56	K8	08°.42.57	sunny	flood	R15	Plastics	0.45	4	Legian Selatan	K7	08°.42.569"	K8	08°.42.575"	Wavy/clo udy	Ebb to flood	R15	Plastics	185	1.21	
			115°.09.7					115°.09.6		115°.09.733"				115°.09.678"		R2			Bottle	2	0.2		
5	Central Legian	K14	08°.43.32	K15	08°.43.35	Calm	flood			0	0	5	Legian Tengah	K14	08°.43.326"	K15	08°.43.354"	Wavy/clo udy	flood	R15	Plastics	8	0.1
			115°.09.9					115°.09.7		115°.09.906"				115°.09.787"									
6	Cental Legian	K16	08°.40.97	K17	08°.41.92	Calm	flood			0	0	6	Legian Tengah	K16	08°.40.973"	K17	08°.41.926"	Wavy/clo udy	flood	R15	Plastics	1	0.01
			115°.09.2					115°.09.3		115°.09.246"				115°.09.324"									
		Total								104	1.2	Total								448	4.82		

April 15th, 2015 (Transitional Season)

Feb 9th, 2016 (West Monsoon Season)

3. Marine Litters in (Very) Small Islands



RESEARCH

POLICY



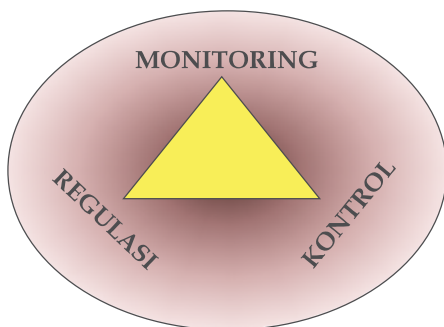
IMPLEMENTATION

POLICY BASED RESEARCH



IDEAL CONDITION

SUMMARY MARINE DEBRIS MANAGEMENT



1. TECHNOLOGY → *end of pipe treatment* → WASTE MINIMIZATION :

- a. *Rethink*
- b. *Reduction*
- b. *Reuse*
- c. *Recycle*
- d. *Recovery*



5R

2. REGULATION

3. RESEARCH AND DEVELOPMENT

NEC



terima kasih