

Plastic pollution research in Indonesia: State of Science and future research directions to reduce impacts

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Meta-analysis of plastic pollution research (n=83) to identify research gaps and biases, with the goal of providing recommendations for future research, and better-informed policy implementation. Four recommendations for future research:

1. Harmonization of research methods
2. Expansion in environmental system focus
3. Expansion in spatial coverage
4. Expansion in plastic characterization methods



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Recommendation 1: Harmonization of research methods

Compartment	Ocean		River	
	Micro	Macro	Micro	Macro
Floating	particles/m ³ particles/m ²	items/m ² kg/100m ² kg/survey	particles/m ³ particles/l	kg/year tons/day
Riverbank/beach	particles/m ³ particles/kg	items/m ² m ³ /m ² kg/m ²	-	kg/m ² kg/hour
Column	particles/l particles/m ³	Items/m ³	particles/l	-
Sediment	particles/sample particles/kg particles/100 g dry weight	kg/sample item/sample	particles/m ³ particles/100g sediment	
Biota	particles/organ particles/animal particles/g dry weight	-	particles/fish particles/m ³	-
Mangrove	particles/m ² kg/m ²	items/kg dry weight	-	-

Table 1 – Units of measurement used in literature on plastic pollution in Indonesia, sorted by environmental system and sub-compartment

Recommendation 2: Expansion in Environmental System Focus

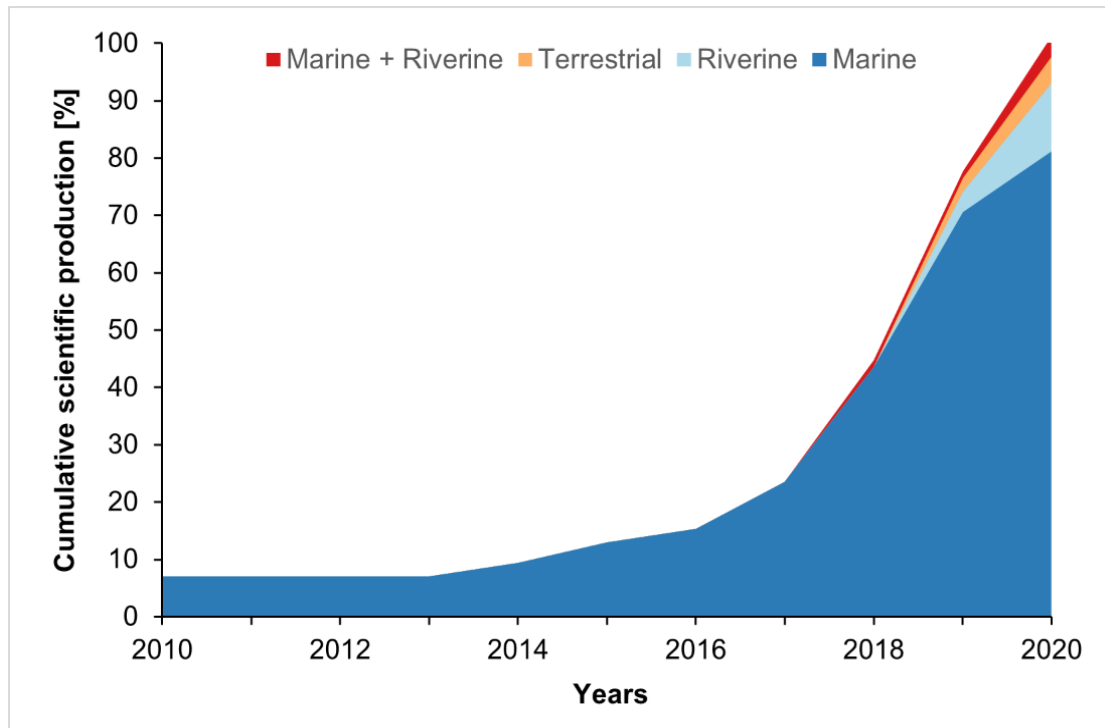


Figure 1 – Number of studies published on plastic pollution in Indonesia, sorted by environmental system and year

Compartment	Marine	Riverine	Terrestrial	Total
Floating	15	5	0	20
Column	9	4	0	13
Sediment	9	2	0	11
Riverbank/beach	29	2	0	31
Biota	7	2	0	9
Mangrove	4	0	0	4
Land surface	0	0	0	0
Waste management	0	0	2	2
Review	4	0	0	4
Other	0	0	2	2
Total	77	15	4	

Table 2 – Number of studies published on plastic pollution in Indonesia, sorted by environmental system and sub-compartment

Recommendation 3: Expansion in spatial coverage

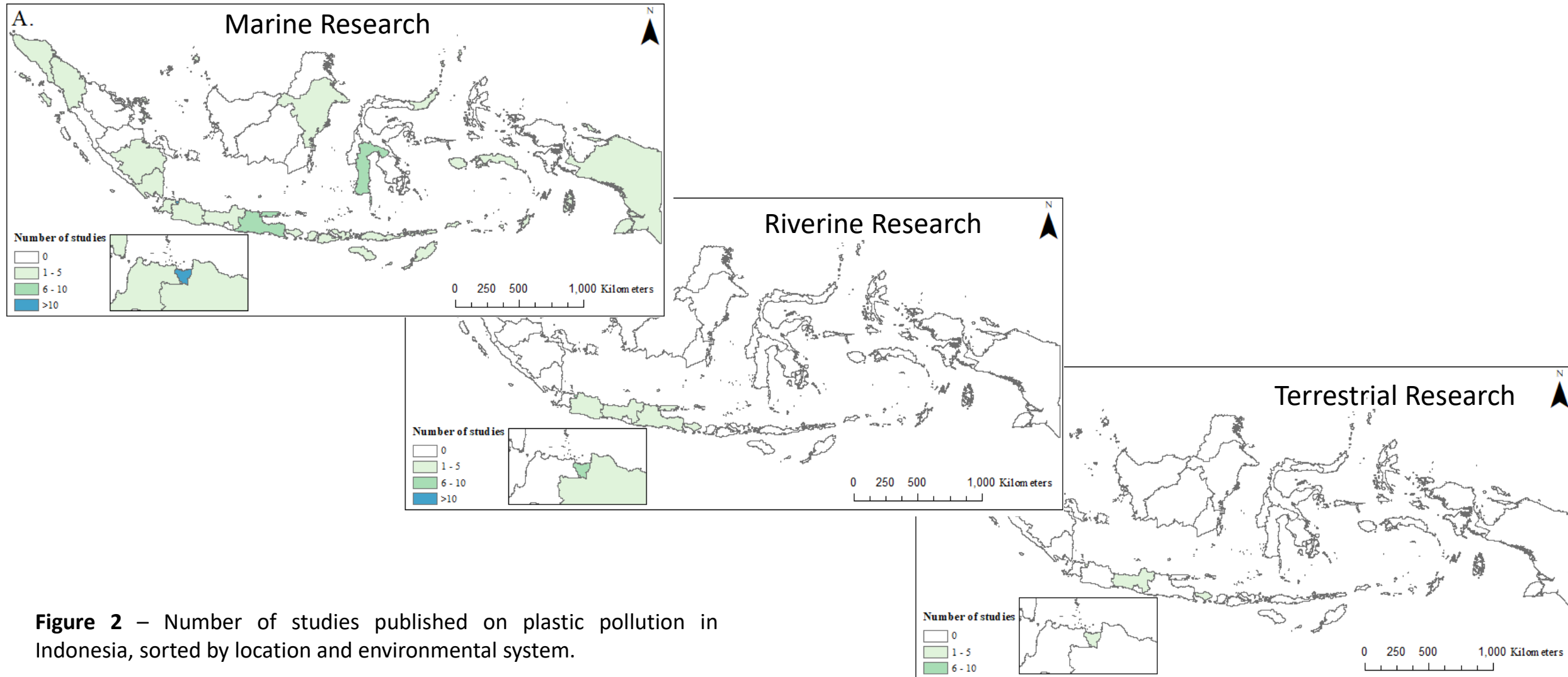


Figure 2 – Number of studies published on plastic pollution in Indonesia, sorted by location and environmental system.

Recommendation 4: Expansion in plastic characterization methods

	Studies that reported polymers	Percentage of studies that present polymer types in top 3 frequently found polymers							
		PP	PS	LDPE	EPS	PET	PE	PA	HDPE
Macro (n=46)	9	56%	33%	33%	22%	11%	22%	0%	11%
Micro (n=43)	10	90%	20%	30%	10%	0%	40%	20%	0%

Table 3 – Number of studies that reported the polymers found and the share of plastic polymers found in the top 3 most abundant polymer in each study

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Thank you for your attention!



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