

Main differences in greenhouse gas emissions between EDGAR 4.1 and version 4.0

National emissions

CO₂

The main changes in CO₂ emissions between EDGAR version 4.0 and 4.1 is in cement production (IPCC code 2A1). This is due to the introduction of explicit accounting for the share of blended cement in total cement production and thus for the fraction of cement clinker in total cement production per country. It has resulted in 17% reduction in global CO₂ emissions from cement production in 2005 (about 200 Tg). Another significant improvement is the removal of double counting in iron and steel production (2C) of about 2.1 Pg in 2005.

New sources included in version 4.1 are:

- other limestone use (2A), that accounts for 25 Tg CO₂ in 2005
- chemicals production (2B): ammonia, ethylene, vinyl chloride and carbon black that account for 350 Tg CO₂ in 2005
- other metal production (2C): aluminium, lead and zinc that account for 55 Tg CO₂ in 2005
- charcoal production (1B1b): CO₂ from fuelwood used in the transformation process that account for 650 Tg biogenic CO₂ in 2005.

Small differences between version 4.1 and version 4.0 are in the following source categories (IPCC source code in brackets) due to corrections of some emission factors for gasworks and other transformation sector (-40 Tg)(1A1c), road transport (+50 Tg)(1A3b), urea production (2B5g) (impact on CO₂ included in net emissions from ammonia production) and non-energy use of lubricants and waxes (+25 Tg)(2G). In addition, CO₂ from biofuel combustion in the residential sector decreased by 120 Tg.

CH₄

Large changes in sources of CH₄ emissions between EDGAR version 4.0 and 4.1 are found in landfills (6A), where adjustment were made of DOC fractions for Annex I countries to better reflect the overall trends, that now account to 26.1 and 27.7 Tg in 1990 and 2005 (22.8 and 28.7 Tg in version 4.0). Another large change was made in industrial wastewater (6B) for the USA and South Korea, for which corrections were made in erroneous activity data, resulting in global emission reductions increasing over time from about 1 Tg in 1992 to 5.5 Tg in 2005. Also, emissions from residential biofuel combustion decreased considerably, by 0.8 Tg in 2005.

New sources included in version 4.1 are:

- coke production (1B1b), that account to 0.6 Tg in 2005
- charcoal production (1B1b), that account to about 1.5 Tg in 2005
- abandoned mines (1B1a), that account to 0.3 Tg in 2005
- oil transport by tankers (1B2a), a small source that accounts to 20 Gg in 2005
- ethylene and carbon black production (2B5), small sources that account to 30 Gg in 2005.

Other, small differences between version 4.1 and version 4.0 are in fossil fuel combustion (1A) due to correction of emission factors, resulting in an increase in global emissions of about 0.5 Tg in 2005, in road transport (1A3b) of about 60 Gg in 2005 and in chemicals production (2B5).

N₂O

One main change in N₂O emissions between EDGAR version 4.0 and 4.1 is in post-burn emissions after forest fires, for which 2005 emissions decreased from 1.3 Tg to 0.325 Tg N₂O due to a correction of the emission factor. Another large change is addition as new

source of indirect N₂O emissions: atmospheric deposition of NO_x and NH₃ from non-agricultural sources, which account to a total of about 0.65 Tg in 2005 and N-fixing crops.

Thus, new sources included in version 4.1 are:

- N-fixing crops (4D13), that account for 270 Gg N₂O in 2005
- indirect N₂O emissions from atmospheric deposition of NO_x and NH₃ emissions from non-agricultural sources (7B and 7C): for NO_x mainly from stationary fuel combustion and road transport (480 Gg) and for NH₃ mainly from forest and savannah fires and field burning of agricultural waste (70 Gg).

Please note that contrary to the 2006 IPCC guidelines, N-fixing crops is a source of N₂O that is not included in other source categories and should therefore be accounted for separately, as was done and defined in the 1996 IPCC guidelines.

Small differences between version 4.1 and version 4.0 are in road transport (1A3b) and international air and marine transport, off-road machinery and public electricity production (1A1a) due to correction of emission factors.

F-gases HFCs, PFCs and SF₆

The only change in F-gas emissions is in SF₆ for which one new source has been added:

- SF₆ production and handling (2E), that accounts for about 0.37 Gg of SF₆ in 2005.

Gridded emissions

Most corrections are for [substance mostly affected between square brackets]:

- coke ovens (1B1), blast furnaces (2C), and other fuel combustion in crude steel production (1A2a) (using source-specific maps) [CO₂]
- gas works, where gas is made from coal (1B1) (urban population) [CO₂]
- inland shipping (1A3x) and fisheries (1A4x) (total population and international shipping, respectively) [CO₂]
- landfills (6A) [CH₄] and SF₆ from GIS equipment (2F) (total population for industrialised countries and urban population for developing countries)
- F-gas consumption of specific categories (2F) [PFCs, SF₆] (urban population)

New source-specific maps used in EDGAR 4.1 are for:

- coke production (for which the map of crude steel producers using BOF or OHF processes was used) (1B1) [CO₂]
- HCFC-22 production (2E) [HFC-23]
- semiconductor manufacture locations (includes semiconductors for Flat Panel Displays and PV solar cells) (2F) [PFCs, SF₆]
- SF₆ production (2E) [SF₆]

A few corrections were made for:

- industrial wastewater (6B) [CH₄] and other waste (6C) (urban population)
- leaching and run-off (4D) [N₂O] (cropland)
- some biofuels in the residential and commercial sectors (1A4) (total population)
- natural gas in the residential and commercial sectors (1A4) [CO₂] (urban population)