Supplementary Information: Articles found during the literature review

Main article: Galafton, Christina; Thonemann, Nils; Vijver, Martina G. (2025): It is time to develop characterization factors for terrestrial plastic pollution impacts on ecosystems in life cycle impact assessment – a systematic review identifying knowledge gaps. In Int J Life Cycle Assess.

The final eight columns indicate the aspect(s) of the LCIA the articles address, which correspond to the sub-chapters in the main article. The only exception is the exposure aspect, which is integrated into the effect sub-chapters in the main article and does not consist in an individual sub-chapter. An 'X' indicates that an article covers an aspect.

Table S1 presents the articles identified with the systematic literature review and indicates the environmental compartment and plastic size they address, and whether they include or aim at an integration in LCIA (column "LCIA"). The column "Applied to LCIA in document index" indicates the source that applied the knowledge generated in a non-LCA article to the LCIA methodology. This column is, therefore, only filled in for documents that are not directly related to LCIA.
The final eight columns indicate the aspect(s) of the LCIA the articles address, which correspond to the sub-chapters in the main article. The only exception is the exposure aspect, which is integrated into the effect sub-chapters in the main article and does not consist in an individual sub-chapter. An 'X' indicates that an article covers an aspect.

Table S1 Articles identified during the systematic literature review and included in the analysis.

Index	Authors	Compartment	Plastic size	LCIA	Applied to LCIA in document index	Redistribution	Fragmentation	Degradation	Exposure	Entanglement	Uptake	Gas emissions during	Plastic pollution impacts
1	Adam et al. 2019	freshwater	Micro	no	27, 41				X		X		
2	Besseling et al. 2017	freshwater	Micro	no	10, 37, 38, 46	X		X					
3	Bridson et al. 2023	all	Micro	no	4				X				
4	Casagrande et al. 2024a	aquatic	Micro	yes					X		X		
5	Casagrande et al. 2024b*	aquatic	Micro	yes									
6	Chamas et al. 2020	all	Both / unspecified	no	8, 9, 10, 13, 17, 29, 37, 38, 42, 43, 46, 56			X					
7	Civancik-Uslu et al. 2018	all	Macro	yes		X							X
8	Corella Puertas et al. 2022	aquatic	Micro	yes		X		X	X		X		
9	Corella-Puertas et al. 2023	aquatic	Micro	yes		X		X	X		X		
10	Croxatto Vega et al. 2021	terrestrial; air	Micro	yes		X	X	X				X	

Index	Authors	Compartment	Plastic size	LCIA	Applied to LCIA in document index	Redistribution	Fragmentation	Degradation	Exposure	Entanglement	Uptake	Gas emissions during	Plastic pollution impacts
11	Domercq et al. 2022	aquatic	Micro	no	9	X	X	X					
12	Everaert et al. 2018	marine	Micro	no	27				X		X		
13	Galafton et al. 2023	terrestrial	Macro	yes		X		X					X
14	Gall and Thompson 2015	marine	Both / unspecified	no	18, 19, 46, 49, 51, 55, 56				X	X	X		
15	Gao and Wan 2022	marine	Macro	yes									X
16	Hahladakis et al. 2018*	all	Both / unspecified	no									
17	Hajjar et al. 2023	marine	Micro	yes		X	X	X					
18	Høiberg et al. 2022	marine	Macro	yes						X			
19	Høiberg et al. 2024	marine	Macro	yes						X			
20	Holmquist et al. 2018	aquatic	Both / unspecified	yes							X		
21	Jacques and Prosser 2021	terrestrial	Micro	no					X		X		
22	Jambeck et al. 2015	terrestrial	Macro	no	7, 10, 13, 29, 49, 51, 56	X							
23	Jiao et al. 2024*	all	Both / unspecified	yes									
24	Kaandorp et al. 2021	marine	Both / unspecified	no	17		X						
25	Koelmans et al. 2014	marine	Both / unspecified	no	4				X				
26	Koelmans et al. 2017	marine	Both / unspecified	no	17, 38, 43, 46	X	X						
27	Lavoie et al. 2021	aquatic	Micro	yes					X		X		
28	Lebreton et al. 2017	terrestrial; freshwater	Both / unspecified	no	17, 51, 56	X							
29	Maga et al. 2022	all	Both / unspecified	yes		X		X					X
30	Meijer et al. 2021	freshwater	Macro	no		X							
31	Mellink et al. 2022	terrestrial	Macro	no		X							
32	Mellink et al. 2024	terrestrial	Macro	no		X							
33	Mennekes and Nowack 2023	freshwater	Micro	no		X							
34	Nakayama and Osako 2023	freshwater	Both / unspecified	no		X	X	X					
35	Newbould et al. 2021	freshwater	Macro	no		X							
36	Nizzetto et al. 2016	freshwater	Micro	no	29	X							
37	Piao et al. 2024	all	Micro	yes	--	X		X	X		X	X	
38	Quik et al. 2023	all	Micro	no	47	X	X	X					
39	Redondo-Hasselerharm et al. 2023	terrestrial	Micro	no					X		X		

Index	Authors	Compartment	Plastic size	LCIA	Applied to LCIA in document index	Redistribution	Fragmentation	Degradation	Exposure	Entanglement	Uptake	Gas emissions during	Plastic pollution impacts
40	Redondo-Hasselerharm et al. 2024	terrestrial	Micro	no							X		
41	Romera-Castillo et al. 2023	marine	Both / unspecified	no									
42	Sabate and Kendall 2024*	all	Both / unspecified	yes									
43	Salieri et al. 2021	freshwater	Micro	yes		X		X			X		
44	Saling et al. 2020	marine	Micro	yes			X	X			X		X
45	Schwarz et al. 2019*	aquatic	Both / unspecified	no									
46	Schwarz et al. 2023	all	Both / unspecified	no	47	X	X						
47	Schwarz et al. 2024	aquatic	Micro	yes		X	X	X	X		X		
48	Shafea et al. 2023	terrestrial	Micro	no		X			X		X		
49	Siegfried et al. 2017	freshwater	Micro	no	13, 29	X							
50	Stafford et al. 2022	all	Macro	yes		X		X					X
51	Stefanini et al. 2021	marine	Macro	yes				X					X
52	Tang et al. 2022	aquatic	Both / unspecified	yes							X		
53	Tunali et al. 2023	terrestrial	Micro	no					X		X		
54	Wang et al. 2022	terrestrial	Micro	no					X		X		
55	Woods et al. 2016*	marine	Both / unspecified	yes									
56	Woods et al. 2019	marine	Macro	yes						X			
57	Woods et al. 2021	marine	Both / unspecified	yes		X	X	X	X	X	X		
58	Zanghelini et al. 2020	marine	Macro	yes									X
59	Zhao and You 2022	freshwater	Micro	yes		X			X		X	X	

* = Review; macro = macroplastics only; micro = microplastics only; both / unspecified = both macro- and microplastics or unspecified

Table S2 lists the studies investigating uptake effects of plastics and additives and indicates with an 'X' the toxicological dose descriptors, endpoints, and environmental compartments considered in these studies.

Table S2 Studies investigating uptake effects of plastics and additives.

Authors	Stressor	EC	LC	LOEC	NOEC / HONEC	Mortality / survival	Growth	Mobility	Reproduction	Feeding	Morphological alterations	Others	Compartment
Adam et al. 2019	Plastics	X	X	X	X	X	X		X			X	Freshwater
Casagrande et al. 2024a	Additives	X	X	X	X	X	X	X	X	X	X		Marine and freshwater
Corella Puertas et al. 2022	Plastics	X		X	X				X			X	Marine and freshwater
Corella-Puertas et al. 2023	Plastics	X	X	X	X	X	X	X	X	X			Marine and freshwater
Everaert et al. 2018	Plastics			X	X	X	X		X	X		X	Marine water
Jacques, O.; Prosser, R. S.	Plastics			X	X	X	X		X				Soil
Lavoie et al. 2021	Plastics	X		X	X				X			X	Marine and freshwater
Piao et al. 2024	Plastics	X	X	X	X	X	X	X	X	X			Marine and freshwater
Redondo-Hasselerharm et al. 2024	Plastics			X	X	X	X		X	X		X	Soil
Redondo-Hasselerharm et al. 2023	Plastics			X	X	X	X		X	X		X	Soil
Salieri et al. 2021	Plastics	X	X	X	X	X	X	X	X				Freshwater
Saling et al. 2020	Plastics	X	X			X					X		Marine water
Schwarz et al. 2024	Plastics	X	X			X	X	X	X	X			Marine and freshwater
Tang et al. 2022	Additives	X	X		X	X	X	X	X			X	Marine and freshwater
Tunali et al. 2023	Plastics			X	X	X	X		X				Soil
Wang et al. 2022	Plastics	X	X		X	X	X		X				Soil
Zhao and You 2022	Plastics	X		X	X	X	X	X	X			X	Marine and freshwater
		12	**9**	**13**	**15**	**15**	**14**	**7**	**16**	**7**	**2**	**8**	

EC = median effect concentration, the concentration at which x % of the effect occurs; LC = lethal concentration, the concentration at which x % of the exposed population dies; LOEC = lowest observed effect concentration, the lowest tested concentration with effects that differ statistically significantly from the control; NOEC = no observed effect concentration, the tested concentration immediately below the LOEC without a statistically significant effect compared to the control; HONEC = highest observed no-effect concentration

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