

Supplementary Table 1 Top 10 institutions for MFA research and MFA-CE research

MFA	Institutions	Country	Number	Ratio (%)
1	Chinese Academy of Sciences	China	71	2.73
2	Tsinghua University	China	50	1.92
3	Yale University	USA	42	1.61
4	University Tokyo	Japan	37	1.42
5	Norwegian University of Science and Technology	Norway	32	1.23
6	Vienna University of Technology	Austria	28	1.08
7	Leiden University	Netherlands	27	1.04
8	University of Southern Denmark	Denmark	25	0.96
9	National Institute Environmental Studies	Japan	24	0.92
10	Northeastern University	USA	23	0.88
MFA-CE	Institutions	Country	Number	Ratio (%)
1	Chinese Academy of Sciences	China	41	2.71
2	Tsinghua University	China	32	2.11
3	Yale University	USA	31	2.05
4	University Tokyo	Japan	24	1.58
5	Vienna University of Technology	Austria	20	1.32
6	National Institute Environmental Studies	Japan	19	1.25
7	Norwegian University of Science and Technology	Norway	18	1.19
8	University of Southern Denmark	Denmark	17	1.12
9	Swiss Federal Laboratories for Materials Science and Technology	Switzerland	15	0.99
10	Tohoku University	Japan	15	0.99

Supplementary Table 2 Top 10 productive journals for MFA research and MFA-CE research

MFA	Journals	Number	Ratio (%)	2021 IF	JCR	Country
1	Resources Conservation and Recycling	191	15.48	13.716	Q1	Netherlands
2	Journal of Industrial Ecology	164	13.29	7.202	Q1	USA
3	Journal of Cleaner Production	131	10.62	11.072	Q1	USA
4	Science of the Total Environment	45	3.65	10.754	Q1	Netherlands
5	Sustainability	35	2.84	3.899	Q2	Switzerland
6	Ecological Economics	33	2.67	6.536	Q1	Netherlands
7	Waste Management	32	2.59	8.816	Q1	USA
8	Environmental Science & Technology	31	2.51	11.357	Q1	USA
9	Waste Management & Research	28	2.27	4.432	Q2	England
10	Journal of Environmental Management	19	1.54	8.910	Q1	England
MFA-CE	Journals	Number	Ratio (%)	2021 IF	JCR	Country
1	Resources Conservation and Recycling	111	15.44	13.716	Q1	Netherlands
2	Journal of Industrial Ecology	101	14.05	7.202	Q1	USA
3	Journal of Cleaner Production	78	10.85	11.072	Q1	USA
4	Environmental Science & Technology	28	3.89	11.357	Q1	USA
5	Science of the Total Environment	20	2.78	10.754	Q1	Netherlands
6	Waste Management	19	2.64	8.816	Q1	USA
7	Waste Management & Research	17	2.36	4.432	Q2	England
8	Ecological Economics	15	2.09	6.536	Q1	Netherlands
9	Journal of Material Cycles and Waste Management	11	1.53	3.579	Q3	Japan
10	Environmental Science and Pollution Research	9	1.25	5.190	Q2	Germany

Supplementary Table 3 Highly cited scientific papers in MFA and MFA-CE research

No.	Title	First Author	Journal	Year	Times
1	How Circular is the Global Economy?: An Assessment of Material Flows, Waste Production, and Recycling in the European Union and the World in 2005	Haas W	Journal of Industrial Ecology	2015	484
2	<i>Global socioeconomic material stocks rise 23-fold over the 20th century and require half of annual resource use</i>	<i>Krausmann F</i>	<i>PNAS</i>	<i>2017</i>	<i>270</i>
3	The global metabolic transition: Regional patterns and trends of global material flows, 1950-2010	Schaffartzik A	Global Environmental Change	2014	183
4	Food waste in the Swiss food service industry - Magnitude and potential for reduction	Betz A	Waste Management	2015	178
5	From resource extraction to outflows of wastes and emissions: The socioeconomic metabolism of the global economy, 1900-2015	Krausmann F	Global Environmental Change	2018	129
6	<i>Stocks and flows of natural and human-derived capital in ecosystem services</i>	<i>Jones L</i>	<i>Land Use Policy</i>	<i>2016</i>	<i>123</i>
7	<i>Material flow analysis for end-of-life lithium-ion batteries from battery electric vehicles in the USA and China</i>	<i>Shafique M</i>	<i>Resources Conservation and Recycling</i>	<i>2022</i>	<i>19</i>