Emissions trends and drivers: sectoral trends

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Table of Contents

# Summary

This document provides an overview and breakdown of emissions trends by IPCC chapter. We have compiled a consistent allocation of emissions categories to sectors using the EDGAR emissions database. We propose to use this allocation and the following figures across the main sectoral chapters (#6 Energy systems, #7 AFOLU, #9 Buildings, #10 Transport, #11 Industry).

The following supporting information is available online: - our code in R - the sector categorisations - the figure files - the data files for each figure (the full EDGAR database must remain private) - this document and any updates Please find these at: <https://github.com/mcc-apsis/AR6-Emissions-trends-and-drivers>

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# Classification of emissions sources

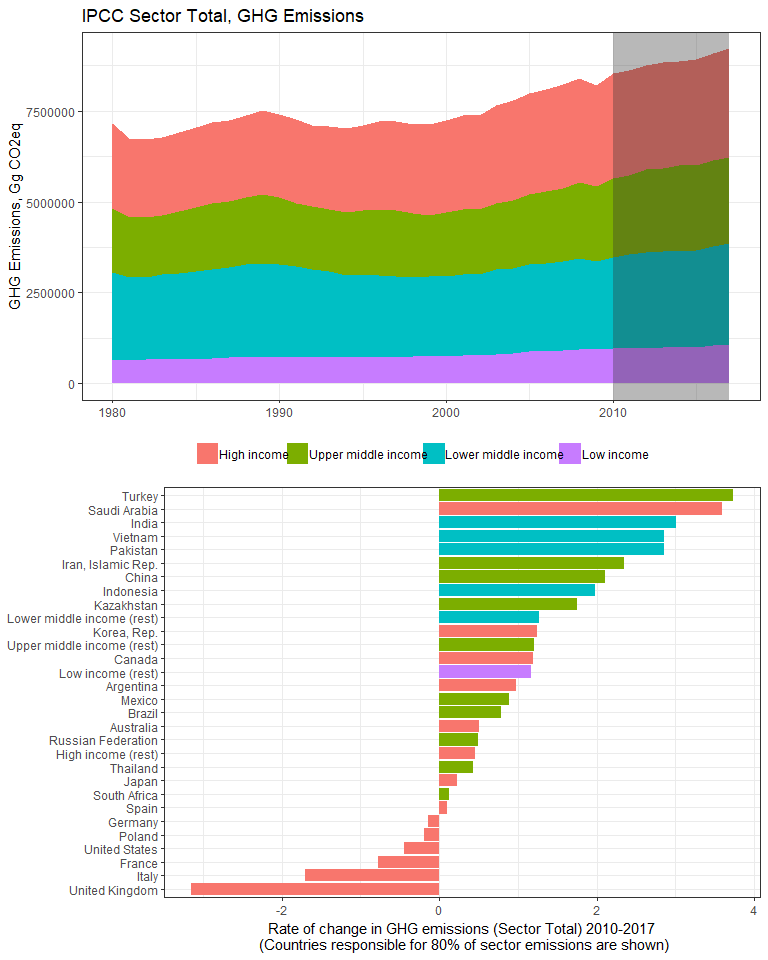
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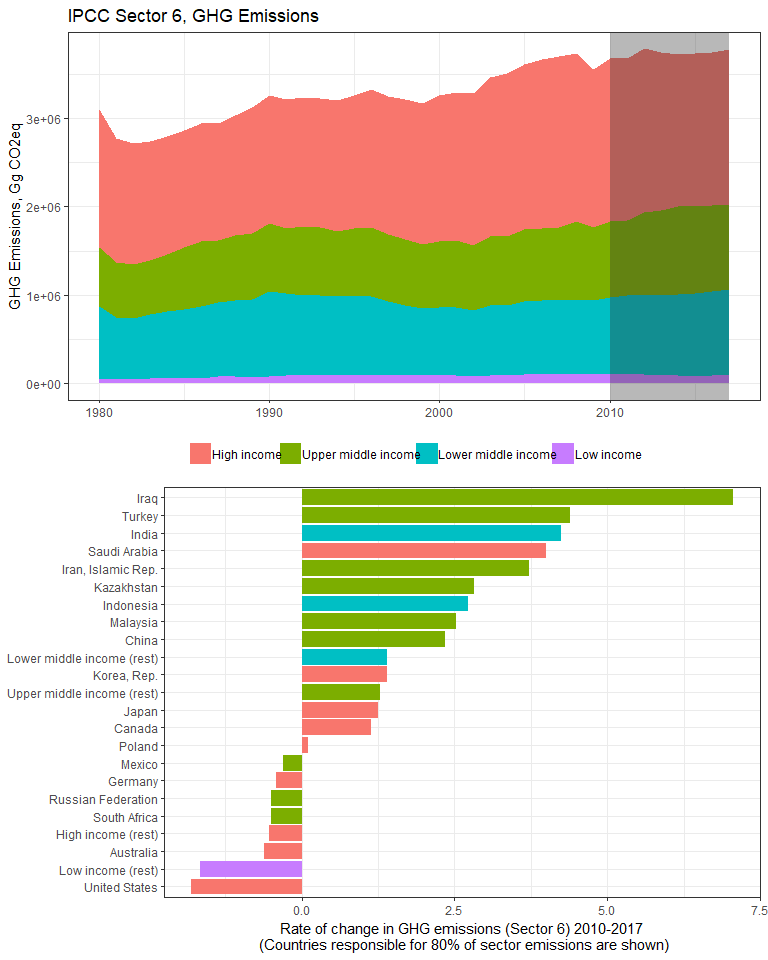
| Code | Chapter | Description | Cat1 | Cat2 | Cat3 |
| --- | --- | --- | --- | --- | --- |
| 1A1 | 6 | Energy Industries | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1a | 6 | Public Electricity and Heat Production | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1a1 | 6 | Public Electricity Generation | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1a2 | 6 | Public Combined Heat and Power gen. | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1a3 | 6 | Public Heat Plants | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1a4 | 6 | Public Electricity Generation (own use) | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1a5 | 6 | Electricity Generation (autoproducers) | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1a6 | 6 | Combined Heat and Power gen. (autoprod.) | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1a7 | 6 | Heat Plants (autoproducers) | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1ax | 6 | Public Electricity and Heat Production (biomass) | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1ax1 | 6 | Public Electricity Generation (biomass) | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1ax2 | 6 | Public Combined Heat and Power gen. (biom.) | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1ax3 | 6 | Public Heat Plants (biomass) | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1ax4 | 6 | Public Electricity Gen. (own use) (biom.) | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1ax5 | 6 | Electricity Generation (autoproducers) (biom.) | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1ax6 | 6 | Combined Heat and Power gen. (autopr.) (biom.) | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1ax7 | 6 | Heat Plants (autoproducers) (biomass) | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1b | 6 | Refineries | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1bc | 6 | Other Energy Industries | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1bx | 6 | Refineries (biomass) | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1c3 | 6 | Gas works | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1c5 | 6 | Other transformation sector (BKB, etc.) | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1cx | 6 | Manufacture of Solid Fuels and Other Energy Industries (biomass) | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1cx3 | 6 | Gas works (biom.) | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1cx4 | 6 | Fuel comb. charcoal production (biom.) | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1cx5 | 6 | Other transf. sector (BKB, etc.) (biom.) | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1r | 6 | Other transformation sector (BKB, etc.) | Energy | Fuel Combustion Activities | Energy Industries |
| 1B1 | 6 | Solid Fuels | Energy | Fugitive Emissions from Fuels | Solid Fuels |
| 1B1a | 6 | Coal Mining | Energy | Fugitive Emissions from Fuels | Solid Fuels |
| 1B1a1 | 6 | Hard coal mining (gross) | Energy | Fugitive Emissions from Fuels | Solid Fuels |
| 1B1a1r | 6 | Methane recovery from coal mining | Energy | Fugitive Emissions from Fuels | Solid Fuels |
| 1B1a2 | 6 | Abandoned mines | Energy | Fugitive Emissions from Fuels | Solid Fuels |
| 1B1a3 | 6 | Brown coal mining | Energy | Fugitive Emissions from Fuels | Solid Fuels |
| 1B1b | 6 | Solid Fuel Transformation | Energy | Fugitive Emissions from Fuels | Solid Fuels |
| 1B1b2 | 6 | Fuel transformation in gas works | Energy | Fugitive Emissions from Fuels | Solid Fuels |
| 1B1b3x | 6 | Fuel transformation charcoal production | Energy | Fugitive Emissions from Fuels | Solid Fuels |
| 1B1b4 | 6 | Fuel transformation of solid fuels (BKB Plants, coal liquefaction, patent fuel plants) | Energy | Fugitive Emissions from Fuels | Solid Fuels |
| 1B1r | 6 | Fugitive emissions from solids fuels except coke ovens | Energy | Fugitive Emissions from Fuels | Solid Fuels |
| 1B2 | 6 | Oil and Natural Gas | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2a | 6 | Oil | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2a1 | 6 | Oil production | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2a1x | 6 | Oil production | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2a2 | 6 | Oil transmission | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2a3 | 6 | Transport | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2a3-l | 6 | Tanker loading | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2a4 | 6 | Refining/Storage | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2a4-l | 6 | Tanker oil transport (crude and NGL) | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2a4-t | 6 | Transport by oil trucks | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2a5 | 6 | Distribution of Oil Products | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2a5(e) | 6 | Oil refineries (evaporation) | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2a6 | 6 | Other (please specify) | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2b | 6 | Natural Gas | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2b1 | 6 | Gas production | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2b2 | 6 | Transmission/Distribution | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2b3 | 6 | Gas transmission | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2b4 | 6 | Gas distribution | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2b5 | 6 | Fuel transformation of gaseous fuels (GTL, Blend, (re-)gasif./Liquef., NSF) | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2c | 6 | Venting and flaring during oil and gas production | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2c1 | 6 | Oil | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2c2 | 6 | Gas | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2c3 | 6 | Combined | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 1B2d | 6 | Other (please specify) | Energy | Fugitive Emissions from Fuels | Oil and Natural Gas |
| 2F8b | 6 | Electrical Equipment Use (incl. site inst.) | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride |  |
| 7A | 6 | Fossil fuel fires | Other (please specify) | Fossil fuel fires |  |
| 7A1 | 6 | Coal fires (underground) | Other (please specify) | Fossil fuel fires | Coal fires (underground) |
| 7A2 | 6 | Oil fires (Kuwait) | Other (please specify) | Fossil fuel fires | Oil fires (Kuwait) |
| 7B1 | 6 | Indirect N2O from NOx emitted in cat. 1A | Other (please specify) |  | Indirect N2O from NOx emitted in cat. 1A |
| 7C1 | 6 | Indirect N2O from NH3 emitted in cat. 1A | Other (please specify) |  | Indirect N2O from NH3 emitted in cat. 1A |
| 1A4c1 | 7 | Agriculture and forestry (fos.) | Energy | Fuel Combustion Activities | Other Sectors |
| 1A4c1x | 7 | Agriculture and forestry (biom.) | Energy | Fuel Combustion Activities | Other Sectors |
| 1A4c2 | 7 | Off-road machinery: agric./for. (diesel) | Energy | Fuel Combustion Activities | Other Sectors |
| 1A4c3 | 7 | Fishing (fos.) | Energy | Fuel Combustion Activities | Other Sectors |
| 1A4c3x | 7 | Fishing (biom.) | Energy | Fuel Combustion Activities | Other Sectors |
| 1A4d | 7 | Non-specified other (fos.) | Energy | Fuel Combustion Activities | Other Sectors |
| 1A4dx | 7 | Non-specified other (biom.) | Energy | Fuel Combustion Activities | Other Sectors |
| 1A5b1 | 7 | Off-road machinery: mining (diesel) | Energy | Fuel Combustion Activities | Other |
| 4 | 7 | Agriculture | Agriculture |  |  |
| 4A | 7 | Enteric Fermentation | Agriculture | Enteric Fermentation |  |
| 4A1 | 7 | Cattle | Agriculture | Enteric Fermentation | Cattle |
| 4A1-d | 7 | Dairy cattle | Agriculture | Enteric Fermentation | Cattle |
| 4A1-n | 7 | Non-dairy cattle | Agriculture | Enteric Fermentation | Cattle |
| 4A10 | 7 | Other (please specify) | Agriculture | Enteric Fermentation | Cattle |
| 4A1a | 7 | Dairy | Agriculture | Enteric Fermentation | Cattle |
| 4A1b | 7 | Non-Dairy | Agriculture | Enteric Fermentation | Cattle |
| 4A2 | 7 | Buffalo | Agriculture | Enteric Fermentation | Buffalo |
| 4A3 | 7 | Sheep | Agriculture | Enteric Fermentation | Sheep |
| 4A4 | 7 | Goats | Agriculture | Enteric Fermentation | Goats |
| 4A5 | 7 | Camels and Lamas | Agriculture | Enteric Fermentation | Camels and Lamas |
| 4A6 | 7 | Horses | Agriculture | Enteric Fermentation | Horses |
| 4A7 | 7 | Mules and asses | Agriculture | Enteric Fermentation | Mules and asses |
| 4A8 | 7 | Swine | Agriculture | Enteric Fermentation | Swine |
| 4A9 | 7 | Poultry | Agriculture | Enteric Fermentation | Poultry |
| 4B | 7 | Manure Management | Agriculture | Manure Management |  |
| 4B1 | 7 | Cattle | Agriculture | Manure Management | Cattle |
| 4B1-d | 7 | Manure Man.: Dairy Cattle (confined) | Agriculture | Manure Management | Cattle |
| 4B1-n | 7 | Manure Man.: Non-Dairy Cattle (confined) | Agriculture | Manure Management | Cattle |
| 4B10 | 7 | Anaerobic | Agriculture | Manure Management | Cattle |
| 4B11 | 7 | Liquid Systems | Agriculture | Manure Management | Cattle |
| 4B12 | 7 | Solid storage and Dry Lot | Agriculture | Manure Management | Cattle |
| 4B13 | 7 | Other (please specify) | Agriculture | Manure Management | Cattle |
| 4B1a | 7 | Dairy | Agriculture | Manure Management | Cattle |
| 4B1b | 7 | Non-Dairy | Agriculture | Manure Management | Cattle |
| 4B2 | 7 | Manure Man.: Buffalo (confined) | Agriculture | Manure Management | Manure Man.: Buffalo (confined) |
| 4B3 | 7 | Manure Man.: Sheep (confined) | Agriculture | Manure Management | Manure Man.: Sheep (confined) |
| 4B4 | 7 | Manure Man.: Goats (confined) | Agriculture | Manure Management | Manure Man.: Goats (confined) |
| 4B5 | 7 | Manure Man.: Camels and llamas (confined) | Agriculture | Manure Management | Manure Man.: Camels and llamas (confined) |
| 4B6 | 7 | Manure Man.: Horses (confined) | Agriculture | Manure Management | Manure Man.: Horses (confined) |
| 4B7 | 7 | Manure Man.: Mules and asses (confined) | Agriculture | Manure Management | Manure Man.: Mules and asses (confined) |
| 4B8 | 7 | Manure Man.: Swine (confined) | Agriculture | Manure Management | Manure Man.: Swine (confined) |
| 4B9 | 7 | Manure Man.: Poultry (confined) | Agriculture | Manure Management | Manure Man.: Poultry (confined) |
| 4C | 7 | Rice cultivation | Agriculture | Rice cultivation |  |
| 4C1 | 7 | Irrigated | Agriculture | Rice cultivation | Irrigated |
| 4C1a | 7 | Continuously Flooded | Agriculture | Rice cultivation | Irrigated |
| 4C1b | 7 | Intermittently Flooded | Agriculture | Rice cultivation | Irrigated |
| 4C1b1 | 7 | Single aeration | Agriculture | Rice cultivation | Irrigated |
| 4C1b2 | 7 | Multiple aeration | Agriculture | Rice cultivation | Irrigated |
| 4C2 | 7 | Rainfed | Agriculture | Rice cultivation | Rainfed |
| 4C2a | 7 | Flood prone | Agriculture | Rice cultivation | Rainfed |
| 4C2b | 7 | Drought prone | Agriculture | Rice cultivation | Rainfed |
| 4C3 | 7 | Deep Water | Agriculture | Rice cultivation | Deep Water |
| 4C3a | 7 | Water depth 50 â€“ 100 cm | Agriculture | Rice cultivation | Deep Water |
| 4C3b | 7 | Water depth greater than 100 cm | Agriculture | Rice cultivation | Deep Water |
| 4C4 | 7 | Other (please specify) | Agriculture | Rice cultivation | Other (please specify) |
| 4D | 7 | Agricultural Soils | Agriculture | Agricultural Soils |  |
| 4D11 | 7 | Synthetic Fertilizers | Agriculture | Agricultural Soils |  |
| 4D12 | 7 | Animal Manure Applied to Soils | Agriculture | Agricultural Soils |  |
| 4D13 | 7 | N-fixing crops | Agriculture | Agricultural Soils |  |
| 4D14 | 7 | Crop Residue | Agriculture | Agricultural Soils |  |
| 4D15 | 7 | Cultivation of Histosols | Agriculture | Agricultural Soils |  |
| 4D2 | 7 | Pasture, Range and Paddock Manure | Agriculture | Agricultural Soils | Pasture, Range and Paddock Manure |
| 4D3 | 7 | Indirect Emissions | Agriculture | Agricultural Soils | Indirect Emissions |
| 4D3a | 7 | Indirect N2O: Atm. Depos. - agricult. (4D) | Agriculture | Agricultural Soils | Indirect Emissions |
| 4D3b | 7 | Indirect N2O: Leaching and Run-Off - agri. | Agriculture | Agricultural Soils | Indirect Emissions |
| 4D4 | 7 | Other direct soil emissions | Agriculture | Agricultural Soils | Other direct soil emissions |
| 4D4a | 7 | CO2 from urea application | Agriculture | Agricultural Soils | Other direct soil emissions |
| 4D4b | 7 | CO2 from agricultural lime application | Agriculture | Agricultural Soils | Other direct soil emissions |
| 4Dr | 7 | Agricultural soils (direct) | Agriculture | Agricultural Soils | Agricultural soils (direct) |
| 4E | 7 | Savannah fires | Agriculture | Savannah fires |  |
| 4F | 7 | Field Burning of Agricultural Residues | Agriculture | Field Burning of Agricultural Residues |  |
| 4F1 | 7 | Field burning of agric. res.: cereals | Agriculture | Field Burning of Agricultural Residues | Field burning of agric. res.: cereals |
| 4F2 | 7 | Field burning of agric. res.: pulses | Agriculture | Field Burning of Agricultural Residues | Field burning of agric. res.: pulses |
| 4F3 | 7 | Field burning of agric. res.: tuber and roots | Agriculture | Field Burning of Agricultural Residues | Field burning of agric. res.: tuber and roots |
| 4F4 | 7 | Field burning of agric. res.: sugar cane | Agriculture | Field Burning of Agricultural Residues | Field burning of agric. res.: sugar cane |
| 4F5 | 7 | Field burning of agric. res.: other | Agriculture | Field Burning of Agricultural Residues | Field burning of agric. res.: other |
| 4G | 7 | Other (please specify) | Agriculture | Other (please specify) |  |
| 5 | 7 | Land-Use Change & Forestry | Land-Use Change & Forestry |  |  |
| 5-CL | 7 | Cropland | Land-Use Change & Forestry |  |  |
| 5-CL-1 | 7 | Cropland Remaining Cropland | Land-Use Change & Forestry |  |  |
| 5-CL-2 | 7 | Land Converted to Cropland | Land-Use Change & Forestry |  |  |
| 5-FL | 7 | Forest Land | Land-Use Change & Forestry |  |  |
| 5-FL-1 | 7 | Forest Land Remaining Forest Land | Land-Use Change & Forestry |  |  |
| 5-FL-2 | 7 | Land Converted to Forest Land | Land-Use Change & Forestry |  |  |
| 5-GL | 7 | Grassland | Land-Use Change & Forestry |  |  |
| 5-GL-1 | 7 | Grassland Remaining Grassland | Land-Use Change & Forestry |  |  |
| 5-GL-2 | 7 | Land Converted to Grassland | Land-Use Change & Forestry |  |  |
| 5-OL | 7 | Other Land | Land-Use Change & Forestry |  |  |
| 5-OL-1 | 7 | Other Land Remaining Other Land | Land-Use Change & Forestry |  |  |
| 5-OL-2 | 7 | Land Converted to Other Land | Land-Use Change & Forestry |  |  |
| 5-SL | 7 | Settlements | Land-Use Change & Forestry |  |  |
| 5-SL-1 | 7 | Settlements Remaining Settlements | Land-Use Change & Forestry |  |  |
| 5-SL-2 | 7 | Land Converted to Settlements | Land-Use Change & Forestry |  |  |
| 5-WL | 7 | Wetlands | Land-Use Change & Forestry |  |  |
| 5-WL-1 | 7 | Wetlands Remaining Wetlands | Land-Use Change & Forestry |  |  |
| 5-WL-2 | 7 | Land Converted to Wetlands | Land-Use Change & Forestry |  |  |
| 5A | 7 | Changes in Forest and Other Woody Biomass Stocks | Land-Use Change & Forestry | Changes in Forest and Other Woody Biomass Stocks |  |
| 5A1 | 7 | Tropical Forests | Land-Use Change & Forestry | Changes in Forest and Other Woody Biomass Stocks | Tropical Forests |
| 5A1a | 7 | Wet/very moist | Land-Use Change & Forestry | Changes in Forest and Other Woody Biomass Stocks | Tropical Forests |
| 5A1b | 7 | Moist, short dry season | Land-Use Change & Forestry | Changes in Forest and Other Woody Biomass Stocks | Tropical Forests |
| 5A1c | 7 | Moist, long dry season | Land-Use Change & Forestry | Changes in Forest and Other Woody Biomass Stocks | Tropical Forests |
| 5A1d | 7 | Dry | Land-Use Change & Forestry | Changes in Forest and Other Woody Biomass Stocks | Tropical Forests |
| 5A1e | 7 | Mountain moist | Land-Use Change & Forestry | Changes in Forest and Other Woody Biomass Stocks | Tropical Forests |
| 5A1f | 7 | Mountain dry | Land-Use Change & Forestry | Changes in Forest and Other Woody Biomass Stocks | Tropical Forests |
| 5A1g | 7 | Plantations | Land-Use Change & Forestry | Changes in Forest and Other Woody Biomass Stocks | Tropical Forests |
| 5A1h | 7 | Other (please specify) | Land-Use Change & Forestry | Changes in Forest and Other Woody Biomass Stocks | Tropical Forests |
| 5A2 | 7 | Temperate Forests | Land-Use Change & Forestry | Changes in Forest and Other Woody Biomass Stocks | Temperate Forests |
| 5A2a | 7 | Coniferous | Land-Use Change & Forestry | Changes in Forest and Other Woody Biomass Stocks | Temperate Forests |
| 5A2b | 7 | Broadleaf | Land-Use Change & Forestry | Changes in Forest and Other Woody Biomass Stocks | Temperate Forests |
| 5A2c | 7 | Plantations | Land-Use Change & Forestry | Changes in Forest and Other Woody Biomass Stocks | Temperate Forests |
| 5A2d | 7 | Other (please specify) | Land-Use Change & Forestry | Changes in Forest and Other Woody Biomass Stocks | Temperate Forests |
| 5A3 | 7 | Boreal Forests | Land-Use Change & Forestry | Changes in Forest and Other Woody Biomass Stocks | Boreal Forests |
| 5A3a | 7 | Mixed broadleaf/Coniferous | Land-Use Change & Forestry | Changes in Forest and Other Woody Biomass Stocks | Boreal Forests |
| 5A3b | 7 | Coniferous | Land-Use Change & Forestry | Changes in Forest and Other Woody Biomass Stocks | Boreal Forests |
| 5A3c | 7 | Forest tundra | Land-Use Change & Forestry | Changes in Forest and Other Woody Biomass Stocks | Boreal Forests |
| 5A4 | 7 | Grasslands/Tundra | Land-Use Change & Forestry | Changes in Forest and Other Woody Biomass Stocks | Grasslands/Tundra |
| 5A5 | 7 | Other (please specify) | Land-Use Change & Forestry | Changes in Forest and Other Woody Biomass Stocks | Other (please specify) |
| 5B | 7 | Forest and Grassland Conversion | Land-Use Change & Forestry | Forest and Grassland Conversion |  |
| 5B1 | 7 | Tropical Forests | Land-Use Change & Forestry | Forest and Grassland Conversion | Tropical Forests |
| 5B1a | 7 | Wet/very moist | Land-Use Change & Forestry | Forest and Grassland Conversion | Tropical Forests |
| 5B1b | 7 | Moist, short dry season | Land-Use Change & Forestry | Forest and Grassland Conversion | Tropical Forests |
| 5B1c | 7 | Moist, long dry season | Land-Use Change & Forestry | Forest and Grassland Conversion | Tropical Forests |
| 5B1d | 7 | Dry | Land-Use Change & Forestry | Forest and Grassland Conversion | Tropical Forests |
| 5B1e | 7 | Mountain moist | Land-Use Change & Forestry | Forest and Grassland Conversion | Tropical Forests |
| 5B1f | 7 | Mountain dry | Land-Use Change & Forestry | Forest and Grassland Conversion | Tropical Forests |
| 5B1g | 7 | Plantations | Land-Use Change & Forestry | Forest and Grassland Conversion | Tropical Forests |
| 5B1h | 7 | Other (please specify) | Land-Use Change & Forestry | Forest and Grassland Conversion | Tropical Forests |
| 5B2 | 7 | Temperate Forests | Land-Use Change & Forestry | Forest and Grassland Conversion | Temperate Forests |
| 5B2a | 7 | Coniferous | Land-Use Change & Forestry | Forest and Grassland Conversion | Temperate Forests |
| 5B2b | 7 | Broadleaf | Land-Use Change & Forestry | Forest and Grassland Conversion | Temperate Forests |
| 5B2c | 7 | Plantations | Land-Use Change & Forestry | Forest and Grassland Conversion | Temperate Forests |
| 5B2d | 7 | Other (please specify) | Land-Use Change & Forestry | Forest and Grassland Conversion | Temperate Forests |
| 5B3 | 7 | Boreal Forests | Land-Use Change & Forestry | Forest and Grassland Conversion | Boreal Forests |
| 5B3a | 7 | Mixed broadleaf/Coniferous | Land-Use Change & Forestry | Forest and Grassland Conversion | Boreal Forests |
| 5B3b | 7 | Coniferous | Land-Use Change & Forestry | Forest and Grassland Conversion | Boreal Forests |
| 5B3c | 7 | Forest tundra | Land-Use Change & Forestry | Forest and Grassland Conversion | Boreal Forests |
| 5B4 | 7 | Grasslands/Tundra | Land-Use Change & Forestry | Forest and Grassland Conversion | Grasslands/Tundra |
| 5B5 | 7 | Other (please specify) | Land-Use Change & Forestry | Forest and Grassland Conversion | Other (please specify) |
| 5C | 7 | Abandonment of Managed Lands | Land-Use Change & Forestry | Abandonment of Managed Lands |  |
| 5C1 | 7 | Tropical Forests | Land-Use Change & Forestry | Abandonment of Managed Lands | Tropical Forests |
| 5C2 | 7 | Temperate Forests | Land-Use Change & Forestry | Abandonment of Managed Lands | Temperate Forests |
| 5C3 | 7 | Boreal Forests | Land-Use Change & Forestry | Abandonment of Managed Lands | Boreal Forests |
| 5C4 | 7 | Grasslands/Tundra | Land-Use Change & Forestry | Abandonment of Managed Lands | Grasslands/Tundra |
| 5C5 | 7 | Other (please specify) | Land-Use Change & Forestry | Abandonment of Managed Lands | Other (please specify) |
| 5D | 7 | CO2 Emissions and Removals from Soil | Land-Use Change & Forestry | CO2 Emissions and Removals from Soil |  |
| 5E | 7 | Other (please specify) | Land-Use Change & Forestry | Other (please specify) |  |
| 5F2 | 7 | Forest Fires-Post burn decay | Land-Use Change & Forestry |  | Forest Fires-Post burn decay |
| 7B5 | 7 | Indirect N2O from NOx emitted in cat. 5 | Other (please specify) |  | Indirect N2O from NOx emitted in cat. 5 |
| 7C5 | 7 | Indirect N2O from NH3 emitted in cat. 5 | Other (please specify) |  | Indirect N2O from NH3 emitted in cat. 5 |
| 1A4a | 9 | Commercial and public services (fos.) | Energy | Fuel Combustion Activities | Other Sectors |
| 1A4ax | 9 | Commercial and public services (biom.) | Energy | Fuel Combustion Activities | Other Sectors |
| 1A4b | 9 | Residential (fos.) | Energy | Fuel Combustion Activities | Other Sectors |
| 1A4bx | 9 | Residential (biom.) | Energy | Fuel Combustion Activities | Other Sectors |
| 2F1a2 | 9 | Refrigeration and Air Conditioning Equipment (HFC) (Building) | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride | Refrigeration and Air Conditioning Equipment |
| 2F3 | 9 | Fire Extinguishers | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride | Fire Extinguishers |
| 2F4 | 9 | Aerosols | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride | Aerosols |
| 2F9a | 9 | Adiabatic prop.: shoes and others | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride | F-gas/ODP consumption |
| 2F9c | 9 | Soundproof windows | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride | F-gas/ODP consumption |
| 7B4 | 9 | Indirect N2O from NOx emitted in cat. 1A4 | Other (please specify) |  | Indirect N2O from NOx emitted in cat. 1A4 |
| 7C4 | 9 | Indirect N2O from NH3 emitted in cat. 1A4 | Other (please specify) |  | Indirect N2O from NH3 emitted in cat. 1A4 |
| 1A3 | 10 | Transport | Energy | Fuel Combustion Activities | Transport |
| 1A3a | 10 | Domestic air transport | Energy | Fuel Combustion Activities | Transport |
| 1A3a1 | 10 | International Aviation | Energy | Fuel Combustion Activities | Transport |
| 1A3a2 | 10 | Domestic | Energy | Fuel Combustion Activities | Transport |
| 1A3b | 10 | Road transport (incl. evap.) (foss.) | Energy | Fuel Combustion Activities | Transport |
| 1A3b1 | 10 | Cars | Energy | Fuel Combustion Activities | Transport |
| 1A3b2 | 10 | Light Duty Trucks | Energy | Fuel Combustion Activities | Transport |
| 1A3b3 | 10 | Heavy Duty Trucks and Buses | Energy | Fuel Combustion Activities | Transport |
| 1A3b4 | 10 | Motorcycles | Energy | Fuel Combustion Activities | Transport |
| 1A3b5 | 10 | Evaporative Emissions from Vehicles | Energy | Fuel Combustion Activities | Transport |
| 1A3bx | 10 | Road transport (incl. evap.) (biom.) | Energy | Fuel Combustion Activities | Transport |
| 1A3c | 10 | Non-road transport (rail, etc.) (fos.) | Energy | Fuel Combustion Activities | Transport |
| 1A3cx | 10 | Non-road transport (rail, etc.)(biom.) | Energy | Fuel Combustion Activities | Transport |
| 1A3d | 10 | Inland shipping (fos.) | Energy | Fuel Combustion Activities | Transport |
| 1A3d1 | 10 | International Marine (Bunkers) | Energy | Fuel Combustion Activities | Transport |
| 1A3d2 | 10 | National Navigation | Energy | Fuel Combustion Activities | Transport |
| 1A3dx | 10 | Inland shipping (biom.) | Energy | Fuel Combustion Activities | Transport |
| 1A3e | 10 | Non-road transport (fos.) | Energy | Fuel Combustion Activities | Transport |
| 1A3e1 | 10 | Pipeline Transport | Energy | Fuel Combustion Activities | Transport |
| 1A3e2 | 10 | Off-road | Energy | Fuel Combustion Activities | Transport |
| 1A3er | 10 | Non-specified transport | Energy | Fuel Combustion Activities | Transport |
| 1A3ex | 10 | Non-road transport (biom.) | Energy | Fuel Combustion Activities | Transport |
| 1C1 | 10 | International air transport | Energy |  | International air transport |
| 1C2 | 10 | International marine transport (bunkers) | Energy |  | International marine transport (bunkers) |
| 1C2x | 10 | International marine transport (biom.) | Energy |  | International marine transport (bunkers) |
| 2F1a1 | 10 | Refrigeration and Air Conditioning Equipment (HFC) (Transport) | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride | Refrigeration and Air Conditioning Equipment |
| 2F9b | 10 | Adiabatic prop.: tyres | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride | F-gas/ODP consumption |
| 7B3 | 10 | Indirect N2O from NOx emitted in cat. 1A3 | Other (please specify) |  | Indirect N2O from NOx emitted in cat. 1A3 |
| 7C3 | 10 | Indirect N2O from NH3 emitted in cat. 1A3 | Other (please specify) |  | Indirect N2O from NH3 emitted in cat. 1A3 |
| 1A1c | 11 | Manufacture of Solid Fuels and Other Energy Industries | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1c1 | 11 | Fuel combustion coke ovens | Energy | Fuel Combustion Activities | Energy Industries |
| 1A1c2 | 11 | Blast furnaces (pig iron prod.) | Energy | Fuel Combustion Activities | Energy Industries |
| 1A2 | 11 | Manufacturing Industries and Construction (ISIC) | Energy | Fuel Combustion Activities | Manufacturing Industries and Construction (ISIC) |
| 1A2a | 11 | Iron and steel | Energy | Fuel Combustion Activities | Manufacturing Industries and Construction (ISIC) |
| 1A2ax | 11 | Iron and steel (biomass) | Energy | Fuel Combustion Activities | Manufacturing Industries and Construction (ISIC) |
| 1A2b | 11 | Non-ferrous metals | Energy | Fuel Combustion Activities | Manufacturing Industries and Construction (ISIC) |
| 1A2bx | 11 | Non-ferrous metals (biomass) | Energy | Fuel Combustion Activities | Manufacturing Industries and Construction (ISIC) |
| 1A2c | 11 | Chemicals | Energy | Fuel Combustion Activities | Manufacturing Industries and Construction (ISIC) |
| 1A2cx | 11 | Chemicals (biomass) | Energy | Fuel Combustion Activities | Manufacturing Industries and Construction (ISIC) |
| 1A2d | 11 | Pulp and paper | Energy | Fuel Combustion Activities | Manufacturing Industries and Construction (ISIC) |
| 1A2dx | 11 | Pulp and paper (biomass) | Energy | Fuel Combustion Activities | Manufacturing Industries and Construction (ISIC) |
| 1A2e | 11 | Food and tobacco | Energy | Fuel Combustion Activities | Manufacturing Industries and Construction (ISIC) |
| 1A2ex | 11 | Food and tobacco (biomass) | Energy | Fuel Combustion Activities | Manufacturing Industries and Construction (ISIC) |
| 1A2f | 11 | Other industries (stationary) (fos.) | Energy | Fuel Combustion Activities | Manufacturing Industries and Construction (ISIC) |
| 1A2f1 | 11 | Off-road machinery: construction (diesel) | Energy | Fuel Combustion Activities | Manufacturing Industries and Construction (ISIC) |
| 1A2f2 | 11 | Off-road machinery: mining (diesel) | Energy | Fuel Combustion Activities | Manufacturing Industries and Construction (ISIC) |
| 1A2f3 | 11 | Machinery | Energy | Fuel Combustion Activities | Manufacturing Industries and Construction (ISIC) |
| 1A2f4 | 11 | Mining and quarrying | Energy | Fuel Combustion Activities | Manufacturing Industries and Construction (ISIC) |
| 1A2f5 | 11 | Wood and wood products | Energy | Fuel Combustion Activities | Manufacturing Industries and Construction (ISIC) |
| 1A2f6 | 11 | Construction | Energy | Fuel Combustion Activities | Manufacturing Industries and Construction (ISIC) |
| 1A2f7 | 11 | Textile and leather | Energy | Fuel Combustion Activities | Manufacturing Industries and Construction (ISIC) |
| 1A2f8 | 11 | Non-specified industry | Energy | Fuel Combustion Activities | Manufacturing Industries and Construction (ISIC) |
| 1A2fx | 11 | Other industries (stationary) (biom.) | Energy | Fuel Combustion Activities | Manufacturing Industries and Construction (ISIC) |
| 1B1b1 | 11 | Fuel transformation coke ovens | Energy | Fugitive Emissions from Fuels | Solid Fuels |
| 2A1 | 11 | Cement production | Industrial Processes | Mineral Products | Cement production |
| 2A2 | 11 | Lime production | Industrial Processes | Mineral Products | Lime production |
| 2A3 | 11 | Limestone and Dolomite Use | Industrial Processes | Mineral Products | Limestone and Dolomite Use |
| 2A4 | 11 | Soda Ash Production and Use | Industrial Processes | Mineral Products | Soda Ash Production and Use |
| 2A4a | 11 | Soda ash production | Industrial Processes | Mineral Products | Soda Ash Production and Use |
| 2A4b | 11 | Soda ash use | Industrial Processes | Mineral Products | Soda Ash Production and Use |
| 2A5 | 11 | Asphalt Roofing | Industrial Processes | Mineral Products | Asphalt Roofing |
| 2A6 | 11 | Road Paving with Asphalt | Industrial Processes | Mineral Products | Road Paving with Asphalt |
| 2A7 | 11 | Other (please specify) | Industrial Processes | Mineral Products | Other (please specify) |
| 2A7a | 11 | Glass production | Industrial Processes | Mineral Products | Other (please specify) |
| 2B | 11 | Chemical Industry | Industrial Processes | Chemical Industry |  |
| 2B1 | 11 | Ammonia Production | Industrial Processes | Chemical Industry | Ammonia Production |
| 2B1g | 11 | Ammonia production (gross CO2) | Industrial Processes | Chemical Industry | Ammonia Production |
| 2B1s | 11 | CO2-ammonia stored in urea | Industrial Processes | Chemical Industry | Ammonia Production |
| 2B2 | 11 | Nitric acid production | Industrial Processes | Chemical Industry | Nitric acid production |
| 2B3 | 11 | Adipic acid production | Industrial Processes | Chemical Industry | Adipic acid production |
| 2B4 | 11 | Carbide Production | Industrial Processes | Chemical Industry | Carbide Production |
| 2B4a | 11 | Silicon carbide production | Industrial Processes | Chemical Industry | Carbide Production |
| 2B4b | 11 | Calcium carbide production | Industrial Processes | Chemical Industry | Carbide Production |
| 2B5 | 11 | Other (please specify) | Industrial Processes | Chemical Industry | Other (please specify) |
| 2B5a | 11 | Carbon black production | Industrial Processes | Chemical Industry | Other (please specify) |
| 2B5b | 11 | Ethylene production | Industrial Processes | Chemical Industry | Other (please specify) |
| 2B5d | 11 | Styrene production | Industrial Processes | Chemical Industry | Other (please specify) |
| 2B5e | 11 | Methanol production | Industrial Processes | Chemical Industry | Other (please specify) |
| 2B5f | 11 | Caprolactam production | Industrial Processes | Chemical Industry | Other (please specify) |
| 2B5g | 11 | Other bulk chemicals production | Industrial Processes | Chemical Industry | Other (please specify) |
| 2B5g1 | 11 | Urea production | Industrial Processes | Chemical Industry | Other (please specify) |
| 2B5g2 | 11 | Vinyl chloride production | Industrial Processes | Chemical Industry | Other (please specify) |
| 2B5h1 | 11 | Glyoxal production | Industrial Processes | Chemical Industry | Other (please specify) |
| 2C | 11 | Metal Production | Industrial Processes | Metal Production |  |
| 2C1 | 11 | Iron and Steel Production | Industrial Processes | Metal Production | Iron and Steel Production |
| 2C1a | 11 | Crude steel production total | Industrial Processes | Metal Production | Iron and Steel Production |
| 2C1b | 11 | Blast furnaces | Industrial Processes | Metal Production | Iron and Steel Production |
| 2C2 | 11 | Ferroy Alloy production | Industrial Processes | Metal Production | Ferroy Alloy production |
| 2C3 | 11 | Aluminium Production | Industrial Processes | Metal Production | Aluminium Production |
| 2C3a | 11 | Aluminium production (primary) | Industrial Processes | Metal Production | Aluminium Production |
| 2C3b | 11 | Aluminium production (secondary) | Industrial Processes | Metal Production | Aluminium Production |
| 2C4 | 11 | SF6 Used in Aluminium and Magnesium Foundries | Industrial Processes | Metal Production | SF6 Used in Aluminium and Magnesium Foundries |
| 2C4a | 11 | Magnesium foundries: SF6 use | Industrial Processes | Metal Production | SF6 Used in Aluminium and Magnesium Foundries |
| 2C4b | 11 | Aluminium foundries: SF6 use | Industrial Processes | Metal Production | SF6 Used in Aluminium and Magnesium Foundries |
| 2C5 | 11 | Other (please specify) | Industrial Processes | Metal Production | Other (please specify) |
| 2C5lp | 11 | Lead production (primary) | Industrial Processes | Metal Production | Other (please specify) |
| 2C5mp | 11 | Magnesium production (primary) | Industrial Processes | Metal Production | Other (please specify) |
| 2C5zp | 11 | Zinc production (primary) | Industrial Processes | Metal Production | Other (please specify) |
| 2Cr | 11 | Non-ferrous metals production | Industrial Processes | Metal Production | Non-ferrous metals production |
| 2D | 11 | Other Production | Industrial Processes | Other Production |  |
| 2D1 | 11 | Pulp and Paper | Industrial Processes | Other Production | Pulp and Paper |
| 2D2 | 11 | Food and Drink | Industrial Processes | Other Production | Food and Drink |
| 2E | 11 | Production of Halocarbons and Sulphur Hexafluoride | Industrial Processes | Production of Halocarbons and Sulphur Hexafluoride |  |
| 2E1 | 11 | Production of halocarbons | Industrial Processes | Production of Halocarbons and Sulphur Hexafluoride | Production of halocarbons |
| 2E2 | 11 | Fugitive Emissions | Industrial Processes | Production of Halocarbons and Sulphur Hexafluoride | Fugitive Emissions |
| 2E3 | 11 | Other (please specify) | Industrial Processes | Production of Halocarbons and Sulphur Hexafluoride | Other (please specify) |
| 2F | 11 | Consumption of Halocarbons and Sulphur Hexafluoride | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride |  |
| 2F1 | 11 | Refrigeration and Air Conditioning Equipment | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride | Refrigeration and Air Conditioning Equipment |
| 2F1a | 11 | Refrigeration and Air Conditioning | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride | Refrigeration and Air Conditioning Equipment |
| 2F1b | 11 | Refrigeration and Air Conditioning Equipment (PFC) | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride | Refrigeration and Air Conditioning Equipment |
| 2F2 | 11 | Foam Blowing | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride | Foam Blowing |
| 2F5 | 11 | F-gas as Solvent | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride | F-gas as Solvent |
| 2F6 | 11 | Other (please specify) | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride | Other (please specify) |
| 2F7a | 11 | Semiconductor Manufacture | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride |  |
| 2F7b | 11 | Flat Panel Display (FPD) Manufacture | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride |  |
| 2F7c | 11 | Photo Voltaic (PV) Cell Manufacture | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride |  |
| 2F8a | 11 | Electrical Equipment Manufacture | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride |  |
| 2F9 | 11 | F-gas/ODP consumption | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride | F-gas/ODP consumption |
| 2F9d | 11 | Accelerators/HEP | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride | F-gas/ODP consumption |
| 2F9e | 11 | Misc. (AWACS, other military and misc.) | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride | F-gas/ODP consumption |
| 2F9f | 11 | Unknown SF6 use | Industrial Processes | Consumption of Halocarbons and Sulphur Hexafluoride | F-gas/ODP consumption |
| 2G | 11 | Other (please specify) | Industrial Processes | Other (please specify) |  |
| 2G1 | 11 | Non-energy use of lubricants/waxes (CO2) | Industrial Processes | Other (please specify) | Non-energy use of lubricants/waxes (CO2) |
| 3 | 11 | Solvent and Other Product Use | Solvent and Other Product Use |  |  |
| 3A | 11 | Solvents in paint | Solvent and Other Product Use | Solvents in paint |  |
| 3B | 11 | Degreasing and dry cleaning | Solvent and Other Product Use | Degreasing and dry cleaning |  |
| 3C | 11 | Chemical products | Solvent and Other Product Use | Chemical products |  |
| 3D | 11 | Other product use | Solvent and Other Product Use | Other product use |  |
| 3D1 | 11 | Use of N2O as anaesthesia | Solvent and Other Product Use | Other product use | Use of N2O as anaesthesia |
| 3D3 | 11 | Use of N2O in aerosol spray cans | Solvent and Other Product Use | Other product use | Use of N2O in aerosol spray cans |
| 6 | 11 | Waste | Waste |  |  |
| 6A | 11 | Solid Waste Disposal on Land | Waste | Solid Waste Disposal on Land |  |
| 6A1 | 11 | Managed waste disposal on land | Waste | Solid Waste Disposal on Land | Managed waste disposal on land |
| 6A2 | 11 | Unmanaged Waste Disposal Sites | Waste | Solid Waste Disposal on Land | Unmanaged Waste Disposal Sites |
| 6A3 | 11 | Other (please specify) | Waste | Solid Waste Disposal on Land | Other (please specify) |
| 6B | 11 | Wastewater Handling | Waste | Wastewater Handling |  |
| 6B1 | 11 | Industrial wastewater | Waste | Wastewater Handling | Industrial wastewater |
| 6B2 | 11 | Domestic and commercial wastewater | Waste | Wastewater Handling | Domestic and commercial wastewater |
| 6B3 | 11 | Other (please specify) | Waste | Wastewater Handling | Other (please specify) |
| 6C | 11 | Waste incineration - hazardous | Waste | Waste incineration - hazardous |  |
| 6Cax | 11 | Waste incineration - biogenic | Waste | Waste incineration - hazardous |  |
| 6Cb1 | 11 | Waste incineration - uncontrolled MSW burning | Waste | Waste incineration - hazardous |  |
| 6Cb2 | 11 | Waste incineration - other non-biogenic | Waste | Waste incineration - hazardous |  |
| 6D | 11 | Other waste | Waste | Other waste |  |
| 7 | 11 | Other (please specify) | Other (please specify) |  |  |
| 7B2 | 11 | Indirect N2O from NOx emitted in cat. 2-3 | Other (please specify) |  | Indirect N2O from NOx emitted in cat. 2-3 |
| 7C2 | 11 | Indirect N2O from NH3 emitted in cat. 2-3 | Other (please specify) |  | Indirect N2O from NH3 emitted in cat. 2-3 |
| 1 |  | Energy | Energy |  |  |
| 1A |  | Fuel Combustion Activities | Energy | Fuel Combustion Activities |  |
| 1A4 |  | Other Sectors | Energy | Fuel Combustion Activities | Other Sectors |
| 1A4c |  | Agriculture/Forestry/Fishing | Energy | Fuel Combustion Activities | Other Sectors |
| 1A5 |  | Other | Energy | Fuel Combustion Activities | Other |
| 1A5a |  | Stationary | Energy | Fuel Combustion Activities | Other |
| 1A5b |  | Mobile | Energy | Fuel Combustion Activities | Other |
| 1B |  | Fugitive Emissions from Fuels | Energy | Fugitive Emissions from Fuels |  |
| 1B1c |  | Other (please specify) | Energy | Fugitive Emissions from Fuels | Solid Fuels |
| 2 |  | Industrial Processes | Industrial Processes |  |  |
| 2A |  | Mineral Products | Industrial Processes | Mineral Products |  |
| 8A |  |  |  |  |  |

# Total sector trends & rates of change

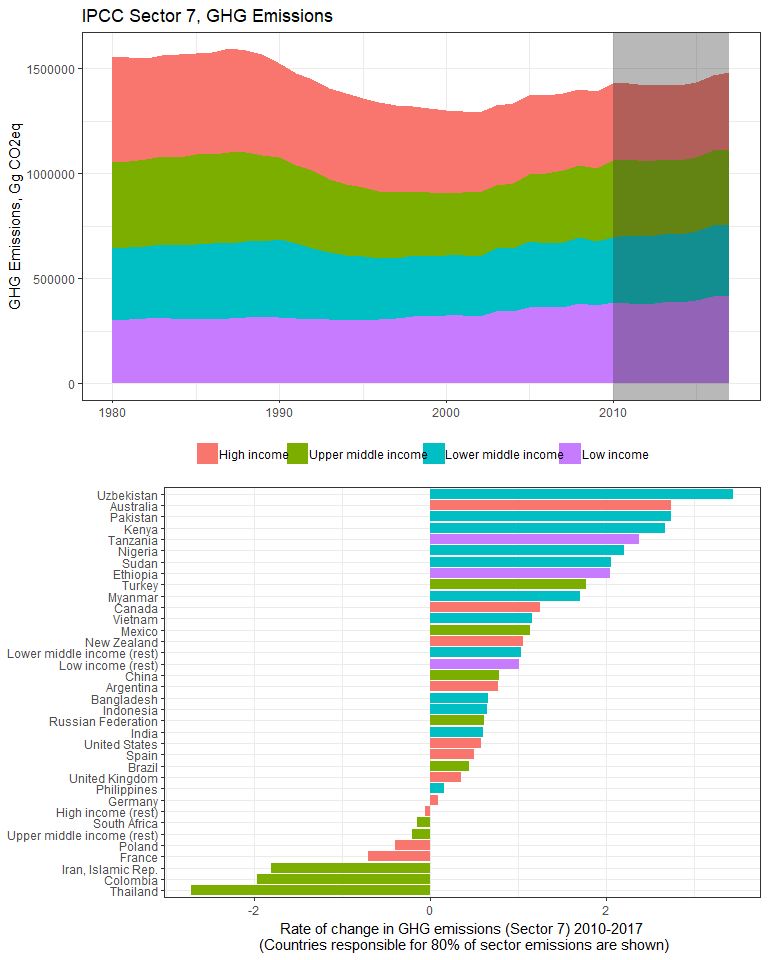


### Regional trends & rates of change by IPCC sector

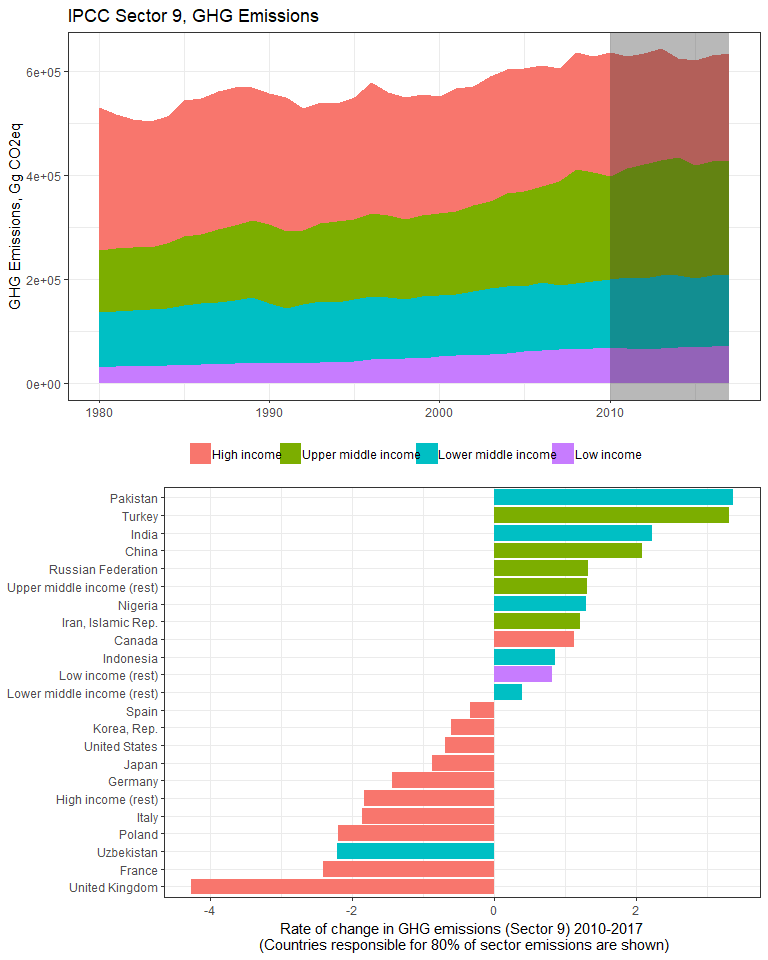
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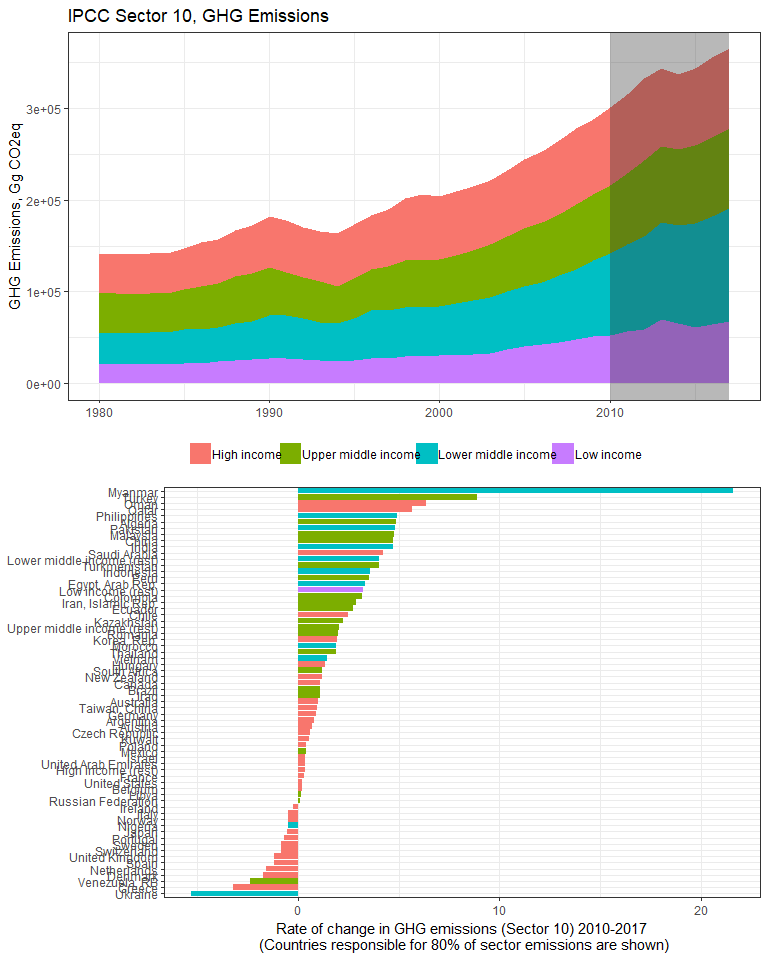
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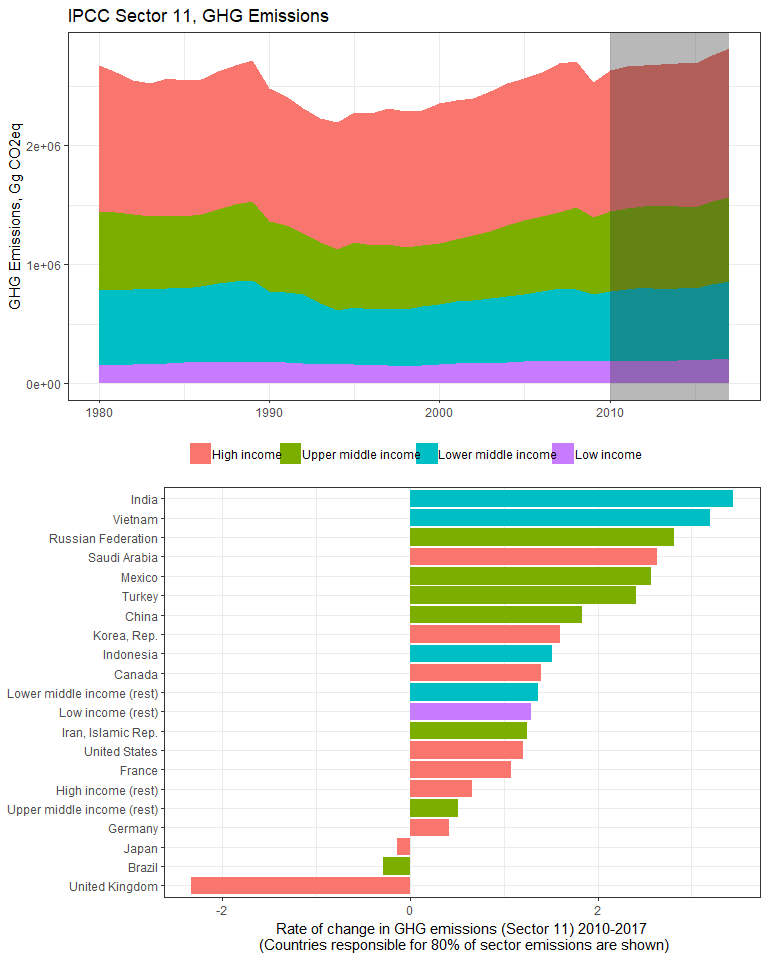
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## [[3]]



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## [[5]]



### Regional trends & absolute change by IPCC sector