

14.2 Comparison of research focus

For the purpose of this comparative analysis, the 23 research foci have been grouped in 10 categories (or clusters) as indicated in the colour grouping below:

1. Laws, administrative measures
2. Guidelines and standards
3. Research framework, coordination
4. Upstream research/waste management
5. Methodology for marine plastic clean-up/removal
6. Surveys and monitoring/pollution status
7. Methodology for the monitoring and assessment of marine litter
8. Accumulation zones and hotspots
9. Movement of plastics in water bodies
10. Source differentiation
11. Contribution from rivers
12. Discharge from shipping and offshore installations (including aquaculture)
13. Contribution from fisheries/ALDFG
14. Fragmentation and degradation
15. Ecological and environmental impact:
 - Ingestion of plastic in the wild
 - Branchial uptake of plastic in the wild
 - Entanglement by plastics in the wild
 - Changes in microbial assemblages
 - Experimental studies of physicochemical impacts
 - Trophic transfer of plastics
16. Socio-economic impact:
 - Human health/food safety
 - Economic loss
17. Social perceptions
18. Public outreach/beach clean-up
19. Contaminants associated with marine plastics:
 - Organic and inorganic pollutants from marine plastic debris
 - Adsorption-Desorption of chemicals/pollutants
 - Plastics as transport medium/vector
20. Port reception facilities
21. Fibreglass-reinforced plastic vessels
22. Hull scraping and marine coating

23. Language and cultural barriers/data accessibility

Of note, research foci 20 to 23 are not included in the comparison because no or hardly any research were found on them. A first finding is therefore a lack of research on these four topics of relevance to pollution from marine plastic debris:

- Port reception facilities
- Fibreglass-reinforced plastic vessels
- Hull scraping and marine coating
- Language and cultural barriers/data accessibility

Figure 1.2.14.2 below shows the number of articles that investigate each research cluster in each country. The number of articles relevant to each cluster is further detailed in Table 2 of [Appendix III](#).

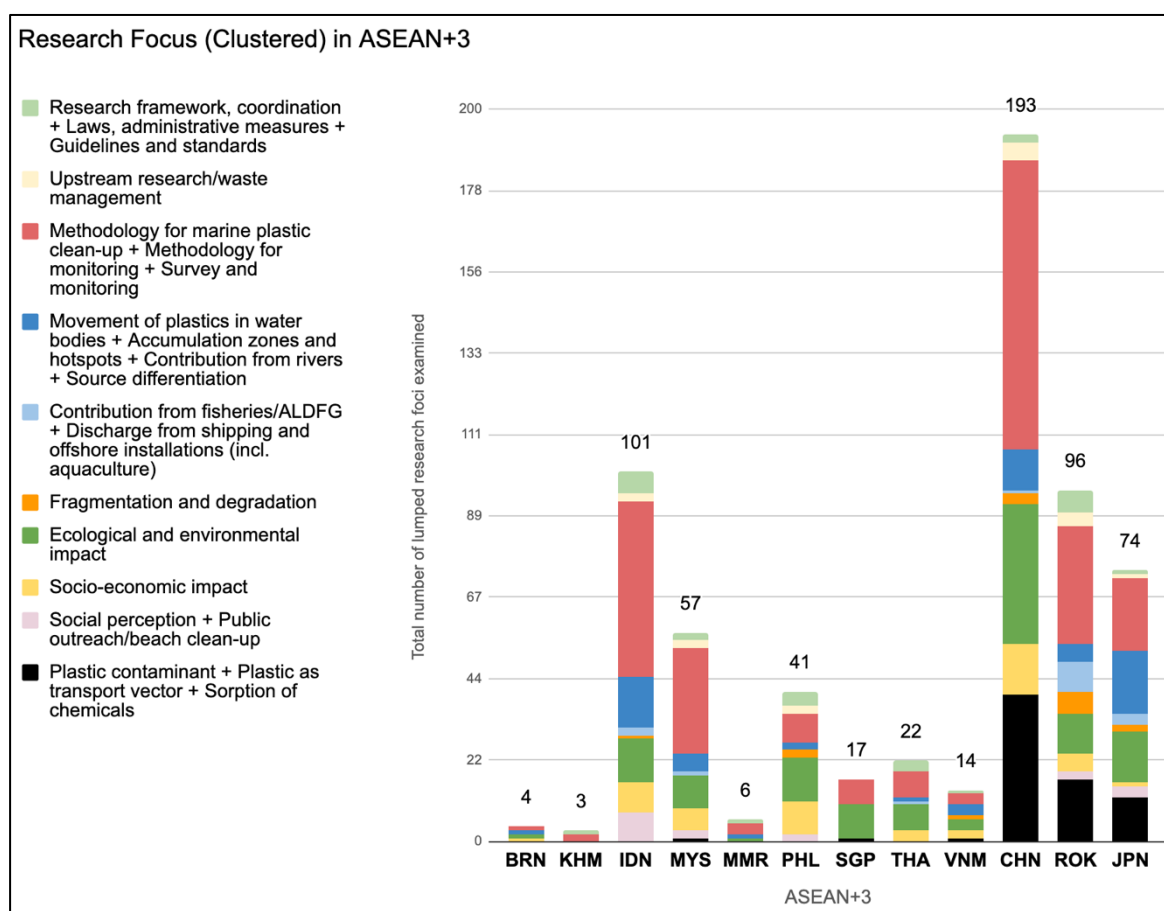


Figure 1.2.14.2. Top 10 clustered research foci in the marine plastics research across ASEAN+3.

This comparative analysis of level of interest in different clusters of research foci is different from comparing the number of publications. Instead of giving a measure of the overall research effort in a country, the former provides information on the breadth of the research topics (although not the depth – this requires a more detailed analysis of the methodology employed, nature of the investigation and findings). The first observation from this comparison is that only RO KOREA and Japan meet them all. Although, as shown in each country analysis, some research foci have not been researched in the same depth, it shows the overall breadth of the research.

The second observation is that China, Indonesia and Malaysia follow closely with nine out of ten research clusters although China has substantially more publications than the other two states. The Philippines, Vietnam and Thailand form the next group of states in number of research clusters covered. The last four states compose the last group in number of research clusters covered. Of note, Singapore is among these states. This may be partly explained by the fact that its publications have a comparatively specific (and therefore narrower) focus, although they are also comparatively deeper than those of the other three states in this group.

Tables 1 and 2 of [Appendix III](#) also show the cumulative interest of the region in different research areas, in the following order:



Whilst the top first four research foci are generally recognised as being more important, discrepancies exist between countries with respect to the nature of research efforts and their research depth. It must also be highlighted that the strong research interest in ecological and environmental impacts tends to skew towards only the quantification of marine plastics within marine organisms. The downstream effects of marine plastics, such as organismal ingestion, accumulation, trophic transfer are less studied, and understood, although they can further impact communities, habitats and consequently ecosystem functionality.

This result also shows the gap in research in the other research foci areas, especially fragmentation and degradation, a key element in the understanding of transformation, sinks and fate of macroplastic to microplastic and the extent to which this transformation may occur in the marine environment or before. In this context, the hot and humid conditions of marine plastics in the ASEAN may be of particular relevance.