Figure S1. Photos taken during the sampling campaign on Somesul Mic River

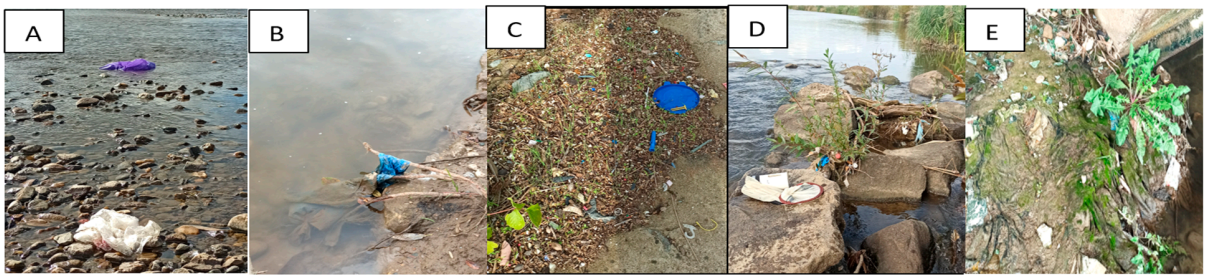
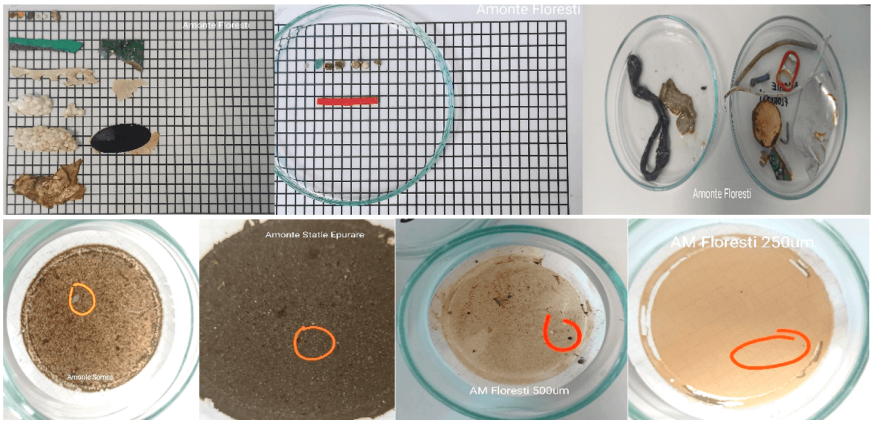
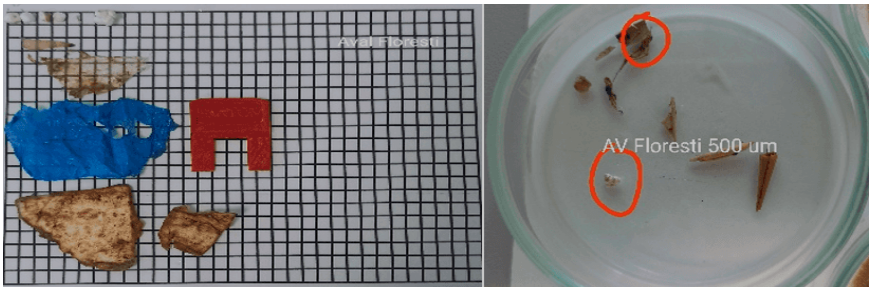


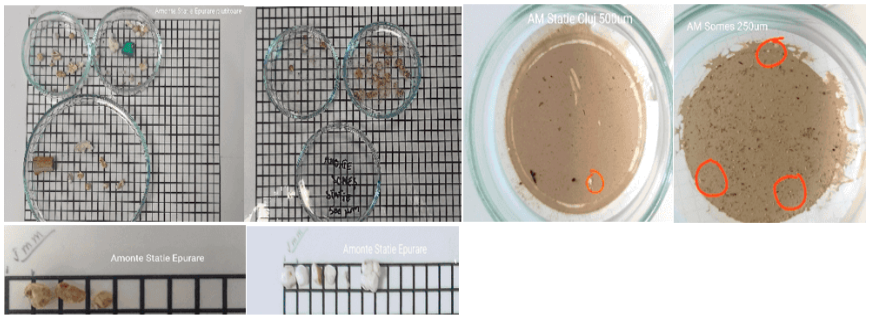
Figure S2 Images of the river banks taken at the sampling points along the Somesul Mic River (A, B – upstream and downstream of Floresti and C, D, E - upstream and downstream of the Cluj-Napoca Wastewater Treatment Plant)



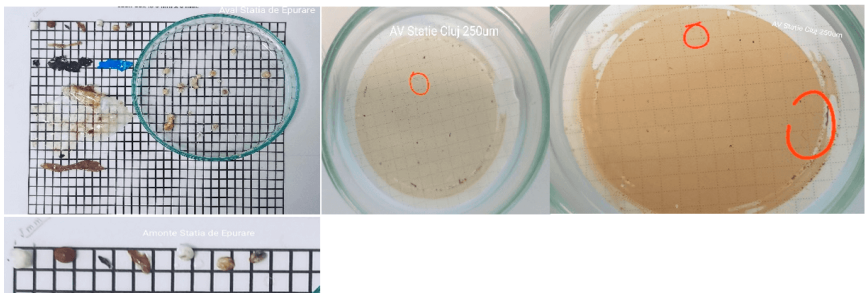
a)



b)



c)



d)

Figure S3 Visualization of plastic particles - large, micro and macro floating MPs < 1 mm separated from Somesul Mic River (surface water and sediment): **a)** UP Floresti; b) DW Floresti; **c)** UP Cluj- Napoca WWTP; **d**) DW Cluj-Napoca WWTP.

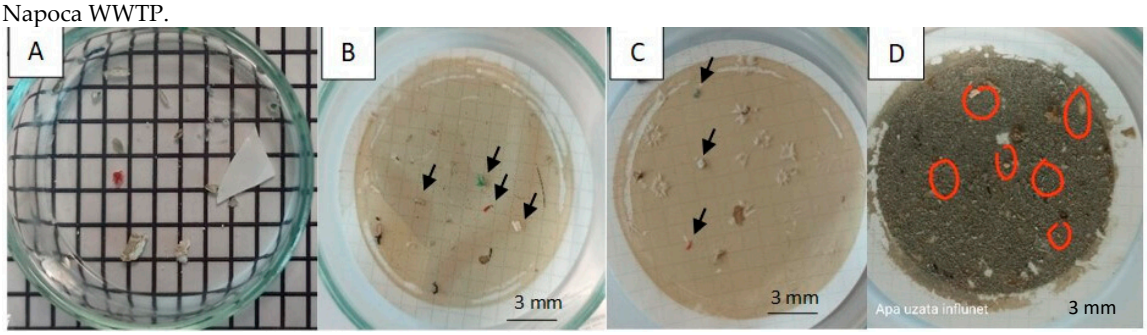


Figure S4 Visualization of plastic particles in the influent of Cluj-Napoca WWTP. **A**: Each square represents 5 mm x 5 mm. Four squares together represent 10 mm x 10 mm. **B, C, D**: Scale bar is 3 mm. Particles suspected to be MPs are indicated by black arrows and are smaller than 3-5 mm.

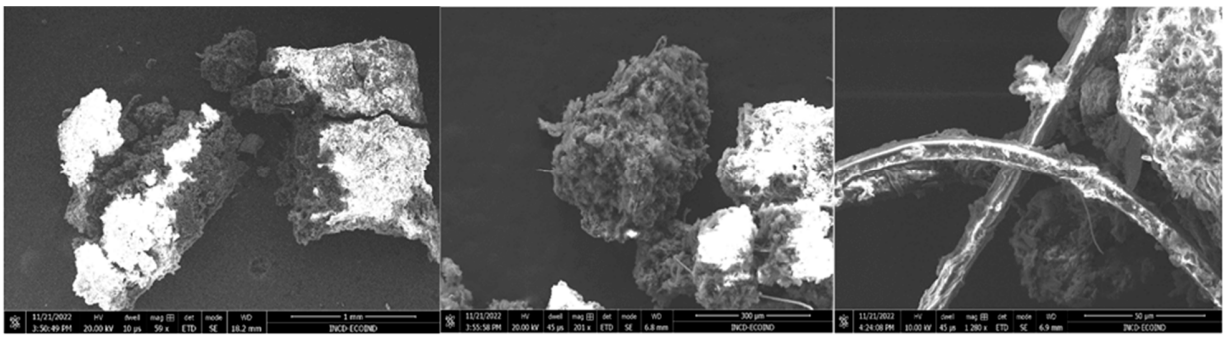


Figure S5 SEM images of suspected MPs - decomposing floating MPs

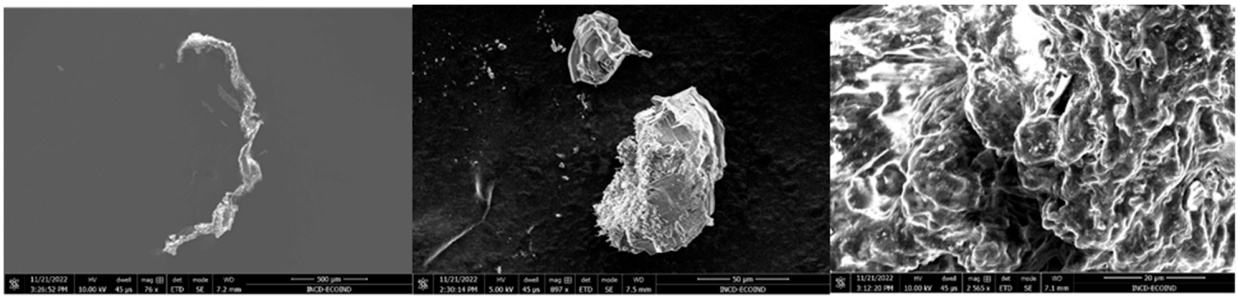


Figure S6 SEM images of suspected MPs without exposure to digestion treatment, scale bar = 500 μm, 50 μm, 20 μm

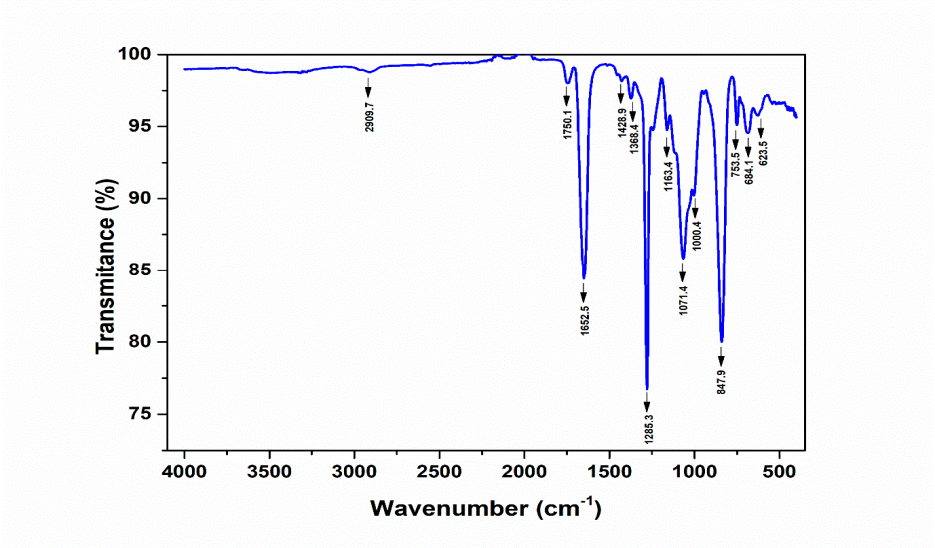


Figure S7 ATR-FTIR spectra of the ester cellulose filter membrane

Table S1. Assignment of the ATR-FTIR band exhibited by the filter membrane

Peak Number	Wavenumber (cm^{-1})	Assignment
1	**2909.7**	stretching vibrations of $CH/CH_2/CH_3$ groups [1]
2	**1750.1**	**C=O** carbonyl stretching [2]
3	**1625.5**	**C=C** stretching [2-4]
4	**1428.9**	**CH_2** bending vibration [1]
5	**1368.4**	**CH_3** Umbrella bending mode [5]
6	**1285.3**	**C-O** stretching [6]
7	**1163.4**	**CF_2** stretching vibration [1]
8	**1071.4**	**C-O** stretching vibration [7]
9	**1000.4**	**C=C** stretching [7]
10	**753.5**	**C-H** bending [7]
11	**684.1**	**C–Cl** stretching vibration [1]
12	**623.5**	**O-S-O** scissoring vibration mode [8]

Table S2. Assignment of the ATR-FTIR band exhibited by the UP Cluj-Napoca WWTP 200 μm (PE) - Fig. 27

Peak Number	**Wavenumber (cm^{-1})**	**Assignment**
1	**2916**	stretching vibrations of $CH/CH_2/CH_3$ groups [1]
2	**2846.8**	stretching vibrations of $CH/CH_2/CH_3$ groups [1]
3	**1735.2**	**C=O** carbonyl stretching [1]
4	**1597.5**	**C=C** stretching [2-4]
5	**1514.6**	**C=C** stretching [2-4]
6	**1464.5**	**C-H** rocking vibration [6]
7	**1368.2**	**CH_3** Umbrella bending mode [5]
8	**1248.7**	**C-O** stretching [7]
9	**1165.9**	**CF_2** stretching vibration [1]
10	**1032.2**	**C-O** stretching vibration [7]
11	**825.9**	**Si-O** bending vibration [9]
12	**720.1**	**C-H** rocking vibration [6]
13	**527.39**	**O-S-O** scissoring vibration mode [8]
14	**467.67**	**O-S-O** scissoring vibration, [8]

Table S3. Assignment of the ATR-FTIR band exhibited by the DW Cluj-Napoca WWTP 200 μm (PE)- Fig. 28

Peak Number	Wavenumber (cm^{-1})	Assignment
1	**2913.8**	stretching vibrations of $CH/CH_2/CH_3$ groups [1]
2	**2849.2**	stretching vibrations of $CH/CH_2/CH_3$ groups [1]
3	**1703.3**	**C=O** carbonyl stretching [2]
4	**1590.3**	**C=C** stretching [2-4]
5	**1466.6**	**C-H** rocking vibration [6]
6	**1293.3**	**C-O** stretching [7]
7	**1168.3**	**CF2** stretching vibration
8	**1028.6**	**C-O** stretching vibration [7]
9	**727.4**	**C-H** rocking vibration [6]
10	**688.1**	**C–Cl** stretching vibration [1]
11	**521.1**	**O-S-O** scissoring vibration mode [8]
12	**464.5**	**O-S-O** scissoring vibration mode [8]
13	**424.2**	**O-S-O** scissoring vibration mode [8]

Table S4. Assignment of the ATR-FTIR band exhibited by the DW Cluj-Napoca WWTP – 20 **μm** (PE) Fig. 29

Peak Number	Wavenumber (cm^{-1})	Assignment
1	**2925.2**	stretching vibrations of $CH/CH_2/CH_3$ groups [1]
2	**2843.5**	stretching vibrations of $CH/CH_2/CH_3$ groups [1]
3	**1687.2**	**C=C** stretching [2-4]
4	**1518.5**	**C=C** stretching [2-4]
5	**1462**	**C-H** rocking vibration [6]
6	**1375.6**	**CH_3** Umbrella bending mode [5]
7	**1283.7**	**C-O** stretching [6]
8	**1232.1**	**C-O** stretching [6]
9	**1170.7**	**CF_2** stretching vibration [1]
10	**1027.1**	**C-O** stretching vibration [6]
11	**833.4**	**Si-O** bending vibration [9]
12	**720.6**	**C-H** rocking vibration [6]

13	**644.7**	**O-S-O** scissoring vibration mode [8]
14	**531.5**	**O-S-O** scissoring vibration mode [8]
15	**470.2**	**O-S-O** scissoring vibration mode [8]
16	**424.2**	**O-S-O** scissoring vibration mode [8]

Table S5. Assignment of the ATR-FTIR band exhibited by the UP Floresti 200 **μm** (PP) Fig. 30

Peak Number	Wavenumber (cm^{-1})	Assignment
1	**3024.3**	**-OH** stretching region [6]
2	**2979.5**	stretching vibrations of CH/CH_2/CH_3 groups [1]
3	**2917.8**	stretching vibrations of CH/CH_2/CH_3 groups [1]
4	**2845.2**	stretching vibrations of CH/CH_2/CH_3 groups [1]
5	**1604.8**	**C=C** stretching [2-4]
6	**1492.7**	**CH_2** asymmetrical vibration [1]
7	**1453.1**	**CH_2** asymmetrical vibration [1]
8	**1021.4**	**C-O** stretching [7]
9	**909.2**	**C=C** stretching [9]
10	**751.8**	**Split CH_2** rocking vibration [5]
11	**690.5**	**C–Cl** stretching vibration [1]
12	**538.8**	**O-S-O** scissoring vibration mode [8]
13	**466.2**	**O-S-O** scissoring vibration mode [8]
14	**420.2**	**O-S-O** scissoring vibration mode [8]

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