14.3 Comparison of methodologies used

This comparison has been approached in two ways: first, with a focus on the diversity in use of different methodological approaches in ASEAN+3 employed for research on pollution from marine plastics (Table 1.2.14.3); and second, with a focus on research papers that discuss methodological approaches. (Table 1.2.14.4).

Table 1.2.14.3. Methodologies employed in marine plastics research in ASEAN+3. Legend: Green = methodology employed in marine plastics research; Red = methodology not employed in marine plastics research.

<table>
<thead>
<tr>
<th>Methodologies</th>
<th>BRN</th>
<th>KHM</th>
<th>IDN</th>
<th>MYS</th>
<th>MMR</th>
<th>PHL</th>
<th>SGP</th>
<th>THA</th>
<th>VNM</th>
<th>CHN</th>
<th>ROK</th>
<th>JPN</th>
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</table>

Methodological approaches for monitoring and assessing marine litter were explored in six countries. These include: Indonesia (n=2), Malaysia (n=3), Vietnam (n=1), China (n=8), ROK (n=8) and Japan (n=8). In Brunei, Cambodia, Myanmar, the Philippines, Singapore and Thailand, there was no published work on such monitoring methodologies.

In some papers, the comparison of methodologies was the main purpose of the paper. In others, their chosen methodology was discussed in the context of particular field or lab-based experiments. Table 1.2.14.3 also shows a strong emphasis on methodologies for microplastic sampling, and significantly less on methodologies for macroplastic identification, fragmentation, degradation and other processes that drive plastic particle behaviour and transport as well as bacterial assemblages.

In most countries, this type of discussion seems to arise after a number of studies and publications as a sign of progress in this field of research whether prior research is country specific or topic specific. An example of this is researchers from a non-ASEAN country discussing application of different methodologies in the context of an ASEAN country; such publication can happen to be the first publication of this type in the country (e.g. Vietnam).
<table>
<thead>
<tr>
<th>Country</th>
<th>No.</th>
<th>Relevant papers</th>
</tr>
</thead>
</table>
| **MYS** | 3   | - Auta et al. (2017a). Screening of Bacillus strains isolated from mangrove systems in Peninsular Malaysia for microplastic degradation. Environmental Pollution 231(2): 1552-1559.  
| **CHN** | 8   | - Ding et al. (2019) Detection of microplastics in local marine organisms using a multi-technology system. Analytical Methods 11: 78-87  

Table 1.2.14. List of papers that analysed the methodologies for monitoring and assessing marine litter.
In conclusion, these methodological discussions should be taken into account in the context of the development of regional guidelines on monitoring and surveying of pollution from marine plastics, bearing in mind that further methodological discussions are still needed on research aspects that have not been discussed.

14.4 Comparison of types of plastics research

**Macroplastics and microplastics**

There is a very dominant interest in microplastics from the scientific literature examined (Figure 1.2.14.5). Although quantification of marine plastic debris or macroplastics is also reported in grey literature, it is often without the same rigour and level of details. There is also a clear lack of research on examining both macro- and micro-plastics or primary and secondary plastic particles in general to understand the process of transformation from the former to the latter.

![Figure 1.2.14.5. Research efforts on micro-/macro- plastics in the ASEAN+3.](image)