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Table S1. List of countries(regions)

ID	Country(region)	Abbreviation
1	Austria	AT
2	Belgium	BE
3	Bulgaria	BG
4	Cyprus	CY
5	Czechia	CZ
6	Germany	DE
7	Denmark	DK
8	Estonia	EE
9	Spain	ES
10	Finland	FI
11	France	FR
12	Greece	GR
13	Croatia	HR
14	Hungary	HU
15	Ireland	IE
16	Italy	IT
17	Lithuania	LT
18	Luxembourg	LU
19	Latvia	LV
20	Malta	MT
21	Netherlands	NL
22	Poland	PL
23	Portugal	PT
24	Romania	RO
25	Sweden	SE
26	Slovenia	SI
27	Slovakia	SK
28	United Kingdom	GB
29	United States	US
30	Japan	JP
31	China	CN
32	Canada	CA
33	South Korea	KR
34	Brazil	BR
35	India	IN
36	Mexico	MX
37	Russia	RU
38	Australia	AU
39	Switzerland	CH
40	Turkey	TR
41	Norway	NO
42	Indonesia	ID

43	South Africa	ZA
44	World rest of Asia	WA
45	World rest of Latin America	WL
46	World rest of Europe	WE
47	World rest of Africa	WF
48	World rest of middle east	WM

Table S2. China's Seven Major Regions and Provinces（Region）

Major Regions	Provinces（Region）	Major Regions	Provinces（Region）
Northeast China	Liaoning	**East China**	Shanghai
	Jilin		Jiangsu
	Heilongjiang		Zhejiang
North China	Beijing		Anhui
	Tianjin		Fujian
	Hebei		Jiangxi
	Shanxi		Shandong
	Inner Mongolia		Taiwan, China
Central China	Henan	**South China**	Guangdong
	Hubei		Guangxi
	Hunan		Hainan
Southwest China	Chongqing	**Northwest China**	Shaanxi
	Sichuan		Gansu
	Guizhou		Qinghai
	Yunnan		Ningxia
			Xinjiang

Table S3. Sectors in EXIOBASE data and aggregation

ID	Sector 163	Sector 21	ISIC Rev.4 Correspondence
1	Cultivation of paddy rice	Agriculture, Forestry, Animal Husbandry and Fishery	A (01–03)
2	Cultivation of wheat		
3	Cultivation of cereal grains nec		
4	Cultivation of vegetables, fruit, nuts		
5	Cultivation of oil seeds		
6	Cultivation of sugar cane, sugar beet		
7	Cultivation of plant-based fibers		
8	Cultivation of crops nec		
9	Cattle farming		
10	Pigs farming		
11	Poultry farming		
12	Meat animals nec		
13	Animal products nec		
14	Raw milk		
15	Wool, silk-worm cocoons		
16	Manure treatment (conventional), storage and land application		
17	Manure treatment (biogas), storage and land application		
18	Forestry, logging and related service activities (02)		
19	Fishing, operating of fish hatcheries and fish farms; service activities incidental to fishing (05)		
20	Mining of coal and lignite; extraction of peat (10)	Mining	B (05–09)
21	Extraction of crude petroleum and services related to crude oil extraction, excluding surveying		
22	Extraction of natural gas and services related to natural gas extraction, excluding surveying		
23	Extraction, liquefaction, and regasification of other petroleum and gaseous materials		
24	Mining of uranium and thorium ores (12)		
25	Mining of iron ores		
26	Mining of copper ores and concentrates		
27	Mining of nickel ores and concentrates		
28	Mining of aluminium ores and concentrates		
29	Mining of precious metal ores and concentrates		
30	Mining of lead, zinc and tin ores and concentrates		

31	Mining of other non-ferrous metal ores and concentrates		
32	Quarrying of stone		
33	Quarrying of sand and clay		
34	Mining of chemical and fertilizer minerals, production of salt, other mining and quarrying n.e.c.		
35	Processing of meat cattle	Food Processing	C10–C12
36	Processing of meat pigs		
37	Processing of meat poultry		
38	Production of meat products nec		
39	Processing vegetable oils and fats		
40	Processing of dairy products		
41	Processed rice		
42	Sugar refining		
43	Processing of Food products nec		
44	Manufacture of beverages		
45	Manufacture of fish products		
46	Manufacture of tobacco products (16)		
47	Manufacture of textiles (17)	Textile Industry	C13–C15
48	Manufacture of wearing apparel; dressing and dyeing of fur (18)		
49	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear (19)		
50	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials (20)	Timber Industry	C16
51	Re-processing of secondary wood material into new wood material		
52	Pulp	Paper Industry	C17–C18
53	Re-processing of secondary paper into new pulp		
54	Paper		
55	Publishing, printing and reproduction of recorded media (22)		
56	Manufacture of coke oven products	Petroleum Industry	C19
57	Petroleum Refinery		
58	Processing of nuclear fuel		
59	Plastics, basic	Chemical Industry	C20–C22
60	Re-processing of secondary plastic into new plastic		
61	N-fertiliser		
62	P- and other fertiliser		

63	Chemicals nec		
64	Manufacture of rubber and plastic products (25)		
65	Manufacture of glass and glass products	Non-metallic Manufacturing	C23
66	Re-processing of secondary glass into new glass		
67	Manufacture of ceramic goods		
68	Manufacture of bricks, tiles and construction products, in baked clay		
69	Manufacture of cement, lime and plaster		
70	Re-processing of ash into clinker		
71	Manufacture of other non-metallic mineral products n.e.c.		
72	Manufacture of basic iron and steel and of ferro-alloys and first products thereof	Nonferrous Metals Manufacturing	C24
73	Re-processing of secondary steel into new steel		
74	Precious metals production		
75	Re-processing of secondary preciuos metals into new preciuos metals		
76	Aluminium production		
77	Re-processing of secondary aluminium into new aluminium		
78	Lead, zinc and tin production		
79	Re-processing of secondary lead into new lead, zinc and tin		
80	Copper production		
81	Re-processing of secondary copper into new copper		
82	Other non-ferrous metal production		
83	Re-processing of secondary other non-ferrous metals into new other non-ferrous metals		
84	Casting of metals	Metal Manufacturing	C25
85	Manufacture of fabricated metal products, except machinery and equipment (28)		
86	Manufacture of machinery and equipment n.e.c. (29)	Manufacture of Special Equipment	C28
87	Manufacture of motor vehicles, trailers and semi-trailers (34)	Manufacture of Transport Equipment	C29–C30
88	Manufacture of other transport equipment (35)		
89	Manufacture of electrical machinery and apparatus n.e.c. (31)	Electrical Machinery	C27
90	Manufacture of office machinery and computers (30)	Electronics Manufacturing	C26

91	Manufacture of radio, television and communication equipment and apparatus (32)		
92	Manufacture of medical, precision and optical instruments, watches and clocks (33)	Instrument Manufacturing	C33
94	Recycling of waste and scrap	Other Manufacturing	C（31, 32, 38, 39）
95	Recycling of bottles by direct reuse		
96	Incineration of waste: Food		
97	Incineration of waste: Paper		
98	Incineration of waste: Plastic		
99	Incineration of waste: Metals and Inert materials		
100	Incineration of waste: Textiles		
101	Incineration of waste: Wood		
102	Incineration of waste: Oil/Hazardous waste		
103	Biogasification of food waste, incl. land application		
104	Biogasification of paper, incl. land application		
105	Biogasification of sewage slugde, incl. land application		
106	Composting of food waste, incl. land application		
107	Composting of paper and wood, incl. land application		
108	Waste water treatment, food		
109	Waste water treatment, other		
110	Landfill of waste: Food		
111	Landfill of waste: Paper		
112	Landfill of waste: Plastic		
113	Landfill of waste: Inert/metal/hazardous		
114	Landfill of waste: Textiles		
115	Landfill of waste: Wood		
116	Production of electricity by coal	Electricity, Heat, Gas and Water Production and Supply	D (35), E (36–39)
117	Production of electricity by gas		
118	Production of electricity by nuclear		
119	Production of electricity by hydro		
120	Production of electricity by wind		
121	Production of electricity by petroleum and other oil derivatives		
122	Production of electricity by biomass and waste		
123	Production of electricity by solar photovoltaic		
124	Production of electricity by solar thermal		
125	Production of electricity by tide, wave, ocean		
126	Production of electricity by Geothermal		
127	Production of electricity nec		

128	Transmission of electricity		
129	Distribution and trade of electricity		
130	Manufacture of gas; distribution of gaseous fuels through mains		
131	Steam and hot water supply		
132	Collection, purification and distribution of water (41)		
133	Construction (45)	Construction	F (41–43)
134	Re-processing of secondary construction material into aggregates		
135	Transport via railways	Transportation, Storage and Postal Services	H (49–53)
136	Other land transport		
137	Transport via pipelines		
138	Sea and coastal water transport		
139	Inland water transport		
140	Air transport (62)		
141	Supporting and auxiliary transport activities; activities of travel agencies (63)		
142	Post and telecommunications (64)		
143	Sale, maintenance, repair of motor vehicles, motor vehicles parts, motorcycles, motor cycles parts and accessoiries	Services	G (45–47), I–S (55–96)
144	Retail sale of automotive fuel		
145	Wholesale trade and commission trade, except of motor vehicles and motorcycles (51)		
146	Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods (52)		
147	Hotels and restaurants (55)		
148	Financial intermediation, except insurance and pension funding (65)		
149	Insurance and pension funding, except compulsory social security (66)		
150	Activities auxiliary to financial intermediation (67)		
151	Real estate activities (70)		
152	Renting of machinery and equipment without operator and of personal and household goods (71)		
153	Computer and related activities (72)		
154	Research and development (73)		
155	Other business activities (74)		
156	Public administration and defence; compulsory social security (75)		

157	Education (80)		
158	Health and social work (85)		
159	Activities of membership organisation n.e.c. (91)		
160	Recreational, cultural and sporting activities (92)		
161	Other service activities (93)		
162	Private households with employed persons (95)		
163	Extra-territorial organizations and bodies		

Table S4. Table of 15 Manufacturing Sector Classifications

Sectoral Classification	Manufacturing Sectors
Labor-intensive Manufacturing	A1: food processing; A2: Textile Industry; A3: Timber Industry; A4: Paper Industry; A15: other manufacturing
Capital-intensive Manufacturing	A5: Petroleum Industry; A6: Chemical Industry; A7: Non-metallic Manufacturing; A8: Nonferrous Metals Manufacturing; A9: Metal Manufacturing
Technology-intensive Manufacturing	A10: Manufacture of Special Equipment; A11: Manufacture of Transport Equipment; A12: Electrical Machinery; A13: Electronics Manufacturing; A14: Instrument Manufacturing