

Supplemental Information for Energy-related CO₂ Emission Accounts and Datasets for 40 Emerging Economies in 2010 - 2019

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1. Data sources

Table S 1 Country-specific data sources of the dataset.

| Country | Data type | Source | Website |
|------------------|---|--|--|
| Argentina | Energy balance sheets | National Institute of Statistics and Censuses | www.argentina.gob.ar/economia/energia/hidrocarburos/balances-energeticos |
| | Emission factors | IPCC | www.iea.org/areas-of-work/global-engagement/china?language=zh |
| | Sectoral mapping indicators | National Institute of Statistics and Censuses | www.indec.gob.ar/indec/web/Nivel3-Tema-3-9 |
| | National to regional downscaling indicators | National Institute of Statistics and Censuses | www.indec.gob.ar/indec/web/Nivel4-Tema-3-9-138 |
| Bolivia | Energy balance sheets | Ministry of Hydrocarbons and Energy | https://www.hidrocarburos.gob.bo/ |
| | Emission factors | IPCC | https://www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | UN Comtrade: export data | https://comtrada.un.org |
| | National to regional downscaling indicators | National Institute of Statistics | https://www.ine.gob.bo/ |
| Brazil | Energy balance sheets | Brazilian Institute of Geography and Statistics | www.epe.gov.br/sites-pt/publicacoes-dados-abertos/publicacoes/PublicacoesArquivos/publicacao-377/topico-494/BEN%202019%20Completo%20WEB.pdf |
| | Emission factors | IPCC | www.iea.org/areas-of-work/global-engagement |
| | Sectoral mapping indicators | Brazilian Institute of Geography and Statistics | www.ibge.gov.br/en/statistics/social/population/18391-2010-population-census.html?edicao=19720&t=series-historicas |
| | National to regional downscaling indicators | Brazilian Institute of Geography and Statistics | www.ibge.gov.br/en/statistics/economic/national-accounts/16855-regional-accounts-of-brazil.html?=&t=o-que-e |
| Cambodia | Energy balance sheets | ERIA | www.eria.org/RPR_FY2015_No.8_Chapter_2.pdf |
| | Emission factors | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | ADB | https://data.adb.org/dataset/cambodia-input-output-economic-indicators |
| Chile | Energy balance sheets | National Energy Commission | http://energiaabierta.cl/visualizaciones/balance-de-energia/ |
| | Emission factors | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | UN Comtrade: export data | https://comtrada.un.org |
| | National to regional downscaling indicators | National Statistics Office | www.ine.cl/estadisticas/ |
| Colombia | Energy balance sheets | Colombian National Mining and Energy Planning Unit | https://www1.upme.gov.co/InformacionCifras/Paginas/BECOCONSULTA.aspx |
| | Emission factors | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | UN Comtrade: export data | https://comtrada.un.org |

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|------------------|---|--|---|
| | National to regional downscaling indicators | National Department of Statistics | https://dane.maps.arcgis.com/apps/MapSeries/index.html?appid=9d091f802200470d816eb1f063aa6aee |
| Djibouti | Energy balance sheets | AFREC Africa Energy Database | https://au-afrec.org/bk-keyafrica-en.php |
| | Emission factors | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | UN Comtrade: International Trade Statistics Yearbook | https://comtrade.un.org/ |
| Ecuador | Energy balance sheets | Ministry of Energy and Non-renewable Natural Resources, Ecuador | https://www.recursoyenergia.gob.ec/ |
| | Emission factors | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | UN Comtrade: export data | https://comtrada.un.org |
| | National to regional downscaling indicators | Central Bank of Ecuador | www.ecuadorencifras.gob.ec/cuentas-economicas/ |
| Ethiopia | Energy balance sheets | The Ministry of Water Resources, Irrigation and Energy of Ethiopia | www.csa.gov.et/ |
| | Emission factors | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | CEADs Ministry of Employment of Ethiopia | www.ceads.net/ www.csa.gov.et/ |
| Ghana | Energy balance sheets | Ghana Ministry of Energy | www.energycom.gov.gh/files |
| | Emission factors | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | CEADs | www.ceads.net/ |
| | Nation-to-region downscaling indicator | Ghana Statistical Service | statsghana.gov.gh |
| Guatemala | Energy balance sheets | Guatemalan Ministry of Energy and Mines | https://mem.gob.gt/ |
| | Emission factors | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | UN Comtrade: export data | https://comtrada.un.org |
| | National to regional downscaling indicators | National Institute of Statistics | www.ine.gob.gt/ine/portal-estadistico-1-0/ |
| India | Energy balance sheet | National Bureau of Statistics | http://mospi.gov.in/ |
| | Emission factor | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Departmental match index | Bureau of Statistics of India - Industry Survey Data | www.csoisw.gov.in/CMS/cms/Home.aspx |
| | Country-to-region downscaling index | Indian Energy Statistics Yearbook GHG Platform India | http://mospi.nic.in/statistical-year-book-india/2018/185 www.ghgplatform-india.org/economy-wide |
| Indonesia | Energy balance sheet | BPS | www.bps.go.id/ |
| | Emission factor | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Departmental match index | Added value, CEIC database | www.ceicdata.com/zh-hans/products/global-economic-database |
| | Country-to-region downscaling index | Added value, CEIC database | www.ceicdata.com/zh-hans/products/global-economic-database |
| Jamaica | Energy balance sheets | Statistical Institute of Jamaica | www.mset.gov.jm/document-category/energy-balances/ |

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| | Emission factors | IEA | https://www.iea.org/areas-of-work/global-engagement/china?language=zh |
| | Sectoral mapping indicators | Statistical Institute of Jamaica | https://statinja.gov.jm/BusinessStatistics.aspx |
| | National to regional downscaling indicators | Statistical Institute of Jamaica | https://statinja.gov.jm/BusinessStatistics.aspx |
| Jordan | Energy balance sheet | Ministry of Energy and Mineral Resources | www.memr.gov.jo/Default/Ar |
| | Emission factor | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Departmental match index | Jordanian Bureau of Statistics (Industry Department) | http://jorinfo.dos.gov.jo/Databank/pxweb/ar/DOS_Database/START__10__1001__1101/FIN_T1/ |
| | | Jordanian Bureau of Statistics (Agriculture, Services and Construction) | http://jorinfo.dos.gov.jo/Databank/pxweb/ar/NationalAccount/ |
| | Energy balance sheets | UNSD | https://unstats.un.org/unsd/energystats/pubs/balance/ |
| Kenya | Emission factors | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | Kenya National Bureau of Statistics | www.knbs.or.ke/ |
| | Nation-to-region downscaling indicator | Kenya National Bureau of Statistics: GDP | www.knbs.or.ke/ |
| | | Energy balance sheet | ERIA |
| Laos | Emission factor | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Departmental match index | Lao Statistics Bureau: GDP | https://laosis.lsb.gov.la/tblInfo/TblInfoList.do |
| | | Energy balance sheet | National Statistical Office of Mongolia |
| Mongolia | Emission factor | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Departmental match index | Industry and construction industry-industrial sales and production | www.1212.mn/Stat.aspx?LIST_ID=976_L11&type=tables |
| | | Family | www.1212.mn/Stat.aspx?LIST_ID=976_L03&type=tables |
| | | Ulaanbaatar Bureau of Statistics | http://ubstat.mn/Statistics |
| | | Orkhon Statistics Bureau | https://orkhon.nso.mn/page/614 |
| | | Bureau of Statistics of Dar Khan UI Province | https://darkhan-uul.nso.mn/page/1298 |
| | | Khentii Provincial Bureau of Statistics | www.khentii.nso.mn/page/1132 |
| | | Statistics Bureau of Kusugul Province | https://khuvsugul.nso.mn/page/726 |
| | Country-to-region downscaling index | Kobdo Statistics Office | https://khovd.nso.mn/page/651 |
| | | Statistics Bureau of Ubusu Province | https://uvs.nso.mn/page/156 |
| | | Central Provincial Bureau of Statistics | https://tuv.nso.mn/page/919 |
| | | Statistics Bureau of Selenga Province | https://selenge.nso.mn/page/778 |
| | | Sukhbaatar Provincial Statistics Bureau | https://sukhbaatar.nso.mn/page/295 |
| | | South Gobi Statistics Bureau | https://umnugovi.nso.mn/page/1321 |
| Former Hang'ai Provincial Statistics Bureau | | https://uvurkhangai.nso.mn/page/94 | |
| Zabhan Provincial Statistics Bureau | | https://zavkhan.nso.mn/page/637 | |

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| | | Statistics Bureau of Central Gobi Province | http://dundgovi.nso.mn/page/645 |
| | | Oriental Statistics Bureau | https://dornod.nso.mn/page/276 |
| | | Gobi Sumer Provincial Statistics Bureau | http://govisumber.nso.mn/page/674 |
| | | Statistics Bureau of Gobi Altai Province | https://govi-altai.nso.mn/page/1244 |
| | | Bureau of Statistics of Burgan Region | https://bulgan.nso.mn/page/853 |
| | | Statistics Bureau of Bayanhongor Province | http://bayankhongor.nso.mn/page/122 |
| | | Statistics Bureau of Bayan-Urga Province | https://bayan-ulgii.nso.mn/page/333 |
| | | Statistics Bureau of Houhangai Province | https://arkhangai.nso.mn/page/1359 |
| | | Statistics Bureau of East Gobi Province | https://dornogovi.nso.mn/ |
| Myanmar | Energy balance sheets | ERIA | www.eria.org/publications/energy-demand-and-supply-of-the-republic-of-the-union-of-myanmar-2010-2017/ |
| | Emission factors | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | ADB | https://data.adb.org/dataset/myanmar-key-indicators |
| Paraguay | Energy balance sheets | General Directorate of Statistics, Surveys and Censuses | www.dgeec.gov.py/ |
| | Emission factors | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | UN Comtrade: export data | https://comtrada.un.org |
| Peru | Energy balance sheets | Peruvian National Environmental Information System | https://sinia.minam.gob.pe/ |
| | Emission factors | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | UN Comtrade: export data | https://comtrada.un.org |
| | National to regional downscaling indicators | National Institute of Statistics and Informatics | https://www.inei.gob.pe/ |
| South Africa | Energy balance sheets | Statistics South Africa | www.energy.gov.za/files/media/Energy_Balances.html |
| | Emission factors | IEA | www.iea.org/areas-of-work/global-engagement/china?language=zh |
| | Sectoral mapping indicators | Statistics South Africa | www.energy.gov.za/files/media/Energy_Balances.html |
| | Nation-to-region downscaling indicator | World Bank | https://datatopics.worldbank.org/world-development-indicators/ |
| Tanzania | Energy balance sheets | AFREC | au-afrec.org |
| | Emission factors | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | UN Comtrade | UN Comtrade International Trade Statistics Database |
| | | Tanzania National Bureau of Statistics | www.nbs.go.tz/index.php/en/ |
| | Nation-to-region downscaling indicator | Tanzania National Bureau of Statistics: regional GDP reports | www.nbs.go.tz |
| Thailand | Energy balance sheet | Ministry of Energy | www.dede.go.th/ewt_news.php?nid=47340 |
| | Emission factor | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Departmental match index | ADB: GDP | https://data.adb.org/dataset/thailand-key-indicators |

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| | | AFREC | https://au-afrec.org ; |
| | | IRENA | www.irena.org/publications/2020/Jul/Renewable-energy-statistics-2020 |
| | Energy balance sheets | UNSD | https://unstats.un.org/unsd/energystats/pubs/yearbook/documents/2016eyb.pdf |
| Uganda | | OAG | www.oag.com/analytics/traffic-analyser ; www.iea.org/ |
| | | IEA Secretariat | |
| | Emission factors | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | CEADs | www.ceads.net/ |
| | Nation-to-region downscaling indicator | Uganda Bureau of Statistics: population projections | www.ubos.org/explore-statistics/20/ |
| | Energy balance sheets | National Institute of Statistics | www.ine.gub.uy/inicio |
| Uruguay | Emission factors | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | UN Comtrade: export data | https://comtrada.un.org |
| | Energy balance sheets | Philippine Statistics Authority | https://psa.gov.ph/sites/default/files/attachments/ird/specialrelease/Table%202.5%20Energy%20Balance%20Tables%2C%202010%20to%202019.xlsx |
| Philippine | Emission factors | IPCC | https://www.ipcc-nggip.iges.or.jp/efdb/ |
| | Sectoral mapping indicators | UN Comtrade | https://comtrada.un.org |
| | Nation-to-region downscaling indicator | Philippine Statistics Authority | https://psa.gov.ph/people |
| | Energy balance sheets | Ministry of Energy | https://www.stats.gov.sa/en/1024 |
| | Emission factors | IPCC | https://www.ipcc-nggip.iges.or.jp/efdb/ |
| Saudi Arabia | Sectoral mapping indicators | UN Comtrade: export data | https://comtrada.un.org |
| | Nation-to-region downscaling indicator | The General Authority for Statistics | https://database.stats.gov.sa/beta/dashboard/landing |
| | Energy balance sheets | Central Bureau of Statistics of Egypt | https://www.capmas.gov.eg/ |
| | Emission factors | Intergovernmental Panel on Climate Change (IPCC) | https://www.ipcc-nggip.iges.or.jp/EFDB/ |
| Egypt | Sector Matching Indicators | Central Statistical Office of Egypt (industrial sector) | https://www.capmas.gov.eg/ |
| | | Central Bureau of Statistics of Egypt (Agriculture, Services and Construction) | https://www.capmas.gov.eg/ |
| | Energy balance sheets | Federated States of Micronesia National Statistics Office - Secondary Energy Consumption | https://www.fsmstatistics.fm/environment/seea-experimental-energy-accounts/ |
| Micronesia | Emission factors | Intergovernmental Panel on Climate Change (IPCC) | https://www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | Federated States of Micronesia National Statistics Office - National GDP | https://www.fsmstatistics.fm/wp-content/uploads/2019/02/FSM-Experimental-Energy-Accounts.pdf |

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| | Nation-to-region downscaling indicator | National Statistics Office of the Federated States of Micronesia - Gross Domestic Product by Region | https://www.fsmstatistics.fm/document-library/ |
| Mauritius | Energy balance sheets | Mauritius Bureau of Statistics | https://statsmauritius.govmu.org/Pages/Statistics/By_Subject/Energy_Water/Arch_Energy-Water.aspx |
| | Emission factors | Intergovernmental Panel on Climate Change (IPCC) | https://www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | Mauritius Bureau of Statistics | https://statsmauritius.govmu.org/Pages/Statistics/By_Subject/Manufacturing/SB_Manufacturing.aspx |
| | Energy balance sheets | Higher Programme | https://www.hcp.ma/ |
| Morocco | Emission factors | Intergovernmental Panel on Climate Change (IPCC) | https://www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | Higher Programme | https://www.hcp.ma/ |
| | Nation-to-region downscaling indicator | Higher Programme | https://www.hcp.ma/ |
| | Energy balance sheets | Togo Energy Information System | http://www.sie-togo.com/bilan-energetique/ |
| Togo | Emission factors | Intergovernmental Panel on Climate Change (IPCC) | https://www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | National Institute of Statistics and Economic and Demographic Research of Togo (INSEED) | https://inseed.tg/comptes-nationaux/ |
| | Nation-to-region downscaling indicator | Population in the five different economic regions of Togo | The population estimates are based on the (1) national population censuses and national estimates, and (2) total population estimates from World Development Indicators. |
| | Energy balance sheets | Ministry of Energy and Mines, Nicaragua | http://www.mem.gob.ni/ |
| Nicaragua | Emission factors | Intergovernmental Panel on Climate Change (IPCC) | https://www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | National Institute for Information Development of Nicaragua | https://www.inide.gob.ni/ |
| | Energy balance sheets | African Energy Commission | https://au-afrec.org/en/western-africa/nigeria https://www.giz.de/en/downloads/giz2015-en-nigerian-energy-sector.pdf |
| Nigeria | Emission factors | Intergovernmental Panel on Climate Change (IPCC) | https://www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | Nigeria official statistics website (industry, public services, population) | https://nigeria.opendataforafrica.org/jlbfmme/selected-banking-sector-report-q3-2018 |
| | Energy balance sheets | African Energy Commission (AFREC) | https://au-afrec.org/en/energy-balances |
| Niger | Emission factors | Intergovernmental Panel on Climate Change (IPCC) | https://www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | China Carbon Accounting Database | https://www.ceads.net/ |
| | Nation-to-region downscaling indicator | Niger Bureau of Statistics | https://www.stat-niger.org/wp-content/uploads/2020/06-TBS_2018.pdf |
| | Energy balance sheets | Ministry of Energy and Mines | http://www.energy.gov.dz/ |
| Algeria | Energy balance sheets | Ministry of Energy and Mines | http://www.energy.gov.dz/ |

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|-------------------|--|--|---|
| | Emission factors | Intergovernmental Panel on Climate Change (IPCC) | https://www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | Algerian Institute of Statistics | https://www.ons.dz/ |
| | Nation-to-region downscaling indicator | World Bank | https://www.citypopulation.de/en/algeria/ |
| | Energy balance sheets | African Energy Commission | https://au-afrec.org/en/energy-balances |
| Liberia | Emission factors | Intergovernmental Panel on Climate Change (IPCC) | https://www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | Liberia Data Portal | https://liberia.opendataforafrica.org/ |
| Rwanda | Energy balance sheets | AFREC Africa Energy Database | https://au-afrec.org/en/energy-balances |
| | Emission factors | IPCC | www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | National Bureau of Statistics | https://www.statistics.gov.rw/statistical-publications/subject/statistical-yearbook |
| Madagascar | Energy balance sheets | AFREC Africa Energy Database | https://au-afrec.org/en/energy-balances |
| | Emission factors | IPCC | https://www.ipcc-nggip.iges.or.jp/EFDB/ |
| | Sectoral mapping indicators | National Bureau of Statistics | https://www.instat.mg/telechargements/publications-mensuelles/comptes-nationaux-annuels |

2. Data overview

The datasets of CO₂ emissions from energy consumption (as the largest proportion of CO₂ emissions with world total emissions of 33.5 gigatons, over 90% in 2018¹) from the datasets of IEA, CDIAC, and EDGAR all show a long time-series and wide coverage of countries, but coarse classifications of sectors, no subnational divisions, and broad energy types (see Table S 2).

Table S 2 Comparison of CO₂ emissions data from major institutes

| Dataset | Energy type | Sectors | Time-series | National or Subnational | Countries covered |
|---|----------------------------|-----------------------------|-------------------------------------|-------------------------|-------------------|
| IEA-CO₂ emission from fuel combustion(Greenhouse Gas Emissions from Energy) | 3 (free); 8 (purchased) | 8 (free); 26 (purchased) | 1971-2019 | National | 190 |
| EDGAR v6.0 - Fossil CO₂ emissions(Crippa et al., 2020, 2021) | NA | 5 (FT); 35 (Full) | 1970-2020 (FT); 1970-2018 (Full) | National | 208 |
| GCB-2021(Friedlingstein et al., 2022) | 3 | NA | 1959-2020 | National | 141 |

Currently, this dataset covers 40 countries of year 2010-2019 (see Table S 3), in which 28 countries have subnational inventory.

Table S 3 Countries covered in this Dataset

| Country | Location | Development stage | Number of regions | Time span |
|----------------------|----------------|---|-------------------|------------|
| Asia | | | | |
| Cambodia | Southeast Asia | Least Developed Countries | - | 2010-2019 |
| Laos | Southeast Asia | Least Developed Countries, Landlocked Developing Countries | - | 2010-2019 |
| Myanmar | Southeast Asia | Least Developed Countries | - | 2010-2019 |
| India | South Asia | Developing Economies | 33 | 2 007-2019 |
| Philippines | Southeast Asia | Developing Economies | 17 | 2 010-2019 |
| Indonesia | Southeast Asia | Developing Economies | 34 | 2010-2019 |
| Mongolia | East Asia | Landlocked Developing Countries | 22 | 2010-2019 |
| Jordan | West Asia | Developing Economies | - | 2010-2019 |
| Thailand | Southeast Asia | Emerging Market Economies, Developing Economies | - | 2010-2019 |
| Saudi Arabia | West Asia | Developing Economies | 13 | 2010-2019 |
| Africa | | | | |
| Madagascar | East Africa | Least Developed Countries | 22 | 2010-2019 |
| Liberia | West Africa | Least Developed Countries | - | 2010-2019 |
| Niger | West Africa | Least Developed Countries, Landlocked Developing Countries | 8 | 2010-2019 |
| Rwanda | East Africa | Least Developed Countries, Landlocked Developing Countries | - | 2010-2019 |
| Ethiopia | East Africa | Least Developed Countries, Landlocked Developing Countries | 11 | 2010-2019 |
| Uganda | East Africa | Least Developed Countries, Landlocked Developing Countries | 135 | 2010-2019 |
| Togo | West Africa | Least Developed Countries | 5 | 2010-2019 |
| Tanzania | East Africa | Least Developed Countries | 23 | 2010-2019 |
| Djibouti | East Africa | Least Developed Countries | - | 2010-2019 |
| Kenya | East Africa | Developing Economies | 47 | 2010-2019 |
| Nigeria | West Africa | Developing Economies | 37 | 2010-2019 |
| Ghana | East Africa | Developing Economies | 16 | 2010-2019 |
| Morocco | North Africa | Developing Economies | 13 | 2010-2019 |
| Algeria | North Africa | Developing Economies | 48 | 2010-2019 |
| Egypt | North Africa | Developing Economies | 27 | 2010-2019 |
| Mauritius | East Africa | Small Island Developing States | 3 | 2010-2019 |
| South Africa | South Africa | Developing Economies | 9 | 2010-2019 |
| Latin America | | | | |
| Nicaragua | North America | Developing Economies | - | 2010-2019 |
| Bolivia | South America | Landlocked Developing Countries | 9 | 2010-2019 |
| Guatemala | North America | Developing Economies | 22 | 2010-2019 |
| Jamaica | North America | Small Island Developing States | - | 2 010-2019 |
| Paraguay | South America | Landlocked Developing Countries | - | 2010-2019 |
| Colombia | South America | Emerging Market Economies, Developing Economies | 32 | 2010-2019 |
| Ecuador | South America | Developing Economies | 24 | 2010-2019 |

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|----------------|---------------|--|----|-----------|
| Peru | South America | Emerging Market Economies, Developing Economies | 25 | 2010-2019 |
| Brazil | South America | Emerging Market Economies, Developing Economies | 26 | 2010-2019 |
| Argentina | South America | Emerging Market Economies, Developing Economies | 23 | 2010-2019 |
| Chile | South America | Emerging Market Economies, Developing Economies | 16 | 2010-2019 |
| Uruguay | South America | Developing Economies | - | 2010-2019 |
| Oceania | | | | |
| Micronesia | | Small Island Developing States | 4 | 2010-2019 |

2.1 Sector classification

The 47 sectors and the merged 17 sectors are listed in **Table S 4**.

Table S 4 Sector classification of CEADS dataset for 40 emerging economies.

| No. | Sector (47) | Sector (17) |
|-----|--|---|
| 1 | Agriculture, forestry, hunting, fishing and husbandry | Agriculture, forestry, hunting, fishing and husbandry |
| 2 | Coal Mining and Dressing | Coal Mining, Petroleum and Natural Gas Extraction |
| 3 | Petroleum and Natural Gas Extraction | |
| 4 | Ferrous Metals Mining and Dressing | Minerals Mining and Dressing |
| 5 | Nonferrous Metals Mining and Dressing | |
| 6 | Nonmetal Minerals Mining and Dressing | |
| 7 | Other Minerals Mining and Dressing | |
| 8 | Logging and Transport of Wood and Bamboo | Logging, Timber, Food, Beverage and Tobacco |
| 9 | Food Processing | |
| 10 | Food Production | |
| 11 | Beverage Production | |
| 12 | Tobacco Processing | |
| 13 | Timber Processing, Bamboo, Cane, Palm Fiber & Straw Products | Textile, Garments and Leather |
| 14 | Furniture Manufacturing | |
| 15 | Textile Industry | |
| 16 | Garments and Other Fiber Products | Textile, Garments and Leather |
| 17 | Leather, Furs, Down and Related Products | |
| 18 | Papermaking and Paper Products | Papermaking, Printing and Cultural |
| 19 | Printing and Record Medium Reproduction | |
| 20 | Cultural, Educational and Sports Articles | |
| 21 | Petroleum Processing and Coking | Petroleum Processing, Raw Chemical, and Medical |
| 22 | Raw Chemical Materials and Chemical Products | |
| 23 | Medical and Pharmaceutical Products | |
| 24 | Chemical Fiber | |

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| 25 | Rubber Products | |
| 26 | Plastic Products | Nonmetal Mineral Products |
| 27 | Nonmetal Mineral Products | |
| 28 | Smelting and Pressing of Ferrous Metals | |
| 29 | Smelting and Pressing of Nonferrous Metals | Metal Smelting, Pressing and Products |
| 30 | Metal Products | |
| 31 | Ordinary Machinery | |
| 32 | Equipment for Special Purposes | |
| 33 | Transportation Equipment | Ordinary, Special, Transportation, Electric, Electronic and Instrument Machinery |
| 34 | Electric Equipment and Machinery | |
| 35 | Electronic and Telecommunications Equipment | |
| 36 | Instruments, Meters, Cultural and Office Machinery | |
| 37 | Other Manufacturing Industry | |
| 38 | Scrap and waste | Other Manufacturing and Waste |
| 39 | Production and Supply of Electric Power, Steam and Hot Water | |
| 40 | Production and Supply of Gas | Production of Electricity, Heat, Gas and Tap Water |
| 41 | Production and Supply of Tap Water | |
| 42 | Construction | Construction |
| 43 | Transportation, Storage, Post and Telecommunication Services | Transportation, Storage, Post and Telecommunication Services |
| 44 | Wholesale, Retail Trade and Catering Services | Wholesale, Retail Trade and Catering Services |
| 45 | Other Services | Other Services |
| 46 | Urban | Residential |
| 47 | Rural | |

2.2 Energy groups

The 8 energy groups and the sourced energy types from original energy balances are listed in **Table S 5**. The “other” descriptions are different among countries, and the precise meanings of them can be referred to the sourced data.

Table S 5 Eight energy groups and the sourced energy type from original energy balances.

| Energy groups | Original energy types | | |
|--------------------|---|---|---|
| Biomass | Agricultural waste | Etanol | Paddy husk renewable energy |
| | Agricultural waste renewable energy | Ethanol | Paddy husk traditional renewable energy |
| | Agricultural waste traditional renewable energy | Firewood | Pelleted wood |
| | Animal droppings | Firewood, wood and agricultural waste | Primary biomass energy |
| | Animal waste | Fuel wood | Primary solid biofuels |
| | Bagasse | Fuel wood renewable energy | Productos de cana |
| | Bagazo | Fuel wood traditional renewable energy | Products cane |
| | Bagazo de caña | Fuel wood, in logs, in billets, in twigs , in faggots or in similar forms | Pure bio jet kerosene |
| | Baggase agro residues | Fuelwood | Pure biodiesels |
| | Bio diesel | Fuelwood commercial | Pure biogasoline |
| | Bio fuel | Incineration of non-renewable waste | Recovery/ waste |
| | Bio jet kerosene | Industrial and municipal waste | Residue vegetable |
| | Bio mass | Industrial waste | Residue vegetables |
| | Biochemical fuel | Industrial waste non-renewable | Sawdust and wood waste |
| | Biodieasel | Industrial wastes | Sewage sludge gas |
| | Biodiesel | Landfill gas | Solid biofuels |
| | Biodiesels | Lena | Solid biomass and animal products |
| | Bioethanol | Liquid biofuels | Straw |
| | Biofuels | Liquid fuels from biomass | Sugar cane bagasse |
| | Biofuels and waste | Msw | Sugar cane juice |
| | Biogas | Municipal waste for heating | Sugar-cane products |
| | Biogas and liquid biofuel bioethanol | Municipal waste non-renewable | Total re vege |
| | Biogases | Municipal waste renewable | Used rubber tyres and other rubber products |
| | Biogasoline | Municipal wastes | Waste |
| | Biomass | Non-renewable municipal waste | Wastes non renewable |
| | Biomass and other | Non-renewable waste | Wastes or scraps |
| | Biomass energy | Non-specified primary biofuels and waste | Wood |
| | Biomass waste | Other biogas | Wood briquettes |
| | Bkb brown coal briquettes | Other biomass | Wood charcoal |
| | Black liquor and residual gas | Other liquid biofuels | Wood chips |
| Blended biodiesels | Other non-energy products | Wood chips and waste | |

| | | | |
|-------------|--|--------------------------------------|---|
| | Blended biogasoline | Other primary sources | Wood coal |
| | Bogas electric power produced by biogas power plants | Other renewables | Wood waste |
| | Briquettes, pellets and wood residues | Other solid biofuels unspecified | Wood wastes |
| | Cana bagasse | Other solid fuel | |
| | Cascarilla de arroz | Other vegetal and agricultural waste | |
| | Cascarilla de café | Otra biomasa | |
| | Cascarilla de maní | Otras biomasas | |
| | Charcoal | Otras primary | |
| | Comb. Vegetables | Paddy husk | |
| Coal | Anthracite | Coke and semi-coke of coal | Other bit. Coal |
| | Artificial coke gas | Coke gas | Other bituminous coal |
| | Bet coke | Coke oven coke | Other coal |
| | Bfg | Coke oven gas | Other coking products |
| | Bituminous | Coking coal | Other gas |
| | Bkb | Concentrate of coal | Other lignite |
| | Blast furnace gas | Coqe | Other recovered gases |
| | Briquettes, pellets of lignite | Derived gas | Other washed coal |
| | Briquette and pellets | Derived gases | Patent fuel |
| | Briquettes | Gas coke | Patent fuels |
| | Briquettes and cokes | Gas manufactured from coal | Peat briquettes |
| | Briquettes and other coal | Gas works gas | Pet coke |
| | Briquettes, pellets and wood residues | Hard coal | Petcoke |
| | Bronw coal | Hard coal and lignite | Primary coal and peat |
| | Brown coal | Hard coal briquettes | Primary ngls |
| | Brown coal briquettes | Hard coal, brown coal and peat | Raw coal |
| | Carbon | Hard coal, lignite and peat | Residual coal |
| | Cleaned coal | Heating and othergas oil | Running gas |
| | Coal | Jet fuels | Secondary solid fuel coke, coal and peat briquettes, charcoal, peat pellets |
| | Coal and coal products | Kerosene and aerokerosene | Solid fossil |
| | Coal and coke | Krabi | Solid fossil fuels |
| | Coal and peat | L coke | Solid fuel |
| | Coal and peat products | Lignit | Solid fuels |
| | Coal coke | Lignite | Steam coal |
| | Coal fuels | Lignite briquettes bkb | Stone coal of coke |
| | Coal products | Lignite/brown coal | Stone coal of energy |
| | Coal products and peat products produits de charbon et de tourbe | Maemoh | Stone coal of energy with high ash |
| | Coal tar | Manufactured gases | Sub-bituminous coal |
| | Coke | Metallurgical coal | Tar |
| | Coke and semi - coke of coal | Mineral carbon | Tar, benzol |

| | | | |
|-------------------------------|--------------------------------------|--|---------------------------|
| | Coke and semi-coke | Mineral coke | |
| Crude, NGL, Ref Feeds. | Additives/blending components | Crude oil, feedstocks and additives for refinery1 | Gasohol |
| | Anhydrous and hydrated ethyl alcohol | Crude oil, other inputs to refineries | Raw oil |
| | Asphalt | Crude oil, other inputs to refineries | Reconstituted crude |
| | Crude oil | Crude oil and ngl | Reconstituted crude oil |
| | Crude oil including gas condensate | Crude petroleum and condensate | Reduced crude |
| | Crude oil reduction | Feed stock | Refinery feedstocks |
| | Crude oil refineries | Feedstocks | Vegetable alcohols |
| | Crude oil | Fuel alcohol | |
| Natural gas | Atfandav gas | Gas natural | N.g |
| | Combustible natural gas | Gaseous fuel | Natural gas |
| | Compressed natural gas methane | Gases | Natural gas liquids |
| | Current gas | High-methane natural gas | Natural gasoline |
| | Ethane | Imports gas | Ngl |
| | Gas | Iquidos de gas natural | Nitrified natural gas |
| | Gas condensate | Lean gas | Produced gas |
| | Gas dis. | Manufactured and recovered gases | Sale gas |
| | Gas distributed by networks | Methane | Well natural gas |
| | Gas ind. | N. Gas | |
| Oil products | All oil products | Heavy oil products | Oil bitumen |
| | Artificial gas | Heavy petroleum products | Oil distillation products |
| | Asphaltite | Heavy petroleum products transport diesel, fuel oil, light heating oil | Oil easy distille |
| | Asphated | Household boiler fuel | Oil easy distille r |
| | Associated petroleum gas | Illuminating kerosene | Oil easy distiller |
| | Auto mobile gasoline | Illuminating kerosene | Oil product |
| | Automotive diesel oil | Jet a-1 | Oil production |
| | Aviation gasoline | Jet fuel | Oil products |
| | Aviation fuel | Jet fuel kerosene | Oil shale and oil sands |
| | Aviation gasoline | Jet fuel of gasoline type | Oil products |
| | Aviation kerosene | Jet fuel of kerosene type | Oils |
| | Base oil | Jet fuel/kerosene | Orim |
| | Bitumen | Jet kerosene | Orimulsion and shale oil |
| | Bitumin | Ker | Other diesel oil |
| | Bituminous coal | Kero / jet fuel | Other energy oil and gas |
| | Blended bio jet kerosene | Kerosene | Other gas oils n.e.c |
| | Blended biodiesel | Kerosene and jet fuel | Other gasoline |
| | Boi diesel | Kerosene and turbo | Other kerosene |
| | Boi gas | Kerosene aviation | Other nonenergy |
| | Bunker fuel | Kerosene fuel | Other oil |
| By products | Kerosene type jet fuel | Other oil products | |

| | | |
|--|--|--|
| Coke oven gas and blast furnace gas | Kerosene type jet fuel excl. Biofuels | Other oil secondaries |
| Combustible gas | Kerosene type jet fuel excl. Biofuels | Other oils n.e.c. |
| Condensate | Kerosene, aviation fuels | Other petro products |
| Condensed oil and natural gasoline | Kerosene/ jetfuel | Other petroleum products |
| Crude oil and ngl | Kerosene-av jet | Other petroleum |
| Crudeoil | Kerosenes, jet fuels | Other petroleum and gas products |
| Denatured alcohol | Kerosene-type jet fuel excluding biofuel portion | Other petroleum products |
| Diesel | L.p.g | Other petroleum products petroleum coke, bitumen, lubricants, sulphur, paraffin, waxes |
| Diesel b5 | L91 | Other petroleum products |
| Diesel fuel | L95 | Other primaries |
| Diesel oil | Light diesel oil | Other products |
| Diesel oil + gas oil | Light diesel oil | Other products petro, energy |
| Diesel oil oven fuel inclusive | Light fuel oil | Other secondary petroleum |
| Diesel oil | Light fuel oil and diesel | Other types of kerosene |
| Dieselhd+ldo | Light oil products | Otros productos de petroleo y gas |
| Do | Light petroleum products | Paraffin |
| Doil | Light petroleum products motor gasoline | Paraffin wax |
| Dry gas | Liquefied and refinery not liquefied gases | Paraffin waxes |
| E20 ron 95 | Liquefied gas | Paraffins |
| E85 | Liquefied hydrocarbon | Petro resid |
| Fat | Liquefied petroleum gas | Petrol |
| Fats | Liquefied petroleum gas lpg | Petrol type jet fuel |
| Fg | Liquefied petroleum gases | Petrol/motor spirit |
| Fo | Liquefied petroleum gases lpg | Petroleo |
| Fuel | Liquefied petroleum gases | Petroleum |
| Fuel oil | Liquefied petroleum gaseslpg | Petroleum coke |
| Fuel oil with low sulfur content <1% | Liquefied propane and butane | Petroleum coke |
| Fuel oils n.e.c. | Liquid gas | Petroleum condensate and natural gasoline |
| Gas de refinaria | Lpg | Petroleum d.i. |
| Gas from oil refineries | Lpg and refinery gas | Petroleum gases and other |
| Gas licuado de petroleo | Lpg, refinery gas, ethane | Petroleum liquid gas |
| Gas oil | Lsd | Petroleum product, total |
| Gas oil and diesel oil excluding biofuel portion | Lubricants | Petroleum products |
| Gas produced by distillation at refineries | Lubricating greases | Premium and regular gasoline |
| Gas refinery | Lubricating oil and grease | Premium gasoline |
| Gas/diesel oil | Lubricating oils | Primary oil |
| Gas/diesel | Lubrication oils | Propane |

| | | | |
|----------------------------------|--|--|--|
| | Gas/diesel oil excl. Biofuels | Marine fuel | Purified gases including ethylene, propylene, butylenes, butadiene and other petroleum gases |
| | Gaseousfuel | Methanol | Refiner oil products |
| | Gasoline | Motonafta total | Refinery gas |
| | Gasoil | Motor | Residual fuel oil |
| | Gasolene | Motor and aviation petrol | Residual heavy fuel oils |
| | Gasolina | Motor gasoilne | Road diesel |
| | Gasoline | Motor gasoline | Ron 91 |
| | Gasoline and naphtha | Motor gasoline e0cl. Biofuels | Ron 95 |
| | Gasoline engine | Motor gasoline excl. Biofuels | Second petroleum |
| | Gasoline excluding aviation | Motor gasoline excluding biofuel portion | Special gasoline |
| | Gasoline type jet fuel | Motor spirit | Sugarcane products |
| | Gasoline,oil and other oil products | Motor spirit premium and regular | Super 91 gasoline |
| | Gasoline,oil and otheroil products | Naphtha | Super gasoline |
| | Gasoline/alcohol | Naphtha | Turbine fuel |
| | Gasoline-type jet fuel | Naphtha and solvents | Turbo |
| | Gave. Oil | Navigation diesel oil | Turbo,aviation, jet fuel kerosene |
| | Gm+gv | Navigation fuel | Un-leaded petroleum |
| | Greased oil | Oil | Used oils |
| | Heating and other gas oil | Oil and gas condensate | White gasoline |
| | Heating and other gasoil | Oil and petroleum products | White spirit |
| | Heating oil | Oil and shale bitumen,tons | White spirit and sbp |
| | Heavy diesel oil | Oil and shale coke | White spirit and special boiling point industrial spirits |
| | Heavy fuel oil | | |
| Oil shale & oil sands | Oil and shale bitumen | Oil shales | Shale oil heavy fraction |
| | Oil and shale coke | Shale oil | Shale oil light fraction |
| | Oil shale | Shale oil gas | Shale-distilling |
| Others | Additives and oxygenates excluding biofuel portion | Jeothermal | Solar heat |
| | Ambient heat heat pumps | Large hydro power | Solar other |
| | Derived energy | Modern renewablesbiogas,solar,wind,and off-grid micro and mini hydro | Solar photovoltaics |
| | Derived heat | Non-energy products | Solar pv |
| | Domestic heating fuel | Non-fossil electricity | Solar thermal |
| | Eolica | Non-fossil heat | Solar, wind, others |
| | Ge | Nuclear | Solidfuel |
| | Geo heat and other heat | Nuclear energy | Thermal |
| | Geoe | Nuclear heat | Thermal energy |
| | Geoenergy | Nuclear, hydro, wind, geothermal energy, solar and energy from chemikal proceses | Thermal energy obtained from geothermal sources |
| | Geotherm., solar etc. | Of which: renewables | Thermal energy produced by the use of biomass |
| | Geothermal | Other heat | Thermal energy received from solar radiation |
| Geothermal and solar | Other hydrocarbons | Tide, wave and ocean | |

| | | | |
|---------------------------------|---|---|---|
| | Geothermal energy | Otras fuentes secundarias | Tide, wave, ocean |
| | Geothermal heat | Paddy husk renewable energy | Uranium |
| | Geothermal. Solar etc. | Photovoltaic | Uranium contained in UO ₂ |
| | Hay.bit.artK | Renewable energy sources and wastes | Uranium U ₃ O ₈ |
| | He | Renewable municipal waste | Used rubber tyres and other rubber products |
| | Hidroenergia | Renewables | Water energy |
| | Hydraulic energy | Renewables and biofuels | Wind |
| | Hydric energy | Renewables and wastes | Wind and geothermal and solar pv |
| | Hydro | Renewables and wastes incl. Non-renewable wastes | Wind and other and solar pv |
| | Hydro and wind energy | Small hydro power | Wind electric power produced by wind power plants |
| | Hydro electricity | Small other power | Wind electricity |
| | Hydro energy | Solar | Wind energy |
| | Hydro power | Solar electric power produced by solar power plants | Wind power |
| | Hydroelectric power | Solar electricity | Wind, solar, etc. |
| | Hydroenergy | Solar energy | Wind, water and biogas |
| | Hydropower | Solar etc | Wind other sources electricity heat |
| | Hydropower produced by hydroelectric power plants | | |
| Peat & Peat products | Briquette | Peat and wood | Pellets |
| | Milled peat | Peat briquette | Sod peat |
| | Peat | Peat briquettes and semi-briquettes | |
| | Peat and peat products | Peat products | |

3. Data verification

3.1 Data comparison among institutes

The CO₂ emissions data from CEADs (with and without biomass-related emissions) and other institutes are listed in **Table S**

6.

Table S 6 Comparison of CO₂ emissions data from different institutes. Unit: Mt.

| Country | Year | CEADs_withBiomass | CEADs_withoutBiomass | IEA | EDGAR | GCB |
|------------------|------|-------------------|----------------------|--------|--------|--------|
| Algeria | 2010 | 76.15 | 76.11 | 95.64 | 116.44 | 117.90 |
| | 2011 | 81.46 | 81.45 | 102.89 | 122.79 | 119.89 |
| | 2012 | 89.14 | 89.14 | 112.49 | 137.15 | 128.20 |
| | 2013 | 91.38 | 91.35 | 115.83 | 141.45 | 132.53 |
| | 2014 | 100.18 | 100.17 | 123.18 | 152.71 | 143.33 |
| | 2015 | 105.75 | 105.74 | 130.49 | 162.42 | 150.93 |
| | 2016 | 104.10 | 104.09 | 127.89 | 160.64 | 148.95 |
| | 2017 | 106.55 | 106.54 | 130.54 | 159.91 | 153.56 |
| | 2018 | 112.53 | 112.50 | 137.30 | 171.33 | 164.43 |
| | 2019 | 117.95 | 117.94 | 142.37 | 180.57 | 171.83 |
| Argentina | 2010 | 148.86 | 145.63 | 162.43 | 191.57 | 186.87 |
| | 2011 | 158.83 | 155.38 | 171.17 | 199.73 | 190.41 |
| | 2012 | 159.82 | 156.71 | 172.64 | 205.58 | 191.85 |
| | 2013 | 166.37 | 162.85 | 177.37 | 202.04 | 190.29 |
| | 2014 | 163.19 | 159.84 | 173.86 | 209.98 | 188.83 |
| | 2015 | 169.50 | 165.98 | 179.75 | 212.87 | 192.51 |
| | 2016 | 168.63 | 165.39 | 178.07 | 212.61 | 191.07 |
| | 2017 | 165.18 | 161.91 | 173.94 | 206.06 | 187.55 |
| | 2018 | 155.87 | 152.82 | 171.19 | 204.92 | 185.16 |
| | 2019 | 149.84 | 145.73 | 162.22 | 199.41 | 179.07 |
| Bolivia | 2010 | 15.97 | 15.97 | 14.07 | 14.83 | 14.65 |
| | 2011 | 17.00 | 17.00 | 15.44 | 16.15 | 16.05 |
| | 2012 | 16.99 | 16.99 | 16.24 | 17.93 | 18.13 |
| | 2013 | 18.50 | 18.50 | 17.46 | 18.11 | 18.44 |
| | 2014 | 19.78 | 19.78 | 19.00 | 19.56 | 19.63 |
| | 2015 | 20.04 | 20.04 | 19.29 | 19.61 | 19.44 |
| | 2016 | 21.52 | 21.52 | 20.52 | 21.67 | 20.71 |
| | 2017 | 22.11 | 22.11 | 21.27 | 23.71 | 21.83 |
| | 2018 | 22.64 | 22.64 | 21.74 | 24.17 | 22.36 |
| | 2019 | 19.33 | 19.33 | 20.85 | 24.51 | 22.59 |
| Brazil | 2010 | 476.83 | 360.28 | 374.44 | 446.57 | 411.54 |
| | 2011 | 494.05 | 378.47 | 392.76 | 467.29 | 430.27 |
| | 2012 | 527.00 | 410.54 | 426.04 | 502.86 | 460.43 |
| | 2013 | 577.30 | 439.23 | 457.51 | 526.85 | 495.41 |
| | 2014 | 608.81 | 453.59 | 481.64 | 552.84 | 524.28 |

| | | | | | | |
|-----------------|------|--------|--------|--------|--------|--------|
| | 2015 | 593.18 | 431.58 | 457.61 | 521.46 | 495.57 |
| | 2016 | 559.27 | 395.91 | 421.78 | 488.17 | 478.79 |
| | 2017 | 579.74 | 406.57 | 433.26 | 497.27 | 484.94 |
| | 2018 | 567.18 | 384.64 | 411.35 | 479.97 | 466.99 |
| | 2019 | 608.08 | 416.77 | 410.99 | 478.15 | 466.05 |
| Cambodia | 2010 | 11.96 | 4.45 | 4.77 | 5.01 | 5.03 |
| | 2011 | 12.70 | 5.15 | 4.93 | 5.28 | 5.11 |
| | 2012 | 13.28 | 5.42 | 5.19 | 5.50 | 5.34 |
| | 2013 | 13.37 | 5.18 | 5.23 | 5.64 | 5.48 |
| | 2014 | 14.74 | 6.15 | 6.44 | 6.69 | 6.52 |
| | 2015 | 16.23 | 7.38 | 7.78 | 8.67 | 8.45 |
| | 2016 | 18.39 | 9.71 | 9.65 | 9.99 | 9.73 |
| | 2017 | 18.94 | 10.41 | 10.39 | 11.53 | 11.19 |
| | 2018 | 21.39 | 11.76 | 11.26 | 15.90 | 15.49 |
| | 2019 | 24.15 | 13.27 | 12.86 | 16.49 | 16.04 |
| Chile | 2010 | 74.09 | 74.09 | 68.60 | 72.05 | 71.38 |
| | 2011 | 82.28 | 82.28 | 75.32 | 78.65 | 78.14 |
| | 2012 | 86.84 | 86.84 | 77.24 | 80.83 | 79.76 |
| | 2013 | 85.93 | 85.93 | 81.86 | 85.12 | 81.75 |
| | 2014 | 82.79 | 82.79 | 75.47 | 78.99 | 77.48 |
| | 2015 | 86.95 | 86.95 | 81.09 | 84.70 | 81.69 |
| | 2016 | 91.34 | 91.34 | 85.25 | 88.96 | 84.21 |
| | 2017 | 92.84 | 92.84 | 86.14 | 89.86 | 84.12 |
| | 2018 | 92.95 | 92.95 | 85.73 | 91.54 | 85.89 |
| | 2019 | 91.25 | 91.25 | 90.50 | 89.89 | 84.33 |
| Colombia | 2010 | 90.97 | 73.39 | 58.58 | 66.72 | 76.33 |
| | 2011 | 88.19 | 71.07 | 63.22 | 72.34 | 76.14 |
| | 2012 | 92.83 | 76.09 | 63.02 | 72.80 | 79.79 |
| | 2013 | 95.80 | 79.55 | 70.61 | 78.11 | 90.05 |
| | 2014 | 99.72 | 83.80 | 72.48 | 80.13 | 91.02 |
| | 2015 | 98.66 | 83.78 | 73.22 | 80.09 | 86.13 |
| | 2016 | 101.21 | 86.82 | 76.32 | 89.04 | 100.87 |
| | 2017 | 88.69 | 75.53 | 68.83 | 77.53 | 91.74 |
| | 2018 | 93.70 | 80.53 | 72.43 | 77.99 | 92.30 |
| | 2019 | 95.21 | 82.96 | 74.88 | 86.55 | 102.28 |
| Djibouti | 2010 | 2.07 | 1.28 | 0.52 | 1.13 | 0.52 |
| | 2011 | 2.07 | 1.27 | 0.48 | 1.32 | 0.47 |
| | 2012 | 2.27 | 1.46 | 0.50 | 1.38 | 0.48 |
| | 2013 | 2.18 | 1.35 | 0.50 | 0.92 | 0.56 |
| | 2014 | 2.29 | 1.35 | 0.34 | 0.93 | 0.37 |
| | 2015 | 2.38 | 1.40 | 0.40 | 0.93 | 0.45 |
| | 2016 | 2.25 | 1.47 | 0.35 | 0.96 | 0.40 |
| | 2017 | 2.28 | 1.49 | 0.34 | 0.99 | 0.38 |
| | 2018 | 2.31 | 1.51 | 0.33 | 1.02 | 0.39 |

| | | | | | | |
|------------------|------|--------|--------|--------|--------|--------|
| | 2019 | 2.34 | 1.53 | 0.35 | 1.05 | 0.40 |
| Ecuador | 2010 | 33.09 | 31.54 | 31.58 | 37.91 | 34.85 |
| | 2011 | 34.89 | 33.37 | 32.06 | 38.57 | 37.43 |
| | 2012 | 36.30 | 34.87 | 33.30 | 38.86 | 37.18 |
| | 2013 | 39.13 | 37.74 | 35.66 | 40.58 | 39.39 |
| | 2014 | 40.95 | 39.55 | 37.40 | 43.84 | 43.24 |
| | 2015 | 34.73 | 33.44 | 37.18 | 42.76 | 40.67 |
| | 2016 | 38.77 | 37.50 | 35.54 | 40.92 | 39.53 |
| | 2017 | 35.91 | 34.67 | 34.38 | 39.68 | 39.27 |
| | 2018 | 39.38 | 38.18 | 36.24 | 41.83 | 41.85 |
| | 2019 | 33.28 | 32.13 | 35.35 | 40.70 | 40.57 |
| Egypt | 2010 | 200.81 | 200.81 | 176.92 | 212.30 | 198.95 |
| | 2011 | 203.83 | 203.83 | 182.79 | 220.21 | 211.19 |
| | 2012 | 206.89 | 206.89 | 189.23 | 234.16 | 210.51 |
| | 2013 | 205.61 | 205.61 | 189.37 | 230.03 | 207.02 |
| | 2014 | 208.67 | 208.67 | 193.35 | 234.62 | 222.10 |
| | 2015 | 216.89 | 216.89 | 199.54 | 240.10 | 219.46 |
| | 2016 | 221.99 | 221.99 | 203.31 | 246.95 | 233.69 |
| | 2017 | 225.32 | 225.32 | 216.24 | 254.29 | 250.42 |
| | 2018 | 228.71 | 228.71 | 222.84 | 255.80 | 251.64 |
| | 2019 | 232.14 | 232.14 | 225.48 | 255.37 | 246.82 |
| Ethiopia | 2010 | 130.71 | 6.53 | 5.84 | 6.91 | 6.34 |
| | 2011 | 134.86 | 6.74 | 6.74 | 8.02 | 7.41 |
| | 2012 | 139.39 | 7.66 | 7.12 | 9.03 | 8.12 |
| | 2013 | 143.65 | 8.38 | 8.33 | 10.40 | 9.79 |
| | 2014 | 148.24 | 9.40 | 10.24 | 12.61 | 12.03 |
| | 2015 | 152.81 | 10.55 | 9.99 | 13.61 | 12.70 |
| | 2016 | 157.66 | 10.88 | 11.75 | 15.76 | 14.44 |
| | 2017 | 162.67 | 11.23 | 12.33 | 17.27 | 15.60 |
| | 2018 | 167.83 | 11.58 | 13.64 | 17.95 | 16.20 |
| | 2019 | 173.16 | 11.95 | 14.76 | 18.25 | 16.27 |
| Ghana | 2010 | 20.67 | 10.59 | 10.34 | 11.42 | 9.72 |
| | 2011 | 21.57 | 11.05 | 10.73 | 12.28 | 11.23 |
| | 2012 | 22.51 | 11.53 | 12.79 | 14.70 | 14.33 |
| | 2013 | 23.49 | 12.03 | 13.71 | 15.58 | 14.19 |
| | 2014 | 24.52 | 12.56 | 13.11 | 15.13 | 14.77 |
| | 2015 | 25.58 | 13.10 | 14.03 | 15.90 | 16.13 |
| | 2016 | 26.70 | 13.67 | 14.21 | 14.92 | 16.56 |
| | 2017 | 28.13 | 14.89 | 14.90 | 16.15 | 13.83 |
| | 2018 | 30.23 | 16.38 | 16.79 | 16.24 | 14.49 |
| | 2019 | 30.34 | 16.39 | 18.15 | 16.84 | 14.97 |
| Guatemala | 2010 | 38.54 | 12.25 | 10.34 | 11.73 | 11.11 |
| | 2011 | 39.53 | 12.46 | 10.62 | 11.97 | 11.25 |
| | 2012 | 40.81 | 13.08 | 11.03 | 12.15 | 11.57 |

| | | | | | | |
|------------------|------|---------|---------|---------|---------|---------|
| | 2013 | 42.96 | 14.30 | 11.85 | 14.02 | 12.59 |
| | 2014 | 44.37 | 15.14 | 12.59 | 18.16 | 13.58 |
| | 2015 | 47.92 | 18.31 | 14.98 | 17.10 | 15.44 |
| | 2016 | 51.20 | 19.67 | 16.09 | 18.21 | 16.39 |
| | 2017 | 52.41 | 18.95 | 15.14 | 17.75 | 17.23 |
| | 2018 | 54.66 | 20.53 | 16.85 | 20.06 | 19.43 |
| | 2019 | 55.32 | 20.55 | 17.84 | 21.20 | 20.53 |
| India | 2010 | 1383.81 | 1383.81 | 1572.14 | 1761.40 | 1679.70 |
| | 2011 | 1284.65 | 1284.65 | 1662.62 | 1858.61 | 1767.36 |
| | 2012 | 1434.80 | 1434.80 | 1805.42 | 2000.84 | 1942.72 |
| | 2013 | 1638.19 | 1638.19 | 1861.15 | 2068.60 | 2034.88 |
| | 2014 | 1846.08 | 1846.08 | 2027.55 | 2235.92 | 2186.03 |
| | 2015 | 2098.36 | 2098.36 | 2036.12 | 2292.96 | 2255.07 |
| | 2016 | 2134.19 | 2134.19 | 2067.83 | 2321.80 | 2394.10 |
| | 2017 | 2290.67 | 2290.67 | 2196.40 | 2425.42 | 2458.64 |
| | 2018 | 2433.07 | 2433.07 | 2310.25 | 2556.55 | 2593.21 |
| | 2019 | 2328.44 | 2328.44 | 2309.98 | 2597.36 | 2617.72 |
| Indonesia | 2010 | 426.46 | 426.46 | 391.65 | 420.32 | 428.49 |
| | 2011 | 497.19 | 497.19 | 449.83 | 431.02 | 508.44 |
| | 2012 | 573.46 | 573.46 | 451.12 | 444.00 | 526.77 |
| | 2013 | 538.22 | 538.22 | 416.86 | 448.19 | 411.49 |
| | 2014 | 515.50 | 515.50 | 452.26 | 485.38 | 417.13 |
| | 2015 | 508.09 | 508.09 | 458.19 | 493.14 | 507.38 |
| | 2016 | 517.22 | 517.22 | 448.23 | 490.61 | 568.61 |
| | 2017 | 534.84 | 534.84 | 480.56 | 531.99 | 531.40 |
| | 2018 | 629.80 | 629.80 | 538.02 | 579.23 | 577.00 |
| | 2019 | 686.51 | 686.51 | 583.41 | 625.66 | 617.96 |
| Jamaica | 2010 | 8.49 | 7.25 | 7.15 | 7.45 | 7.68 |
| | 2011 | 10.61 | 9.65 | 7.21 | 7.69 | 8.26 |
| | 2012 | 7.99 | 7.08 | 6.62 | 7.25 | 7.92 |
| | 2013 | 8.37 | 7.43 | 7.04 | 7.75 | 8.50 |
| | 2014 | 8.30 | 7.19 | 6.78 | 7.55 | 7.68 |
| | 2015 | 10.25 | 9.21 | 6.67 | 7.41 | 7.94 |
| | 2016 | 10.45 | 9.80 | 7.18 | 7.94 | 8.15 |
| | 2017 | 7.48 | 6.90 | 6.86 | 7.28 | 7.80 |
| | 2018 | 9.30 | 8.67 | 8.29 | 7.49 | 8.02 |
| | 2019 | 7.91 | 7.66 | 8.06 | 7.44 | 8.02 |
| Jordan | 2016 | 20.22 | 20.22 | 23.15 | 25.86 | 24.01 |
| | 2017 | 20.00 | 20.00 | 24.39 | 27.62 | 25.49 |
| | 2018 | 22.05 | 22.05 | 22.99 | 27.06 | 24.94 |
| | 2019 | 22.63 | 22.63 | 22.84 | 28.34 | 26.09 |
| | 2013 | 24.19 | 24.19 | 22.34 | 24.11 | 23.83 |
| | 2014 | 24.53 | 24.53 | 24.02 | 25.83 | 25.91 |
| | 2015 | 24.39 | 24.39 | 23.74 | 25.70 | 25.29 |

| | | | | | | |
|-------------------|------|-------|-------|-------|-------|-------|
| | 2010 | 25.85 | 25.85 | 18.79 | 20.61 | 20.63 |
| | 2011 | 23.68 | 23.68 | 19.76 | 21.08 | 21.26 |
| | 2012 | 24.16 | 24.16 | 22.71 | 24.49 | 23.83 |
| Kenya | 2010 | 54.30 | 10.28 | 11.21 | 13.21 | 11.75 |
| | 2011 | 56.51 | 10.70 | 11.32 | 13.51 | 12.94 |
| | 2012 | 58.81 | 11.13 | 10.36 | 12.63 | 12.00 |
| | 2013 | 77.46 | 11.97 | 12.13 | 14.07 | 12.78 |
| | 2014 | 84.98 | 13.59 | 12.87 | 14.91 | 13.78 |
| | 2015 | 76.39 | 16.01 | 14.75 | 16.98 | 16.31 |
| | 2016 | 79.50 | 16.66 | 16.51 | 18.71 | 17.16 |
| | 2017 | 82.73 | 17.33 | 16.60 | 18.83 | 16.54 |
| | 2018 | 86.10 | 18.04 | 15.31 | 19.51 | 17.15 |
| | 2019 | 89.60 | 18.77 | 20.10 | 19.81 | 17.33 |
| Laos | 2010 | 5.98 | 1.79 | 2.42 | 1.72 | 3.00 |
| | 2011 | 7.14 | 2.14 | 2.55 | 2.17 | 3.17 |
| | 2012 | 8.52 | 2.55 | 2.71 | 2.43 | 3.40 |
| | 2013 | 8.75 | 2.81 | 3.34 | 3.21 | 4.01 |
| | 2014 | 9.62 | 3.63 | 3.50 | 2.49 | 4.33 |
| | 2015 | 15.26 | 9.19 | 7.69 | 2.50 | 8.81 |
| | 2016 | 20.98 | 14.95 | 14.40 | 3.45 | 14.27 |
| | 2017 | 24.30 | 18.26 | 17.55 | 3.91 | 17.93 |
| | 2018 | 24.60 | 18.55 | 17.83 | 6.66 | 32.29 |
| | 2019 | 29.36 | 22.14 | 17.18 | 6.78 | 32.84 |
| Liberia | 2010 | 5.53 | 0.59 | 0.71 | 0.57 | 0.76 |
| | 2011 | 5.72 | 0.61 | 0.82 | 0.67 | 0.85 |
| | 2012 | 5.93 | 0.64 | 0.91 | 0.71 | 0.96 |
| | 2013 | 6.08 | 0.61 | 0.84 | 1.02 | 0.88 |
| | 2014 | 6.10 | 0.61 | 1.10 | 1.08 | 1.19 |
| | 2015 | 6.29 | 0.61 | 1.14 | 1.06 | 1.21 |
| | 2016 | 5.33 | 0.64 | 1.32 | 1.07 | 1.36 |
| | 2017 | 5.51 | 0.61 | 1.17 | 1.11 | 1.22 |
| | 2018 | 5.63 | 0.62 | 1.01 | 1.16 | 1.28 |
| | 2019 | 5.64 | 0.62 | 1.06 | 1.21 | 1.32 |
| Madagascar | 2010 | 15.98 | 1.89 | 1.81 | 2.20 | 1.94 |
| | 2011 | 16.13 | 2.04 | 2.12 | 3.02 | 2.38 |
| | 2012 | 16.27 | 2.36 | 2.65 | 3.33 | 2.74 |
| | 2013 | 17.02 | 2.56 | 2.84 | 3.89 | 3.15 |
| | 2014 | 18.56 | 3.82 | 2.95 | 3.82 | 3.10 |
| | 2015 | 20.12 | 3.91 | 3.23 | 3.82 | 3.52 |
| | 2016 | 18.54 | 2.58 | 3.12 | 3.93 | 3.36 |
| | 2017 | 23.56 | 4.06 | 3.40 | 4.07 | 3.89 |
| | 2018 | 25.81 | 5.45 | 3.27 | 4.39 | 4.19 |
| | 2019 | 27.24 | 5.75 | 4.04 | 4.20 | 4.02 |
| Mauritius | 2010 | 2.43 | 2.40 | 3.66 | 3.68 | 3.92 |

| | | | | | | |
|-------------------|------|-------|-------|-------|-------|-------|
| | 2011 | 2.52 | 2.49 | 3.64 | 3.66 | 3.92 |
| | 2012 | 2.59 | 2.55 | 3.73 | 3.76 | 3.97 |
| | 2013 | 2.52 | 2.48 | 3.82 | 3.85 | 4.07 |
| | 2014 | 2.59 | 2.56 | 3.95 | 3.98 | 4.21 |
| | 2015 | 2.65 | 2.62 | 3.96 | 3.99 | 4.21 |
| | 2016 | 2.74 | 2.71 | 4.04 | 4.07 | 4.35 |
| | 2017 | 2.88 | 2.86 | 4.17 | 4.21 | 4.54 |
| | 2018 | 2.94 | 2.91 | 4.13 | 4.57 | 4.91 |
| | 2019 | 3.08 | 3.06 | 4.17 | 4.33 | 4.69 |
| Micronesia | 2010 | 0.15 | 0.15 | | | |
| | 2011 | 0.14 | 0.14 | | | |
| | 2012 | 0.15 | 0.15 | | | |
| | 2013 | 0.15 | 0.15 | | | |
| | 2014 | 0.16 | 0.16 | | | |
| | 2015 | 0.14 | 0.14 | | | |
| | 2016 | 0.17 | 0.17 | | | |
| | 2017 | 0.17 | 0.17 | | | |
| | 2018 | 0.17 | 0.17 | | | |
| | 2019 | 0.18 | 0.18 | | | |
| Mongolia | 2010 | 10.60 | 10.60 | 14.14 | 14.37 | 13.83 |
| | 2011 | 10.98 | 10.98 | 15.57 | 15.84 | 21.44 |
| | 2012 | 12.02 | 12.02 | 16.98 | 17.23 | 35.06 |
| | 2013 | 13.03 | 13.03 | 18.29 | 18.51 | 43.59 |
| | 2014 | 12.80 | 12.80 | 17.94 | 18.25 | 29.61 |
| | 2015 | 12.39 | 12.39 | 17.12 | 17.47 | 23.26 |
| | 2016 | 12.84 | 12.84 | 17.98 | 18.33 | 25.34 |
| | 2017 | 13.96 | 13.96 | 19.28 | 19.61 | 34.18 |
| | 2018 | 15.74 | 15.74 | 21.13 | 35.28 | 64.56 |
| | 2019 | 16.54 | 16.54 | 22.66 | 35.93 | 65.56 |
| Morocco | 2010 | 46.87 | 46.87 | 46.40 | 52.00 | 56.31 |
| | 2011 | 48.71 | 48.71 | 50.75 | 56.22 | 56.75 |
| | 2012 | 50.53 | 50.53 | 52.24 | 58.49 | 59.07 |
| | 2013 | 50.64 | 50.64 | 51.52 | 58.61 | 58.78 |
| | 2014 | 52.21 | 52.21 | 53.52 | 60.21 | 59.69 |
| | 2015 | 54.74 | 54.74 | 55.11 | 61.77 | 61.07 |
| | 2016 | 55.25 | 55.25 | 55.09 | 61.82 | 61.08 |
| | 2017 | 58.26 | 58.26 | 57.95 | 64.96 | 63.88 |
| | 2018 | 59.97 | 59.97 | 59.39 | 66.74 | 65.42 |
| | 2019 | 66.31 | 66.31 | 65.90 | 73.91 | 71.98 |
| Myanmar | 2010 | 49.06 | 12.39 | 7.93 | 8.57 | 13.09 |
| | 2011 | 52.45 | 13.16 | 8.49 | 8.77 | 15.08 |
| | 2012 | 51.62 | 12.02 | 11.62 | 12.39 | 11.90 |
| | 2013 | 55.56 | 12.88 | 13.17 | 14.82 | 12.95 |
| | 2014 | 62.61 | 17.28 | 16.54 | 21.19 | 16.18 |

| | | | | | | |
|------------------|------|---------|-------|-------|--------|--------|
| | 2015 | 64.17 | 22.56 | 18.66 | 25.32 | 22.09 |
| | 2016 | 61.34 | 21.24 | 20.90 | 28.86 | 25.49 |
| | 2017 | 66.45 | 29.69 | 30.40 | 43.07 | 23.69 |
| | 2018 | 75.28 | 33.64 | 31.35 | 46.87 | 26.11 |
| | 2019 | 85.30 | 38.11 | 35.13 | 48.31 | 26.25 |
| Nicaragua | 2010 | 4.48 | 4.01 | 4.28 | 4.67 | 4.47 |
| | 2011 | 4.61 | 4.12 | 4.49 | 4.85 | 4.81 |
| | 2012 | 4.74 | 4.24 | 4.45 | 4.82 | 4.55 |
| | 2013 | 4.58 | 4.07 | 4.22 | 4.67 | 4.35 |
| | 2014 | 4.86 | 4.34 | 4.49 | 4.93 | 4.60 |
| | 2015 | 5.28 | 4.78 | 5.00 | 5.57 | 5.25 |
| | 2016 | 5.50 | 4.93 | 5.11 | 5.63 | 5.45 |
| | 2017 | 5.46 | 4.89 | 5.13 | 5.67 | 5.38 |
| | 2018 | 5.62 | 5.04 | 4.76 | 5.67 | 5.38 |
| | 2019 | 5.78 | 5.18 | 4.88 | 5.86 | 5.55 |
| Niger | 2010 | 4.96 | 1.56 | 1.36 | 1.43 | 1.17 |
| | 2011 | 5.08 | 1.60 | 1.38 | 1.45 | 1.32 |
| | 2012 | 5.63 | 2.08 | 1.87 | 2.04 | 1.76 |
| | 2013 | 5.64 | 1.98 | 1.78 | 2.02 | 1.89 |
| | 2014 | 6.29 | 2.39 | 1.97 | 2.19 | 2.08 |
| | 2015 | 6.51 | 2.18 | 1.99 | 2.15 | 2.04 |
| | 2016 | 6.93 | 2.15 | 2.00 | 2.14 | 2.07 |
| | 2017 | 9.33 | 1.98 | 1.82 | 2.22 | 2.01 |
| | 2018 | 7.69 | 2.12 | 1.87 | 2.31 | 2.10 |
| | 2019 | 21.55 | 2.54 | 2.07 | 2.36 | 2.14 |
| Nigeria | 2010 | 840.78 | 47.60 | 56.90 | 90.52 | 112.40 |
| | 2011 | 932.45 | 50.29 | 66.47 | 95.18 | 129.66 |
| | 2012 | 1032.89 | 52.19 | 70.64 | 90.61 | 116.42 |
| | 2013 | 939.79 | 51.81 | 82.31 | 89.78 | 122.19 |
| | 2014 | 984.56 | 50.25 | 90.83 | 85.70 | 127.92 |
| | 2015 | 433.99 | 38.01 | 84.84 | 89.43 | 113.62 |
| | 2016 | 532.18 | 74.02 | 88.19 | 90.82 | 116.86 |
| | 2017 | 1011.22 | 78.36 | 86.36 | 94.14 | 130.37 |
| | 2018 | 1017.59 | 68.68 | 87.38 | 97.67 | 136.18 |
| | 2019 | 1041.49 | 70.29 | 92.02 | 100.22 | 140.13 |
| Paraguay | 2010 | 11.08 | 4.89 | 4.79 | 5.19 | 5.03 |
| | 2011 | 11.20 | 5.11 | 5.01 | 5.38 | 5.20 |
| | 2012 | 11.23 | 5.31 | 4.88 | 5.64 | 5.18 |
| | 2013 | 10.55 | 5.25 | 5.08 | 5.57 | 5.18 |
| | 2014 | 11.05 | 5.53 | 5.37 | 5.83 | 5.46 |
| | 2015 | 11.57 | 6.07 | 6.02 | 6.38 | 6.06 |
| | 2016 | 12.45 | 6.88 | 6.80 | 7.32 | 7.16 |
| | 2017 | 16.64 | 7.96 | 7.65 | 8.18 | 8.02 |
| | 2018 | 16.93 | 8.43 | 8.06 | 8.28 | 8.11 |

| | | | | | | |
|---------------------|------|--------|--------|--------|--------|--------|
| | 2019 | 17.60 | 8.25 | 7.81 | 8.47 | 8.28 |
| Peru | 2010 | 50.79 | 41.71 | 41.54 | 45.28 | 57.19 |
| | 2011 | 52.02 | 42.72 | 44.92 | 48.39 | 48.99 |
| | 2012 | 54.05 | 45.03 | 44.09 | 48.95 | 54.20 |
| | 2013 | 54.30 | 45.56 | 45.18 | 49.81 | 42.96 |
| | 2014 | 55.67 | 46.87 | 48.12 | 53.05 | 49.09 |
| | 2015 | 57.01 | 48.32 | 49.53 | 54.12 | 48.73 |
| | 2016 | 61.31 | 52.46 | 52.20 | 56.30 | 52.40 |
| | 2017 | 61.45 | 50.85 | 49.76 | 53.99 | 52.53 |
| | 2018 | 61.66 | 51.31 | 50.05 | 55.81 | 54.25 |
| | 2019 | 65.66 | 52.43 | 52.21 | 56.29 | 54.57 |
| Philippines | 2010 | 65.80 | 65.80 | 75.76 | 87.36 | 83.01 |
| | 2011 | 65.88 | 65.88 | 76.34 | 87.17 | 83.80 |
| | 2012 | 67.72 | 67.72 | 78.74 | 92.38 | 88.47 |
| | 2013 | 74.42 | 74.42 | 87.54 | 100.75 | 95.86 |
| | 2014 | 78.99 | 78.99 | 93.36 | 107.64 | 101.26 |
| | 2015 | 86.02 | 86.02 | 101.48 | 116.51 | 112.22 |
| | 2016 | 94.92 | 94.92 | 112.06 | 127.79 | 122.33 |
| | 2017 | 103.80 | 103.80 | 123.29 | 139.96 | 134.62 |
| | 2018 | 107.93 | 107.93 | 128.40 | 144.64 | 139.03 |
| | 2019 | 113.32 | 113.32 | 135.25 | 150.64 | 144.37 |
| Rwanda | 2010 | 7.18 | 0.62 | 0.71 | 0.79 | 0.65 |
| | 2011 | 7.03 | 0.46 | 0.75 | 0.92 | 0.72 |
| | 2012 | 7.12 | 0.56 | 0.83 | 0.96 | 0.78 |
| | 2013 | 7.11 | 0.54 | 0.92 | 0.87 | 0.81 |
| | 2014 | 7.10 | 0.53 | 0.93 | 0.92 | 0.93 |
| | 2015 | 4.87 | 0.54 | 1.05 | 0.95 | 1.05 |
| | 2016 | 6.93 | 0.55 | 1.11 | 1.05 | 1.05 |
| | 2017 | 7.30 | 0.65 | 1.20 | 1.09 | 1.08 |
| | 2018 | 7.36 | 0.53 | 1.33 | 1.12 | 1.11 |
| | 2019 | 7.38 | 0.54 | 1.43 | 1.15 | |
| Saudi Arabia | 2010 | 667.11 | 667.11 | 418.24 | 478.17 | 518.09 |
| | 2011 | 590.78 | 590.78 | 434.34 | 499.30 | 498.02 |
| | 2012 | 542.35 | 542.35 | 463.38 | 531.10 | 563.59 |
| | 2013 | 513.92 | 513.92 | 471.16 | 541.27 | 541.20 |
| | 2014 | 487.30 | 487.30 | 506.94 | 577.99 | 602.33 |
| | 2015 | 500.24 | 500.24 | 531.39 | 604.00 | 645.88 |
| | 2016 | 484.67 | 484.67 | 527.79 | 600.93 | 566.16 |
| | 2017 | 459.71 | 459.71 | 516.62 | 608.85 | 579.84 |
| | 2018 | 393.75 | 393.75 | 491.74 | 605.31 | 577.18 |
| | 2019 | 371.69 | 371.69 | 495.15 | 614.61 | 582.57 |
| South Africa | 2010 | 391.33 | 391.33 | 420.29 | 465.00 | 467.27 |
| | 2011 | 366.59 | 366.59 | 404.69 | 445.93 | 474.29 |
| | 2012 | 373.25 | 373.25 | 422.29 | 461.81 | 461.47 |

| | | | | | | |
|-----------------|------|--------|--------|--------|--------|--------|
| | 2013 | 418.83 | 418.83 | 432.21 | 473.04 | 456.20 |
| | 2014 | 397.84 | 397.84 | 443.19 | 484.59 | 482.24 |
| | 2015 | 363.66 | 363.66 | 419.55 | 477.75 | 451.92 |
| | 2016 | 387.51 | 387.51 | 419.89 | 476.50 | 460.38 |
| | 2017 | 366.76 | 366.76 | 430.01 | 481.71 | 466.44 |
| | 2018 | 363.37 | 363.37 | 428.28 | 487.54 | 472.34 |
| | 2019 | 360.02 | 360.02 | 433.57 | 494.86 | 478.96 |
| Tanzania | 2010 | 21.37 | 6.12 | 6.02 | 7.19 | 6.93 |
| | 2011 | 23.23 | 7.78 | 7.27 | 8.87 | 7.76 |
| | 2012 | 25.91 | 9.87 | 8.88 | 11.04 | 9.07 |
| | 2013 | 28.55 | 10.21 | 9.89 | 11.35 | 9.92 |
| | 2014 | 29.10 | 10.23 | 9.63 | 11.52 | 9.91 |
| | 2015 | 20.41 | 11.39 | 10.47 | 12.93 | 10.65 |
| | 2016 | 17.53 | 10.41 | 9.62 | 12.09 | 10.54 |
| | 2017 | 16.96 | 10.07 | 10.21 | 12.58 | 11.03 |
| | 2018 | 16.40 | 9.74 | 10.26 | 13.10 | 11.51 |
| | 2019 | 15.87 | 9.43 | 10.71 | 13.34 | 11.63 |
| Thailand | 2010 | 251.30 | 219.56 | 221.89 | 246.13 | 256.61 |
| | 2011 | 256.29 | 223.92 | 220.07 | 245.13 | 253.99 |
| | 2012 | 261.39 | 228.37 | 236.56 | 263.10 | 270.37 |
| | 2013 | 266.58 | 232.91 | 244.98 | 274.33 | 286.28 |
| | 2014 | 256.37 | 221.61 | 240.91 | 270.33 | 280.20 |
| | 2015 | 271.43 | 237.73 | 248.01 | 274.44 | 283.50 |
| | 2016 | 274.72 | 252.51 | 244.09 | 272.27 | 281.91 |
| | 2017 | 276.08 | 254.26 | 244.04 | 273.24 | 286.54 |
| | 2018 | 278.68 | 258.01 | 241.37 | 279.31 | 292.67 |
| | 2019 | 282.35 | 262.09 | 251.41 | 275.06 | 288.49 |
| Togo | 2010 | 8.36 | 2.29 | 2.08 | 2.54 | 2.60 |
| | 2011 | 7.70 | 1.46 | 1.89 | 2.33 | 2.51 |
| | 2012 | 8.27 | 1.88 | 1.63 | 2.22 | 2.22 |
| | 2013 | 8.07 | 1.53 | 1.28 | 2.33 | 2.13 |
| | 2014 | 8.12 | 1.42 | 1.15 | 2.37 | 2.24 |
| | 2015 | 8.70 | 1.84 | 1.01 | 2.43 | 2.69 |
| | 2016 | 8.64 | 1.62 | 1.49 | 2.53 | 3.10 |
| | 2017 | 8.63 | 1.62 | 1.25 | 2.64 | 3.05 |
| | 2018 | 8.61 | 1.61 | 1.44 | 2.75 | 3.17 |
| | 2019 | 8.60 | 1.61 | 1.50 | 2.85 | 3.26 |
| Uganda | 2010 | 27.11 | 1.61 | 3.01 | 3.77 | 3.57 |
| | 2011 | 26.05 | 3.28 | 3.35 | 4.33 | 3.83 |
| | 2012 | 28.67 | 2.81 | 3.35 | 4.55 | 3.63 |
| | 2013 | 37.89 | 10.44 | 3.34 | 4.48 | 3.76 |
| | 2014 | 39.39 | 10.42 | 3.72 | 4.57 | 4.10 |
| | 2015 | 42.27 | 10.54 | 4.36 | 4.69 | 4.53 |
| | 2016 | 59.54 | 4.75 | 4.57 | 4.87 | 4.81 |

| | | | | | | |
|----------------|------|--------|------|------|------|------|
| | 2017 | 59.64 | 4.85 | 4.79 | 5.05 | 5.23 |
| | 2018 | 68.47 | 5.83 | 5.48 | 5.18 | 5.39 |
| | 2019 | 153.41 | 5.77 | 5.48 | 5.34 | 5.54 |
| Uruguay | 2010 | 8.14 | 5.65 | 5.95 | 6.42 | 6.30 |
| | 2011 | 9.66 | 7.04 | 7.23 | 7.71 | 7.66 |
| | 2012 | 10.50 | 7.93 | 8.18 | 8.78 | 8.60 |
| | 2013 | 9.40 | 6.78 | 7.02 | 7.62 | 7.50 |
| | 2014 | 8.43 | 5.91 | 6.17 | 6.76 | 6.66 |
| | 2015 | 8.57 | 6.13 | 6.30 | 6.81 | 6.66 |
| | 2016 | 8.45 | 6.01 | 6.23 | 6.80 | 6.53 |
| | 2017 | 8.30 | 5.87 | 5.78 | 6.36 | 6.18 |
| | 2018 | 9.41 | 6.00 | 6.22 | 6.43 | 6.26 |
| | 2019 | 8.25 | 5.89 | 6.17 | 6.56 | 6.38 |

3.2 Data uncertainty by sector

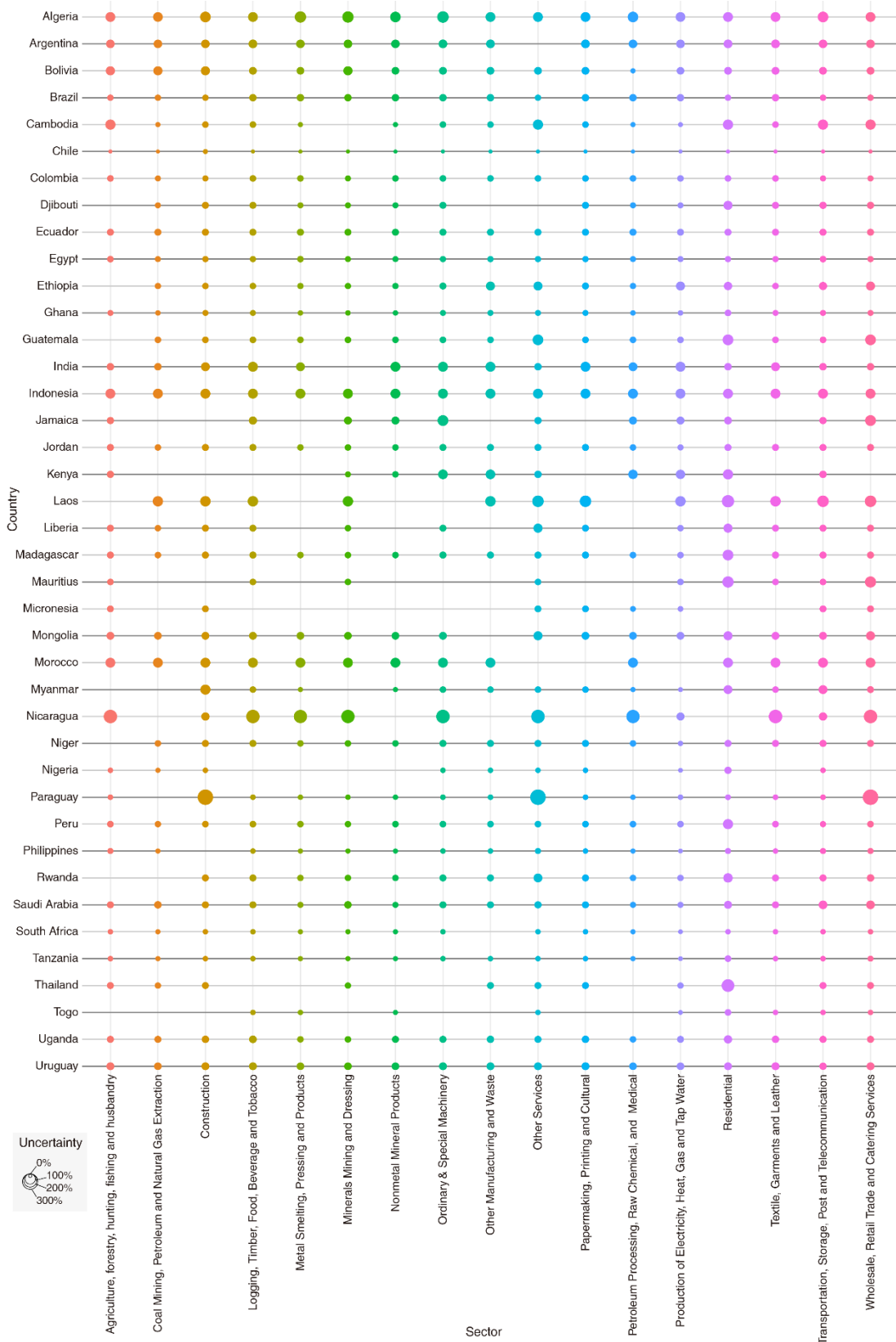


Figure S 1 Data uncertainty for 40 countries by sector. Colors show the 17 sectors and sizes of point show the uncertainty of emissions.

4. Supplemental Results

Our previous work on 30 emerging economies' CO₂ emissions are provided as a report in CEADs website: https://ceads.oss-cn-hangzhou.aliyuncs.com/CEADs_en_v1.4.pdf.

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