

1 **(Supplementary Materials)**

2 **Microplastic sources and distribution dynamics across contrasting**
3 **anthropogenic settings: Implications for lake management**

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18 Journal: *Environmental Science: Advances*

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24 Table S1: Geographical position, microplastics, total organic carbon (TOC), total nitrogen
 25 (TN) and grain size measured in samples collected from Mansar Lake.

Sample ID	Lat (°N)	Long (°E)	MPs in water (Particles/L)	MPs in sediment (Particles/kg)	TOC	TN	%			D[4,3]	Depth
							Sand	Silt	Clay		
MSR-1	32.695	75.15	61	2210	0.85	0.21	65.82	31.3	2.84	107	6
MSR-2	32.695	75.15	60	4600	4.63	0.6	88.2	10.48	1.34	231	8.5
MSR-3	32.694	75.15	54	5720	4.37	0.66	12.95	73.85	13.18	35.7	12
MSR-4	32.694	75.149	71	5180	3.44	0.46	14.75	71.77	13.51	36.1	13.5
MSR-5	32.693	75.147	50	1290	2.46	0.38	23.81	65.26	10.92	50.2	14.5
MSR-6	32.694	75.145	59	580	2.8	0.39	23.93	64.08	12.02	48.3	20.5
MSR-7	32.694	75.146	66	1310	3.68	0.52	3.83	54.96	41.23	12.5	
MSR-8	32.696	75.148	109	1040	4.27	0.59	3.53	63.66	32.83	13.4	33
MSR-9	32.697	75.149	61	2850	4.24	0.53	5.37	70.88	23.76	18.6	20
MSR-10	32.698	75.148	112	880	2.82	0.43	12.93	77.03	10.03	34	16
MSR-11	32.697	75.147	94	810	4.6	0.62	3.87	67.05	29.05	20.7	
MSR-12	32.697	75.146	78	940	4.59	0.63	3.46	67.27	29.29	20.1	41
MSR-13	32.696	75.145	61	1120	3.37	0.51	6.36	69.79	23.83	25.6	37
MSR-14	32.695	75.144	45	750	3.73	0.52	4.46	71.72	23.85	22.2	26.5
MSR-15	32.696	75.143	68	1280	3.66	0.56	4.09	68.87	27.05	21.6	28
MSR-16	32.698	75.142	79	860	2.76	0.41	9.07	76.87	14.07	26.6	14
MSR-17	32.699	75.142	50	610	0.83	0.15	83.46	14.62	1.92	146	17
MSR-18	32.698	75.144	109	810	4.44	0.6	3.2	71.75	25.09	21.2	31
MSR-19	32.699	75.145	120	1230	2.99	0.47	3.23	59.22	37.53	22.5	33
MSR-20	32.7	75.143	90	610	2.89	0.45	9.52	75.74	14.76	34.1	16
MSR-21	32.702	75.144	55	1420	0.36	0.16	84.84	13.22	1.96	151	7
MSR-22	32.701	75.145	52	1440	4.83	0.54	12.66	67.85	19.49	40.7	16
MSR-23	32.699	75.146	105	390	4.56	0.58	5.24	70.26	24.51	23.7	27

27 Table S2: Geographical position, microplastics, total organic carbon (TOC), total nitrogen
 28 (TN) and grain size measured in samples collected from Sukhna Lake.

Sample ID	Lat (°N)	Long (°E)	MPs in water (Particles/L)	MPs in sediment (Particles/kg)	TOC	TN	%			D[4,3]	Depth (m)
							Sand	Silt	Clay		
S1	30.743	76.813	10	1090	0.7	0.4	0	71.4	28.6	8.7	1
S2	30.743	76.816	43	280	0.7	0.4	0.4	71.4	28.2	9.5	5
S3	30.744	76.816	11	510	0.7	0.3	2.7	70.1	27.2	14.4	4
S4	30.747	76.814	19	1410	1.3	0.3	7	78.5	14.5	25.7	3
S5	30.746	76.813	26	580	0.9	0.3	1.1	59.6	39.3	11.5	6
S6	30.747	76.812	35	590	0.8	0.2	0.7	58.8	40.5	10.7	5
S7	30.745	76.812	10	2320	0.6	0.3	3.8	55.7	40.6	17.1	4
S8	30.745	76.814	5	400	0.7	0.3	5.4	60.9	33.7	16.7	7
S9	30.744	76.814	43	540	1	0.3	1.6	59.1	39.4	11.3	2
S10	30.744	76.812	43	320	0.8	0.4	0.4	55.1	44.5	7.5	5
S11	30.745	76.819	30	170	0.8	0.4	0.2	54.6	45.3	7.3	6
S12	30.741	76.818	52	340	0.7	0.4	0.3	57.1	42.7	7.7	1
S13	30.74	76.82	75	1360	0.6	0.4	0.3	64.2	35.5	8.6	4
S14	30.742	76.822	13	330	0.8	0.3	1.7	65	33.3	13.4	3
S15	30.742	76.827	8	1180	0.9	0.3	4.5	66.1	29.3	18	3
S16	30.742	76.825	22	460	0.7	0.3	3.4	71.2	25.4	18.4	6
S17	30.741	76.824	10	1180	0.6	0.1	13.2	68.3	18.5	41.3	5
S18	30.741	76.827	17	170	0.8	0.4	0	42.6	57.4	4.7	2
S19	30.741	76.828	27	310	1.3	0.2	3.2	59.7	37	17.4	3
S20	30.739	76.829	24	680	0.6	0.3	5.4	76.3	18.4	20.7	5
S21	30.74	76.822	22	1190	0.6	0.2	0	63.5	36.5	8.8	3
S22	30.74	76.824	41	280	0.5	0.3	0.6	66.9	32.6	10.4	5
S23	30.739	76.827	47	1350	0.6	0.3	0.5	65.8	33.7	10.1	6
S24	30.738	76.826	44	750	0.6	0.2	2.8	78.1	19.1	18	4
S25	30.737	76.823	21	2170	0.6	0.2	1.7	69.3	29	12.7	2
S26	30.737	76.82	12	780	0.6	0.2	0	67	33	10.5	9
S27	30.737	76.818	23	330	0.5	0.3	0.8	61.5	37.8	9.7	5
S28	30.739	76.816	27	790	0.7	0.2	0.1	62.8	37	9.4	3
S29	30.741	76.815	31	1150	0.7	0.2	0	61	39.1	8.3	2
S30	30.745	76.811	16	350	0.7	0.2	0.3	53.1	46.6	6.8	2

31 Table S3: Summary of microplastics measured in water and sediment and its comparison
 32 with regional and global freshwater lakes.

S.No.	Lake Name	Sample matrices	MPs abundance (mean)	Polymer composition	Reference
1	Manipal Lake, India	water	0.42 particles/L	PET, CE	1
2	Red Hills Lake, India	water	5.9 particles/L	HDPE, LDPE, PP, PS	2
		sediment	27 particles/kg		
3	Vellayani Lake, India	water	4.1 particles/L	PY, PP and PE	3
		sediment	5.4 particles/kg		
4	Chembarambakkam Lake, India	water	118 particles/L	PE, PP, PVC, PUR, PET and PS	4
		sediment	156.23 particles/kg		
5	Sholinganallur Lake, India	water	75 particles/L	PE, PP, PVC, PUR, PET and PS	4
		sediment	102.68 particles/kg		
6	Renuka Lake, India	water	21 ± 13 particles/L	PS, PP, PE	5
		sediment	180 ± 143 particles/kg		
7	Rewalsar Lake, India	water	130 ± 61.16 particles/L	PS, PP, PE	6
		sediment	1149 ± 505.34 particles/kg		
8	Nainital Lake, India	water	36.07 particles/L	PP, PE, HDPE, PET, and PS	7
		sediment	2161 particles/kg		
9	Manasbal Lake, India	water	46.8 particles/L	PE, PP, PS	8
		sediment	2148 particles/kg		
10	Thaiyur Lake, India	water	112 particles/L	PE, PS, PVC, PET, PP, and nylon	9
11	Dal Lake, India	water	57.88 ± 35.28 particle/L	PE, PP, PS and PET	10
		sediment	2283.78 particles/kg		
12	Anchar lake, India	sediment	606 ± 360 particles/kg	PA, PET, PS, PVC and PP	11
13	Dzhulukul, Russia	water	5 particles/L	ND	12
14	Talmen, Russia	water	8 particles/L	ND	12
15	Taihu Lake, China	water	5.67 ± 1.92 particles/L	PVC, PE, PS and PP	13
		sediment	893.48 ± 245.74 particles/kg		
16	Lake Bolsena, Central Italy	sediment	112 ± 32 particles/kg	PE, PP and PET	14
17	Lake Chiusi, Central Italy	sediment	234 ± 85 particles/kg		14
18	Lake Tollense, Germany	sediment	10476 ± 4290 particles/kg	PE, PP, PA, PET	15
19	Lake Bracciano, Central Italy	sediment	42 particles/kg	PE, PP, PVC, PET, PC, aPA	16
21	Lake Simcoe, Canada	sediment	372 ± 346 particles/kg	PE, PP, PS, PVC	17
22	Karagol Lake, Turkey	sediment	344 particles/kg	PE, PP, PET, PS	18
23	Phewa Lake, Nepal	sediment	100.5 particles/kg	PP, PE	19
24	Sarab Niloofar Lake, Iran	sediment	170.5 particles/kg	PP, PE, PS, and PUR	20
25	Mohamaya Lake, Bangladesh	water	50.62 ± 9.95 particles/L	PET, LDPE and HDPE	21
		sediment	1068.75 ± 521.49 particles/kg		
26	Ulungur Lake, China	water	5.11 ± 2.67 particles/L	PE, PP, PS, PVC, PET, and PA	22
		sediment	144.31 ± 59.54 particles/kg		
27	Mansar Lake, India	water	74.3 ± 23.3 particles/L	PE, PS, PP and PET	This study
		sediment	1649.13 ± 1501.9 particles/kg		

28	Sukhna Lake, India	water	26.9 ± 16 particles/L	PE, PS, and PP	This study
		sediment	778.7 ± 557.3 particles/kg		

ND: not determined; PE: polyethylene; PP: polypropylene; PS: polystyrene; PET: polyethylene terephthalate; PA: polyamide; PVC: polyvinyl chloride; HDPE: High-Density Polyethylene; LDPE: Low-Density Polyethylene; PC: Polycarbonate; PUR: Polyurethane; PY: polyester; aPA; aromatic polyamide.

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