

Supplementary appendix 1

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Health-care systems' resource footprints and their access and quality in 49 regions
between 1995 and 2015: an input-output analysis. *Lancet Planet Health* 2023;
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**Appendix – The exponential relationship between healthcare systems’
resource footprints and their access and quality: a study of 49 regions
between 1995 and 2015**

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Contents

Supplementary method	2
Data collection.....	2
Data analysis.....	3
Extensions.....	4
Taiwan data	4
Supplementary results	4
Healthcare systems' dependency to resources in 2013.....	7
Relationship between the energy footprint and access and quality (HAQ index)	14
Supplementary discussion.....	23
References.....	36

Supplementary method

Data collection

Footprint calculations over the whole period with available energy or resources data (1995-2015) are limited by data the World Health Organization' Global Health Expenditures database (GHE), which starts in 2000.¹ We have completed GHE data using the OECD health expenditure database for years 1995-1999.² For the regions missing from the OECD database, we have made the hypothesis that the global health expenditures were proportional to EXIOBASE3 expenditures in the sector "Health and social work services", using the proportionality factor of year 2000. This resulted in aggregated health expenditures for all EXIOBASE regions between 1995 and 2015.

These expenditures then had to be disaggregated into EXIOBASE sectors. We have used OECD health expenditure data to build a concordance matrix between aggregated health expenditures and EXIOBASE3 sectors (Table S1). OECD data is disaggregated into 9 provider categories and 23 sub-categories.² Among these sub categories, seven correspond to sectors other than "Health and social work services". The database provides 2621 out of 7203 possible data points (49 EXIOBASE regions, 21 years and seven sectors), all others are extrapolated or interpolated. If a region is not in the database at all, shares for these seven sub categories are considered equal to the weighted mean of all available data points.

Table S1: OECD-EXIOBASE3 concordance table

OECD provider name		Corresponding EXIOBASE3 sector
Hospitals		
Hospitals	General hospitals	Health and social work services (85)
	Mental health hospitals	Health and social work services (85)
	Specialised hospitals (other than mental health hospitals)	Health and social work services (85)
Residential long-term care facilities		
Residential long-term care facilities	Long-term nursing care facilities	Health and social work services (85)
	Mental health and substance abuse facilities	Health and social work services (85)
	Other residential long-term care facilities	Health and social work services (85)
Providers of ambulatory health care		
Providers of ambulatory health care	Medical practices	Health and social work services (85)
	Dental practices	Health and social work services (85)
	Other health care practitioners	Health and social work services (85)

	Ambulatory health care centres	Health and social work services (85)
	Providers of home health care services	Health and social work services (85)
Providers of ancillary services		
Providers of ancillary services	Providers of patient transportation and emergency rescue	Health and social work services (85)
	Medical and diagnostic laboratories	Health and social work services (85)
	Other providers of ancillary services	Health and social work services (85)
Retailers and other providers of medical goods		
Retailers and other providers of medical goods	Pharmacies	Chemicals nec
	Retail sellers and other suppliers of durable medical goods and medical appliances	Retail trade services, except of motor vehicles and motorcycles; repair services of personal and household goods (52)
	All other miscellaneous sellers and other suppliers of pharmaceuticals and medical goods	Health and social work services (85)
Providers of preventive care		Health and social work services (85)
Providers of health care system administration and financing		
Providers of health care system administration and financing	Government health administration agencies	Public administration and defence services; compulsory social security services (75)
	Social health insurance agencies	Insurance and pension funding services, except compulsory social security services (66)
	Private health insurance administration agencies	Insurance and pension funding services, except compulsory social security services (66)
	Other administration agencies	Public administration and defence services; compulsory social security services (75)
Rest of the economy		
Rest of the economy	Households as providers of home health care	Private households with employed persons (95)
	All other industries as secondary providers of health care	Health and social work services (85)
Rest of the world		
Providers unknown		Health and social work services (85)

Data analysis

Calculations were made with the python module pymrio.³ Matrix Z represents the inter-industries flows and Y the final consumption matrix. The total industrial output is given by

$$x = Ze + Ye \quad (1)$$

with e a summation vector. Capital endogenization consists in adding to Z a matrix \bar{K} representing the inter-industries flows of capital.⁴ We have chosen to endogenize the consumption of fixed capital as it measures only the decline in value of fixed assets due to the production process a given year and does not include further investments that will allow future production. Following input-output formalism, the direct requirement matrix A^K with capital endogenized is

$$A^K = (Z + \bar{K})x^{-1} \quad (2)$$

And the Leontief inverse

$$L^K = (I - A^K)^{-1} \quad (3)$$

Energy and resources footprints are calculated using their associated environmental extensions f . The consumption-based account footprint D_{cba} of a vector of final consumption y writes:

$$D_{cba} = f L^K y \quad (4)$$

Extensions

All the energy data in the paper refers to final energy. It was calculated by subtracting the EXIOBASE extension “Energy Carrier Net LOSS” to the EXIOBASE extension “Energy Carrier Net Total”, which refers to primary energy.⁵

The main data source for the construction of the energy extensions is the International Energy Agency’s (IEA) extended energy balances. The uncertainties associated with the extensions are those of the IEA data itself, combined with the uncertainty of conversion from the residence to the territory principle⁶. The EXIOBASE authors argue that these extensions are a good basis for calculating footprints at a macro-level, which is the case for the present study (we are not providing results with the value chain disaggregated at the meso level). For an extensive description and discussion on the energy extensions, see the following supplementary information from the EXIOBASE paper⁵:

<https://onlinelibrary.wiley.com/action/downloadSupplement?doi=10.1111%2Fjiec.12715&file=jiec12715-sup-0002-SuppMat-2.pdf>

As for the minerals extensions, many data sources are used (BGS, WMD, USGS, and official statistics). The procedure to compile the extensions are detailed in a supplementary information but the uncertainties are not discussed in it⁷:

<https://onlinelibrary.wiley.com/action/downloadSupplement?doi=10.1111%2Fjiec.12715&file=jiec12715-sup-0005-SuppMat-5.pdf>

Taiwan data

Taiwan was not in the Global Health Expenditure Database.¹ We calculated expenditures for Taiwan assuming that they were proportional to Chinese expenditures, using the ratio of proportionality for EXIOBASE’s sector “Health and social work services (85)”.

Supplementary results

Evolution of resource footprints of healthcare systems between 1995 and 2013

Table S2: Figure 1 b-d-f data, per capita footprints

	region	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Fossil fuel	Africa	0,02	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01
	Australia	0,26	0,32	0,28	0,40	0,32	0,35	0,40	0,42	0,48	0,49	0,38	0,47	0,48	0,44	0,55	0,43	0,43	0,51	0,45
	China	0,02	0,02	0,02	0,03	0,03	0,03	0,03	0,04	0,04	0,05	0,05	0,04	0,06	0,08	0,08	0,13	0,12	0,12	0,16
	Europe	0,10	0,14	0,14	0,13	0,13	0,13	0,16	0,16	0,16	0,17	0,18	0,18	0,17	0,19	0,20	0,18	0,18	0,19	0,17
	India	0,02	0,02	0,02	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01
	Japan and Korea	0,14	0,18	0,19	0,15	0,17	0,20	0,16	0,19	0,20	0,22	0,21	0,17	0,21	0,19	0,20	0,21	0,28	0,28	0,27
	Latin America	0,04	0,03	0,04	0,04	0,04	0,03	0,04	0,04	0,03	0,03	0,04	0,03	0,04	0,04	0,04	0,04	0,04	0,04	0,04
	Middle East	0,03	0,02	0,02	0,02	0,02	0,02	0,02	0,03	0,02	0,02	0,02	0,02	0,03	0,03	0,03	0,03	0,03	0,03	0,03

	Rest of Asia	0,07	0,03	0,03	0,03	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02
	USA and Canada	0,34	0,42	0,42	0,42	0,44	0,47	0,47	0,47	0,47	0,57	0,51	0,52	0,45	0,43	0,41	0,45	0,45	0,52	0,59
Metal ores	Africa	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01
	Australia	0,21	0,22	0,25	0,35	0,31	0,29	0,43	0,54	0,50	0,44	0,35	0,30	0,33	0,30	0,44	0,34	0,35	0,37	0,36
	China	0,00	0,00	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,02	0,02	0,02	0,03	0,03	0,05	0,05	0,06	0,06
	Europe	0,04	0,06	0,06	0,07	0,08	0,07	0,08	0,09	0,09	0,08	0,08	0,09	0,08	0,09	0,09	0,09	0,08	0,09	0,08
	India	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	Japan and Korea	0,11	0,12	0,12	0,10	0,12	0,14	0,13	0,13	0,14	0,14	0,14	0,13	0,16	0,13	0,15	0,17	0,22	0,20	0,18
	Latin America	0,03	0,03	0,03	0,03	0,04	0,03	0,03	0,03	0,03	0,03	0,03	0,02	0,03	0,03	0,03	0,03	0,03	0,03	0,03
	Middle East	0,01	0,01	0,01	0,01	0,01	0,02	0,02	0,02	0,01	0,01	0,01	0,02	0,02	0,03	0,02	0,03	0,03	0,03	0,03
	Rest of Asia	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01
	USA and Canada	0,36	0,45	0,45	0,45	0,41	0,41	0,42	0,42	0,43	0,50	0,45	0,47	0,42	0,47	0,45	0,40	0,29	0,26	0,29
Non-metallic minerals	Africa	0,02	0,02	0,03	0,02	0,02	0,02	0,02	0,02	0,03	0,03	0,04	0,03	0,03	0,04	0,04	0,04	0,04	0,04	0,06
	Australia	0,23	0,27	0,25	0,28	0,28	0,28	0,31	0,39	0,40	0,43	0,44	0,38	0,43	0,44	0,56	0,47	0,60	0,65	0,61
	China	0,05	0,04	0,07	0,09	0,10	0,13	0,13	0,16	0,18	0,18	0,22	0,09	0,26	0,39	0,45	0,68	0,66	0,79	0,90
	Europe	0,37	0,37	0,40	0,43	0,44	0,44	0,50	0,50	0,52	0,55	0,60	0,59	0,61	0,59	0,60	0,58	0,62	0,64	0,60
	India	0,03	0,03	0,03	0,02	0,02	0,03	0,02	0,03	0,02	0,02	0,05	0,02	0,02	0,02	0,01	0,01	0,01	0,02	0,02
	Japan and Korea	0,29	0,34	0,40	0,32	0,37	0,43	0,37	0,44	0,44	0,45	0,44	0,42	0,49	0,42	0,48	0,52	0,72	0,68	0,67
	Latin America	0,09	0,09	0,10	0,09	0,12	0,11	0,10	0,09	0,10	0,10	0,11	0,11	0,13	0,14	0,15	0,14	0,16	0,16	0,17
	Middle East	0,10	0,10	0,10	0,10	0,13	0,12	0,11	0,14	0,14	0,12	0,12	0,14	0,20	0,18	0,23	0,34	0,26	0,44	0,45
	Rest of Asia	0,14	0,09	0,16	0,09	0,08	0,06	0,05	0,06	0,06	0,07	0,08	0,07	0,07	0,07	0,07	0,07	0,07	0,08	0,07

	USA and Canada	0,87	1,02	1,02	1,05	1,09	1,13	1,19	1,23	1,28	1,50	1,41	1,44	1,26	1,23	1,20	1,37	1,37	1,55	1,71
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109

110 **Table S3: Share of the total footprint due to the endogenization of capital, in %.** See Table S14 for region
111 names abbreviations.

	Non- metallic minerals	Metal ores	Fossil fuel	Final energy
World	35,3	44,0	21,0	18,5
AT	62,0	52,2	22,6	17,5
AU	43,1	35,7	27,0	15,9
BE	39,9	39,0	21,0	18,7
BG	30,0	36,5	11,8	16,4
BR	42,4	44,3	20,5	19,4
CA	61,5	19,3	26,3	16,7
CH	59,2	37,3	43,5	30,6
CN	14,8	40,8	16,2	14,2
CY	33,7	43,6	16,7	16,3
CZ	49,2	39,4	16,4	16,5
DE	53,2	50,8	33,7	20,2
DK	63,6	58,8	34,8	12,9
EE	51,4	35,6	25,6	15,3
ES	41,3	37,8	18,6	21,0
FI	52,3	40,6	23,1	12,9
FR	71,0	69,5	43,6	33,6
GB	35,6	35,8	15,7	13,6
GR	75,6	57,2	22,4	17,6
HR	27,6	38,0	21,0	15,7
HU	25,6	45,6	14,6	16,4
ID	69,0	77,1	25,6	18,5
IE	58,9	59,7	36,9	24,8
IN	25,5	40,6	26,9	17,5
IT	65,8	55,8	18,9	21,4
JP	46,6	50,9	23,1	16,9
KR	53,3	59,8	24,7	19,0
LT	14,9	31,9	6,9	13,3
LU	23,4	29,8	15,3	14,5
LV	72,7	48,9	30,9	22,5
MT	11,6	16,6	9,9	11,8
MX	63,4	34,8	12,6	19,7
NL	66,1	56,3	31,6	31,0
NO	51,2	43,1	30,6	22,0
PL	62,6	43,9	12,7	5,8
PT	51,7	41,3	21,6	15,1
RO	66,0	50,7	26,8	20,6
RU	64,4	38,9	17,3	15,5

SE	66,6	51,4	39,9	24,6
SI	48,8	43,2	15,5	16,9
SK	52,5	38,7	19,9	11,6
TR	18,5	35,5	14,4	5,7
TW	56,0	44,4	13,8	8,9
US	61,8	47,6	22,7	20,5
WA	47,3	55,4	26,4	22,4
WE	37,6	29,5	10,6	9,6
WF	40,2	22,3	23,4	26,1
WL	42,4	29,5	17,1	16,6
WM	27,6	40,2	31,5	25,0
ZA	53,3	30,2	20,4	24,9

Healthcare systems' dependency to resources in 2013

We assessed the flows of resources in between regions to find out if some regions produced more resources than what they used, taking into account only the resources used by healthcare systems (figures S2-S10, tables S2-S5).

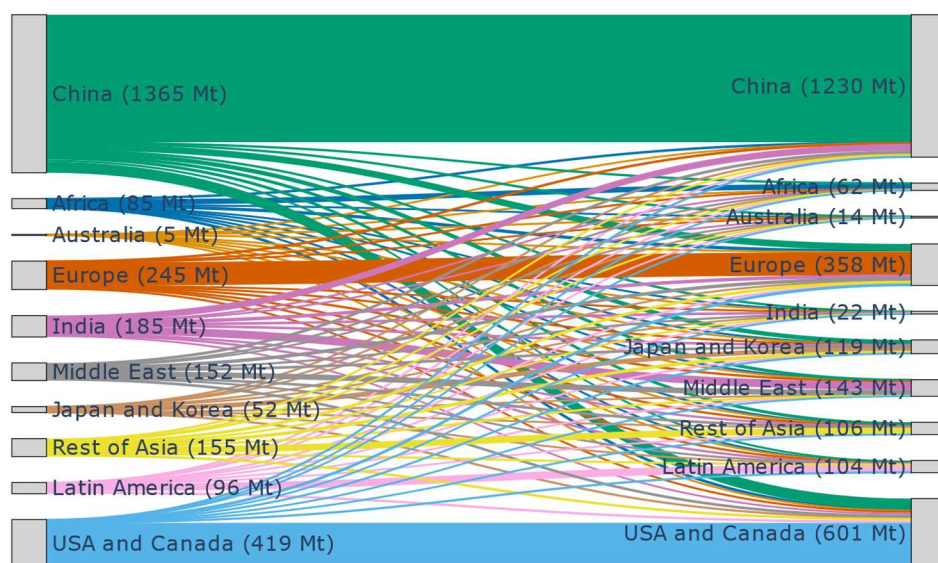


Figure S1: healthcare non-metallic minerals sankey diagram for 2013

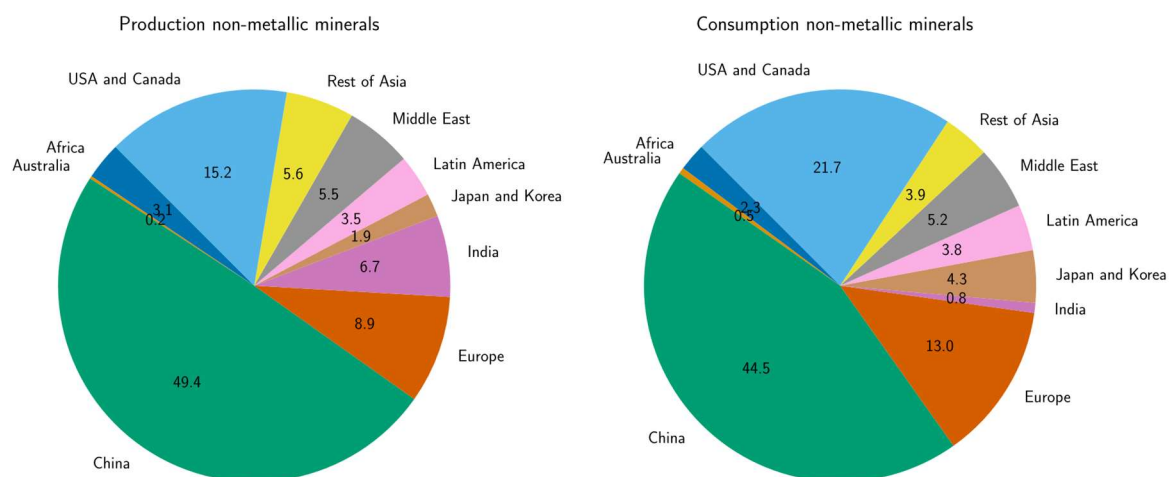


Figure S2: healthcare non-metallic minerals production and consumption in 2013

Table S4: non-metallic minerals shares

Non-metallic minerals	Production (%)	Consumption (%)	Population (%)
Global North	27	40	18
China	49	44	19
Rest of Global South	24	16	63

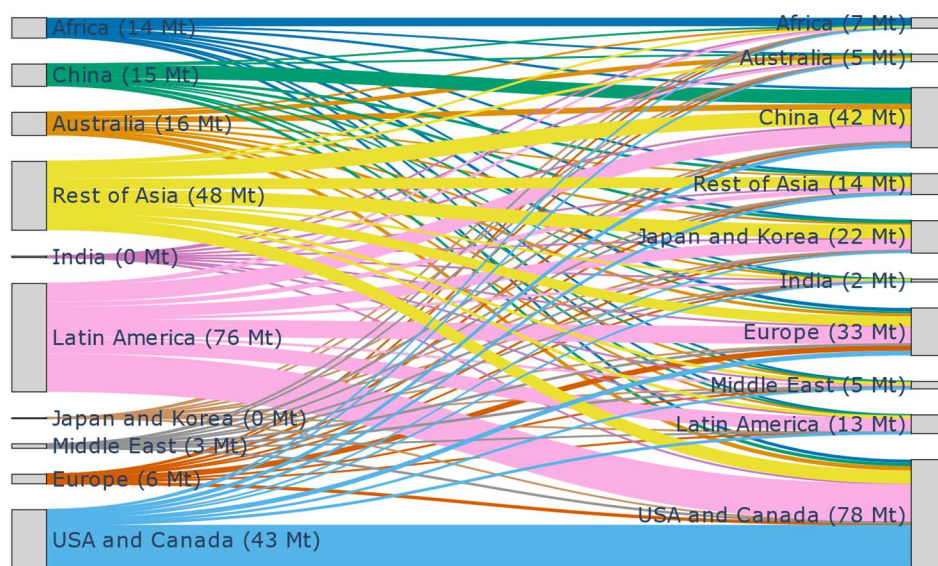


Figure S3: healthcare non-ferous metal ores sankey diagram for 2013

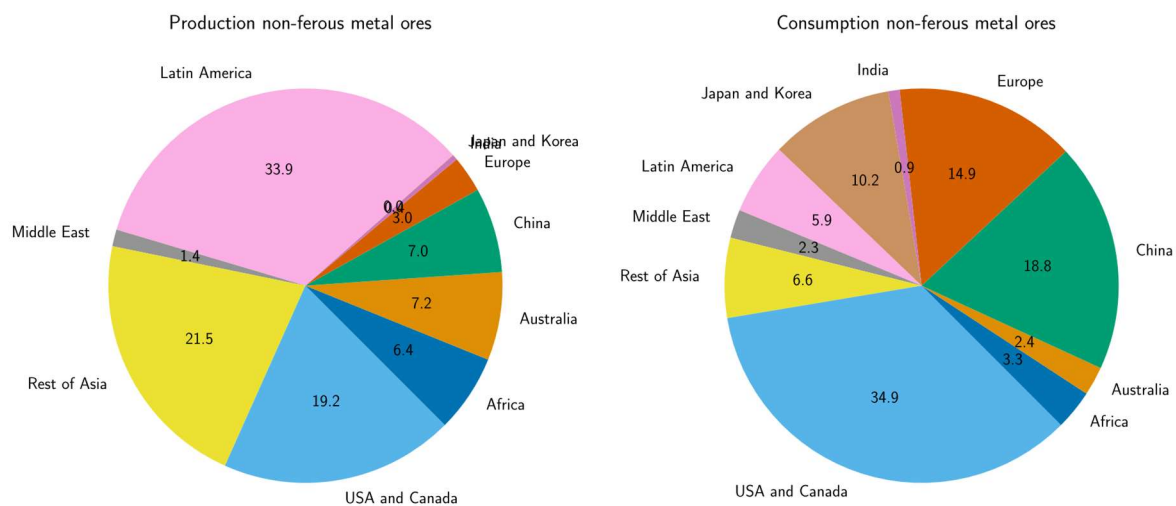


Figure S4: healthcare non-ferous metal ores production and consumption in 2013

Table S5: non-ferous metal ores shares

Non-ferous metal ores	Production (%)	Consumption (%)	Population (%)
Global North	29	62	18
China	7	19	19
Rest of Global South	64	19	63

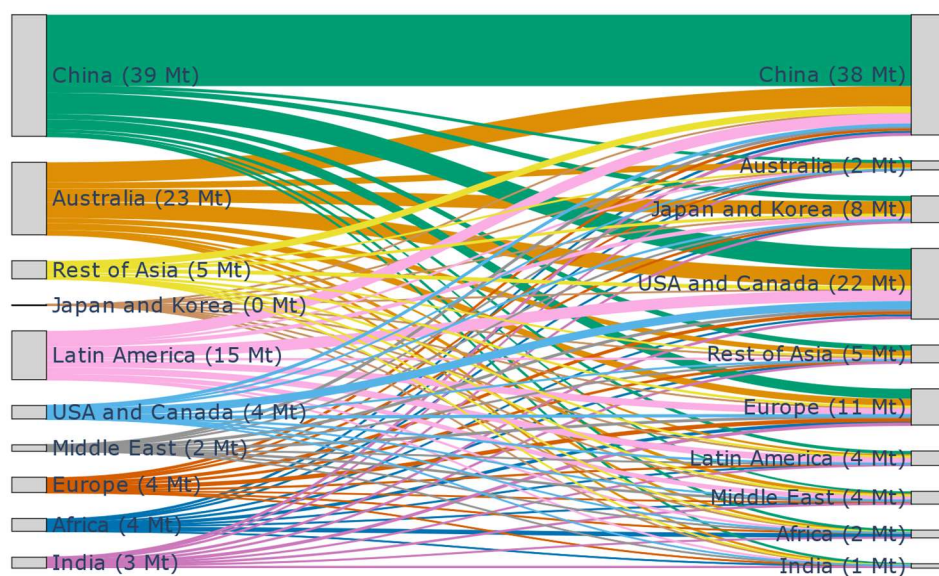


Figure S5: healthcare iron ore sankey diagram for 2013

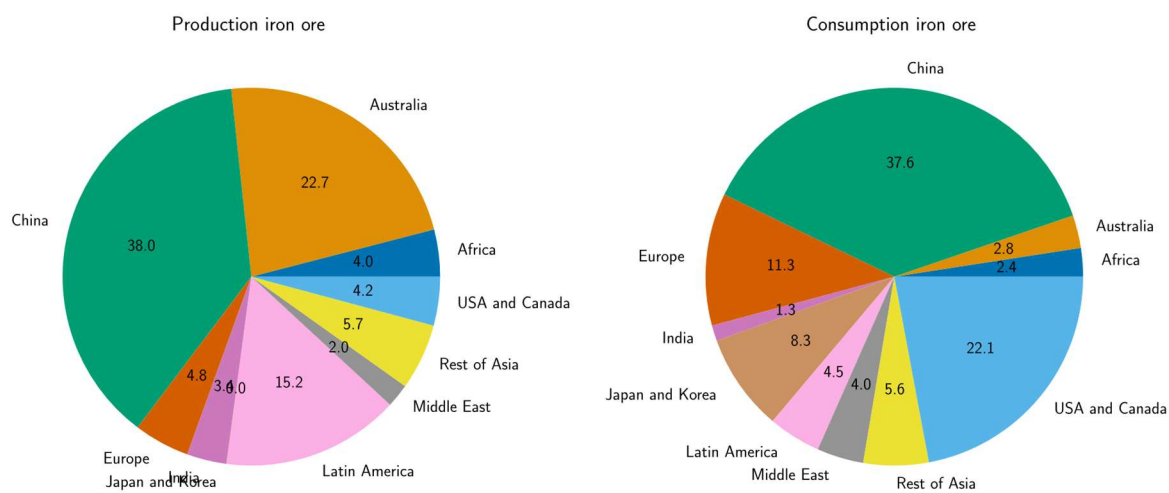


Figure S6: healthcare iron ore production and consumption in 2013

Table S6: iron ore shares

Iron ore	Production (%)	Consumption (%)	Population (%)
Global North	32	44	18
China	38	38	19
Rest of Global South	30	18	63

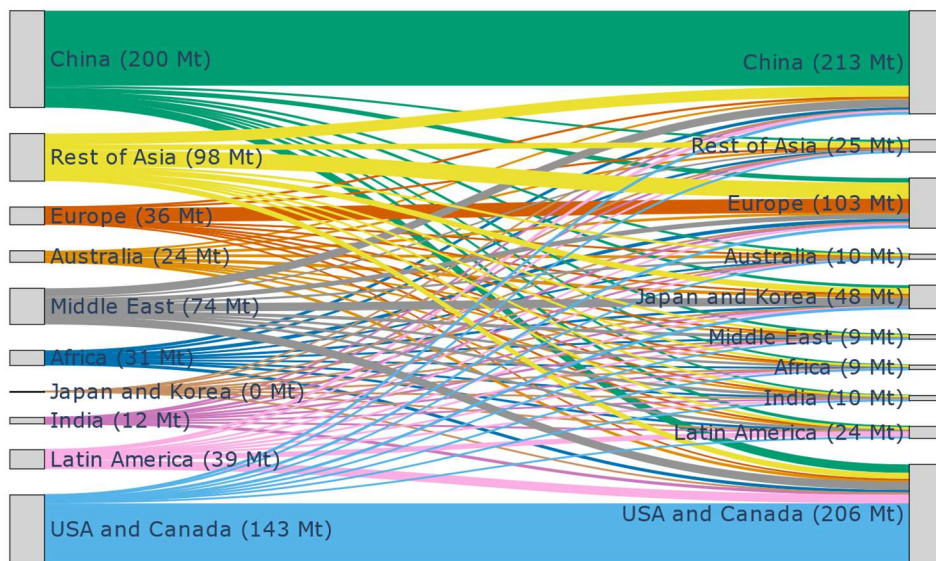


Figure S7 healthcare fossil fuels sankey diagram for 2013

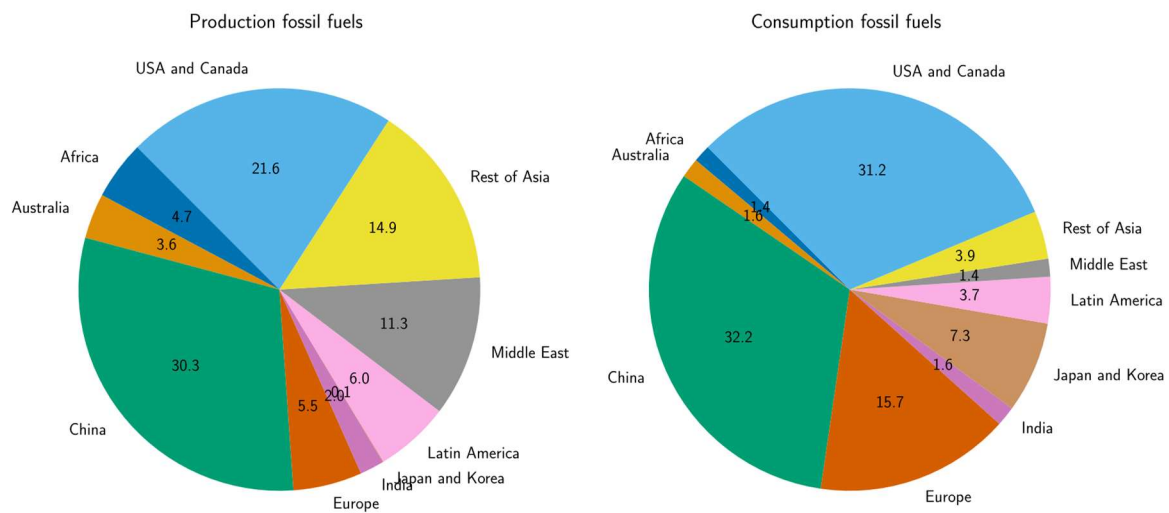


Figure S8: healthcare fossil fuels production and consumption in 2013

Table S7: fossil fuels shares

Fossil fuels	Production (%)	Consumption (%)	Population (%)
Global North	31	56	18
China	30	32	19

Rest of Global South	39	12	63
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These flows allowed to produce the maps of figure 2 in the paper. The detailed percentages of imports are given in figure S10 and table S6.

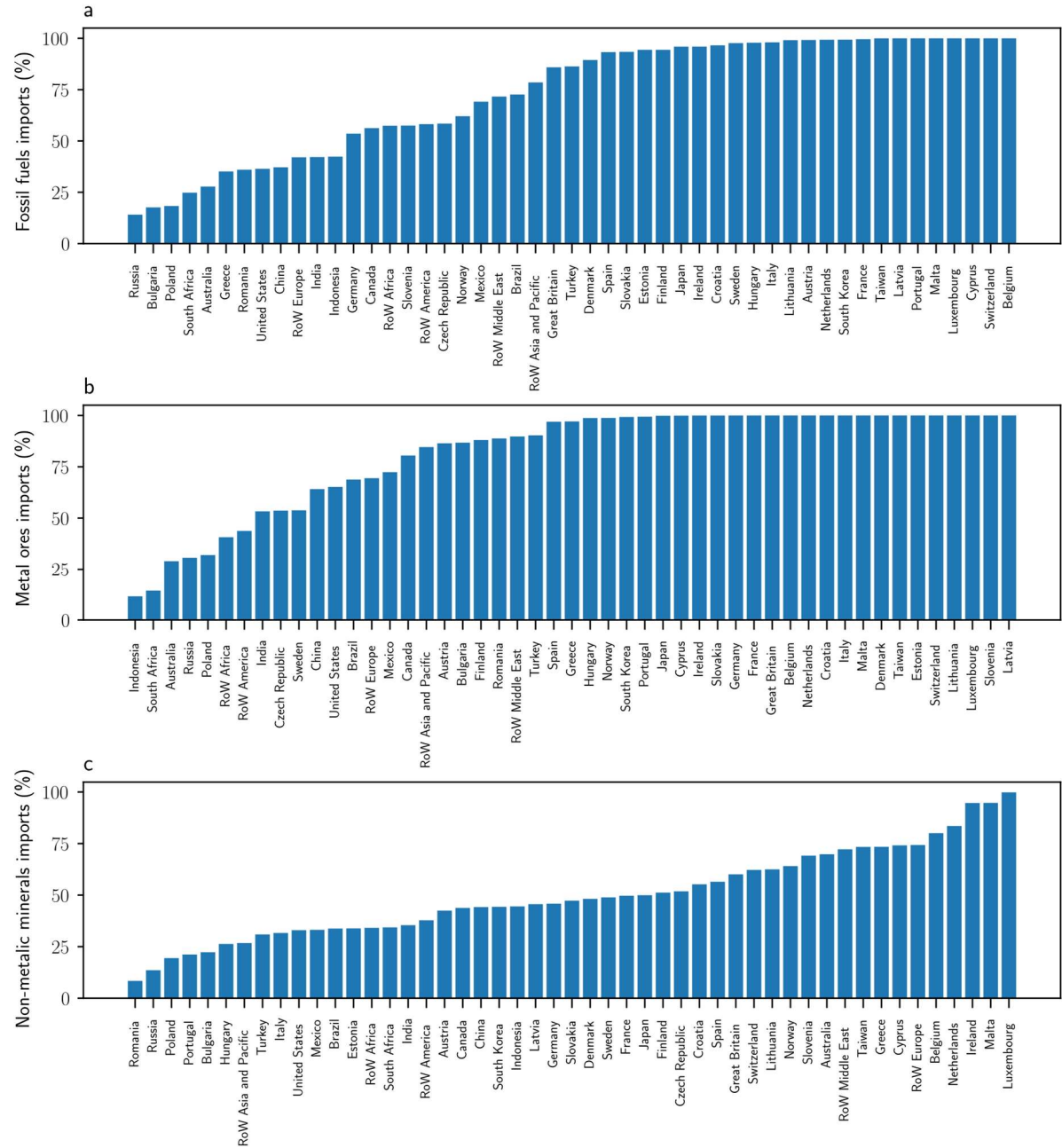


Figure S9: regional import dependencies

Table S8: regional import dependencies

region cons	Non-metallic minerals	Metal ores	Fossil fuels
Austria	38%	86%	99%
Australia	80%	37%	43%
Belgium	83%	100%	100%
Bulgaria	46%	90%	39%

Brazil	37%	58%	73%
Canada	43%	81%	56%
Switzerland	66%	100%	100%
China	10%	60%	27%
Cyprus	70%	100%	100%
Czech Republic	51%	92%	67%
Germany	49%	100%	60%
Denmark	49%	100%	92%
Estonia	60%	100%	97%
Spain	73%	99%	97%
Finland	66%	93%	98%
France	43%	100%	99%
Great Britain	80%	100%	92%
Greece	53%	97%	44%
Croatia	70%	100%	97%
Hungary	38%	99%	99%
Indonesia	42%	21%	50%
Ireland	91%	100%	95%
India	66%	76%	63%
Italy	39%	100%	99%
Japan	66%	100%	99%
South Korea	67%	100%	100%
Lithuania	57%	100%	100%
Luxembourg	100%	100%	100%
Latvia	38%	100%	100%
Malta	98%	100%	100%
Mexico	42%	35%	56%
Netherlands	58%	100%	99%
Norway	67%	99%	76%
Poland	21%	34%	31%
Portugal	46%	100%	100%
Romania	19%	89%	47%
Russia	24%	71%	19%
Sweden	46%	60%	99%
Slovenia	63%	100%	58%
Slovakia	40%	100%	100%
Turkey	54%	96%	86%
Taiwan	75%	100%	100%
United States	37%	68%	44%
RoW Asia and Pacific	55%	91%	88%
RoW Europe	79%	71%	50%
RoW Africa	23%	34%	85%
RoW America	44%	50%	69%
RoW Middle East	67%	89%	67%
South Africa	45%	19%	43%

Some regions show surprisingly high levels of import dependency. Though the Middle East produces 74 Mt of fossil fuels for healthcare systems and consumes only 9 Mt, it is dependent at 67% on fossil fuel imports. This comes from the fossil fuels embodied in the goods imported in the Middle East. For example, if the Middle East imports drugs from the United States and that these drugs were produced using fossil fuels that did not come from the Middle East.

Relationship between the energy footprint and access and quality (HAQ index)

As Luxembourg is an outlier, it was cut out of Figure 3 in the paper to increase its readability. Figure S10 corresponds to Figure 3 in the paper, including Luxembourg.

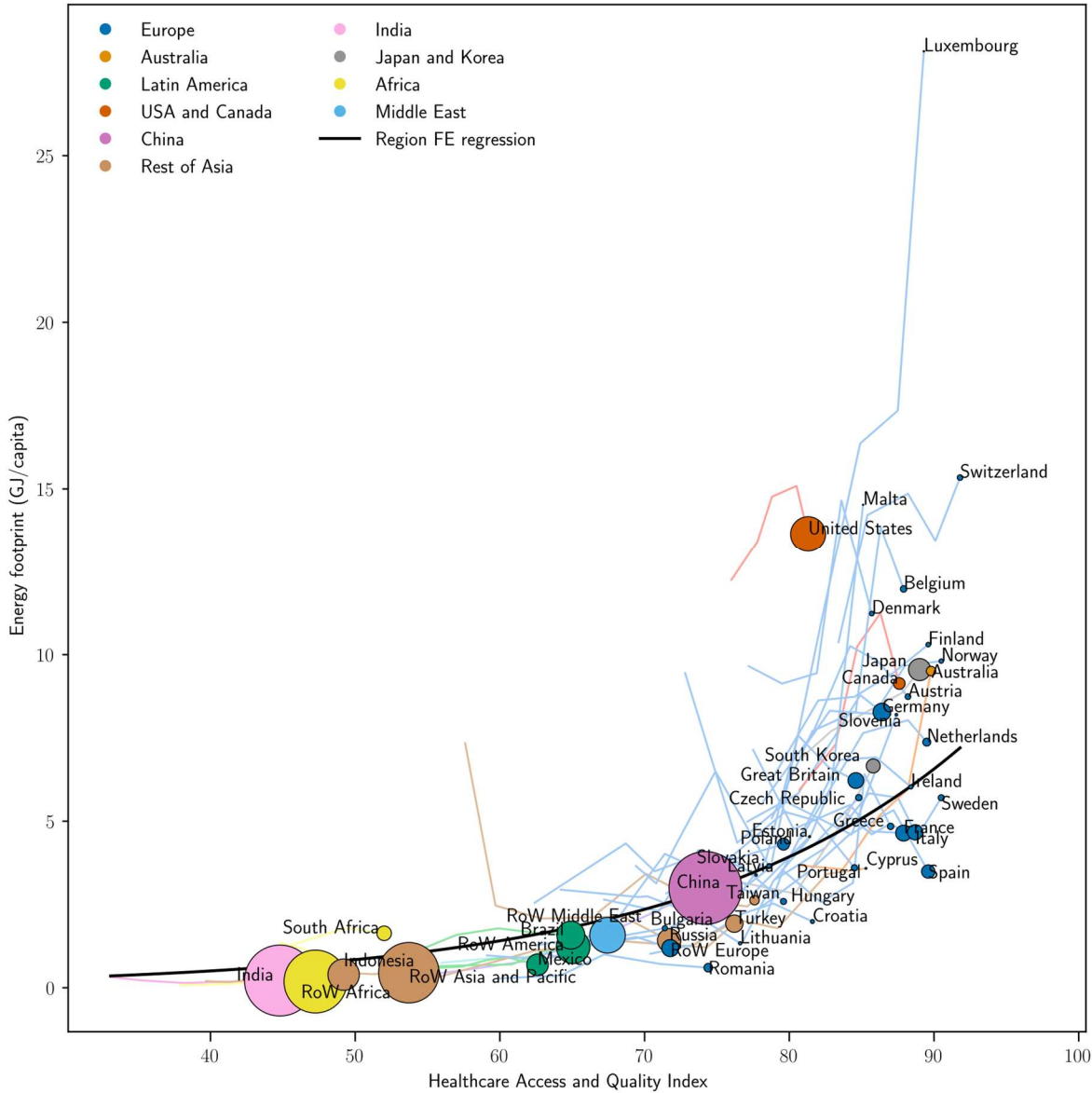


Figure S10: Energy footprint of healthcare systems including Luxembourg

Identical to Figure 3 in the paper but including Luxembourg

Table S9: regional fixed effects results. See Table S14 for region names abbreviations.

region	Estimated effect
WF	-1,5
RO	-1,34
ID	-0,87
IN	-0,81
WA	-0,72
TR	-0,72
HR	-0,64
MX	-0,61
WL	-0,54
CN	-0,53
CY	-0,53
WE	-0,5
BG	-0,43
WM	-0,4
ES	-0,26
GR	-0,2
PL	-0,16
SE	-0,13
LT	-0,07
IT	-0,07
EE	-0,03
AU	-0,01
KR	-0,01
TW	0,01
IE	0,01
HU	0,07
CZ	0,07
PT	0,08

BR	0,08
FR	0,13
MT	0,15
GB	0,23
NL	0,28
LV	0,36
RU	0,4
SK	0,42
SI	0,42
DE	0,44
NO	0,46
JP	0,47
CA	0,54
AT	0,55
ZA	0,59
FI	0,61
BE	0,61
CH	0,85
DK	0,92
LU	0,94
US	1,39

167

168 Energy footprint disaggregation

169 **Table S10: Footprint by scope (in GJ per capita).** See Table S14 for region names abbreviations.

	Chemicals	Construction	Energy production	Equipment	Food	Other	Other raw materials	Scope 1	Transport
AT	0,59	0,35	0,11	0,30	0,24	0,55	1,06	4,70	0,85
AU	1,24	0,16	0,10	0,57	0,90	0,70	1,83	2,95	1,05
BE	3,78	0,29	0,31	0,54	0,74	0,81	1,83	2,46	1,20
BG	0,27	0,05	0,05	0,09	0,06	0,32	0,30	0,49	0,15
BR	0,36	0,02	0,05	0,04	0,04	0,17	0,43	0,35	0,11

CA	1,54	0,34	0,44	0,29	0,11	0,54	1,18	3,38	1,32
CH	2,99	0,45	0,54	0,91	0,77	1,75	2,73	2,02	3,18
CN	1,51	0,02	0,06	0,10	0,08	0,09	0,48	0,49	0,16
CY	1,37	0,05	0,08	0,06	0,23	0,15	0,37	0,91	0,36
CZ	1,46	0,34	0,23	0,14	0,13	0,29	0,62	1,93	0,55
DE	0,61	0,31	0,35	0,33	0,37	0,63	0,93	4,05	0,70
DK	0,56	0,16	0,24	0,25	0,30	0,41	0,86	3,05	5,42
EE	1,84	0,13	0,13	0,14	0,19	0,15	0,58	1,09	0,29
ES	0,77	0,13	0,09	0,15	0,11	0,29	0,57	1,00	0,37
FI	2,25	0,25	0,39	0,28	0,23	0,67	1,82	2,62	1,80
FR	0,67	0,21	0,09	0,27	0,21	0,48	0,85	1,16	0,70
GB	1,63	0,14	0,11	0,29	0,22	0,40	0,79	1,92	0,71
GR	0,23	0,19	0,03	0,17	0,06	0,36	0,50	1,26	2,03
HR	0,17	0,06	0,09	0,24	0,03	0,15	0,32	0,74	0,19
HU	0,39	0,11	0,12	0,13	0,12	0,18	0,34	1,01	0,19
ID	0,05	0,01	0,01	0,01	0,03	0,03	0,03	0,17	0,05
IE	0,72	0,27	0,16	0,51	0,14	0,57	0,90	2,14	0,63
IN	0,05	0,01	0,00	0,01	0,05	0,01	0,04	0,03	0,02
IT	0,54	0,22	0,19	0,20	0,10	0,39	0,63	1,92	0,48
JP	2,23	0,20	0,10	0,23	0,11	0,47	1,11	4,54	0,57
KR	1,78	0,17	0,36	0,22	0,41	0,40	0,92	1,57	0,83
LT	0,17	0,08	0,16	0,09	0,05	0,11	0,17	0,40	0,11
LU	14,35	0,67	0,50	0,89	1,96	1,24	4,59	1,42	2,51
LV	1,03	0,17	0,11	0,08	0,08	0,15	0,41	1,04	0,31
MT	7,70	0,28	0,44	0,26	0,70	0,48	1,57	1,61	1,48
MX	0,15	0,03	0,02	0,03	0,02	0,08	0,18	0,11	0,07
NL	1,83	0,60	0,22	0,34	0,39	0,52	1,06	1,71	0,70
NO	1,08	0,49	0,22	0,66	0,23	0,74	1,34	3,84	1,19
PL	0,40	0,10	0,09	0,08	0,04	0,11	0,28	3,09	0,12
PT	0,21	0,12	0,09	0,08	0,15	0,17	0,50	2,09	0,20
RO	0,07	0,03	0,02	0,02	0,04	0,05	0,12	0,15	0,09
RU	0,08	0,05	0,04	0,03	0,06	0,23	0,20	0,59	0,14
SE	0,55	0,31	0,35	0,34	0,19	0,36	1,11	1,77	0,72
SI	2,72	0,26	0,20	0,28	0,24	0,48	1,10	2,39	0,51

SK	0,34	0,15	0,10	0,13	0,06	0,18	0,45	1,97	0,26
TR	0,24	0,03	0,06	0,02	0,08	0,11	0,28	0,80	0,29
TW	1,09	0,03	0,03	0,06	0,03	0,07	0,25	0,95	0,13
US	1,98	0,73	0,14	0,61	0,81	1,35	1,92	4,17	1,94
WA	0,10	0,05	0,00	0,01	0,01	0,02	0,06	0,15	0,04
WE	0,18	0,05	0,03	0,03	0,05	0,07	0,17	0,52	0,09
WF	0,02	0,02	0,01	0,01	0,01	0,01	0,04	0,05	0,01
WL	0,33	0,04	0,03	0,06	0,07	0,09	0,27	0,23	0,12
WM	0,24	0,12	0,03	0,05	0,05	0,17	0,29	0,37	0,25
ZA	0,29	0,07	0,07	0,05	0,05	0,20	0,63	0,11	0,16

170

171 **Table S11: Footprint by scope (in %).** See Table S14 for region names abbreviations.

	Chemicals	Construction	Energy production	Equipment	Food	Other	Other raw materials	Scope 1	Transport
AT	6,7	4	1,3	3,5	2,7	6,2	12,1	53,7	9,7
AU	13,1	1,7	1,1	5,9	9,4	7,4	19,3	31,1	11
BE	31,6	2,4	2,6	4,5	6,2	6,8	15,3	20,5	10
BG	15,1	2,7	2,8	5,3	3,5	18,1	16,8	27,2	8,5
BR	22,8	1,4	3,2	2,5	2,4	10,7	27,4	22,4	7,3
CA	16,8	3,7	4,8	3,2	1,2	5,9	12,9	37	14,5
CH	19,5	3	3,5	5,9	5	11,4	17,8	13,2	20,7
CN	50,3	0,8	2	3,3	2,8	2,9	16,1	16,3	5,5
CY	38,1	1,3	2,4	1,8	6,3	4,2	10,5	25,5	10
CZ	25,6	6	4,1	2,5	2,3	5,1	10,9	33,8	9,7
DE	7,3	3,7	4,2	4	4,5	7,6	11,2	49	8,5
DK	5	1,5	2,2	2,2	2,6	3,6	7,6	27,1	48,2
EE	40,7	2,9	2,8	3	4,2	3,2	12,8	23,9	6,4
ES	22	3,8	2,6	4,4	3,1	8,4	16,3	28,7	10,6
FI	21,9	2,4	3,8	2,7	2,2	6,5	17,7	25,4	17,5
FR	14,4	4,4	1,9	5,9	4,5	10,3	18,4	25	15,1
GB	26,2	2,3	1,8	4,7	3,5	6,5	12,8	30,9	11,4
GR	4,9	3,8	0,6	3,6	1,3	7,4	10,4	26,1	42
HR	8,7	3	4,5	12	1,5	7,8	15,9	37,1	9,5
HU	15,1	4,2	4,6	5	4,5	7	13,2	38,9	7,5

ID	12,5	1,3	1,9	3,1	8,2	8,6	8,5	43,9	11,8
IE	11,9	4,5	2,6	8,4	2,3	9,5	14,8	35,5	10,4
IN	21,8	4,3	2	3,5	21,7	5,4	17	16	8,4
IT	11,7	4,7	4	4,3	2,2	8,3	13,4	41,2	10,3
JP	23,3	2,1	1,1	2,4	1,1	5	11,6	47,5	5,9
KR	26,7	2,6	5,4	3,3	6,1	5,9	13,9	23,6	12,4
LT	12,9	5,8	11,7	6,6	3,7	8,5	12,7	29,9	8,2
LU	51	2,4	1,8	3,2	7	4,4	16,3	5	8,9
LV	30,5	5,1	3,3	2,3	2,5	4,5	12,1	30,8	9,1
MT	53	1,9	3	1,8	4,8	3,3	10,8	11,1	10,2
MX	22,4	4,2	2,2	4,7	3	11	25,8	16,5	10,2
NL	24,8	8,2	3	4,6	5,3	7	14,4	23,1	9,5
NO	11	5	2,3	6,8	2,4	7,5	13,7	39,2	12,2
PL	9,3	2,4	2	1,9	1	2,6	6,5	71,6	2,8
PT	5,8	3,3	2,6	2,3	4,1	4,7	13,8	58,1	5,4
RO	11,5	4,6	3,8	4	6,9	8,9	20,6	25	14,7
RU	5,8	3,2	3	2,3	4,5	16	14,1	41,3	9,7
SE	9,6	5,4	6,1	5,9	3,3	6,4	19,5	31,1	12,7
SI	33,2	3,2	2,4	3,4	3	5,9	13,5	29,2	6,2
SK	9,3	4,2	2,7	3,4	1,7	4,9	12,4	54	7,2
TR	12,5	1,5	3,3	1,1	4,1	5,8	14,8	41,7	15,2
TW	41,4	1	1,1	2,1	1,3	2,5	9,6	36,2	4,8
US	14,5	5,3	1	4,4	5,9	9,9	14,1	30,5	14,2
WA	22,2	12	1	2,6	2,7	4,7	14	32,3	8,4
WE	14,8	4,2	2,5	2,5	4,3	6,3	14,4	43,4	7,6
WF	11,4	10,1	5,3	4,5	5,7	6,9	20,3	28,9	6,9
WL	26,8	3,5	2,1	4,5	5,4	7,2	21,6	18,8	10,1
WM	15	7,5	2	3,5	3,4	10,9	18,1	23,5	16,1
ZA	18	4,5	4,2	3,1	3	12,1	38,6	6,5	10,1

172

173 Energy efficiency

174 **Table S12: Cost of employment (in % of total inputs).** See Table S14 for region names abbreviations.

region	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
AT	0,57	0,59	0,58	0,59	0,59	0,60	0,56	0,57	0,58	0,58	0,56	0,57	0,56	0,56

AU	0,64	0,63	0,65	0,63	0,65	0,65	0,66	0,57	0,59	0,58	0,57	0,56	0,56	0,54
BE	0,48	0,48	0,45	0,51	0,49	0,48	0,46	0,48	0,45	0,45	0,44	0,44	0,45	0,45
BG	0,32	0,47	0,49	0,54	0,51	0,51	0,46	0,37	0,41	0,47	0,43	0,44	0,40	0,39
BR	0,38	0,37	0,35	0,35	0,38	0,38	0,42	0,41	0,46	0,46	0,46	0,47	0,48	0,49
CA	0,57	0,55	0,53	0,02	0,02	0,54	0,02	0,53	0,50	0,53	0,50	0,54	0,50	0,54
CH	0,05	0,50	0,05	0,04	0,05	0,52	0,05	0,53	0,05	0,05	0,53	0,06	0,53	0,05
CN	0,33	0,30	0,30	0,26	0,36	0,23	0,00	0,36	0,00	0,29	0,31	0,28	0,28	0,25
CY	0,41	0,44	0,40	0,45	0,44	0,43	0,41	0,44	0,47	0,48	0,47	0,45	0,43	0,40
CZ	0,46	0,48	0,44	0,48	0,46	0,44	0,48	0,46	0,49	0,48	0,48	0,48	0,47	0,46
DE	0,48	0,49	0,48	0,44	0,44	0,43	0,44	0,45	0,46	0,45	0,44	0,45	0,46	0,46
DK	0,63	0,64	0,64	0,64	0,63	0,61	0,60	0,62	0,61	0,61	0,63	0,62	0,59	0,62
EE	0,65	0,56	0,65	0,60	0,59	0,70	0,72	0,73	0,71	0,73	0,65	0,65	0,64	0,61
ES	0,53	0,54	0,53	0,53	0,56	0,55	0,54	0,57	0,57	0,55	0,55	0,59	0,57	0,60
FI	0,62	0,62	0,64	0,63	0,61	0,62	0,67	0,60	0,56	0,59	0,55	0,55	0,57	0,54
FR	0,51	0,52	0,52	0,52	0,56	0,53	0,53	0,54	0,53	0,54	0,53	0,53	0,53	0,54
GB	0,49	0,48	0,49	0,48	0,46	0,44	0,44	0,45	0,48	0,46	0,43	0,43	0,43	0,45
GR	0,40	0,38	0,47	0,49	0,45	0,40	0,41	0,43	0,36	0,37	0,36	0,39	0,37	0,36
HR	0,67	0,67	0,68	0,65	0,67	0,72	0,68	0,75	0,73	0,64	0,65	0,69	0,73	0,69
HU	0,54	0,53	0,56	0,56	0,55	0,56	0,59	0,52	0,46	0,45	0,49	0,54	0,52	0,51
ID	0,20	0,15	0,16	0,13	0,11	0,15	0,13	0,04	0,04	0,04	0,03	0,05	0,03	0,07
IE	0,49	0,57	0,54	0,56	0,59	0,67	0,65	0,70	0,61	0,69	0,67	0,67	0,68	0,67
IN	0,00	0,41	0,46	0,46	0,47	0,48	0,43	0,45	0,47	0,47	0,45	0,50	0,50	0,52
IT	0,54	0,54	0,53	0,53	0,53	0,53	0,53	0,51	0,51	0,52	0,51	0,51	0,53	0,52
JP	0,45	0,45	0,44	0,46	0,49	0,41	0,49	0,41	0,41	0,39	0,39	0,35	0,39	0,40
KR	0,41	0,41	0,41	0,51	0,44	0,42	0,44	0,43	0,41	0,42	0,42	0,42	0,00	0,35
LT	0,68	0,63	0,63	0,62	0,64	0,68	0,67	0,70	0,68	0,69	0,70	0,71	0,68	0,69
LU	0,58	0,66	0,59	0,57	0,54	0,55	0,55	0,53	0,54	0,49	0,47	0,46	0,38	0,28
LV	0,65	0,62	0,56	0,61	0,59	0,65	0,58	0,55	0,52	0,60	0,64	0,65	0,64	0,64
MT	0,59	0,60	0,67	0,57	0,55	0,38	0,57	0,46	0,45	0,59	0,58	0,00	0,00	0,00
MX	0,38	0,38	0,40	0,42	0,45	0,43	0,43	0,43	0,42	0,42	0,47	0,42	0,40	0,46
NL	0,53	0,55	0,55	0,55	0,56	0,55	0,56	0,57	0,54	0,54	0,53	0,56	0,55	0,54
NO	0,68	0,69	0,69	0,70	0,69	0,71	0,70	0,70	0,72	0,70	0,70	0,73	0,76	0,72
PL	0,51	0,47	0,43	0,42	0,44	0,44	0,48	0,42	0,43	0,44	0,41	0,43	0,41	0,42
PT	0,48	0,47	0,46	0,48	0,44	0,50	0,52	0,53	0,51	0,53	0,51	0,52	0,55	0,55

RO	0,43	0,39	0,43	0,44	0,47	0,54	0,53	0,61	0,51	0,59	0,54	0,54	0,53	0,56
RU	0,51	0,55	0,05	0,55	0,55	0,54	0,70	0,71	0,60	0,78	0,69	0,74	0,72	0,73
SE	0,72	0,70	0,69	0,68	0,68	0,69	0,65	0,64	0,66	0,65	0,64	0,65	0,65	0,65
SI	0,61	0,57	0,56	0,53	0,52	0,58	0,60	0,59	0,63	0,61	0,59	0,60	0,57	0,03
SK	0,59	0,55	0,44	0,44	0,55	0,49	0,54	0,46	0,47	0,48	0,49	0,44	0,45	0,45
TR	0,28	0,30	0,30	0,33	0,33	0,33	0,34	0,28	0,48	0,23	0,33	0,27	0,23	0,25
TW	0,00	0,53	0,52	0,00	0,00	0,44	0,00	0,42	0,00	0,63	0,55	0,51	0,55	0,49
US	0,48	0,04	0,48	0,04	0,48	0,48	0,48	0,50	0,48	0,04	0,48	0,04	0,04	0,47
WA	0,41	0,43	0,42	0,02	0,40	0,39	0,40	0,41	0,40	0,40	0,40	0,42	0,43	0,47
WE	0,50	0,50	0,46	0,46	0,49	0,45	0,43	0,47	0,46	0,45	0,46	0,48	0,48	0,48
WF	0,36	0,38	0,37	0,37	0,37	0,37	0,37	0,37	0,36	0,36	0,36	0,35	0,36	0,37
WL	0,49	0,51	0,51	0,51	0,50	0,49	0,49	0,50	0,50	0,50	0,50	0,50	0,50	0,50
WM	0,39	0,39	0,40	0,40	0,38	0,38	0,38	0,39	0,39	0,38	0,39	0,38	0,40	0,39
ZA	0,26	0,21	0,19	0,19	0,18	0,19	0,19	0,18	0,15	0,15	0,13	0,14	0,11	0,13

175

176 **Table S13: Energy intensity (in MJ/US\$2015ppp).** See Table S14 for region names abbreviations.

region	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
AT	2,19	2,22	2,23	2,50	2,27	2,12	2,29	2,07	2,11	2,03	2,02	1,94	1,84	1,69
AU	1,44	1,50	1,48	1,51	1,36	1,43	1,54	1,81	1,53	2,28	2,49	2,14	2,31	2,15
BE	2,44	2,55	2,96	2,22	2,42	2,44	3,00	2,82	3,15	2,74	2,77	2,61	2,60	2,48
BG	2,12	1,89	1,76	1,90	1,78	1,72	1,46	1,65	1,32	1,44	1,35	1,33	1,35	1,31
BR	1,35	1,48	1,61	1,66	1,45	1,64	1,52	1,48	1,34	1,43	1,35	1,33	1,29	1,20
CA	2,32	2,11	2,21	2,76	2,66	2,66	3,48	2,19	2,15	3,03	2,35	2,23	2,12	1,90
CH	2,81	1,96	2,91	2,96	2,77	1,57	2,39	1,62	2,44	2,69	1,63	1,91	1,42	2,11
CN	3,16	2,88	2,96	3,59	2,17	3,55	4,41	3,42	5,05	4,19	4,26	4,36	4,53	4,68
CY	1,70	1,67	1,87	1,35	1,52	1,58	3,24	1,45	1,94	1,82	1,87	1,56	1,91	2,28
CZ	2,13	2,11	2,26	2,22	2,30	2,29	2,10	2,10	2,09	2,21	2,47	2,37	2,38	2,34
DE	1,55	2,12	1,64	1,90	1,70	1,87	1,88	1,89	1,88	1,80	1,90	1,60	1,48	1,55
DK	2,66	2,79	2,97	2,50	3,22	2,98	3,57	2,86	3,05	3,14	2,85	2,84	2,49	2,24
EE	2,55	2,50	2,69	3,93	3,73	1,90	1,85	1,64	1,91	1,82	2,01	2,12	3,14	2,43
ES	1,62	1,81	1,91	1,76	1,27	1,76	1,79	1,64	1,71	1,74	1,76	1,49	1,52	1,10
FI	4,10	3,79	2,26	2,41	3,34	2,25	1,94	2,04	3,01	2,27	2,89	2,90	2,25	2,51
FR	1,46	1,58	1,47	1,45	1,39	1,35	1,22	0,94	1,08	1,02	1,11	1,00	1,02	0,99
GB	2,00	1,72	2,10	2,27	2,28	2,43	2,07	1,90	1,71	1,71	2,13	2,02	1,78	1,48

GR	2,22	1,72	1,50	1,18	1,28	1,38	1,34	1,27	2,21	2,37	2,22	1,95	2,31	2,25
HR	1,39	1,59	1,25	1,73	1,62	1,50	1,46	1,24	1,46	1,94	1,93	1,48	1,15	1,27
HU	2,20	2,49	2,52	2,49	2,25	2,02	1,63	1,83	2,22	2,12	1,79	1,33	1,38	1,41
ID	1,36	1,42	1,50	1,47	1,26	1,25	1,30	1,18	1,17	1,09	1,06	1,16	1,26	1,31
IE	2,02	1,81	1,88	1,82	1,90	1,11	1,19	1,09	1,41	1,13	1,42	1,38	1,47	1,19
IN	1,81	1,12	1,05	1,03	0,97	0,98	1,30	1,24	1,20	1,15	1,16	0,96	0,99	1,10
IT	1,78	1,60	1,86	1,91	1,88	1,58	1,67	1,86	1,68	1,66	1,58	1,61	1,45	1,43
JP	2,97	3,05	3,03	2,78	2,64	2,65	2,42	2,38	2,56	2,55	2,59	2,59	2,13	2,17
KR	3,10	3,26	3,01	2,00	2,45	2,59	2,29	2,25	2,52	2,58	2,51	2,41	2,78	2,64
LT	2,72	2,81	2,40	2,76	2,51	2,19	1,66	0,91	1,46	0,77	0,85	0,74	0,68	0,71
LU	2,13	1,98	2,47	2,75	3,02	1,97	2,50	2,52	2,67	2,77	3,25	3,21	3,84	5,13
LV	4,07	4,22	3,91	3,54	3,57	2,42	3,84	3,60	3,51	2,76	2,32	2,66	2,74	2,40
MT	2,06	1,86	1,89	2,34	1,59	3,15	1,70	2,23	3,21	1,91	1,94	5,30	6,02	4,36
MX	1,10	0,94	0,96	0,92	0,82	0,90	0,92	0,83	0,97	0,99	0,81	1,03	1,00	0,66
NL	1,90	1,95	1,79	1,93	1,72	1,74	1,72	1,24	1,87	1,76	1,83	1,30	1,70	1,42
NO	2,31	1,89	1,84	1,65	1,57	1,69	1,56	1,60	1,64	1,93	1,83	1,71	1,37	1,60
PL	1,93	2,08	2,13	2,32	2,40	2,31	2,25	2,28	2,66	2,45	2,79	2,58	2,65	2,51
PT	2,01	1,87	1,95	1,98	1,84	1,80	1,64	1,47	1,69	1,49	1,60	1,48	1,31	1,30
RO	1,24	1,42	1,30	1,55	2,07	1,39	1,07	0,68	0,67	0,70	0,63	0,68	0,58	0,56
RU	2,84	2,38	4,15	2,83	2,67	2,63	2,49	2,06	1,81	1,10	1,34	1,06	1,10	1,10
SE	1,35	1,42	1,41	1,45	1,39	1,34	1,31	1,24	1,17	1,22	1,18	1,15	1,22	1,08
SI	2,16	2,79	2,35	2,53	2,33	1,64	1,93	1,75	1,62	1,97	1,78	1,81	1,80	3,05
SK	2,58	2,37	3,29	3,73	2,59	1,89	2,22	3,69	2,72	3,13	2,17	2,20	1,82	1,79
TR	1,49	1,92	1,92	1,95	1,89	1,85	2,01	1,65	1,27	2,00	2,26	2,24	2,24	1,81
US	1,82	2,50	1,68	2,37	1,59	1,65	1,65	1,45	1,53	2,37	1,58	2,29	2,32	1,45
WA	1,67	1,82	1,79	2,38	1,64	1,76	1,55	1,47	1,71	1,70	1,71	1,56	1,54	1,49
WE	2,10	2,10	2,16	1,97	1,91	2,04	1,98	1,63	2,09	2,00	1,80	1,69	1,50	1,40
WF	0,84	0,74	0,84	0,95	0,84	0,82	0,94	0,90	1,04	1,07	1,17	1,32	1,07	1,05
WL	0,96	0,93	1,00	0,99	0,98	1,00	1,09	1,01	1,13	1,18	1,16	1,20	1,10	1,13
WM	1,29	1,21	1,18	1,20	1,37	1,42	1,54	1,36	1,42	1,48	1,51	1,66	1,55	1,62
ZA	1,59	1,84	1,68	1,34	1,23	1,18	1,19	1,48	1,64	1,46	1,62	1,44	1,57	1,48

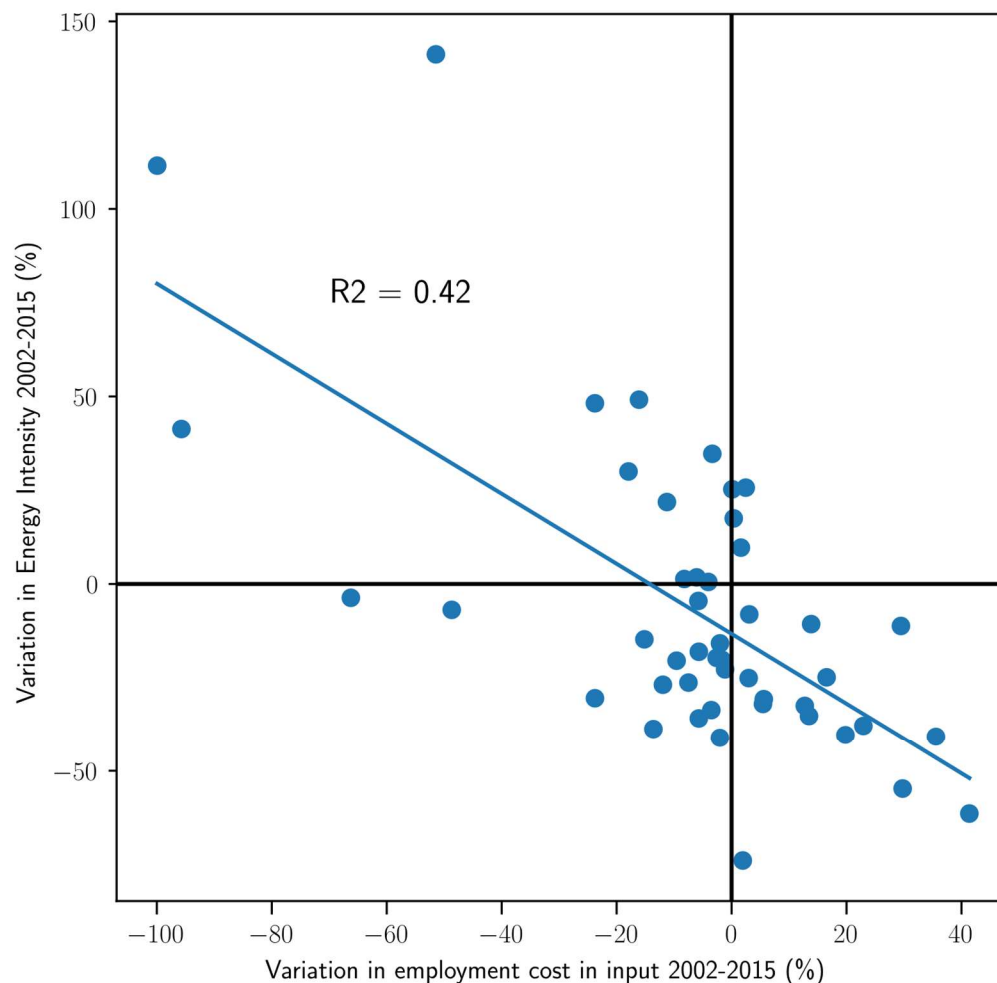
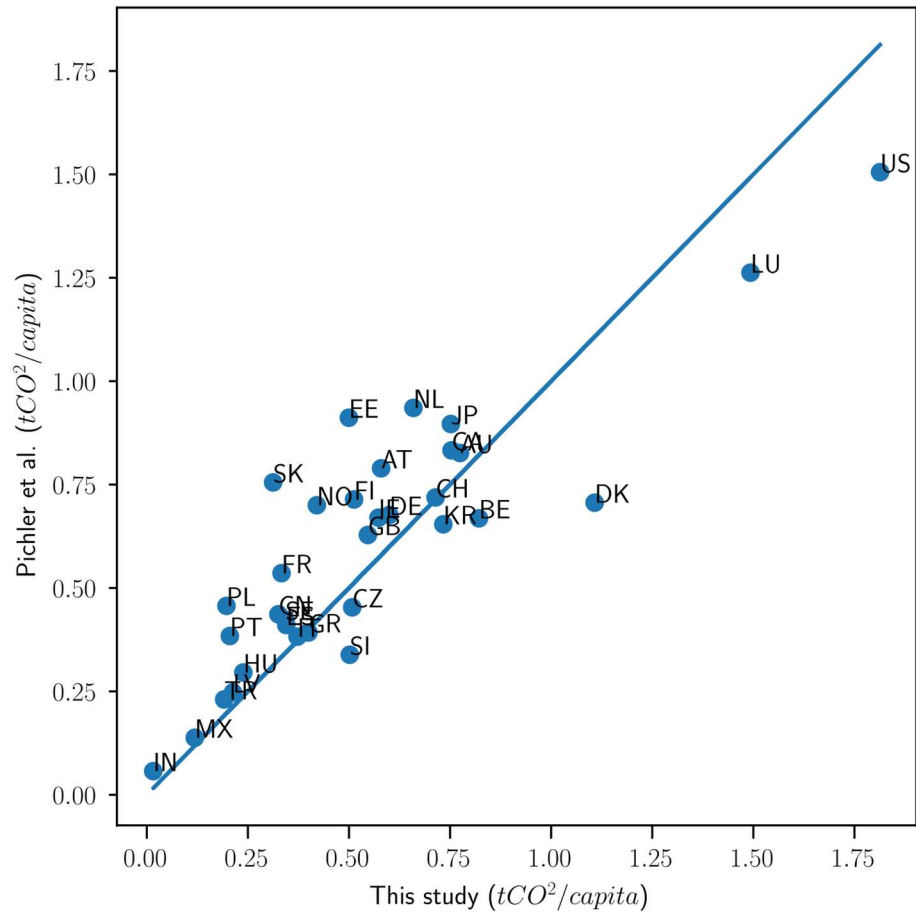


Figure S11: Variation in energy intensity as a function of variation in employment cost over period 2002-2015. Based on Supplementary Tables S11 and S12.

Supplementary discussion

Our results for CO₂ emissions in 2014 were similar to the previous multi-regional estimates using the Eora EE-MRIO database⁸ (Figure S11). Apart from Luxembourg and Malta, our results were also close to the values reported for 2015 in the Health Care Without Harm, which used the GTAP database to assess healthcare systems' climate footprint in 43 countries⁹ (Figure S12). Both studies used expenditure data from World Health Organization's National Health Expenditures database and included capital (investments) goods and infrastructures. The fact that using EXIOBASE3 yields similar results than Eora and GTAP confirms the similarity of input-output databases.

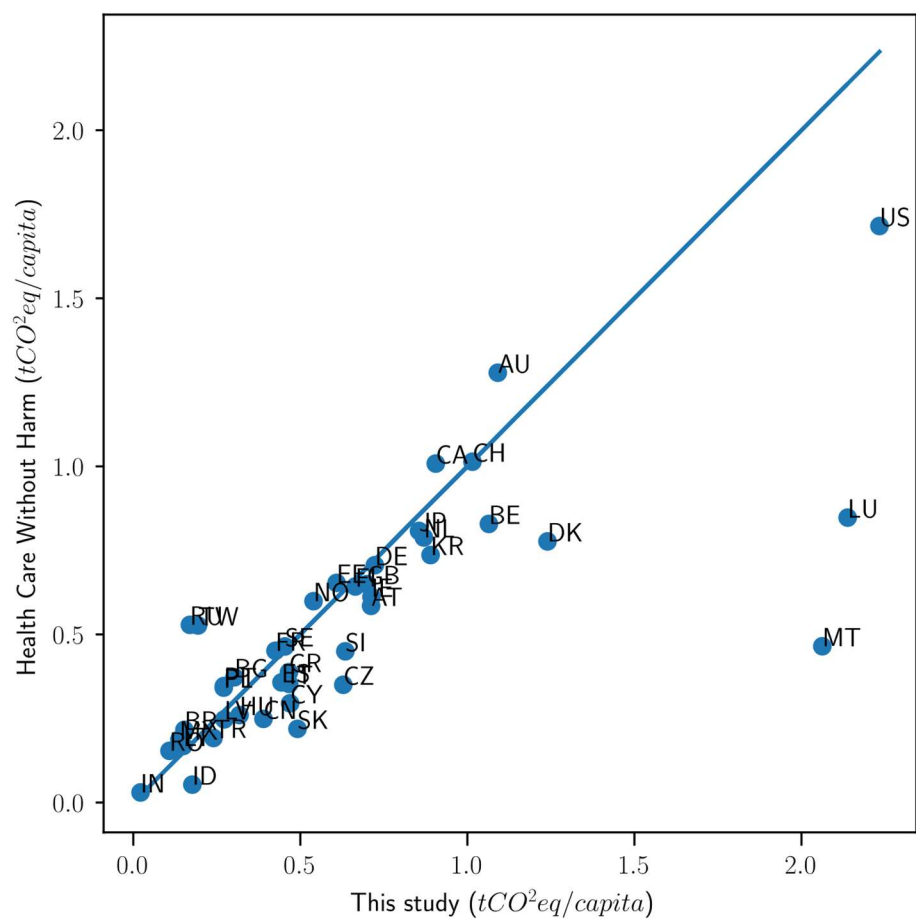
However, our results differ from those of Lenzen and colleagues¹⁰ (Figure S13) who used the healthcare-related sectors directly from Eora, without harmonising the expenses with WHO's NHA database and accounting for capital expenditures. This highlights the importance of expenditure data when calculating footprints. For footprints to be compared in between regions, expenditure data must come from a common source and have the same scope. Using Eora's sectors has the advantage of providing the best possible disaggregation of regional footprints but limits international comparisons due to different healthcare definitions.



197

198 **Figure S12: Healthcare carbon footprint in 2014**

199 See Table S14 for region names abbreviations.



200

201 **Figure S13: Healthcare carbon footprint in 2014**

202 See Table S14 for region names abbreviations.

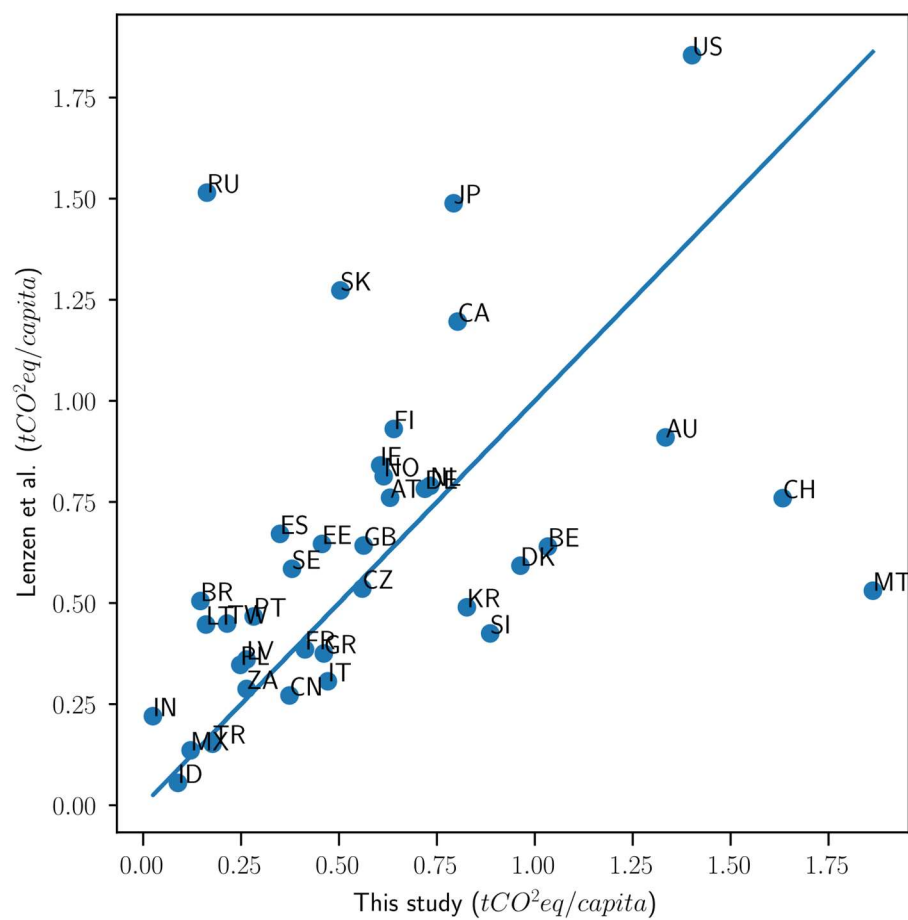


Figure S14: Healthcare carbon footprint in 2015

See Table S14 for region names abbreviations.

Table S14: region names

region	full name
AT	Austria
BE	Belgium
BG	Bulgaria
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
ES	Spain
FI	Finland
FR	France
GR	Greece
HR	Croatia
HU	Hungary

IE	Ireland
IT	Italy
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NL	Netherlands
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia
GB	Great Britain
US	United States
JP	Japan
CN	China
CA	Canada
KR	South Korea
BR	Brazil
IN	India
MX	Mexico
RU	Russia
AU	Australia
CH	Switzerland
TR	Turkey
TW	Taiwan
NO	Norway
ID	Indonesia
ZA	South Africa
WA	RoW Asia and Pacific
WL	RoW America
WE	RoW Europe
WF	RoW Africa
WM	RoW Middle East

208

209 **Table S15: concordance regions**

ISO3	UN code	Name	continent	EXIOBASE region	EXIOBASE region name
AFG	4	Afghanistan	Asia	WA	RoW Asia and Pacific
ALB	8	Albania	Europe	WE	RoW Europe

DZA	12	Algeria	Africa	WF	RoW Africa
ASM	16	American Samoa	Oceania	WP	RoW Asia and Pacific
AND	20	Andorra	Europe	WE	RoW Europe
AGO	24	Angola	Africa	WF	RoW Africa
AIA	660	Anguilla	America	WL	RoW America
ATA	-1	Antarctica	Antarctica	WA	RoW Asia and Pacific
ATG	28	Antigua and Barbuda	America	WL	RoW America
ARG	32	Argentina	America	WL	RoW America
ARM	51	Armenia	Asia	WA	RoW Asia and Pacific
ABW	533	Aruba	America	WL	RoW America
AUS	36	Australia	Oceania	WP	Asia and Pacific
AUT	40	Austria	Europe	WE	Europe
AZE	31	Azerbaijan	Asia	WA	RoW Asia and Pacific
BHS	44	Bahamas, The	America	WL	RoW America
BHR	48	Bahrain	Asia	WM	RoW Middle East
BGD	50	Bangladesh	Asia	WA	RoW Asia and Pacific
BRB	52	Barbados	America	WL	RoW America
BLR	112	Belarus	Europe	WE	RoW Europe
BEL	56	Belgium	Europe	WE	Europe
BLZ	84	Belize	America	WL	RoW America
BEN	204	Benin	Africa	WF	RoW Africa
BMU	60	Bermuda	America	WL	RoW America
BTN	64	Bhutan	Asia	WA	RoW Asia and Pacific
BOL	68	Bolivia	America	WL	RoW America
BES	535	Bonaire, Saint Eustatius and Saba	America	WL	RoW America
BIH	70	Bosnia and Herzegovina	Europe	WE	RoW Europe
BWA	72	Botswana	Africa	WF	RoW Africa
BVT	-1	Bouvet Island	Antarctica	WA	RoW Asia and Pacific

BRA	76	Brazil	America	WL	America
BAI	-1	British Antarctic Territories	Antarctica	WA	RoW Asia and Pacific
IOT	-1	British Indian Ocean Territory	Asia	WA	RoW Asia and Pacific
BRN	96	Brunei Darussalam	Asia	WA	RoW Asia and Pacific
BGR	100	Bulgaria	Europe	WE	Europe
BFA	854	Burkina Faso	Africa	WF	RoW Africa
BDI	108	Burundi	Africa	WF	RoW Africa
KHM	116	Cambodia	Asia	WA	RoW Asia and Pacific
CMR	120	Cameroon	Africa	WF	RoW Africa
CAN	124	Canada	America	WL	America
CPV	132	Cape Verde	Africa	WF	RoW Africa
CYM	136	Cayman Islands	America	WL	RoW America
CAF	140	Central African Republic	Africa	WF	RoW Africa
TCD	148	Chad	Africa	WF	RoW Africa
CHI	830	Channel Islands	Europe	WE	RoW Europe
CHL	152	Chile	America	WL	RoW America
CHN	156	China	Asia	WA	Asia and Pacific
CXR	-1	Christmas Island	Oceania	WP	RoW Asia and Pacific
CCK	-1	Cocos (Keeling) Islands	Asia	WA	RoW Asia and Pacific
COL	170	Colombia	America	WL	RoW America
COM	174	Comoros	Africa	WF	RoW Africa
COD	180	Congo, Dem. Rep.	Africa	WF	RoW Africa
COG	178	Congo, Rep.	Africa	WF	RoW Africa
COK	184	Cook Islands	Oceania	WP	RoW Asia and Pacific
CRI	188	Costa Rica	America	WL	RoW America
CIV	384	Cote d'Ivoire	Africa	WF	RoW Africa
HRV	191	Croatia	Europe	WE	Europe
CUB	192	Cuba	America	WL	RoW America
CUW	531	Curaçao	America	WL	RoW America

CYP	196	Cyprus	Asia	WM	Middle East
CZE	203	Czech Republic	Europe	WE	Europe
DNK	208	Denmark	Europe	WE	Europe
DJI	262	Djibouti	Africa	WF	RoW Africa
DMA	212	Dominica	America	WL	RoW America
DOM	214	Dominican Republic	America	WL	RoW America
ECU	218	Ecuador	America	WL	RoW America
EGY	818	Egypt, Arab Rep.	Africa	WM	RoW Middle East
SLV	222	El Salvador	America	WL	RoW America
GNQ	226	Equatorial Guinea	Africa	WF	RoW Africa
ERI	232	Eritrea	Africa	WF	RoW Africa
EST	233	Estonia	Europe	WE	Europe
ETH	231	Ethiopia	Africa	WF	RoW Africa
FRO	234	Faeroe Islands	Europe	WE	RoW Europe
FLK	238	Falkland Islands (Malvinas)	America	WL	RoW America
FJI	242	Fiji	Oceania	WP	RoW Asia and Pacific
FIN	246	Finland	Europe	WE	Europe
FRA	250	France	Europe	WE	Europe
GUF	254	French guiana	America	WL	RoW America
PYF	258	French Polynesia	Oceania	WP	RoW Asia and Pacific
GAB	266	Gabon	Africa	WF	RoW Africa
GMB	270	Gambia, The	Africa	WF	RoW Africa
GEO	268	Georgia	Asia	WA	RoW Asia and Pacific
DEU	276	Germany	Europe	WE	Europe
GHA	288	Ghana	Africa	WF	RoW Africa
GIB	292	Gibraltar	Europe	WE	RoW Europe
GRC	300	Greece	Europe	WE	Europe
GRL	304	Greenland	America	WL	RoW America
GRD	308	Grenada	America	WL	RoW America
GLP	312	Guadeloupe	America	WL	RoW America

GUM	316	Guam	Oceania	WP	RoW Asia and Pacific
GTM	320	Guatemala	America	WL	RoW America
GIN	324	Guinea	Africa	WF	RoW Africa
GNB	624	Guinea-Bissau	Africa	WF	RoW Africa
GUY	328	Guyana	America	WL	RoW America
HTI	332	Haiti	America	WL	RoW America
HMD	-1	Heard and mc donald islands	Asia	WA	RoW Asia and Pacific
HND	340	Honduras	America	WL	RoW America
HKG	344	Hong Kong SAR, China	Asia	WA	RoW Asia and Pacific
HUN	348	Hungary	Europe	WE	Europe
ISL	352	Iceland	Europe	WE	RoW Europe
IND	356	India	Asia	WA	Asia and Pacific
IDN	360	Indonesia	Asia	WA	Asia and Pacific
IRN	364	Iran, Islamic Rep.	Asia	WM	RoW Middle East
IRQ	368	Iraq	Asia	WM	RoW Middle East
IRL	372	Ireland	Europe	WE	Europe
IMY	833	Isle of Man	Europe	WE	RoW Europe
ISR	376	Israel	Asia	WM	RoW Middle East
ITA	380	Italy	Europe	WE	Europe
JAM	388	Jamaica	America	WL	RoW America
JPN	392	Japan	Asia	WA	Asia and Pacific
JOR	400	Jordan	Asia	WM	RoW Middle East
KAZ	398	Kazakhstan	Asia	WA	RoW Asia and Pacific
KEN	404	Kenya	Africa	WF	RoW Africa
KIR	296	Kiribati	Oceania	WP	RoW Asia and Pacific
PRK	408	Korea, democratic people's republic of	Asia	WA	RoW Asia and Pacific
KSV	-1	Kosovo	Europe	WE	RoW Europe

KWT	414	Kuwait	Asia	WM	RoW Middle East
KGZ	417	Kyrgyz Republic	Asia	WA	RoW Asia and Pacific
LAO	418	Lao PDR	Asia	WA	RoW Asia and Pacific
LVA	428	Latvia	Europe	WE	Europe
LBN	422	Lebanon	Asia	WM	RoW Middle East
LSO	426	Lesotho	Africa	WF	RoW Africa
LBR	430	Liberia	Africa	WF	RoW Africa
LBY	434	Libya	Africa	WF	RoW Africa
LIE	438	Liechtenstein	Europe	WE	RoW Europe
LTU	440	Lithuania	Europe	WE	Europe
LUX	442	Luxembourg	Europe	WE	Europe
MAC	446	Macao SAR, China	Asia	WA	RoW Asia and Pacific
MKD	807	Macedonia, FYR	Europe	WE	RoW Europe
MDG	450	Madagascar	Africa	WF	RoW Africa
MWI	454	Malawi	Africa	WF	RoW Africa
MYS	458	Malaysia	Asia	WA	RoW Asia and Pacific
MDV	462	Maldives	Asia	WA	RoW Asia and Pacific
MLI	466	Mali	Africa	WF	RoW Africa
MLT	470	Malta	Europe	WE	Europe
MHL	584	Marshall Islands	Oceania	WP	RoW Asia and Pacific
MTQ	474	Martinique	America	WL	RoW America
MRT	478	Mauritania	Africa	WF	RoW Africa
MUS	480	Mauritius	Africa	WF	RoW Africa
MYT	175	Mayotte	Africa	WF	RoW Africa
MEX	484	Mexico	America	WL	America
FSM	583	Micronesia, Fed. Sts.	Oceania	WP	RoW Asia and Pacific
MDA	498	Moldova	Europe	WE	RoW Europe
MCO	492	Monaco	Europe	WE	RoW Europe

MNG	496	Mongolia	Asia	WA	RoW Asia and Pacific
MNE	499	Montenegro	Europe	WE	RoW Europe
MSR	500	Montserrat	America	WL	RoW America
MAR	504	Morocco	Africa	WF	RoW Africa
MOZ	508	Mozambique	Africa	WF	RoW Africa
MMR	104	Myanmar	Asia	WA	RoW Asia and Pacific
NAM	516	Namibia	Africa	WF	RoW Africa
NRU	520	Nauru	Oceania	WP	RoW Asia and Pacific
NPL	524	Nepal	Asia	WA	RoW Asia and Pacific
NLD	528	Netherlands	Europe	WE	Europe
ANT	530	Netherlands Antilles	America	WL	RoW America
NCL	540	New Caledonia	Oceania	WP	RoW Asia and Pacific
NZL	554	New Zealand	Oceania	WP	RoW Asia and Pacific
NIC	558	Nicaragua	America	WL	RoW America
NER	562	Niger	Africa	WF	RoW Africa
NGA	566	Nigeria	Africa	WF	RoW Africa
NIU	570	Niue	Oceania	WP	RoW Asia and Pacific
NFK	574	Norfolk Island	Oceania	WP	RoW Asia and Pacific
MNP	580	Northern Mariana Islands	Oceania	WP	RoW Asia and Pacific
NOR	578	Norway	Europe	WE	Europe
OMN	512	Oman	Asia	WM	RoW Middle East
PAK	586	Pakistan	Asia	WA	RoW Asia and Pacific
PLW	585	Palau	Oceania	WP	RoW Asia and Pacific
PAL	275	Palestine	Asia	WM	RoW Middle East
PAN	591	Panama	America	WL	RoW America

PNG	598	Papua New Guinea	Oceania	WP	RoW Asia and Pacific
PRY	600	Paraguay	America	WL	RoW America
PER	604	Peru	America	WL	RoW America
PHL	608	Philippines	Asia	WA	RoW Asia and Pacific
PCN	612	Pitcairn	Oceania	WP	RoW Asia and Pacific
POL	616	Poland	Europe	WE	Europe
PRT	620	Portugal	Europe	WE	Europe
PRI	630	Puerto Rico	America	WL	RoW America
QAT	634	Qatar	Asia	WM	RoW Middle East
REU	638	Reunion	Africa	WF	RoW Africa
ROM	642	Romania	Europe	WE	Europe
RUS	643	Russia	Europe	WE	Europe
RWA	646	Rwanda	Africa	WF	RoW Africa
WSM	882	Samoa	Oceania	WP	RoW Asia and Pacific
SMR	674	San Marino	Europe	WE	RoW Europe
STP	678	Sao Tome and Principe	Africa	WF	RoW Africa
SAU	682	Saudi Arabia	Asia	WM	RoW Middle East
SEN	686	Senegal	Africa	WF	RoW Africa
SRB	688	Serbia	Europe	WE	RoW Europe
SYC	690	Seychelles	Africa	WF	RoW Africa
SLE	694	Sierra Leone	Africa	WF	RoW Africa
SGP	702	Singapore	Asia	WA	RoW Asia and Pacific
SXM	534	Sint Maarten (Dutch part)	America	WL	RoW America
SVK	703	Slovakia	Europe	WE	Europe
SVN	705	Slovenia	Europe	WE	Europe
SLB	90	Solomon Islands	Oceania	WP	RoW Asia and Pacific
SOM	706	Somalia	Africa	WF	RoW Africa
ZAF	710	South Africa	Africa	WF	Africa

SGS	-1	South georgia and the south sandwich is	Antarctic a	WA	RoW Asia and Pacific
KOR	410	South Korea	Asia	WA	Asia and Pacific
SSD	728	South Sudan	Africa	WF	RoW Africa
ESP	724	Spain	Europe	WE	Europe
LKA	144	Sri Lanka	Asia	WA	RoW Asia and Pacific
SHN	654	St. Helena	Africa	WF	RoW Africa
KNA	659	St. Kitts and Nevis	America	WL	RoW America
LCA	662	St. Lucia	America	WL	RoW America
SPM	666	St. Pierre and Miquelon	America	WL	RoW America
VCT	670	St. Vincent and the Grenadines	America	WL	RoW America
SDN	729	Sudan	Africa	WF	RoW Africa
SUR	740	Suriname	America	WL	RoW America
SJM	744	Svalbard and jan mayen islands	Europe	WE	RoW Europe
SWZ	748	Swaziland	Africa	WF	RoW Africa
SWE	752	Sweden	Europe	WE	Europe
CHE	756	Switzerland	Europe	WE	Europe
SYR	760	Syrian Arab Republic	Asia	WM	RoW Middle East
TWN	-1	Taiwan	Asia	WA	Asia and Pacific
TJK	762	Tajikistan	Asia	WA	RoW Asia and Pacific
EAT	-1	Tanganjika	Africa	WF	RoW Africa
TZA	834	Tanzania	Africa	WF	RoW Africa
THA	764	Thailand	Asia	WA	RoW Asia and Pacific
TLS	626	Timor-Leste	Asia	WA	RoW Asia and Pacific
TGO	768	Togo	Africa	WF	RoW Africa
TKL	772	Tokelau	Oceania	WP	RoW Asia and Pacific
TON	776	Tonga	Oceania	WP	RoW Asia and Pacific
TTO	780	Trinidad and Tobago	America	WL	RoW America
TUN	788	Tunisia	Africa	WF	RoW Africa

TUR	792	Turkey	Asia	WM	Middle East
TKM	795	Turkmenistan	Asia	WA	RoW Asia and Pacific
TCA	796	Turks and Caicos Islands	America	WL	RoW America
TUV	798	Tuvalu	Oceania	WP	RoW Asia and Pacific
UGA	800	Uganda	Africa	WF	RoW Africa
UKR	804	Ukraine	Europe	WE	RoW Europe
ARE	784	United Arab Emirates	Asia	WM	RoW Middle East
GBR	826	United Kingdom	Europe	WE	Europe
USA	840	United States	America	WL	America
UMI	-1	United states minor outlying islands	Oceania	WP	RoW Asia and Pacific
URY	858	Uruguay	America	WL	RoW America
UZB	860	Uzbekistan	Asia	WA	RoW Asia and Pacific
VUT	548	Vanuatu	Oceania	WP	RoW Asia and Pacific
VAT	336	Vatican city state (holy see)	Europe	WE	RoW Europe
VEN	862	Venezuela, RB	America	WL	RoW America
VNM	704	Vietnam	Asia	WA	RoW Asia and Pacific
VGB	92	British Virgin Islands	America	WL	RoW America
VIR	850	Virgin islands (u.s.)	America	WL	RoW America
WLF	876	Wallis and futuna Islands	Oceania	WP	RoW Asia and Pacific
ESH	732	Western sahara	Africa	WF	RoW Africa
YEM	887	Yemen, Rep.	Asia	WM	RoW Middle East
ZMB	894	Zambia	Africa	WF	RoW Africa
EAZ	-1	Zanzibar	Africa	WF	RoW Africa
ZWE	716	Zimbabwe	Africa	WF	RoW Africa

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231