European Commission

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# Fossil $CO_2$ & GHG emissions of all world countries

Janssens-Maenhout, G., Crippa, M., Guizzardi, D., Muntean, M., Schaaf, E., Olivier, J.G.J., Peters, J.A.H.W., Schure, K.M.

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**Fossil $CO_2$ & GHG emissions of all world countries**
The Paris Agreement plans global stocktakes, to which the UNFCCC GHG emission inventories are the primary input. To complete this picture, the Emissions Database for Global Atmospheric Research provides for all world countries emission timeseries from 1970 until 2016 for $CO_2$ and until 2012 for the other GHGs.

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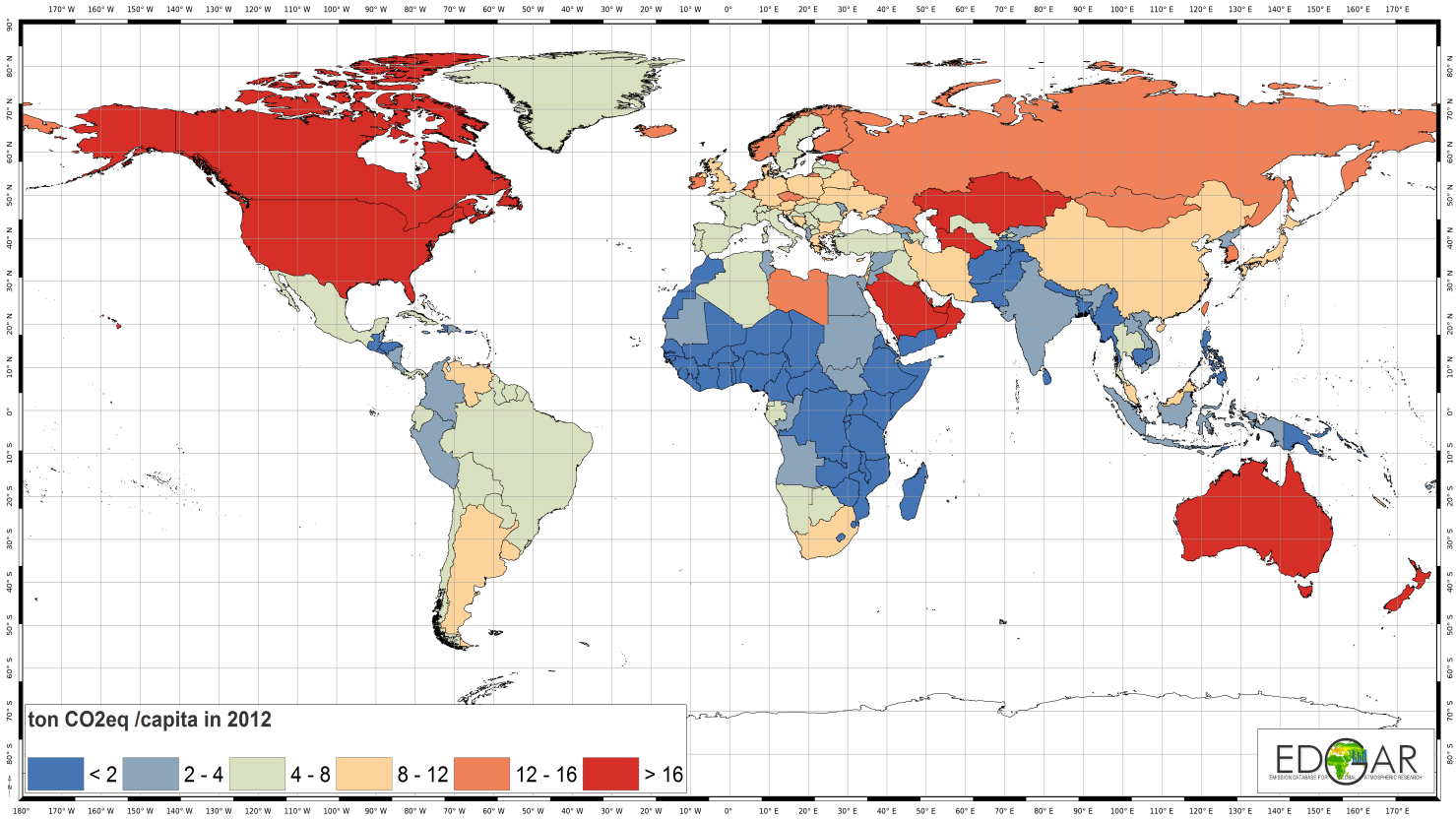


EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

Joint Research Centre

# $CO_2$ and GHG emissions of all world countries

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## Acknowledgement

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## Executive summary

### Policy context

Part of the Paris Agreement is the implementation of a transparency framework to be implemented bottom-up based on the national GHG emission inventories of all Parties reported to the UNFCCC. In addition, 5-yearly global stocktakes are planned from 2023 onwards to monitor emission trends and the efforts of the individual Parties. Reported inventories however neither cover the entire globe, nor the entire time period. The Commission's in-house Emissions Database for Global Atmospheric Research (EDGAR) estimates anthropogenic greenhouse gas emissions for all world countries thereby contributing to enhanced transparency and completing the global picture with time series for each country from 1970 to 2016 for $CO_2$ and until 2012 for the other GHGs. These data provide scientific estimates of GHG emissions for the different Parties and support the role of the European Commission in the climate negotiations at the 23rd Conference of Parties.

### Key conclusions

EDGARv4.3.2 is a comprehensive database of anthropogenic emission time series from 1970 until 2016 for $CO_2$ and until 2012 for the other GHGs. All human activities, except large-scale biomass burning and land use, land-use change and forestry are included and the IPCC sectoral classification is used. A consistent bottom-up emissions calculation methodology is applied to all countries, which allows the inventories of different countries to be compared with the same level of detail and data limitations. For developing countries with less strong statistical data infrastructure and experience in reporting, EDGARv4.3.2 can provide information and help to comply with their future inventory requirements. As such EDGARv4.3.2 can complete the emission trends for all countries and contribute to the comprehensive picture needed for the UNFCCC's global stock take of 2023.

The global GHG emissions trend has increased since the beginning of the 21st century in comparison to the three previous decades, mainly driven by the increase in $CO_2$ emissions from China and the other emerging economies. By comparison, the GHG emissions trend in the EU28 is decreasing due to rather stable $CO_2$ emissions and a smooth continuous reduction in $CH_4$ emissions. Even though the overall uncertainty of global emissions has increased because of the increasing share of GHG emissions from emerging economies, for Europe the uncertainty has decreased because of progress in inventory compilation and the reduction in more uncertain $CH_4$ emissions.

The dataset for $CO_2$ was extended until 2016, based on recent energy and product statistics (EDGARv4.3.2_FT2016). This dataset shows that global anthropogenic $CO_2$ emissions are effectively constant for the third year in a row plateauing at 35.8 Gton $CO_2$ in 2016. The 0.3% increase in 2016 from 2015 can be entirely attributed to the extra day as 2016 was a leap year. While $CO_2$ emissions from the US fell by 2.0% in 2016 compared to 2015, there was little change in emissions from China with -0.3% and the EU28 with +0.2%. The EU28 emissions have fallen over the past two decades reaching 3.4 Gton $CO_2$ in 2016, a reduction of 20.8% compared to 1990. Since 2015 the EU share of the global total has remained constant at 9.6% equivalent to 6.8 ton $CO_2$/cap/yr.

**Main findings**

In 2016, China, US, EU28, India, Russia and Japan, the world's largest emitters in decreasing order of $CO_2$ emissions, accounted for 51% of the population, 65% of global Gross Domestic Product, 67% of the total primary energy supply and emitted 68% of total global $CO_2$ and circa 65% of total global GHGs. Emissions from international transport (aviation and shipping) contribute another 3% to the total global GHG emissions.

These six countries show different trends: with 2% decreases for US and Russia, a 1% decrease for Japan, constant emissions for China and EU28 and a 5% increase for India. India does not show yet any decoupling of their emissions growth from their economic growth, unlike Brazil, where emissions fell by 6%.

Emissions are increasing in other developing countries: 6% for Indonesia and Malaysia; 9% for Pakistan and 12% for the Philippines. Also in Eurasia emissions grew in Turkey (5%) and Ukraine (8%).

Within the EU28 the trends vary between countries with decreases of 6% for the UK and Bulgaria and of 3% for Greece and Spain, while increases of 5% in Ireland and Denmark and of 4% in Sweden and Finland occurred.

**Related and future JRC work**

This $CO_2$/GHG booklet provides the background data behind the $CO_2$ reports, which have been published annually by the Netherlands Environmental Assessment Agency and the European Commission Joint Research Centre. The $CO_2$ report series started in 2009 and provide up-to-date knowledge on the trend of global $CO_2$ emissions.

**Quick guide**

The GHG emissions presented for all world countries include the emissions of $CO_2$, $CH_4$ and $N_2O$ of all anthropogenic sectors, excluding large-scale biomass burning and the land use, land-use change and forestry sectors. These emissions were calculated bottom-up using international statistics for the activity data (such as fuel consumption or crops) and IPCC (2006) values for the emission factors. While the uncertainty in $CO_2$ emissions is generally low (below 10%), the uncertainty in $CH_4$ and $N_2O$ emissions is much larger. Moreover, while statistical data until 2016 are available for all major $CO_2$ sources, no global agriculture statistics are available yet beyond 2014 and this sector is an important source of $CH_4$ and $N_2O$.

# Introduction

## Scope

In December 2015, the Paris Agreement brought all nations into a common cause to undertake ambitious efforts to combat climate change and required all Parties to put forward their best efforts through "nationally determined contributions". Acknowledging the need to ensure environmental integrity it creates a transparency framework and plans 5-yearly global stock takes from 2023 onwards. The Emissions Database for Global Atmospheric Research (EDGAR) database is a unique geographically resolved global database that estimates global emissions of $CO_2$ and other greenhouse gases. As such it can contribute to the efforts to increase transparency. This report gives an overview of the country level emissions of $CO_2$, $CH_4$ and $N_2O$, the three major greenhouse gases (GHG), estimated by EDGAR. While information on energy-related activities is produced annually (including 2016), comparable updates are not available for agricultural activities. As such, the report provides $CO_2$ emission estimates until 2016, while the overall greenhouse gas time series are provided until 2012.

The framework and experience in compiling emissions inventories is shared and compared within the international emissions community of the Global Emissions Initiative (GEIA). In addition, EDGAR supports the IPCC Task Force on National Greenhouse Gas Inventories, compiling and refining guidelines for national GHG emission inventories. Moreover, EDGAR reaches out to developing regions with training support and knowledge databases to visualise emission hot spots.

## Overview

For each country, ordered alphabetically, this publication provides a fact sheet with time series of $CO_2$ and other GHG emissions from all anthropogenic activities except land use, land-use change, forestry and large scale biomass burning. The upper panel includes the fossil $CO_2$ annual totals from 1990 until 2016 per sector, and the bottom panel shows the GHG annual totals from 1970 until 2012 per substance ($CO_2$, $CH_4$ and $N_2O$, neglecting F-gases). The first two fact sheets present the world totals (including international shipping and aviation) and the EU28 region, with all 28 European countries (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic (Czechia), Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom).

Key findings of the data trends are summarised in the first two sections on $CO_2$ and GHG, respectively. For a more comprehensive description of the $CO_2$ trends we refer to the annual update of the companion publication "Trends in Global $CO_2$ and GHG Emissions – 2017 Report" by Olivier et al. (2017).

At the end of the report, details on the bottom-up methodology applied for the EDGAR emissions compilation is reported together with the data sources and references used. Finally, concluding remarks are also provided. Country-specific $CO_2$ and other GHG emission timeseries can be downloaded at the following website: http://edgar.jrc.ec.europa.eu/overview.php?v=$CO_2$andGHG1970-2016.

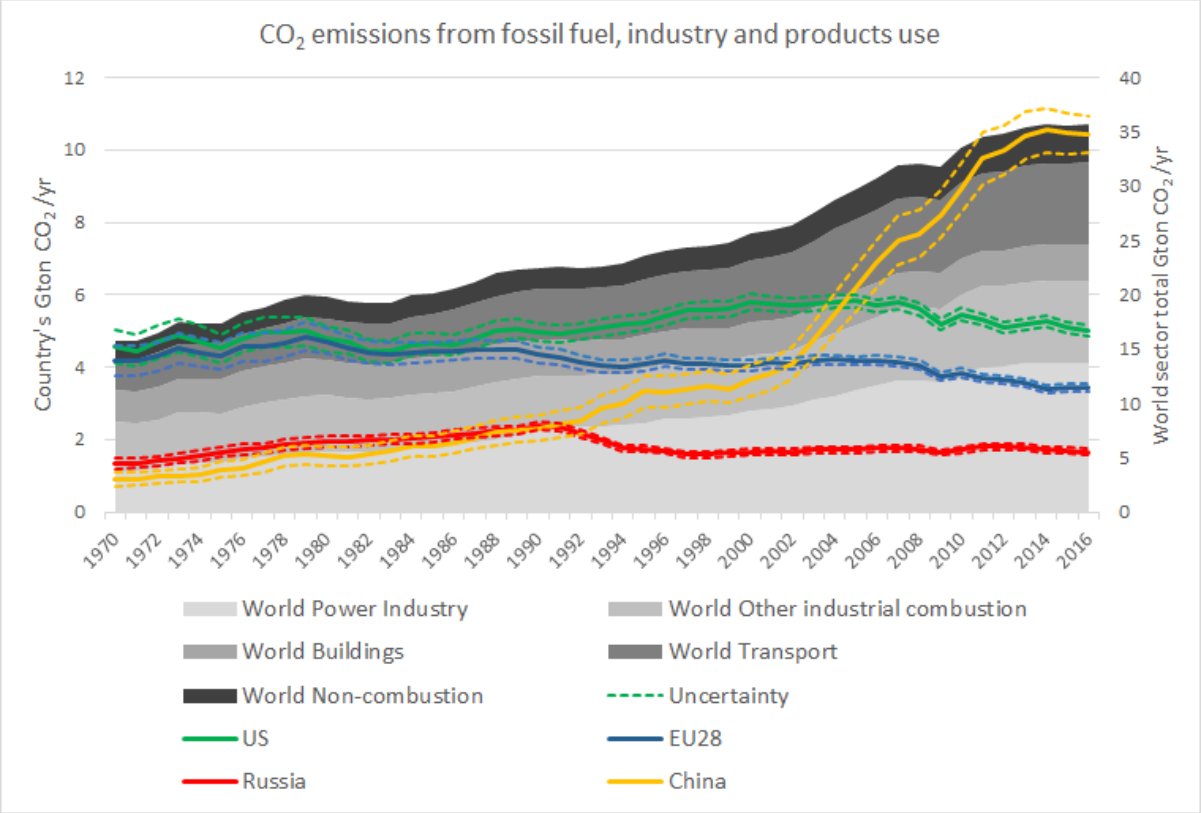
## EDGAR's Global Fossil $CO_2$ Emissions from 1990 until 2016

The Emissions Database for Global Atmospheric Research (EDGAR) supports policy making in the area of climate, energy and air pollution with independent in-house datasets on emissions of anthropogenic activities and has established a complete new inventory under the version EDGAR v4.3.2 for the period 1970-2012.

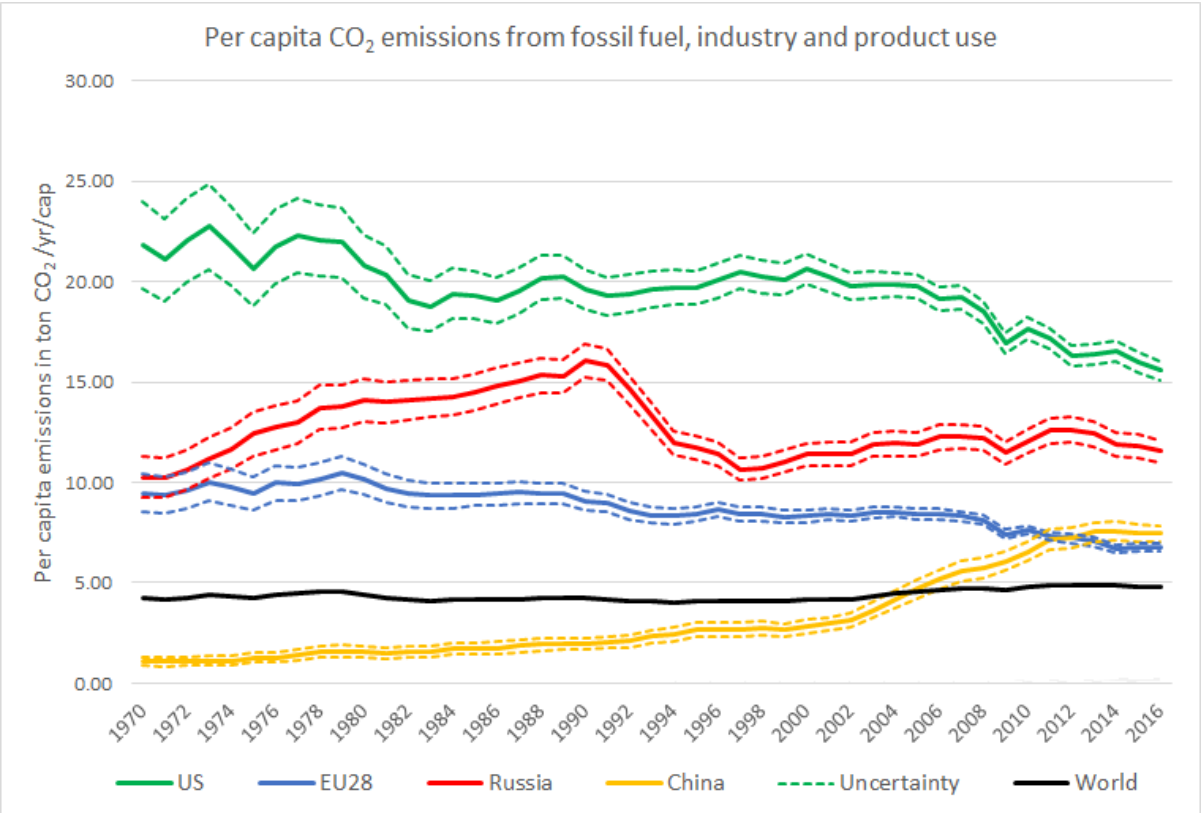
In addition, the Emissions Database for Global Atmospheric Research (latest version: EDGARv4.3.2_FT2016) is updated annually for fossil $CO_2$ emissions only. A so called Fast Track (FT) approach is used for the years 2013-2016 when official statistical data are not yet available. This FT update is based on the most recent activity data of various sources as well as information on energy reduction measures and policies, and then estimates the impact on fossil $CO_2$ emissions. As with the standard EDGARv4.3.2 version, the long term historic data is based on IEA (2014) energy statistics. The fossil $CO_2$ emissions include all anthropogenic emissions from fossil fuel (combustion and production) and from processes (cement, steel, liming, urea and ammonia production or consumption). Activity datasets used are based on a variety of latest statistical information from IEA, BP, USGS, WSA and IFA.

Time series of annual total fossil $CO_2$ emissions for each country are presented in this publication in the upper graph of each country fact sheet. Emissions for the major emitting countries and regions are briefly discussed, as well as the per capita and per GDP trends. For a more detailed description of our findings for the EU28 and the five largest emitting countries, we refer to the companion publication "Trends in Global $CO_2$ Emissions – 2017 Report". The uncertainty in fossil $CO_2$ emissions is relatively small (below 5% for industrialised countries and below 15% for developing countries).

**Global** $CO_2$ emissions are stalled for the third year in a row, plateauing with no further increase to a total of 35.8 Gton $CO_2$ in 2016. The 0.3% increase in 2016 compared to 2015 is due to the extra day in the leap year of 2016. $CO_2$ emissions in the US (with 14% share of global total) fell by 2%. There was a status quo in emissions with -0.3% and +0.2% change in 2016 compared to 2015 in China (29.2% share of global total) and Europe (9.6% share of global total), respectively. The largest decrease is seen for UK (1.0% share) with -6.4%, Brazil (1.3% share) with -6.1% and Bulgaria (0.1% share) with -6.0% while increases are observed for India (7.1% share of global total) with +4.7%, Indonesia (1.5% share) with +6.4%, Ukraine (0.7% share) with 8.0% and Malaysia (0.7% share) with 6.5%.




Total annual emissions of fossil $CO_2$ in Gton $CO_2$/yr. The fossil $CO_2$ emissions include sources from fossil fuel and industrial processes and product use (combustion, flaring, cement, iron and steel, chemicals and urea) for the EU28 and large emitting countries with uncertainty (in dashed line) (left axis) and for the world total per sector (right axis).




Per capita $CO_2$ emissions (in ton $CO_2$/cap/yr) for the EU28 and large emitting countries with uncertainty (in dashed line) and for the world average.

**EU28** emissions have decreased over the past two decades, such that emissions in 2016 are 20.8% less than in 1990 and 17.9% less than in 2005. Since 2015 the EU share of the global total has remained constant at 9.6%. In 2016 the EU28 emitted 3.4 Gton $CO_2$, corresponding to 6.8 ton $CO_2$/cap/yr. This was obtained by a reduction of the 1.1% increase in 2015 compared to 2014 down to a 0.2% in 2016 compared to 2015. The 0.2% increase in 2016 can be explained by it being a leap year, so effectively $CO_2$ emission rates for the EU28 have remained constant over the past 2 years within the uncertainties. The EDGARv4.3.2_FT2016 emission estimates agree with less than 3% difference to the EU-28 inventory submitted to UNFCCC and show 1% difference for the $CO_2$ trends compared to UNFCCC ones. However, in particular for the early 1990s, inventories for countries that were part of the Soviet Union or part of Yugoslavia before their breakup are reconstructed assuming representative shares for these countries with economies in transition and are subject to larger uncertainties. There is no increase in $CO_2$ emissions from fossil fuel combustion, whereas cement and lime production emissions increased by 6.4% in 2016, almost double the increase in 2015. Eurostat (May 2017) estimate that the $CO_2$ emissions from fossil fuel combustion in the EU decreased slightly by 0.4%. According to BP (2017) the almost constant $CO_2$ emissions from fossil fuel combustion in 2016 are the result of a 9% fall in coal consumption, a 0.5% increase in renewables and a 1.7% increase in hydro, offset by a 7.2 % increase in gas consumption, and a 1.8% increase in oil consumption. Economic growth at 1.9% continues to be decoupled from growth in emissions. At the end of 2016, Germany and Denmark were the world leaders in installed per capita capacity of Solar PV and wind respectively (REN21, 2017).

**China**'s $CO_2$ emissions have decreased since 2015 with a further 0.3% in 2016, which is similar to the decrease in 2015 after leap year correction. Equivalent per capita $CO_2$ emissions of 7.4 ton $CO_2$/cap/yr are similar to the European average while per GDP $CO_2$ emissions are 0.5 ton $CO_2$ /1000 USD /yr. This results mainly from the decrease in coal consumption, despite the increase in oil and gas consumption during the colder winter of 2016. Since 2012 the total primary energy supply (i.e. consumption) (TPES) in China has increased by 10%, while the Gross Domestic Product (GDP) on PPP basis grew by 31% in that period (about 7% per year). Power generation increased with 5.6% in 2016 but with an increased share of nuclear energy and renewables.

**US** $CO_2$ emissions peaked in 2005. They are 14% less in 2016 compared to 2005, whereas the population has increased by 12% over this period. Total $CO_2$ emissions of 5.0 Gton decreased by about 2.7% in 2015 and 2.0% in 2016, virtually all from fossil fuel combustion (BP, 2017). When correcting for the extra day in 2016, the rate of emission reduction in 2016 was very similar to that for 2015. The 97% share of total $CO_2$ emissions from fossil fuel combustion is the highest among the G20 countries. In 2016, the decrease in $CO_2$/GDP was 3.7%, slightly more than the 5-year average. The $CO_2$/capita has decreased by 2.7%. The continuing decline in $CO_2$ emissions is mostly due to substitution of coal by gas and renewables in power plants. The 2.0% $CO_2$ reduction in 2016 is almost entirely due to a 8.5% decline of coal use, partially offset by small rises (~1%) in gas and oil consumption (BP, 2017).

**India**'s $CO_2$ emissions continued to increase to 2.5 Gton $CO_2$ in 2016, 4.7% more than in 2015. This annual increase is a little below the average annual increase of 7.5% per year for the period 2006–2012. India's emissions already surpassed those of the Russian Federation in 2009 and with a share of 7.1% of total global $CO_2$ emissions, India is the next largest emitting country after China, the United States and the EU28. However, India's per capita emissions of 1.9 ton $CO_2$/cap/yr are more than four times lower than the average per capita emissions of China and the EU28, eight times lower than the average per capita emissions of the United States and lower even than average per capita emissions in many developing countries. India's emissions are not yet decoupled from GDP growth. The major contribution to India's growing emissions is the 5.7%/yr increase in Total Primary Energy Supply (TPES), 57% of which is supplied by coal. Annual coal consumption increased with 3.6% whereas annual oil consumption increased by 8.6% (with a 29.4 % share of TPES), according to BP (2017).

The **Russian Federation**'s $CO_2$ emissions decreased by 2.1% to about 1.66 Gton, the fourth year in a row since 2013 with average decreases of about 2%/yr. The 36 Mton of $CO_2$ saved, in 2016 is of the same order of magnitude as the 30 Mton decrease in Chinese emissions in 2016. Unlike China, this decrease seems related to the 0.2 % decrease in GDP in 2016 (World Bank, 2017). Russia's share of global $CO_2$ emissions fell to 4.7% in 2016, which is 0.5% lower than the share in 2011 (5.2%). The decrease in $CO_2$ emissions in 2016 was mainly due to a decrease in the consumption of coal by 5.3%, and natural gas by 3.0%; oil consumption increased by 2.6% instead (BP, 2017). The Russian Federation's per capita emissions of 11.5 ton $CO_2$/cap/yr are 36%, 38% and 17% higher than those of China, EU28 and Japan respectively and 35% lower than per capita emissions of the United States.

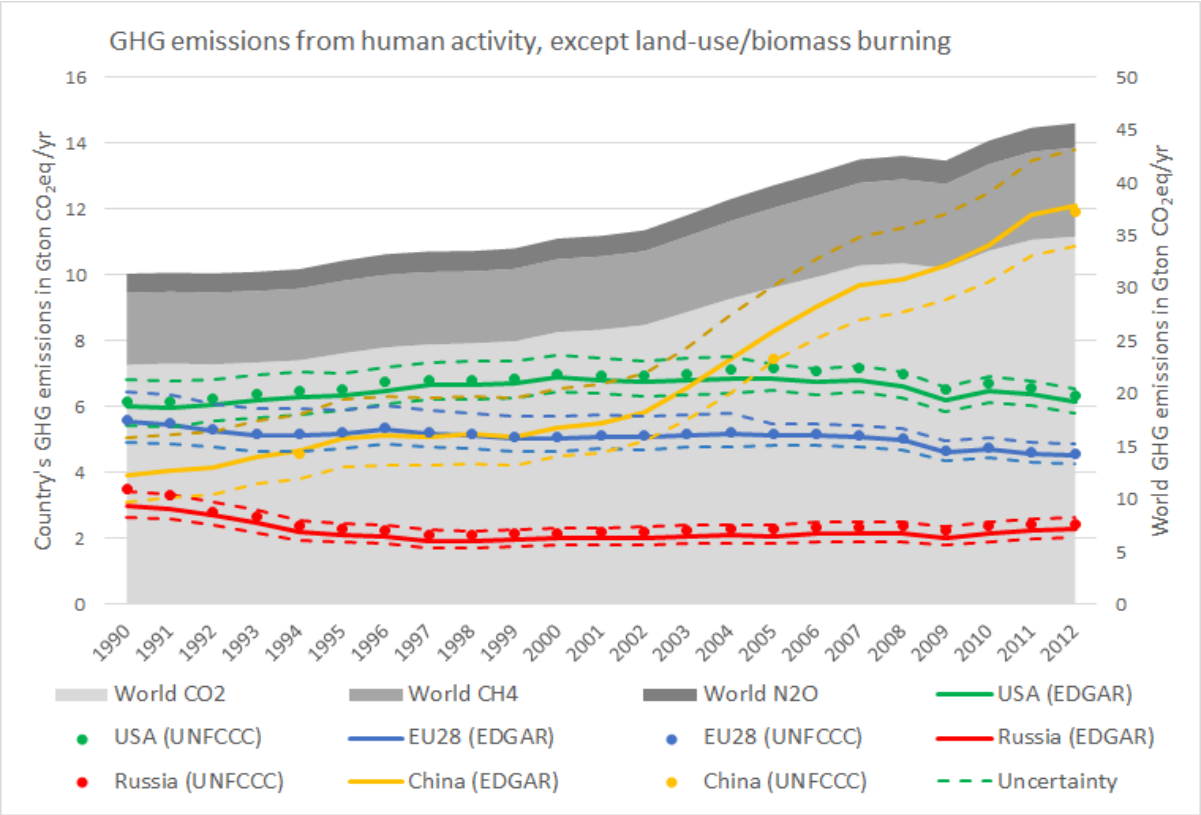
**Japan** further decreased its $CO_2$ emissions in 2016 by 1.2%, less than observed in 2015 (-2.2%), yielding a 3.5% share in global $CO_2$ emissions and a total of 1.2 Gton $CO_2$. Japan's per capita emissions of 9.7 ton $CO_2$/cap/yr are of the same order of magnitude as those of Germany (9.5) and the Netherlands (9.6) even though Japanese GDP, which increased by 1% in 2016, is about one third higher than that of Germany. This increase is small but positive and comparable to that of the year before (1.2%). 2016 is the third year in a row that GDP growth was combined with a fall in emissions giving signs of potential structural changes in the economy, decoupling economic growth from emissions growth. In 2016, the TPES was 0.1% less than in 2015; the shares in total TPES for oil decreased from 42.4% in 2015 to 41.4% in 2016 and for nuclear energy and renewables increased from 0.2% to 0.9% and from 3.3% to 4.2% respectively; oil consumption decreased by 2.5%/yr and coal consumption remained unchanged (BP, 2017).

## EDGAR's Global Greenhouse Gas Emissions for the Period 1970-2012

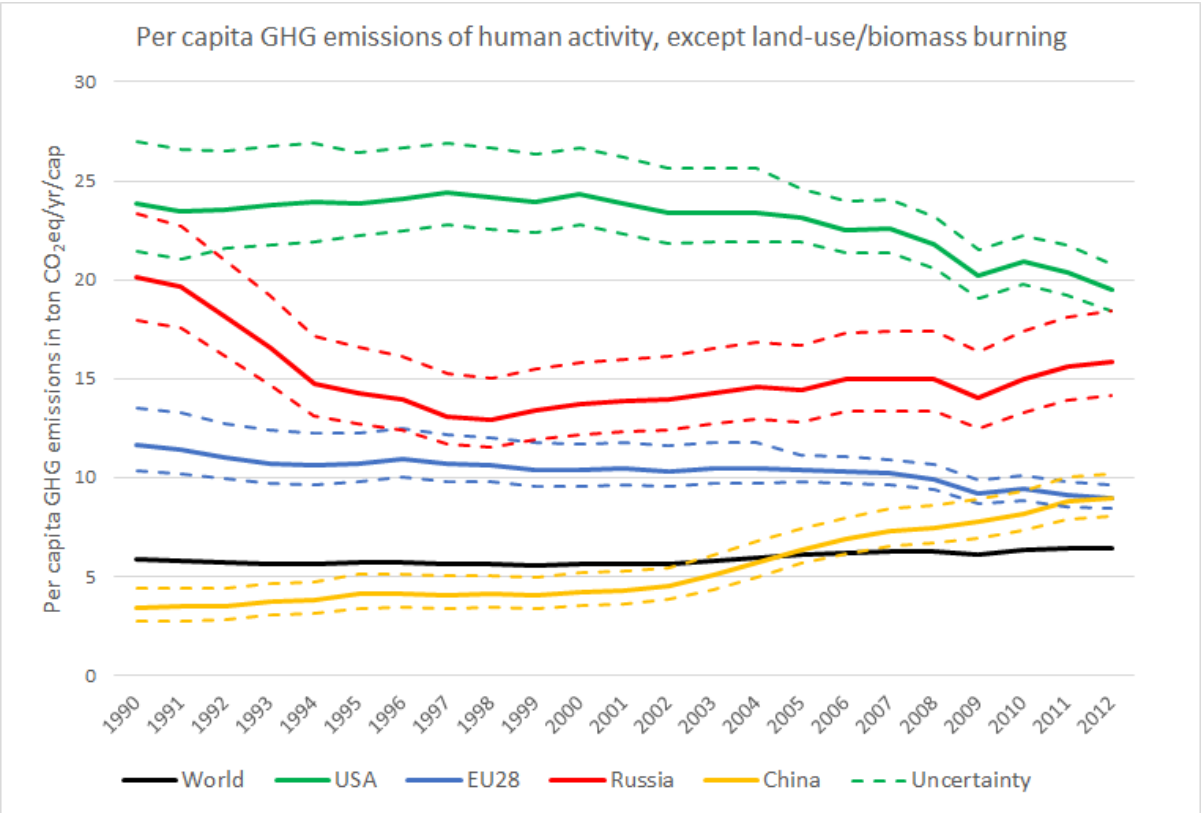
The EDGARv4.3.2 database is not only unique in its space and time coverage, but also in its completeness and consistency of the emissions compilations for multiple pollutants: the greenhouse gases (GHG), air pollutants and aerosols. The new version v4.3.2 of the EDGAR emission inventory provides global emission estimates for all anthropogenic activities except the land-use, land-use change and forestry sector (including Forest fires and Savannah burning). The dataset is available at disaggregated country and source-sector level, from 1970 until 2012, the end of the first commitment period of the Kyoto Protocol. We note the large uncertainty range around the estimates. The comparison with the UNFCCC values show that the emission estimates are within the uncertainty range, but also that the annual variation is much smaller than the uncertainty as such no recent trends are presented.

EDGARv4.3.2 estimates by region/country for the three major Greenhouse Gases ($CO_2$, $CH_4$ and $N_2O$, summed in $CO_2$ equivalent using the GWP-100 metric of AR4) and for the per capita GHG emissions are given in the lower figure of each fact sheet. GHG emissions for the major emitting countries and regions are briefly described, as well as the per capita and per GDP trends. For a more detailed description of our findings for the EU28 and the five largest emitting countries, we refer to the ESSD publication of Janssens-Maenhout et al. (2017).

**Global** GHG emissions are dominated by the fossil $CO_2$ share and increased steadily over the entire period 1970-2012 from 24.3 to 46.4 Gton $CO_2$eq/yr, with an overall increase in total GHG emissions of 91%. Per capita GHG emissions decreased in the 1980s and 1990s to a minimum of 5.7 ton $CO_2$eq/cap/yr but have increased by 13% from 2002 to 2012 to reach 6.5 ton $CO_2$eq/cap/yr. $CH_4$ and $N_2O$ emissions were 27% and 7% of the global total respectively in 1970 and decreased to 19% and 6% respectively by 2012. This corresponded to a shift in primarily the emerging economies from agricultural societies, with a large share of $N_2O$ and $CH_4$ emissions coming from agricultural activities to industrialised economies, with strongly increasing fossil $CO_2$ emissions in the energy and industrial sectors.




Total annual GHG emissions in Gton $CO_2$eq /yr from all anthropogenic activities, except land use, land-use change, forestry, forest fires and savannah burning for the EU28 and large emitting countries with uncertainty (in dashed line) (left axis) and for the world total per contributing gas ($CO_2$, $CH_4$ and $N_2O$) (right axis). The AR4 GWP coefficients of 25 and 298 have been used to calculate the $CO_2$eq for $CH_4$ and $N_2O$.




Per capita GHG emissions (in ton $CO_2$eq/cap/yr) for the EU28 and large emitting countries with uncertainty (in dashed line) and for the world average. Excluded are land-use, land-use change, forestry activities and forest fires and Savannah burning. AR4 GWP coefficients of 25 for $CH_4$ and 298 for $N_2O$ were applied.

**EU28** GHG emissions have decreased since the eighties and the 4577 Mton $CO_2$eq/yr GHG emissions in 2012 represent a reduction of 18% compared to 1990 and 16% compared to 1970. In the seventies, emissions were characterised by an increase of 12% over the entire decade, whereas in the eighties and nineties decreases of 8% respectively 9% were obtained. The decrease in emissions has slowed since 2000 with a reduction of 6% in 2010 compared to 2000. The EDGARv4.3.2 GHG emission trends differ by 2% from the reported UNFCCC trends for EU28. The EU28 GHG emissions are dominated by fossil $CO_2$ emissions which contribute for more than two thirds to the total GHGs (ranging from 77.1% to 82.5% over time). $CH_4$ contributes from 12% to 15.4% and it is mainly emitted by agricultural activities (enteric fermentation and manure management, representing 35.4% to 44.0% of $CH_4$ emissions), production of coal and gas (representing 18.4% to 28.5% of $CH_4$ emissions with the predominant share currently coming from gas production and distribution) and waste treatment and disposal (representing 28.8% to 36.8% of $CH_4$ emissions). The top six emitting countries of Europe generate more than 60% of $CH_4$ emissions and are Germany (in average 16.2%), UK (14.8%), Poland (13.4%), France (10.5%), Italy (7.0%) and Spain (5.4%). Overall $CH_4$ landfills emissions have decreased pattern from 1996 onwards; however, individual countries have behaved differently. With the exception of Spain and Portugal, most Western EU countries strongly reduced their $CH_4$ emissions from landfills over time, while stable or increasing emissions observed for Eastern EU countries (in particular for Romania, Slovakia, Hungary and Czech Republic). $CH_4$ fugitive emissions from coal and gas production also show a decreasing pattern, with most of the reduction associated with the production of coal in Poland, Romania, Germany and Great Britain, while increasing emissions are observed for several EU countries for the gas production sector. $N_2O$ emissions are 5.5% to 7.7% of the total greenhouse gas emissions and are produced mainly by agricultural soil activities (representing 32.1% to 47.3% of $N_2O$ emissions) and the production of chemicals (adipic and nitric acid, representing 13.4% to 41.6% of $N_2O$ emissions). More than 60% of $N_2O$ emissions are associated with 6 top emitting countries, namely Germany (on average 16.9%), France (16.1%), UK (11.9%), Poland (8.4%), Italy (7.6%), Spain (6.3%).

**China**'s GHG emissions increased almost 6 times in the last decades from 2063 Mton $CO_2$eq/yr in 1970 to 12102 Mton $CO_2$eq/yr in 2012. The shares in 1970, 1990 and 2012 of $CH_4$ in total $CO_2$eq emissions in China were 46.9%, 30.0% and 13.7%, whereas for $N_2O$ they were 6.7%, 8.1% and 4.3%, respectively. The shares of non-$CO_2$ GHG decreased considerably over time from 53.6% in 1970 to 38.1% in 1990 reaching 18% in 2012, which show the effects of industrial versus agriculture development on GHG emissions since 1970. With $N_2O$ and $CH_4$ added to the GHG emissions budget of China, we observe increases of 27.7% and 26.6% of per capita emissions and per GDP emissions respectively in 2012.

**US** GHG emission time series are dominated by fossil $CO_2$ emissions which contribute from 82.3% to 86.8% (peak in 2005) to total GHG emissions and represented 84.9% of total greenhouse gases in 2012. $CH_4$ is the second largest contributor to total greenhouse gases (from 8.9% to 12.4%) with more than 93% of US $CH_4$ emissions produced by agricultural activities (enteric fermentation and manure management) (range: 30.8%-37.5%), fugitive emissions from the production of oil, gas and coal (range: 31.6%-39.8%) and landfills (range: 19.8%-28.6%). $N_2O$ emissions represent from 4.3% to 5.5% of total GHG and they are emitted mainly from the agricultural soil sector and partly from the production of chemicals (adipic and nitric acid production).

**India**'s GHG emissions continuously increased and had values of 785, 1425 and 3166 Mton $CO_2$eq/yr in 1970, 1990 and 2012 respectively. The shares of $CH_4$ for these three years in total $CO_2$eq emissions in India were 60.9%, 43.3%, 25.7% whereas for $N_2O$ were 9.4%, 10.2% and 7.9% respectively. We note the shift from 70.3% share of non-$CO_2$ GHG to the total in 1970 to only 33.7% in 2012, due to the decreasing share of agricultural activities. Per capita emissions are 55.3% higher and per GDP emissions are 55.7% higher in 2012 when comparing the $CO_2$eq ($CO_2$+$CH_4$+$N_2O$) to the same numbers based on $CO_2$ alone.

The **Russian Federation**'s GHG emissions decreased by 23.4% from 1990-2012 after an increase of 66.3% from 1970 to 1990. This corresponds to a change in GHG emissions from 1791 Mton $CO_2$eq/yr in 1970 to 2978 Mton $CO_2$eq/yr in 1990, and reaching the level of 2281 Mton $CO_2$eq/yr in 2012. The shares of $CH_4$ for these three years in total $CO_2$eq emissions in Russia were 18.5%, 16.8% and 19.1%, whereas for $N_2O$ were 5.6%, 4.0% and 2.8%, respectively; over the last decade the shares of non-$CO_2$ GHG in the total were in the range 21-24%. Increases of 30.1% and 30.3% of per capita emissions and per GDP emissions respectively are seen when adding $N_2O$ and $CH_4$ to the $CO_2$ emissions to estimate the budget of the most important GHG emissions for Russia in 2012.

**Japan**'s GHG emissions slowly increased over the last decade; in 1970, 1990 and 2012 the levels of emissions were 1001, 1269 and 1369 Mton $CO_2$eq/yr, respectively. The shares of $CH_4$ for these three years in total $CO_2$eq emissions in Japan were 11.7%, 6.1% and 3.4%, whereas for $N_2O$ were 2.6%, 2.5% and 1.6%, respectively. In Japan, the shares of non-$CO_2$ GHG in the total are small; they decreased from 14.3% in 1970 to 5% in 2012. Adding up the $N_2O$ and $CH_4$ emissions to the $CO_2$ emissions resulted in a value 9.4% higher of per capita emissions and a value 8.3% higher of per GDP emissions in 2012.

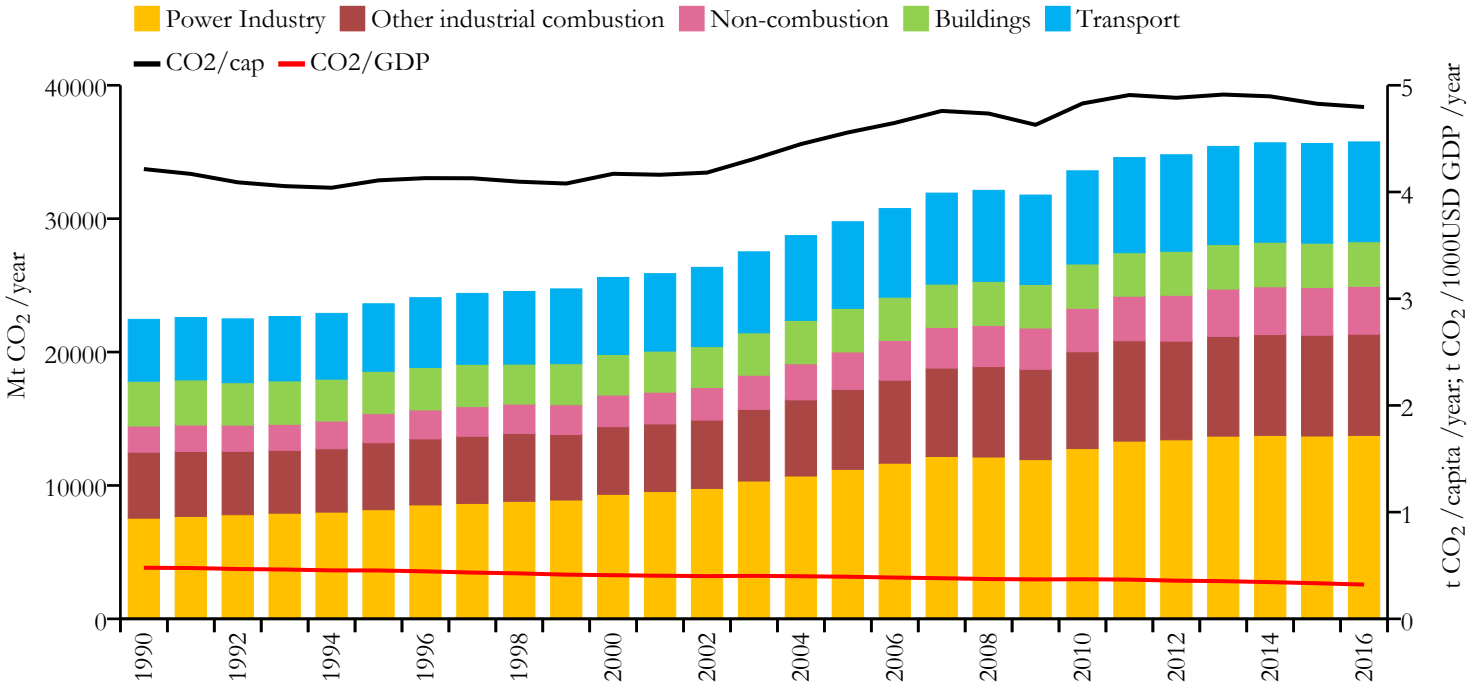
## Fossil $CO_2$ and GHG emissions for the world and the EU28

We present first the global totals for all countries, including international shipping and aviation, followed by the international transport sector (shipping and aviation).

Next, we present total EU28 emissions from the 28 Member States of the EU (2016): Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

# WORLD

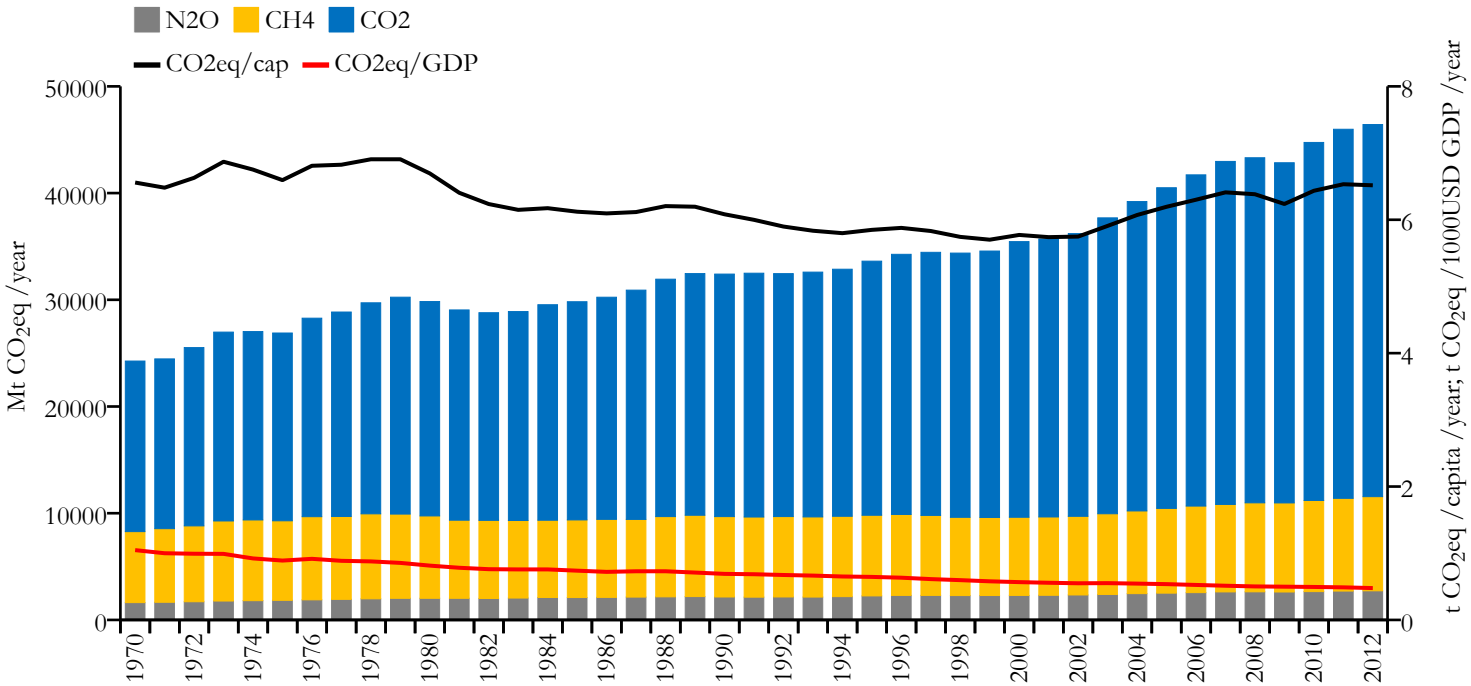
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 35753.306 | 4.796 | 0.321 | 7461900000 |
| 1990 | 22450.442 | 4.215 | 0.479 | 5328680000 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



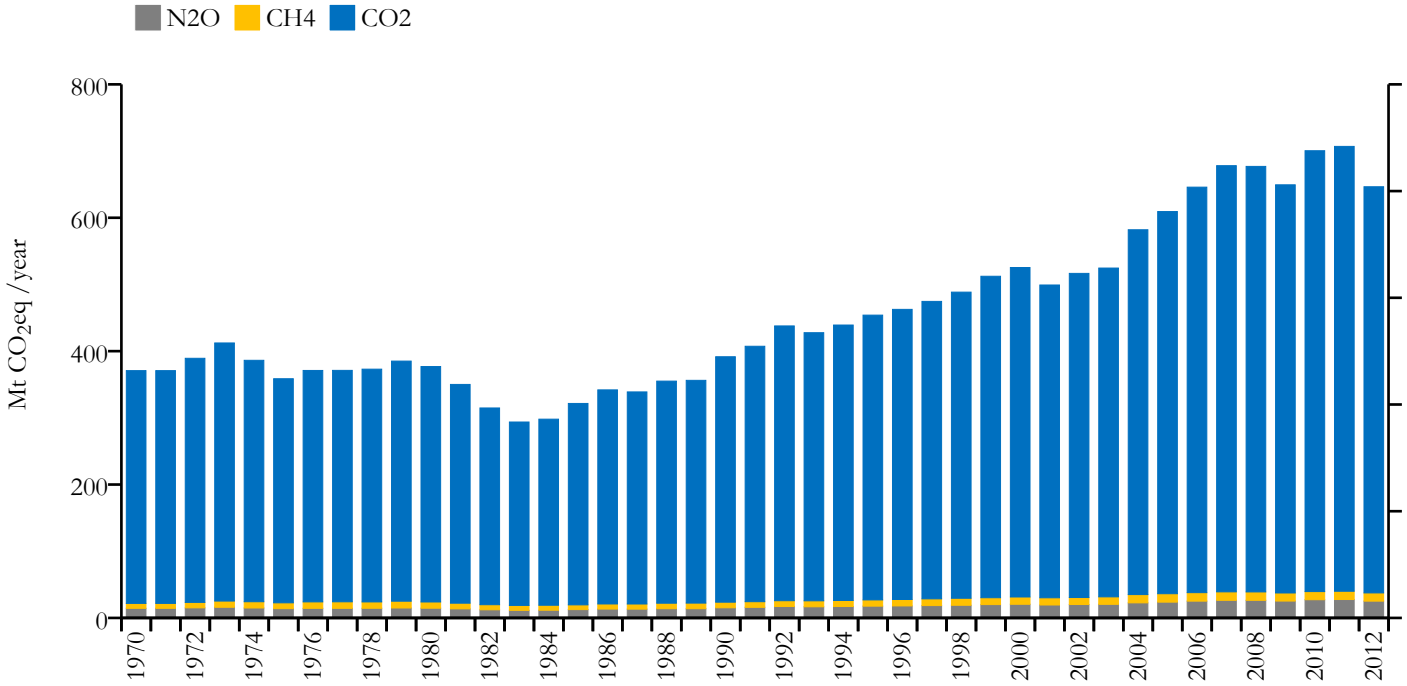
# International Shipping

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)


| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 656.369 | n/a | n/a | n/a |
| 1990 | 367.521 | n/a | n/a | n/a |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



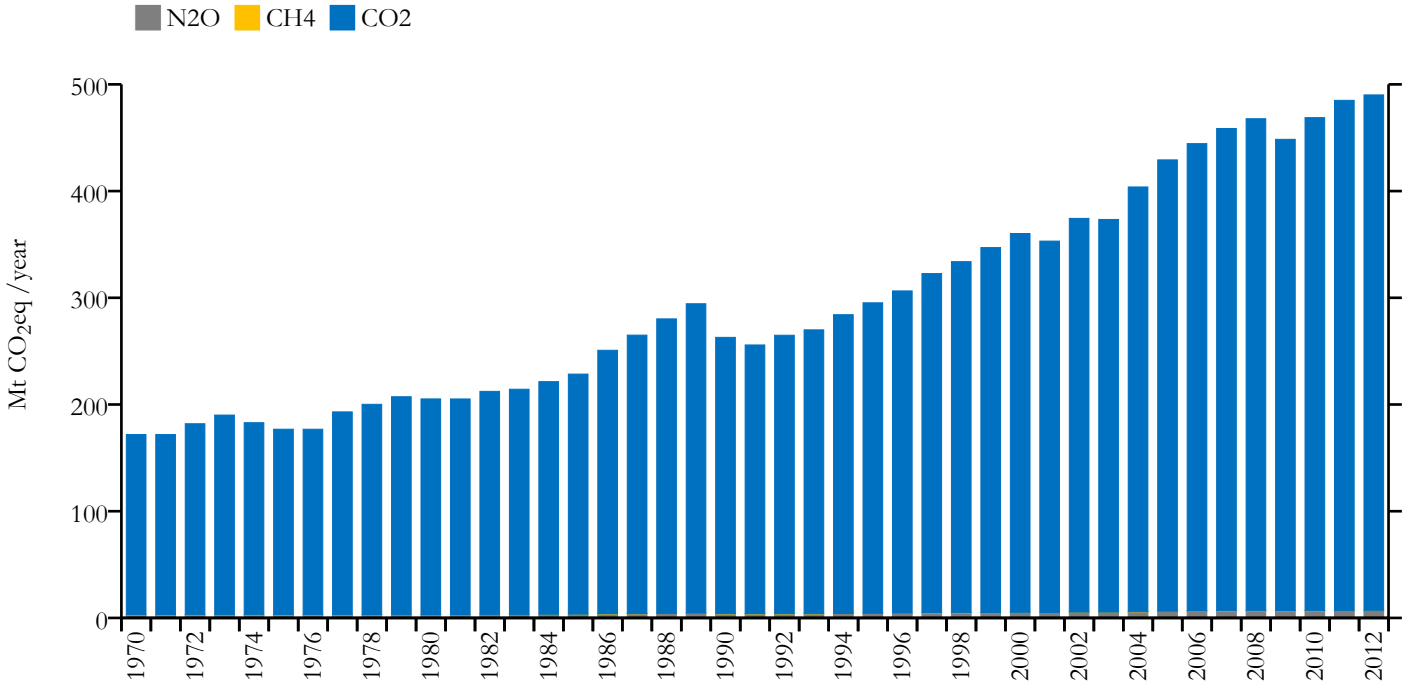
# International Aviation

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)


| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 523.454 | n/a | n/a | n/a |
| 1990 | 258.943 | n/a | n/a | n/a |

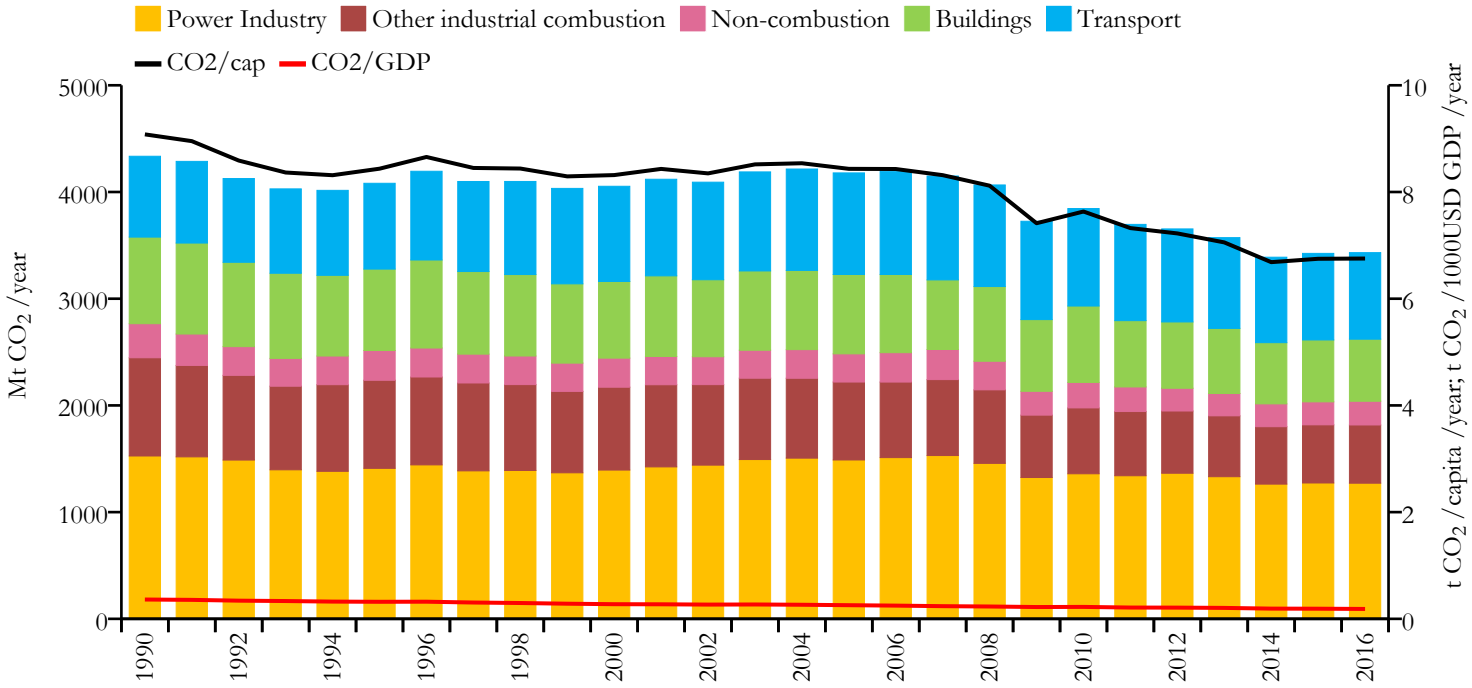
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# EU28

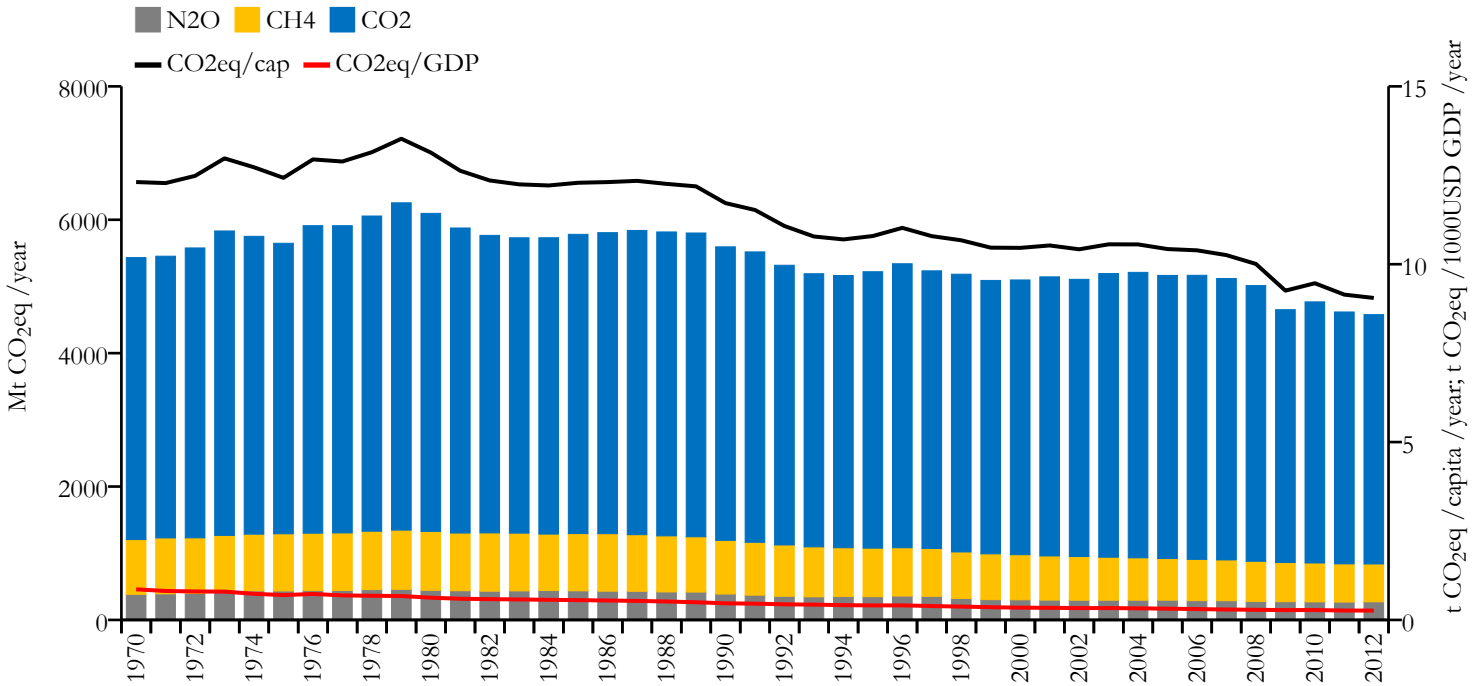
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 3431.656 | 6.753 | 0.185 | 508193000 |
| 1990 | 4334.975 | 9.080 | 0.362 | 477381000 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



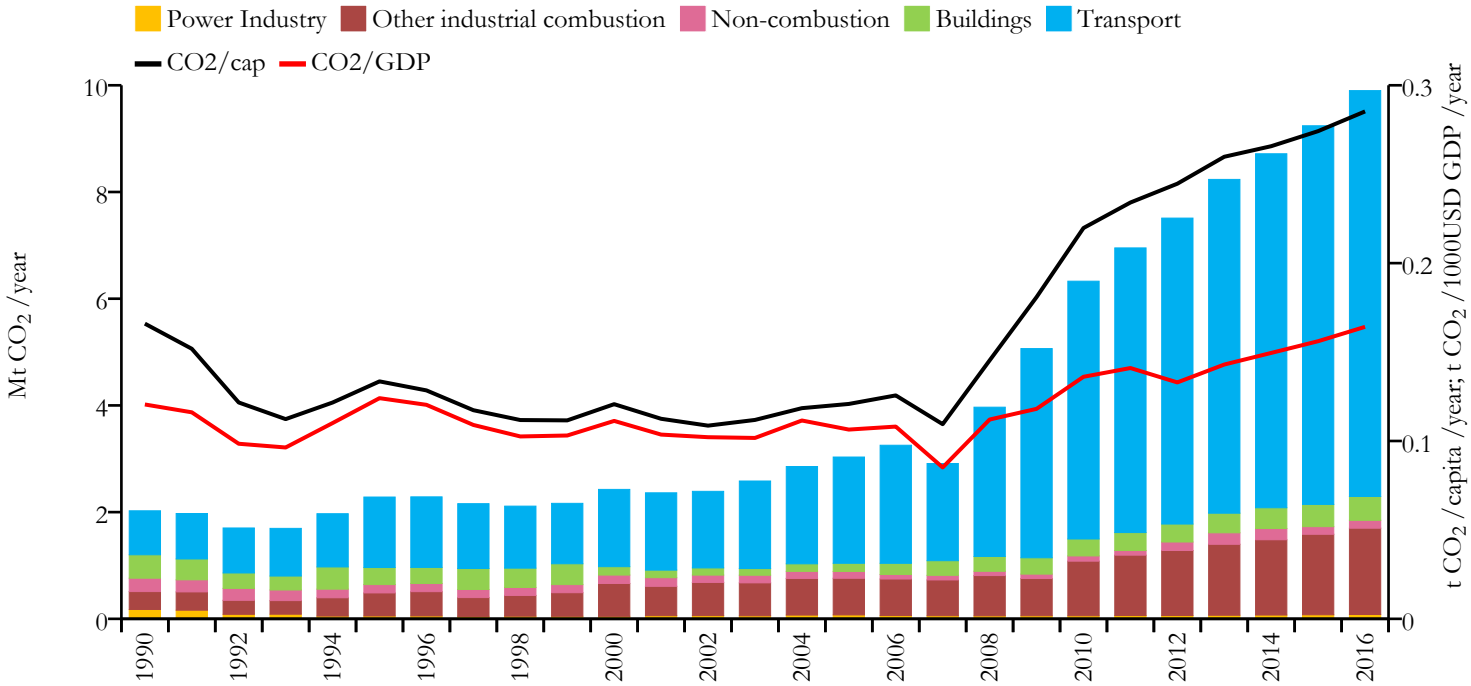
## Fossil $CO_2$ and GHG emissions by country

The following countries are presented:

Afghanistan; Albania; Algeria; Angola; Anguilla; Antigua and Barbuda; Argentina; Armenia; Aruba; Australia; Austria; Azerbaijan; Bahamas; Bahrain; Bangladesh; Barbados; Belarus; Belgium; Belize; Benin; Bermuda; Bhutan; Bolivia; Bosnia and Herzegovina; Botswana; Brazil; British Virgin Islands; Brunei; Bulgaria; Burkina Faso; Burundi; Cambodia; Cameroon; Canada; Cape Verde; Cayman Islands; Central African Republic; Chad; Chile; China; Colombia; Comoros; Congo; Cook Islands; Costa Rica; Côte d'Ivoire; Croatia; Cuba; Curaçao; Cyprus; Czech Republic; Democratic Republic of the Congo; Denmark; Djibouti; Dominica; Dominican Republic; Ecuador; Egypt; El Salvador; Equatorial Guinea; Eritrea; Estonia; Ethiopia; Falkland Islands; Faroes; Fiji; Finland; former Yugoslav Republic of Macedonia, the; France and Monaco; French Guiana; French Polynesia; Gabon; Georgia; Germany; Ghana; Gibraltar; Greece; Greenland; Grenada; Guadeloupe; Guatemala; Guinea; Guinea-Bissau; Guyana; Haiti; Honduras; Hong Kong; Hungary; Iceland; India; Indonesia; Iran; Iraq; Ireland; Israel and Palestine, State of; Italy, San Marino and the Holy See; Jamaica; Japan; Jordan; Kazakhstan; Kenya; Kiribati; Kuwait; Kyrgyzstan; Laos; Latvia; Lebanon; Lesotho; Liberia; Libya; Lithuania; Luxembourg; Macao; Madagascar; Malawi; Malaysia; Maldives; Mali; Malta; Martinique; Mauritania; Mauritius; Mexico; Moldova; Mongolia; Morocco; Mozambique; Myanmar/Burma; Namibia; Nepal; Netherlands; New Caledonia; New Zealand; Nicaragua; Niger; Nigeria; North Korea; Norway; Oman; Pakistan; Palau; Panama; Papua New Guinea; Paraguay; Peru; Philippines; Poland; Portugal; Puerto Rico; Qatar; Réunion; Romania; Russia; Rwanda; Saint Helena, Ascension and Tristan da Cunha; Saint Kitts and Nevis; Saint Lucia; Saint Pierre and Miquelon; Saint Vincent and the Grenadines; Samoa; São Tomé and Príncipe; Saudi Arabia; Senegal; Serbia and Montenegro; Seychelles; Sierra Leone; Singapore; Slovakia; Slovenia; Solomon Islands; Somalia; South Africa; South Korea; Spain and Andorra; Sri Lanka; Sudan and South Sudan; Suriname; Swaziland; Sweden; Switzerland and Liechtenstein; Syria; Taiwan; Tajikistan; Tanzania; Thailand; The Gambia; Timor-Leste; Togo; Tonga; Trinidad and Tobago; Tunisia; Turkey; Turkmenistan; Turks and Caicos Islands; Uganda; Ukraine; United Arab Emirates; United Kingdom; United States; Uruguay; Uzbekistan; Vanuatu; Venezuela; Vietnam; Western Sahara; Yemen; Zambia; Zimbabwe.

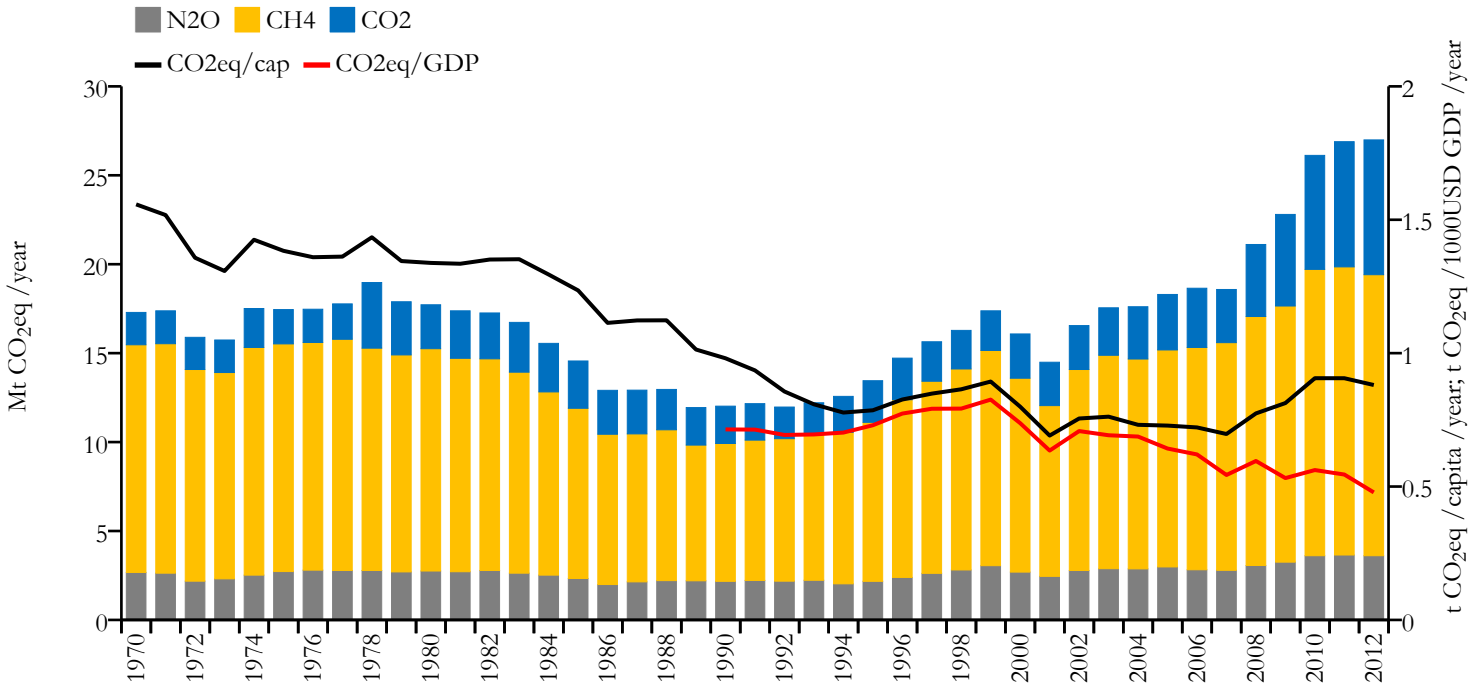
# Afghanistan

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



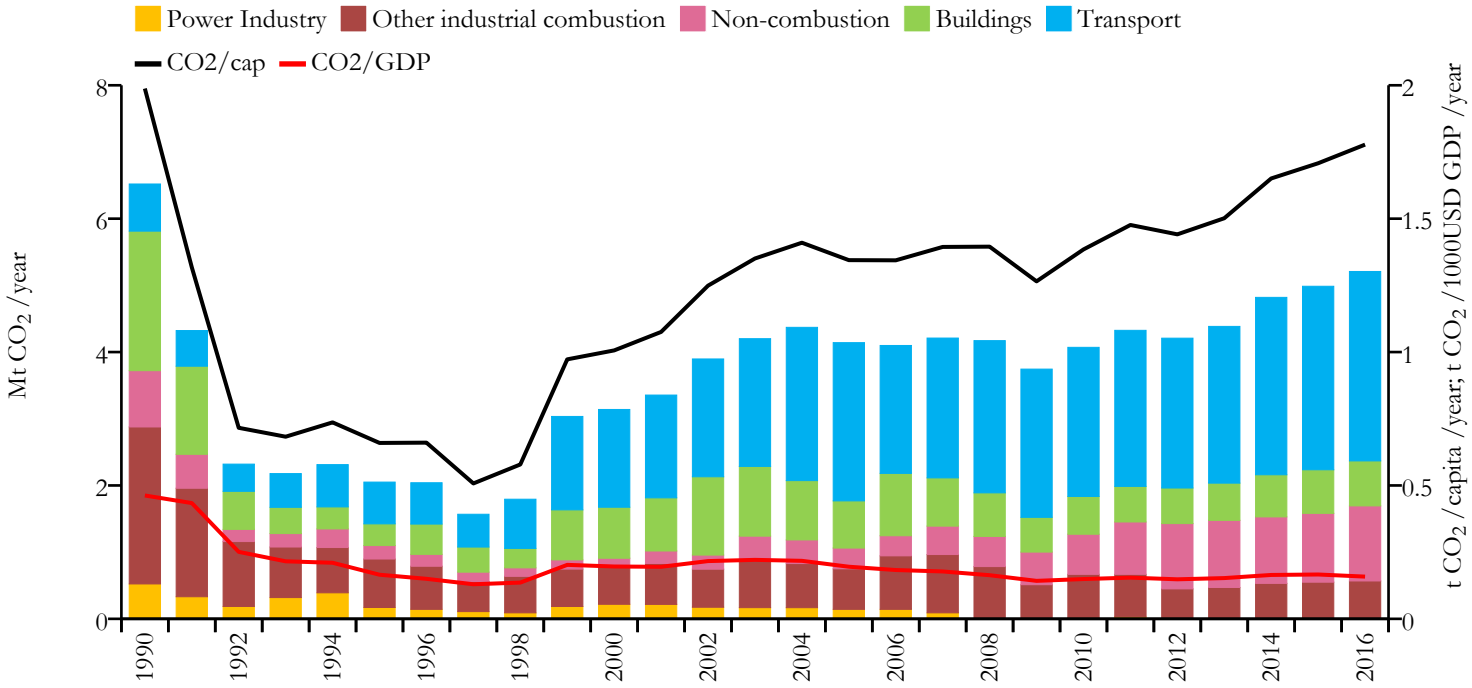

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 9.900 | 0.285 | 0.164 | 34656032 |
| 1990 | 2.025 | 0.166 | 0.121 | 12249114 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Albania

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 5.208 | 1.778 | 0.158 | 2926348 |
| 1990 | 6.520 | 1.988 | 0.462 | 3281454 |

EDGAR
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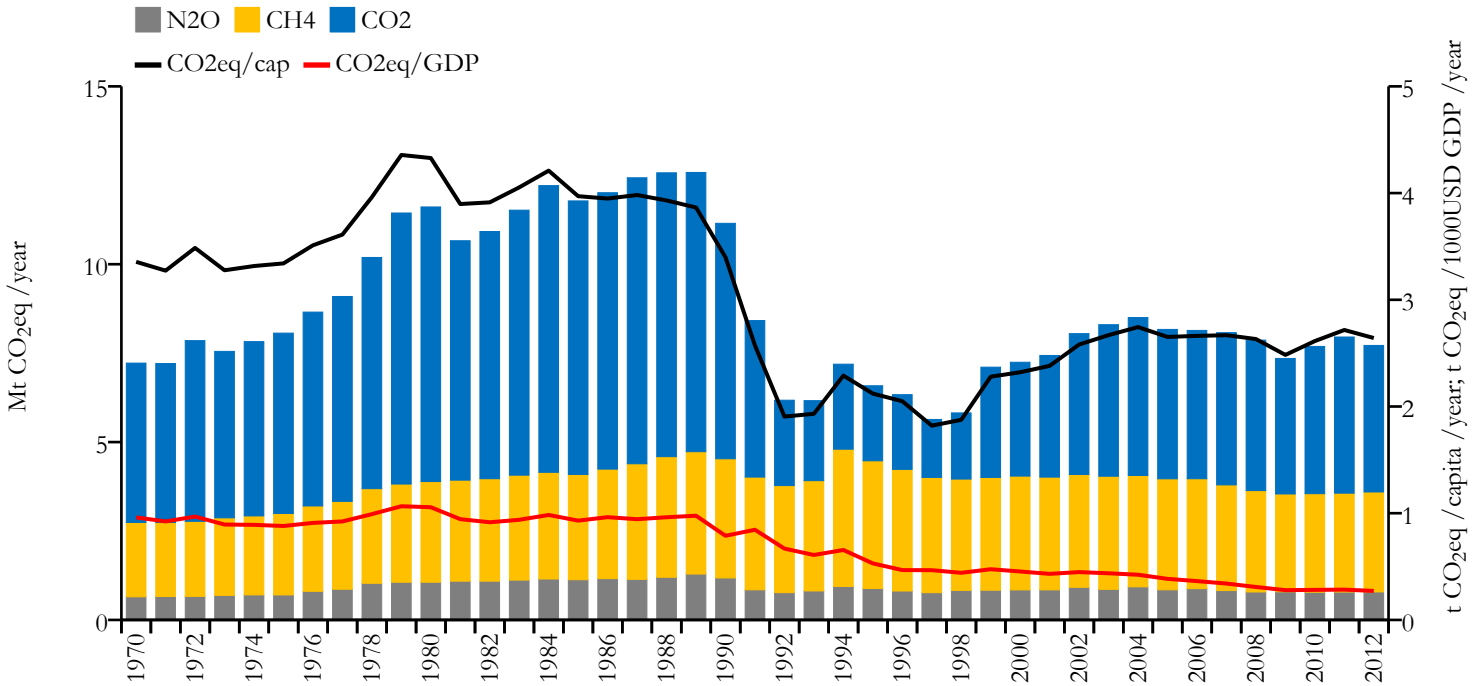
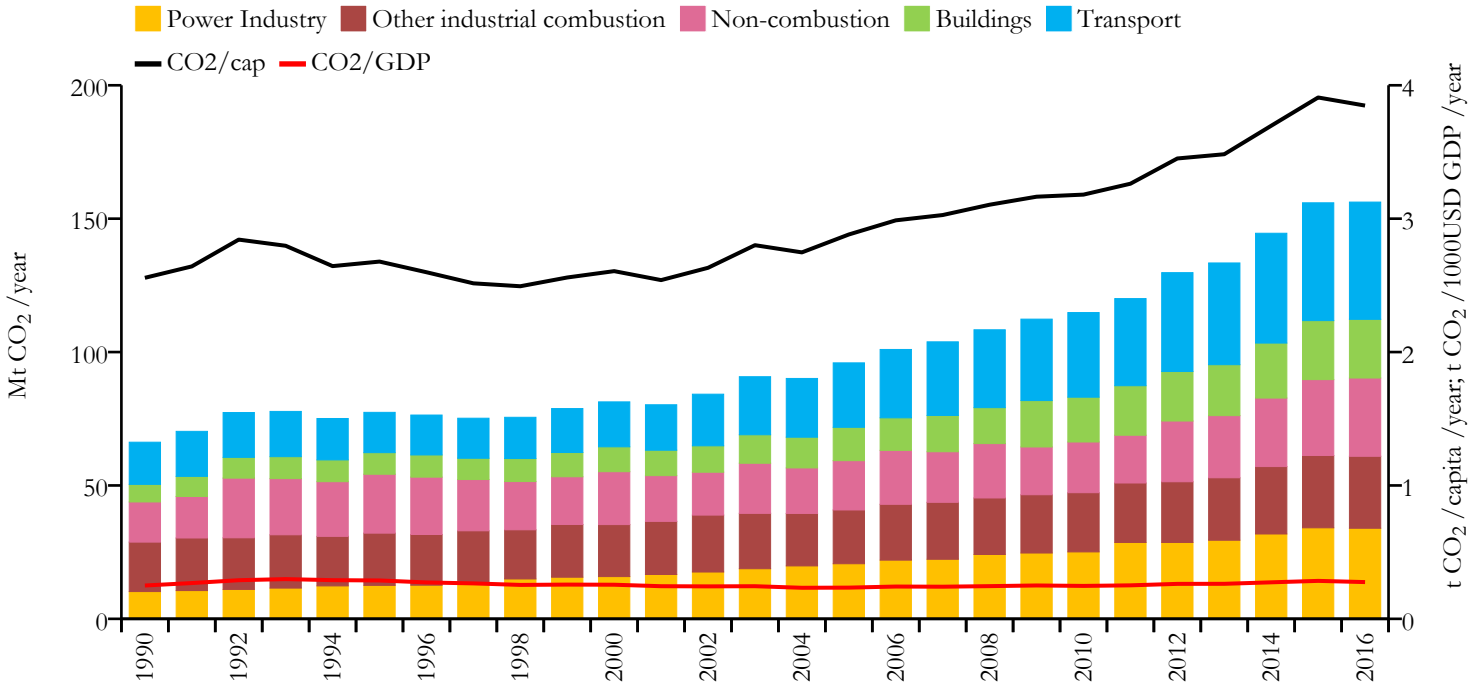
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Algeria

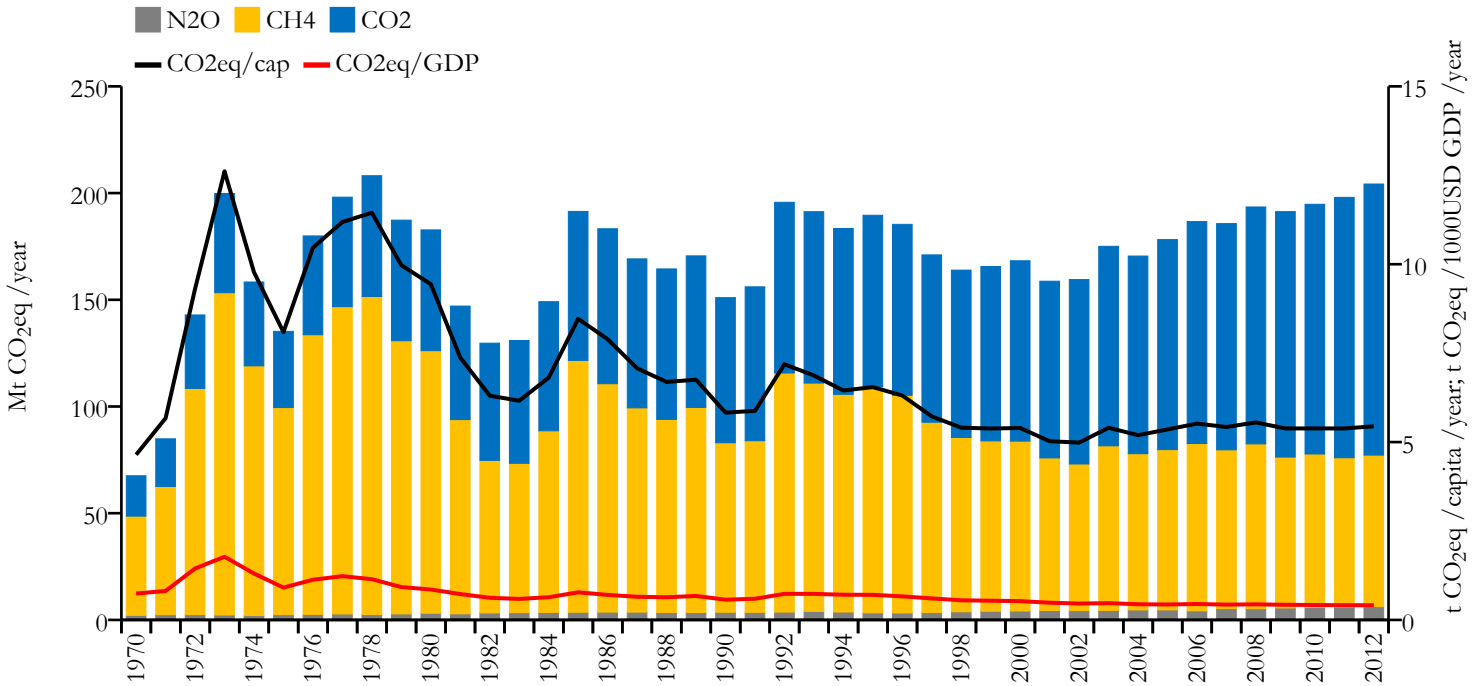
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 156.221 | 3.848 | 0.276 | 40606052 |
| 1990 | 66.215 | 2.557 | 0.250 | 25912367 |

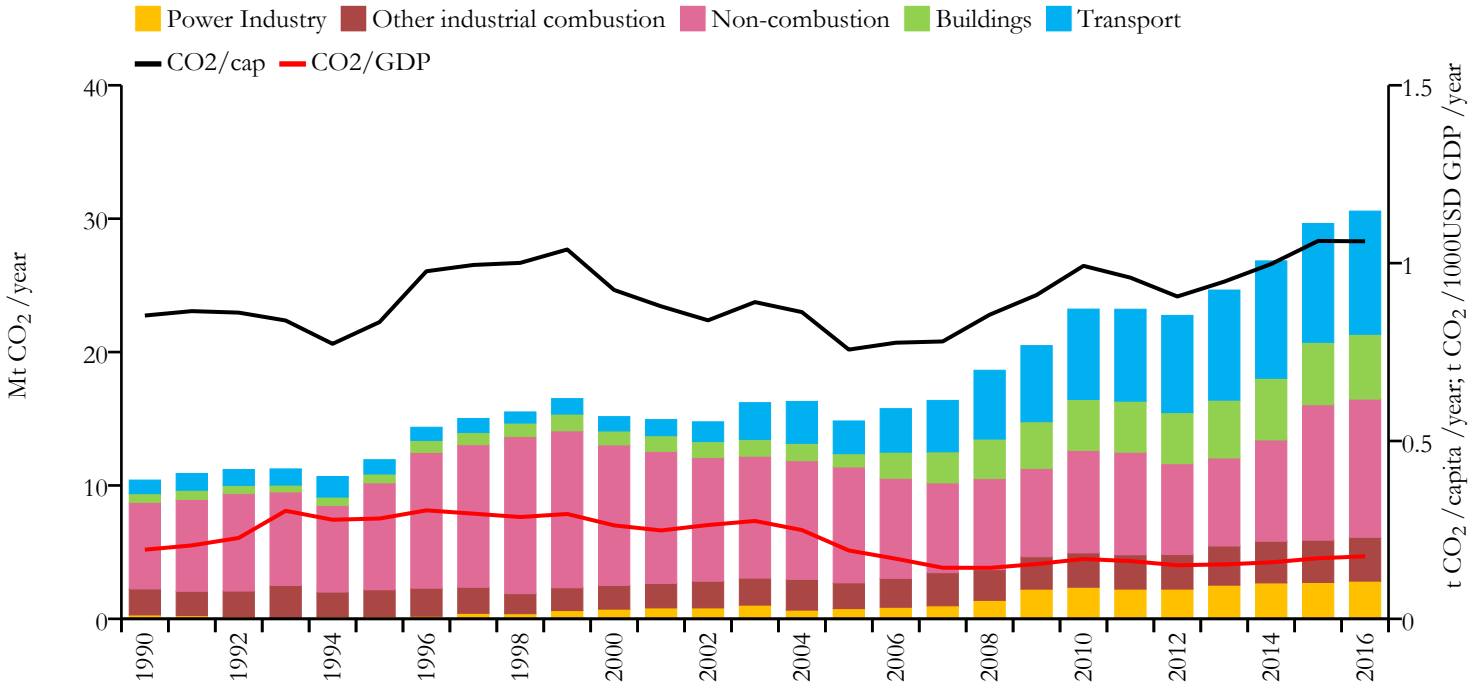
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



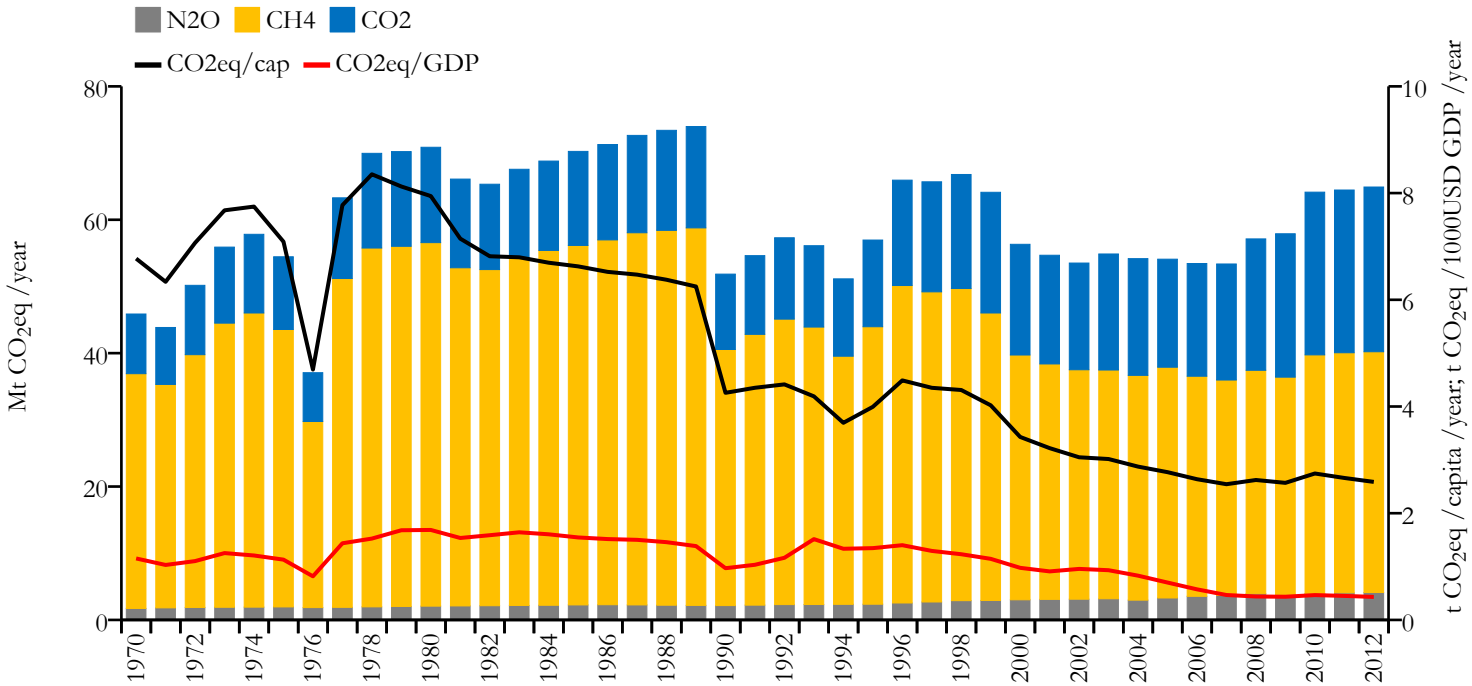
# Angola

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



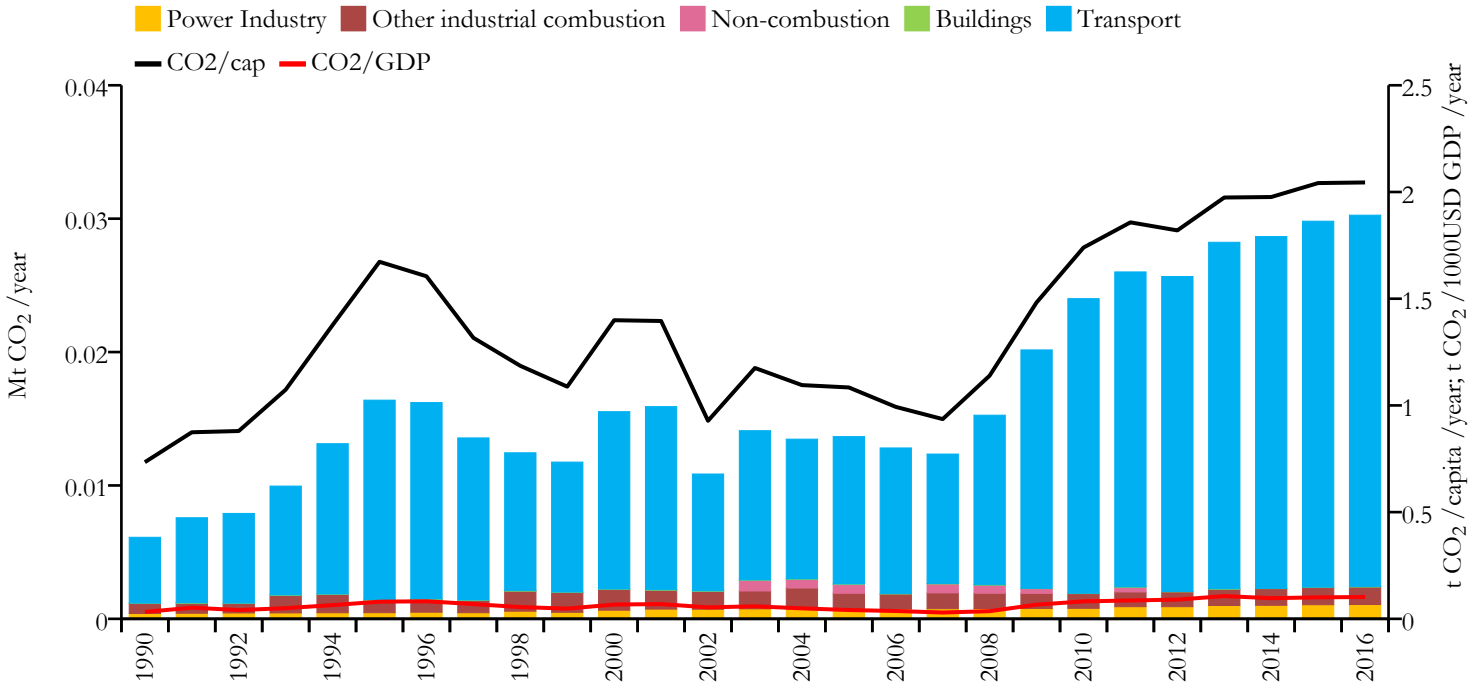

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 30.567 | 1.061 | 0.176 | 28813463 |
| 1990 | 10.402 | 0.853 | 0.194 | 12171441 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Anguilla

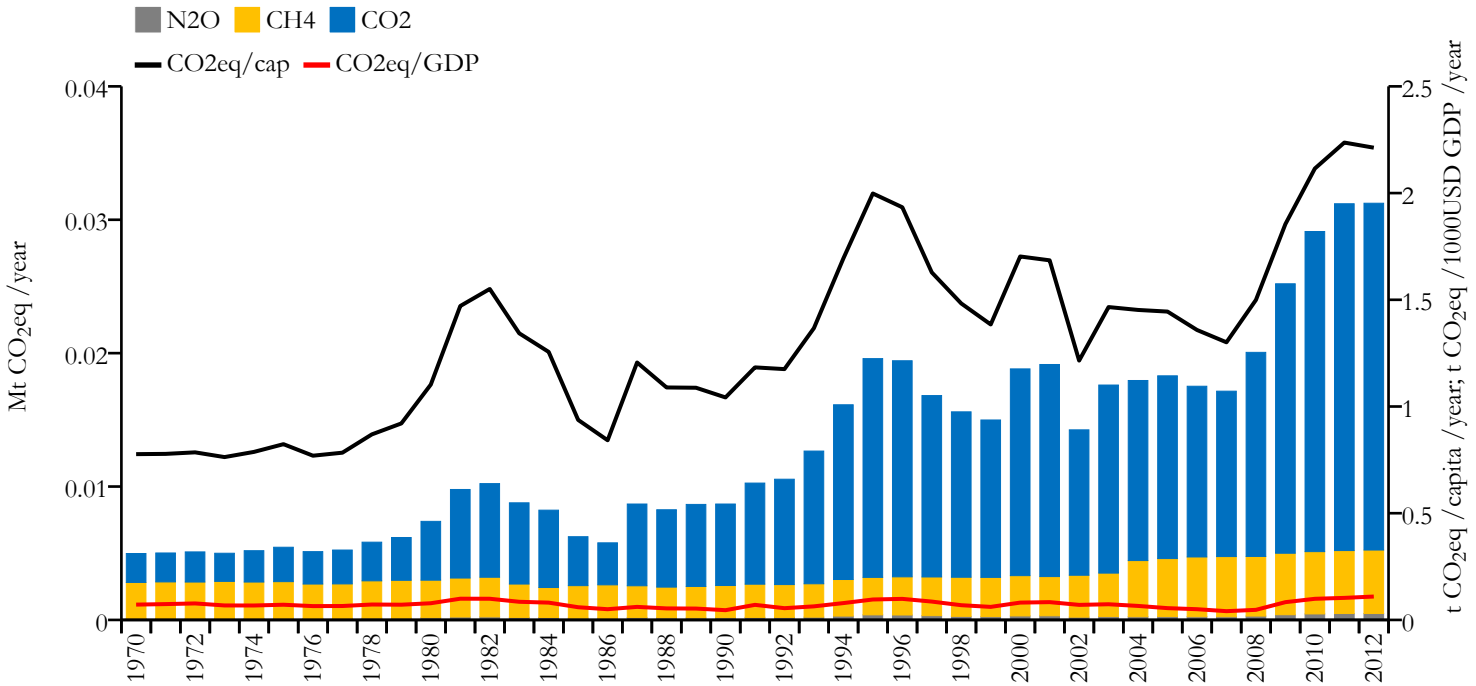
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.030 | 2.045 | 0.102 | 14764 |
| 1990 | 0.006 | 0.734 | 0.032 | 8334 |

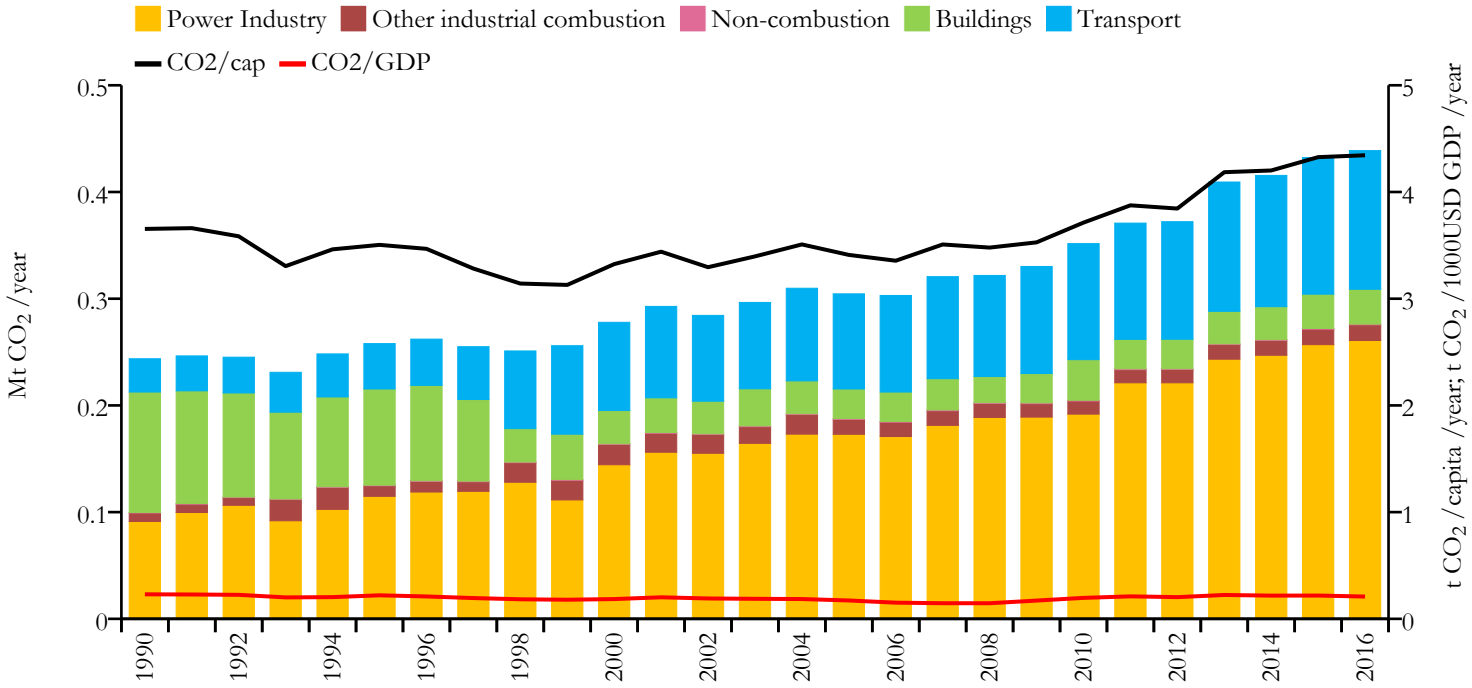
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Antigua and Barbuda

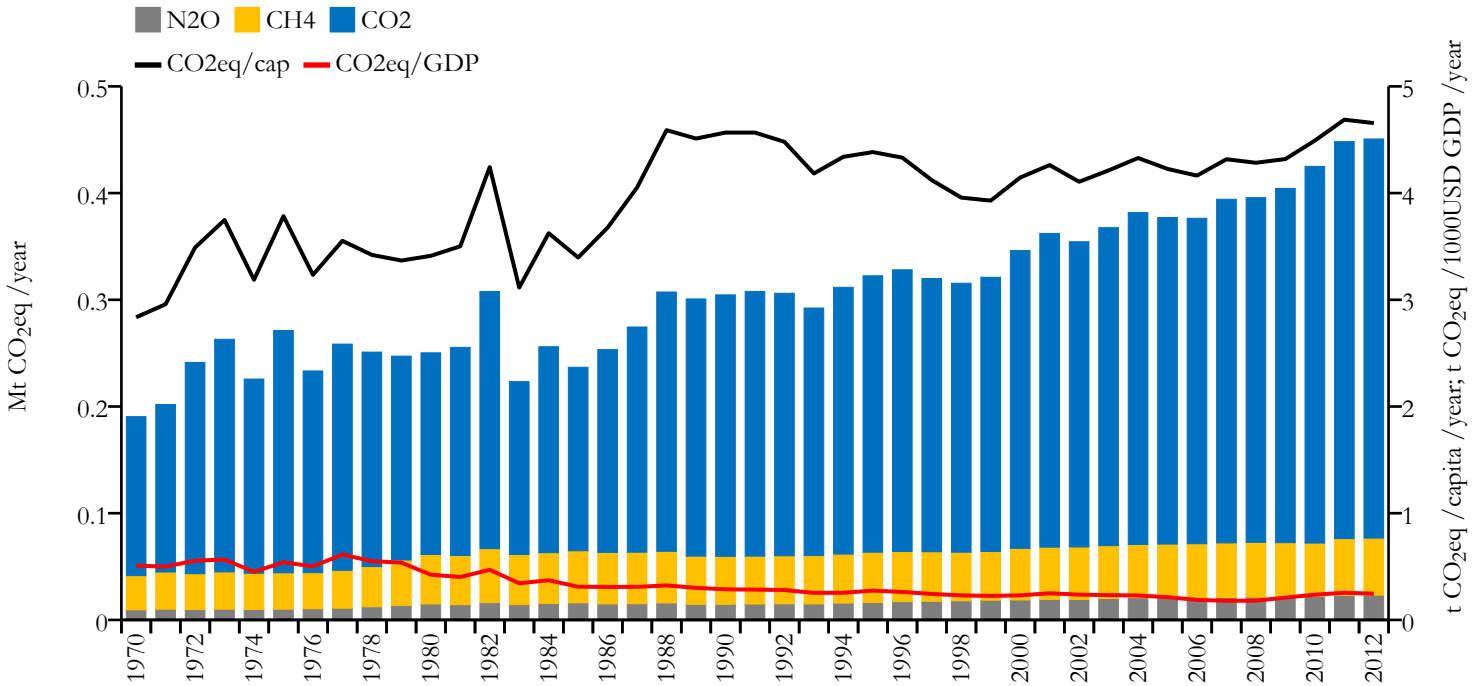
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.439 | 4.344 | 0.209 | 100963 |
| 1990 | 0.244 | 3.654 | 0.230 | 66696 |

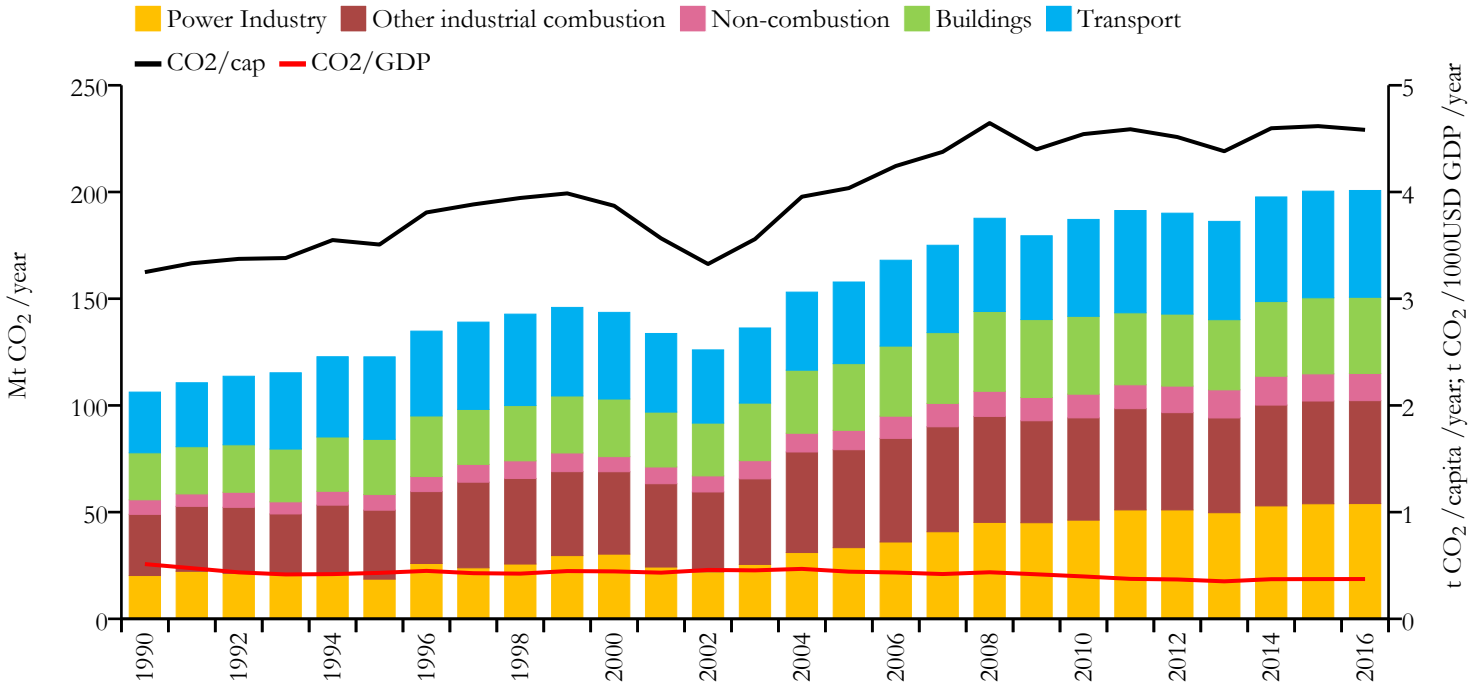
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Argentina

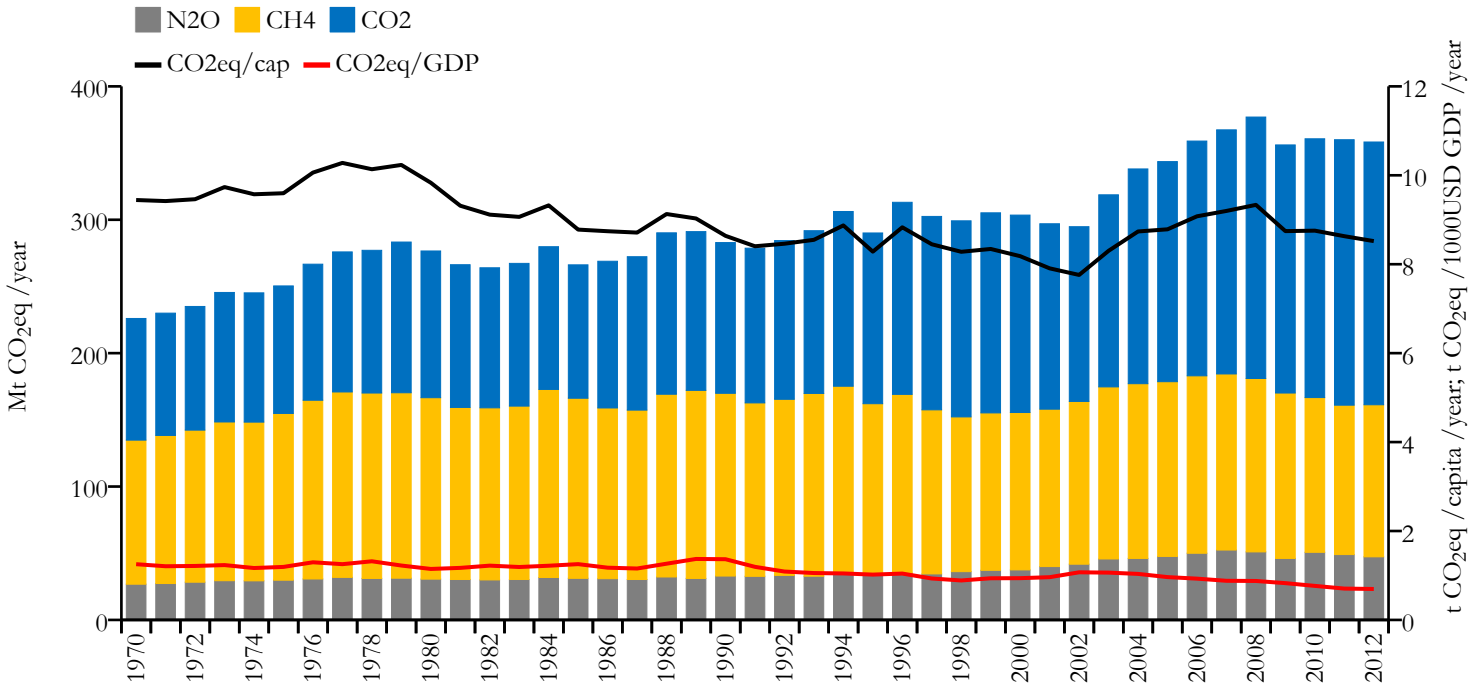
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 200.708 | 4.582 | 0.373 | 43847430 |
| 1990 | 106.240 | 3.249 | 0.513 | 32729739 |

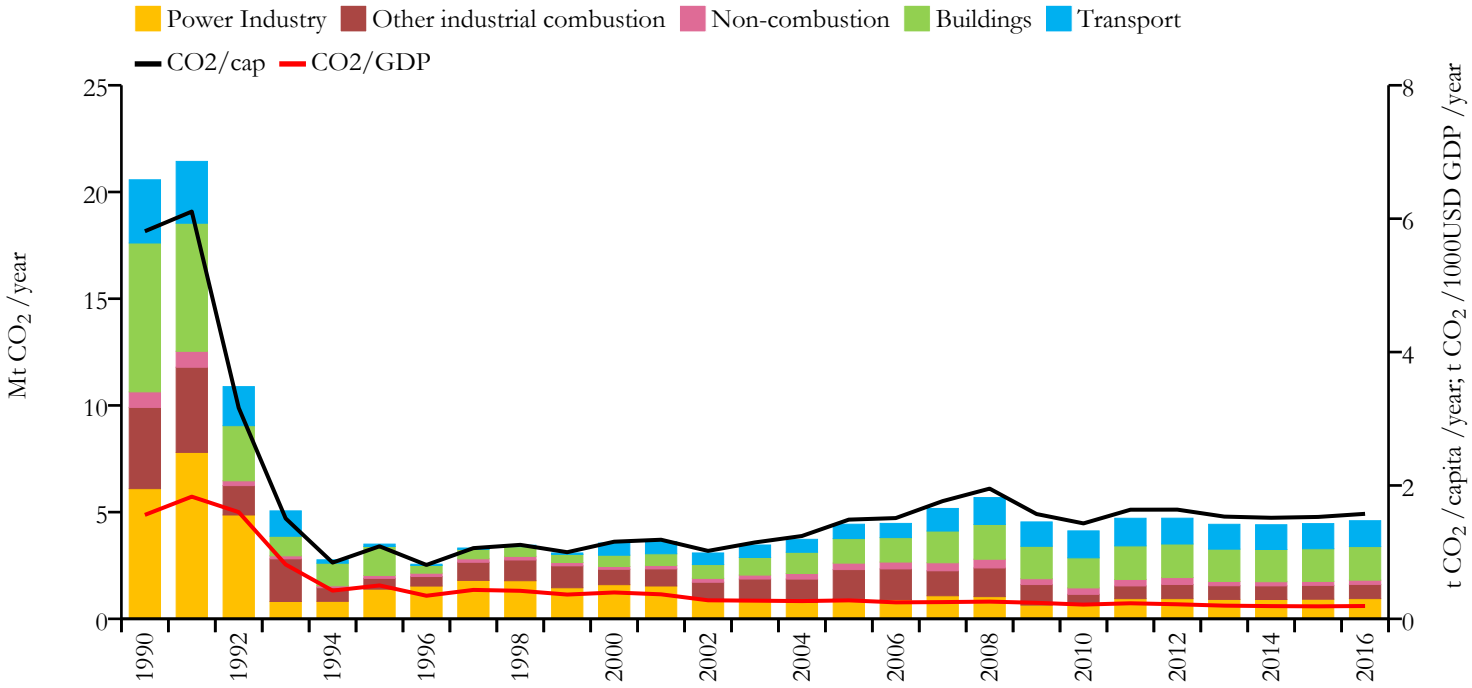
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Armenia

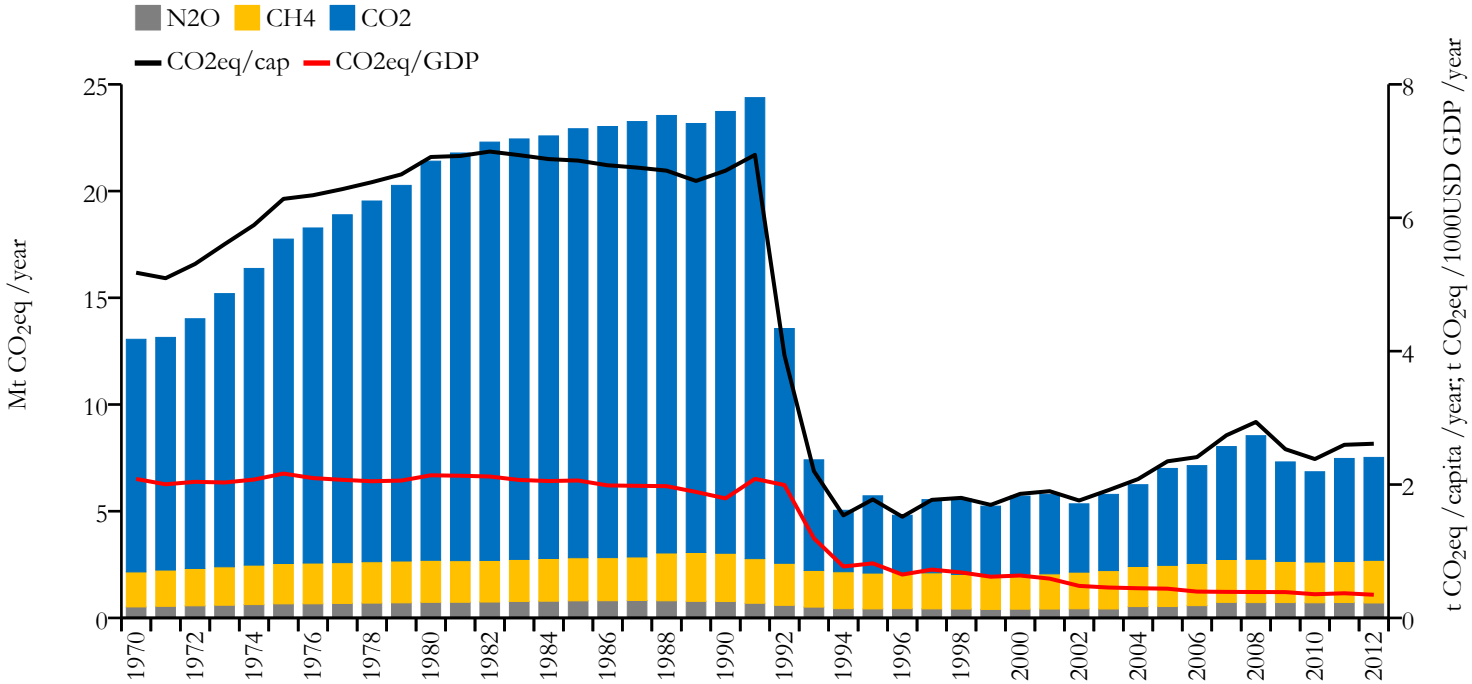
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 4.598 | 1.575 | 0.192 | 2924816 |
| 1990 | 20.572 | 5.811 | 1.558 | 3538165 |

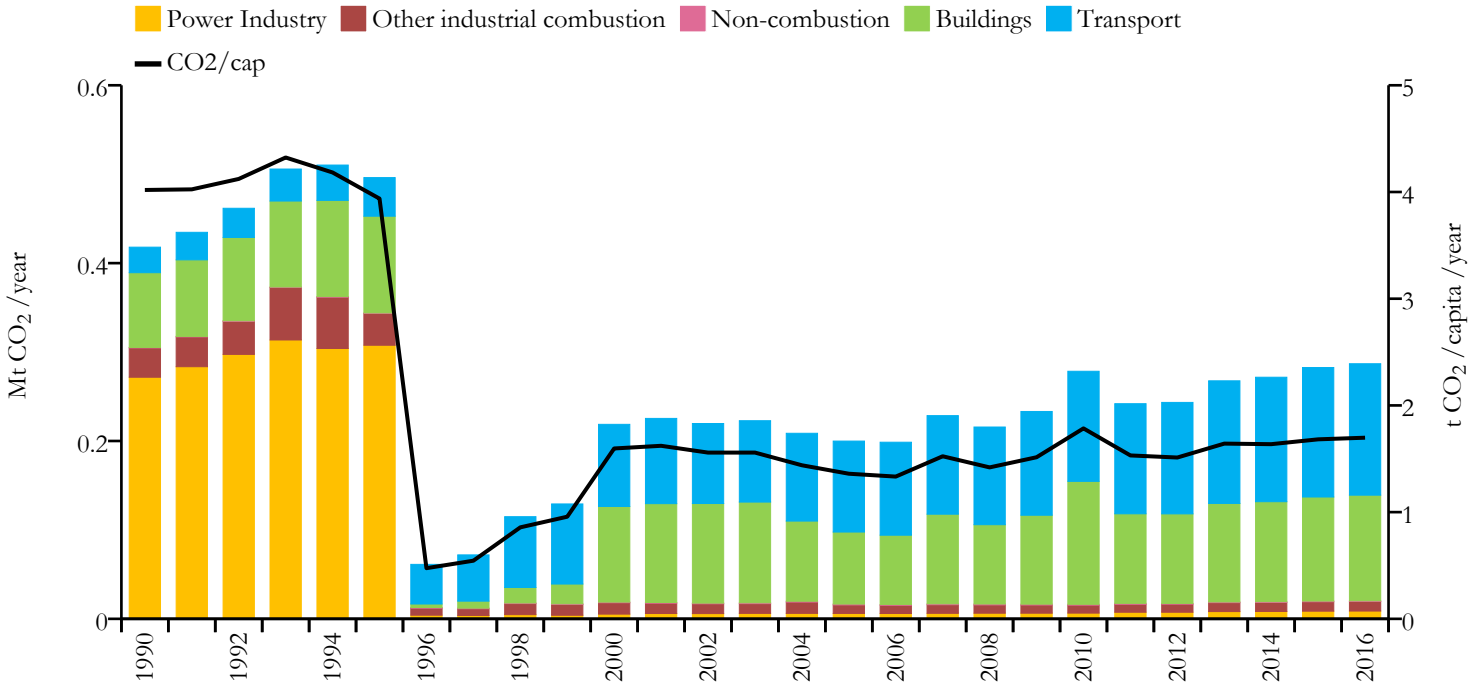
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Aruba

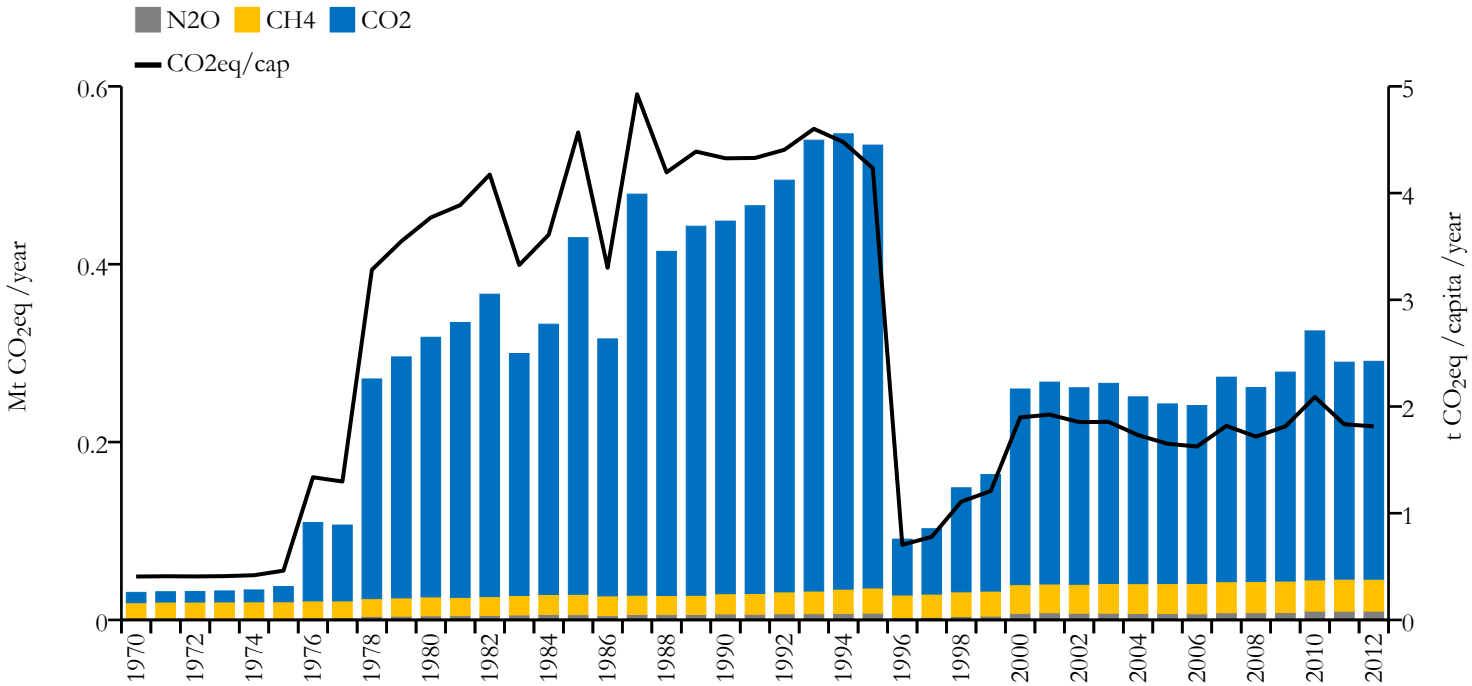
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.287 | 1.697 | n/a | 169378 |
| 1990 | 0.418 | 4.019 | n/a | 103717 |

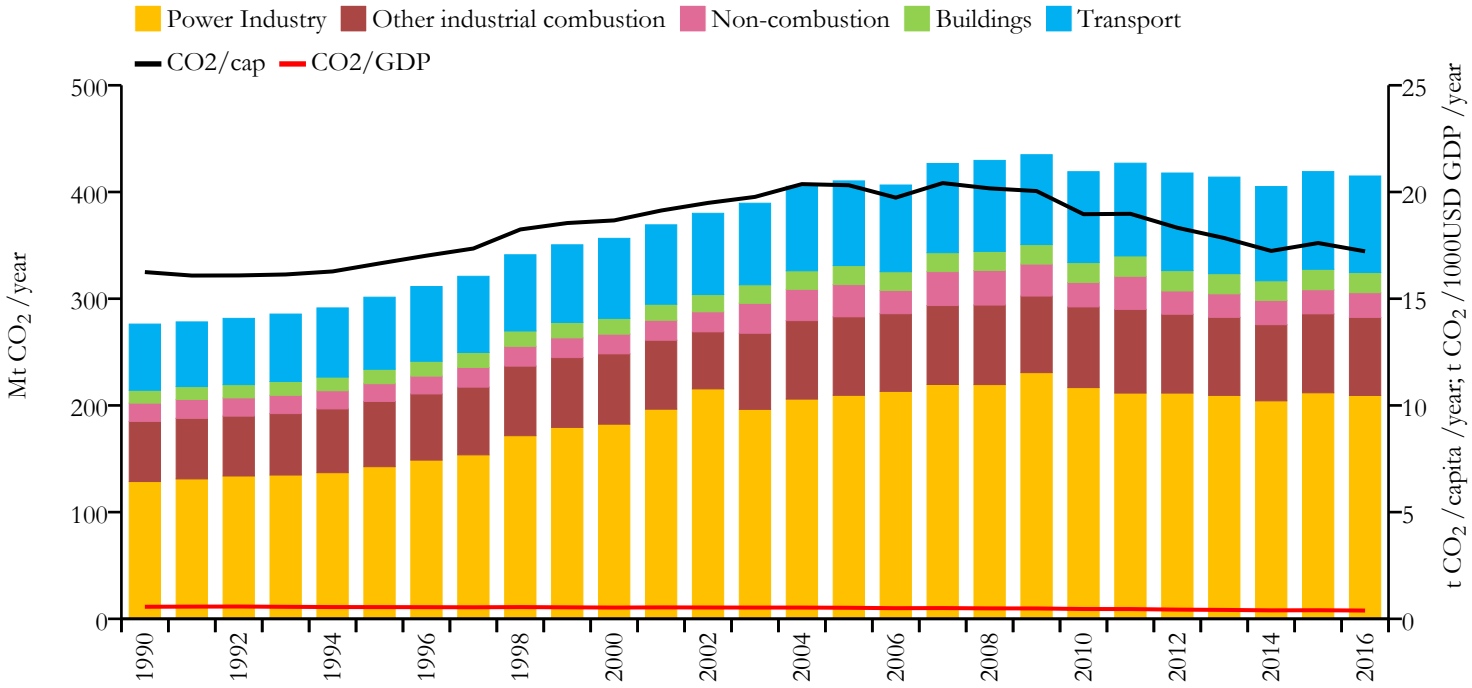
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Australia

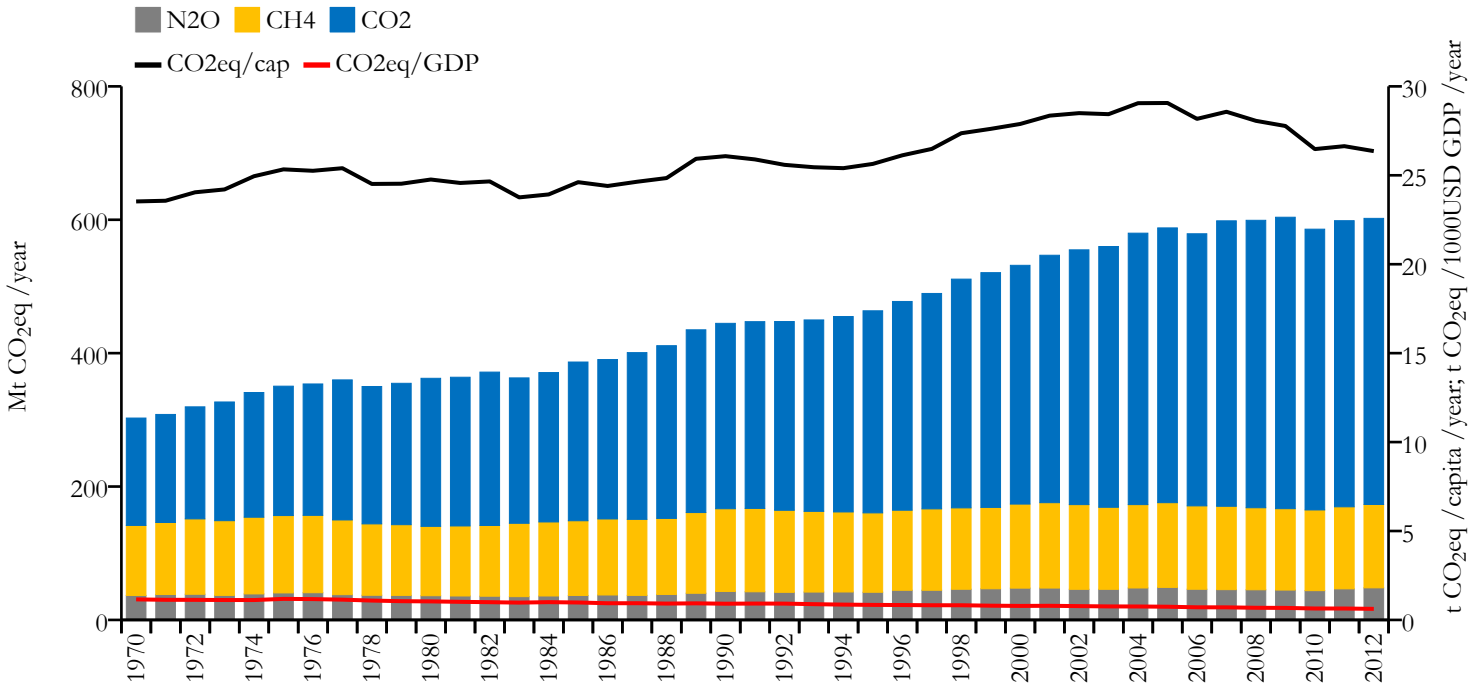
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 414.989 | 17.219 | 0.388 | 24125848 |
| 1990 | 276.218 | 16.248 | 0.566 | 17041431 |

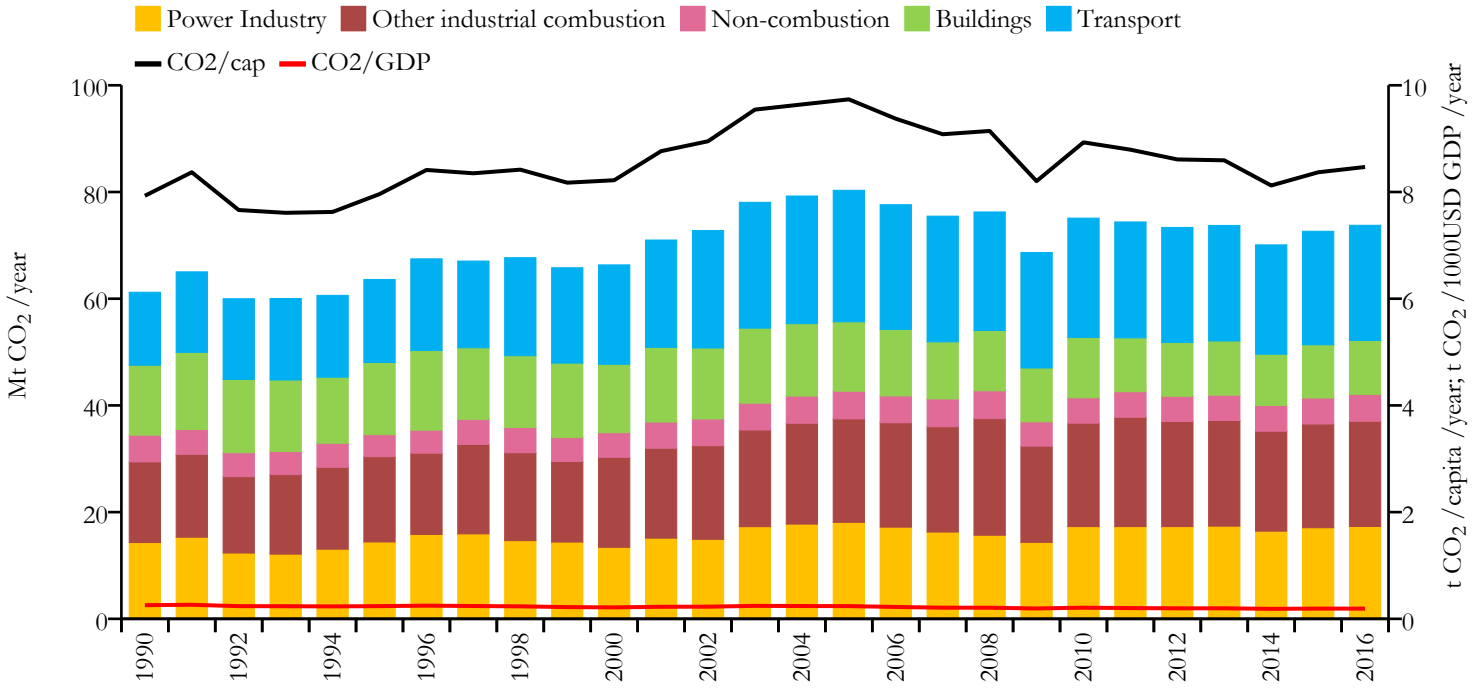
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Austria

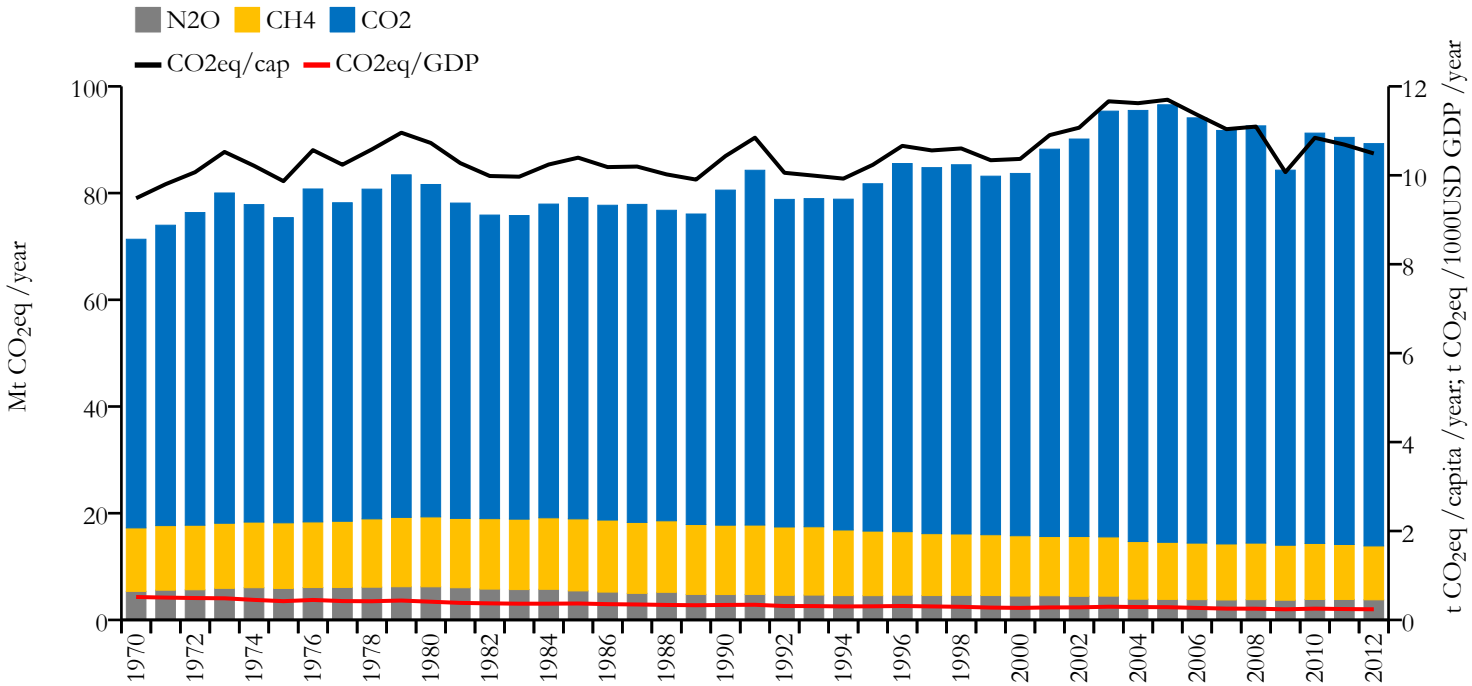
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 73.764 | 8.469 | 0.191 | 8712137 |
| 1990 | 61.212 | 7.929 | 0.256 | 7723949 |

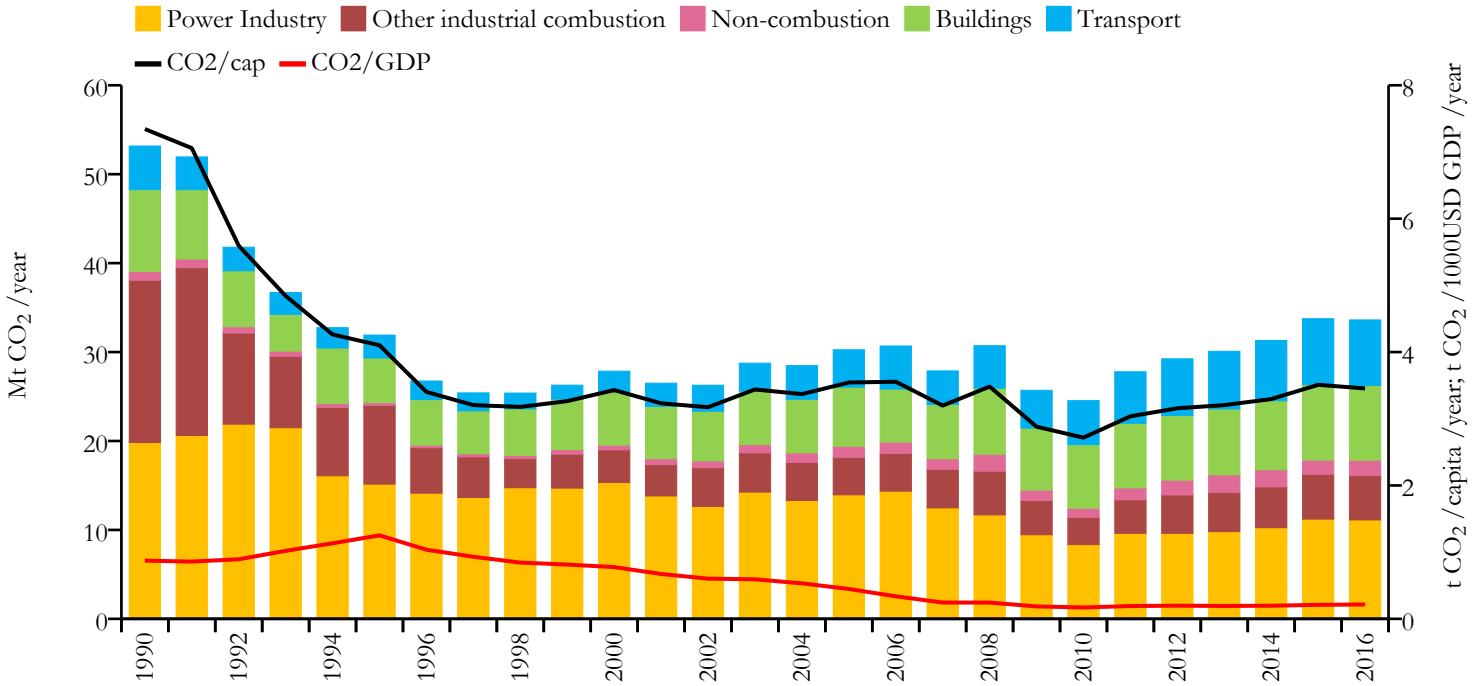
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Azerbaijan

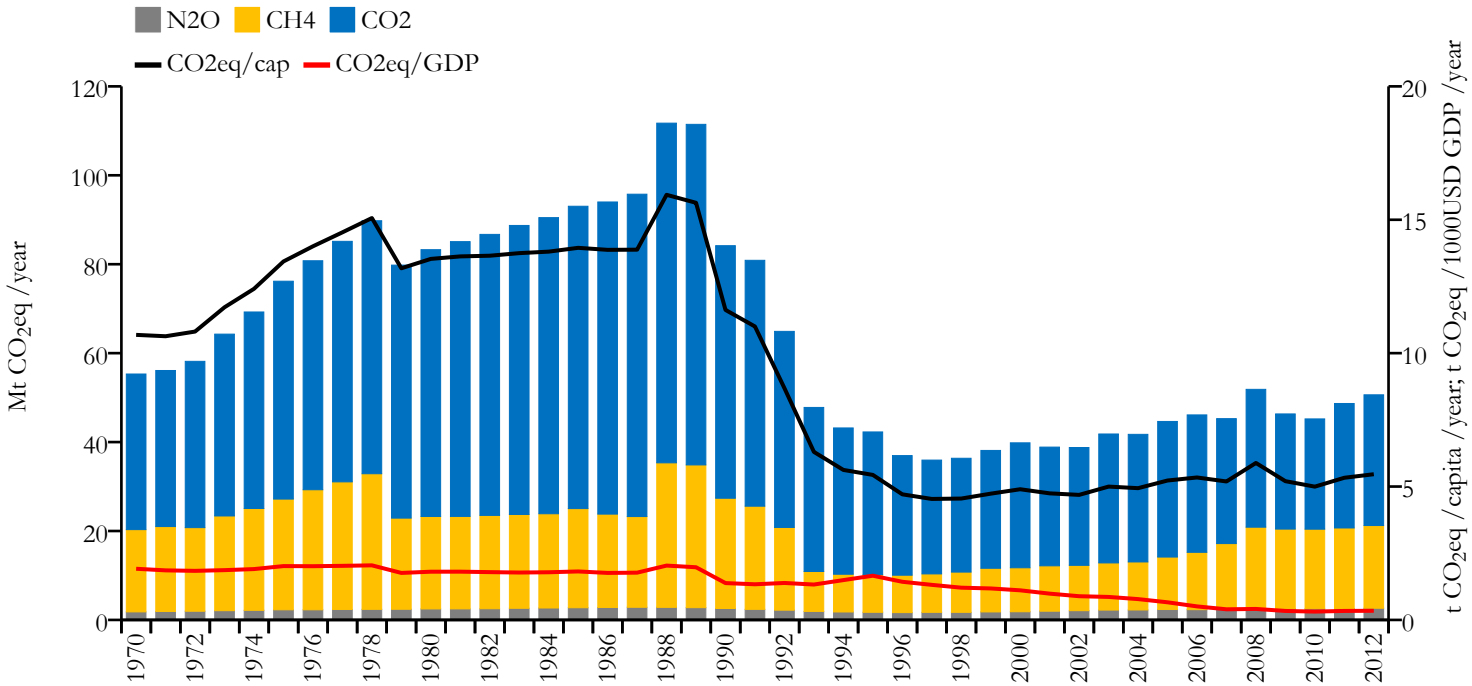
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



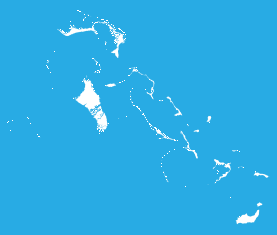

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 33.614 | 3.455 | 0.215 | 9725376 |
| 1990 | 53.171 | 7.344 | 0.873 | 7242770 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

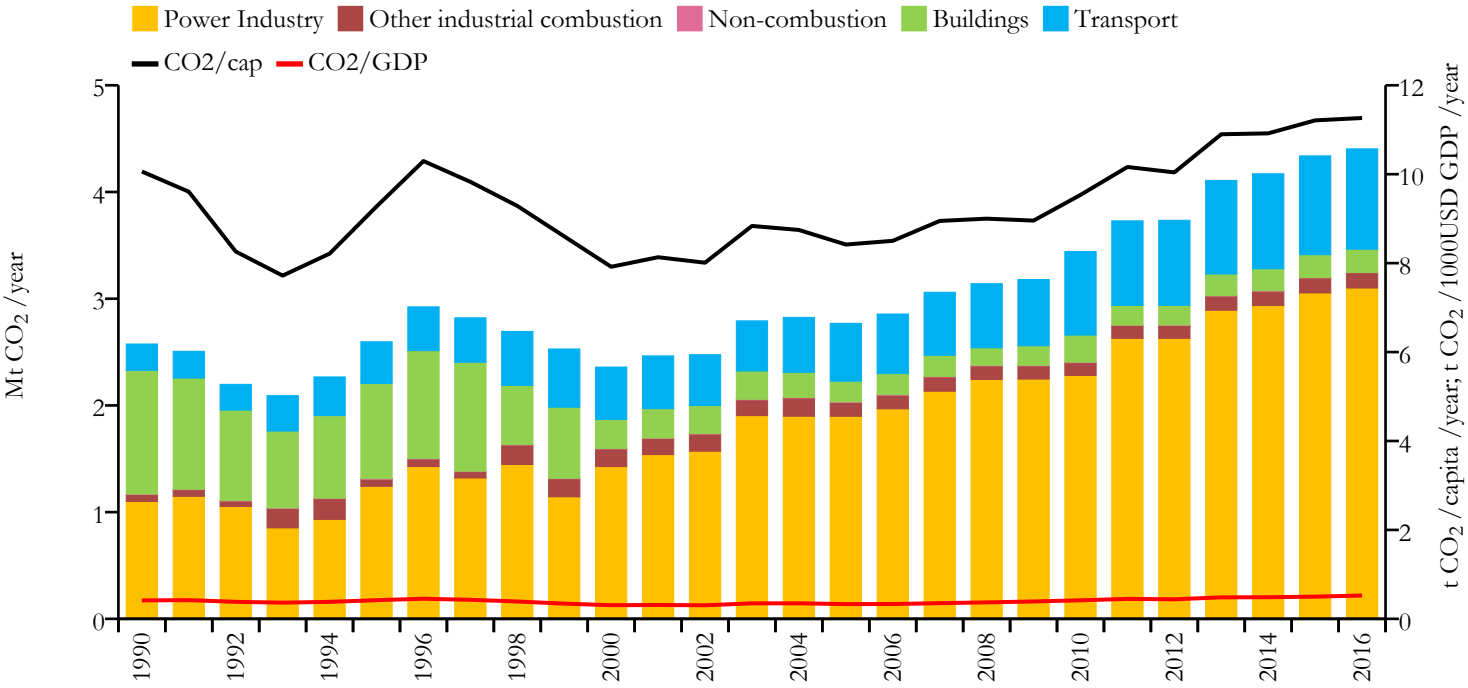
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Bahamas



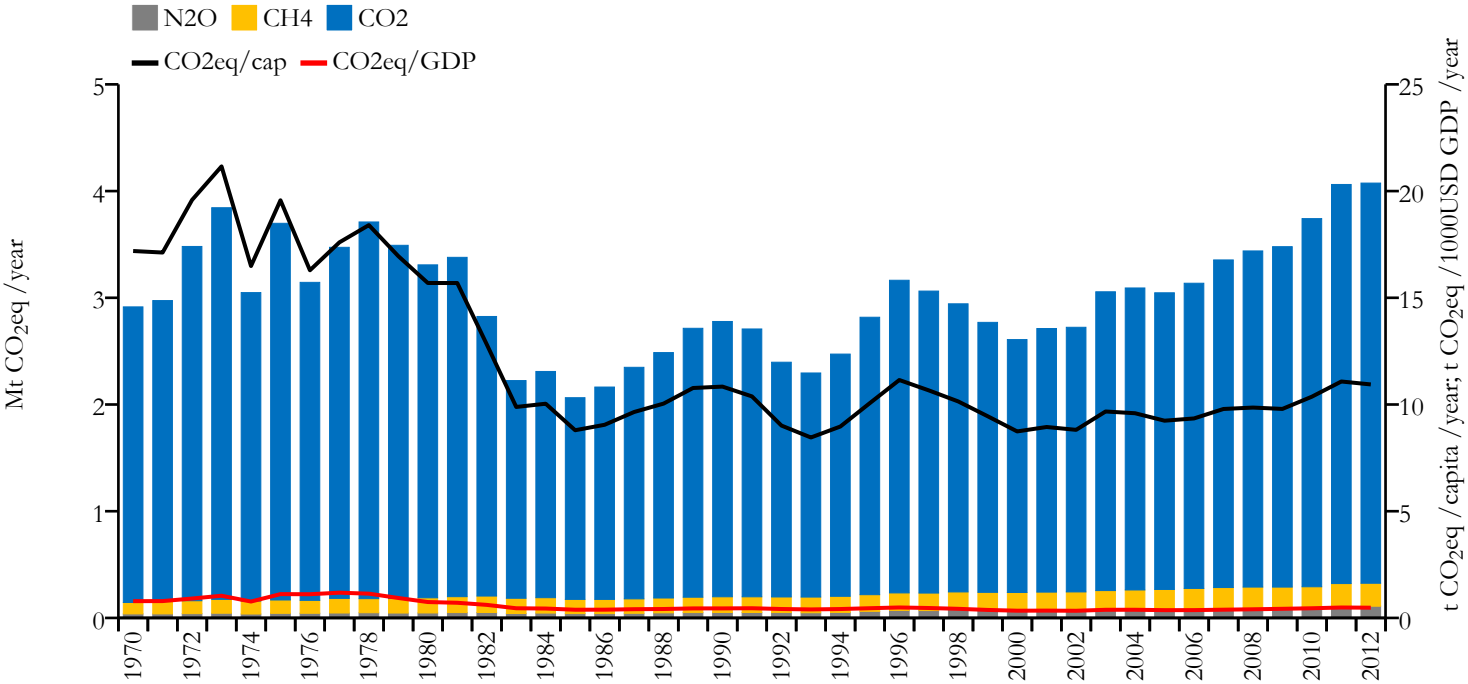
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 4.404 | 11.264 | 0.524 | 391232 |
| 1990 | 2.576 | 10.061 | 0.414 | 256336 |

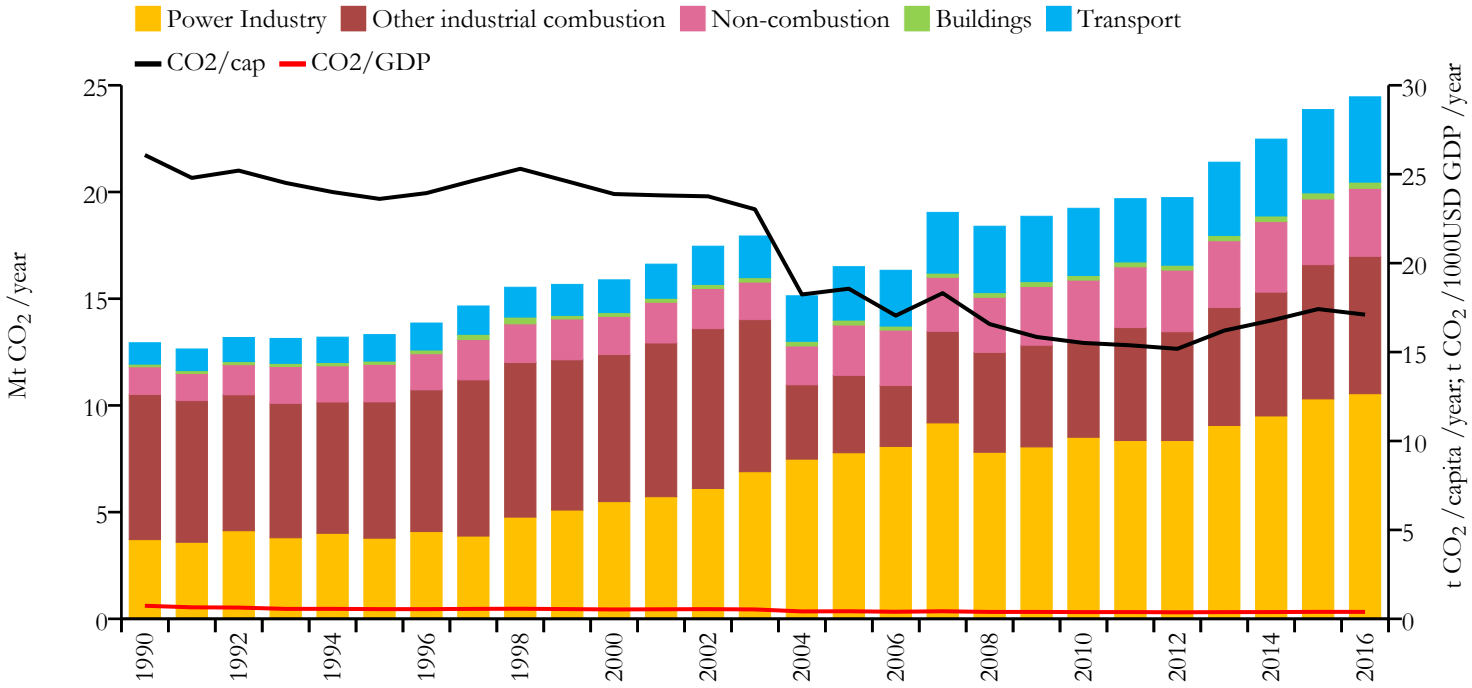
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Bahrain

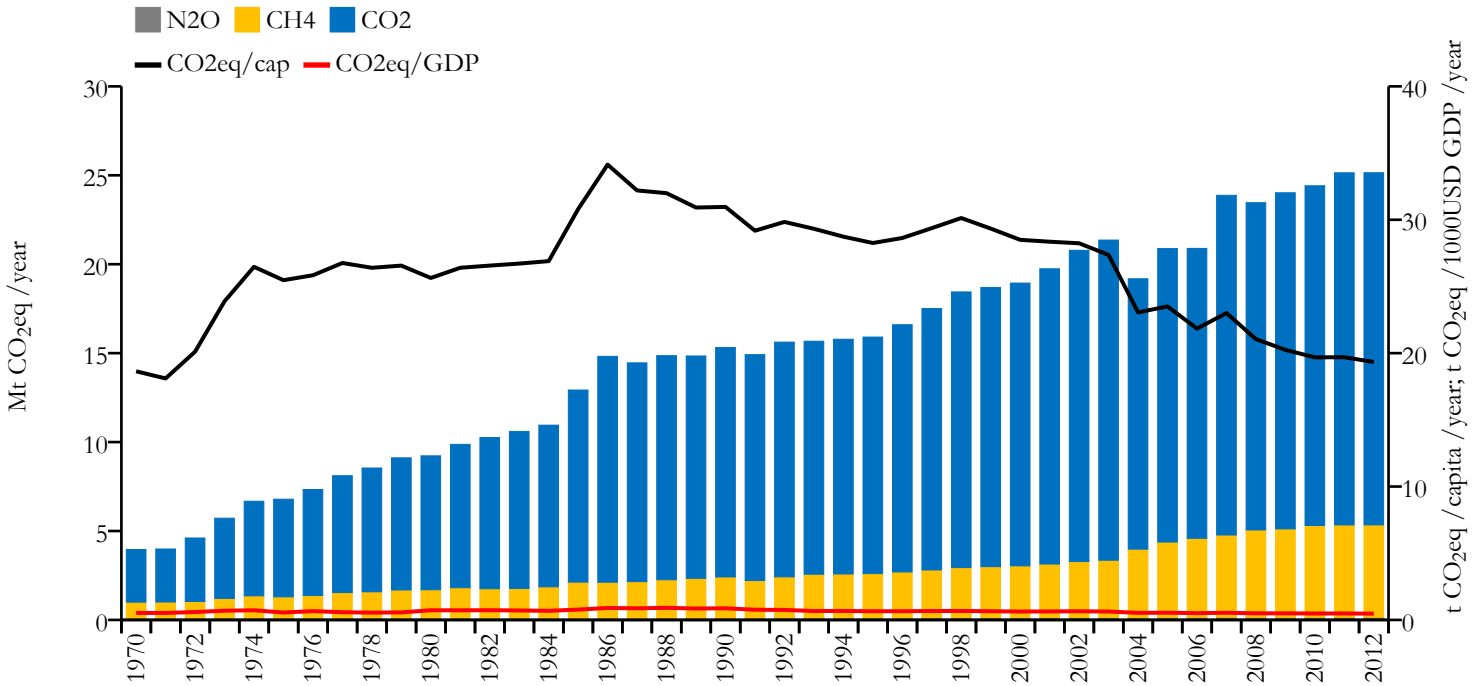
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 24.458 | 17.104 | 0.390 | 1425171 |
| 1990 | 12.935 | 26.079 | 0.735 | 495931 |

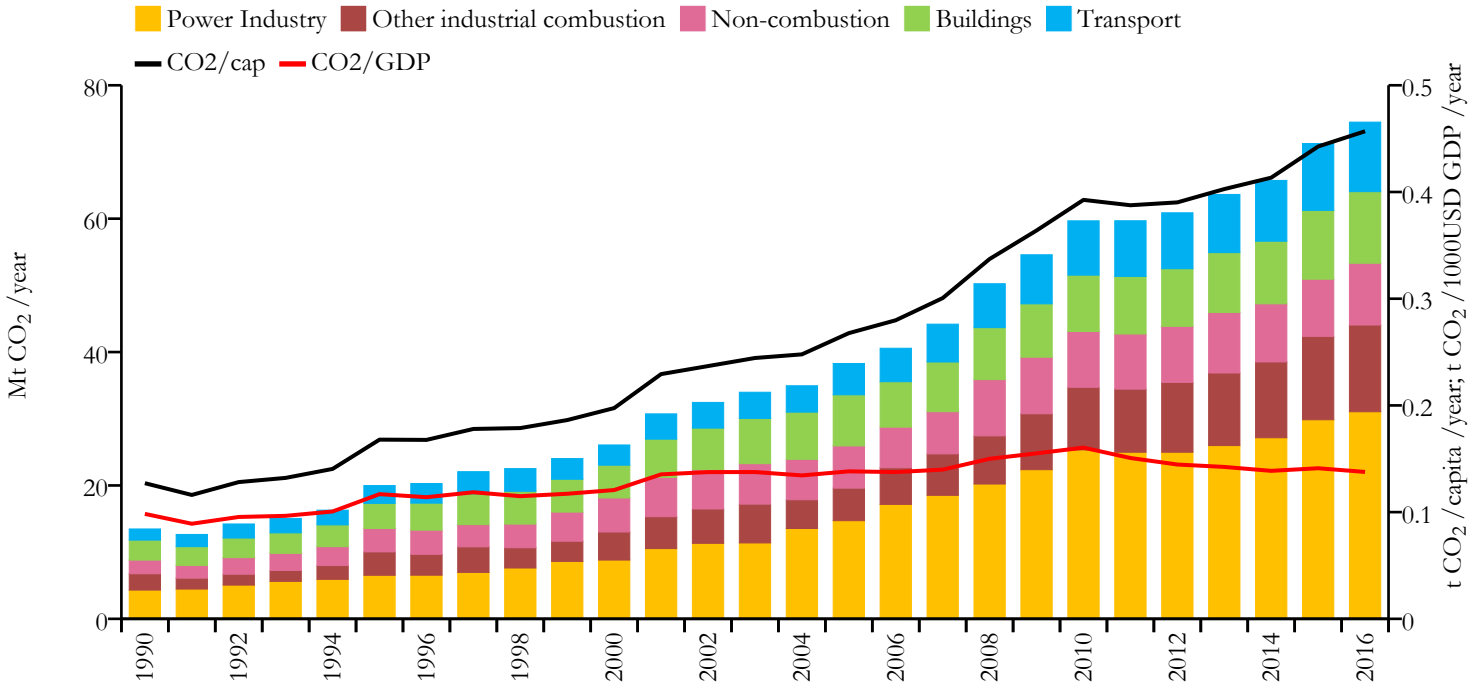
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Bangladesh

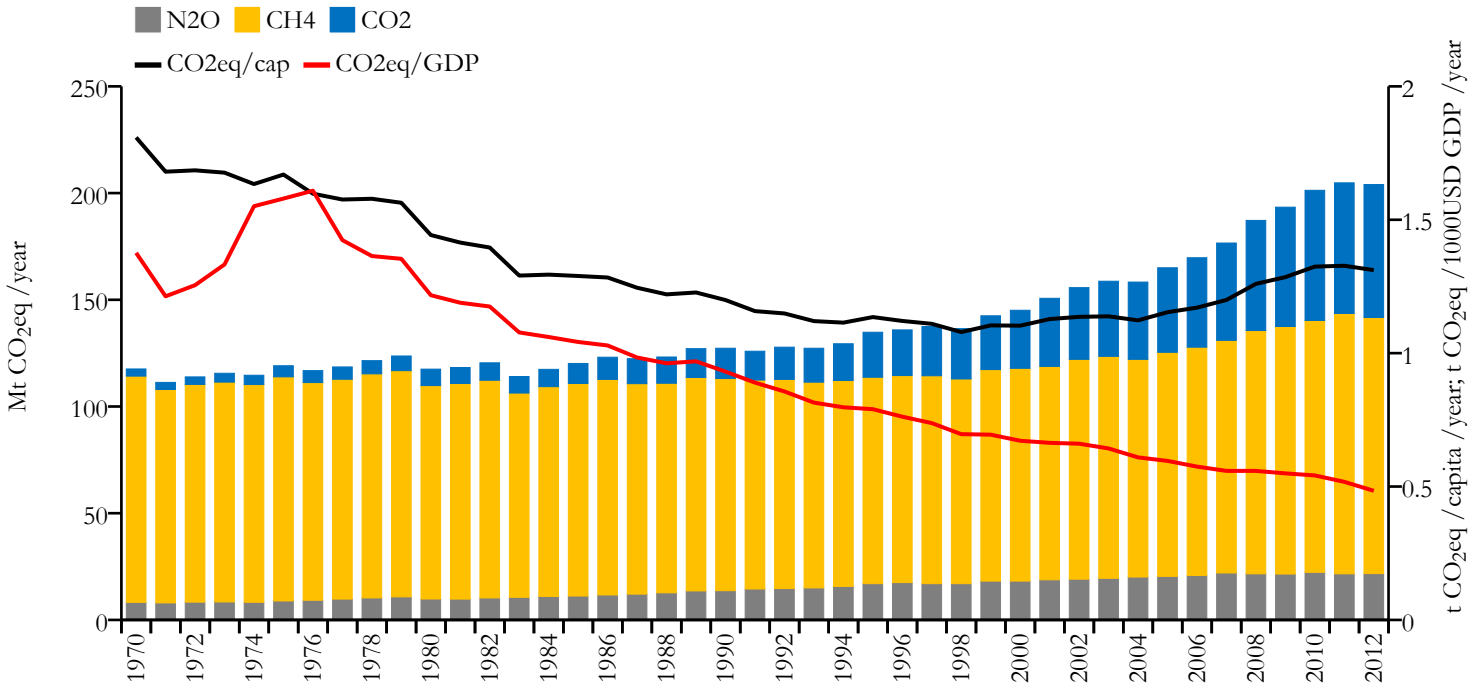
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 74.476 | 0.457 | 0.138 | 162951560 |
| 1990 | 13.475 | 0.127 | 0.098 | 106188642 |

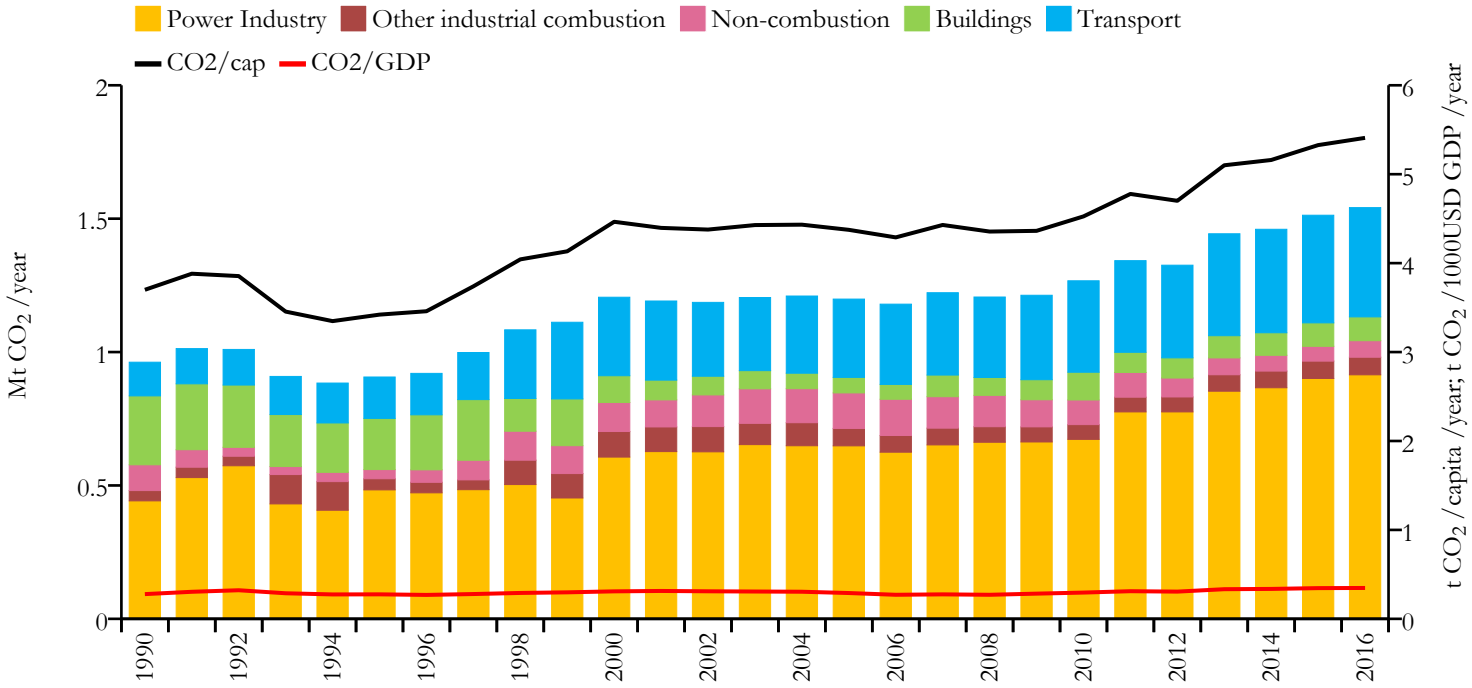
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Barbados

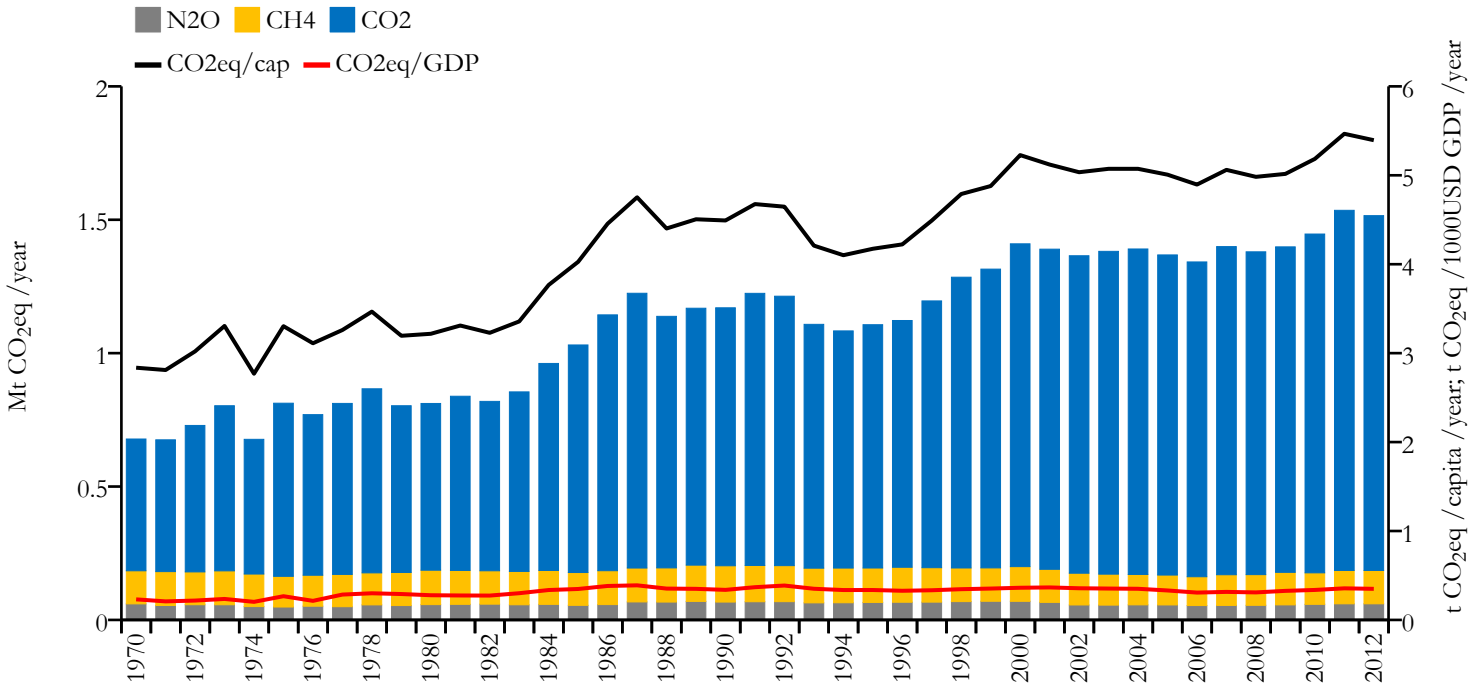
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 1.541 | 5.409 | 0.347 | 284996 |
| 1990 | 0.962 | 3.700 | 0.278 | 260374 |

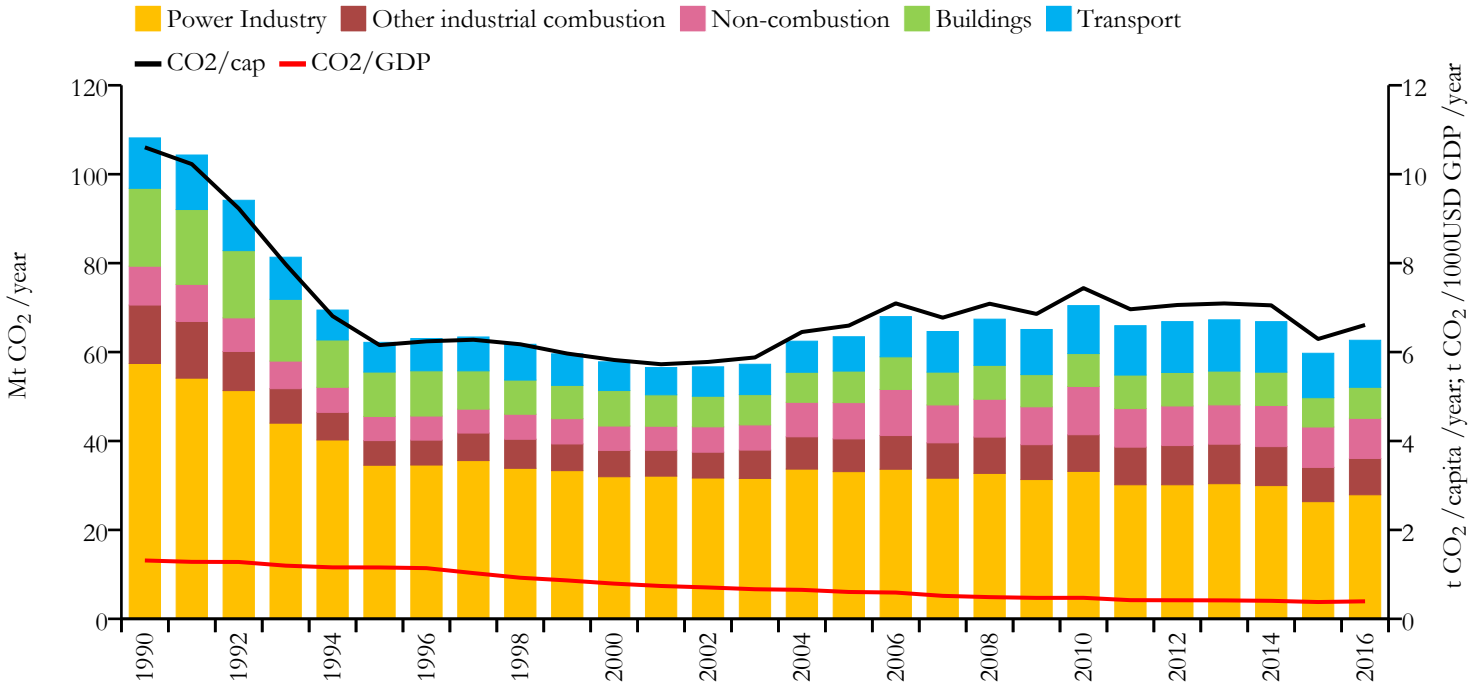
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Belarus

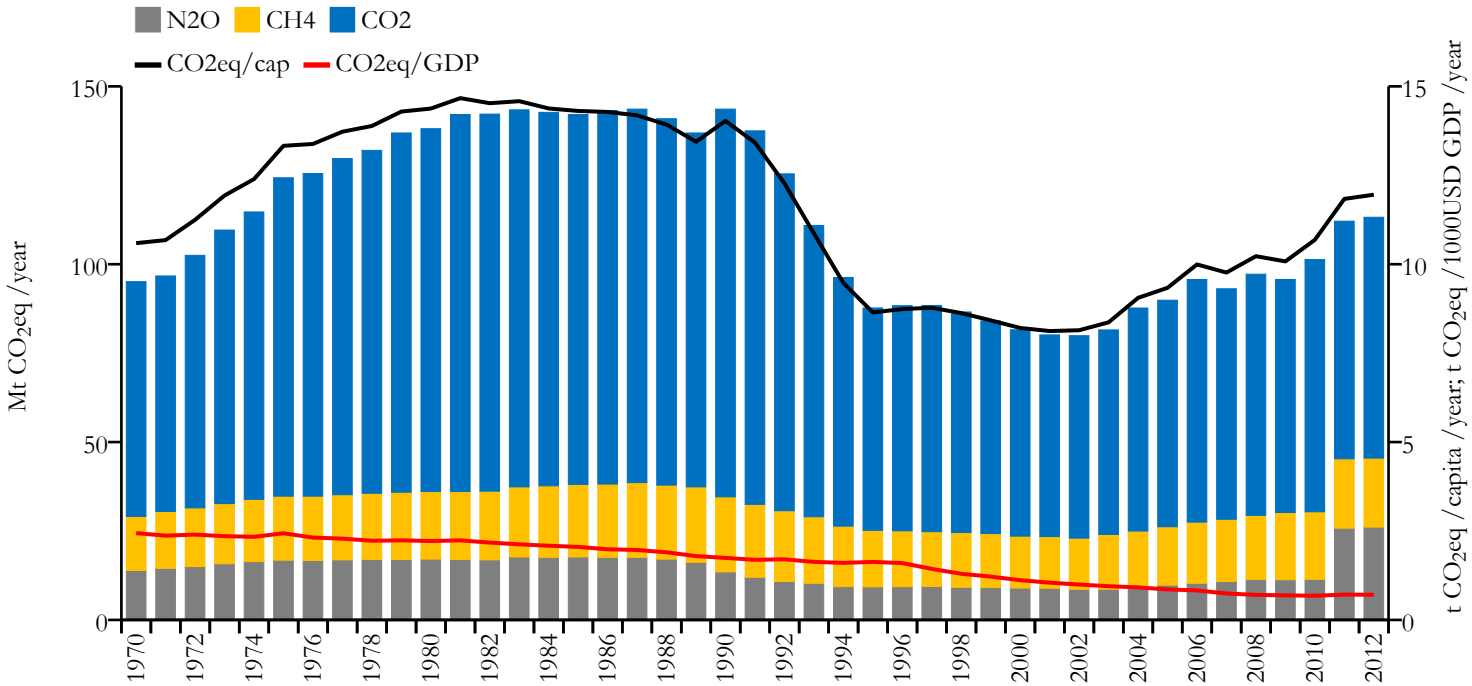
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 62.656 | 6.609 | 0.394 | 9480042 |
| 1990 | 108.163 | 10.604 | 1.313 | 10216846 |

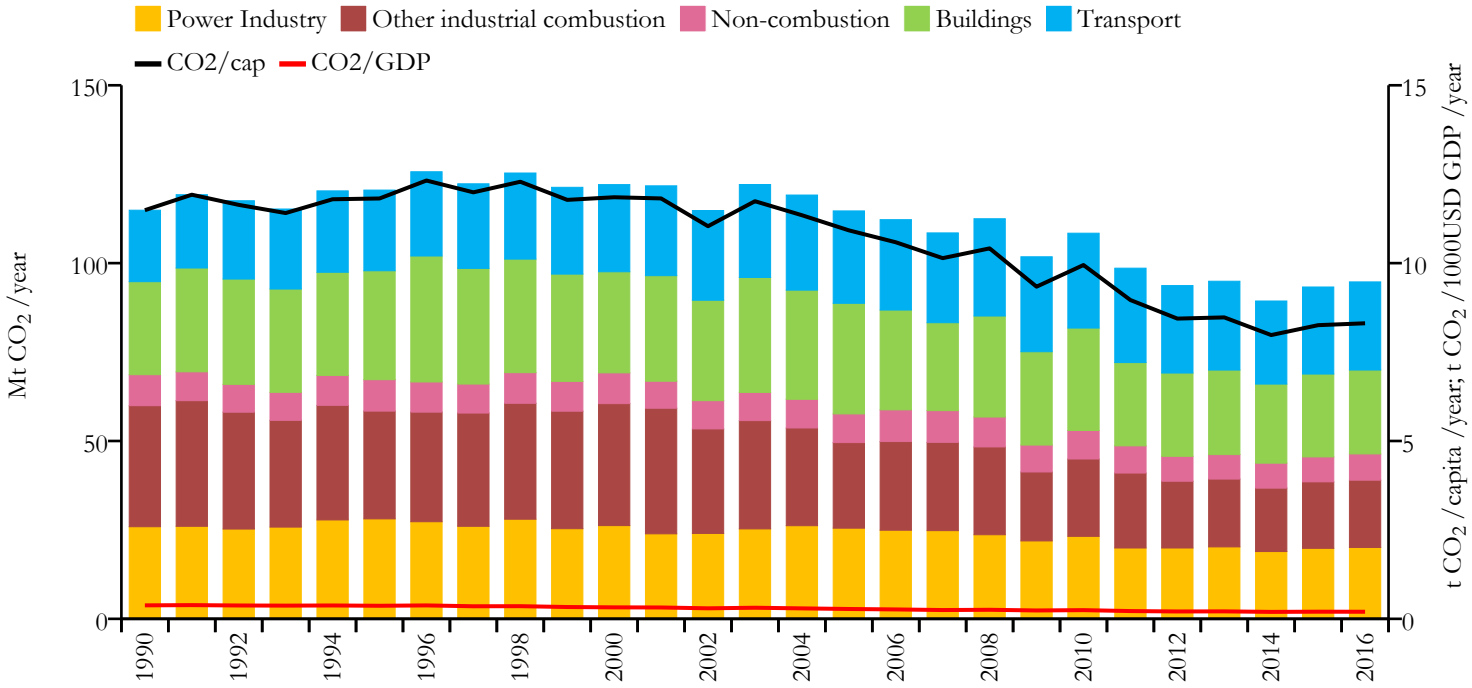
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



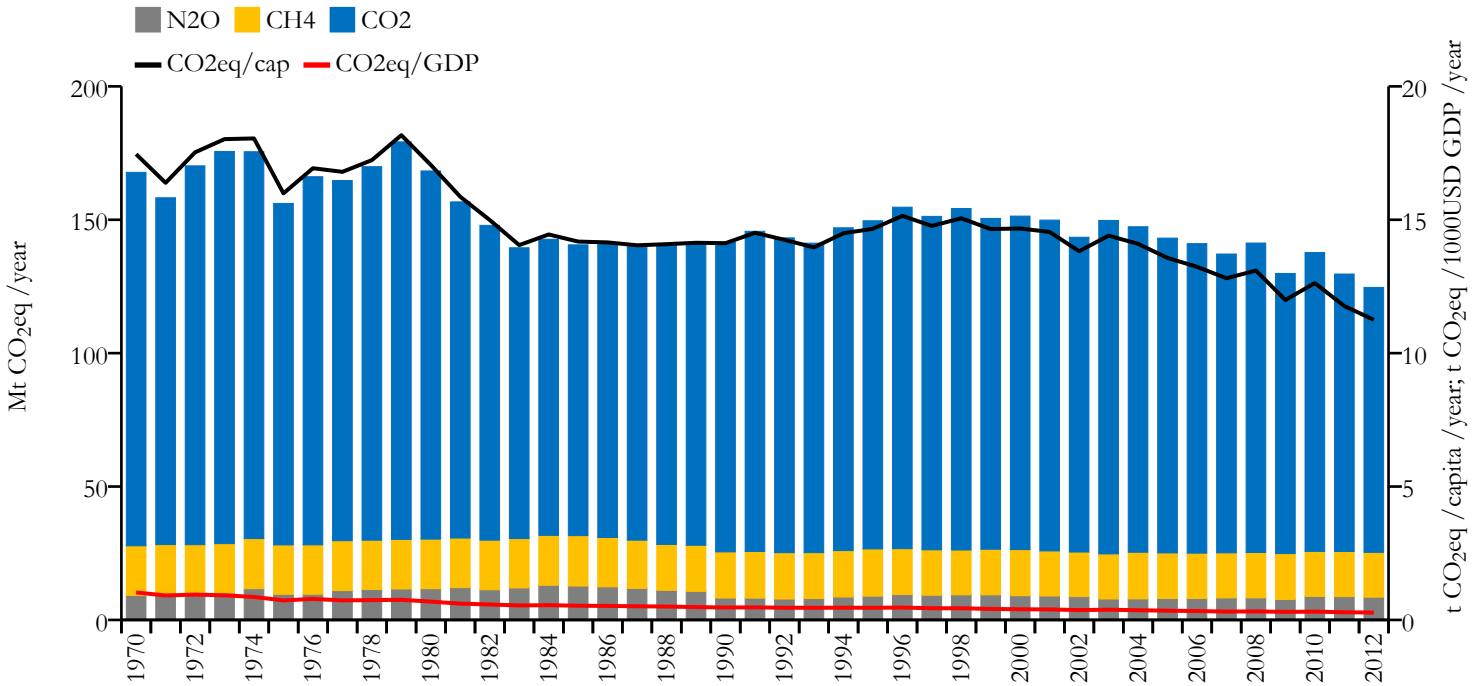
# Belgium

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



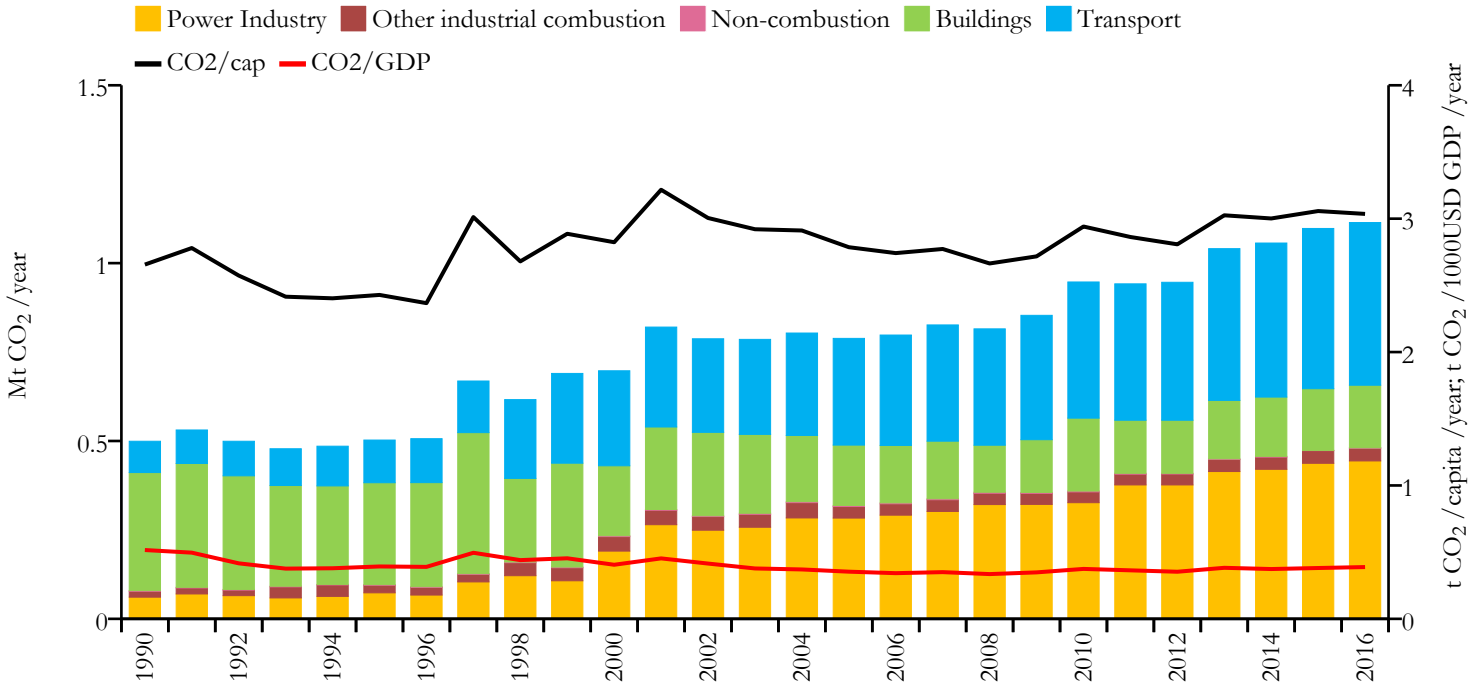

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 94.723 | 8.309 | 0.199 | 11358379 |
| 1990 | 114.882 | 11.488 | 0.379 | 10006544 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Belize

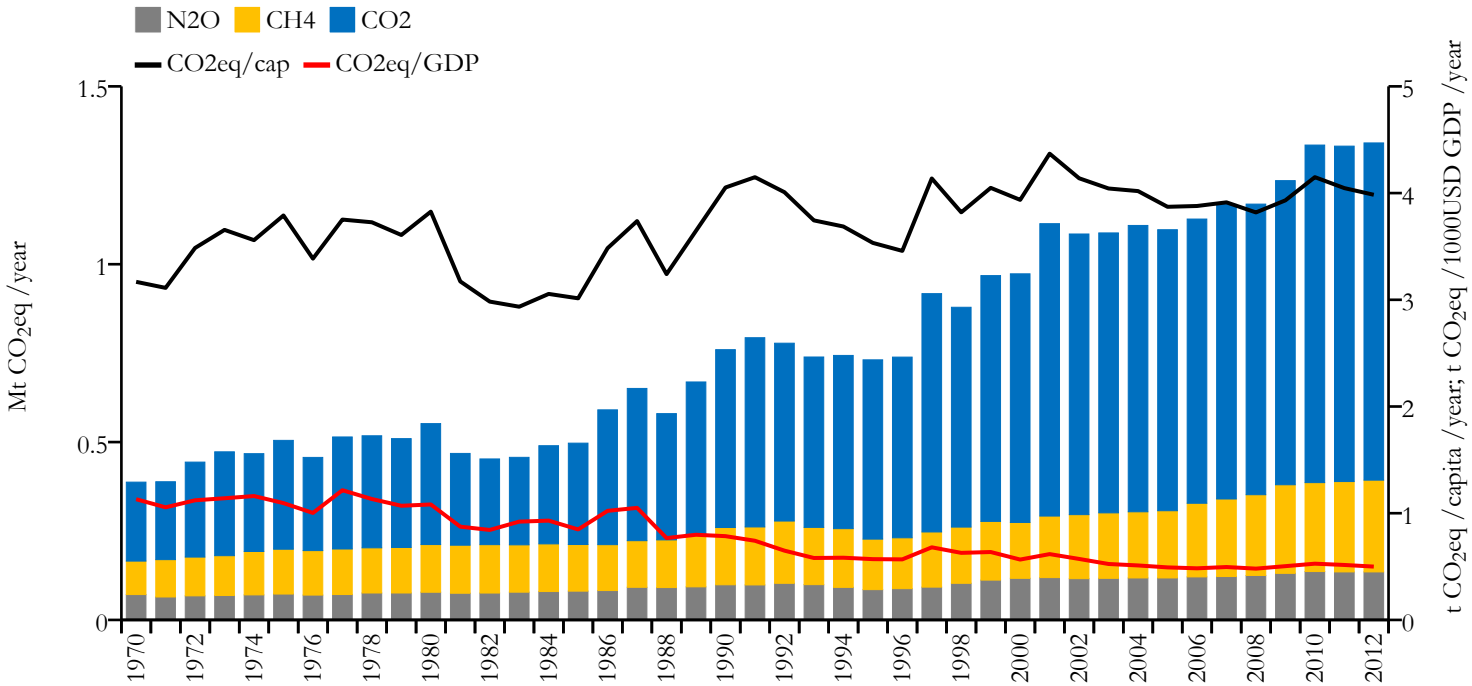
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 1.114 | 3.036 | 0.388 | 366954 |
| 1990 | 0.499 | 2.656 | 0.516 | 187552 |

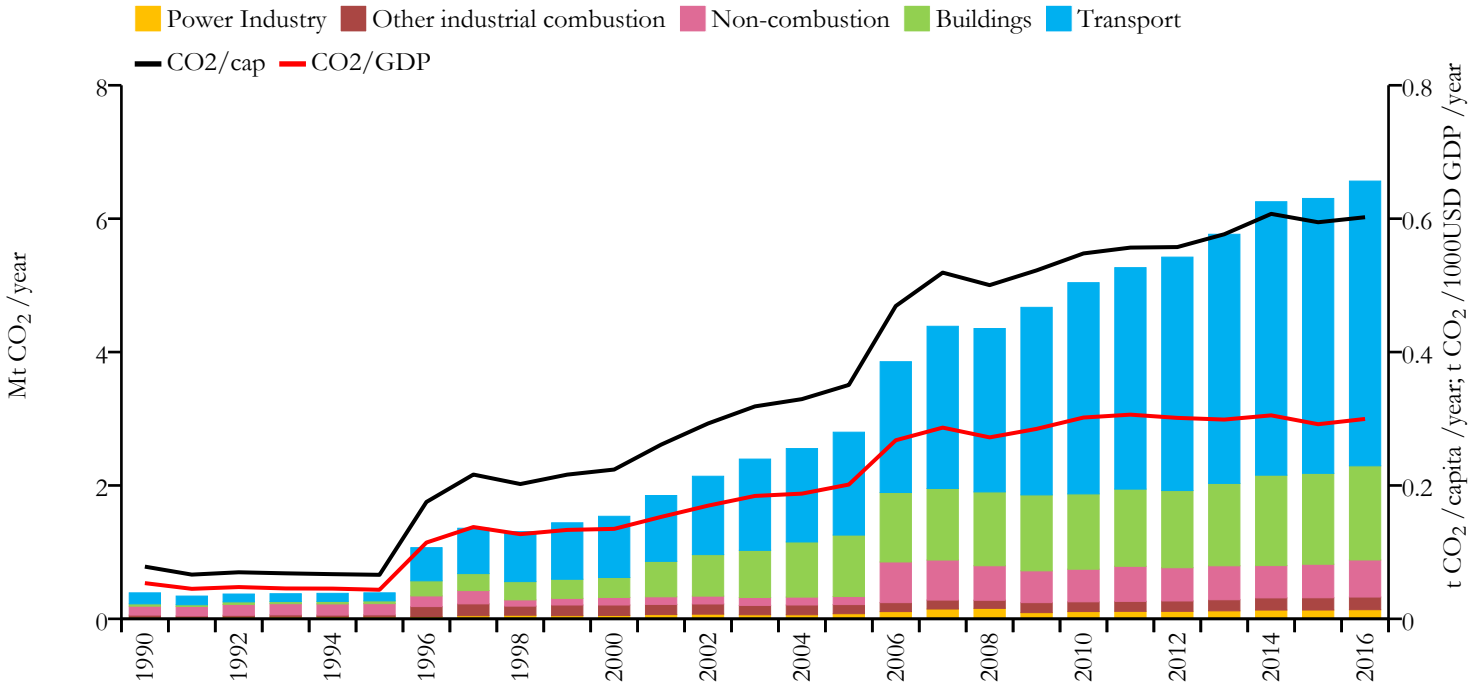
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Benin

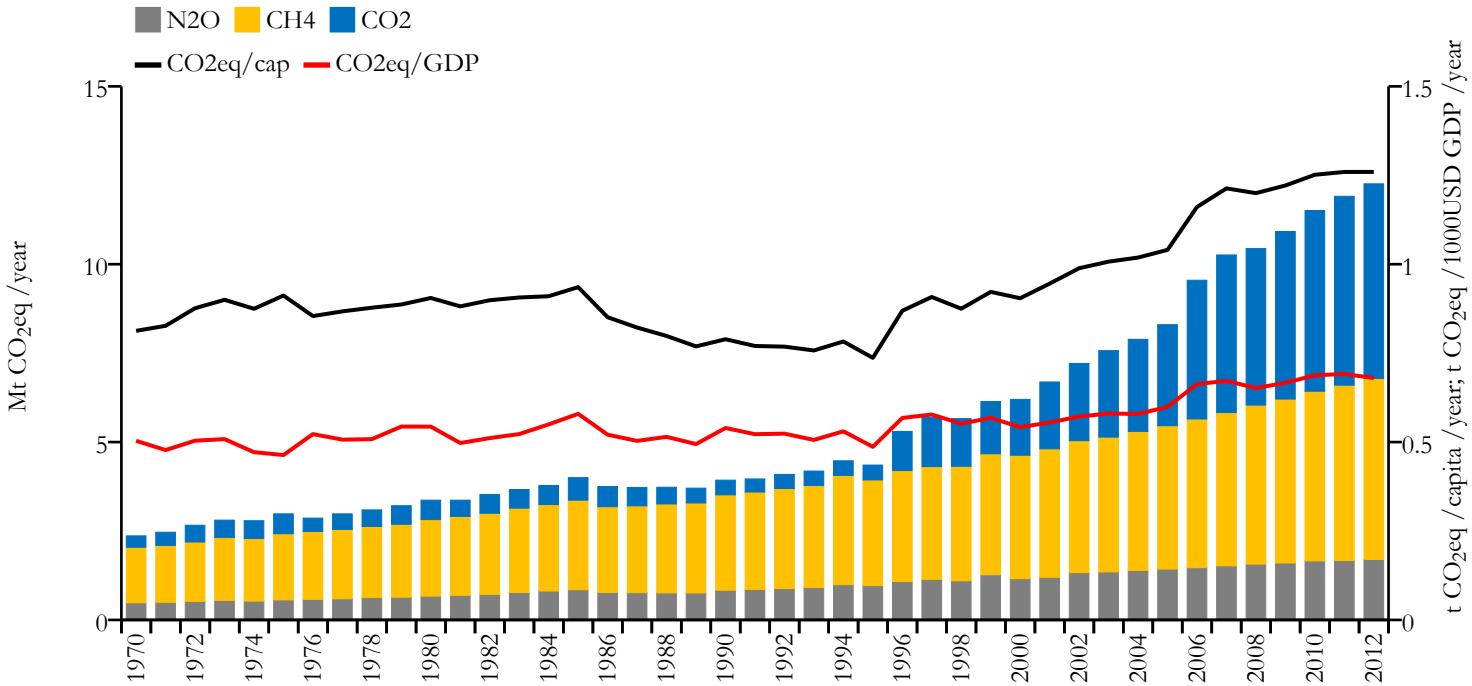
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



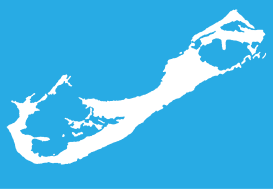

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 6.564 | 0.602 | 0.300 | 10872298 |
| 1990 | 0.390 | 0.078 | 0.054 | 4978496 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

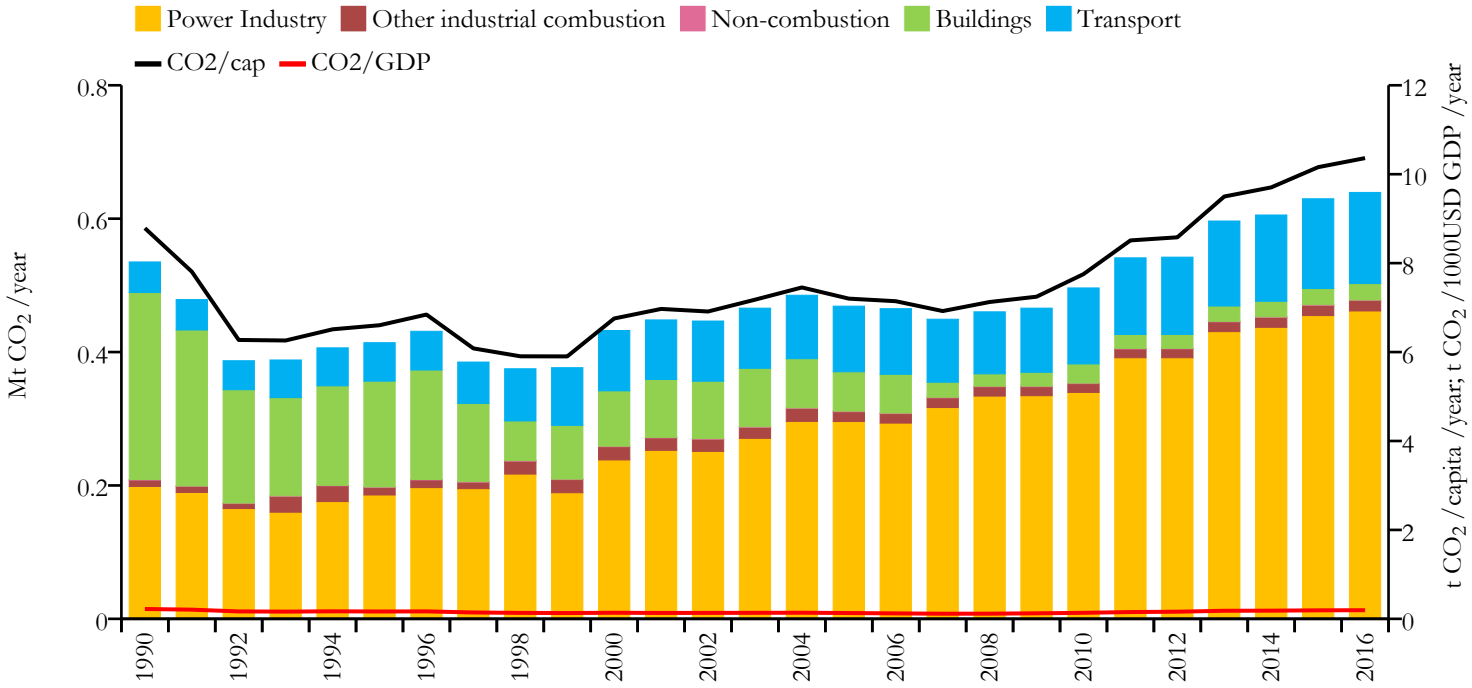
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Bermuda



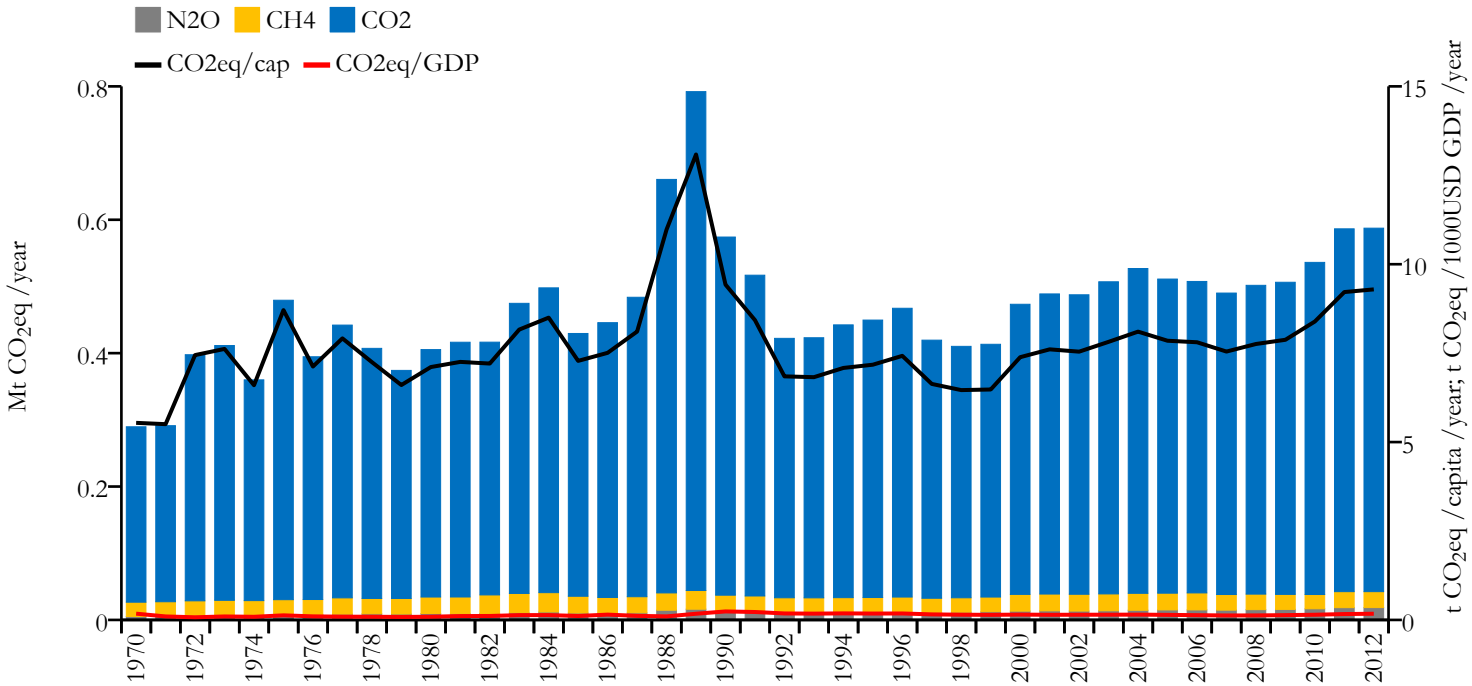
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.639 | 10.362 | 0.194 | 61666 |
| 1990 | 0.535 | 8.786 | 0.222 | 60930 |

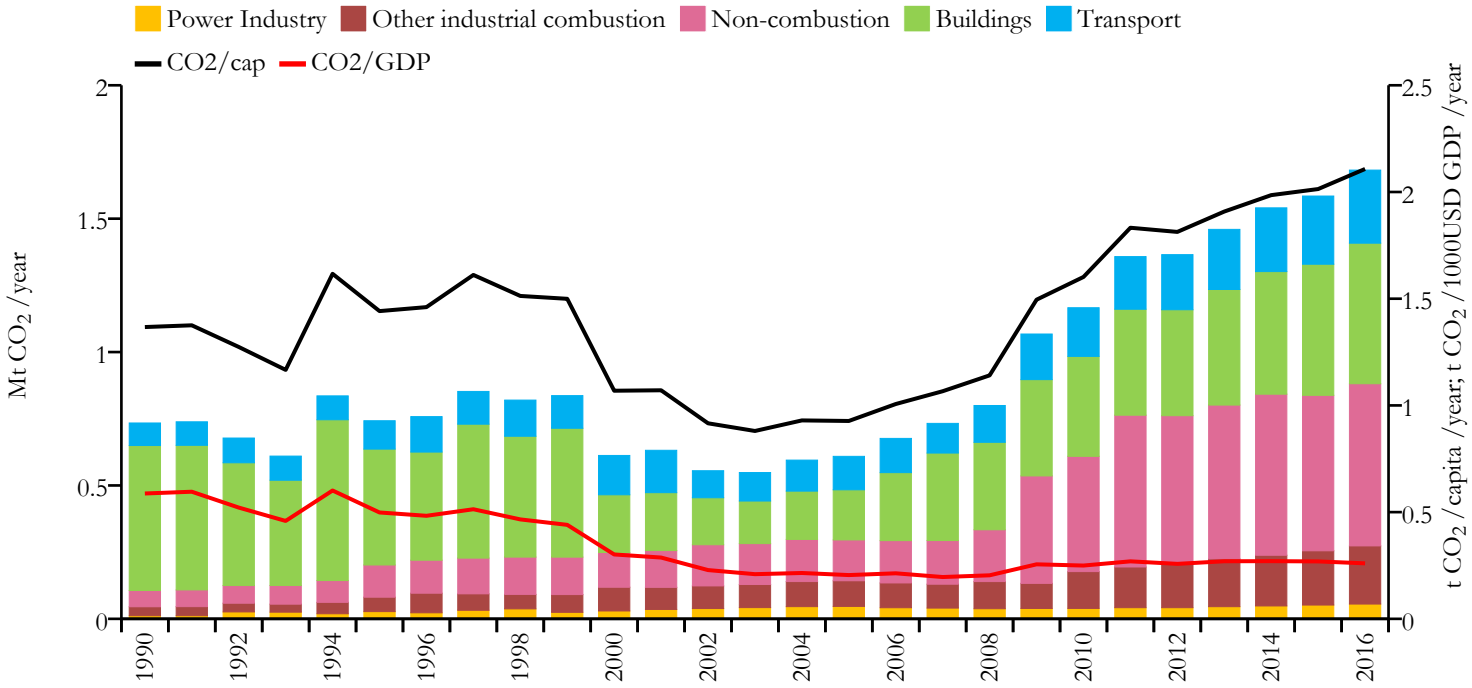
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Bhutan

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 1.682 | 2.108 | 0.260 | 797765 |
| 1990 | 0.734 | 1.367 | 0.587 | 537280 |

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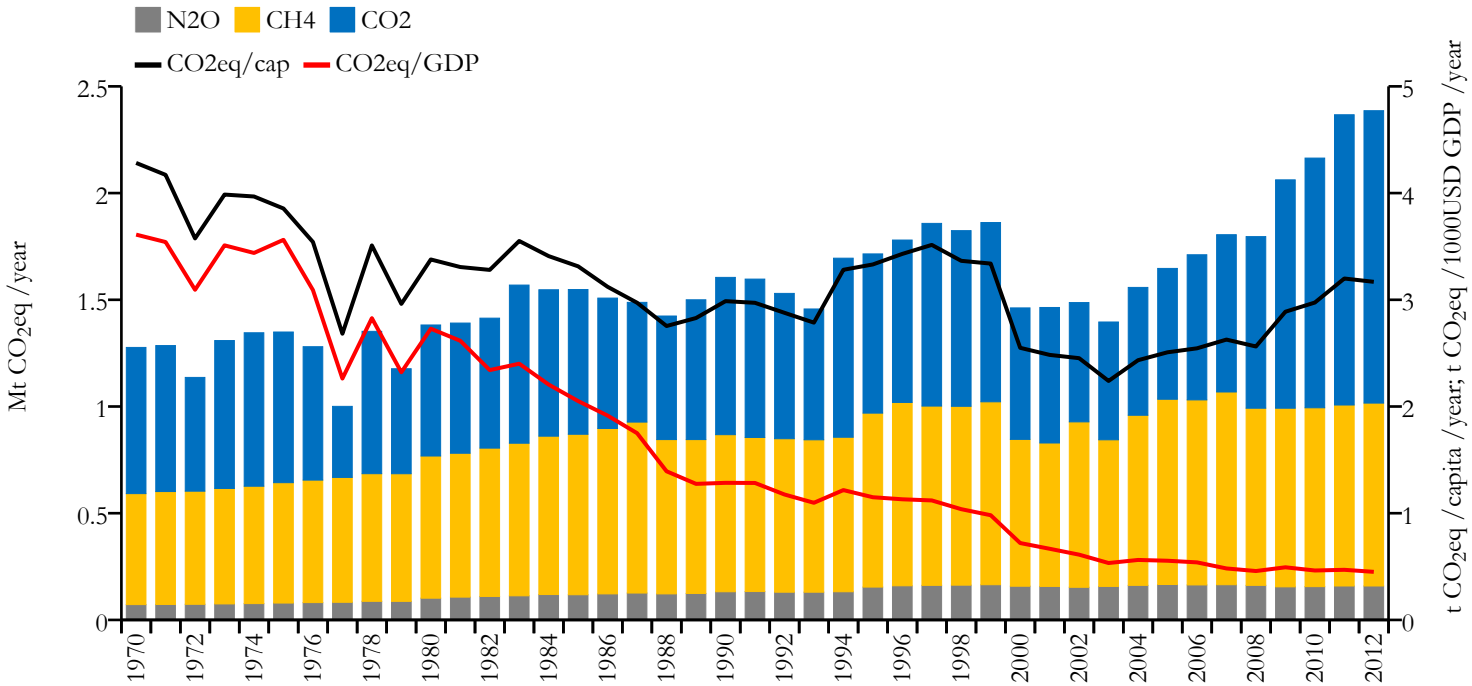
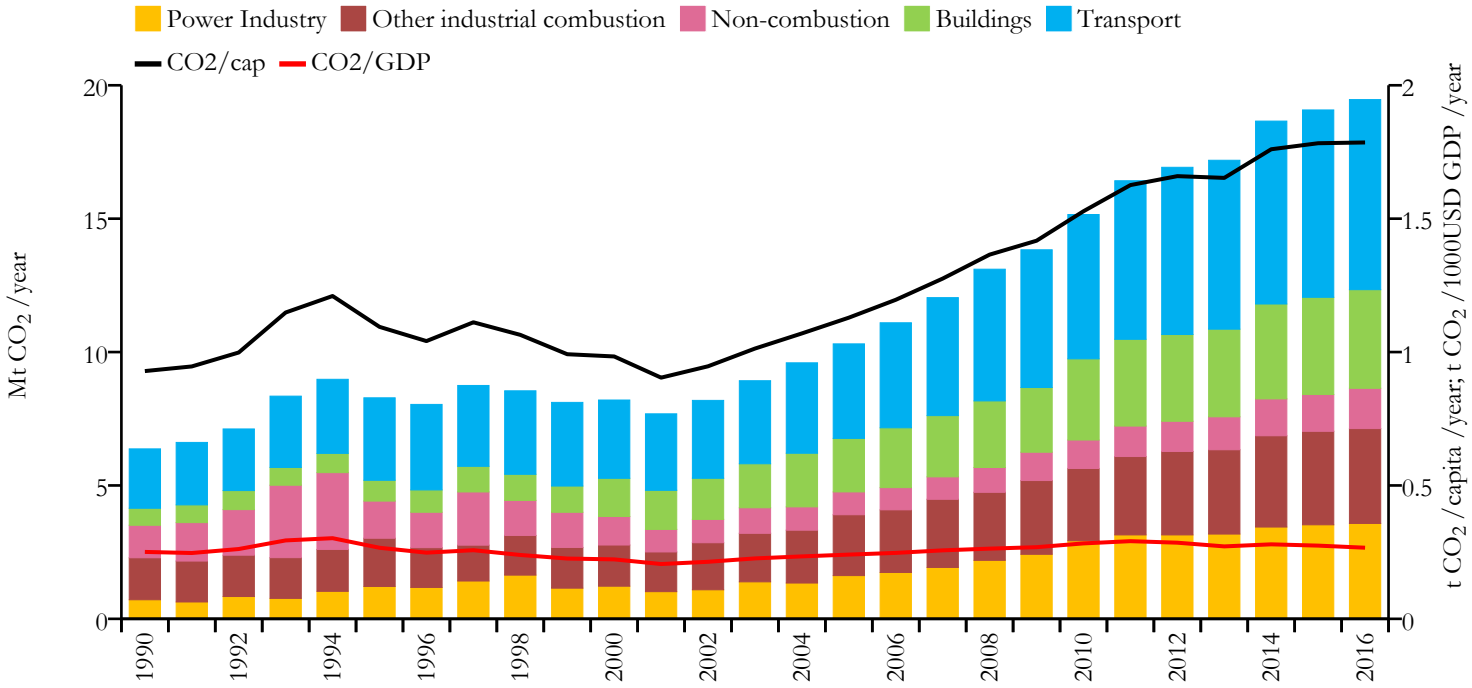
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



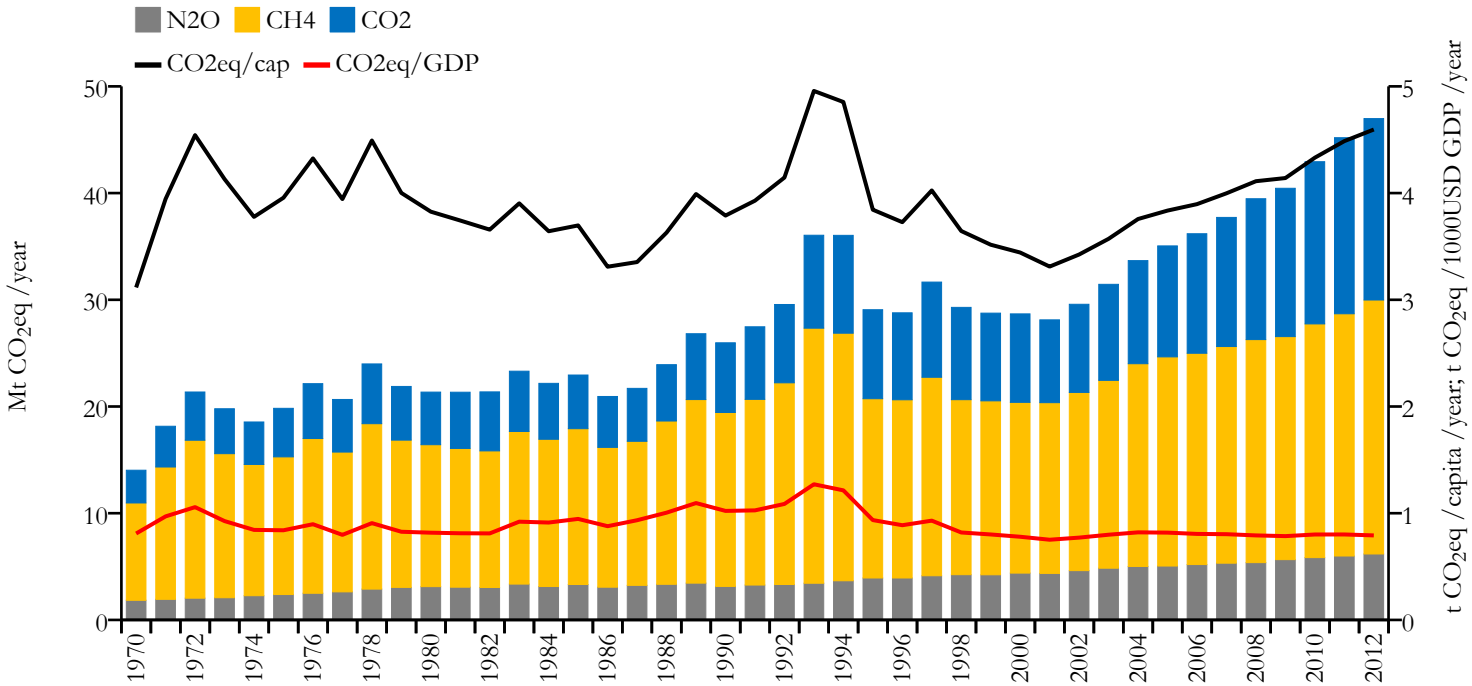
# Bolivia

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



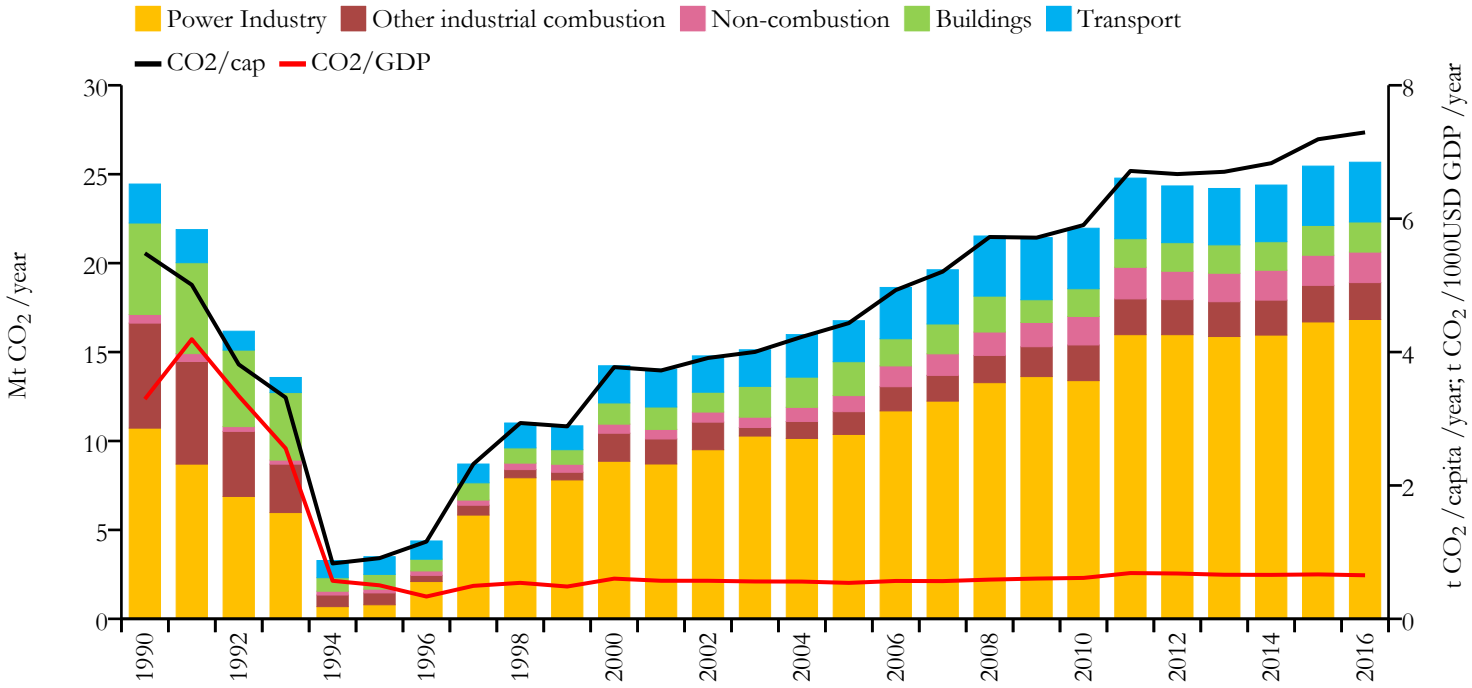

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 19.464 | 1.786 | 0.267 | 10887882 |
| 1990 | 6.371 | 0.929 | 0.251 | 6856244 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Bosnia and Herzegovina

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 25.674 | 7.294 | 0.653 | 3516816 |
| 1990 | 24.447 | 5.481 | 3.295 | 4463422 |

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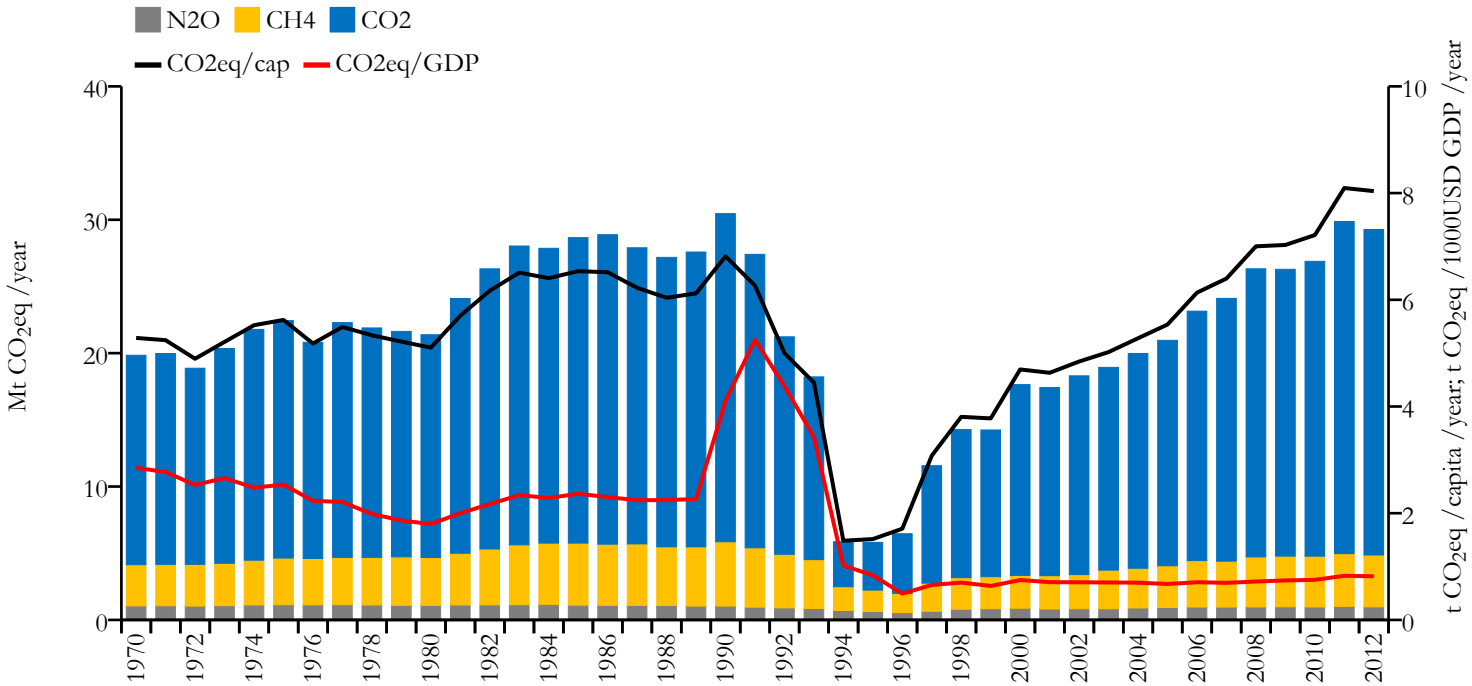
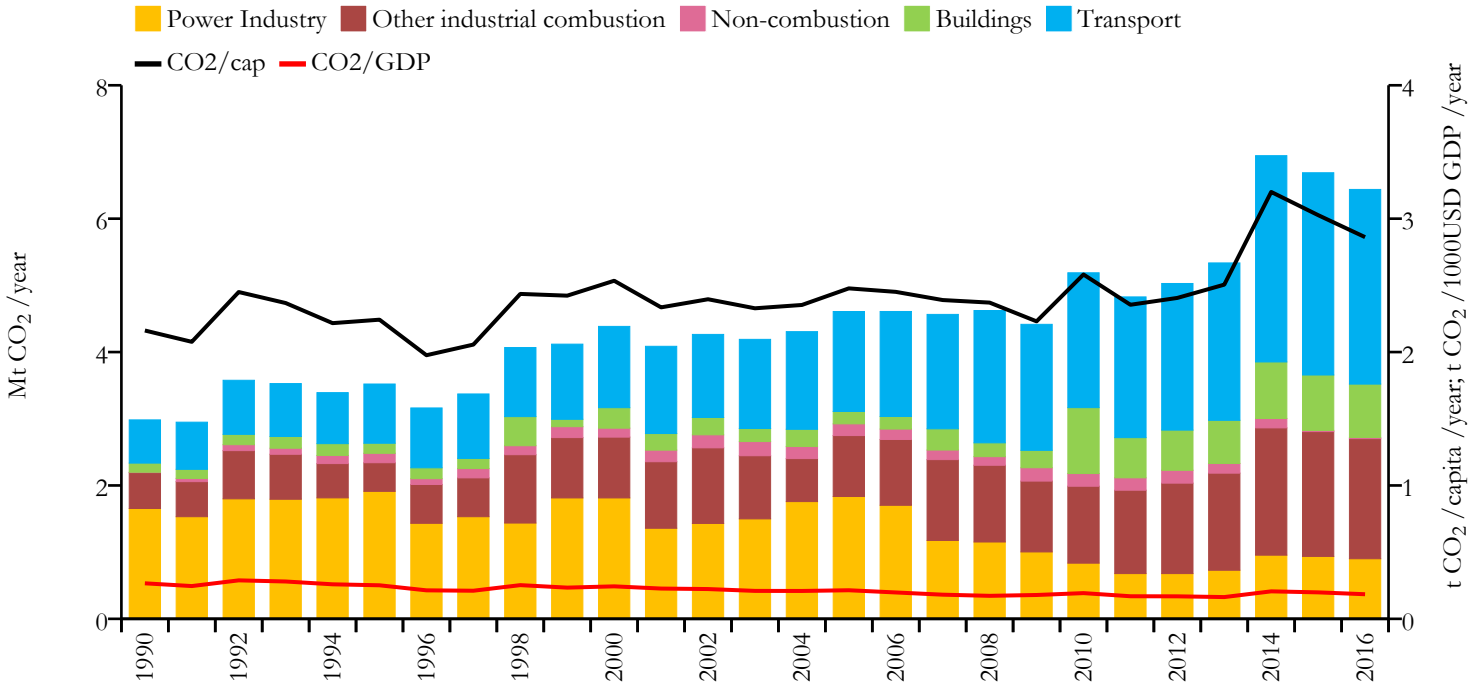
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



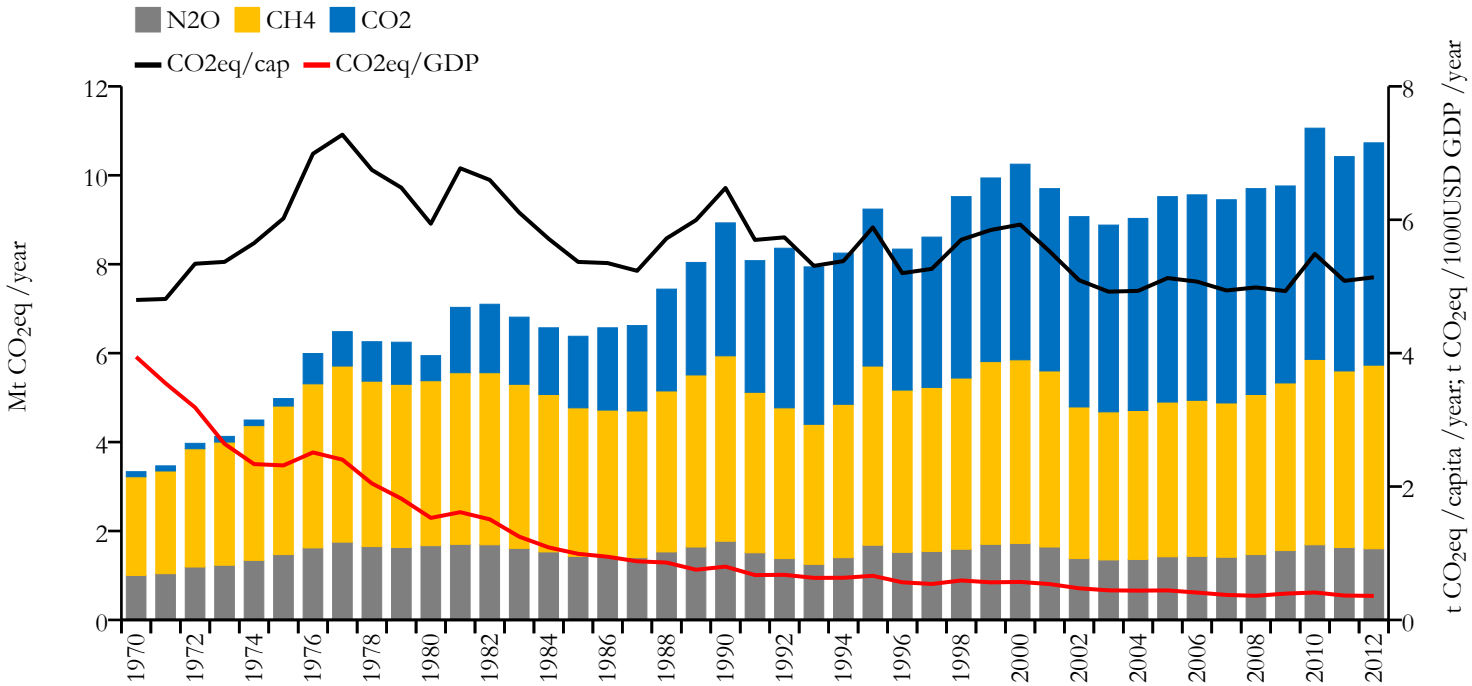
# Botswana

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



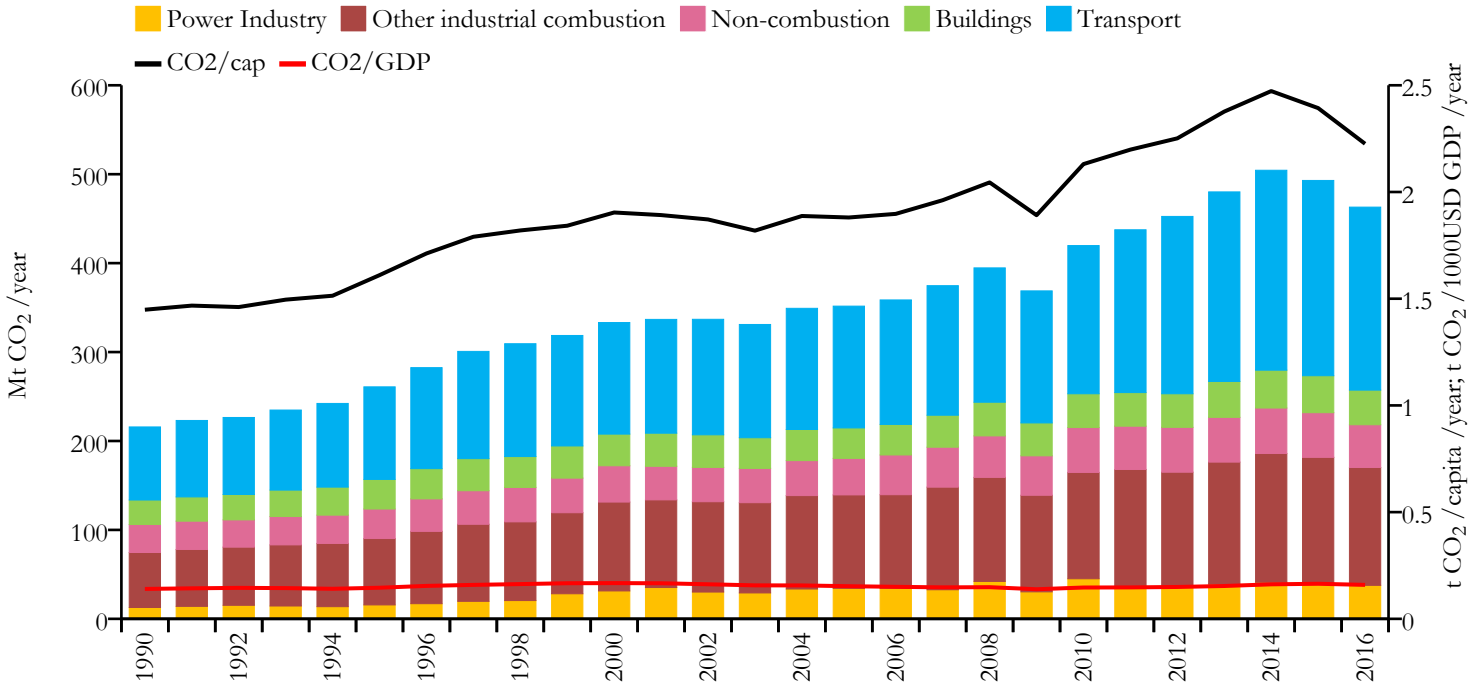

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 6.438 | 2.862 | 0.184 | 2250260 |
| 1990 | 2.983 | 2.162 | 0.266 | 1377912 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



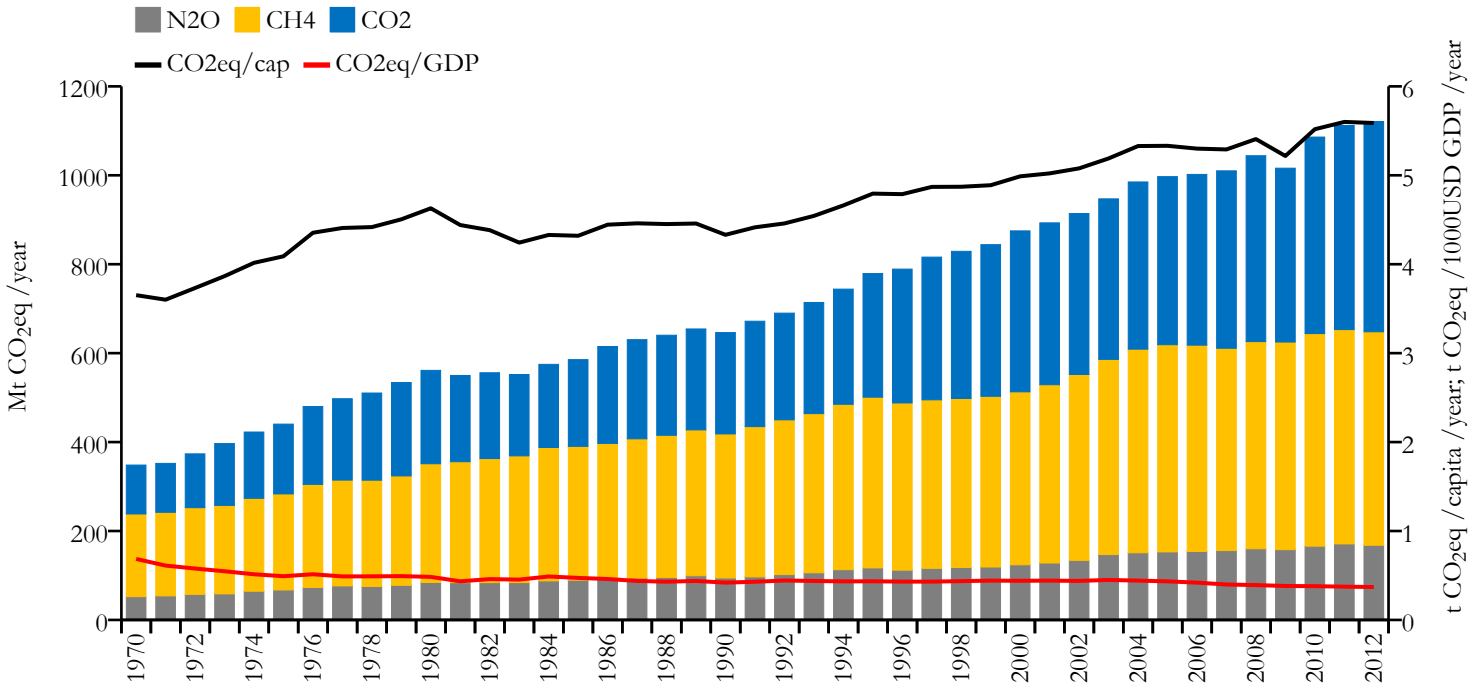
# Brazil

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)

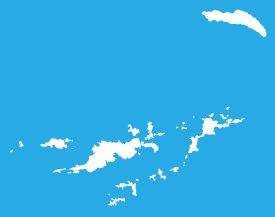



| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 462.995 | 2.226 | 0.159 | 207652865 |
| 1990 | 215.804 | 1.448 | 0.140 | 149352145 |

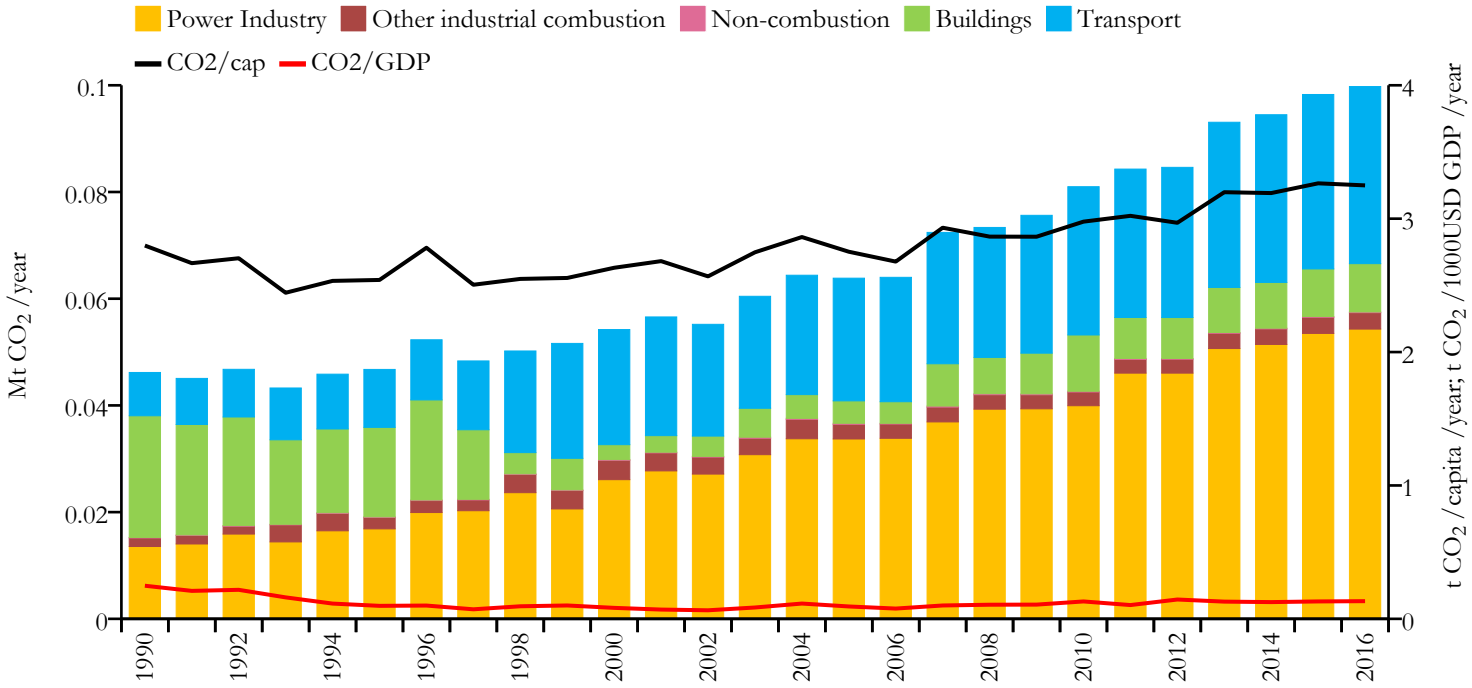
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# British Virgin Islands

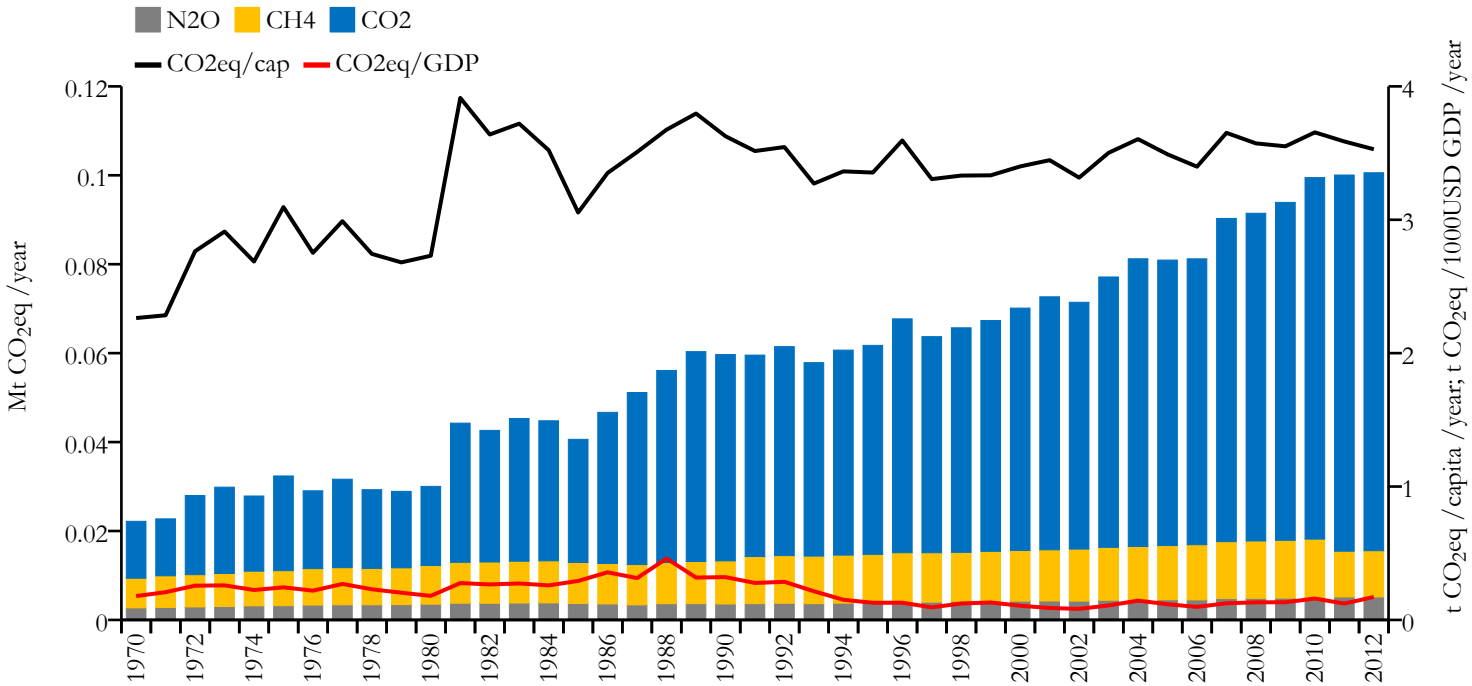


## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



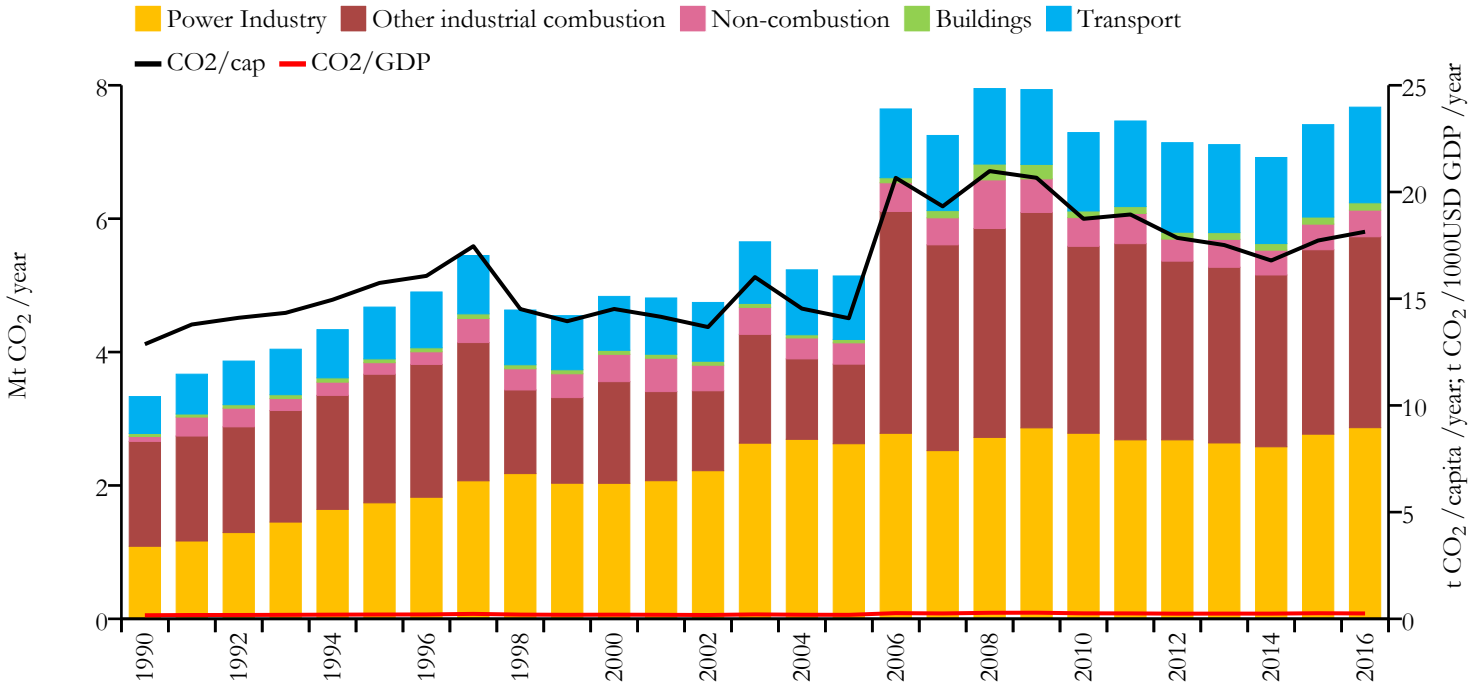

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.100 | 3.250 | 0.132 | 30661 |
| 1990 | 0.046 | 2.799 | 0.248 | 16461 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Brunei

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 7.672 | 18.137 | 0.252 | 423196 |
| 1990 | 3.333 | 12.868 | 0.168 | 258785 |

EDGAR
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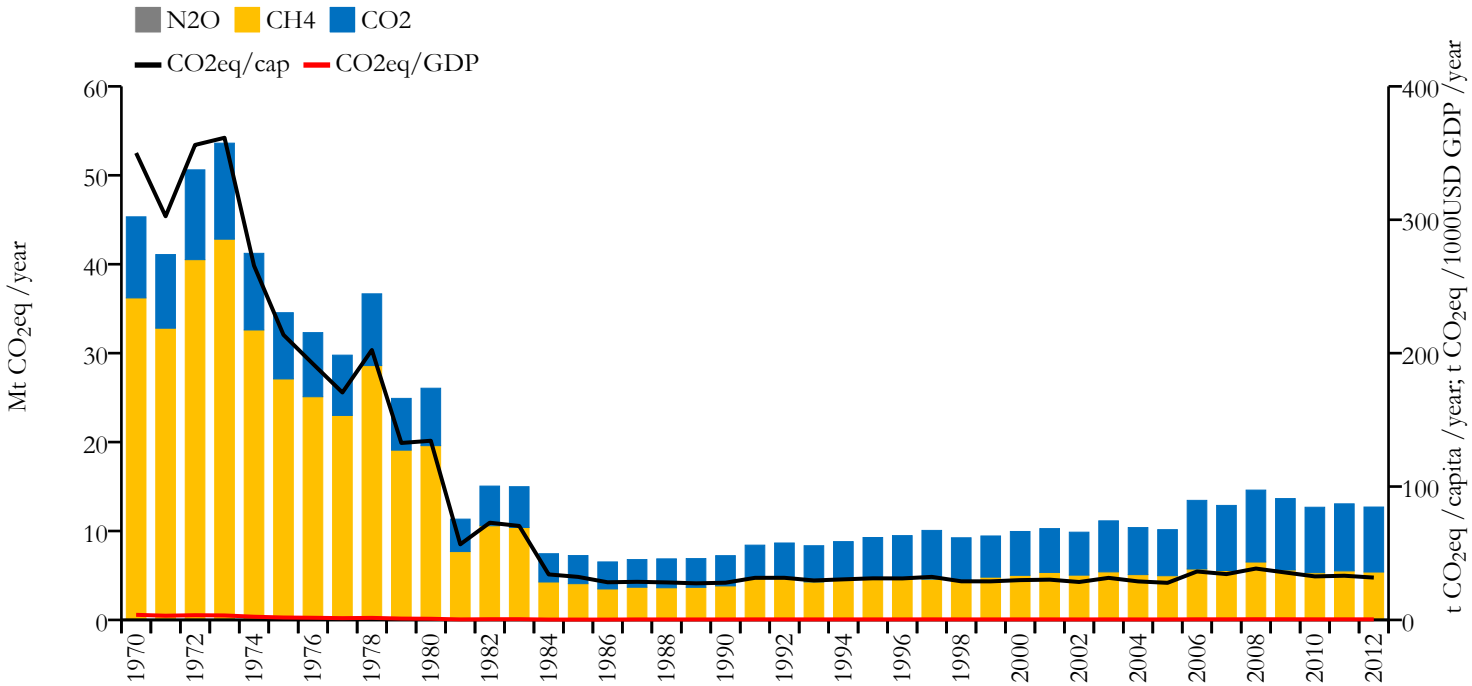
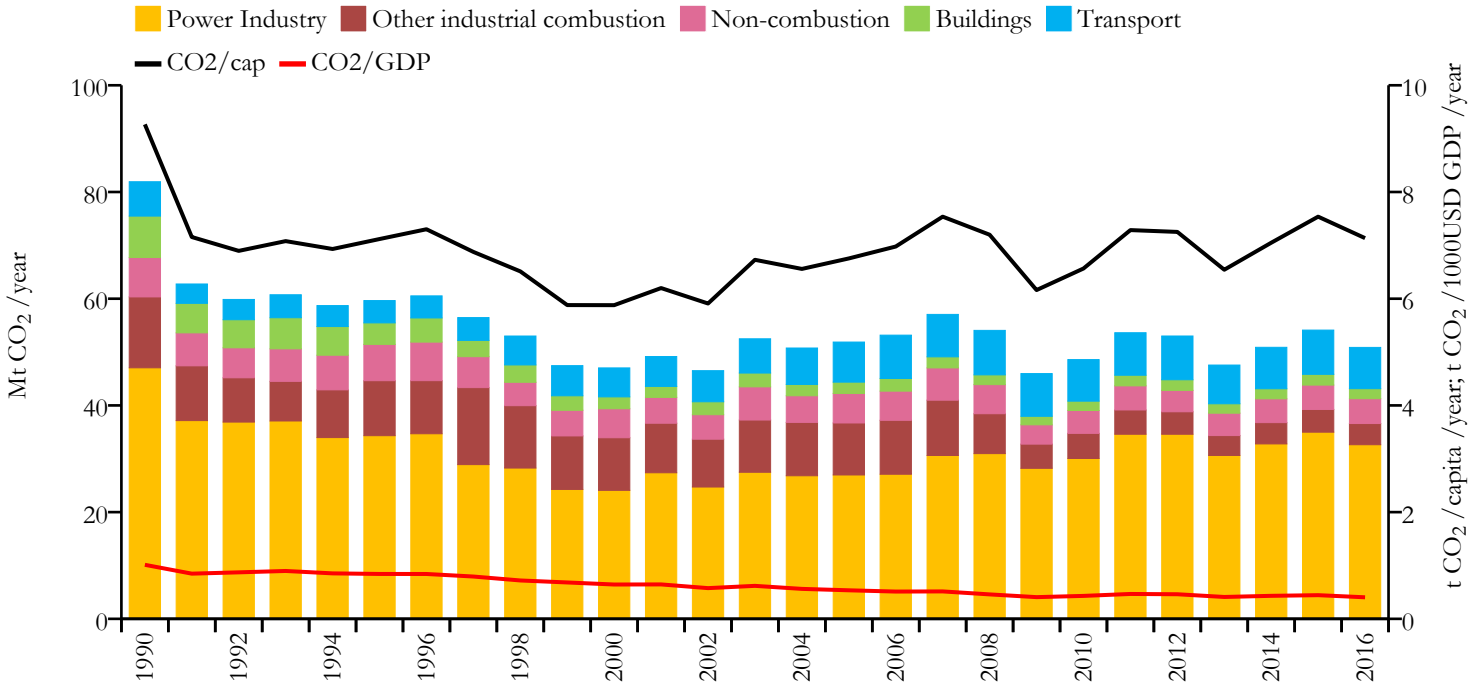
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Bulgaria

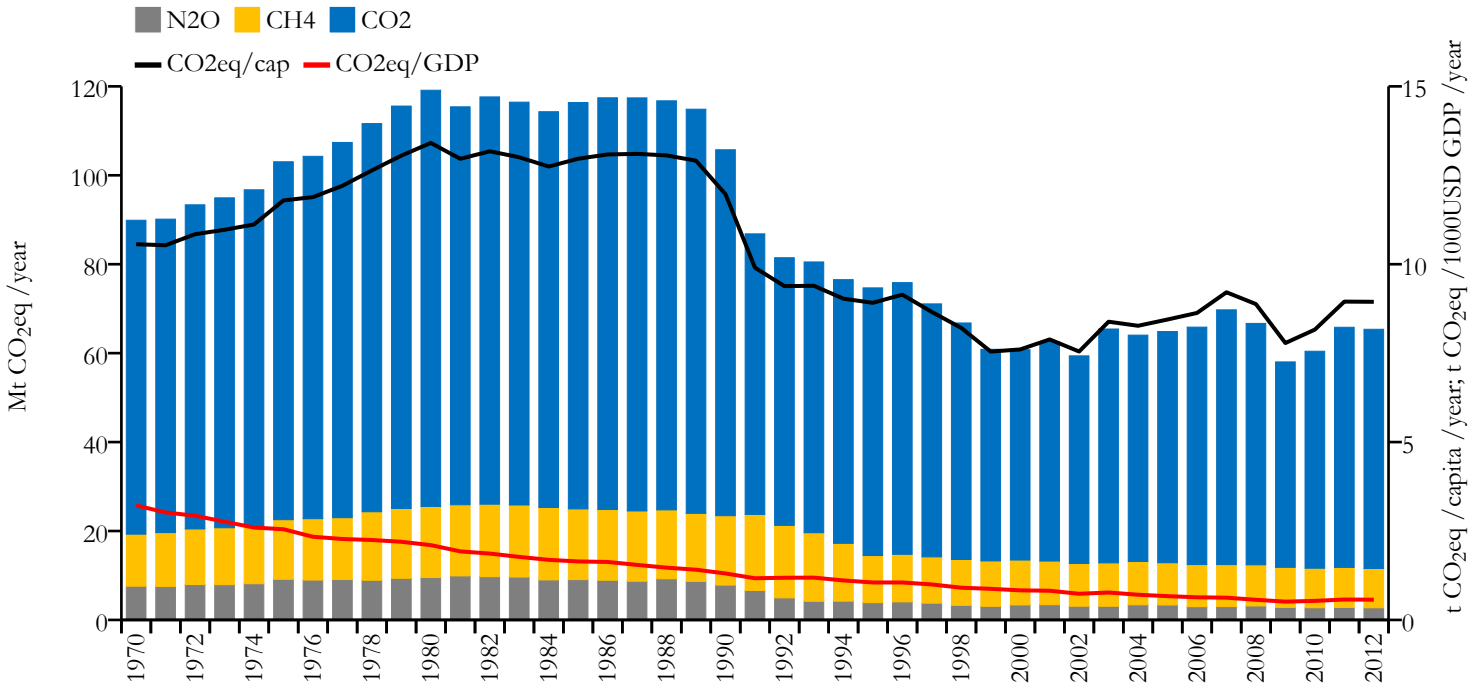
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 50.873 | 7.135 | 0.404 | 7131494 |
| 1990 | 81.923 | 9.267 | 1.013 | 8841371 |

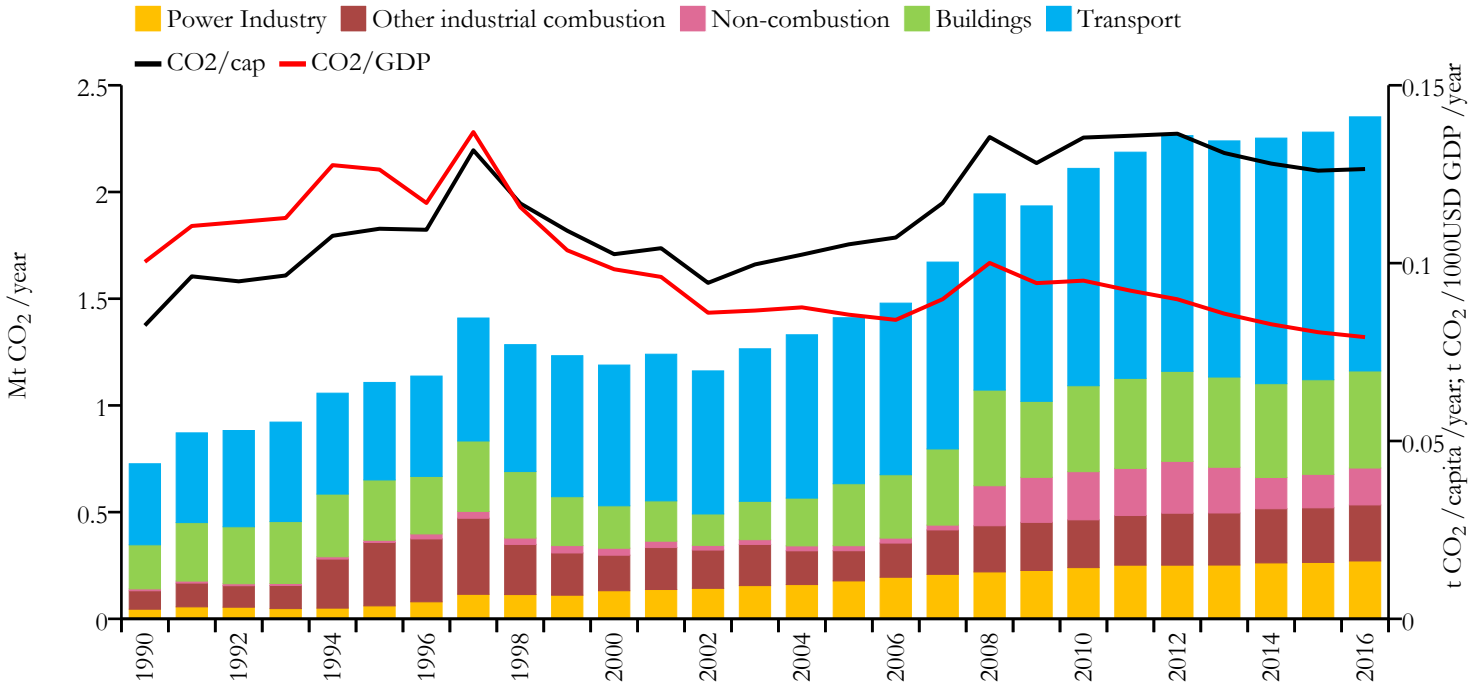
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



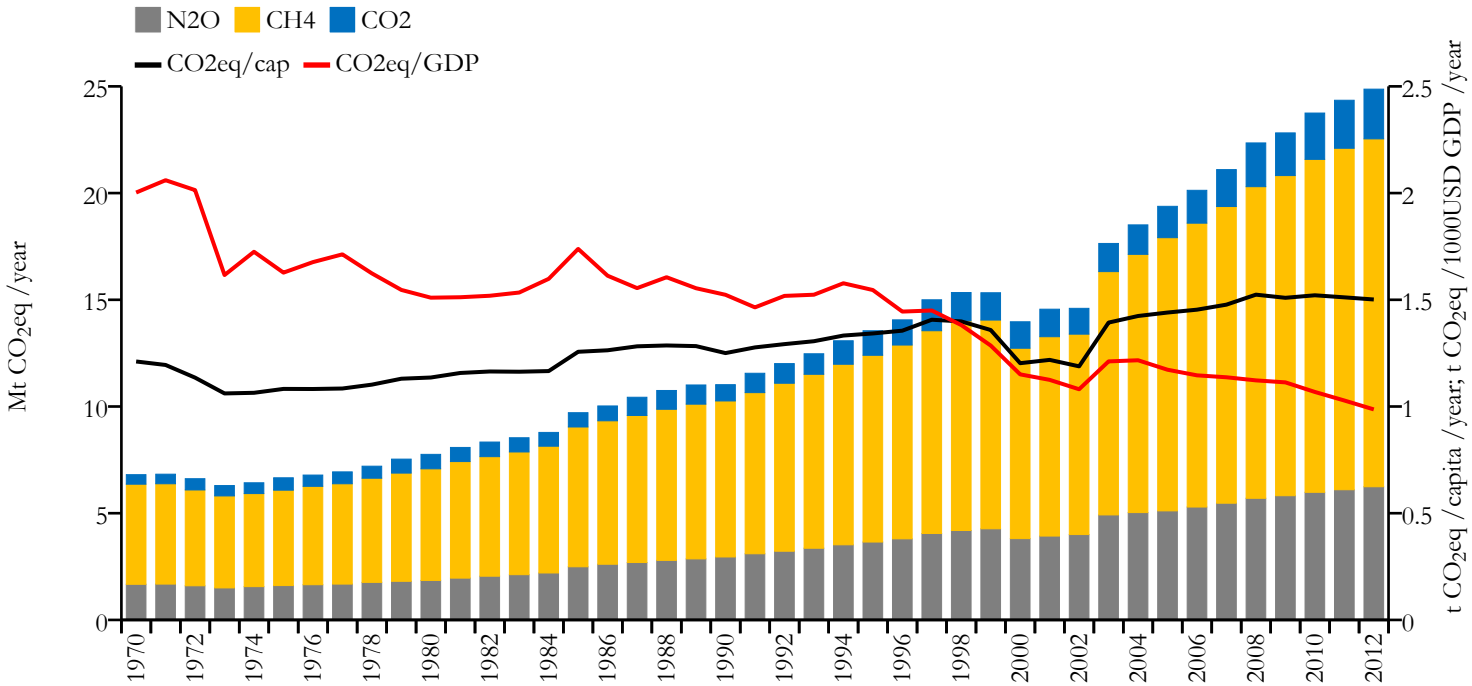
# Burkina Faso

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



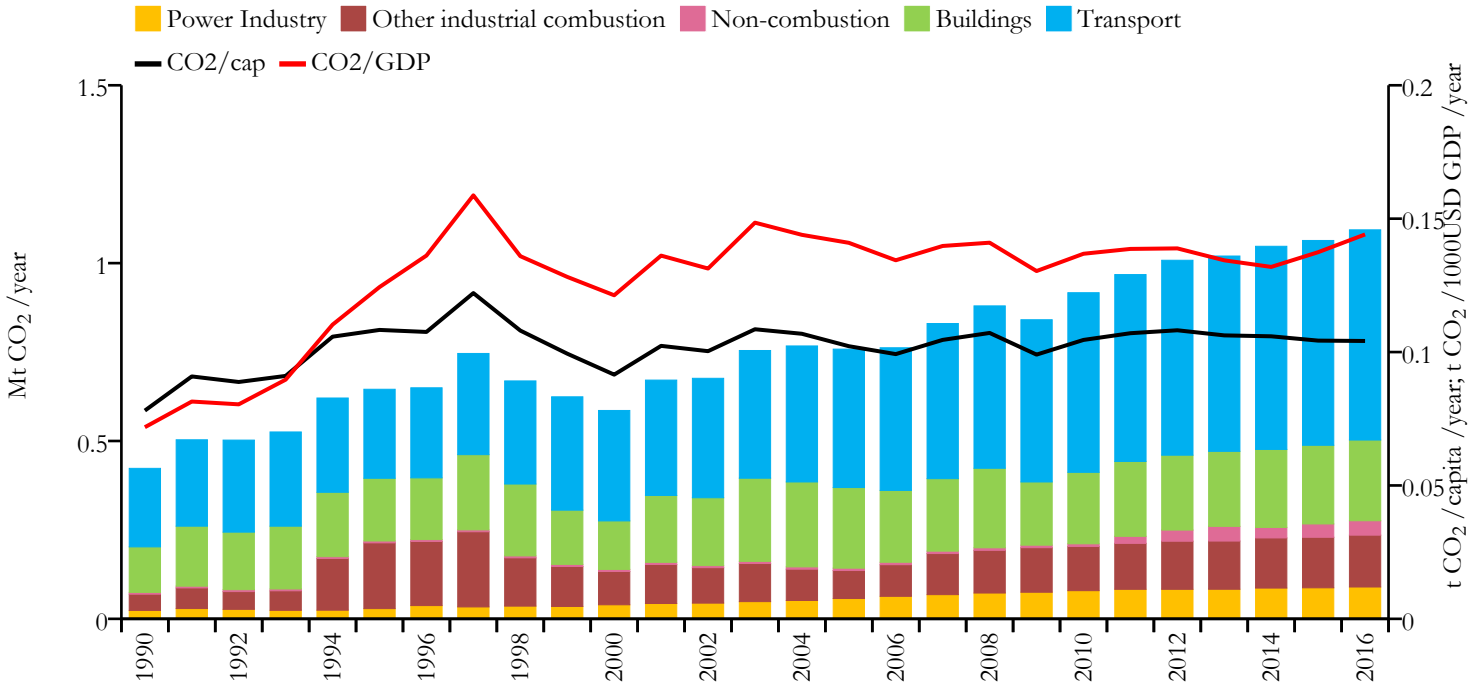

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 2.352 | 0.126 | 0.079 | 18646433 |
| 1990 | 0.727 | 0.082 | 0.100 | 8811034 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



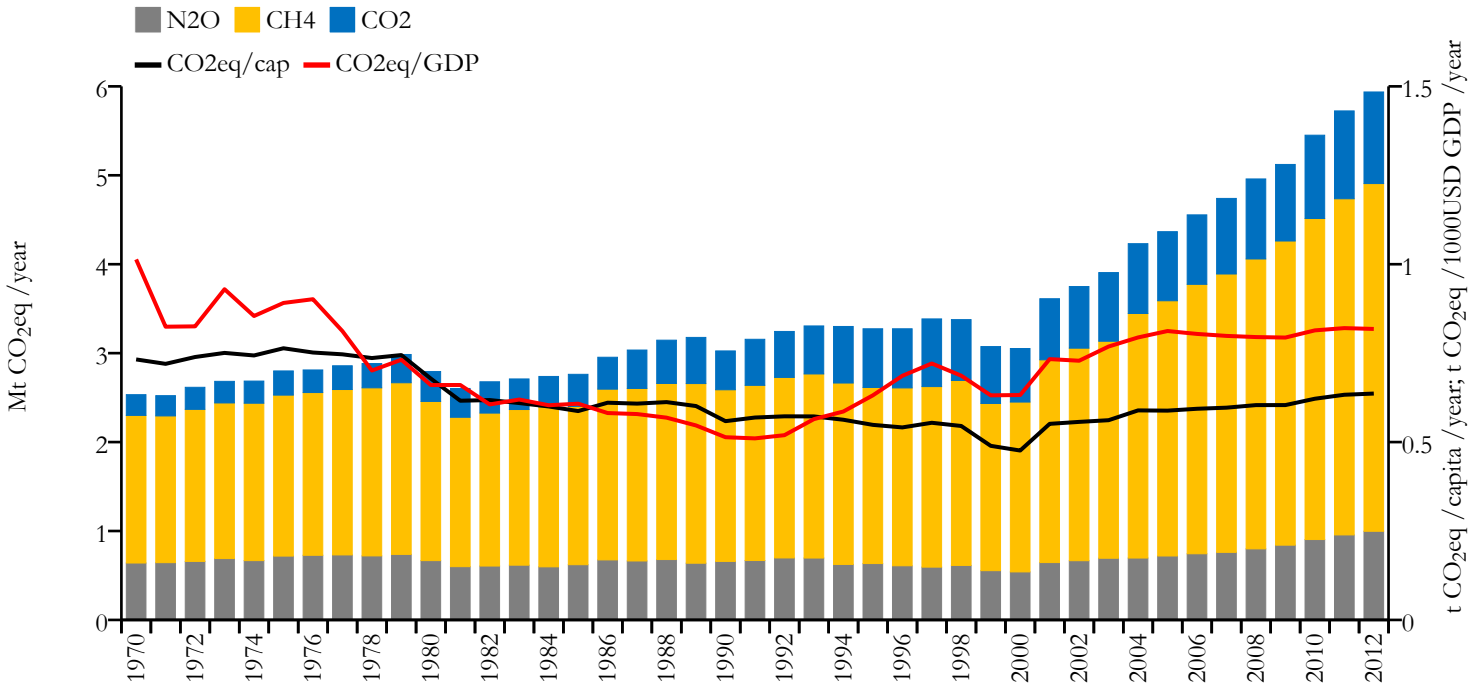
# Burundi

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)

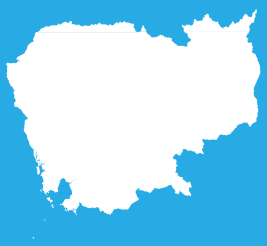



| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 1.094 | 0.104 | 0.144 | 10524117 |
| 1990 | 0.423 | 0.078 | 0.072 | 5415415 |

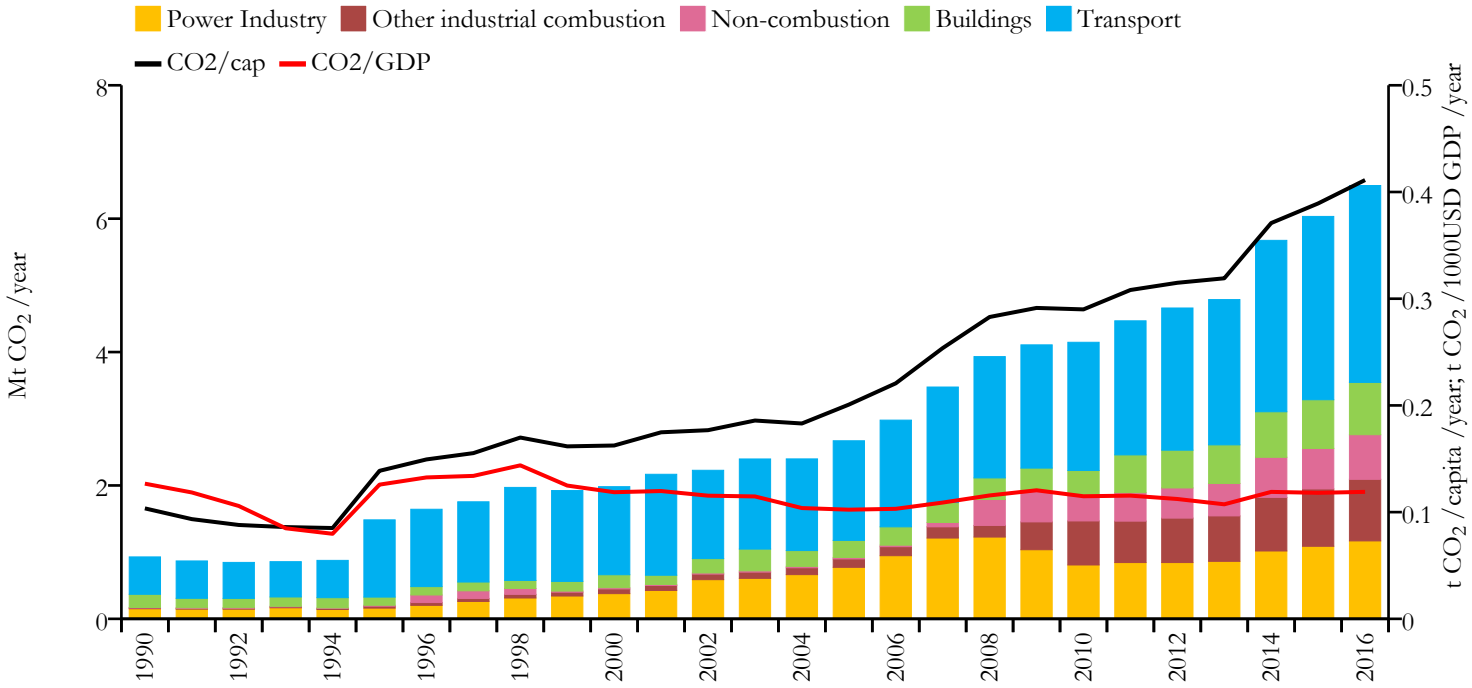
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Cambodia

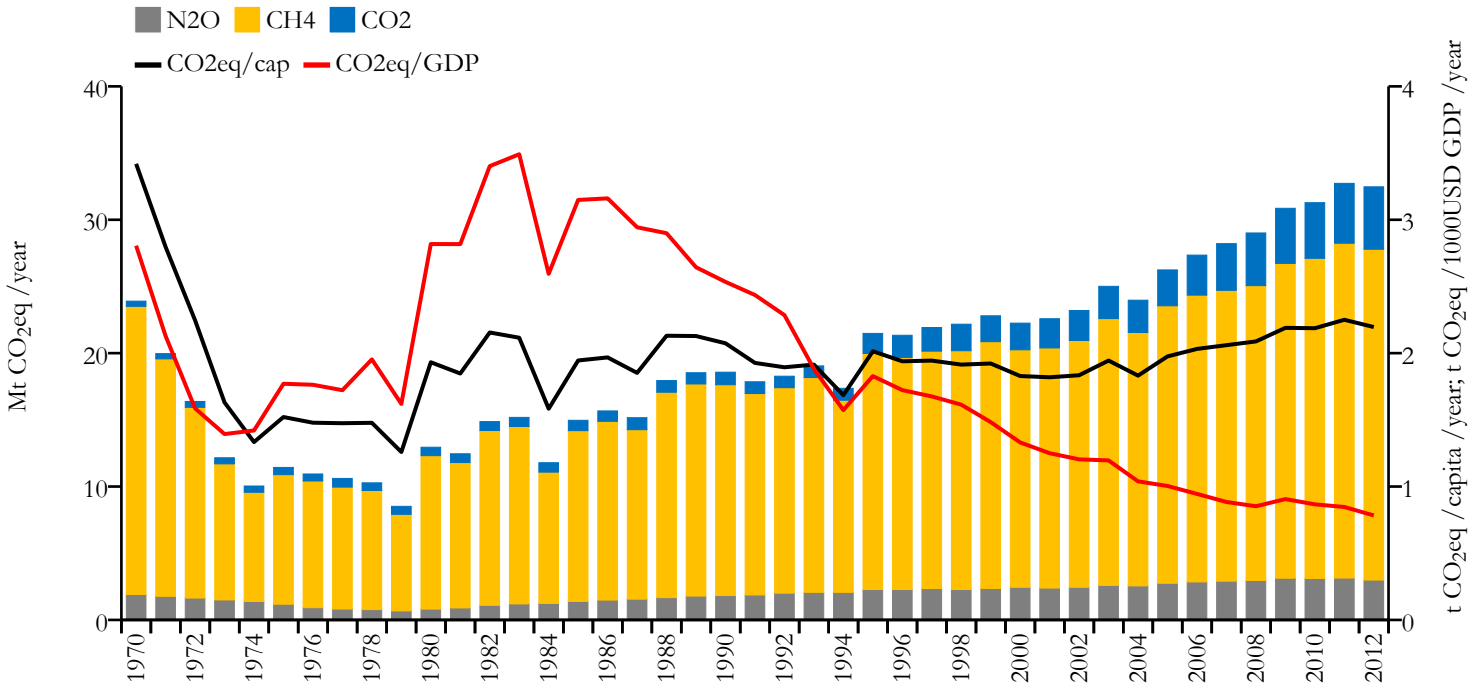


## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



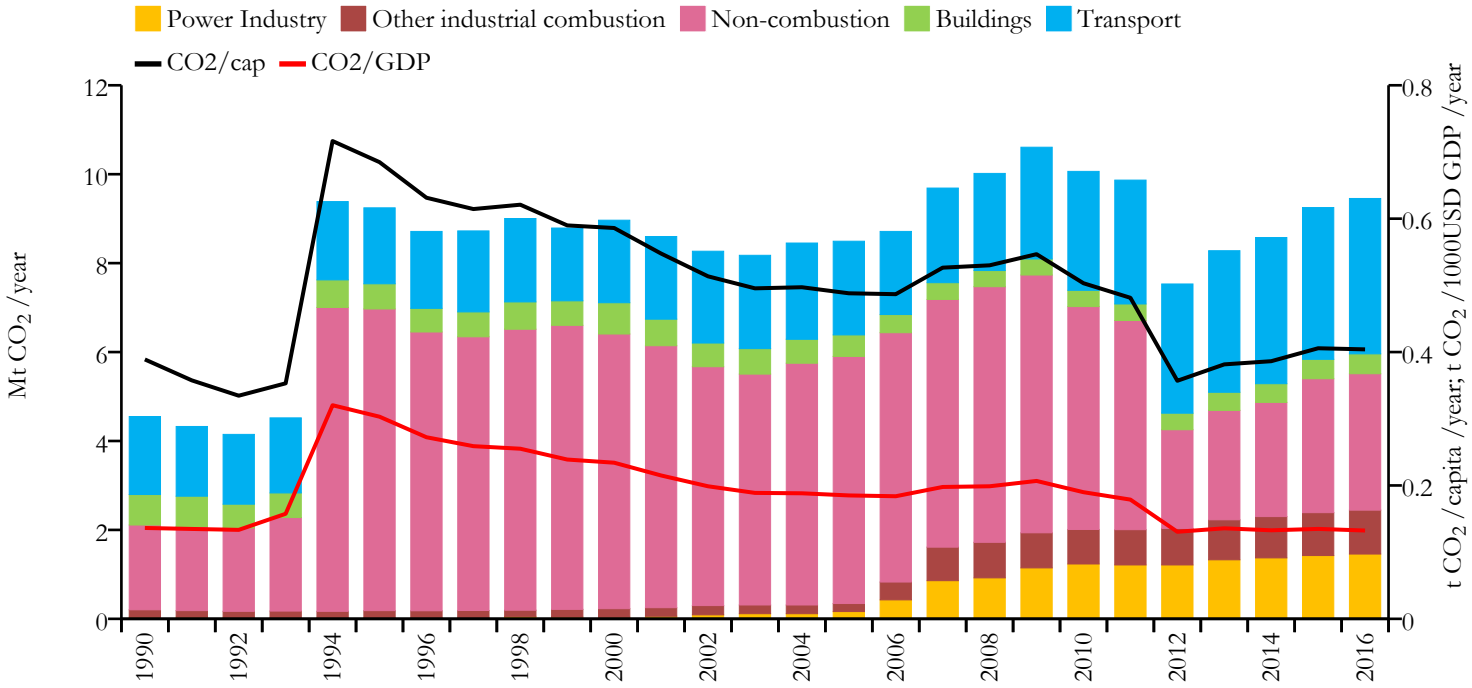

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 6.497 | 0.411 | 0.119 | 15762370 |
| 1990 | 0.929 | 0.104 | 0.127 | 8973342 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Cameroon

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 9.454 | 0.404 | 0.132 | 23439189 |
| 1990 | 4.551 | 0.389 | 0.136 | 11715218 |

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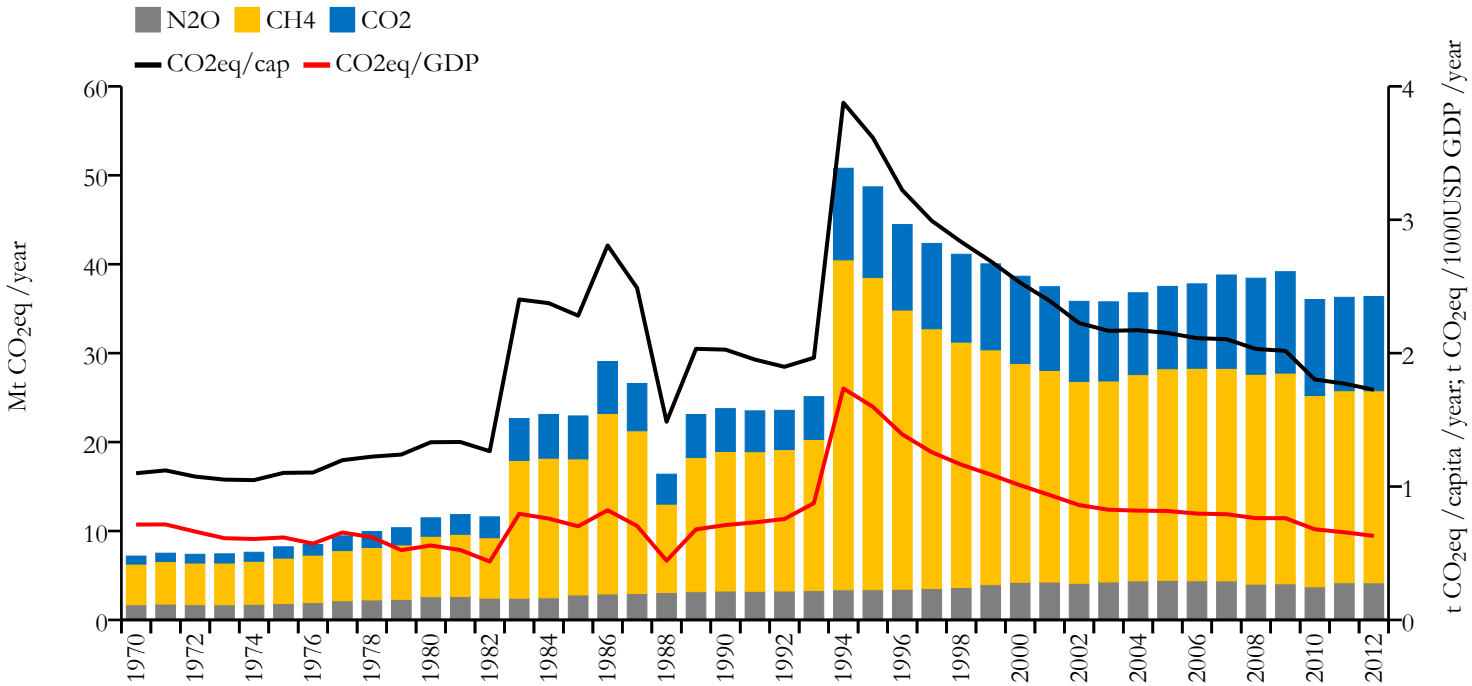
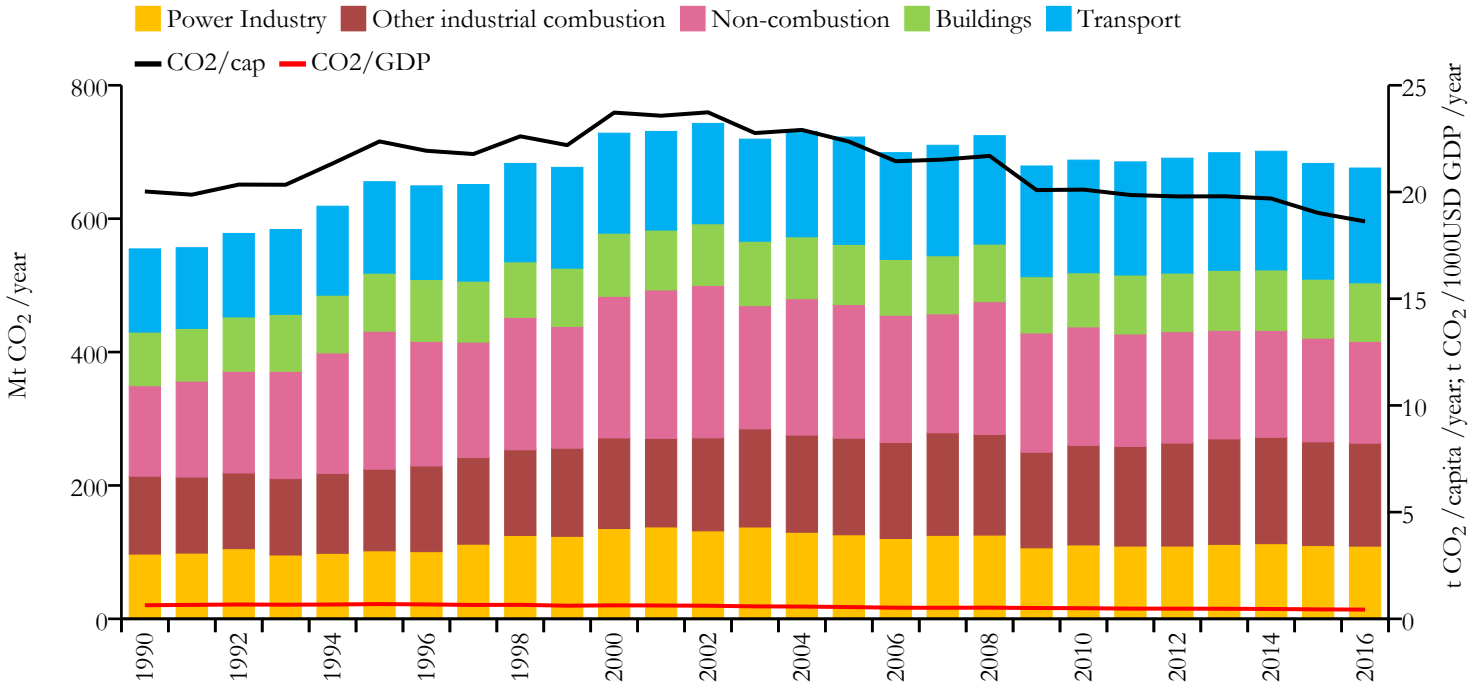
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Canada

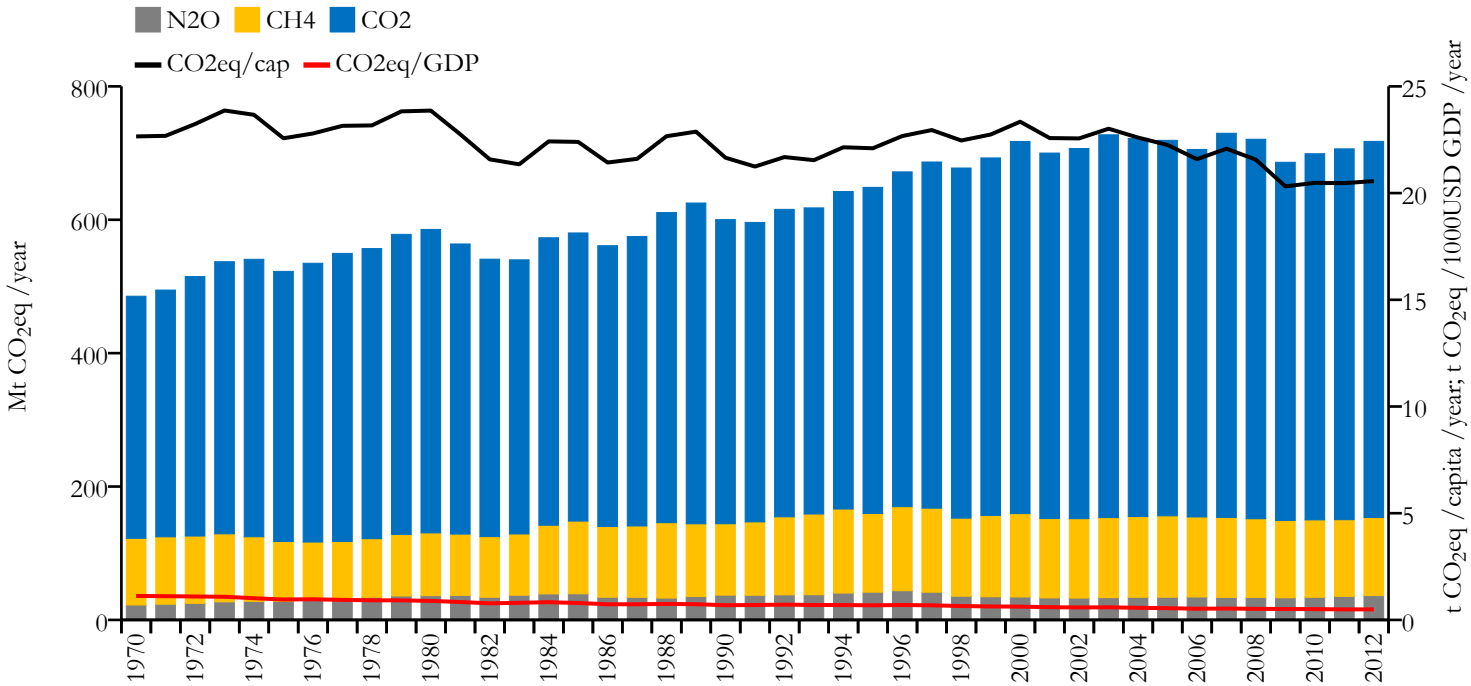
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 675.919 | 18.620 | 0.433 | 36289822 |
| 1990 | 554.684 | 20.025 | 0.638 | 27692680 |

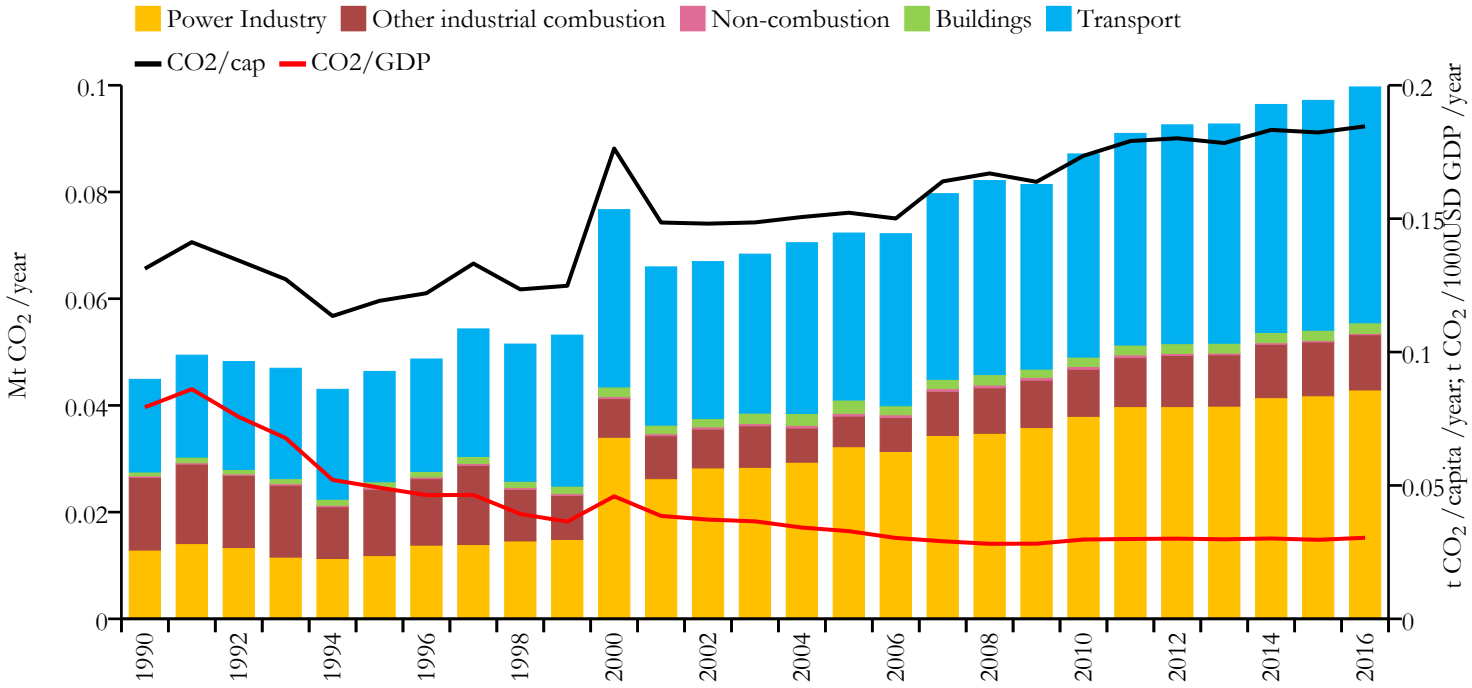
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Cape Verde

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.100 | 0.185 | 0.030 | 539560 |
| 1990 | 0.045 | 0.131 | 0.079 | 341883 |

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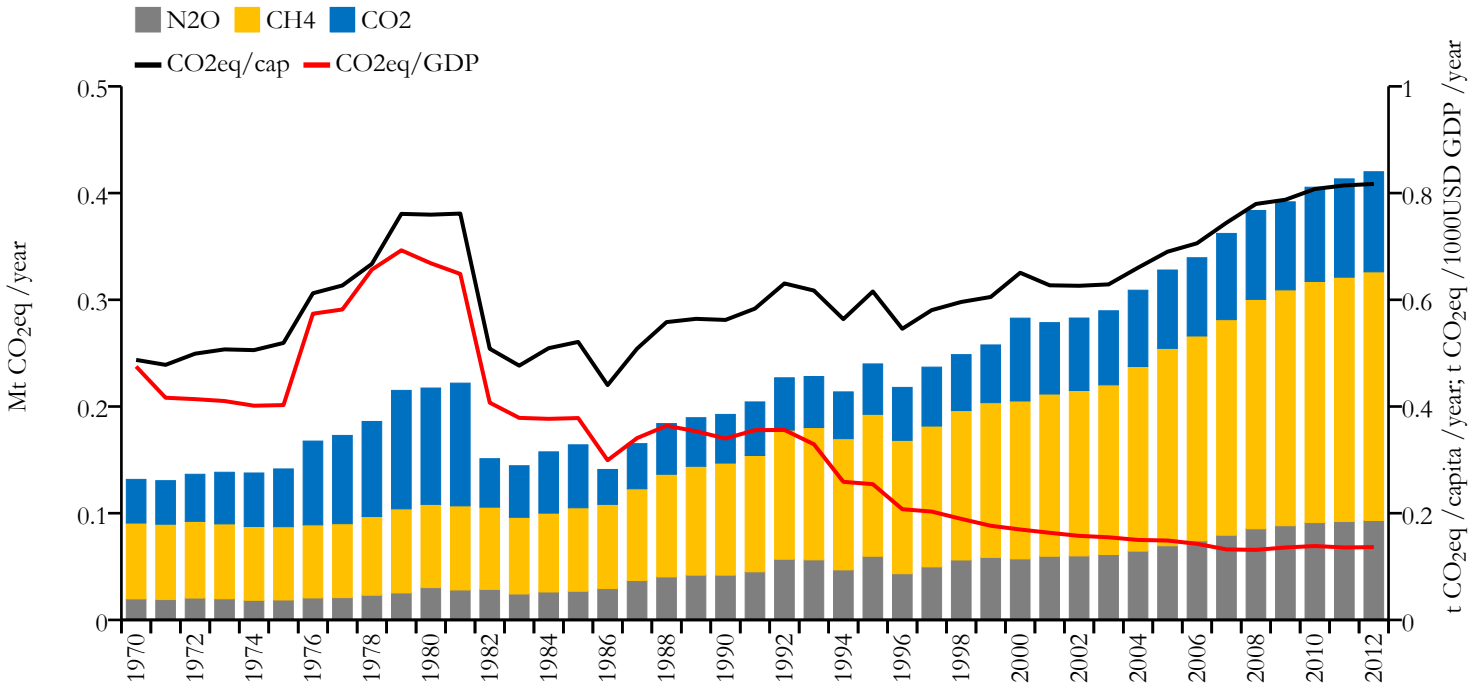
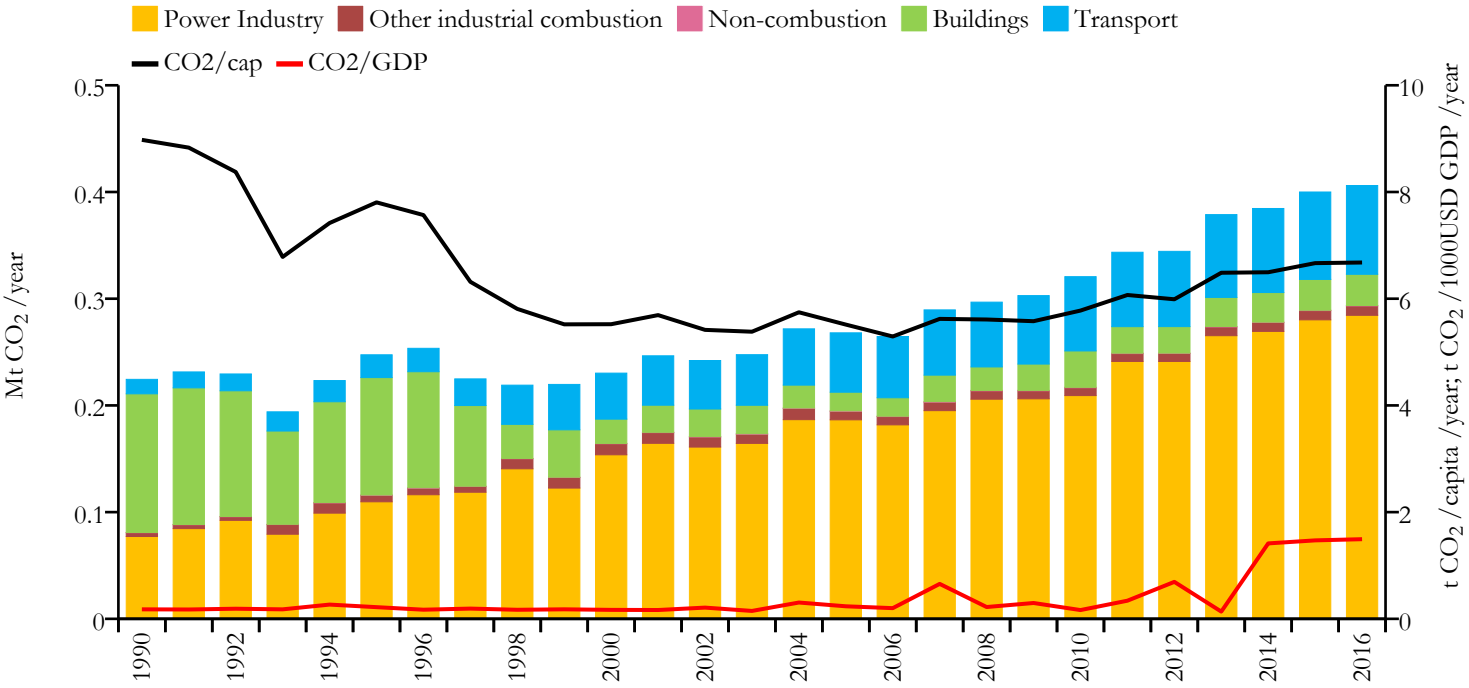
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Cayman Islands

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.406 | 6.679 | 1.493 | 60765 |
| 1990 | 0.224 | 8.977 | 0.178 | 25010 |

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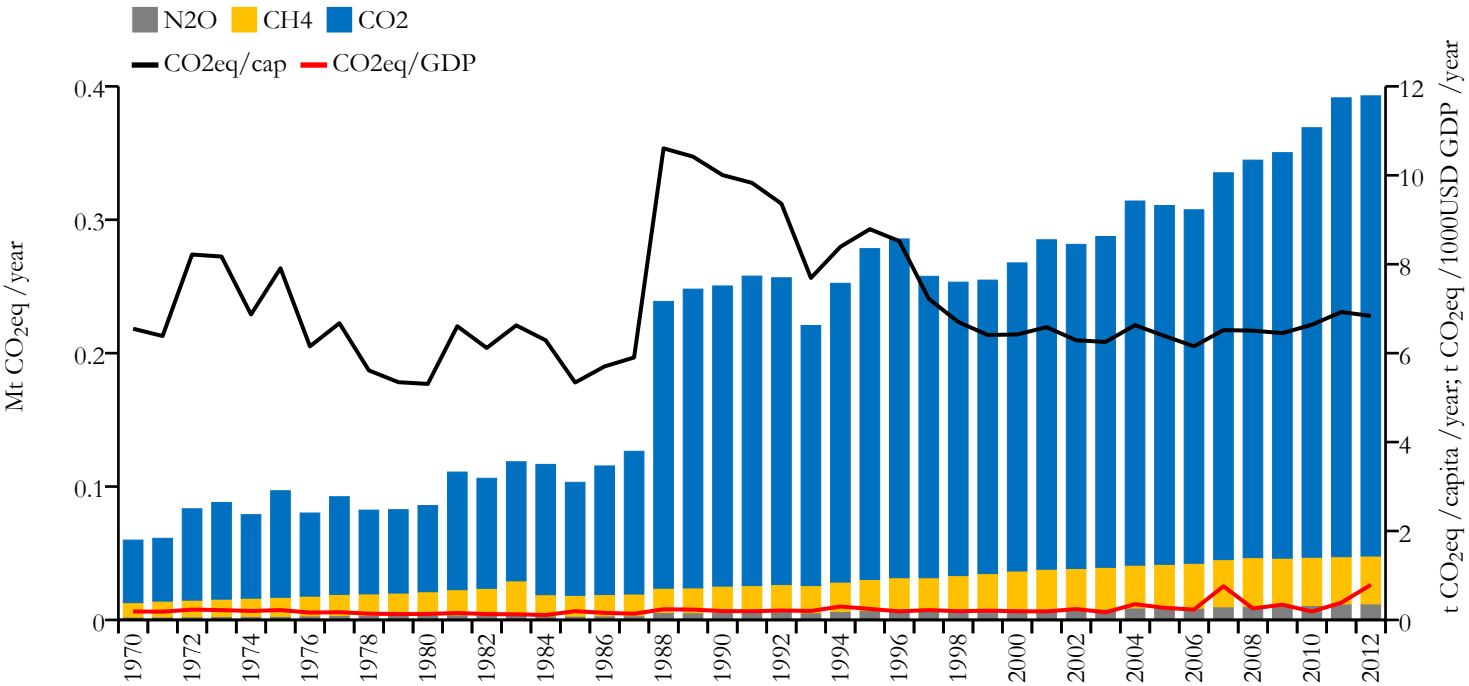
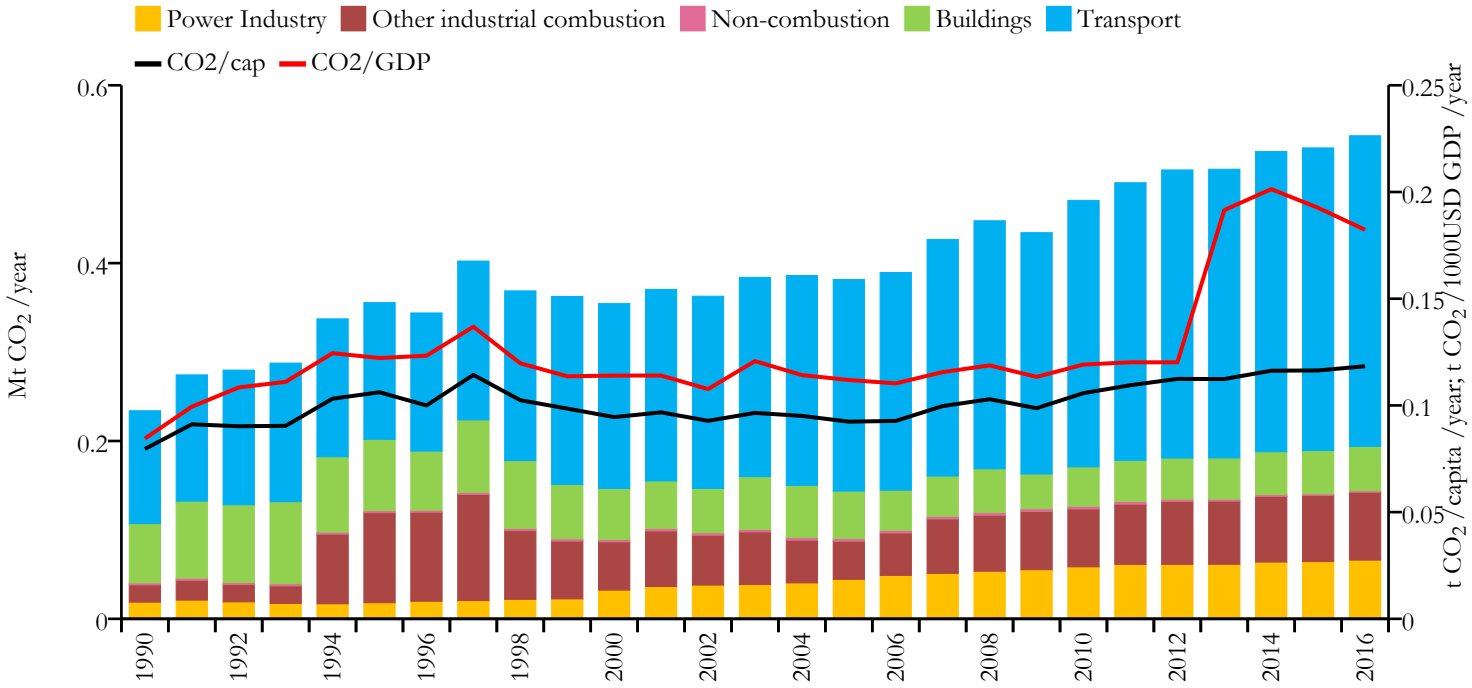
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



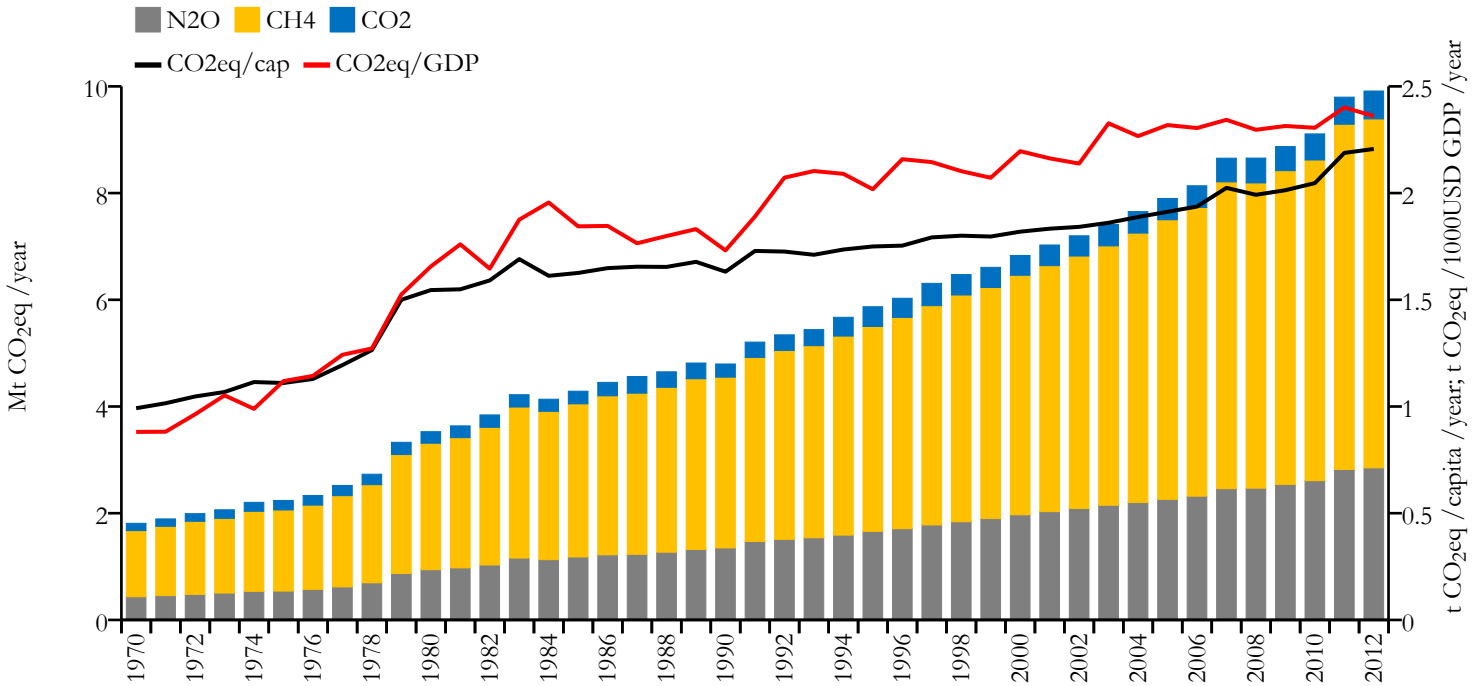
# Central African Republic

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



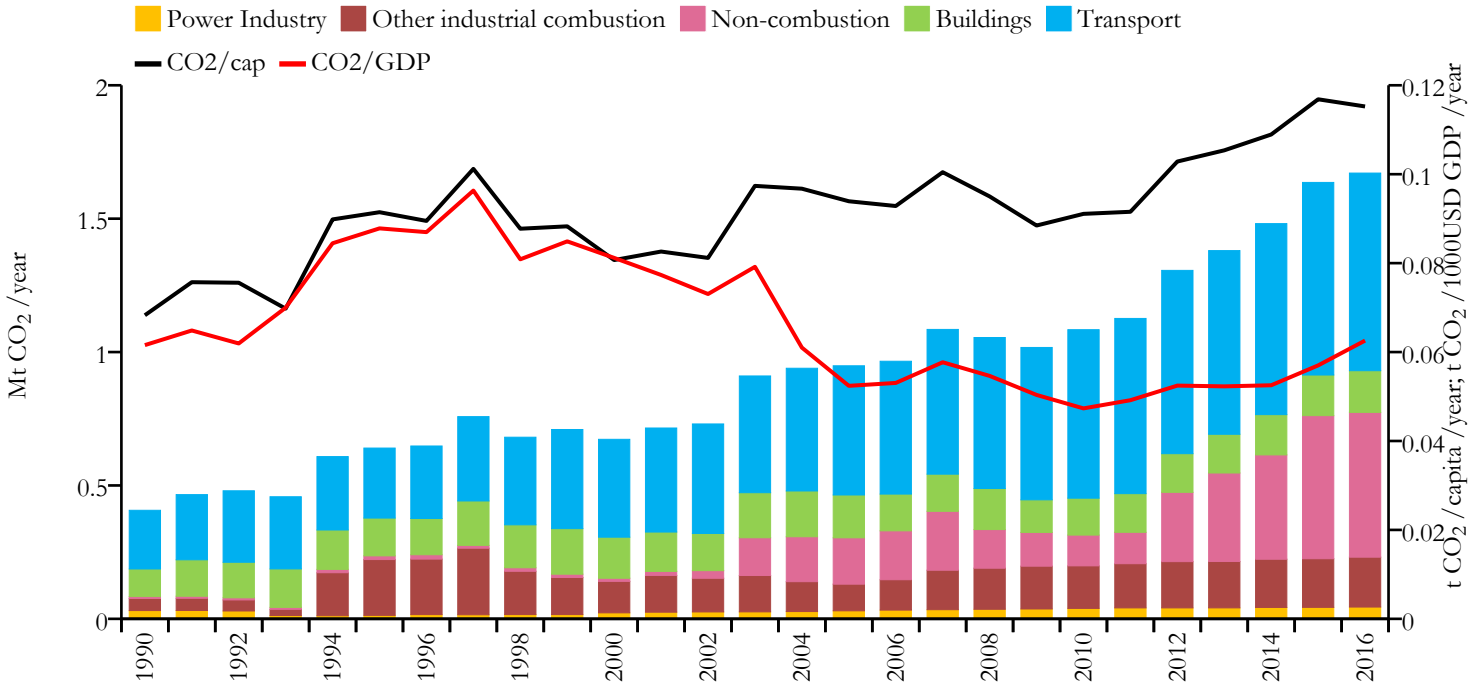

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.543 | 0.118 | 0.182 | 4594621 |
| 1990 | 0.234 | 0.080 | 0.084 | 2939780 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Chad

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 1.671 | 0.115 | 0.063 | 14452543 |
| 1990 | 0.407 | 0.068 | 0.062 | 5956859 |

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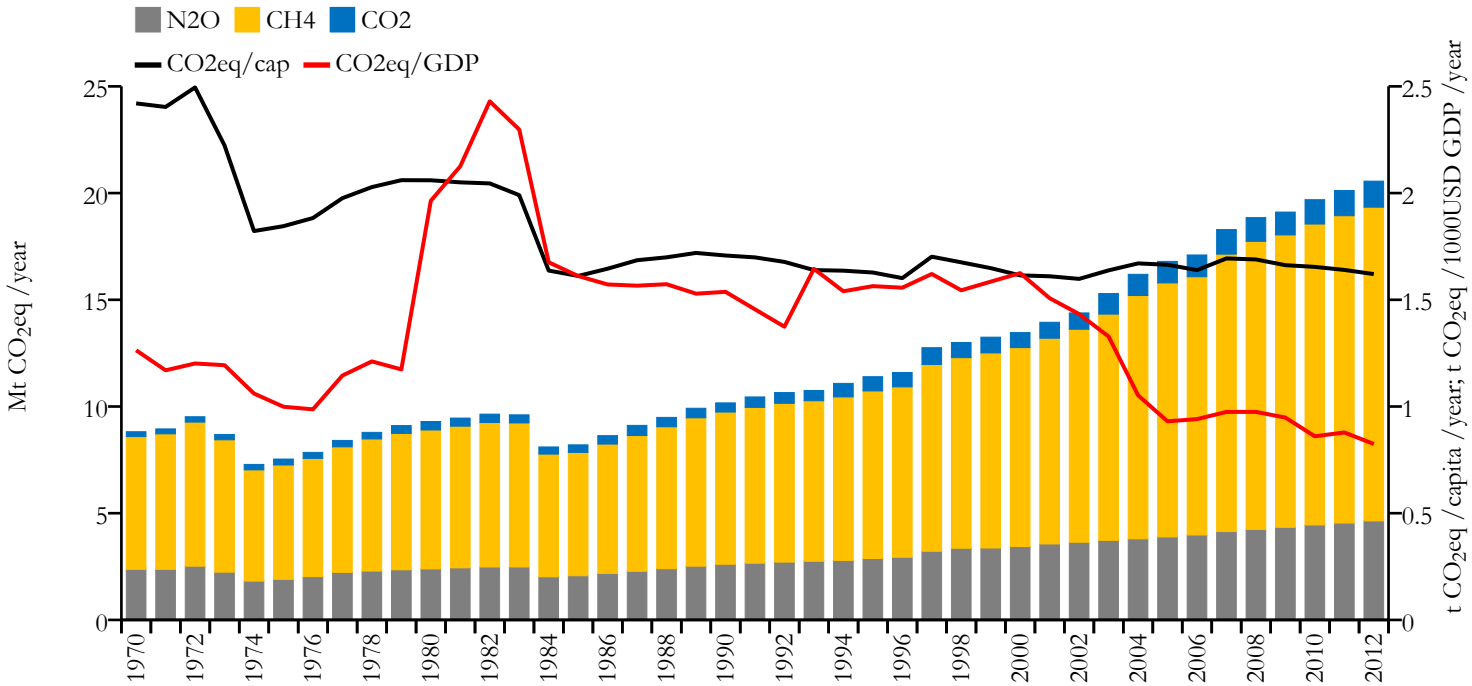
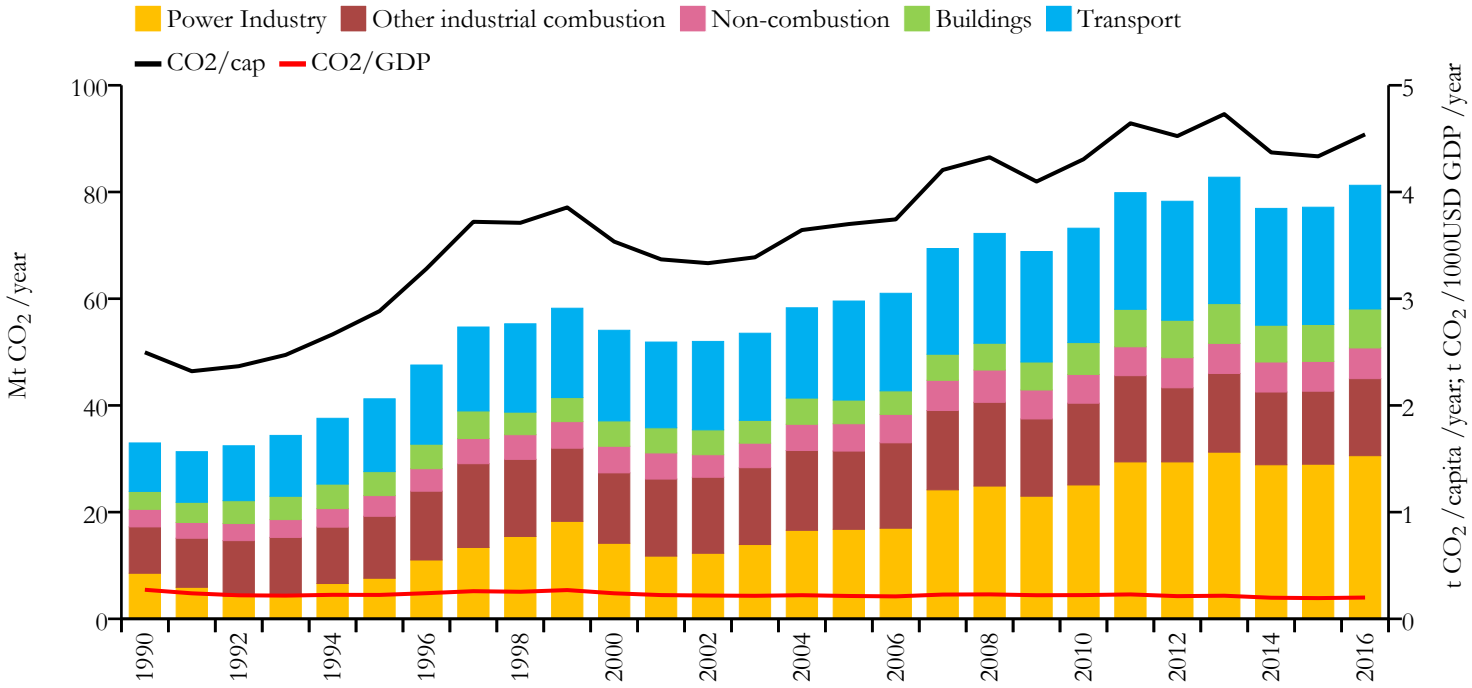
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



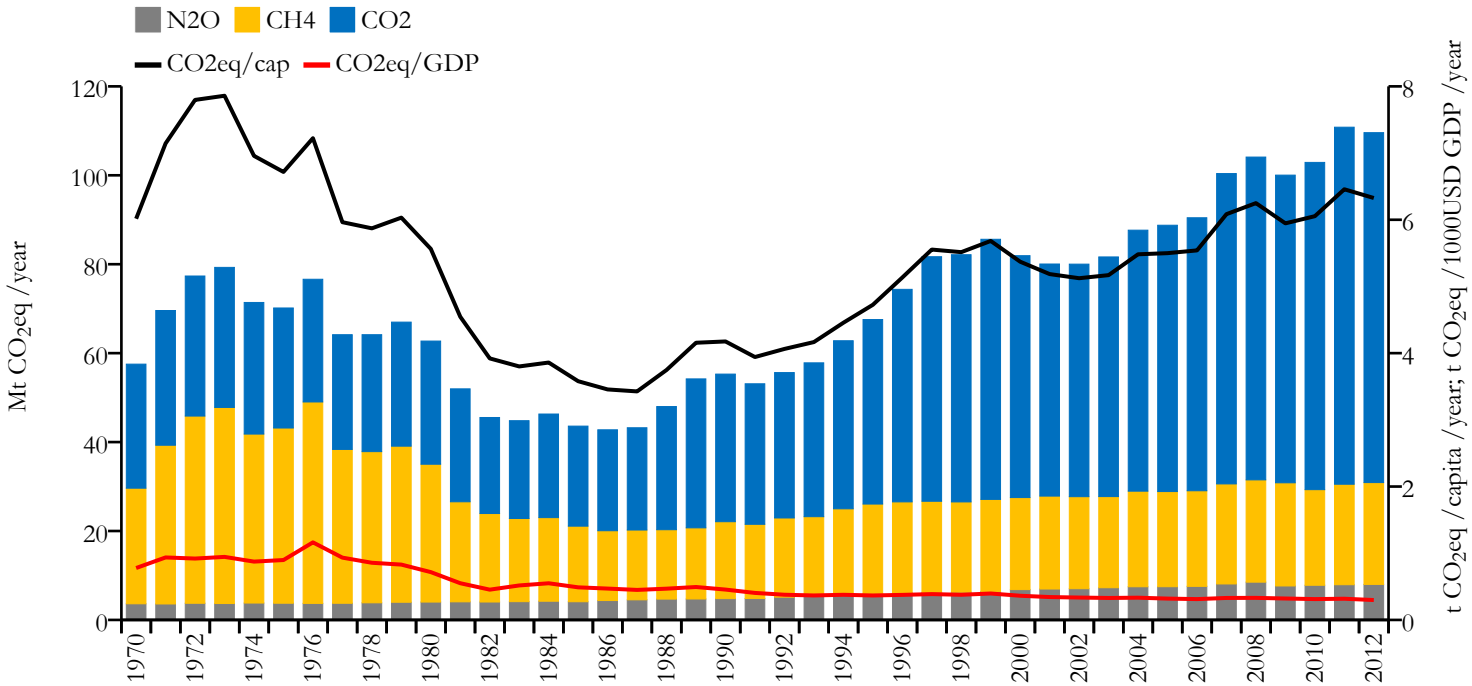
# Chile

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



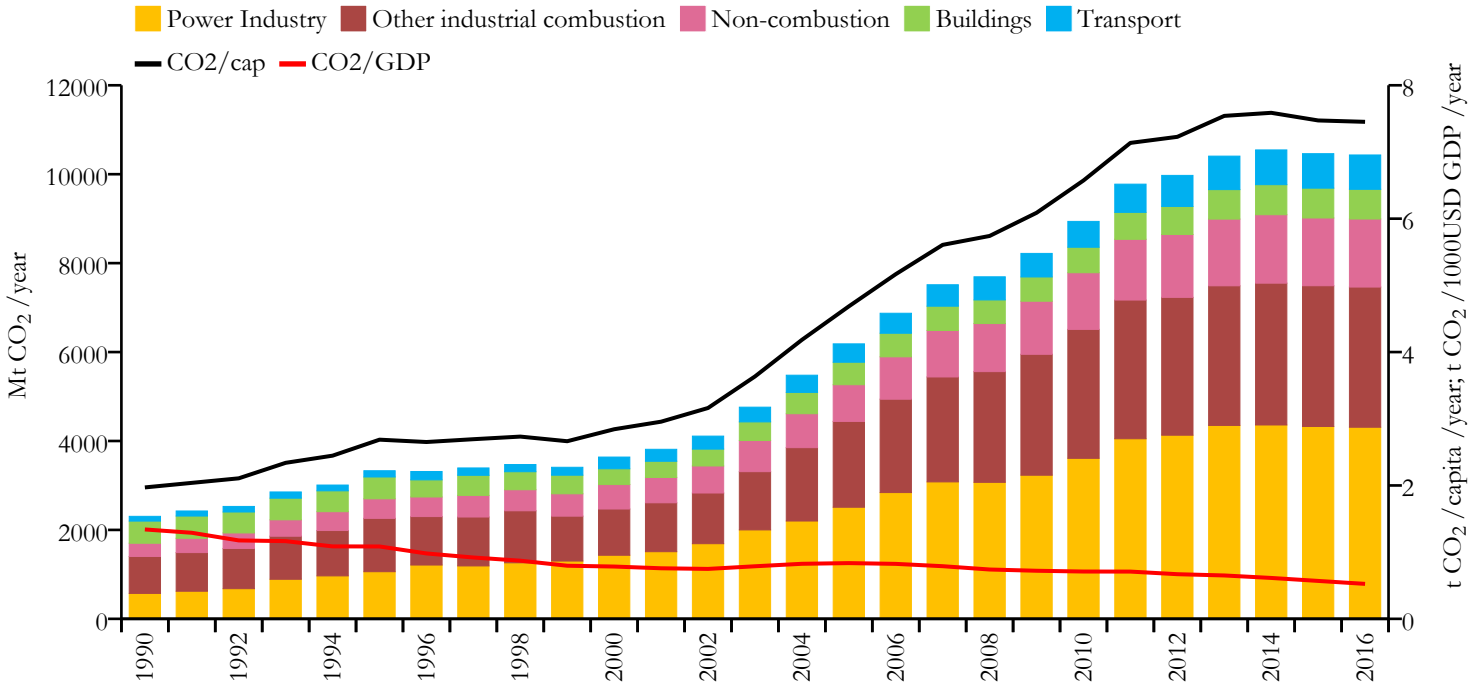

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 81.259 | 4.540 | 0.200 | 17909754 |
| 1990 | 32.966 | 2.497 | 0.272 | 13242132 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



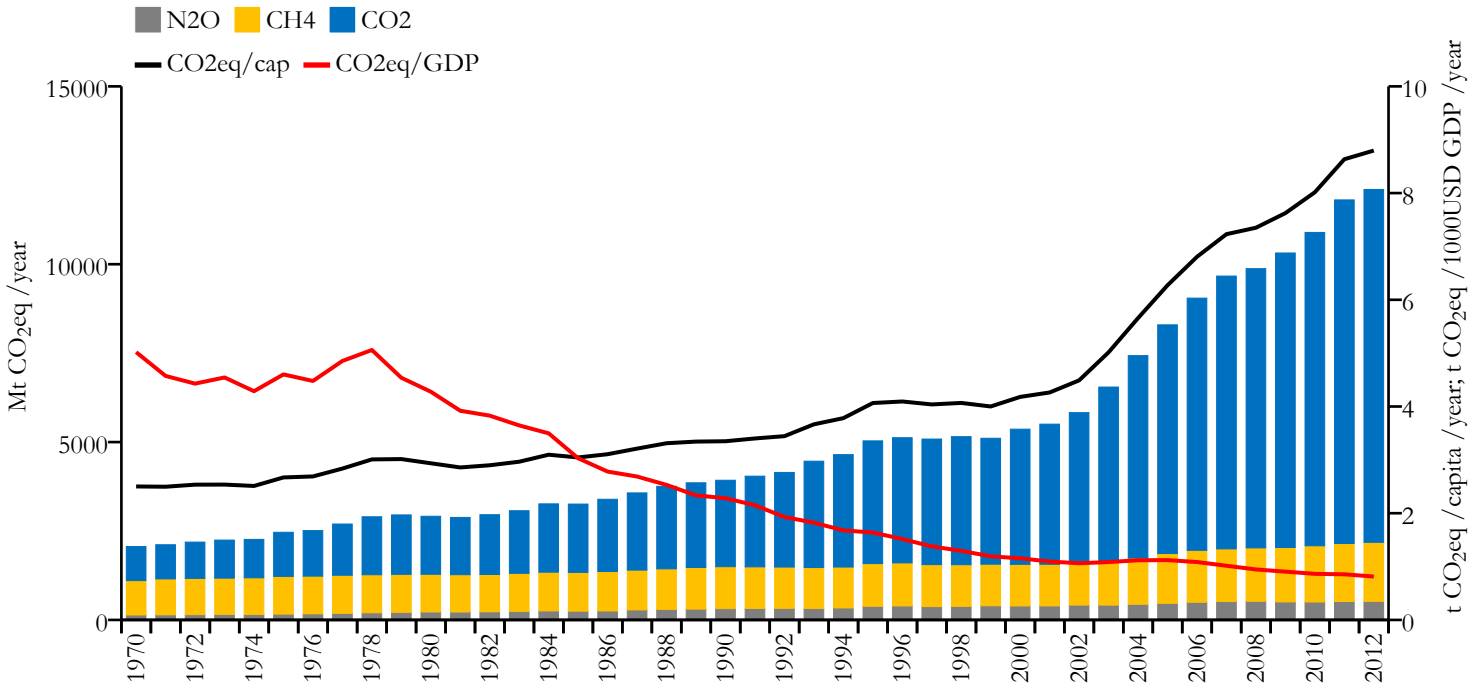
# China

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



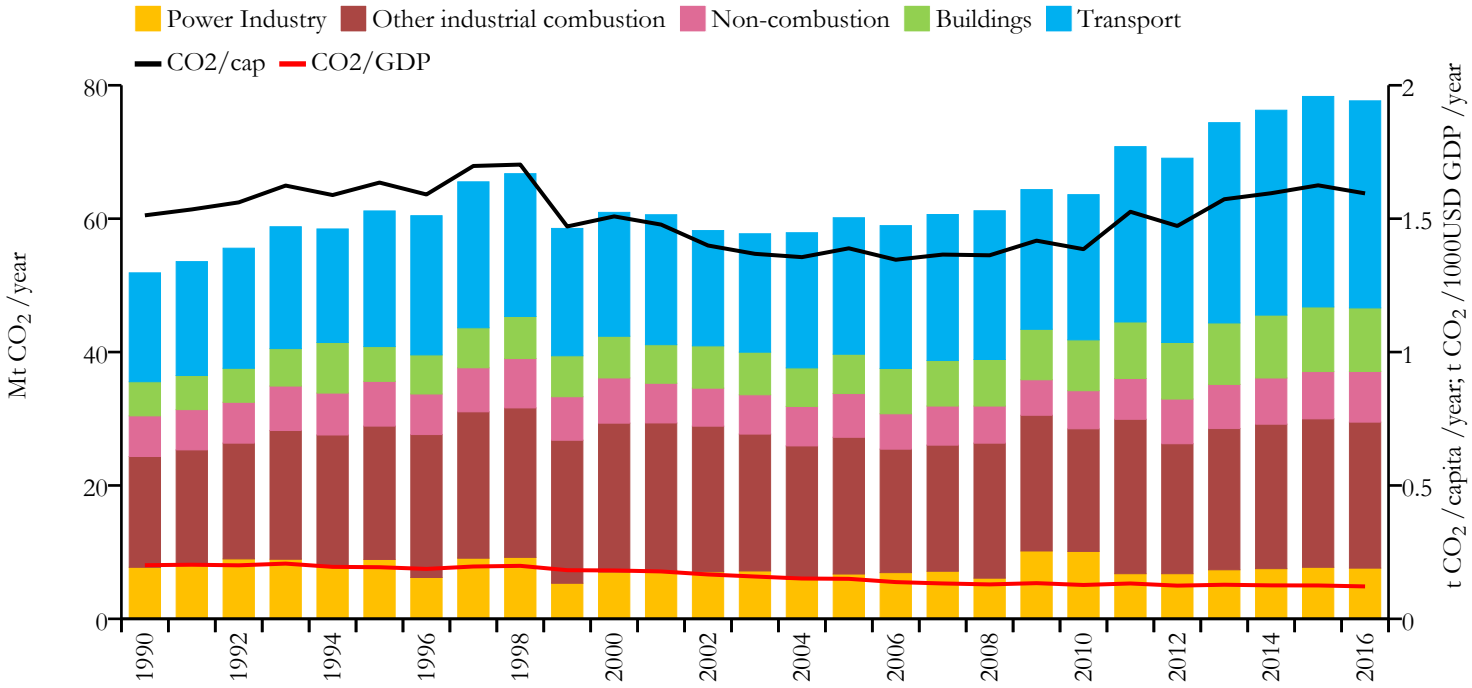

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 10432.751 | 7.452 | 0.524 | 1403500365 |
| 1990 | 2305.425 | 1.970 | 1.340 | 1172445200 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Colombia

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 77.668 | 1.595 | 0.122 | 48653419 |
| 1990 | 51.877 | 1.512 | 0.201 | 34271565 |

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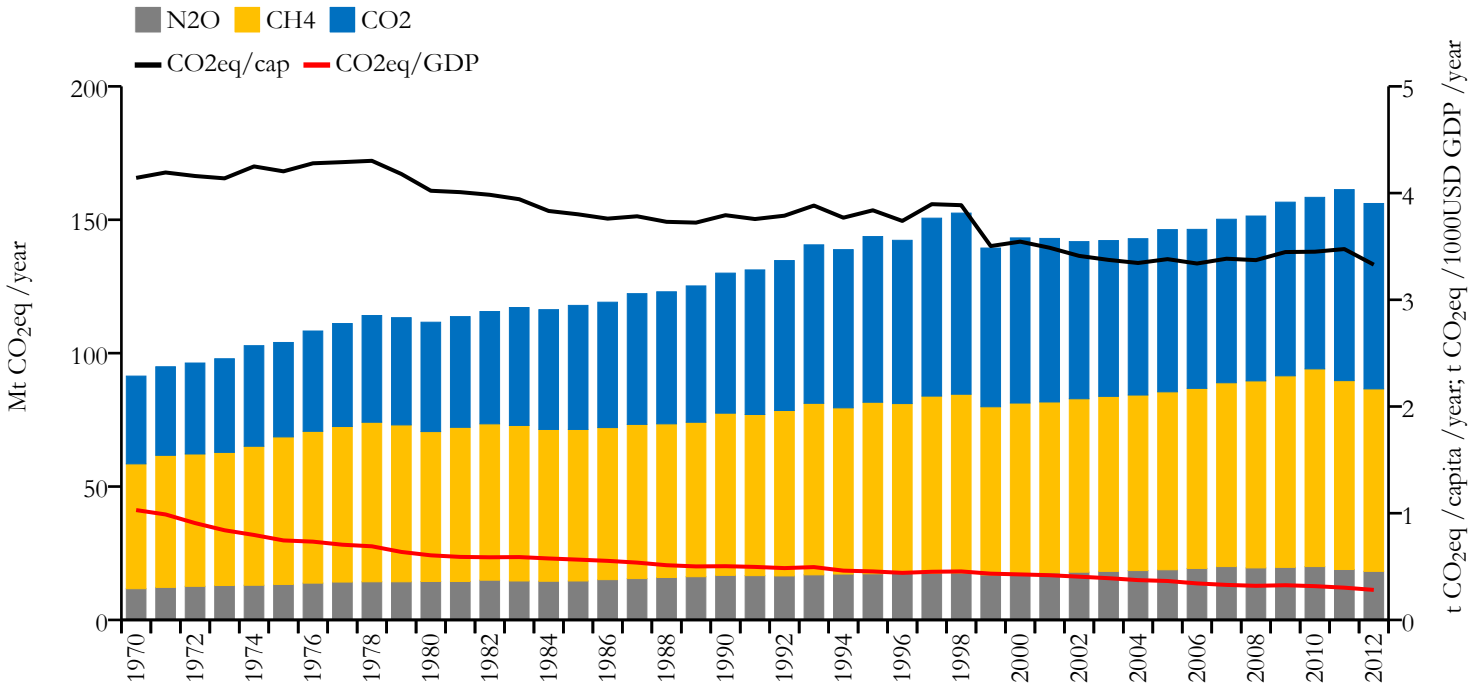
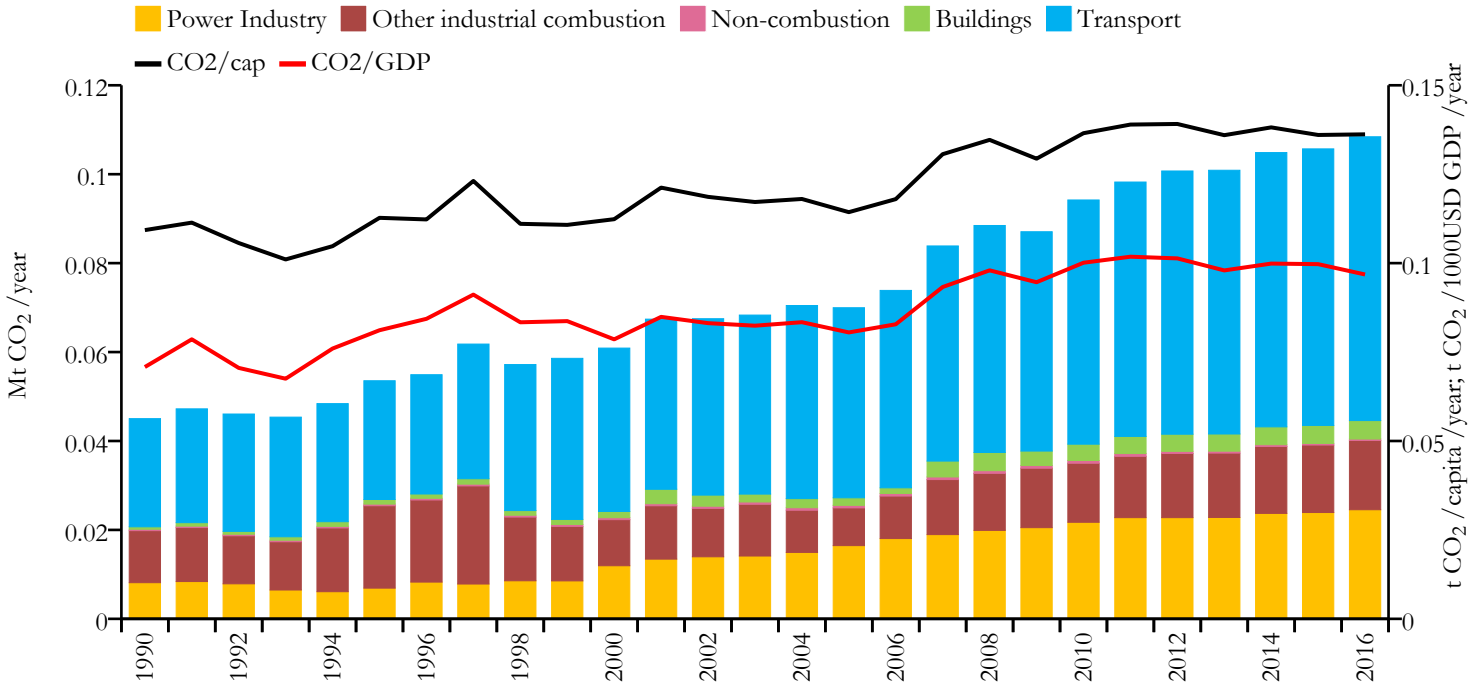
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Comoros

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.108 | 0.136 | 0.097 | 795601 |
| 1990 | 0.045 | 0.109 | 0.071 | 411594 |

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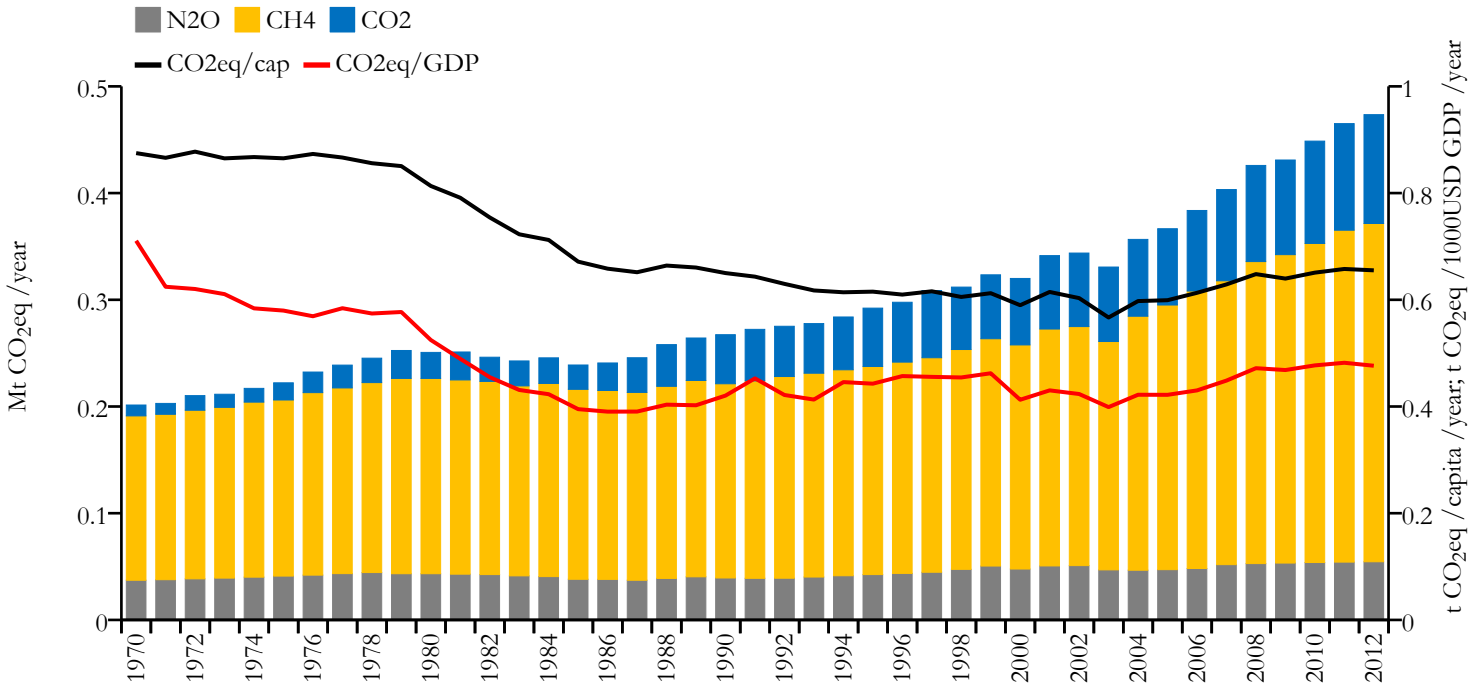
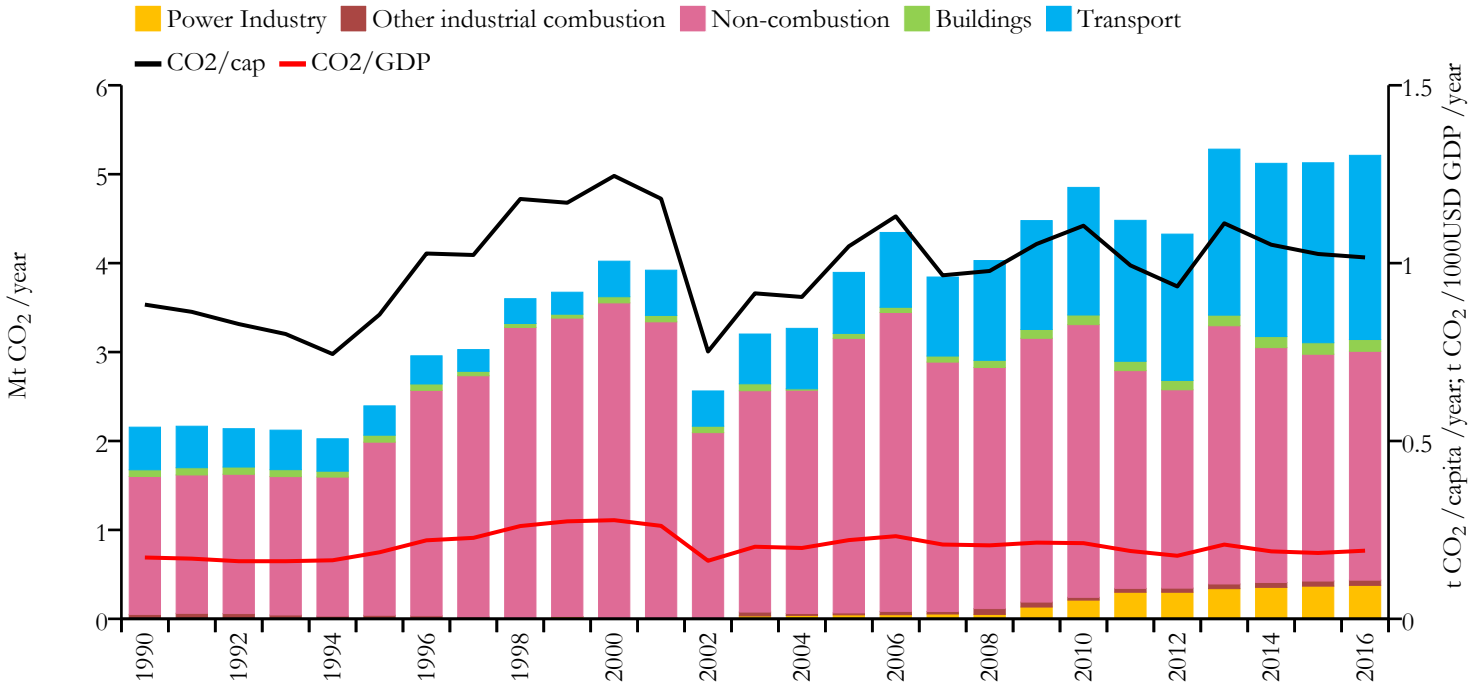
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Congo

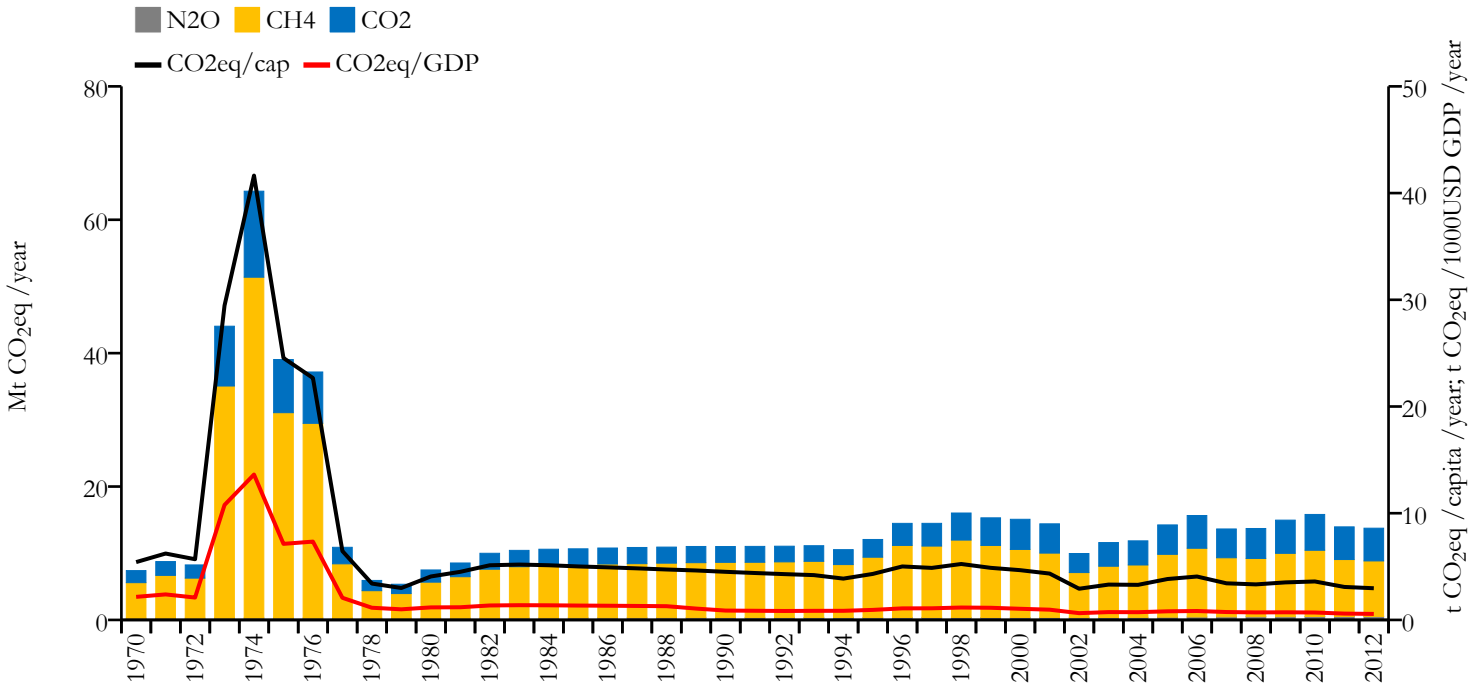
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 5.212 | 1.016 | 0.192 | 5125821 |
| 1990 | 2.156 | 0.883 | 0.172 | 2440457 |

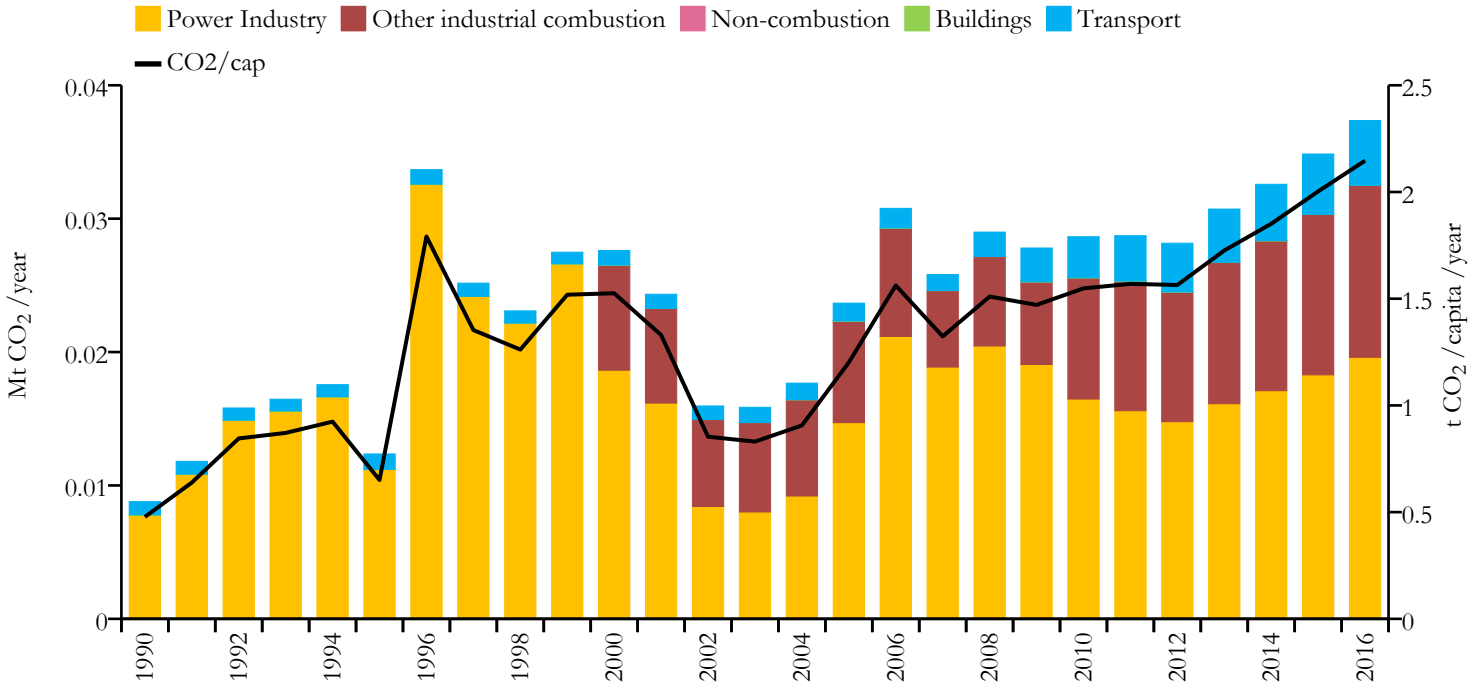
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Cook Islands

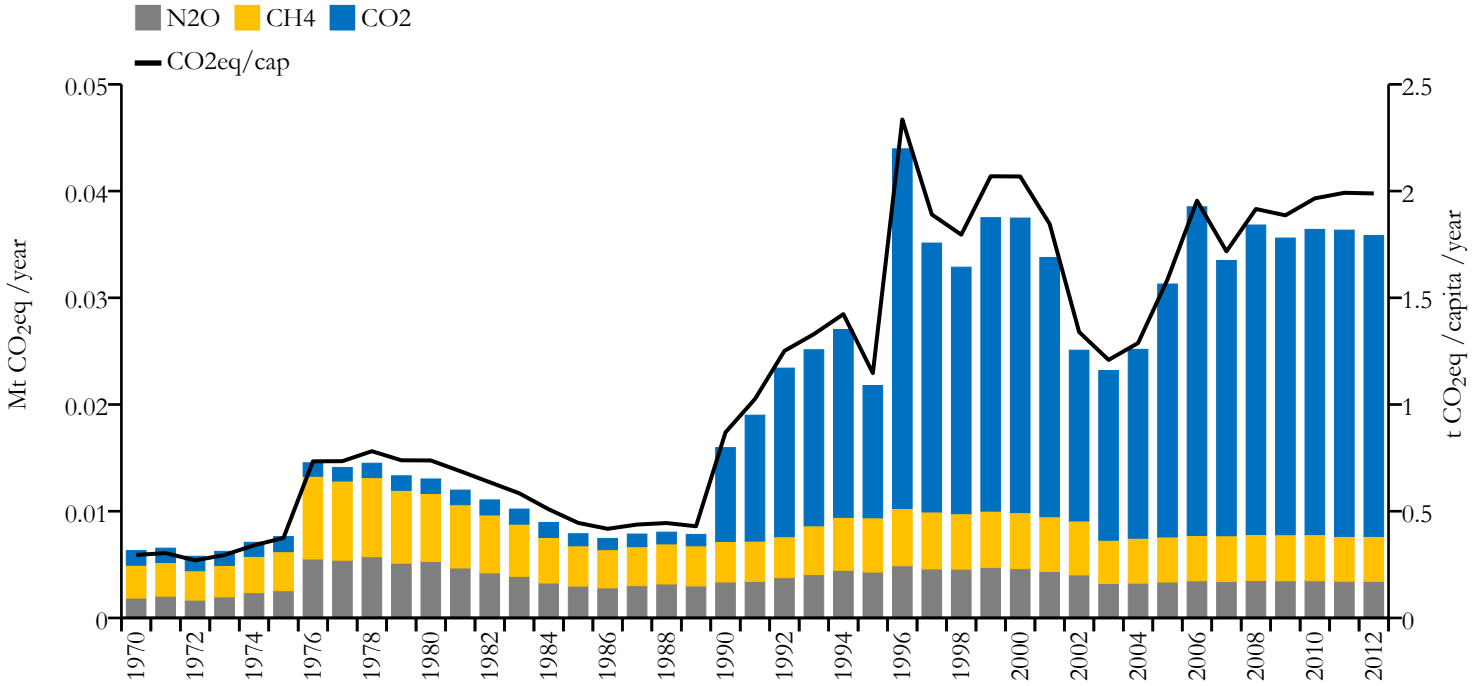
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.037 | 2.147 | n/a | 17379 |
| 1990 | 0.009 | 0.478 | n/a | 18356 |

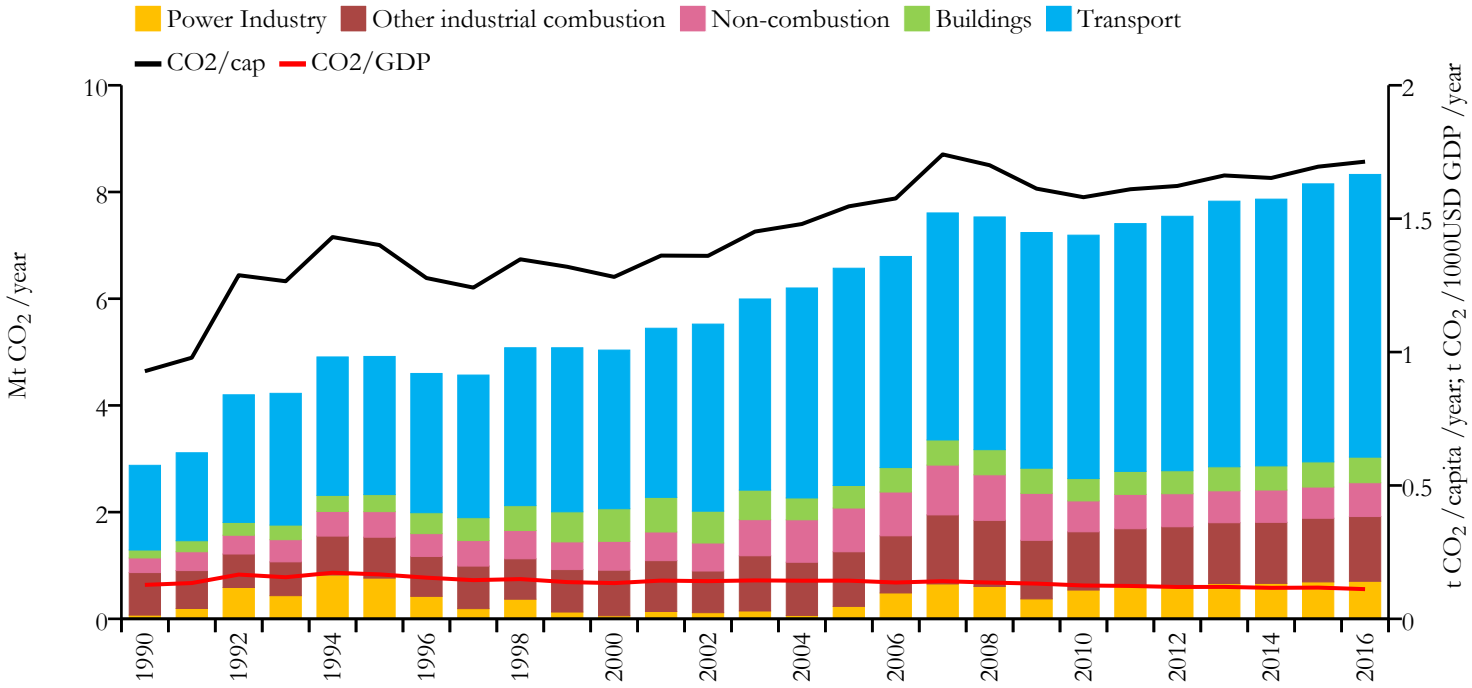
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



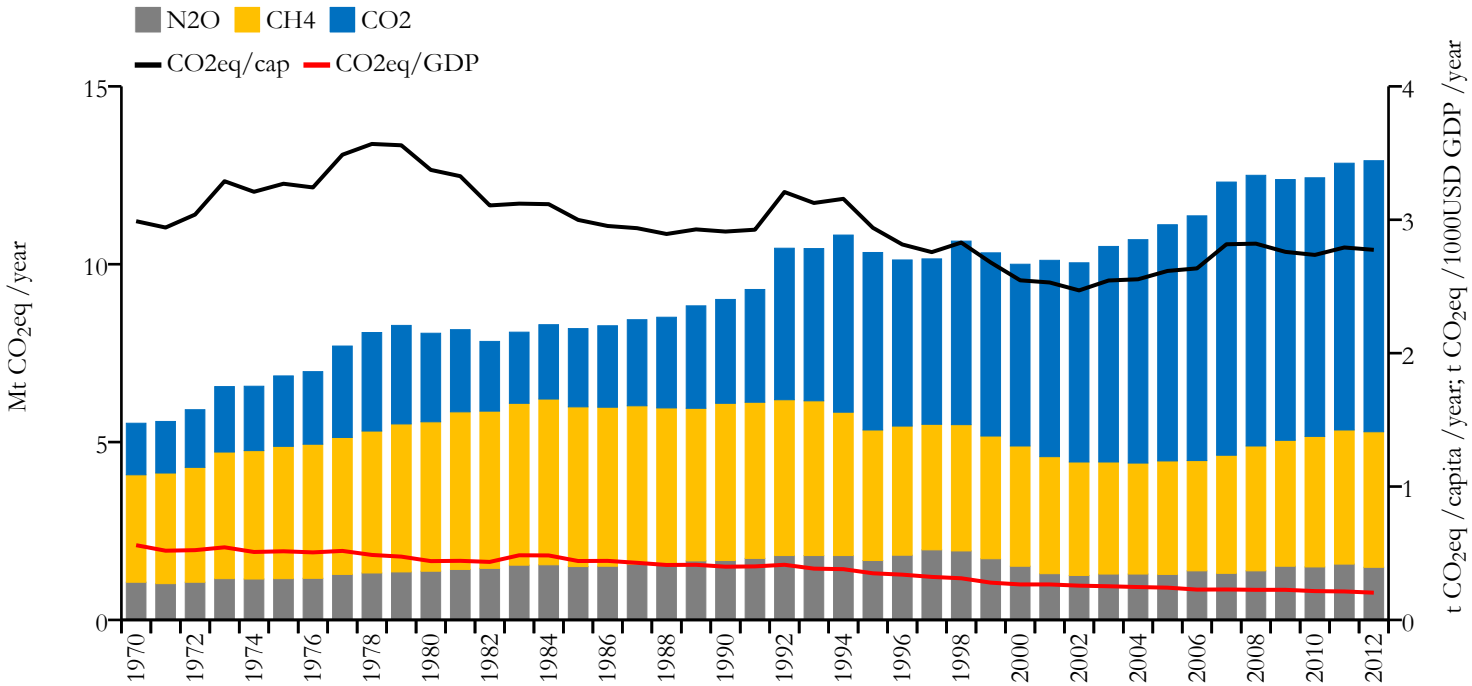
# Costa Rica

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



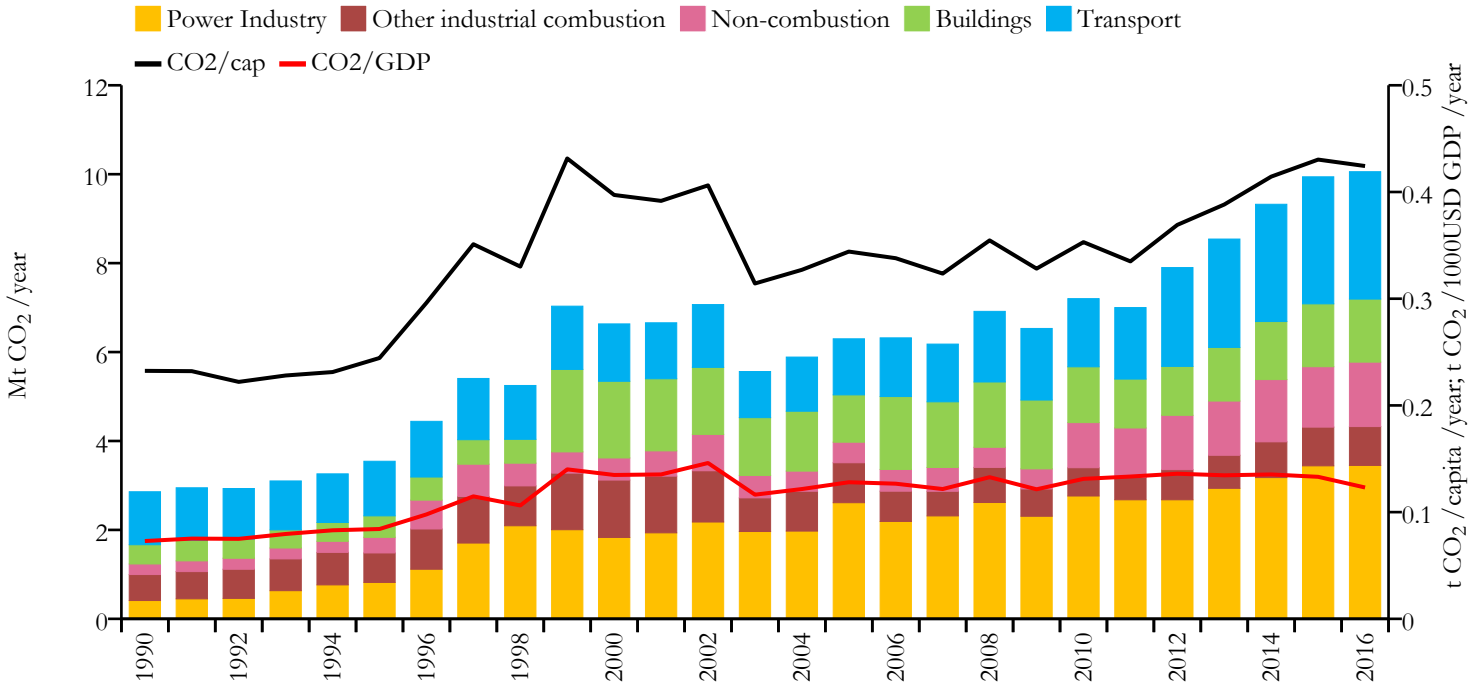

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 8.329 | 1.714 | 0.111 | 4857274 |
| 1990 | 2.878 | 0.928 | 0.127 | 3095995 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Côte d'Ivoire

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 10.056 | 0.424 | 0.123 | 23695919 |
| 1990 | 2.858 | 0.232 | 0.073 | 12267754 |

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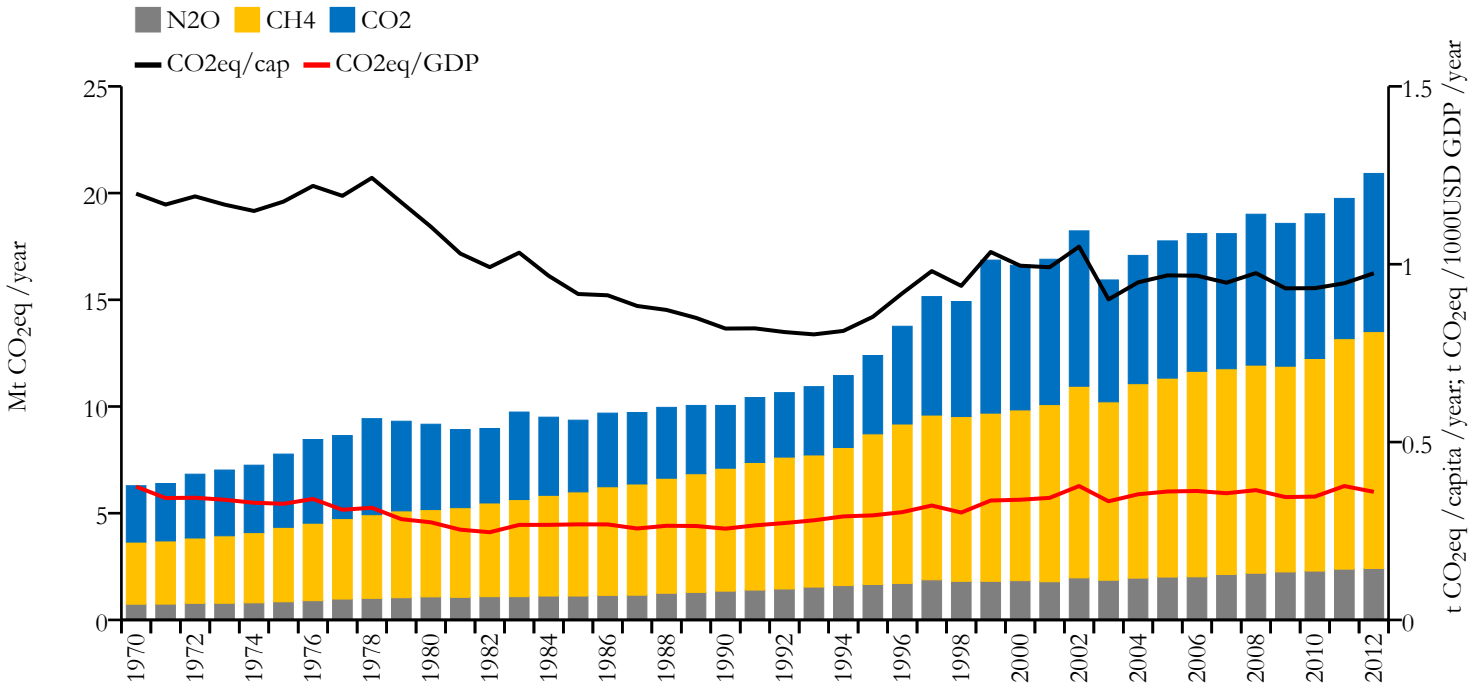
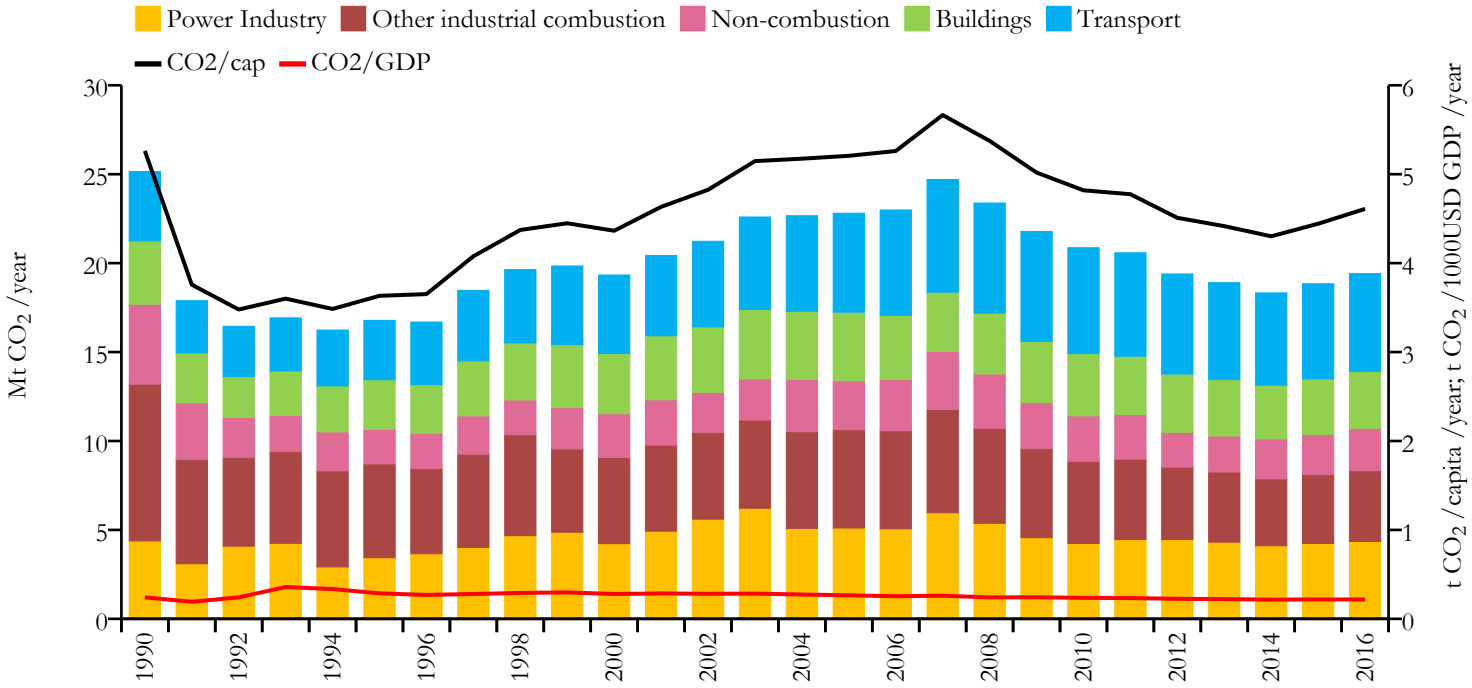
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



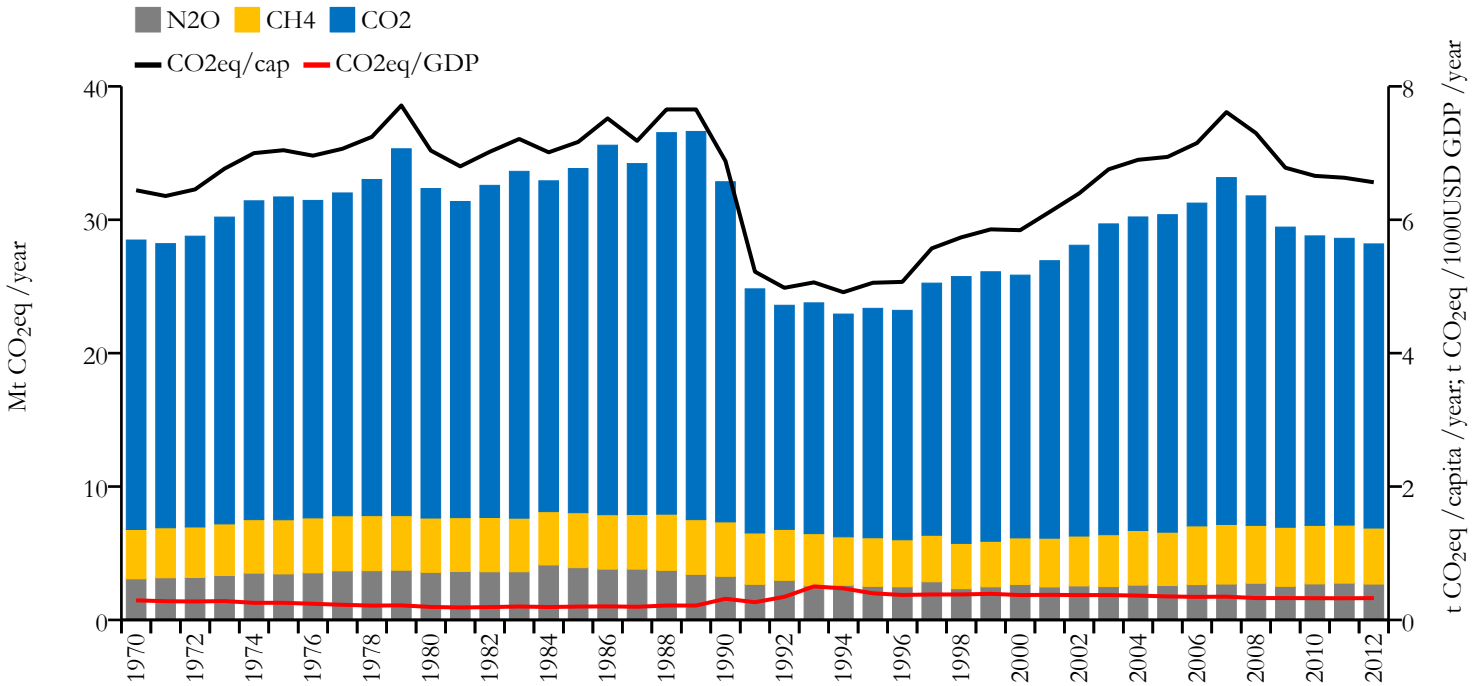
# Croatia

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



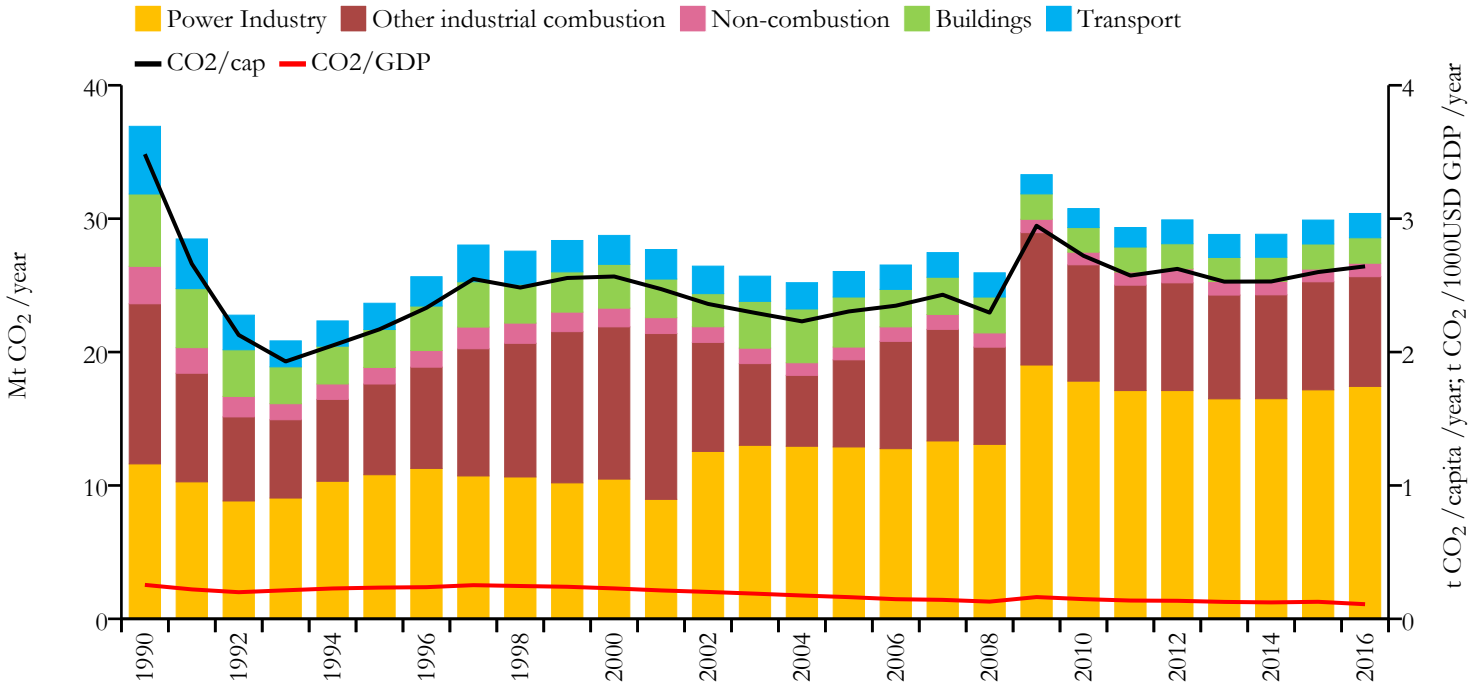

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 19.408 | 4.610 | 0.217 | 4213265 |
| 1990 | 25.151 | 5.262 | 0.242 | 4776372 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Cuba

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 30.389 | 2.643 | 0.110 | 11475982 |
| 1990 | 36.924 | 3.483 | 0.255 | 10582081 |

EDGAR
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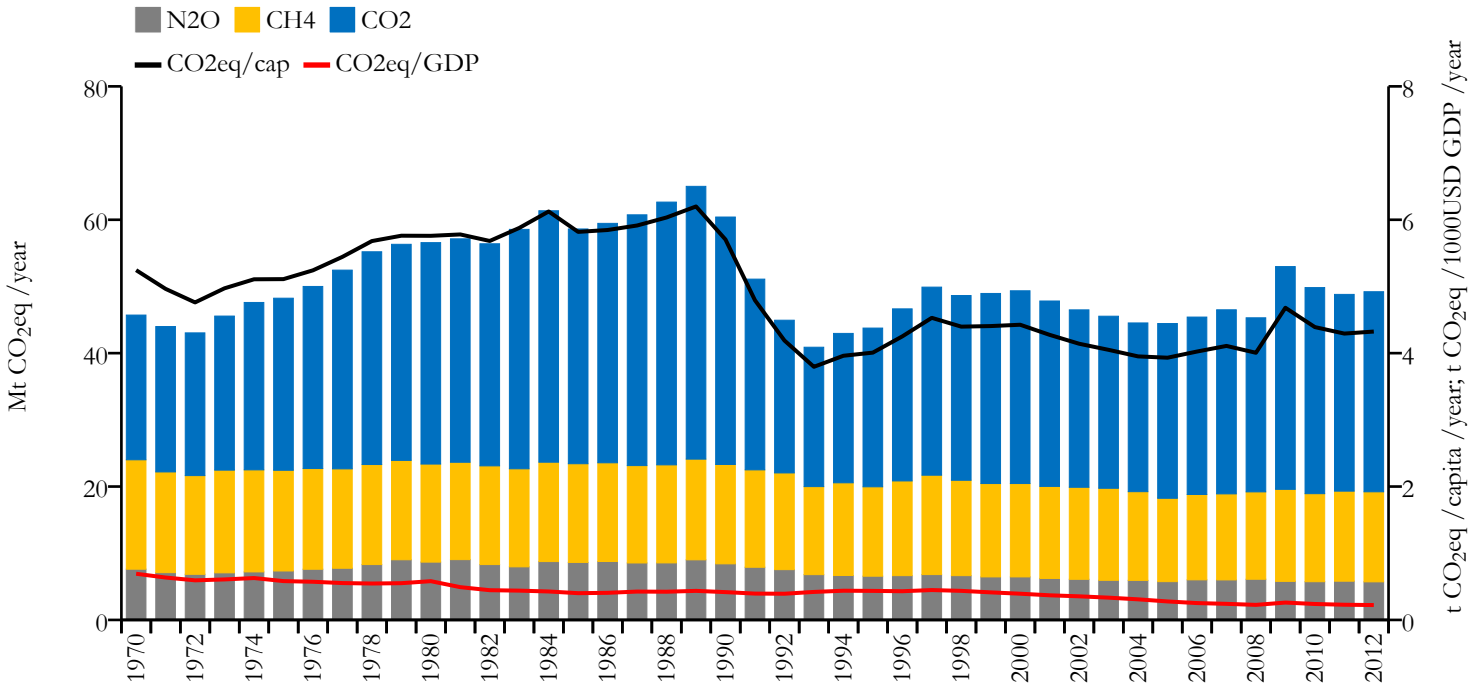
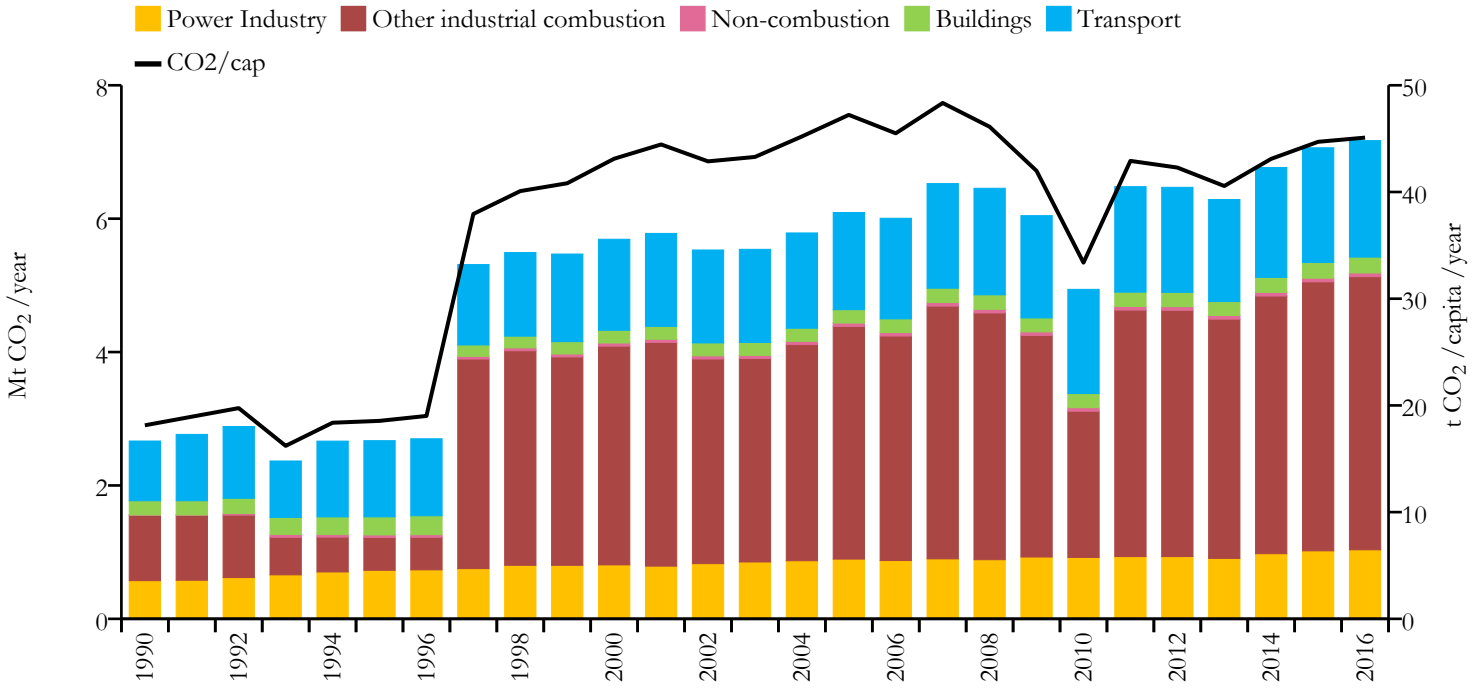
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Curaçao

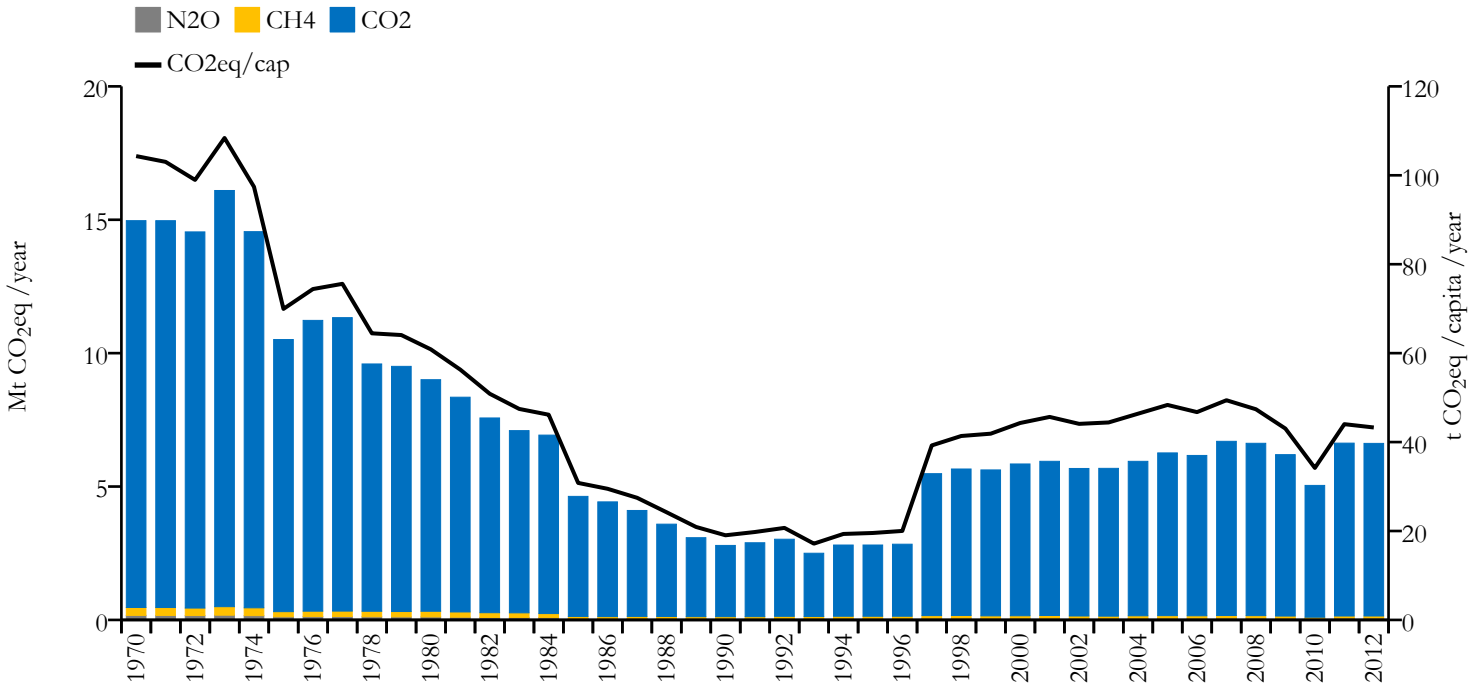
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 7.170 | 45.096 | n/a | 159371 |
| 1990 | 2.666 | 18.137 | n/a | 146671 |

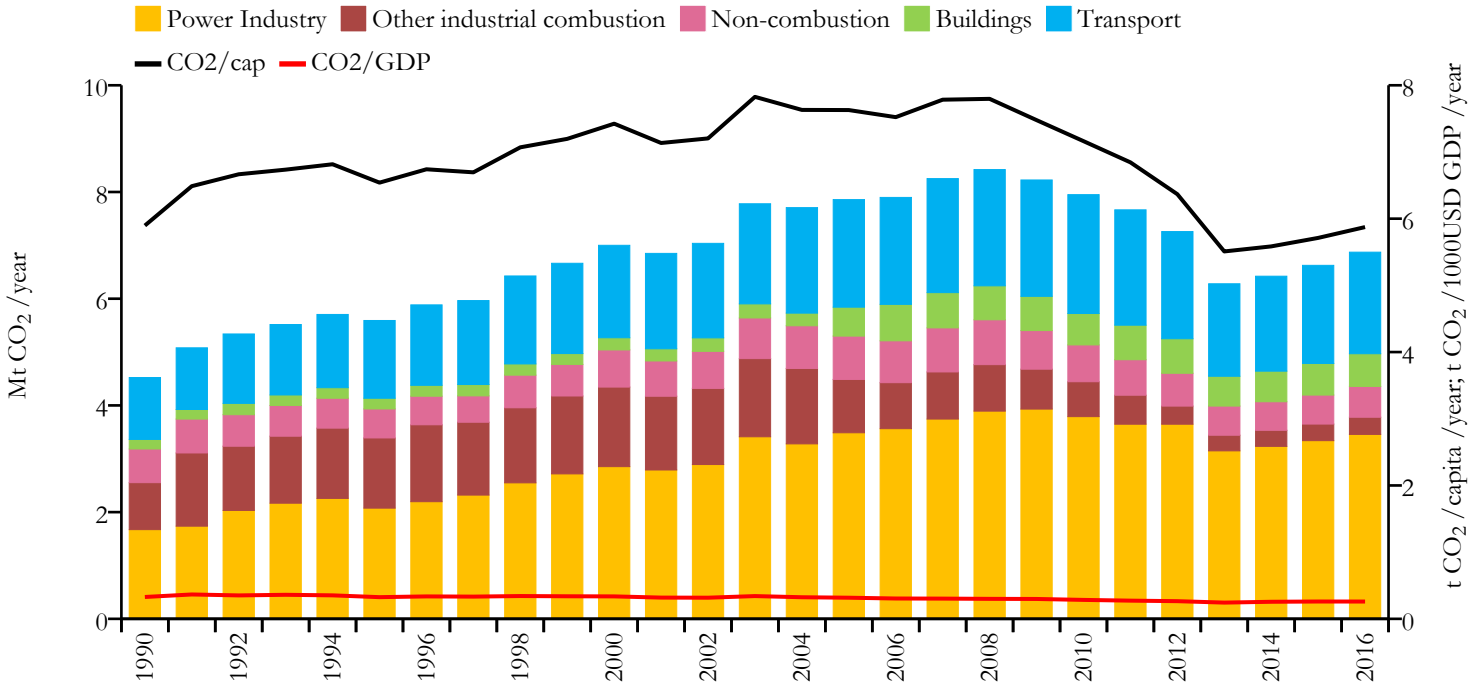
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Cyprus

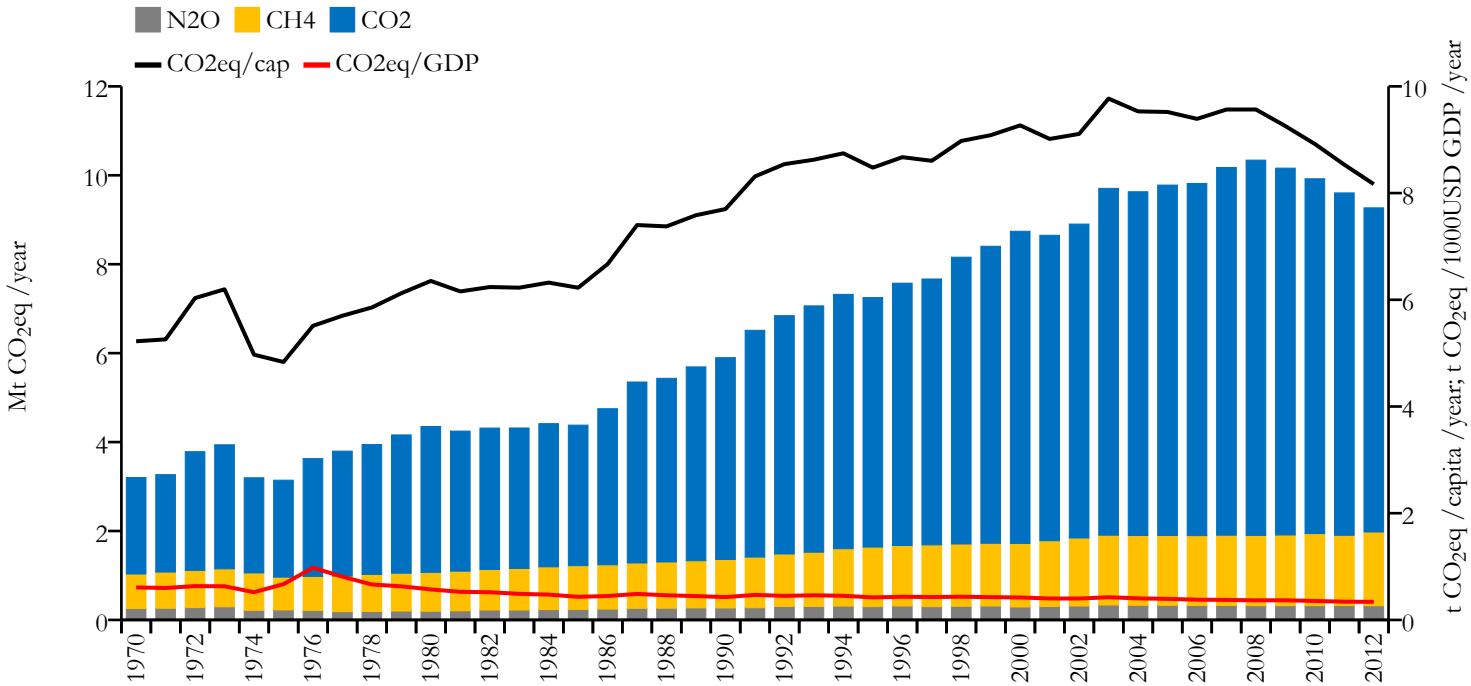
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 6.872 | 5.874 | 0.259 | 1170125 |
| 1990 | 4.523 | 5.896 | 0.328 | 766614 |

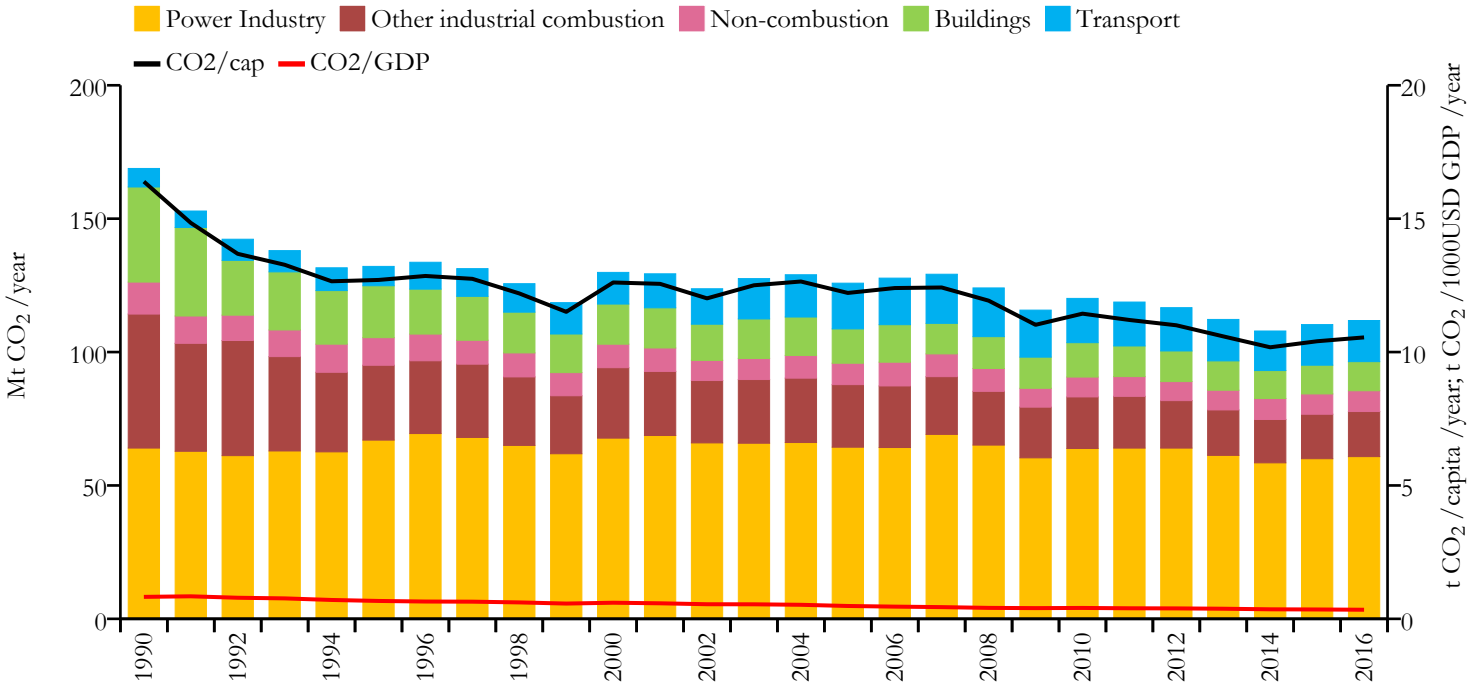
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Czech Republic

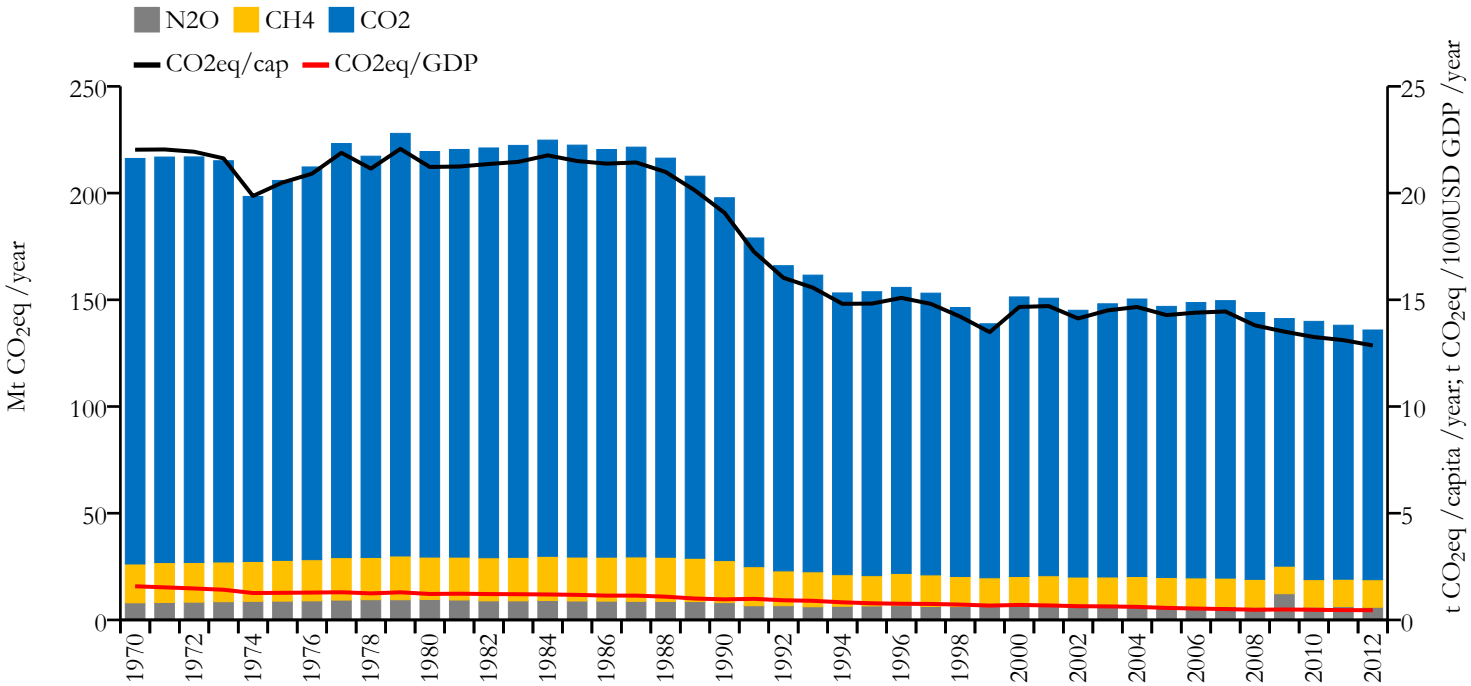
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 111.825 | 10.550 | 0.341 | 10610947 |
| 1990 | 168.823 | 16.391 | 0.824 | 10341169 |

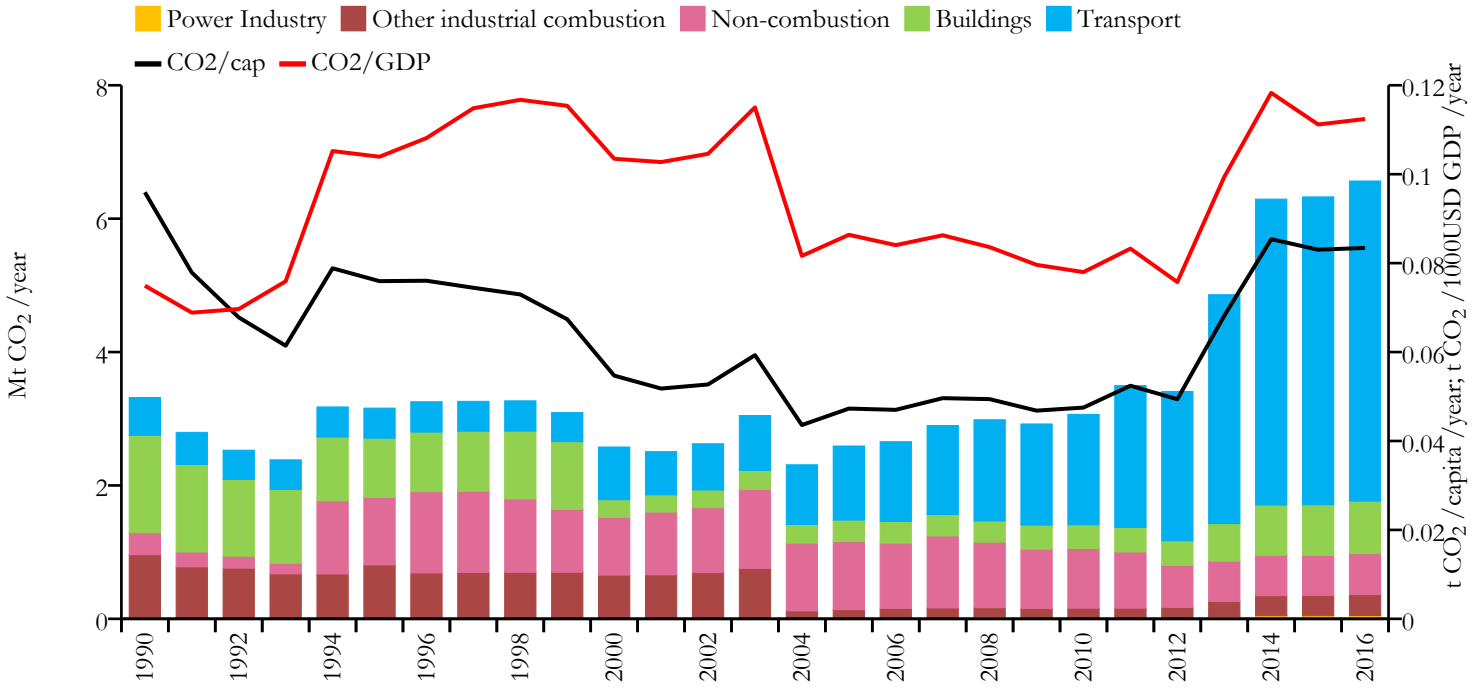
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Democratic Republic of the Congo

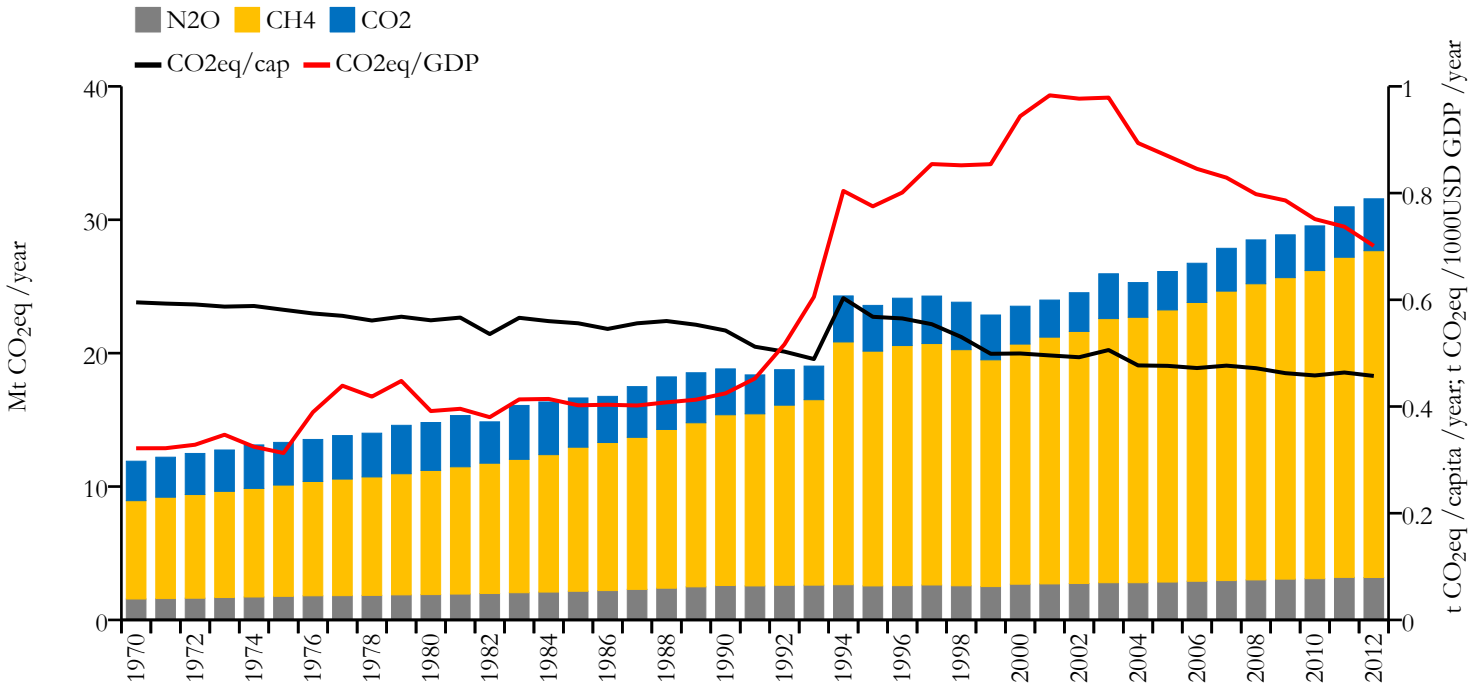
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 6.565 | 0.083 | 0.112 | 78736153 |
| 1990 | 3.319 | 0.096 | 0.075 | 34614581 |

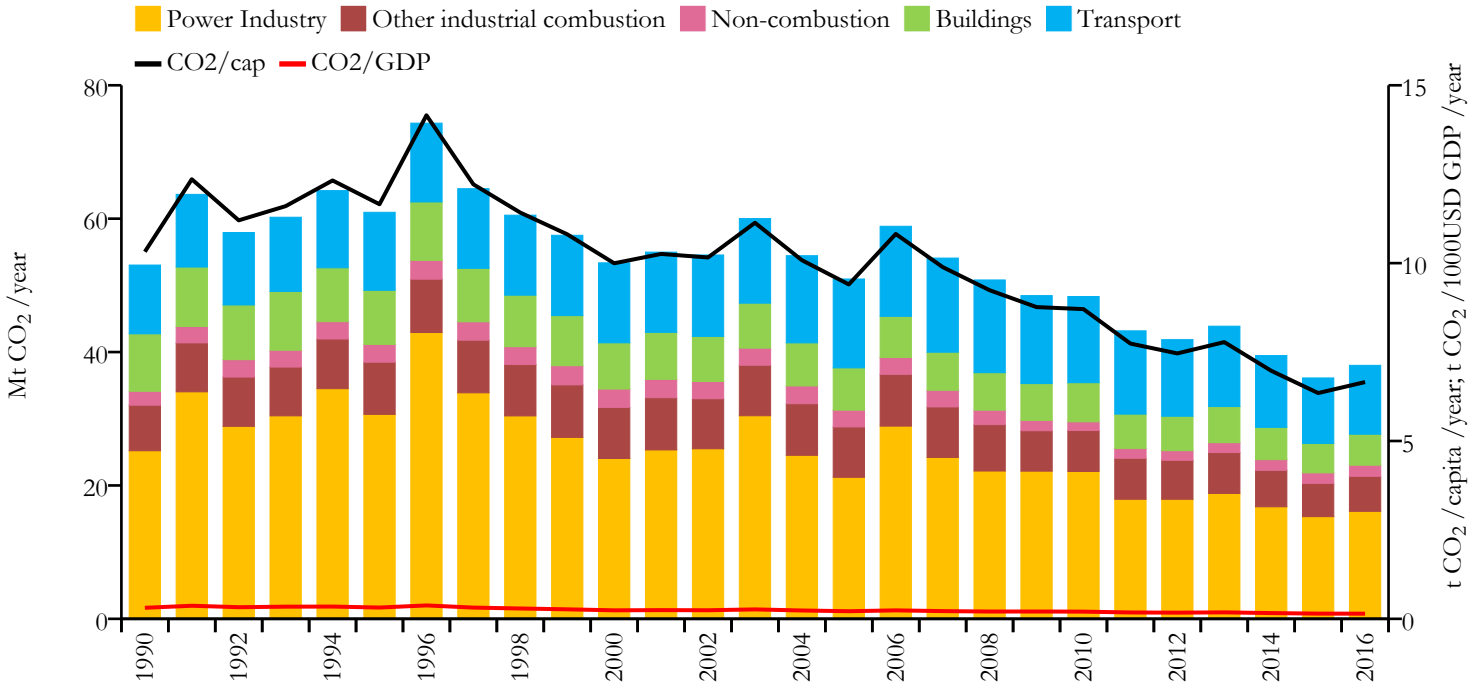
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Denmark

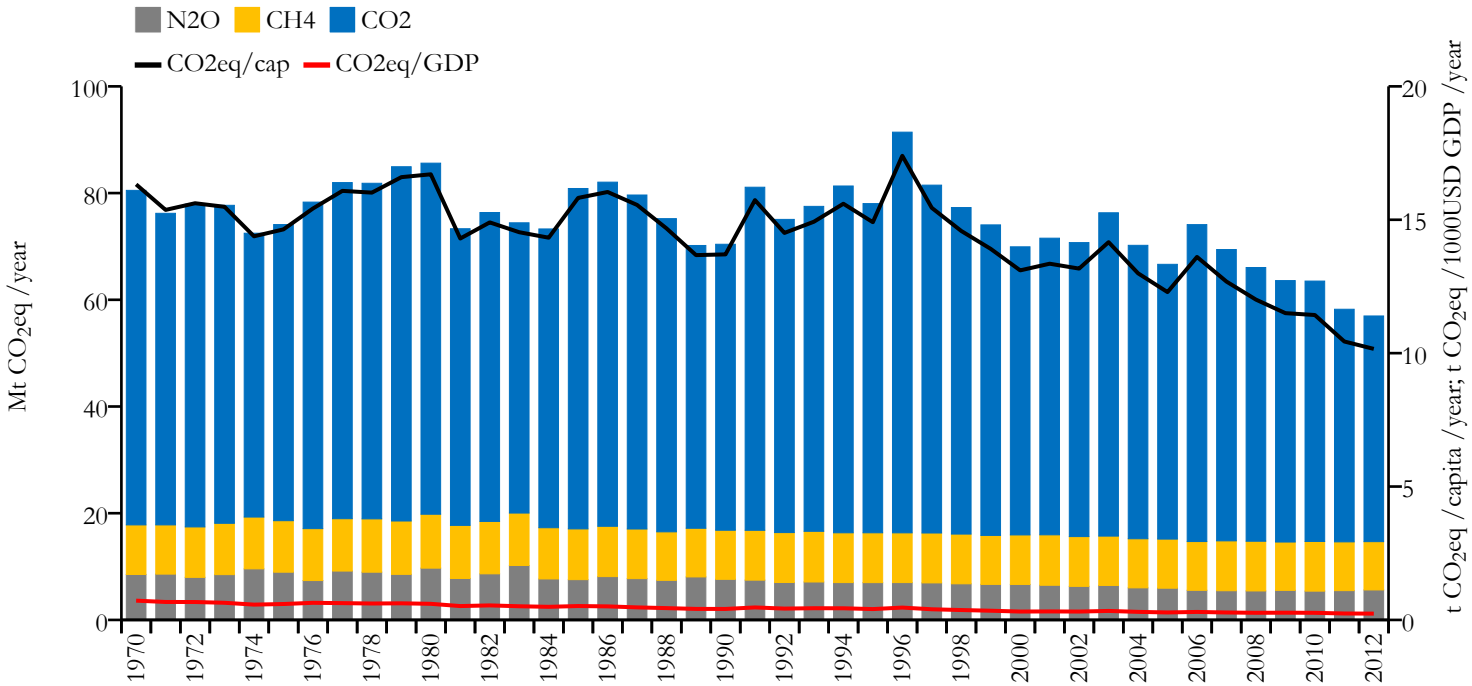
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 38.008 | 6.656 | 0.145 | 5711870 |
| 1990 | 53.045 | 10.320 | 0.310 | 5141115 |

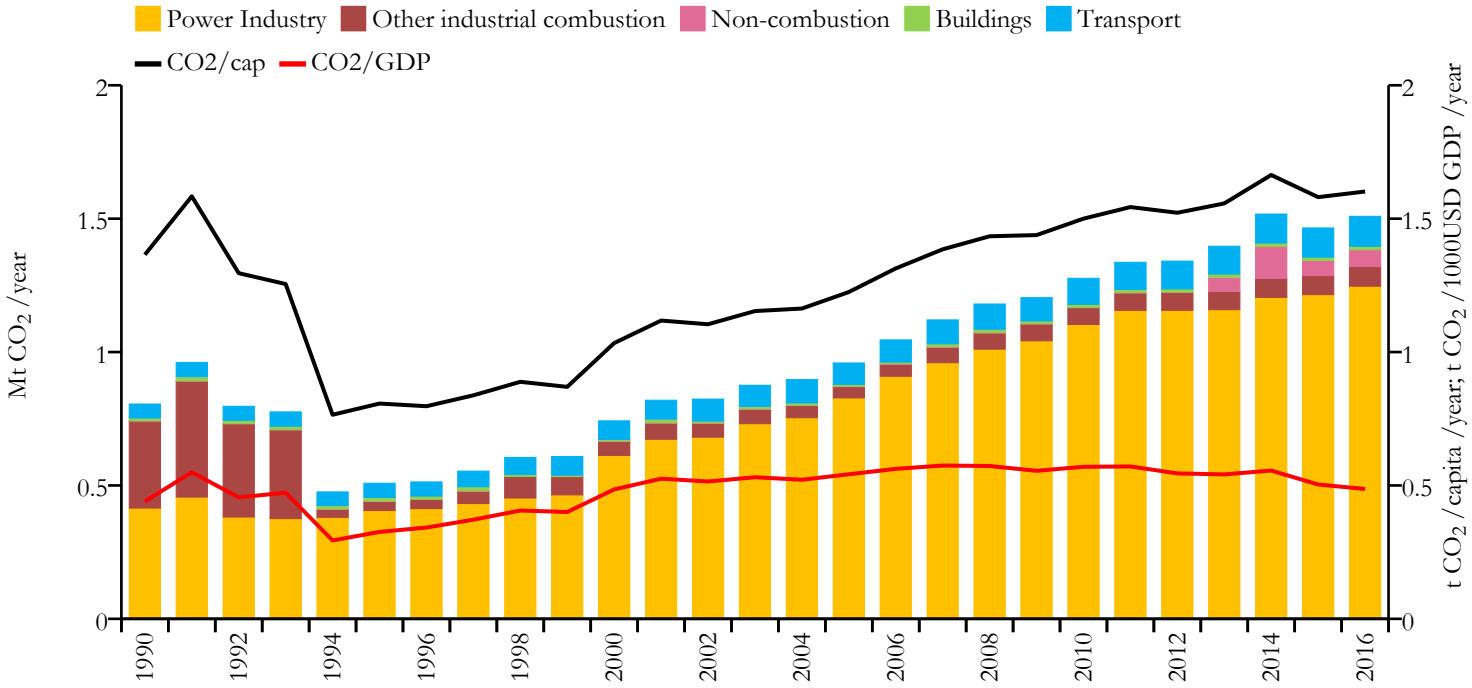
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Djibouti

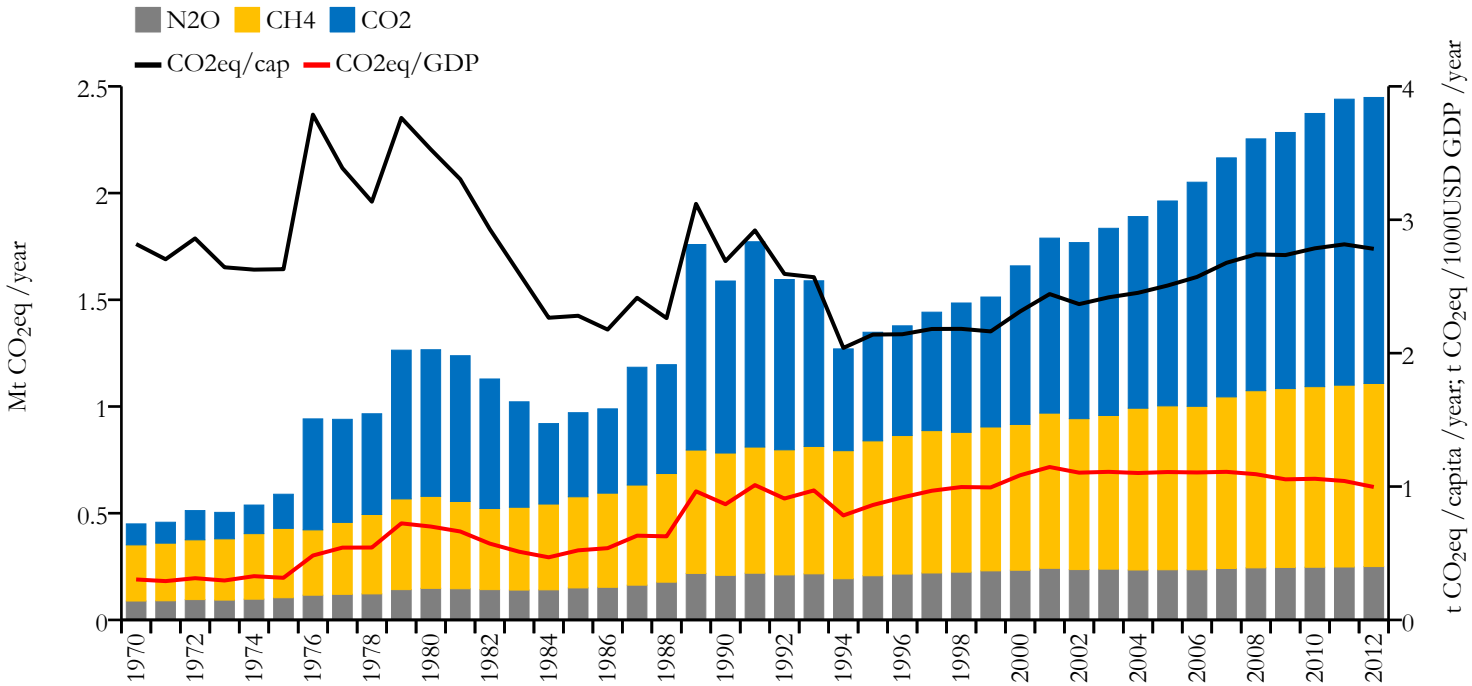
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 1.509 | 1.602 | 0.487 | 942333 |
| 1990 | 0.805 | 1.365 | 0.440 | 590398 |

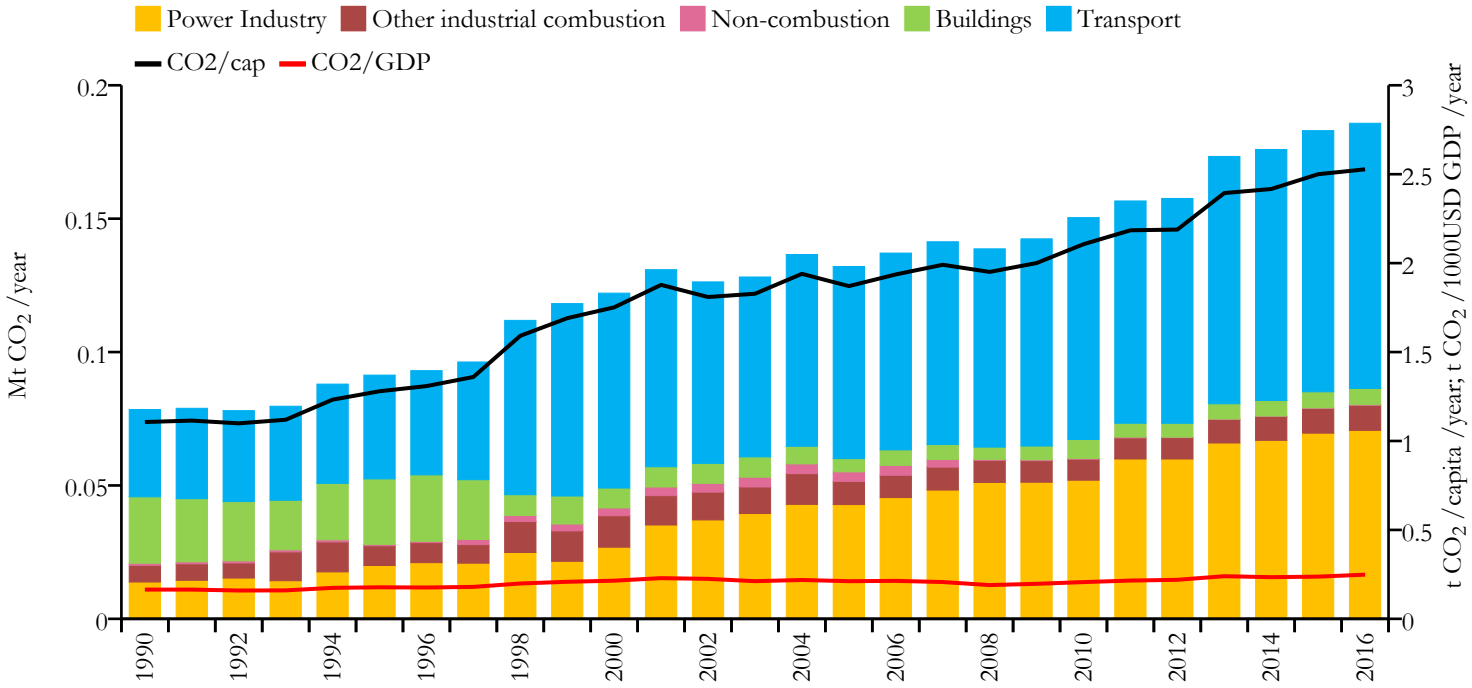
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Dominica

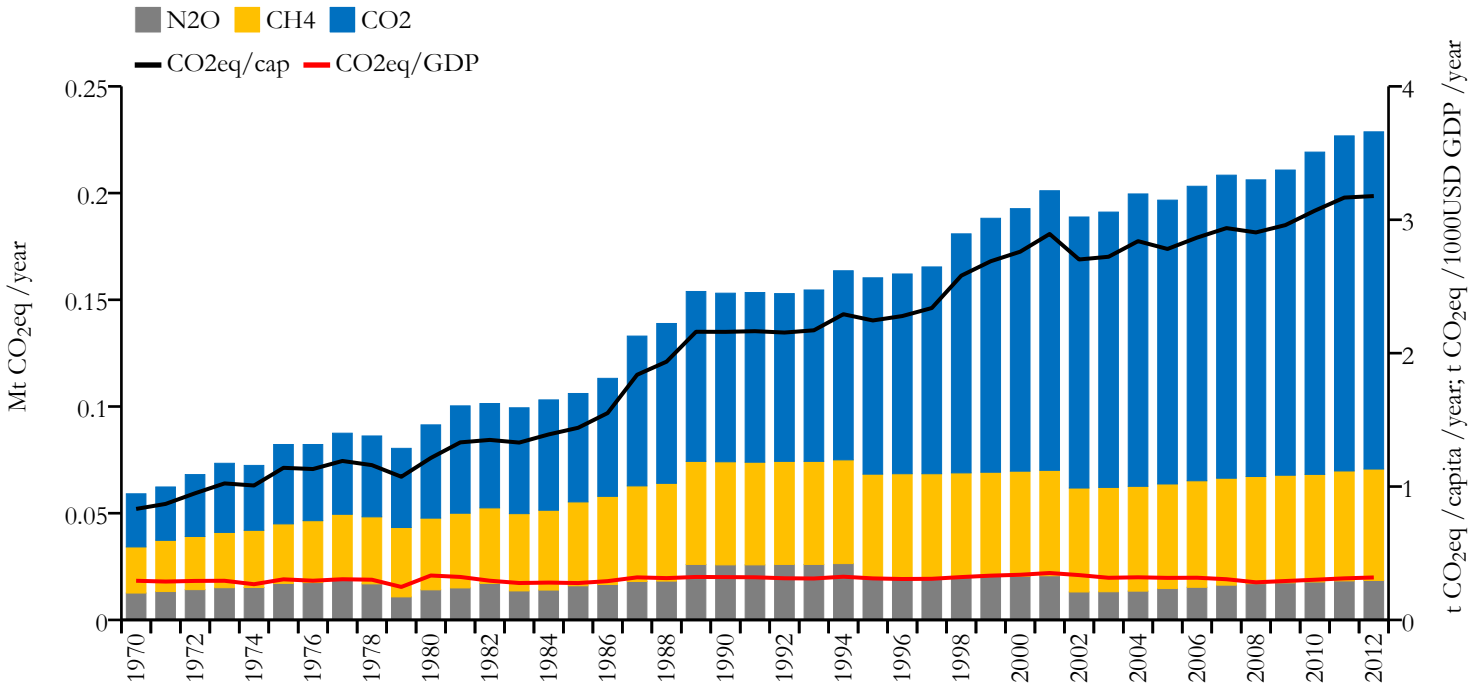
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



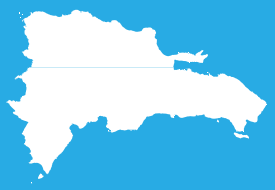

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.186 | 2.527 | 0.248 | 73543 |
| 1990 | 0.078 | 1.107 | 0.164 | 70926 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

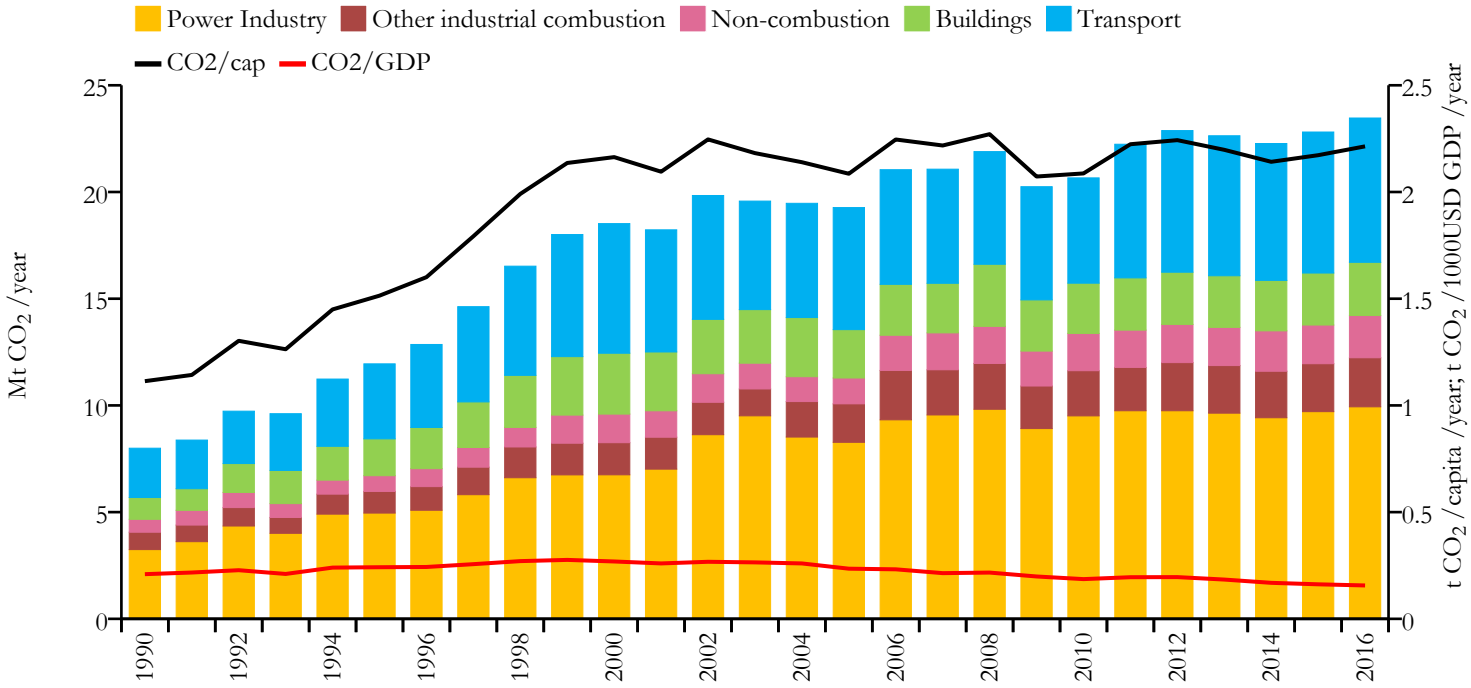
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Dominican Republic



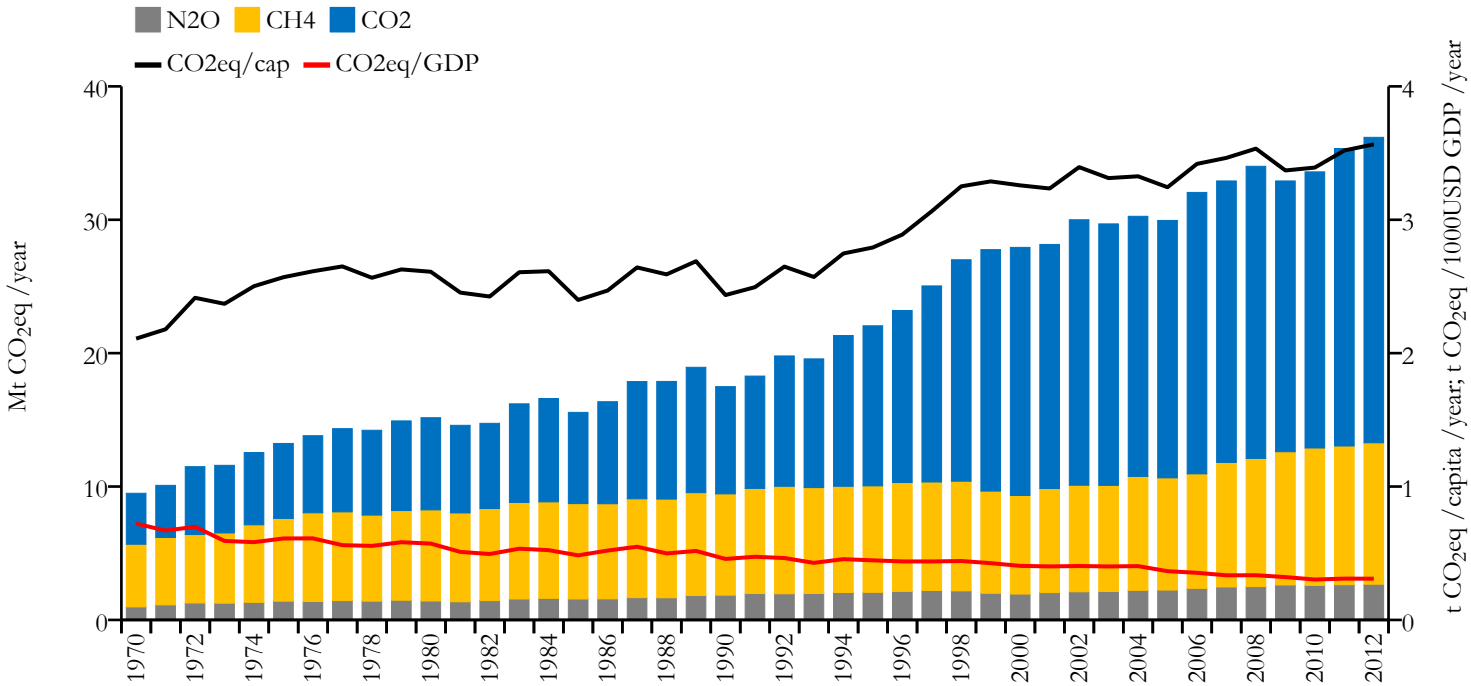
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 23.467 | 2.214 | 0.156 | 10648791 |
| 1990 | 7.996 | 1.114 | 0.209 | 7183647 |

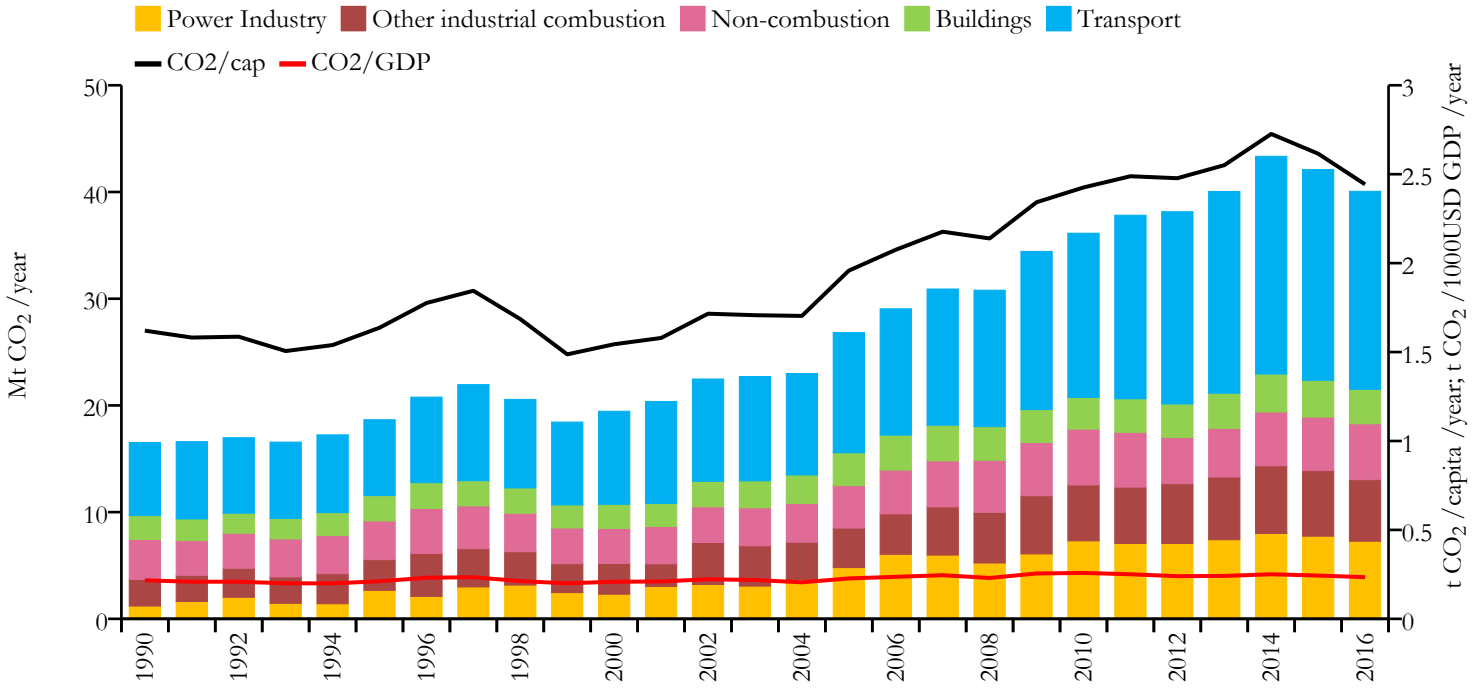
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



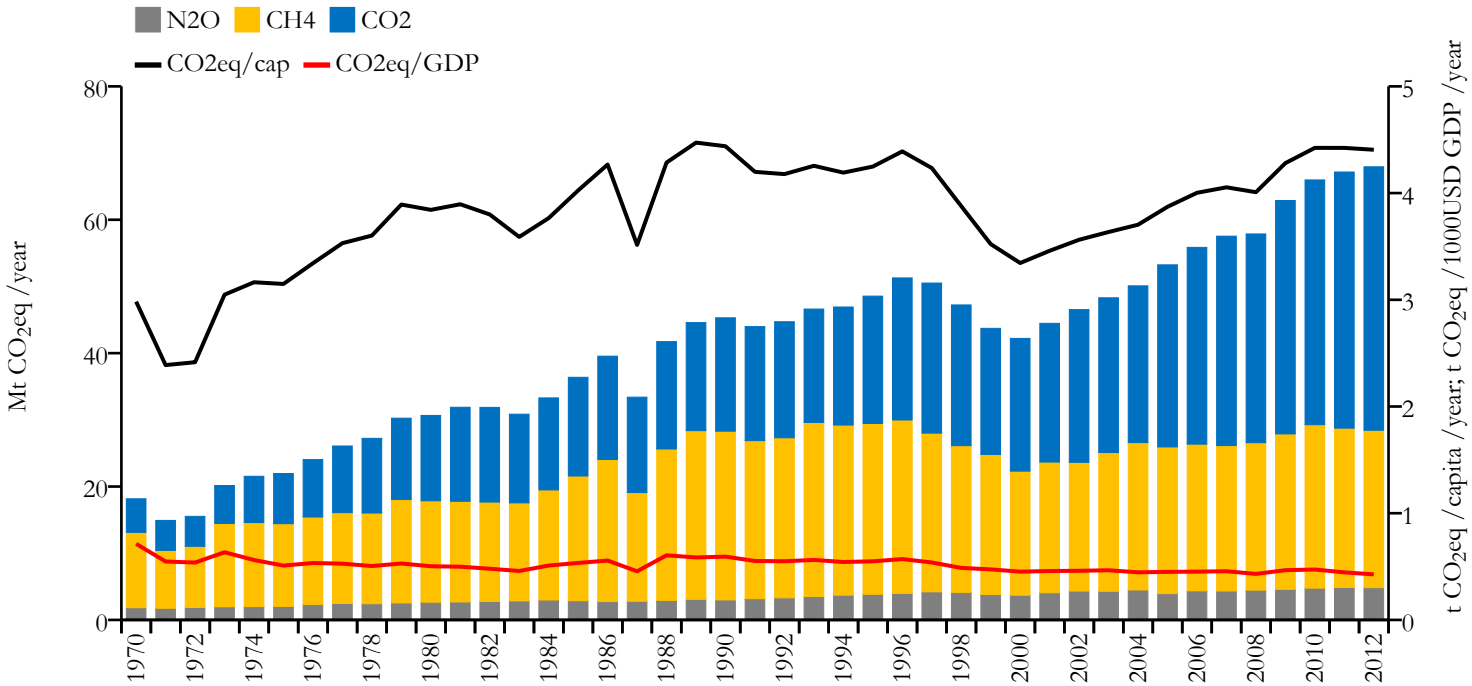
# Ecuador

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)

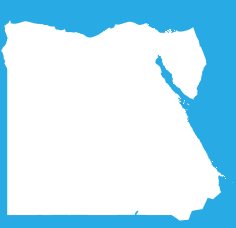



| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 40.066 | 2.443 | 0.234 | 16385068 |
| 1990 | 16.528 | 1.620 | 0.217 | 10218091 |

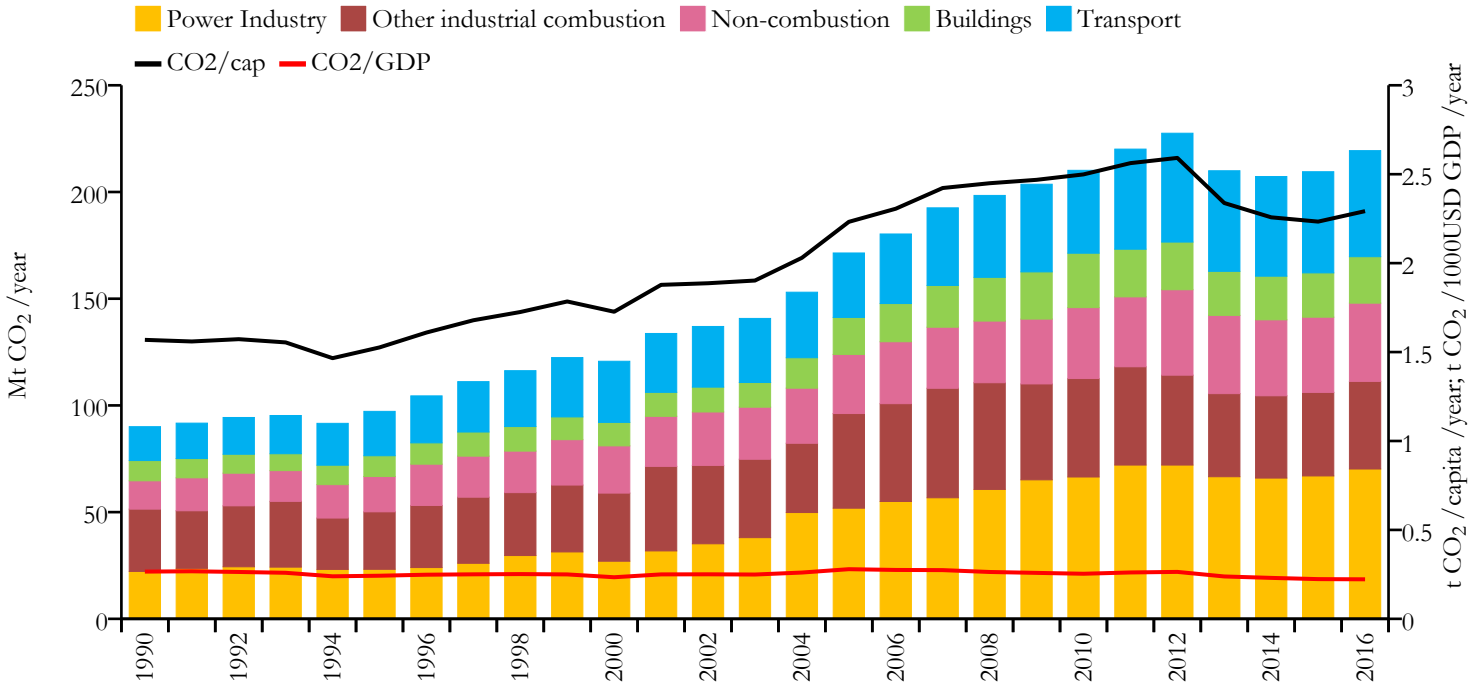
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Egypt

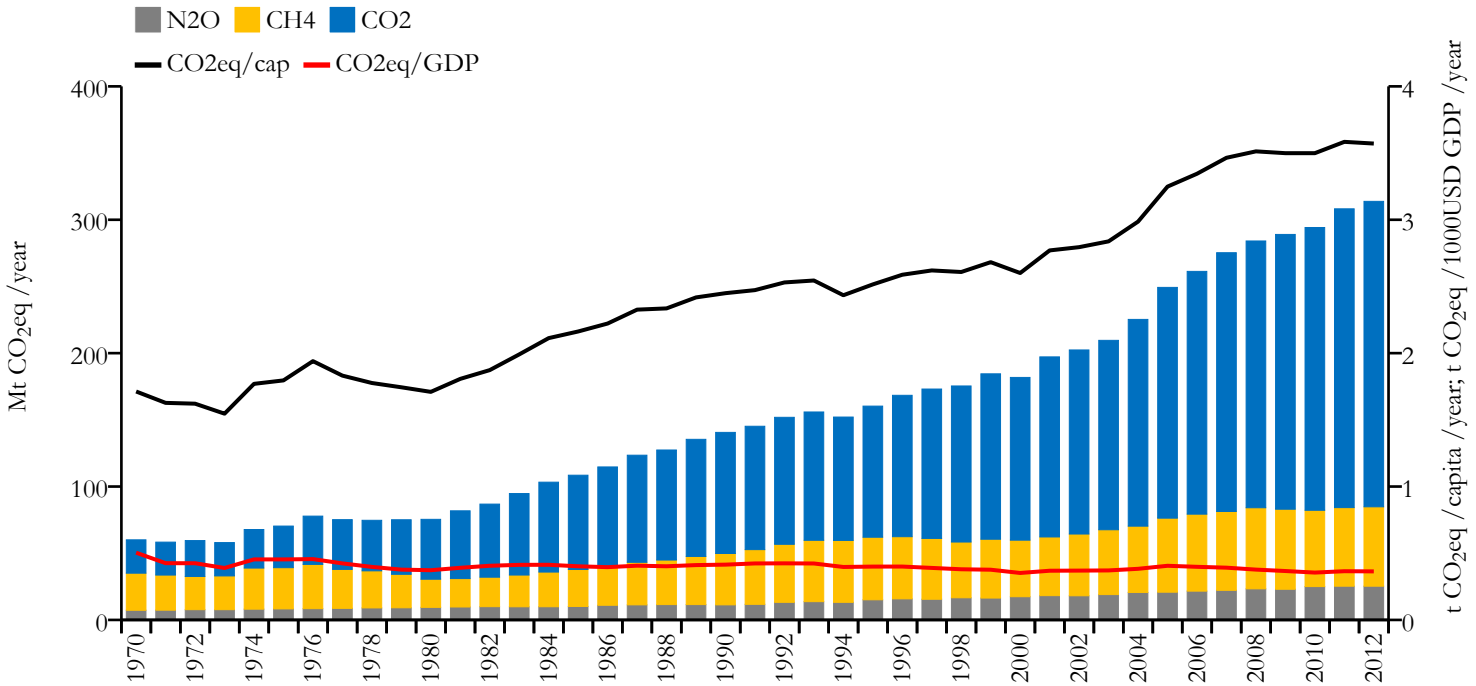


## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



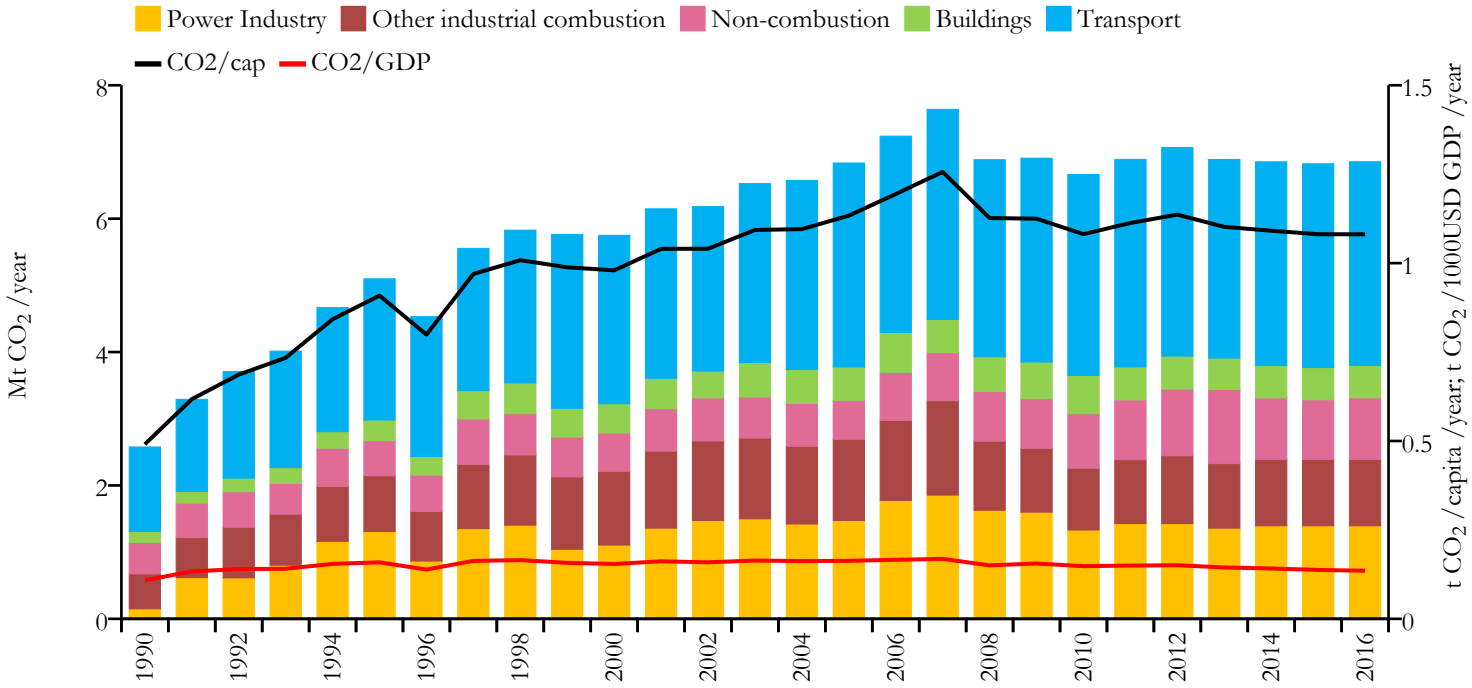

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 219.377 | 2.292 | 0.222 | 95688681 |
| 1990 | 90.038 | 1.569 | 0.266 | 57412215 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



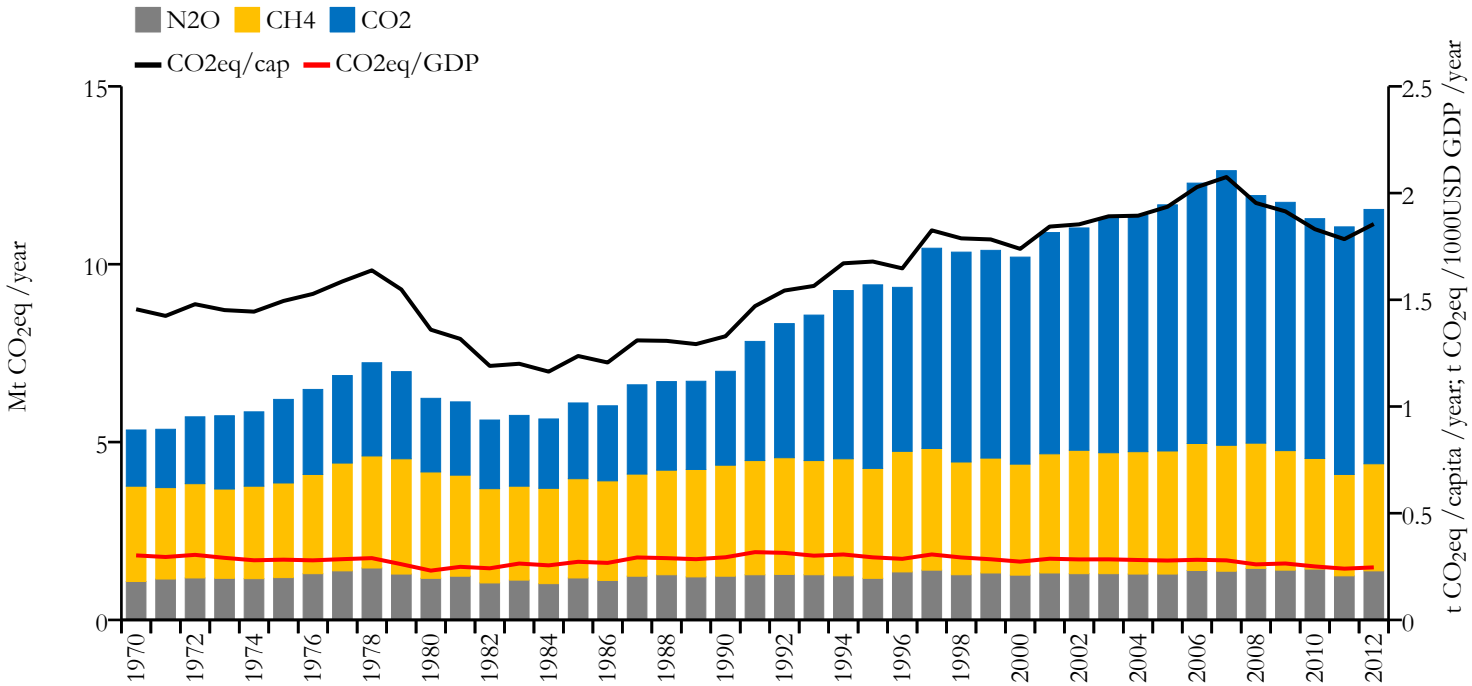
# El Salvador

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



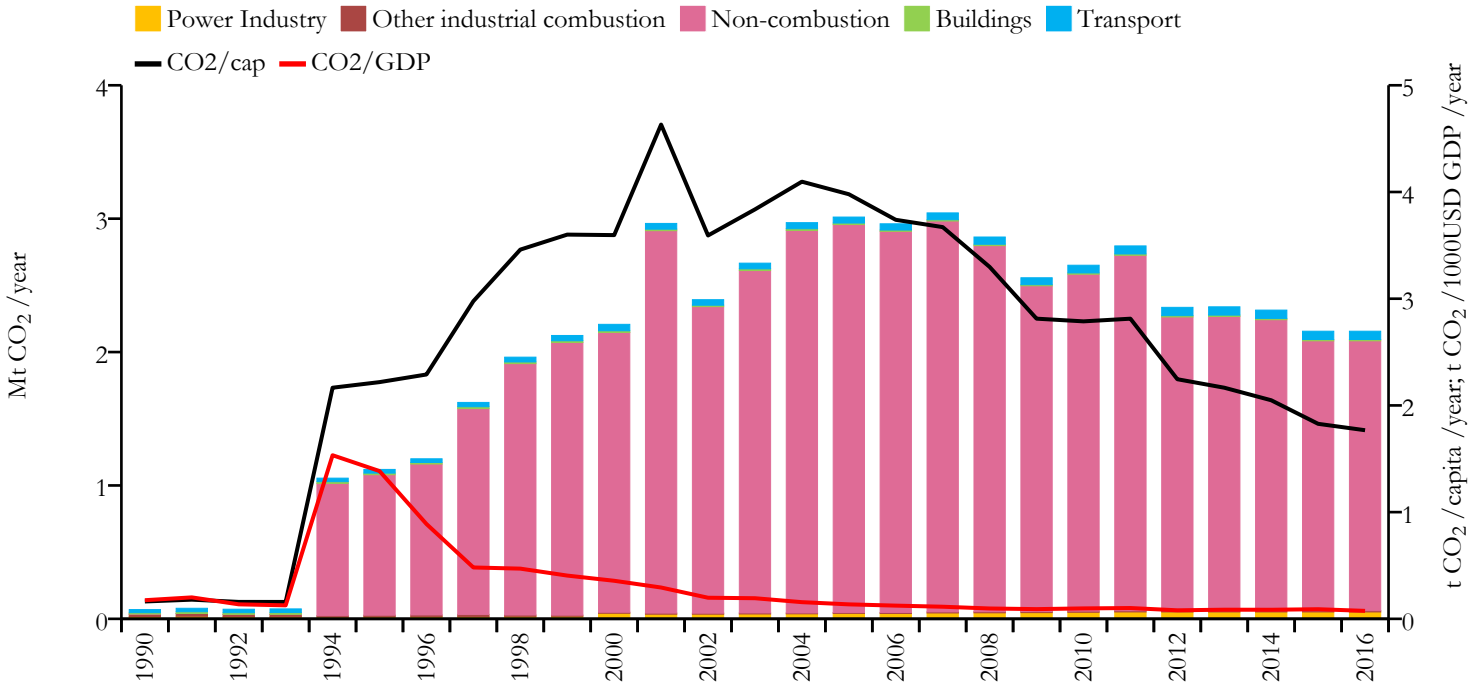

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 6.854 | 1.081 | 0.135 | 6344722 |
| 1990 | 2.577 | 0.491 | 0.108 | 5254984 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



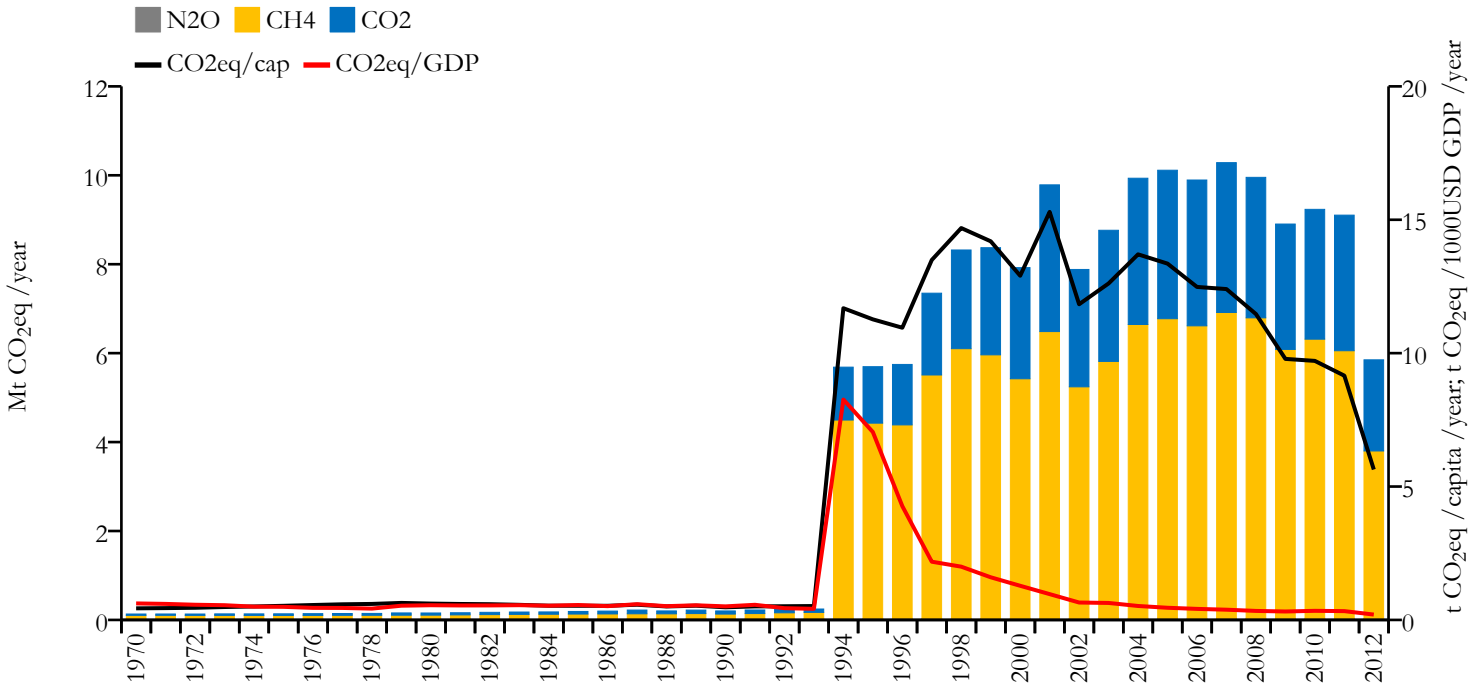
# Equatorial Guinea

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)

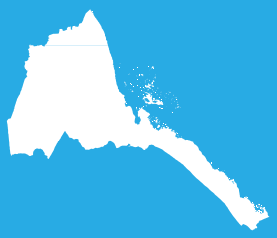



| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 2.156 | 1.768 | 0.075 | 1221490 |
| 1990 | 0.069 | 0.163 | 0.175 | 426846 |

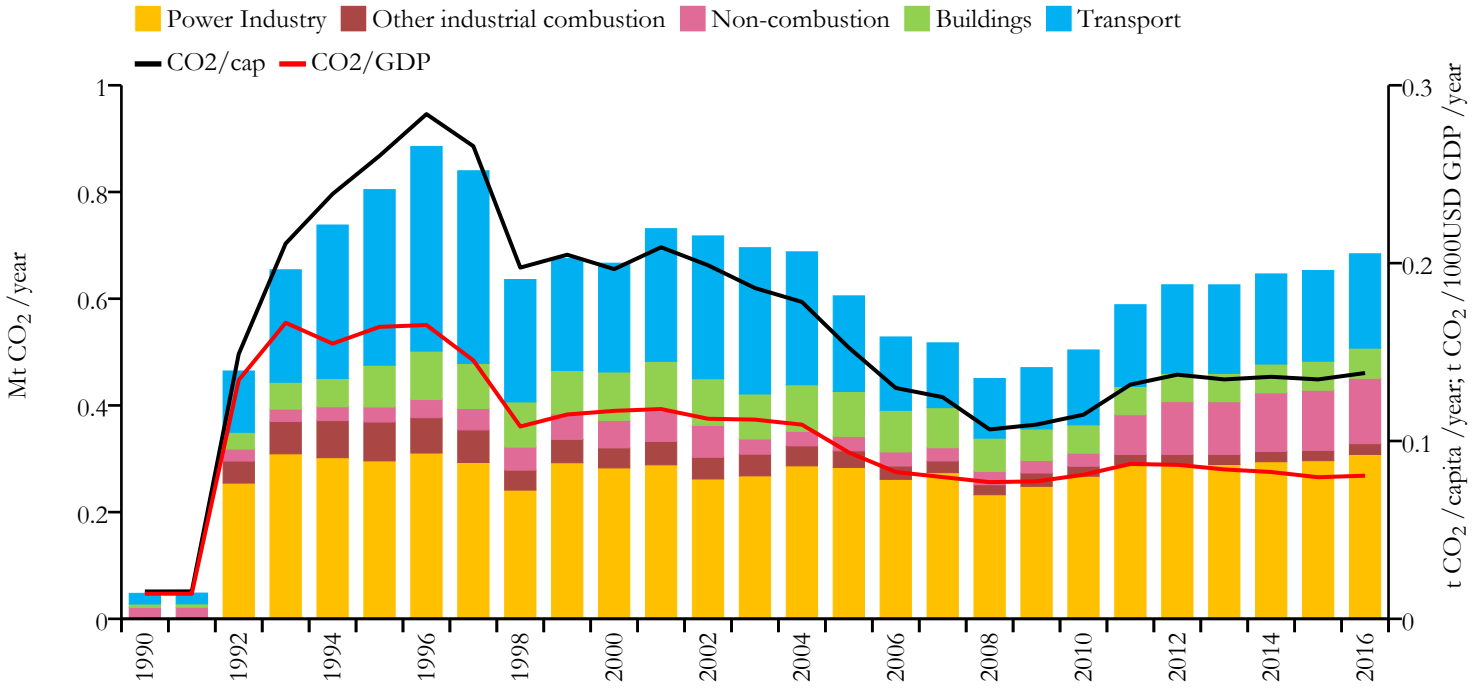
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Eritrea



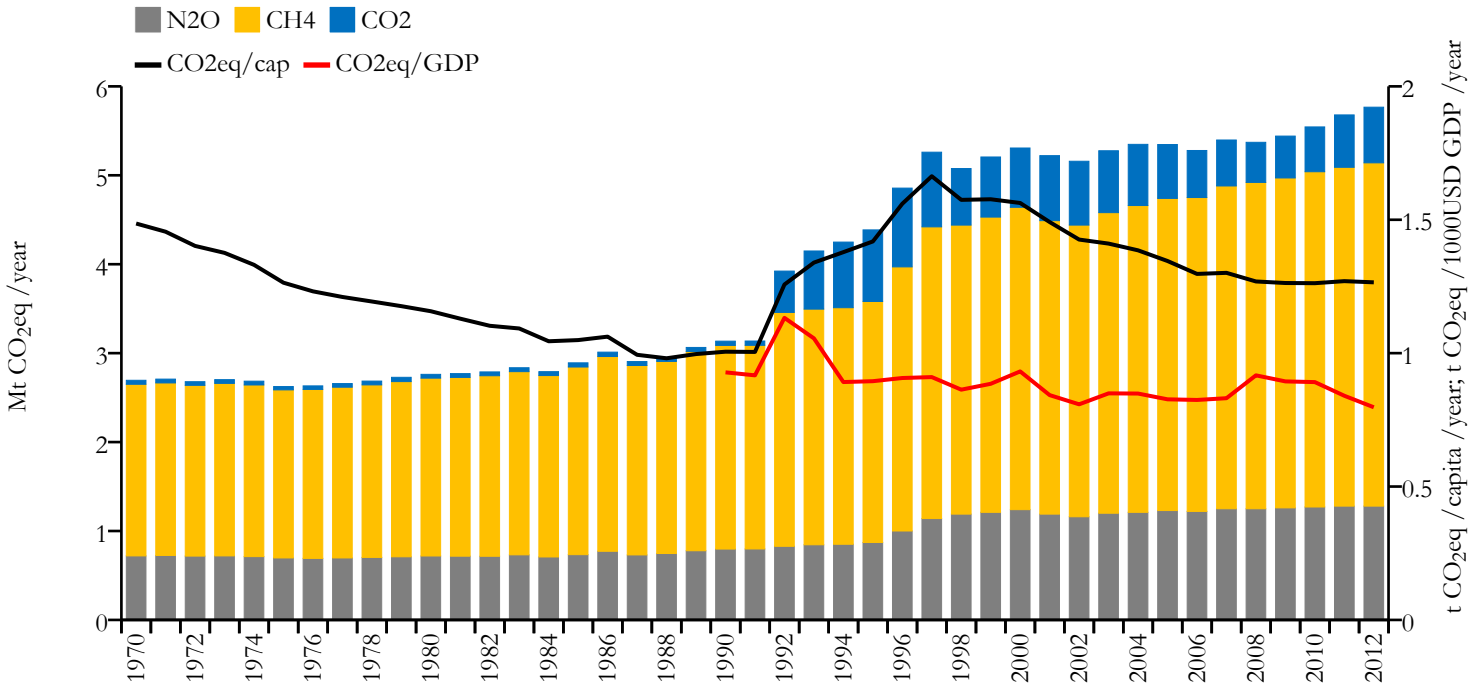
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.684 | 0.138 | 0.080 | 4954645 |
| 1990 | 0.048 | 0.015 | 0.014 | 3113311 |

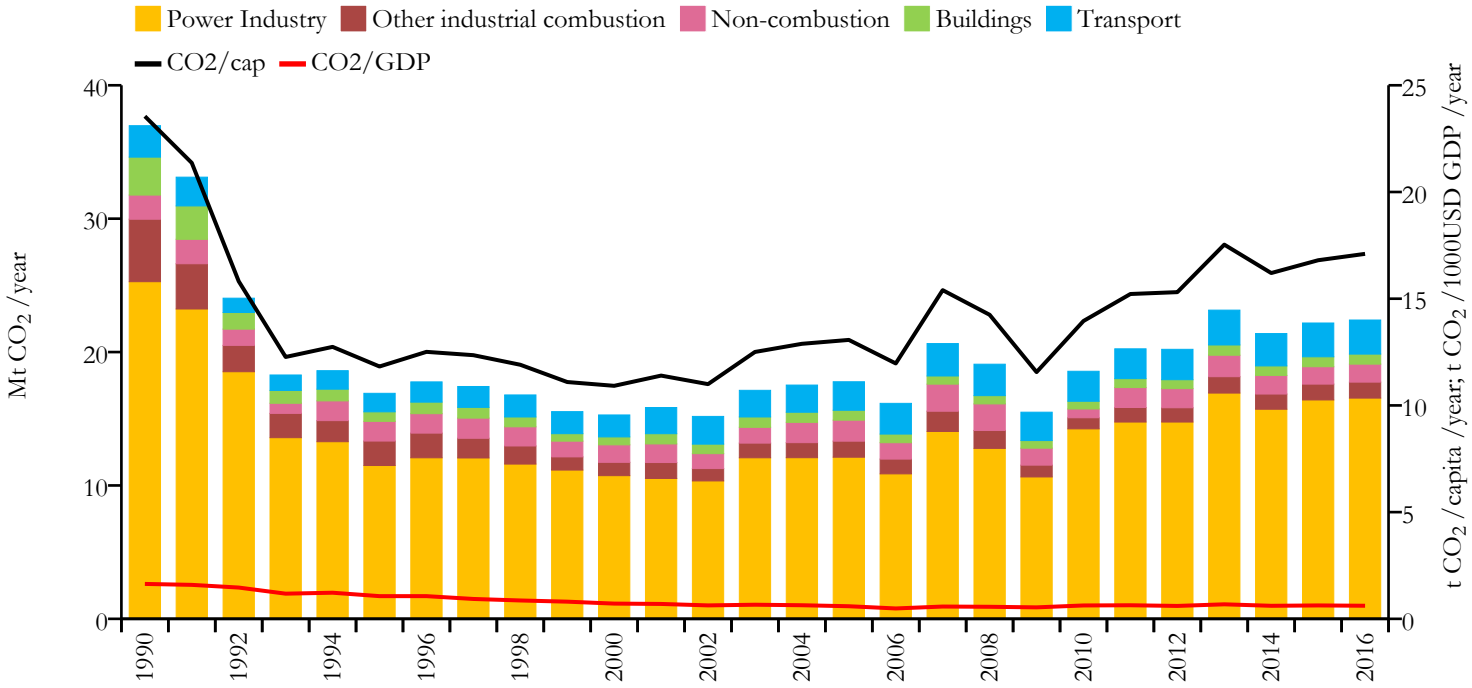
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Estonia

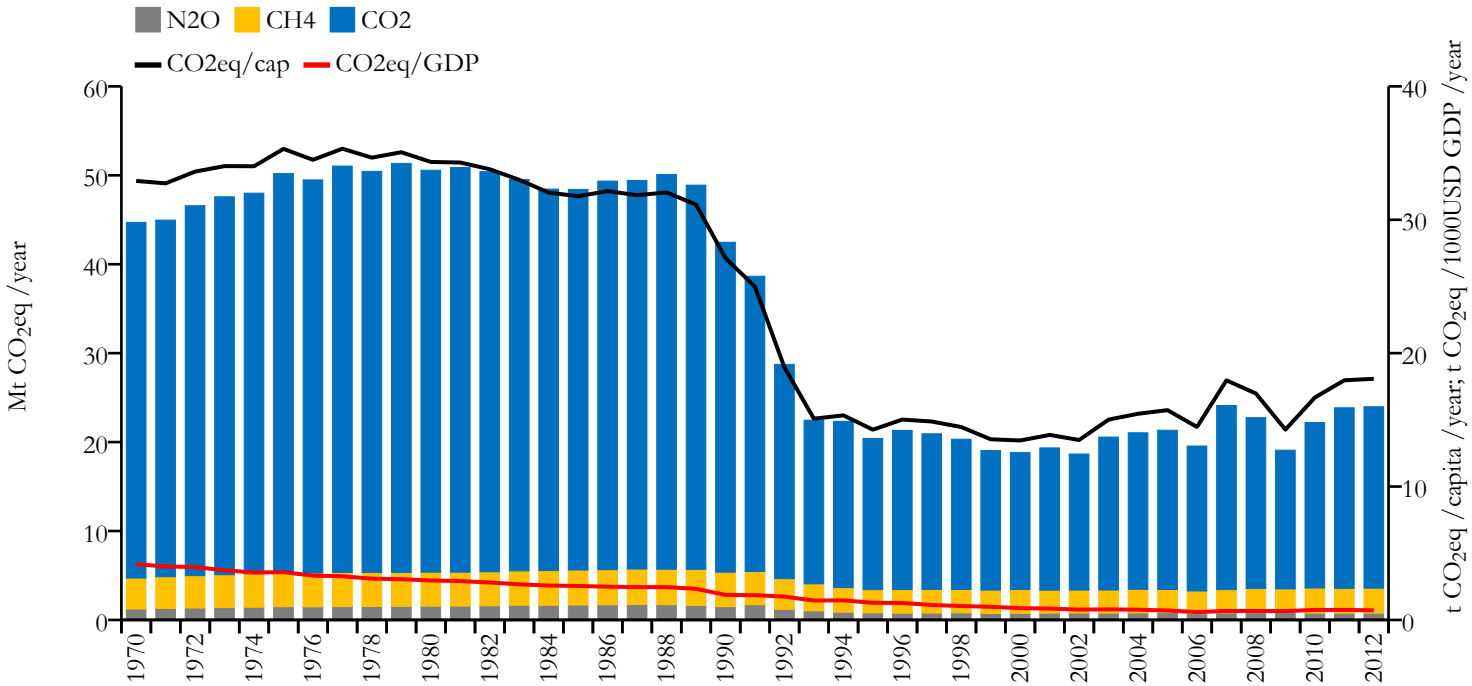
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 22.402 | 17.101 | 0.614 | 1312442 |
| 1990 | 36.971 | 23.548 | 1.636 | 1565242 |

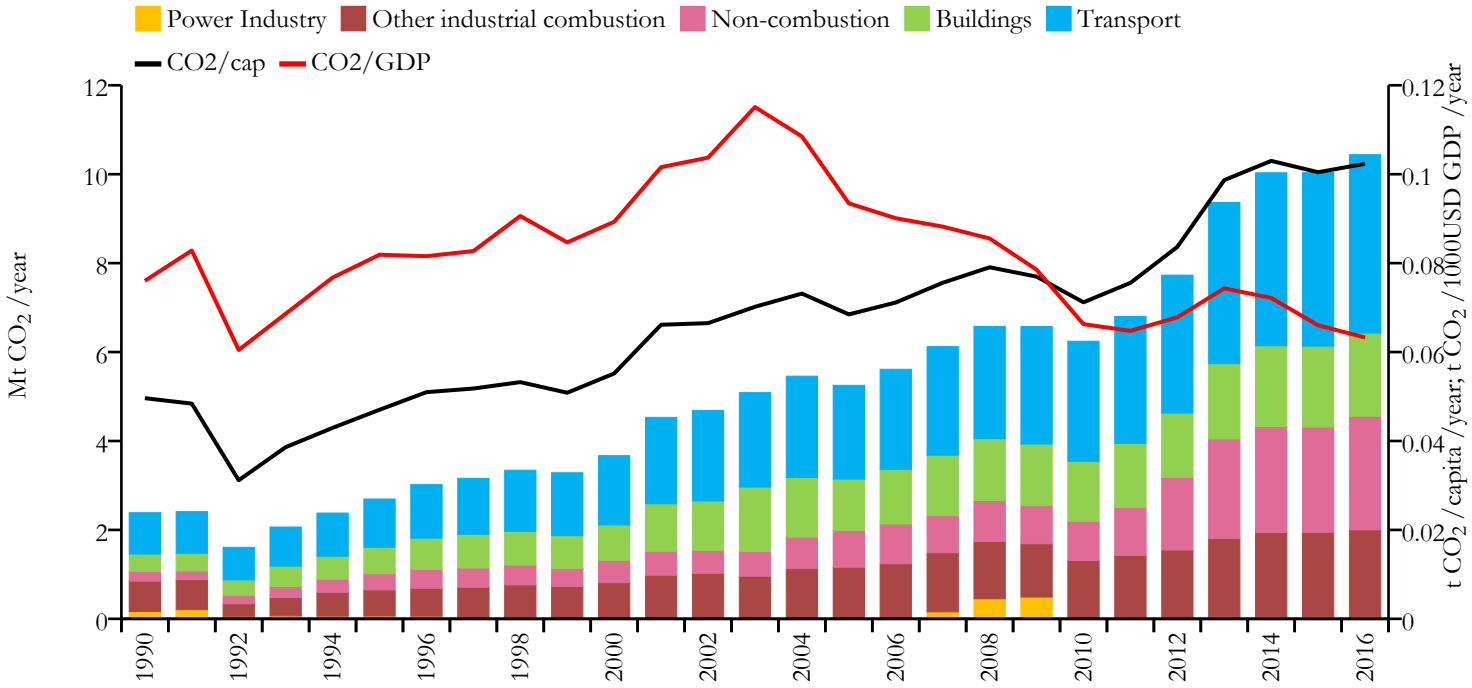
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Ethiopia

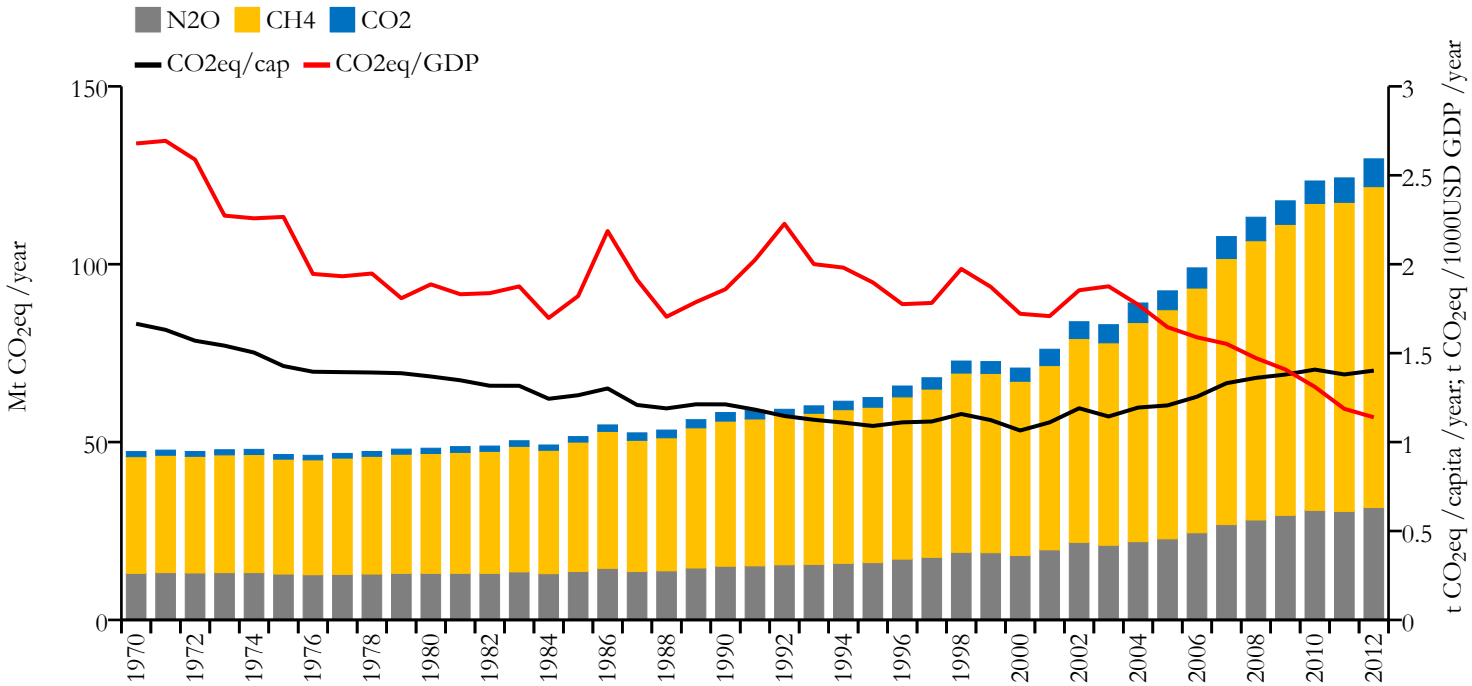
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 10.439 | 0.102 | 0.063 | 102403196 |
| 1990 | 2.387 | 0.050 | 0.076 | 48086516 |

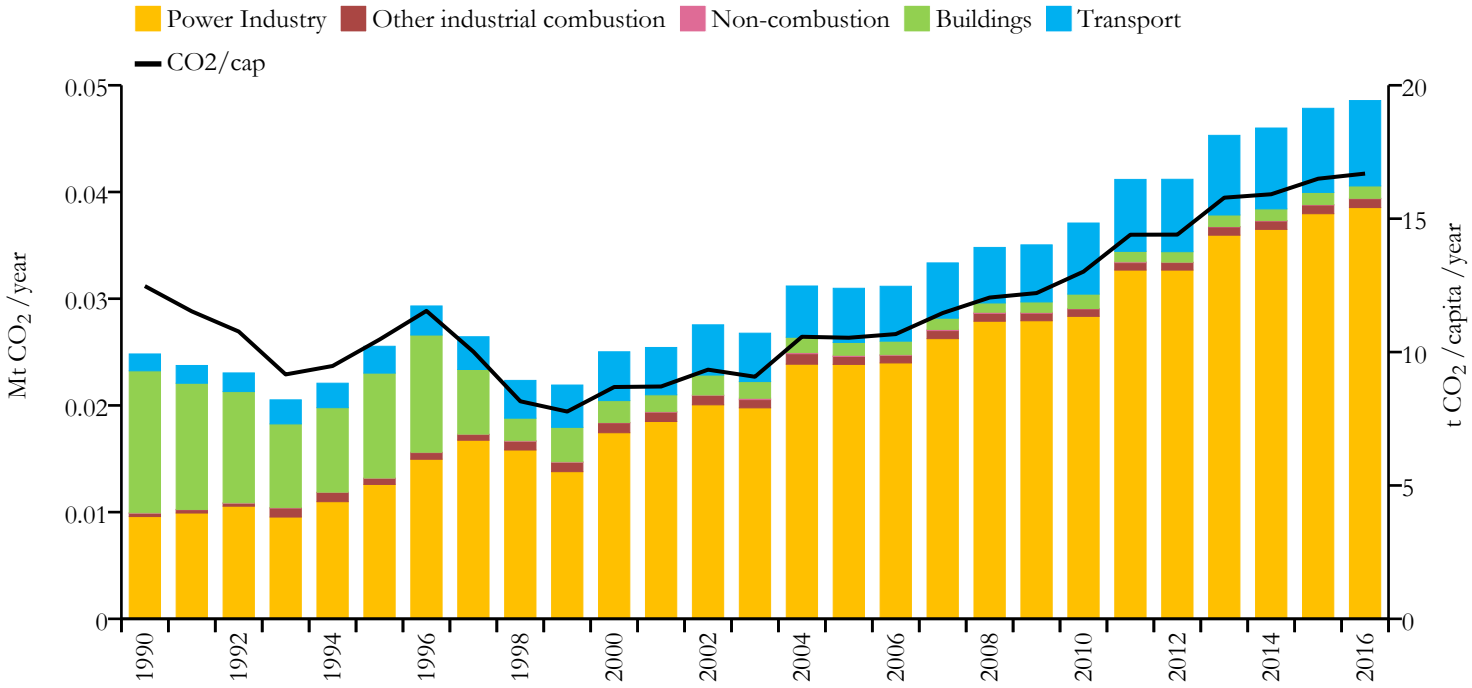
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Falkland Islands

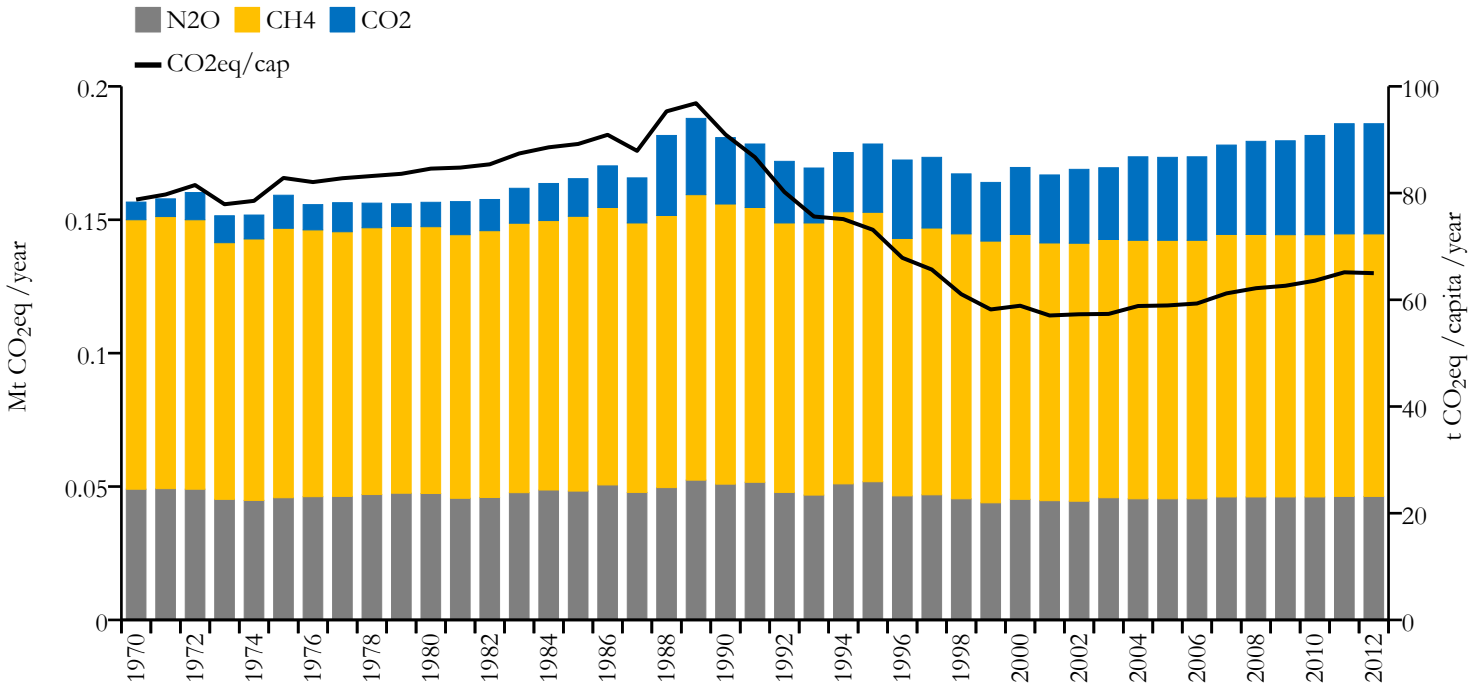
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.049 | 16.690 | n/a | 2910 |
| 1990 | 0.025 | 12.474 | n/a | 1989 |

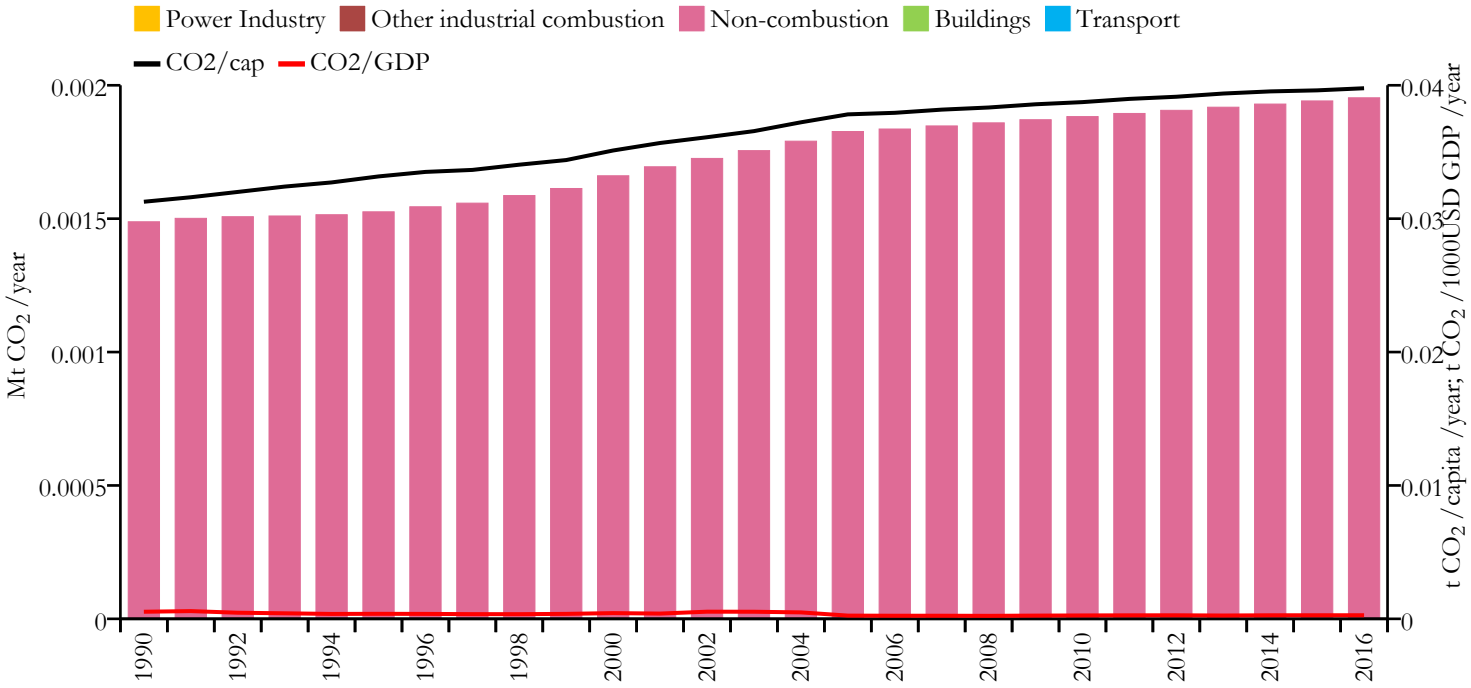
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Faroes

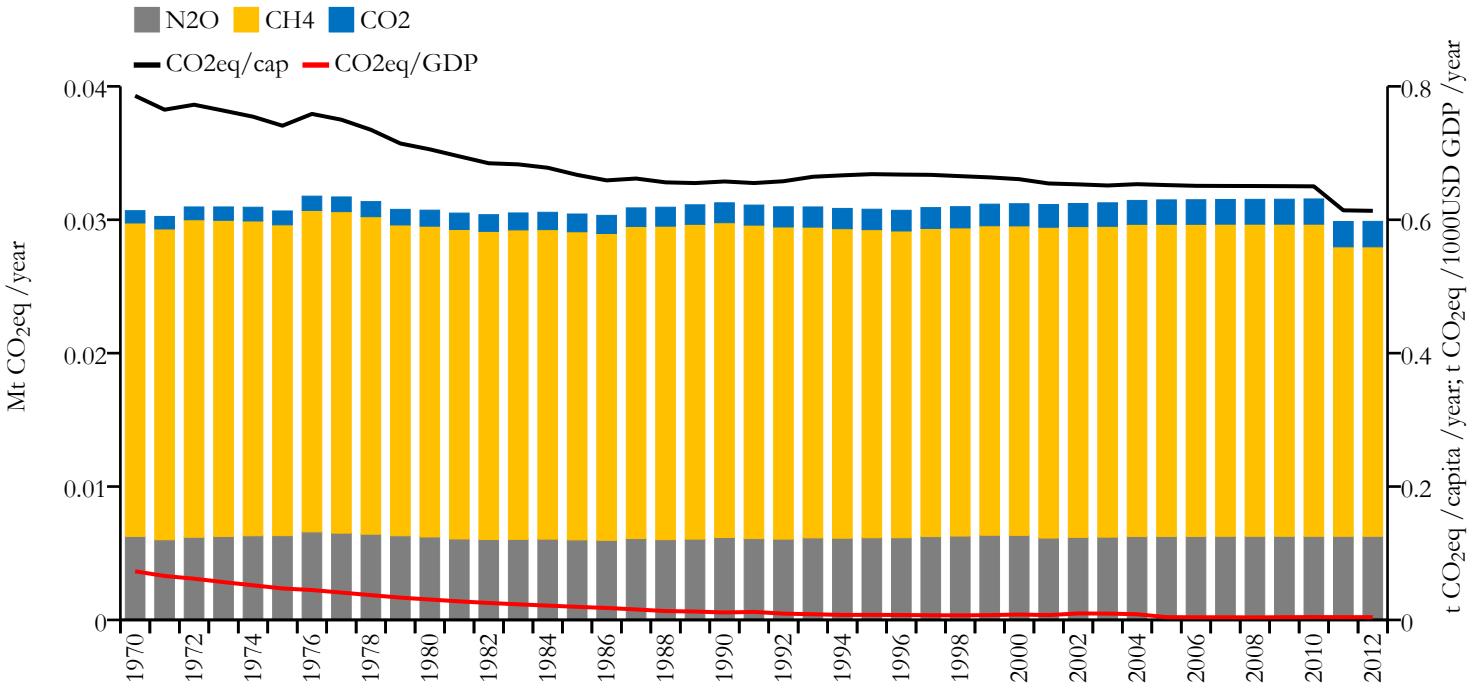
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.002 | 0.040 | 0.000 | 49117 |
| 1990 | 0.001 | 0.031 | 0.001 | 47594 |

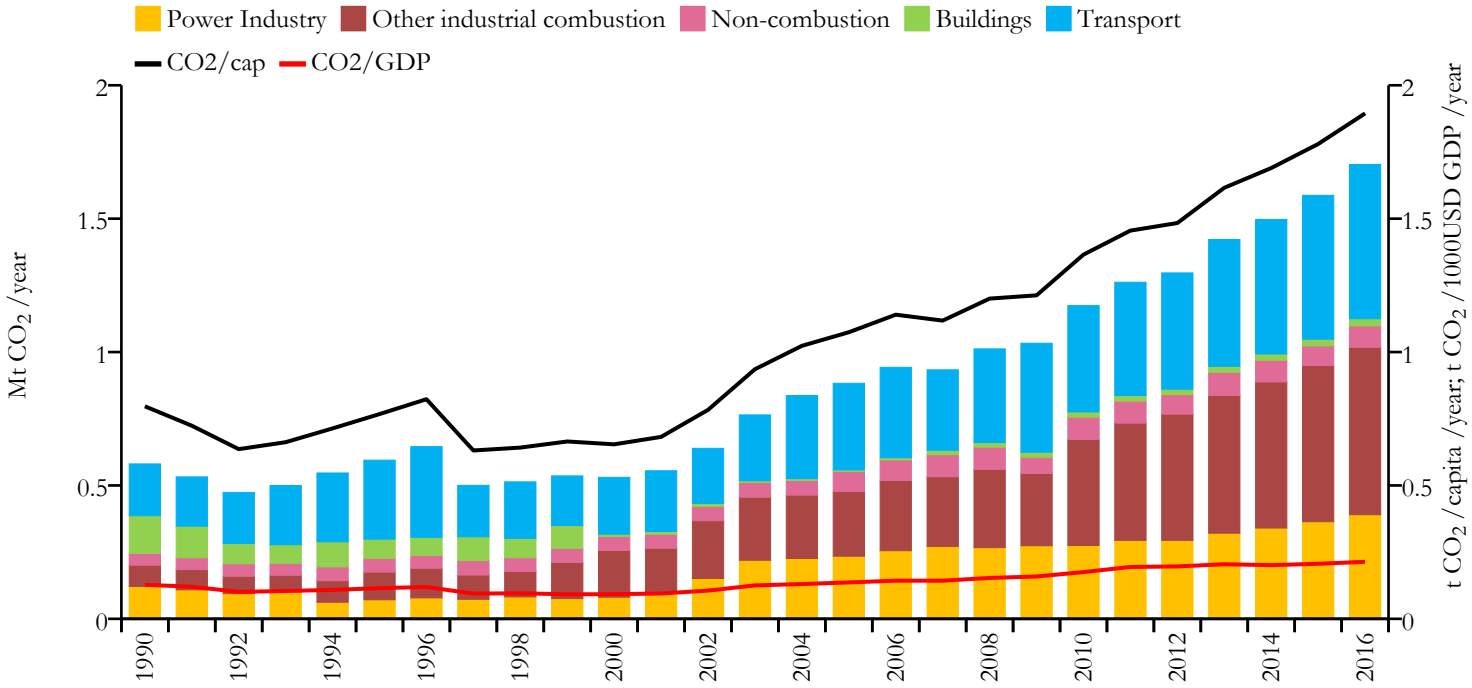
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Fiji

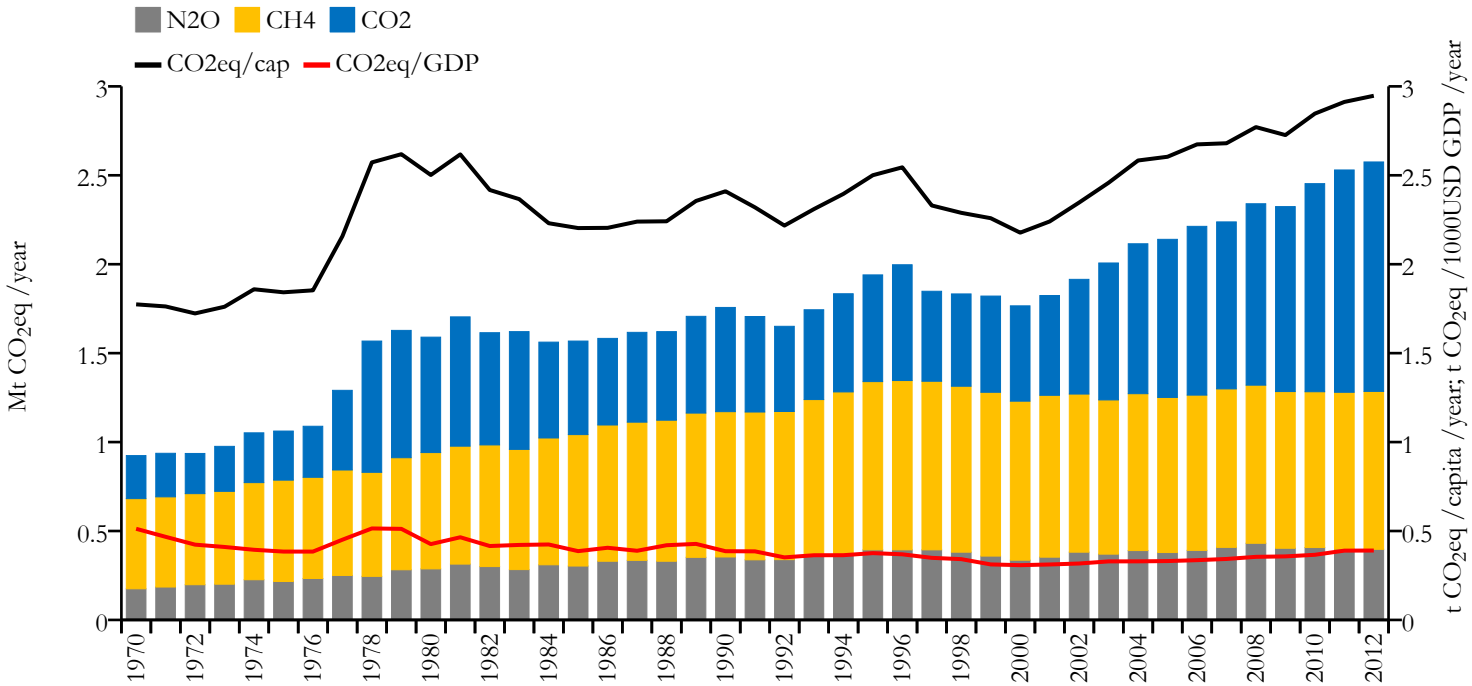
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



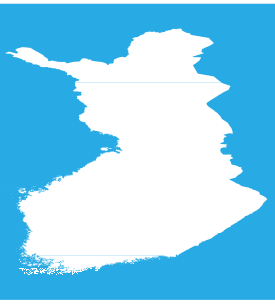

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 1.703 | 1.895 | 0.214 | 898760 |
| 1990 | 0.581 | 0.797 | 0.128 | 728628 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

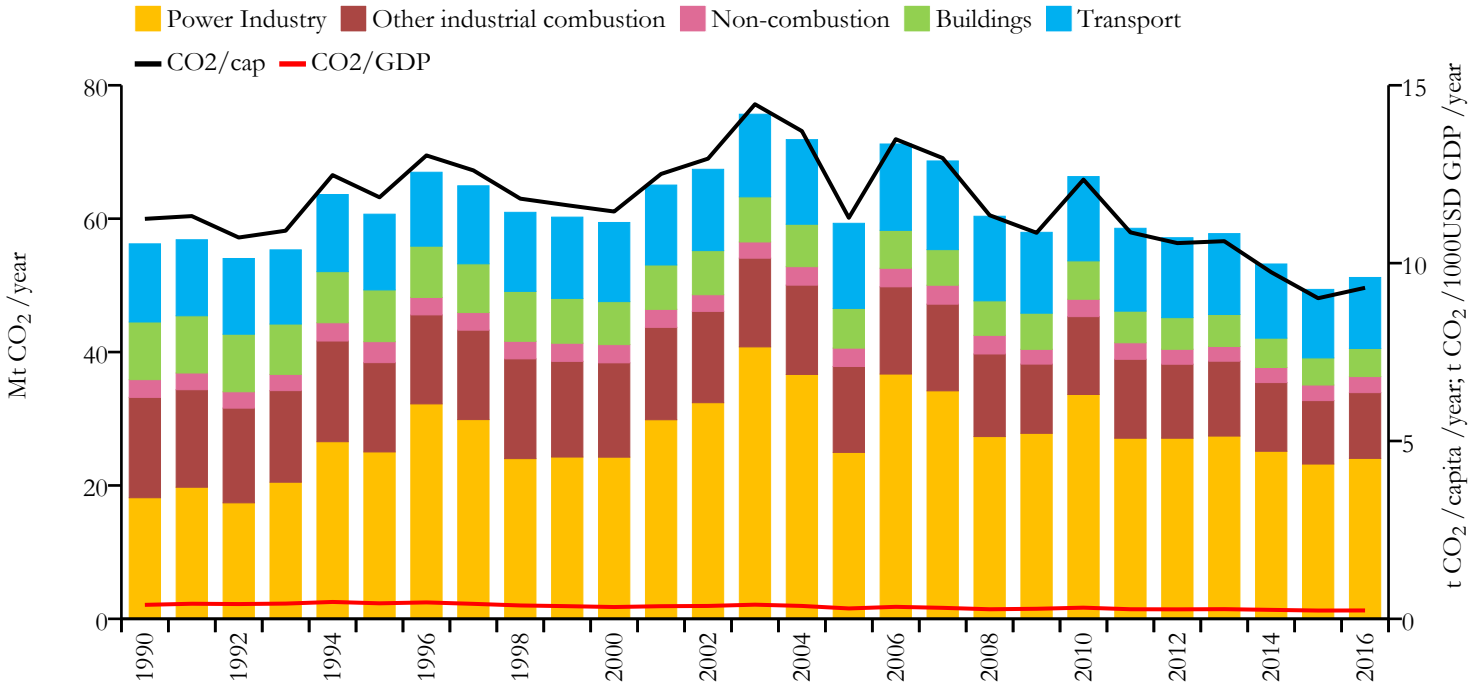
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Finland



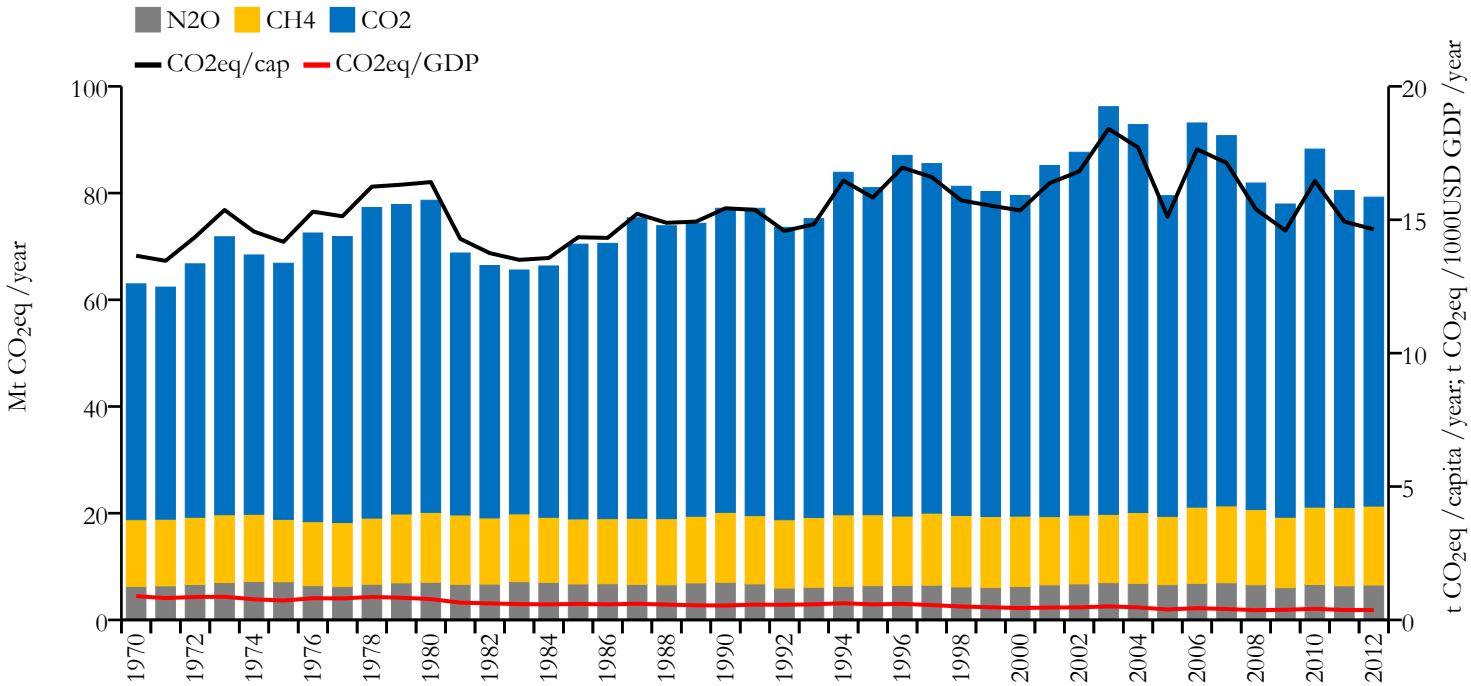
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 51.184 | 9.306 | 0.236 | 5503132 |
| 1990 | 56.225 | 11.245 | 0.393 | 4996222 |

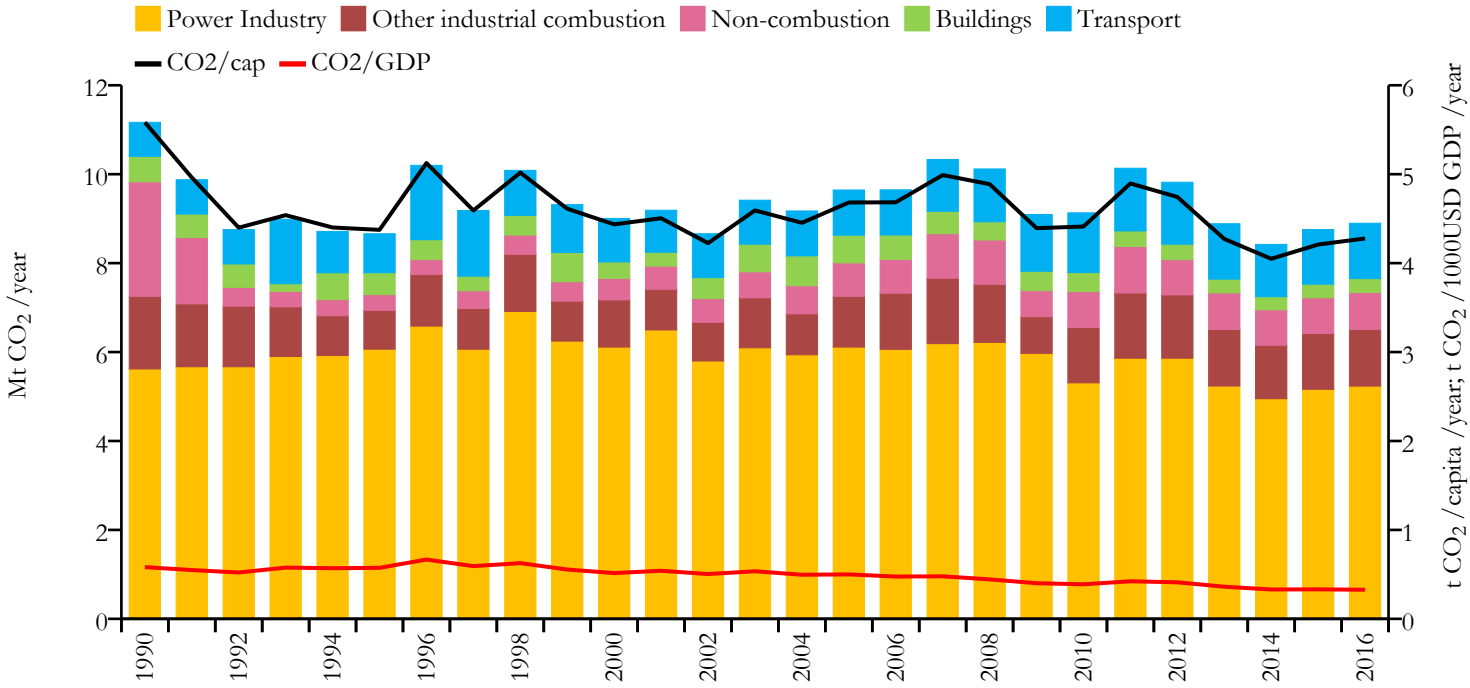
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# former Yugoslav Republic of Macedonia, the

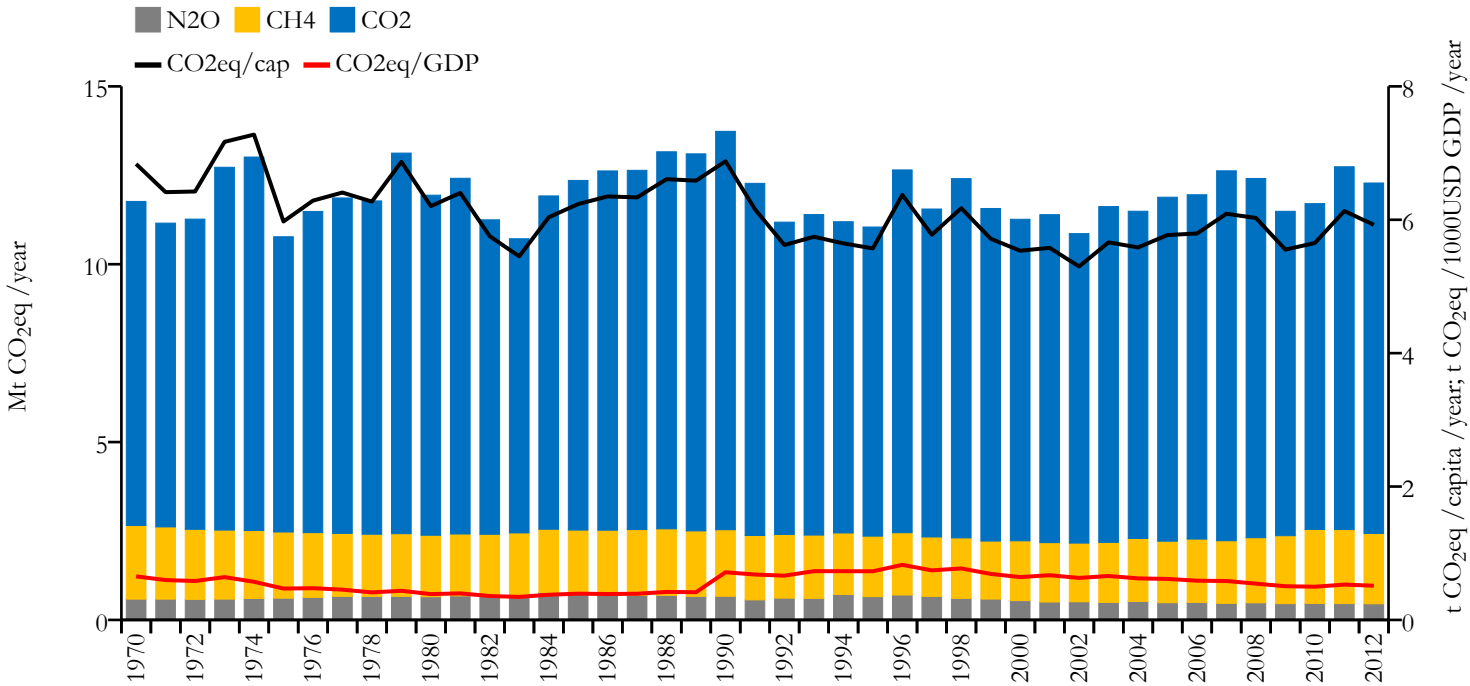
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



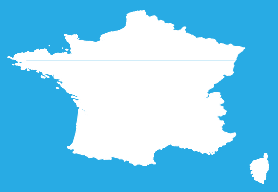

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 8.897 | 4.277 | 0.327 | 2081206 |
| 1990 | 11.167 | 5.583 | 0.582 | 1996228 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

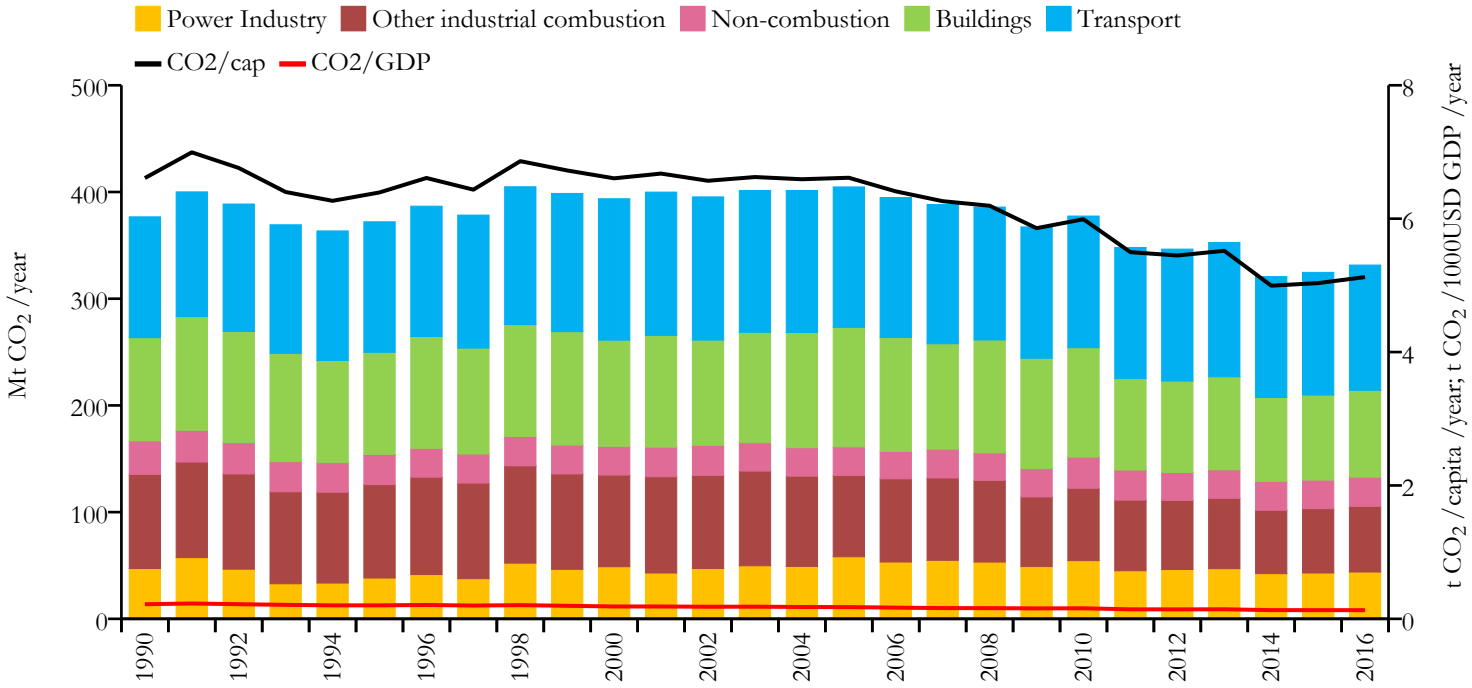
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# France and Monaco

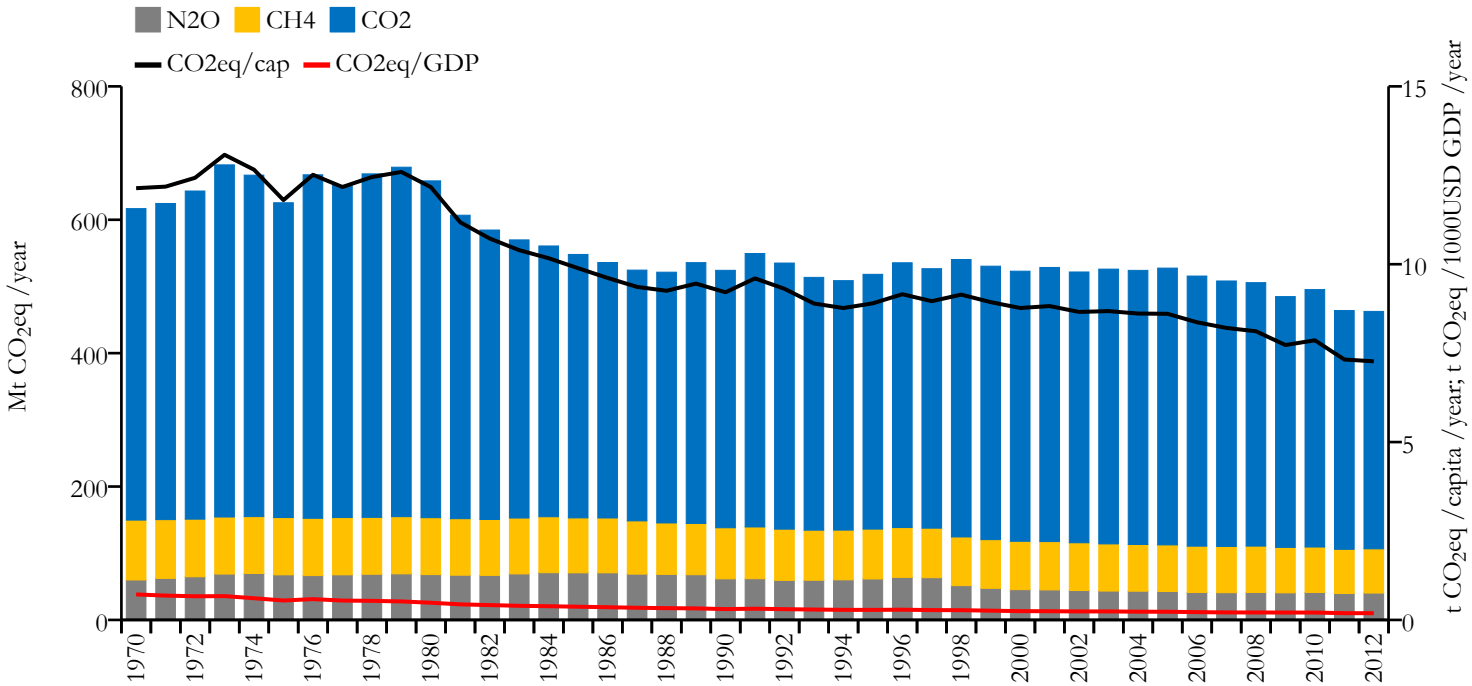


## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



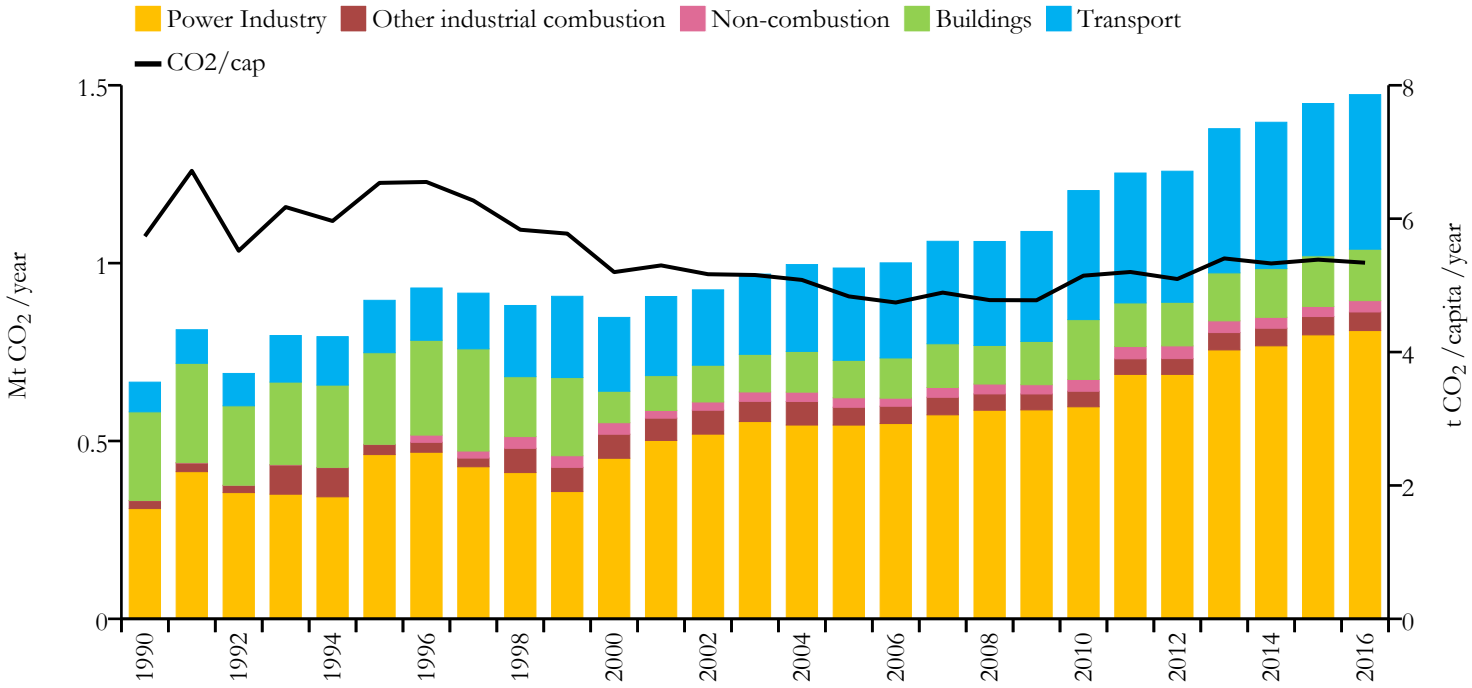

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 331.533 | 5.124 | 0.130 | 64720690 |
| 1990 | 376.700 | 6.609 | 0.219 | 56960835 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# French Guiana

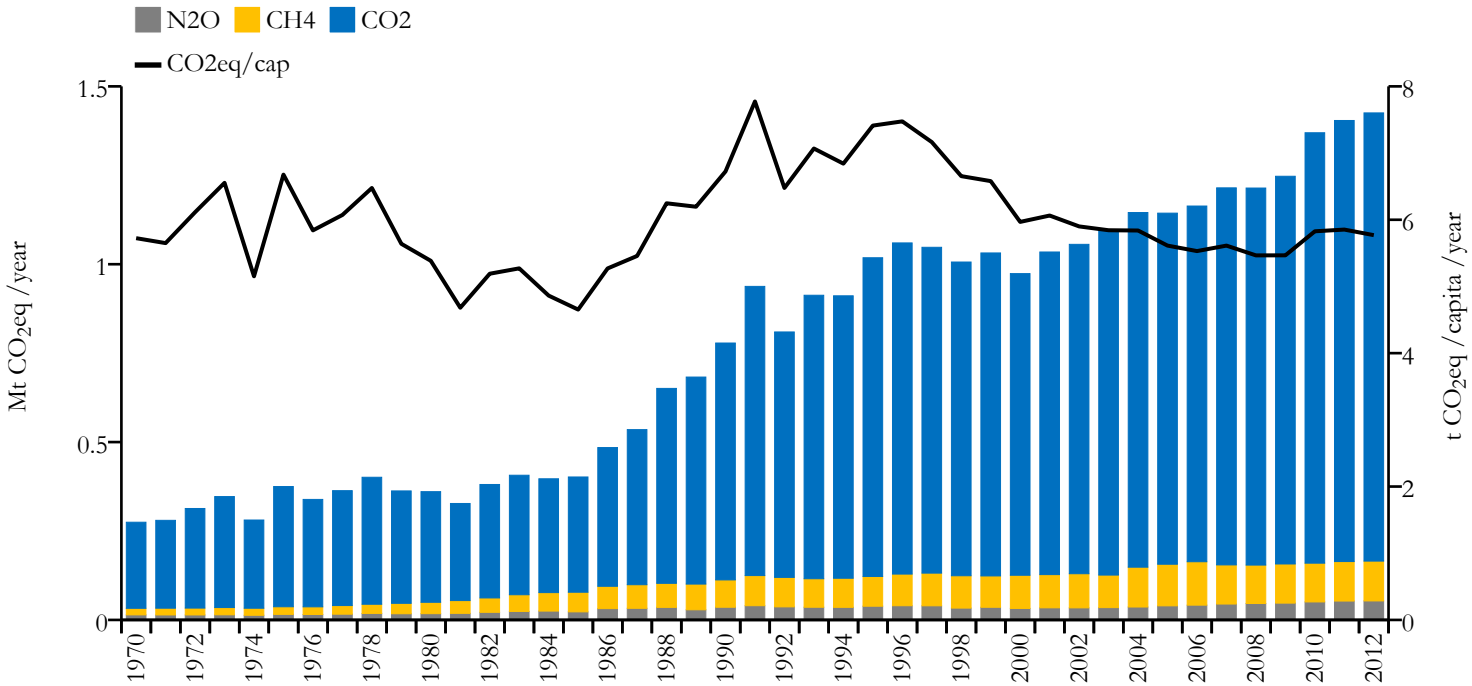
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 1.474 | 5.340 | n/a | 275713 |
| 1990 | 0.665 | 5.737 | n/a | 115784 |

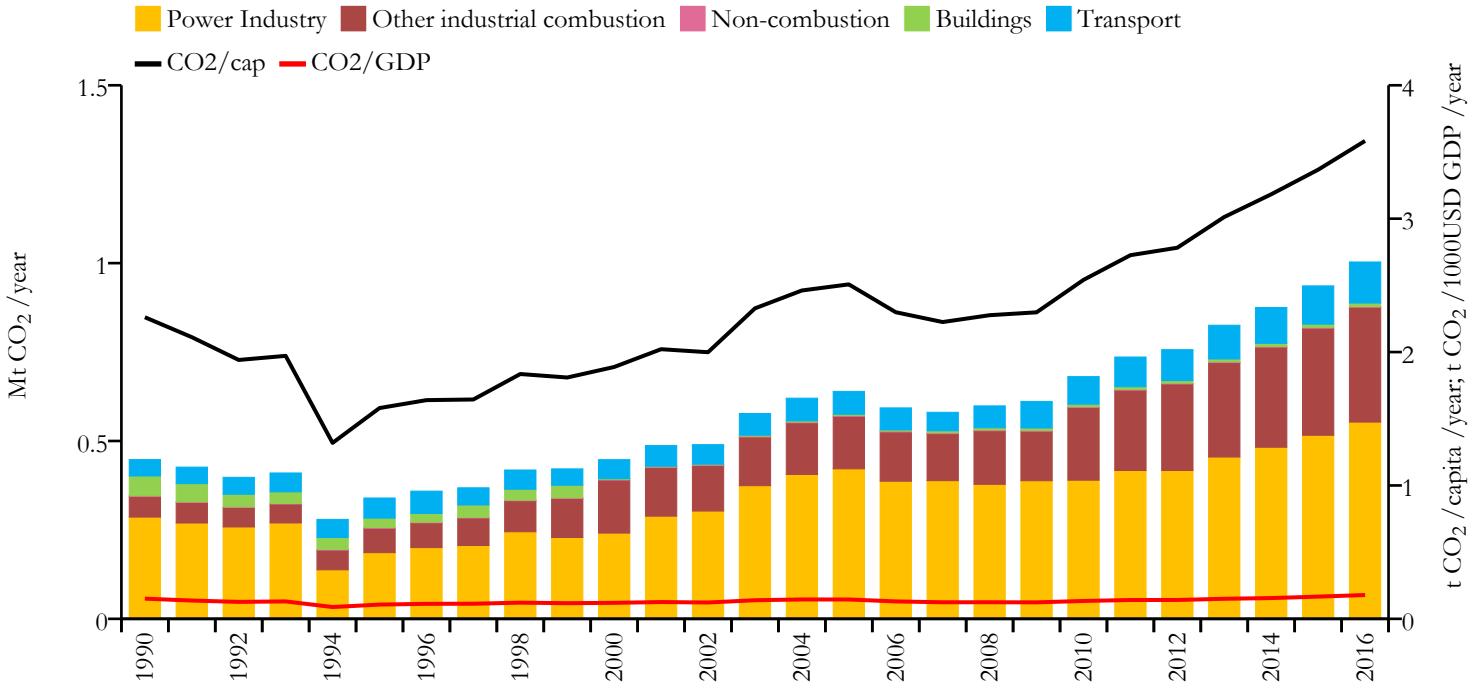
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



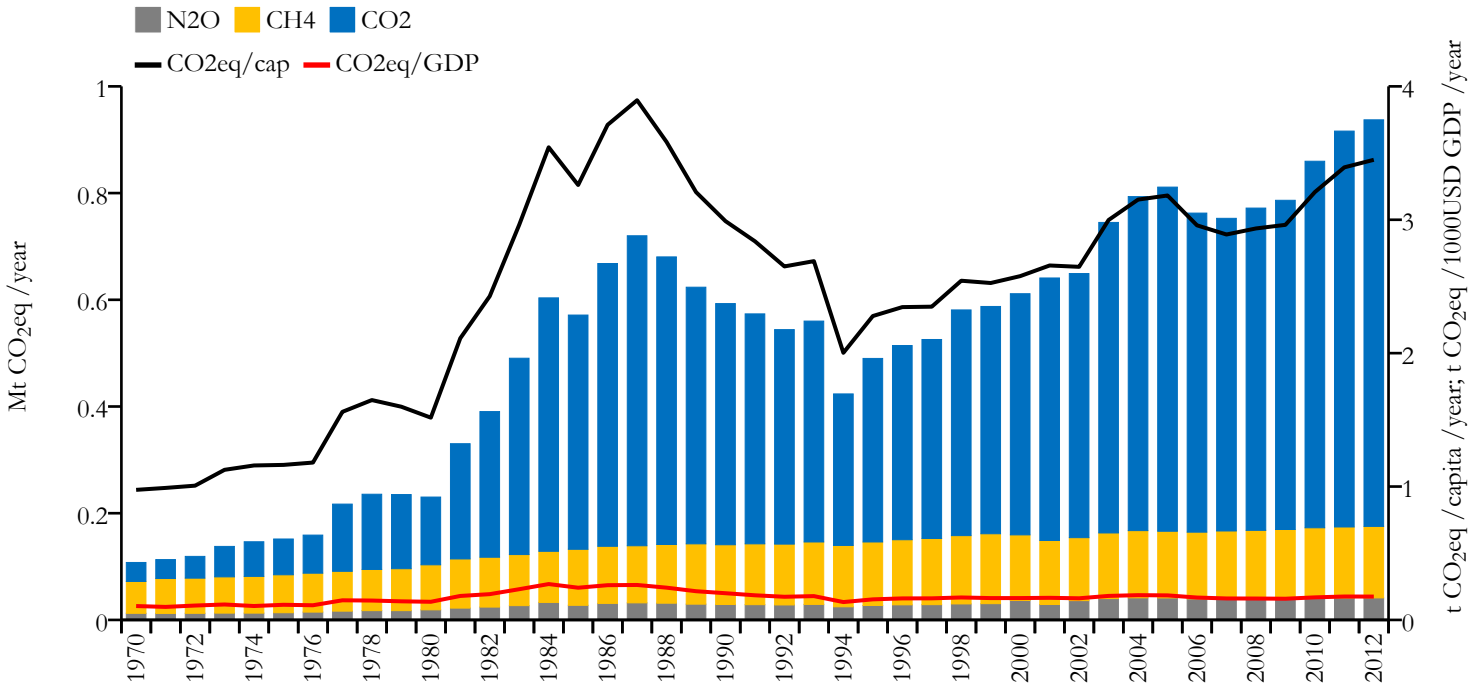
# French Polynesia

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



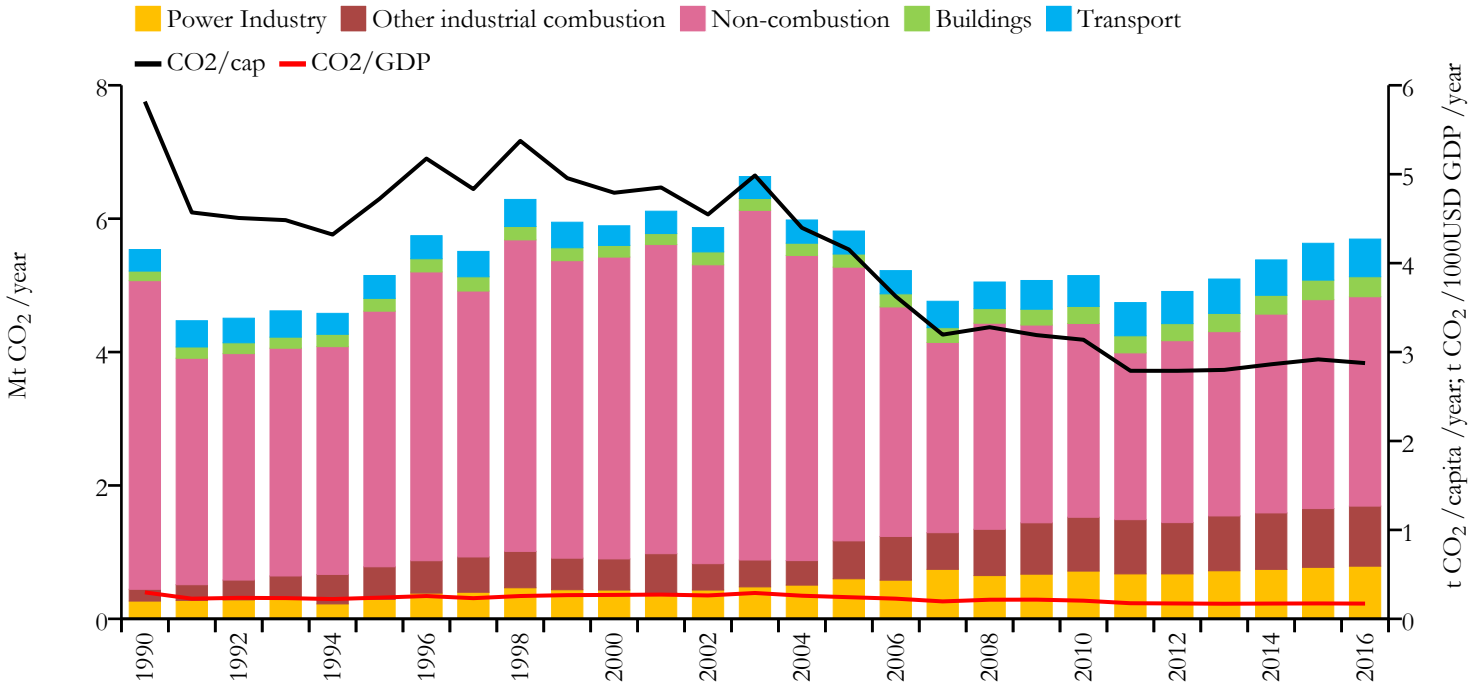

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 1.003 | 3.583 | 0.179 | 280208 |
| 1990 | 0.448 | 2.261 | 0.151 | 198375 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Gabon

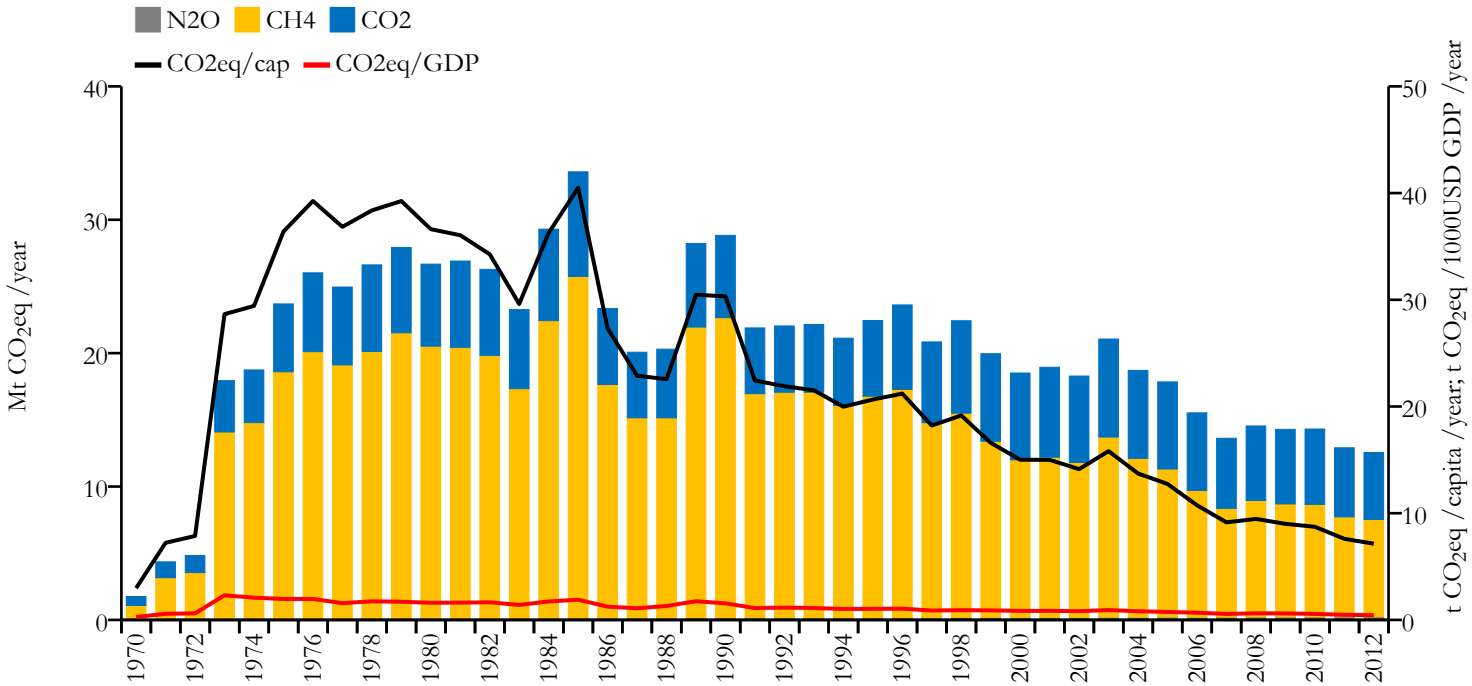
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 5.694 | 2.876 | 0.172 | 1979786 |
| 1990 | 5.537 | 5.816 | 0.298 | 952212 |

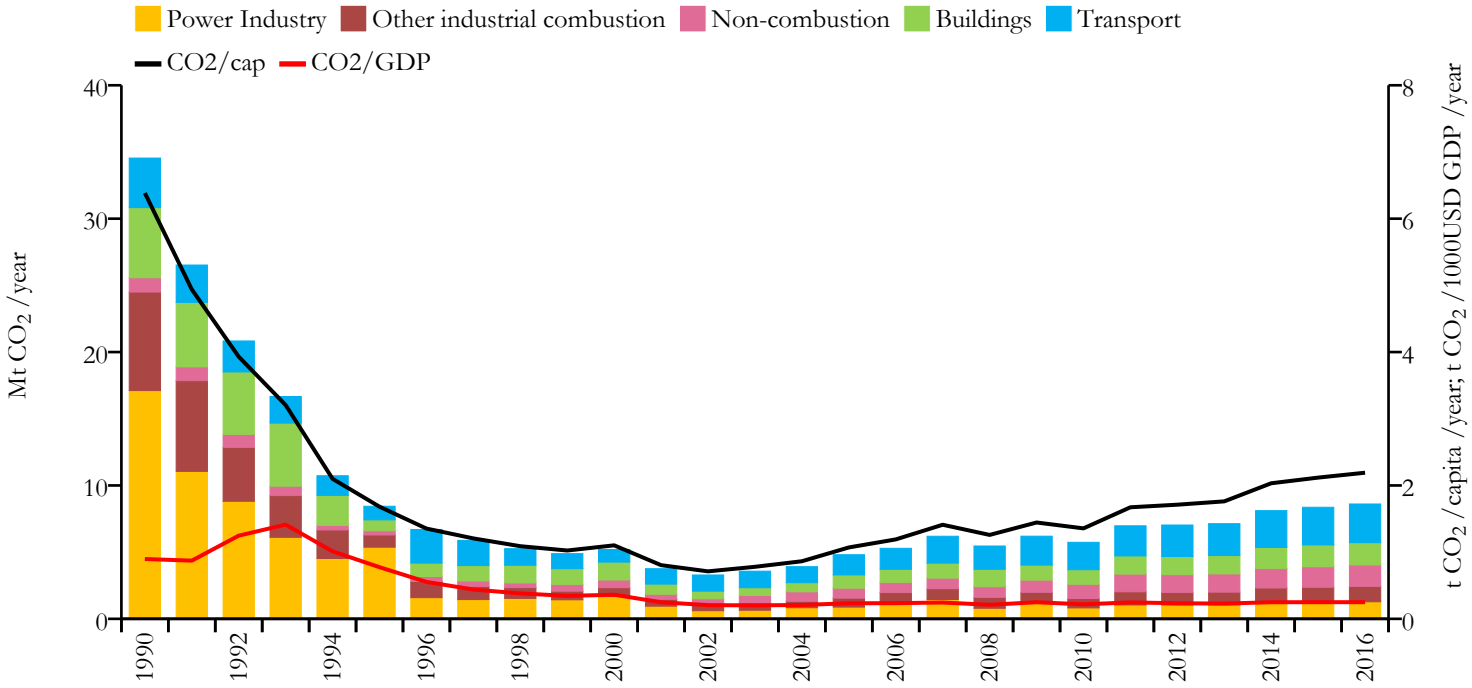
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



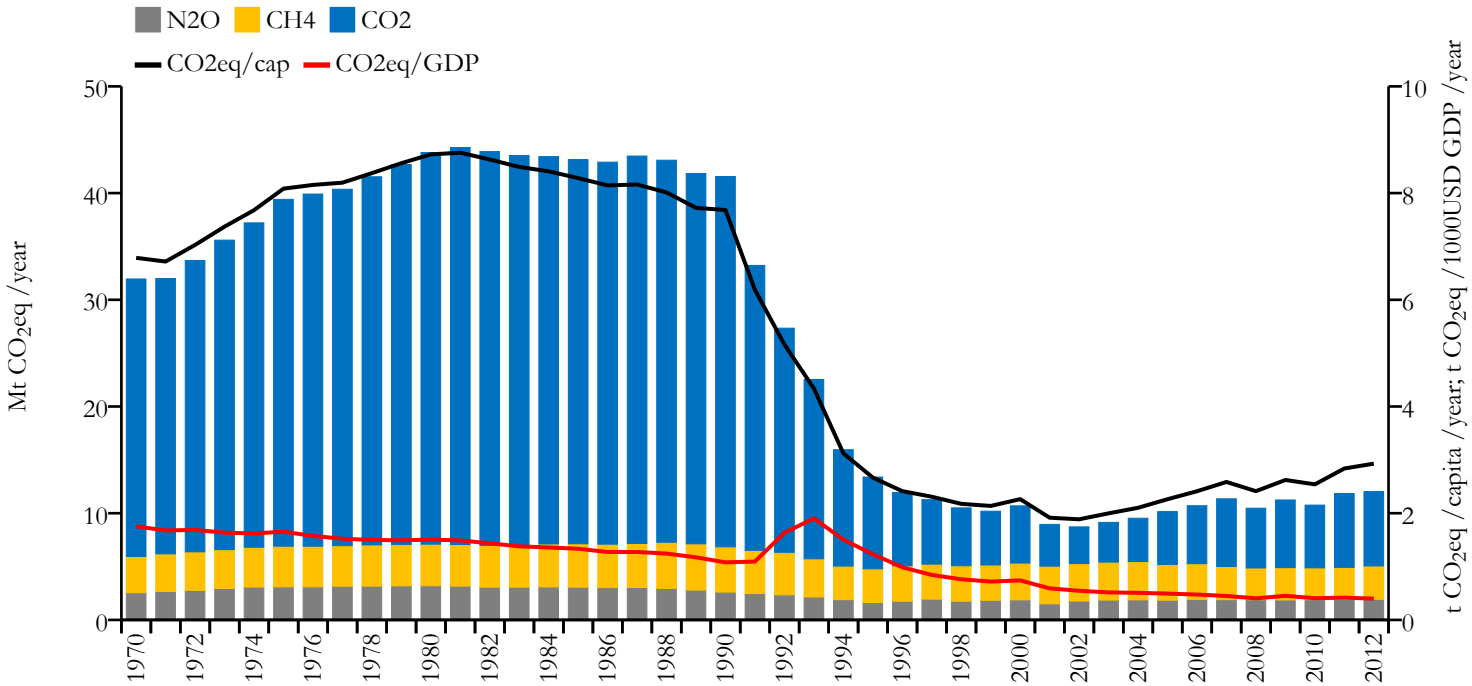
# Georgia

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



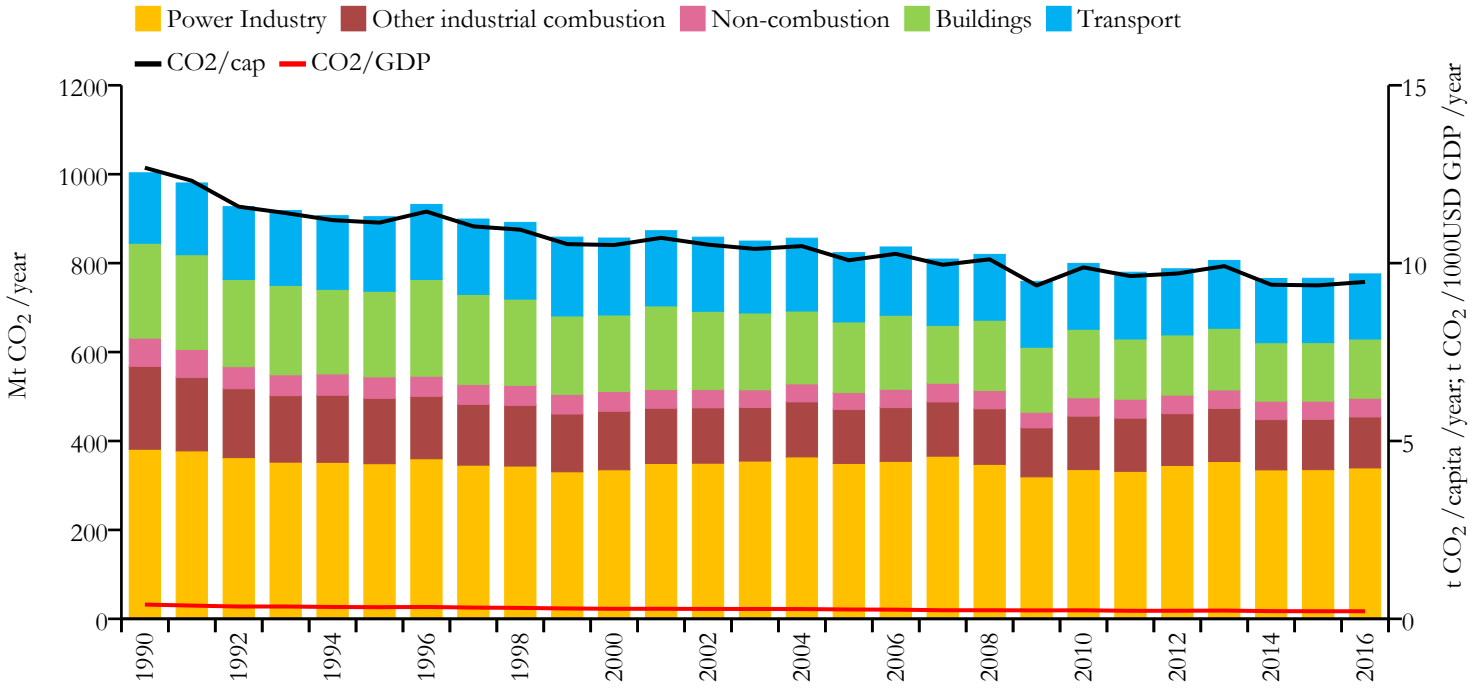

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 8.610 | 2.191 | 0.250 | 3925405 |
| 1990 | 34.543 | 6.385 | 0.897 | 5410372 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Germany

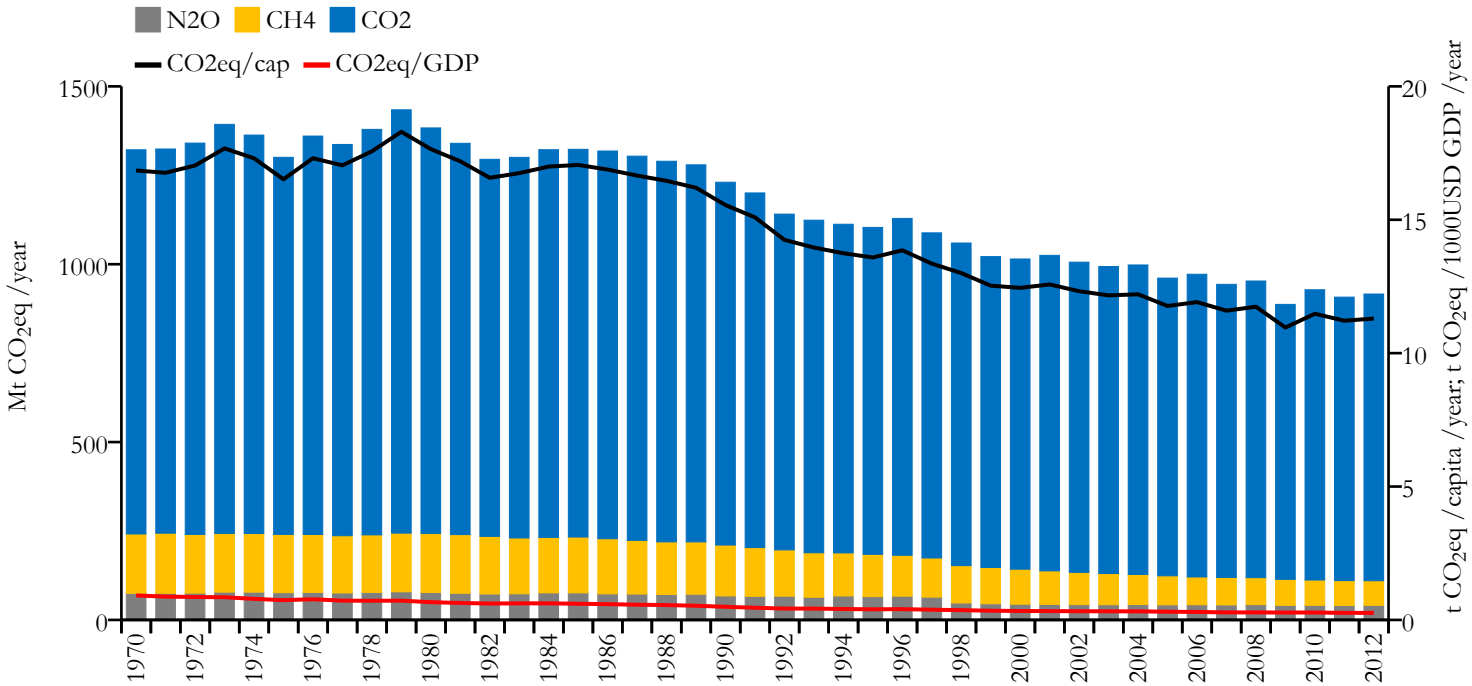
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 775.752 | 9.472 | 0.213 | 81914672 |
| 1990 | 1003.149 | 12.682 | 0.401 | 79118326 |

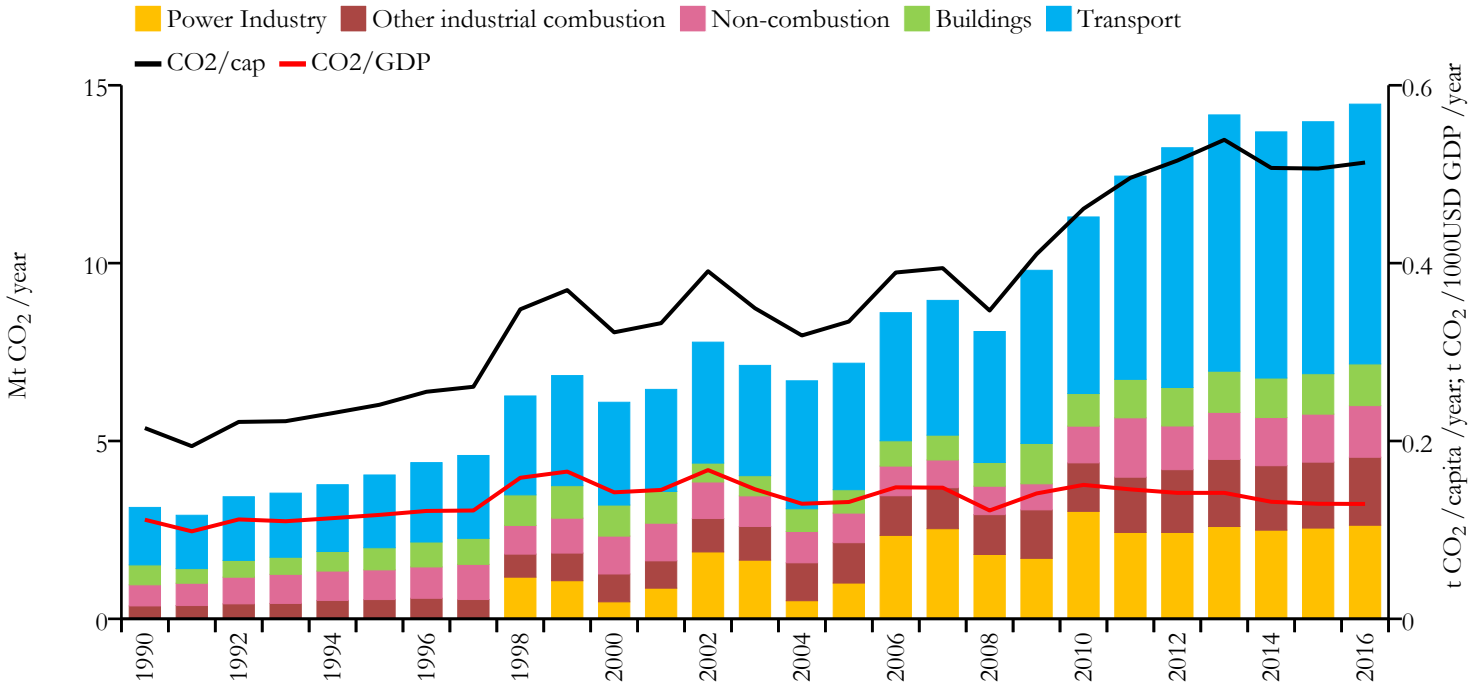
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Ghana

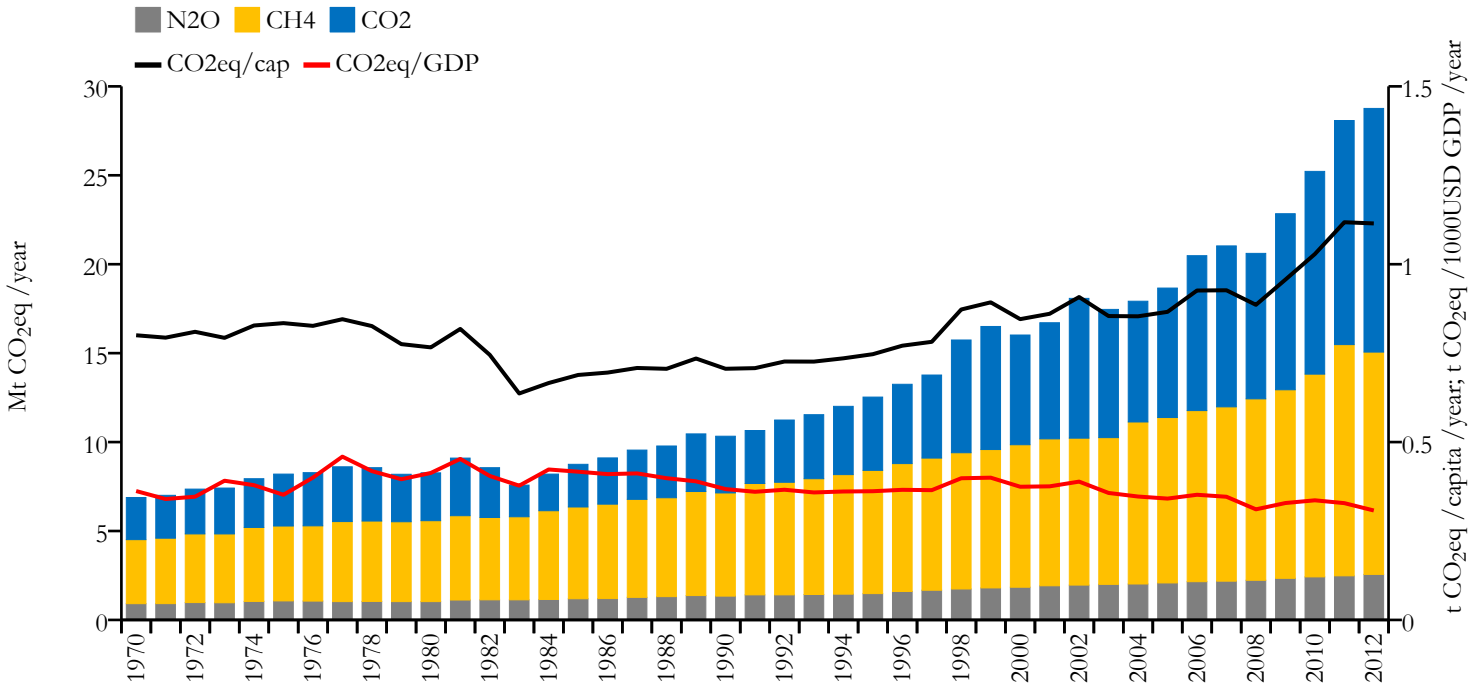
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 14.470 | 0.513 | 0.129 | 28206728 |
| 1990 | 3.132 | 0.215 | 0.111 | 14628260 |

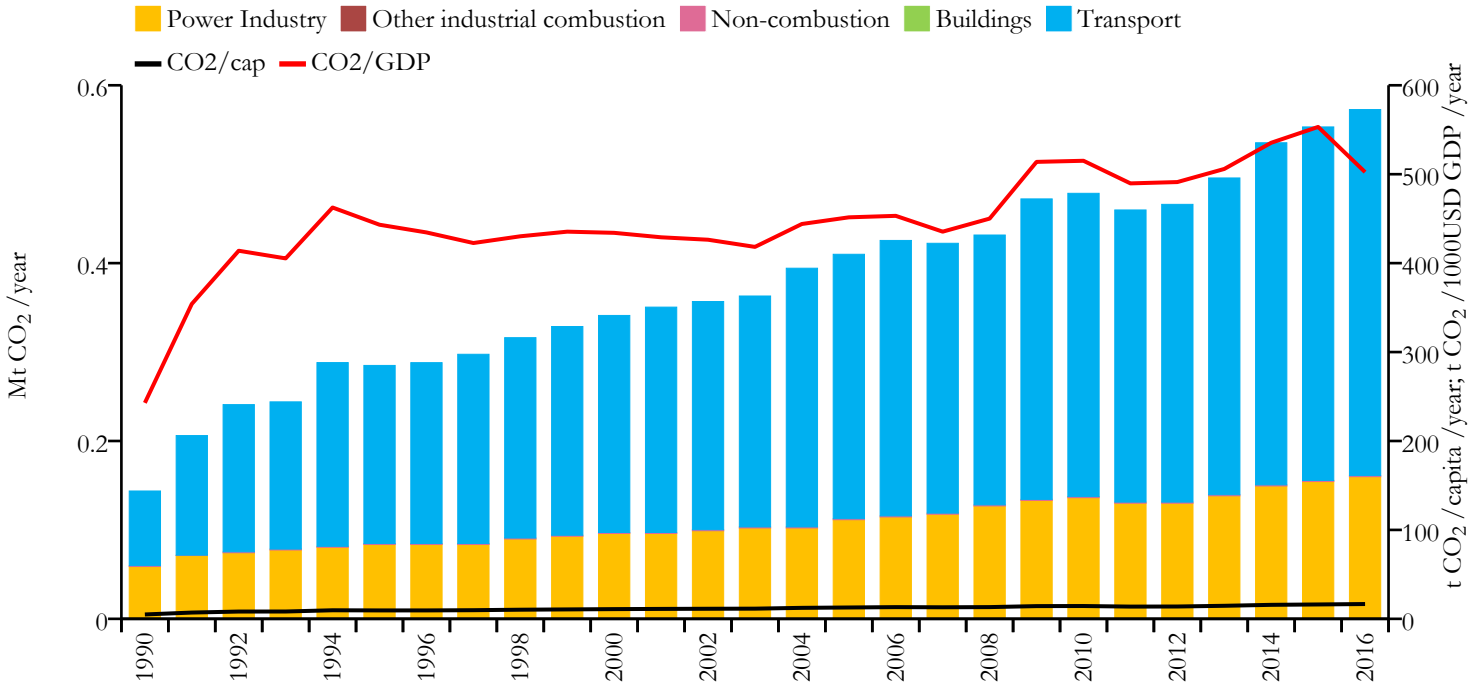
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Gibraltar

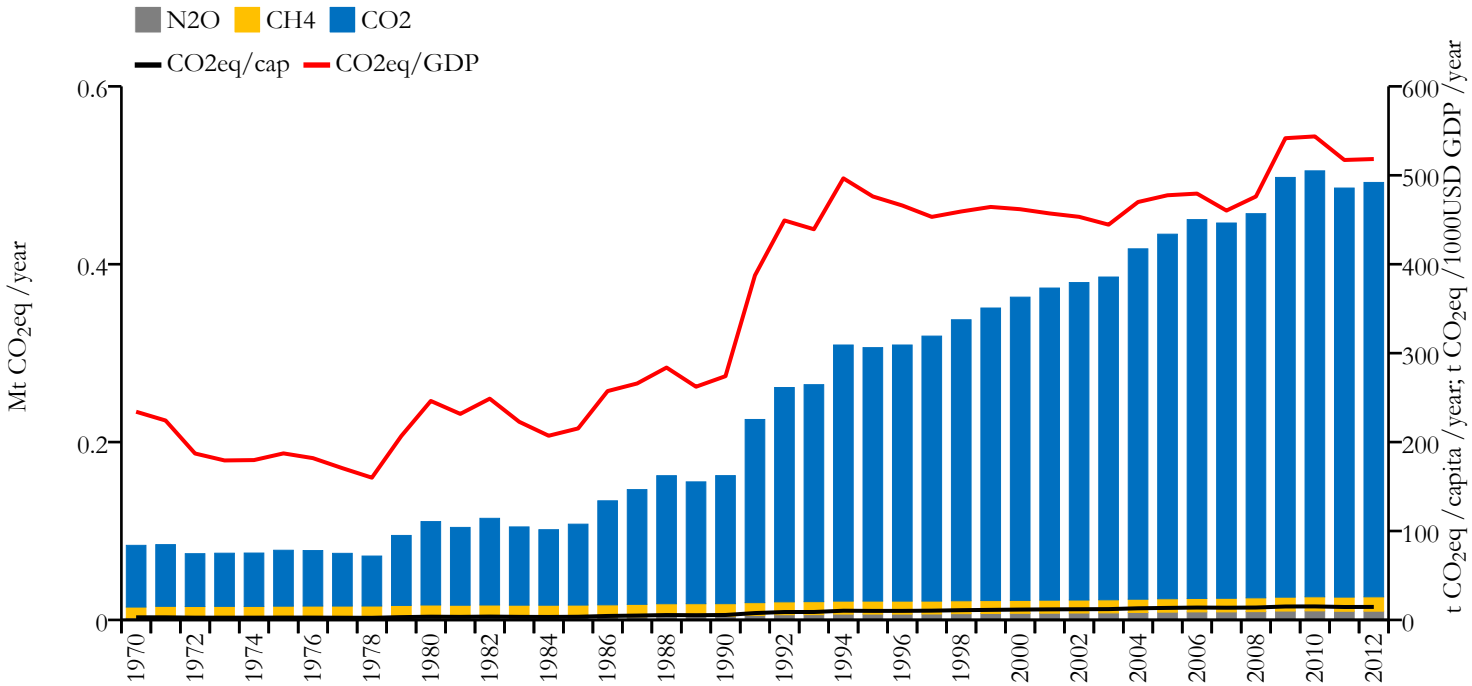
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.573 | 16.648 | 502.376 | 34408 |
| 1990 | 0.144 | 4.924 | 242.866 | 29164 |

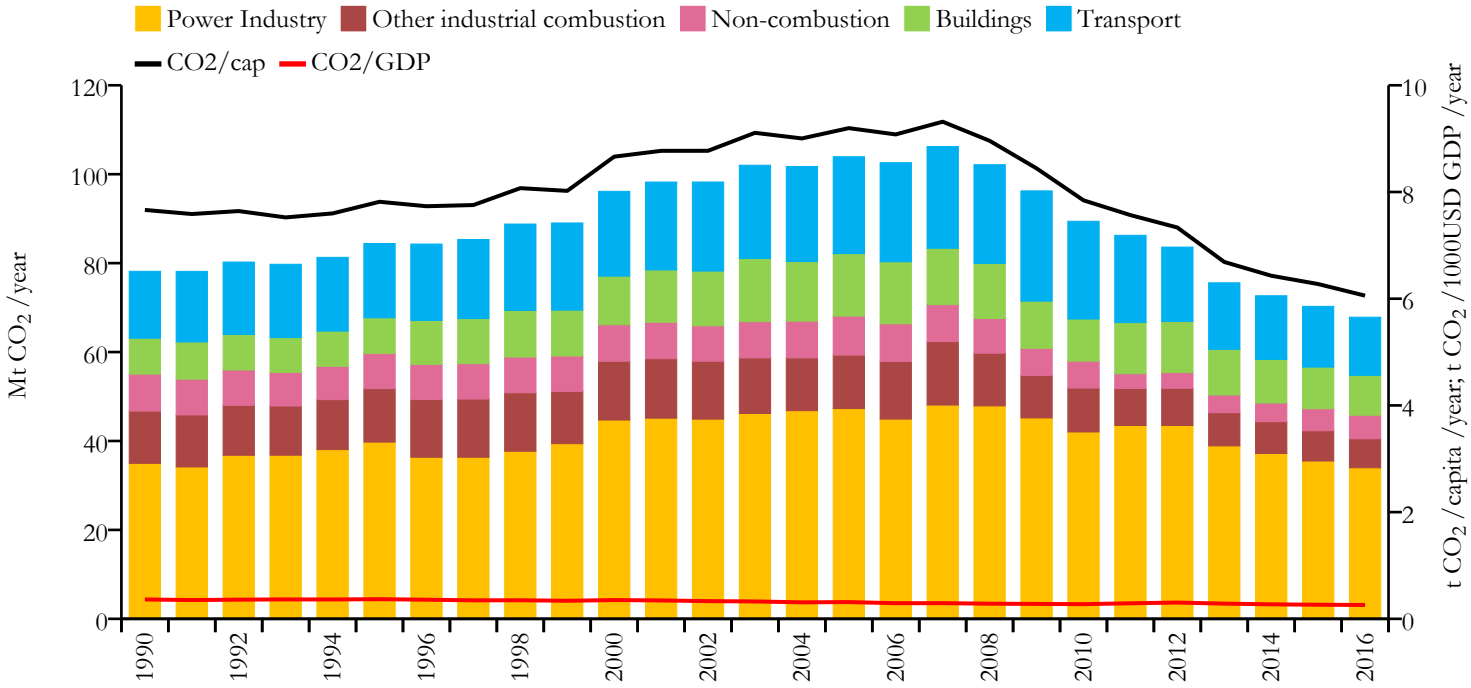
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Greece

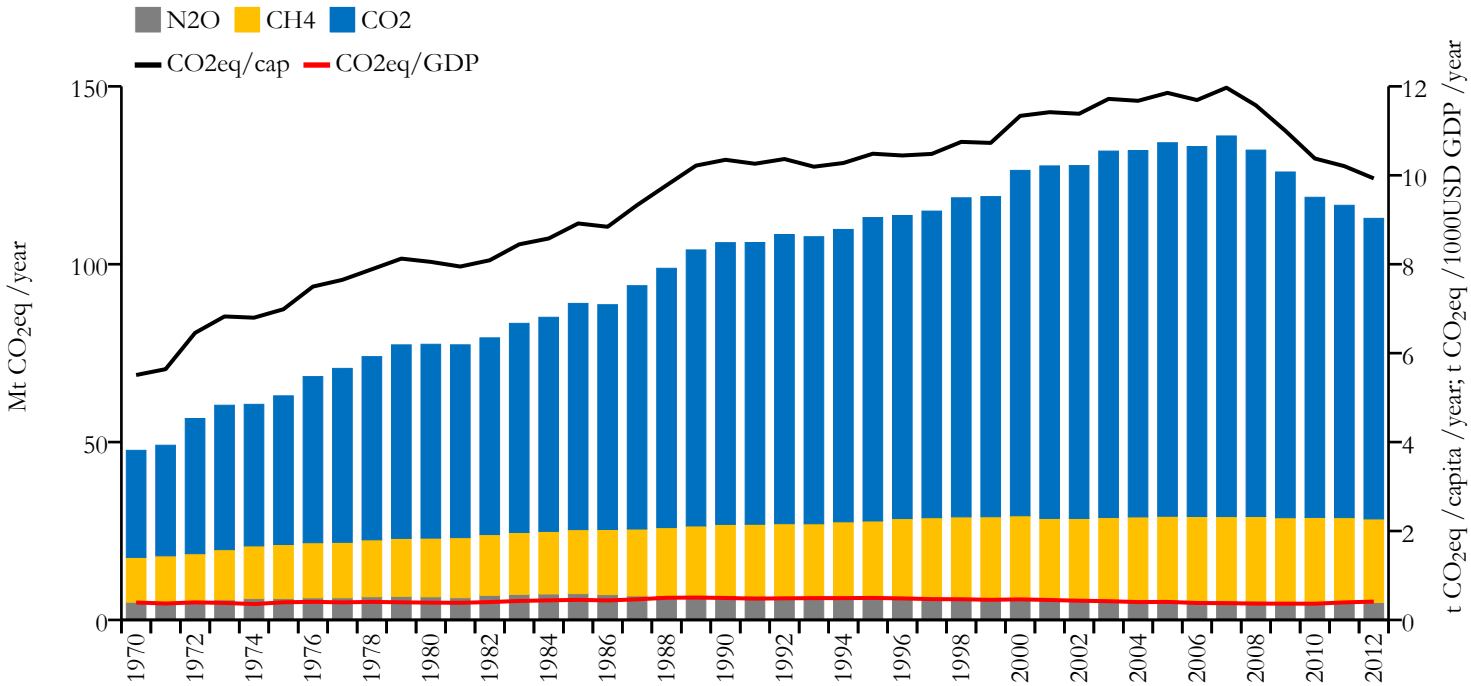
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 67.841 | 6.057 | 0.260 | 11183716 |
| 1990 | 78.171 | 7.664 | 0.364 | 10248537 |

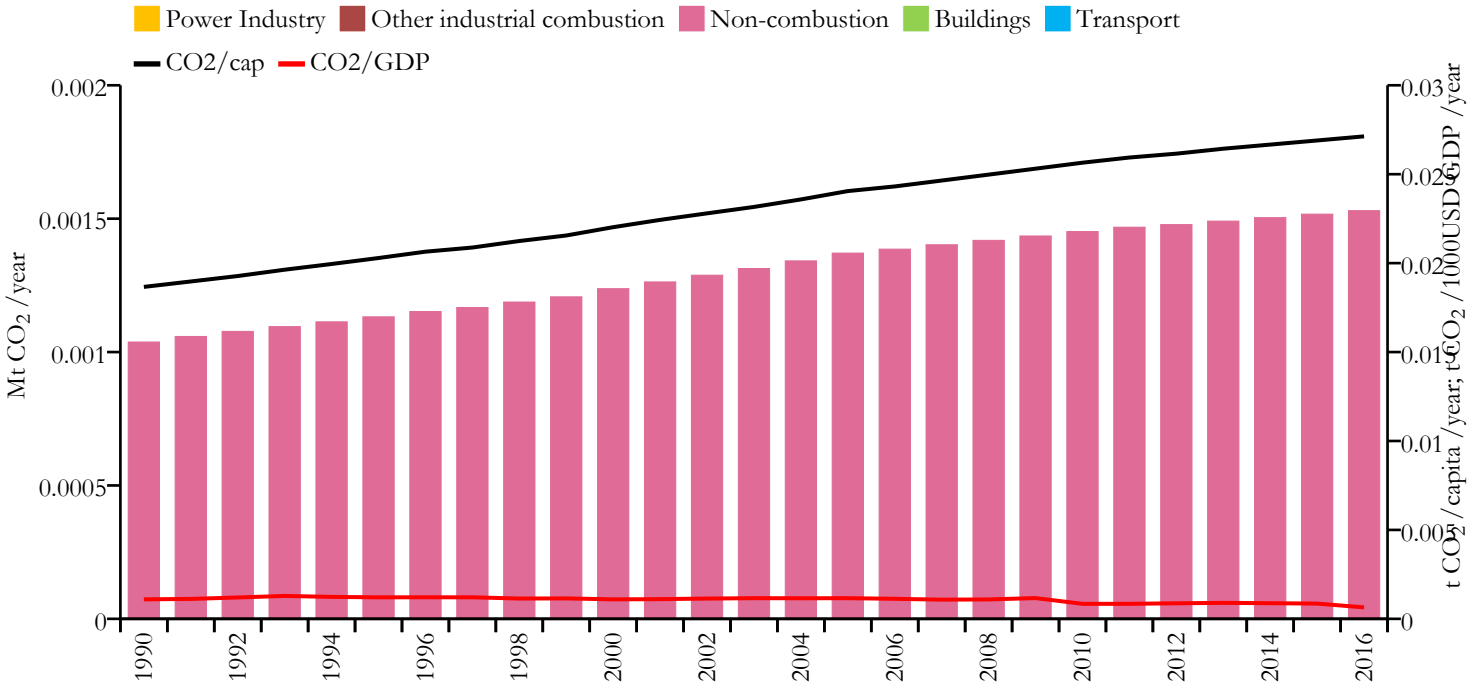
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Greenland

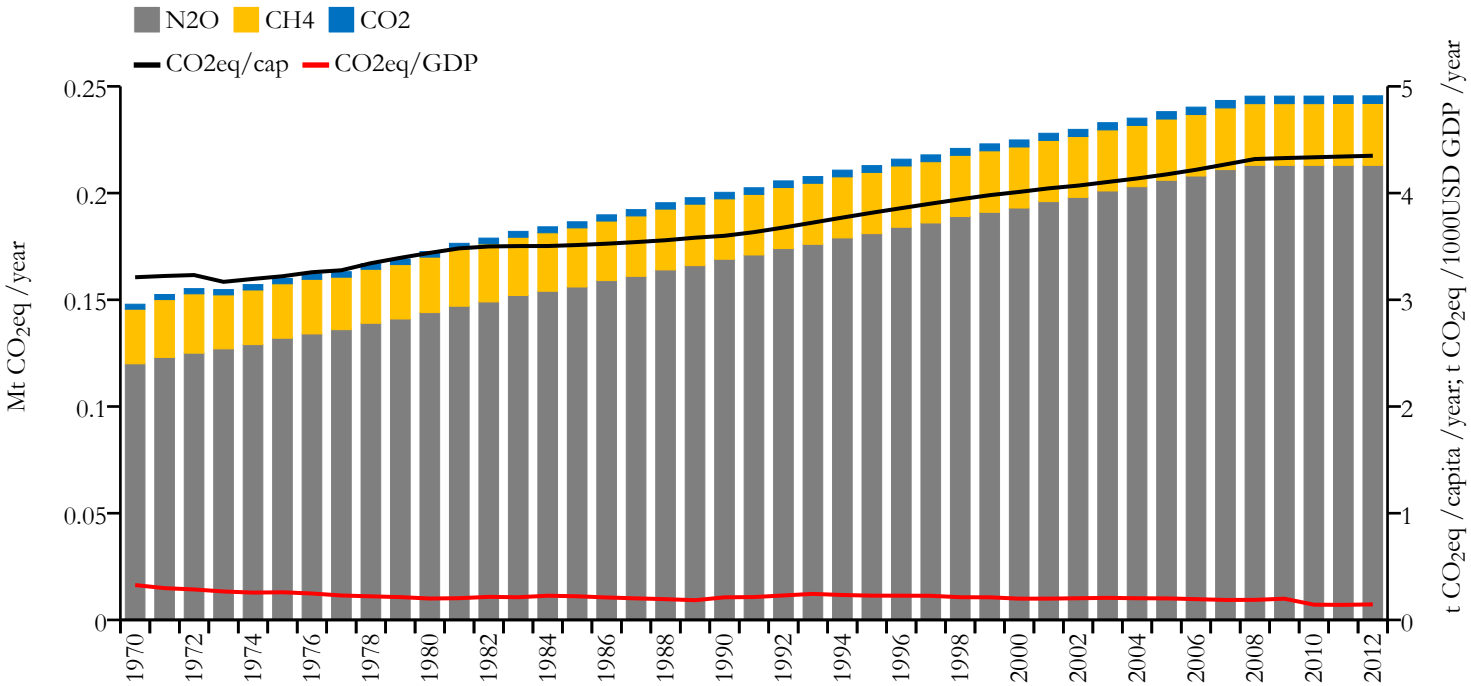
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



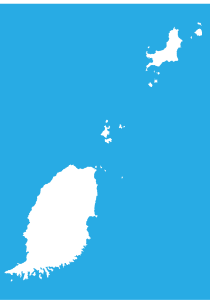

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.002 | 0.027 | 0.001 | 56412 |
| 1990 | 0.001 | 0.019 | 0.001 | 55604 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

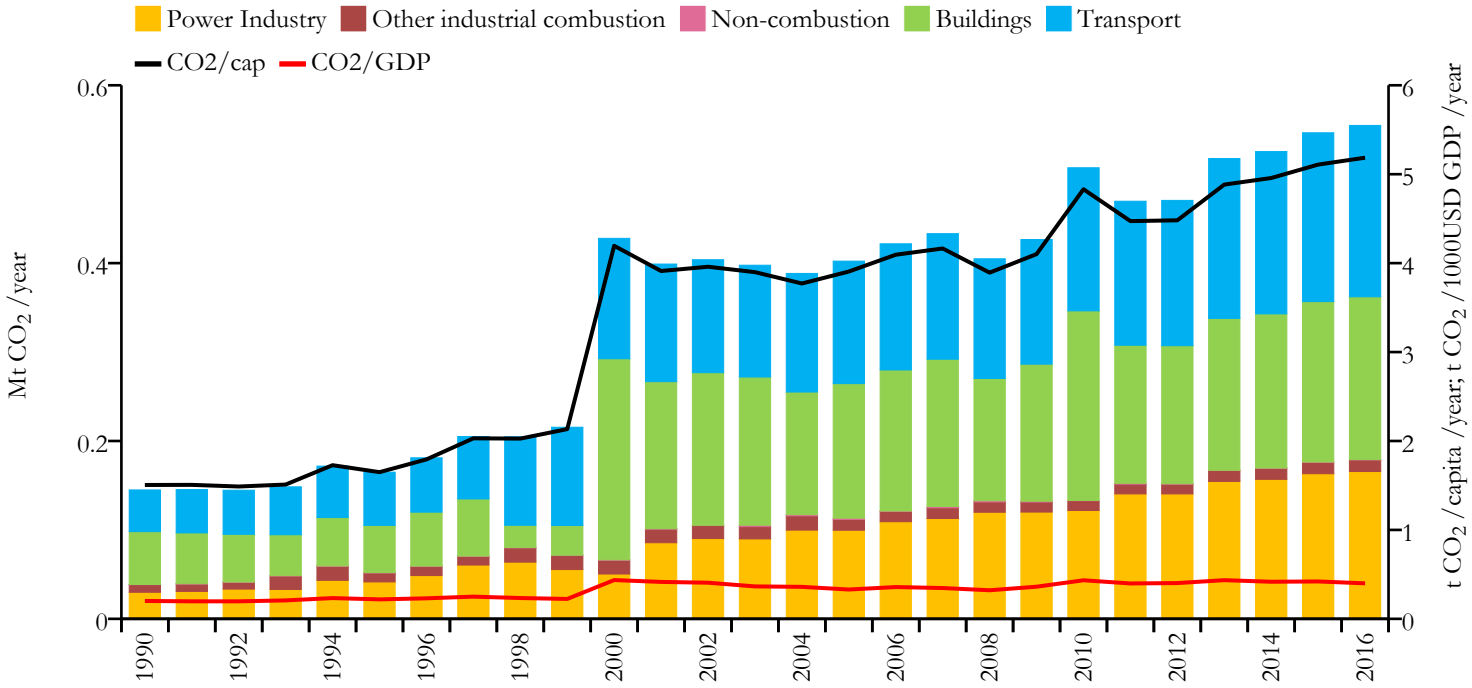
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Grenada

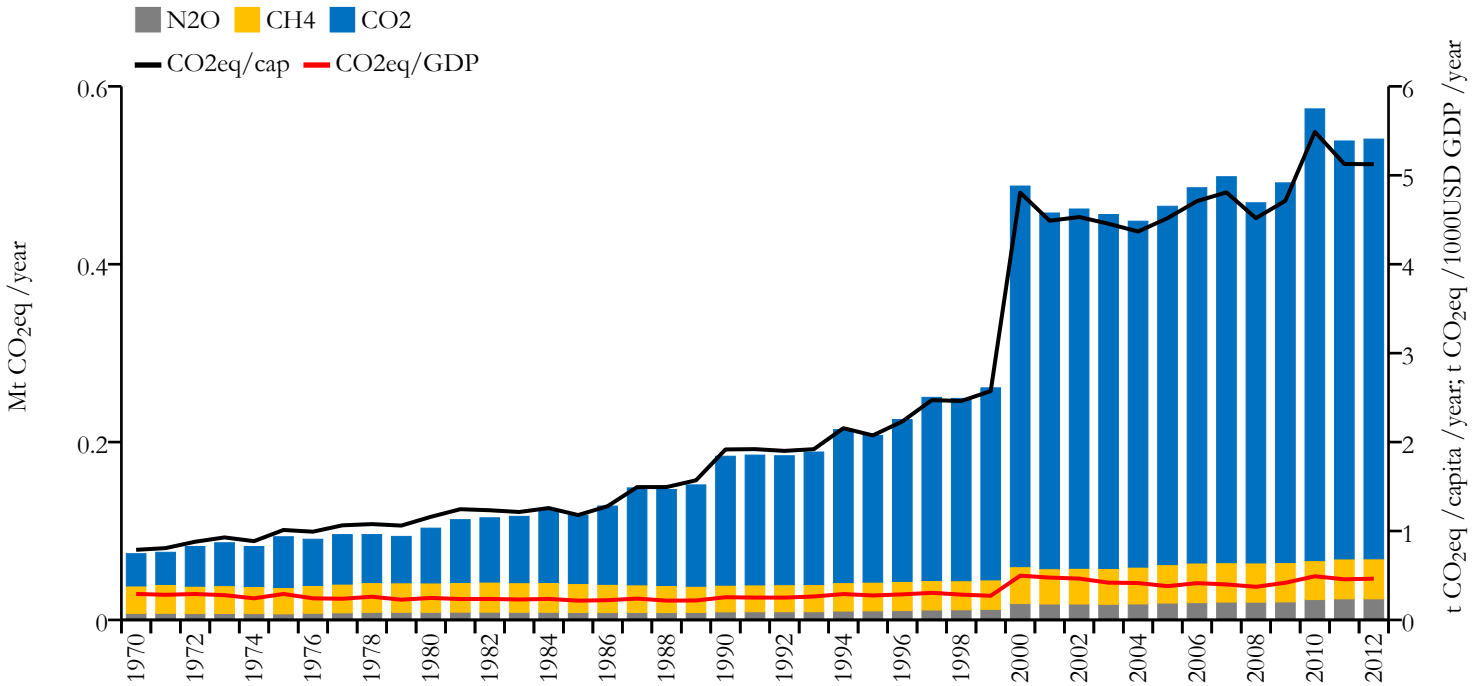


## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)

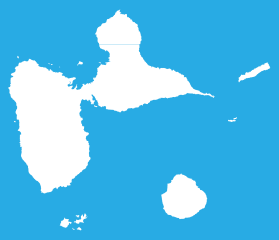



| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.555 | 5.185 | 0.399 | 107317 |
| 1990 | 0.145 | 1.505 | 0.201 | 96283 |

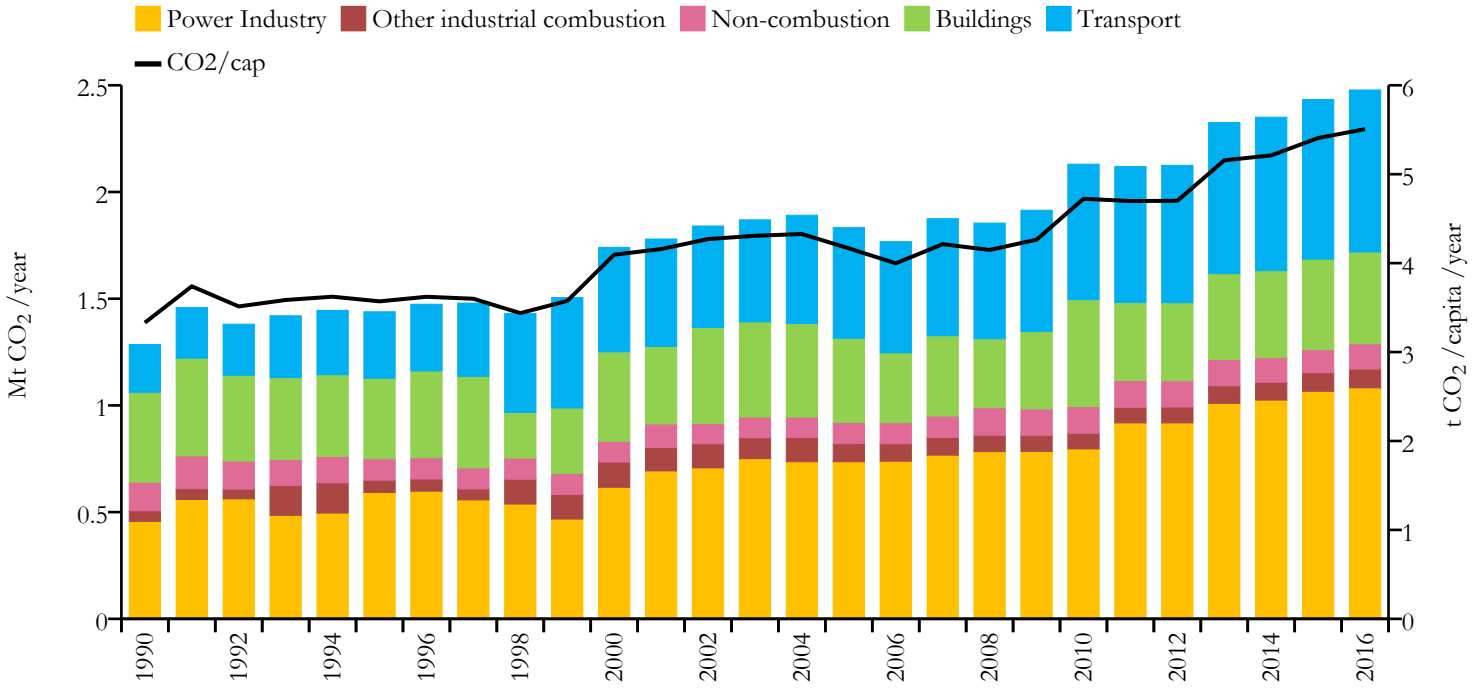
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Guadeloupe



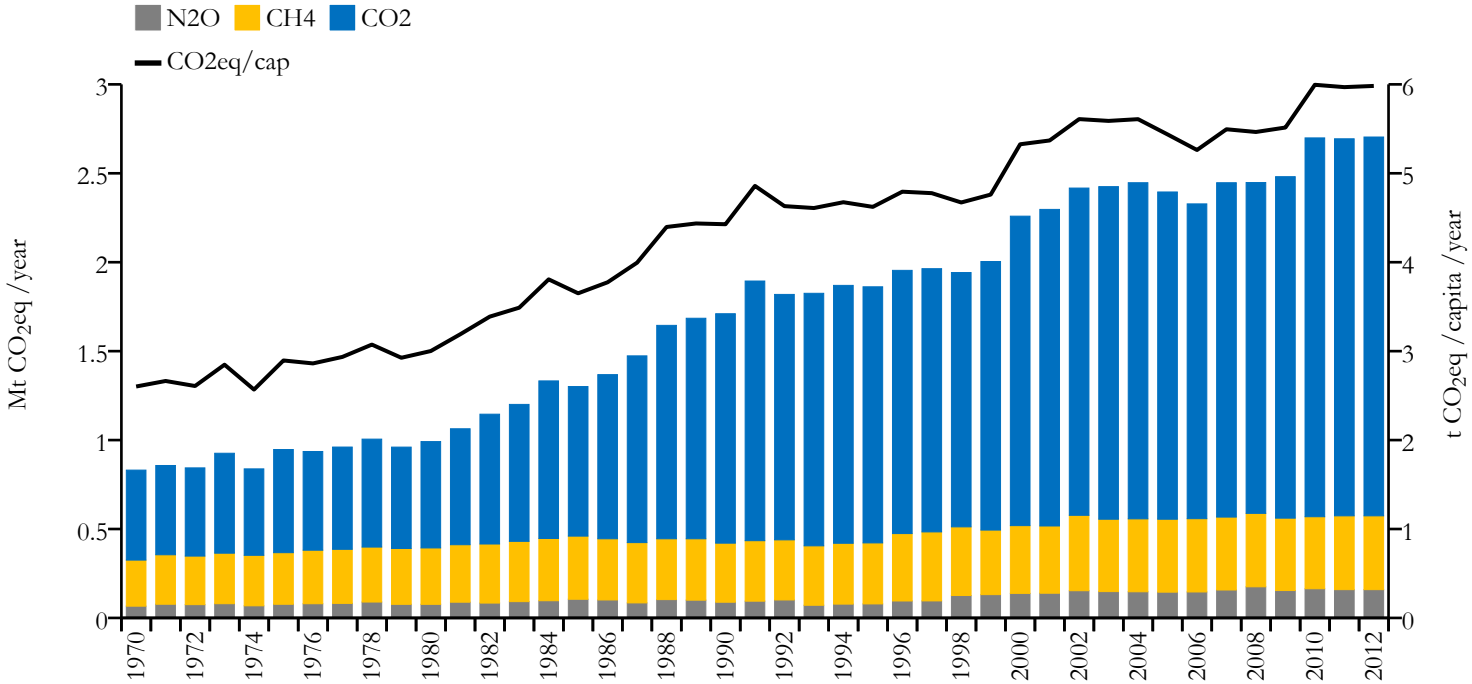
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 2.478 | 5.507 | n/a | 449975 |
| 1990 | 1.285 | 3.330 | n/a | 385878 |

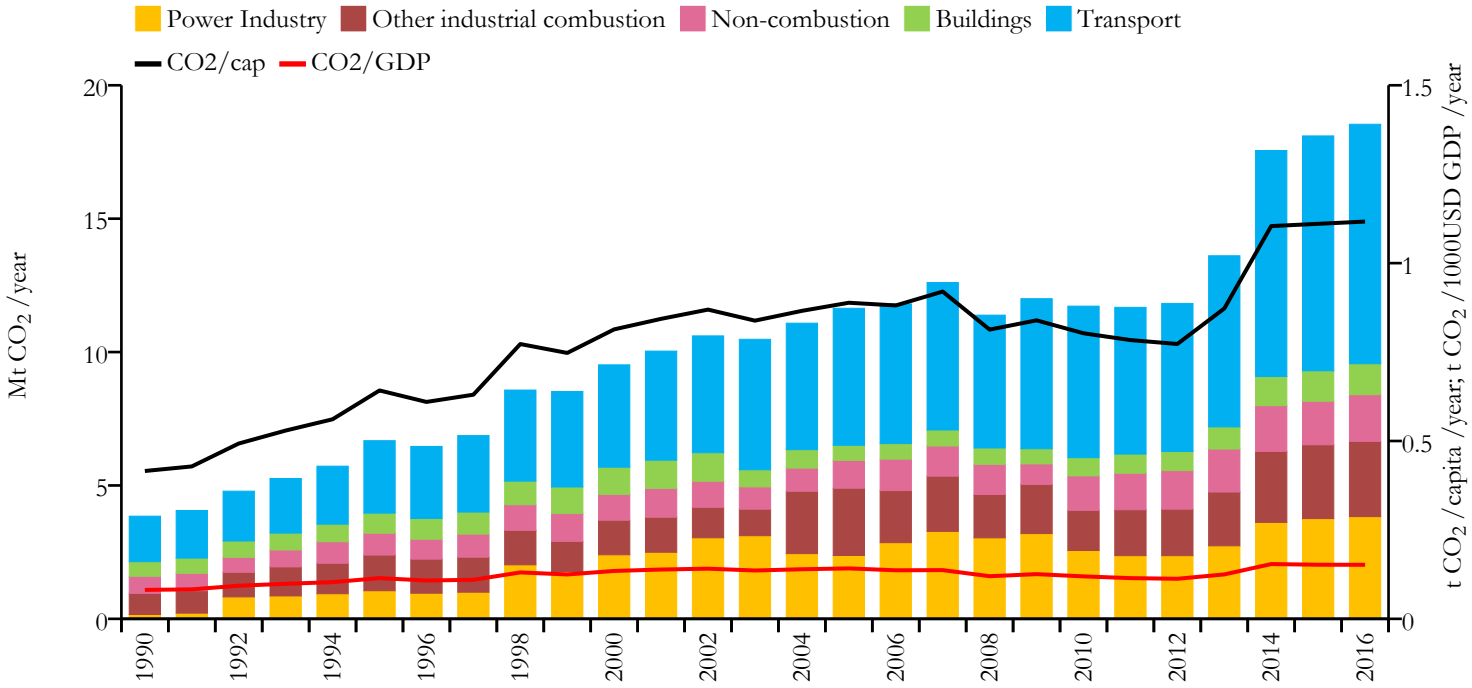
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Guatemala

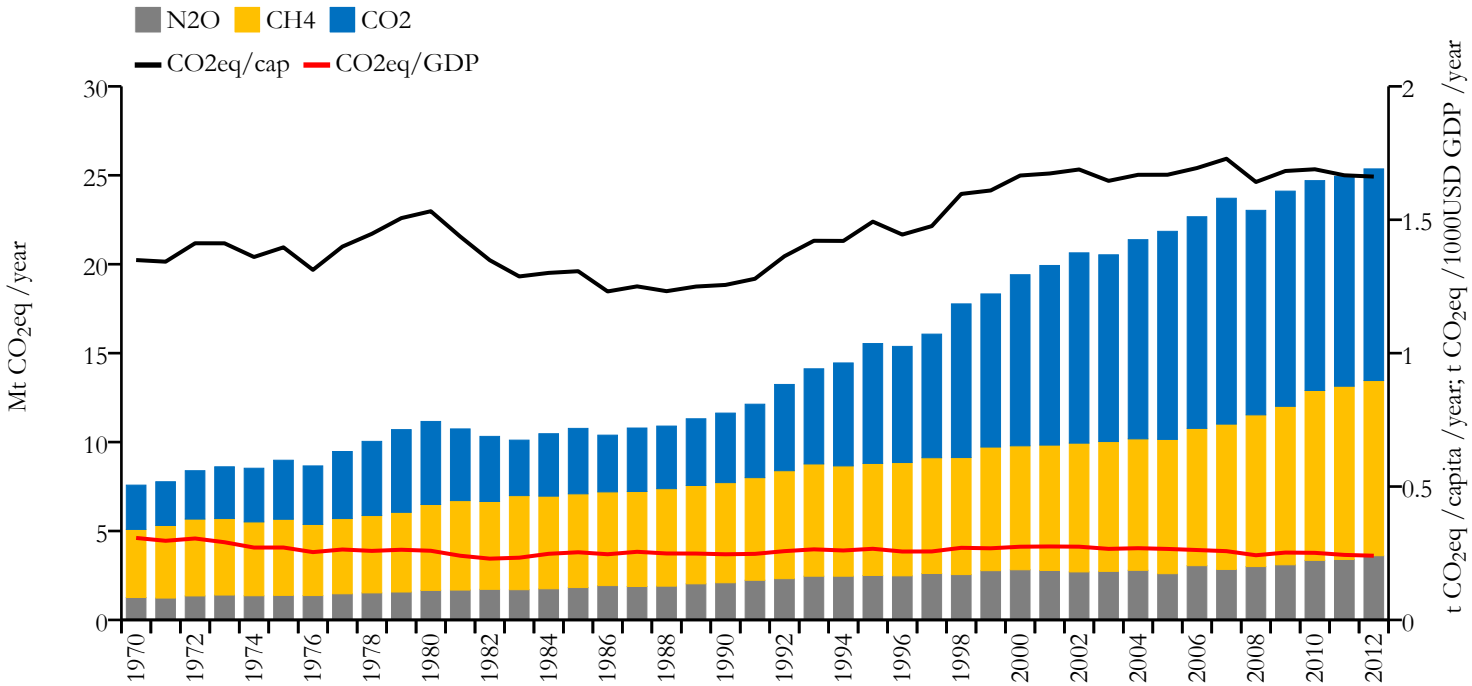
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



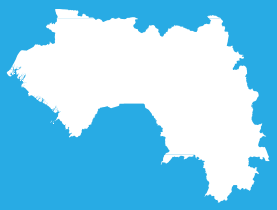

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 18.539 | 1.117 | 0.152 | 16582469 |
| 1990 | 3.849 | 0.416 | 0.081 | 9263813 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

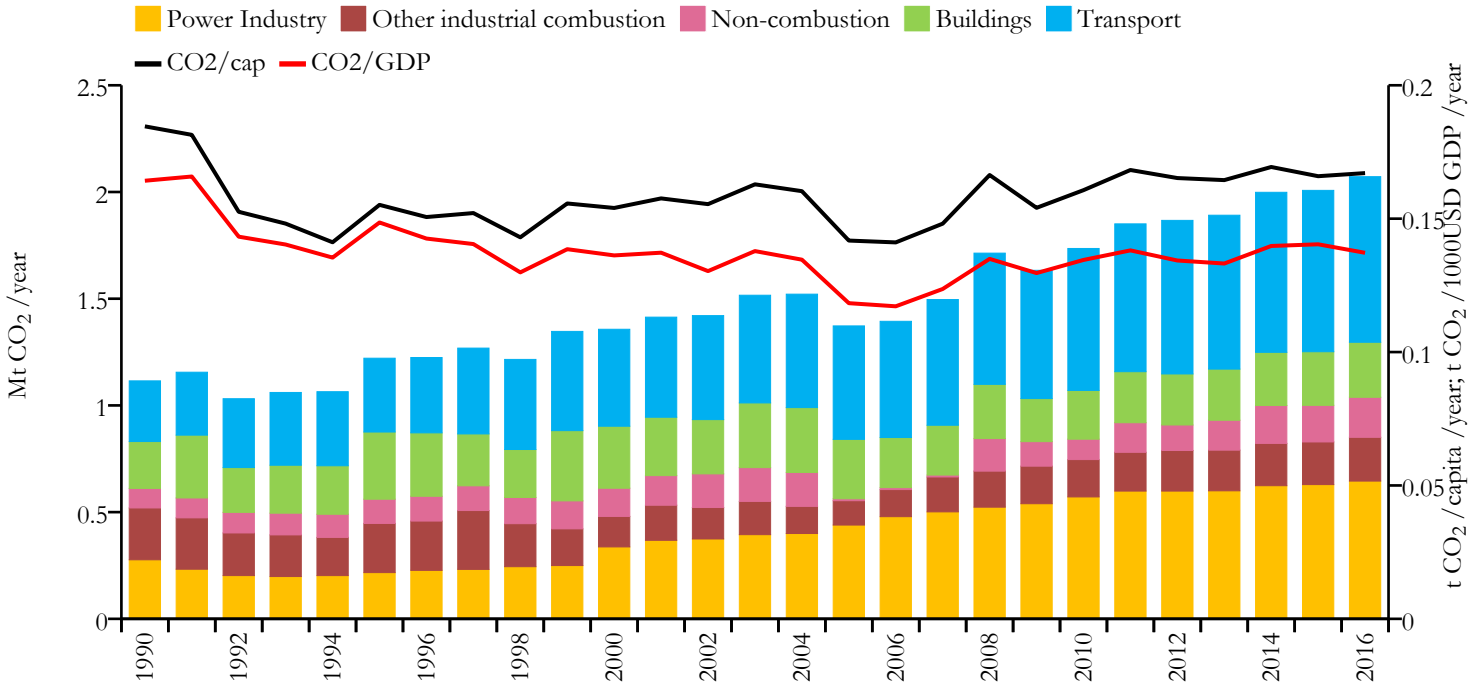
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Guinea



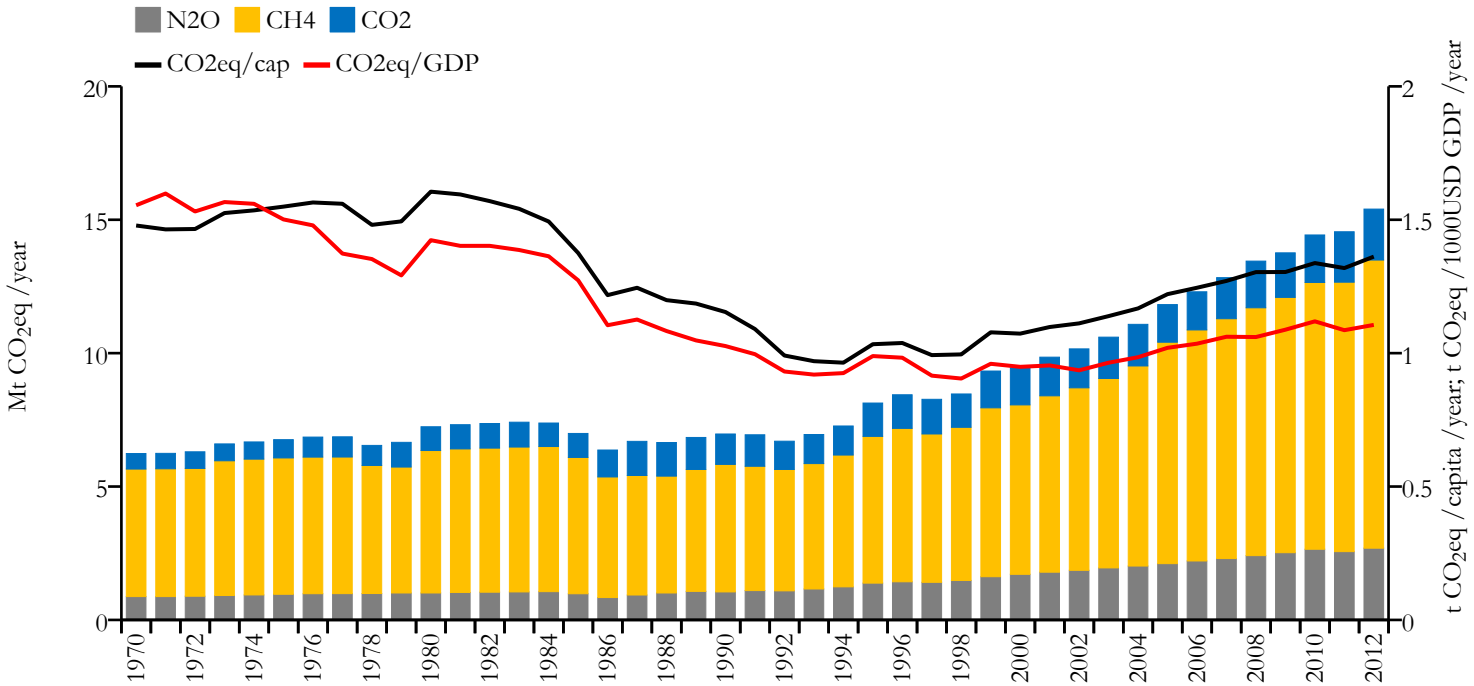
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 2.072 | 0.167 | 0.137 | 12395924 |
| 1990 | 1.115 | 0.185 | 0.164 | 6041094 |

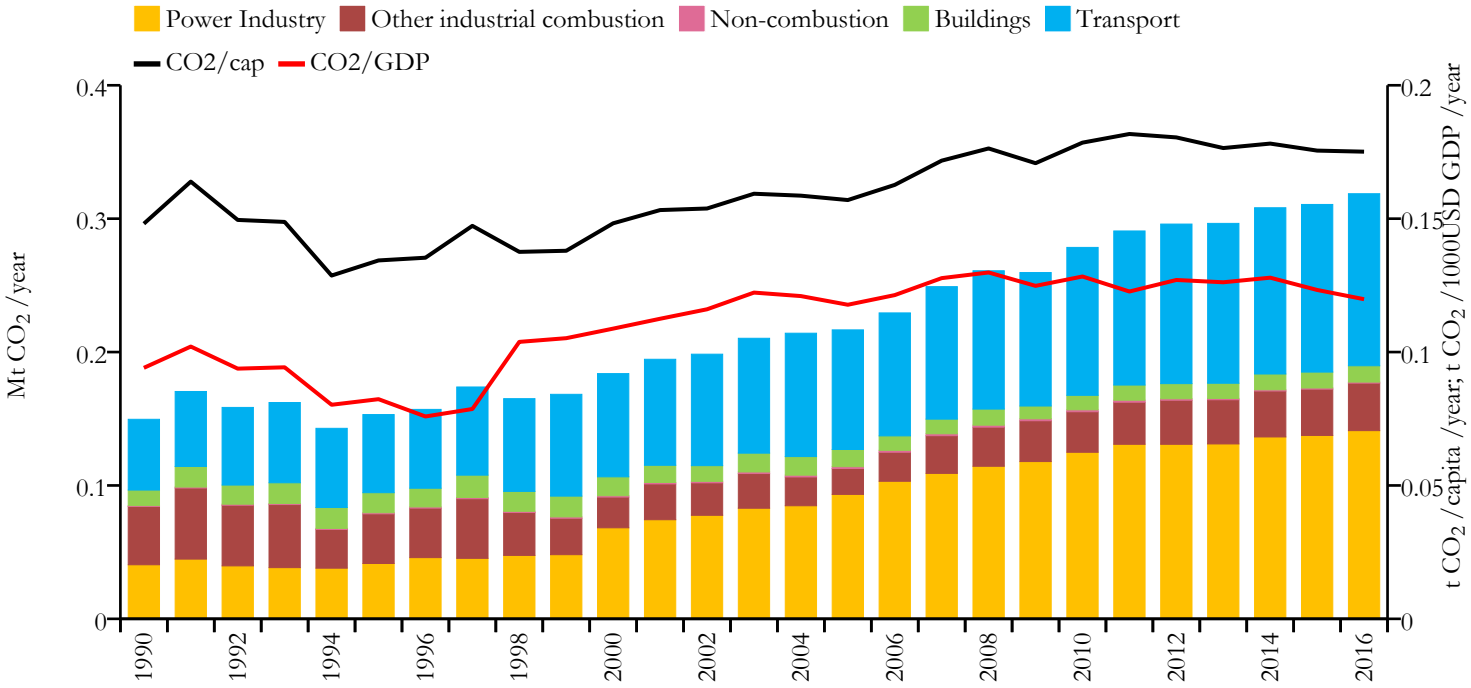
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Guinea-Bissau

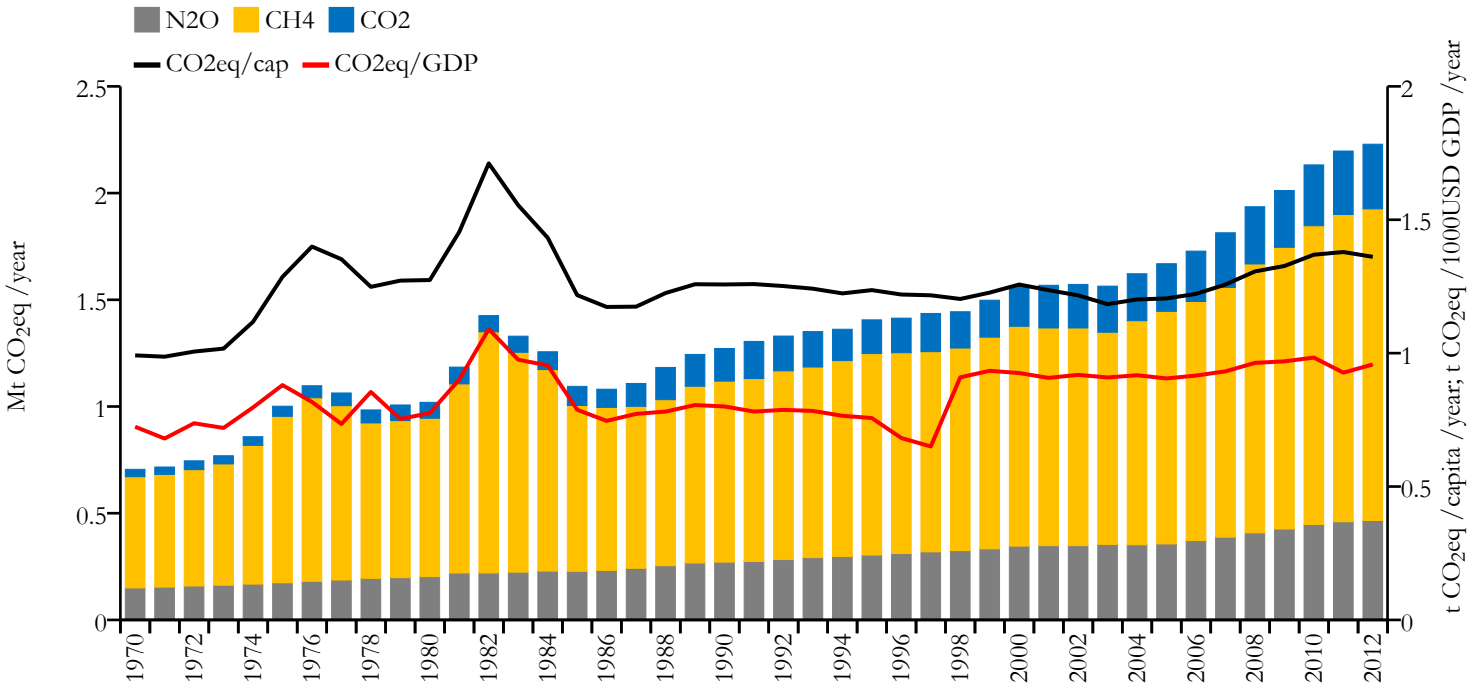
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.319 | 0.175 | 0.120 | 1815698 |
| 1990 | 0.150 | 0.148 | 0.094 | 1012280 |

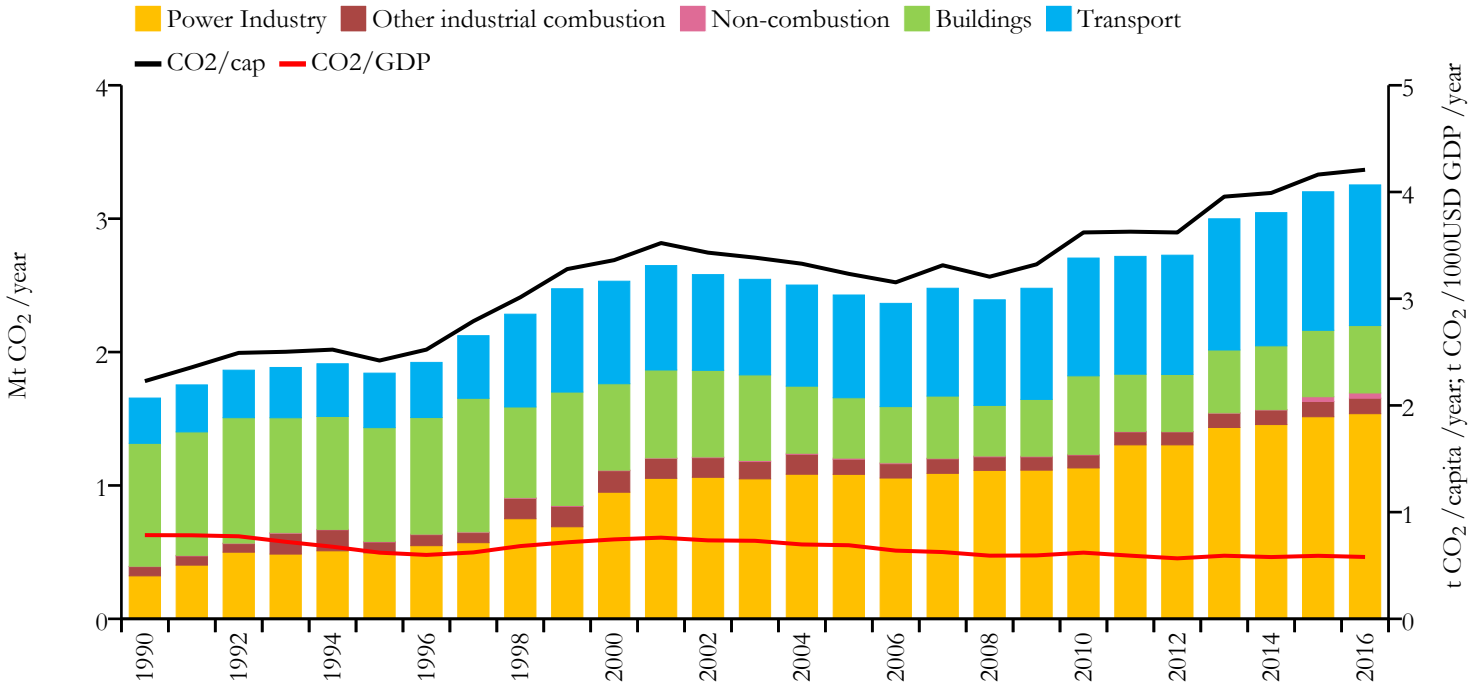
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Guyana

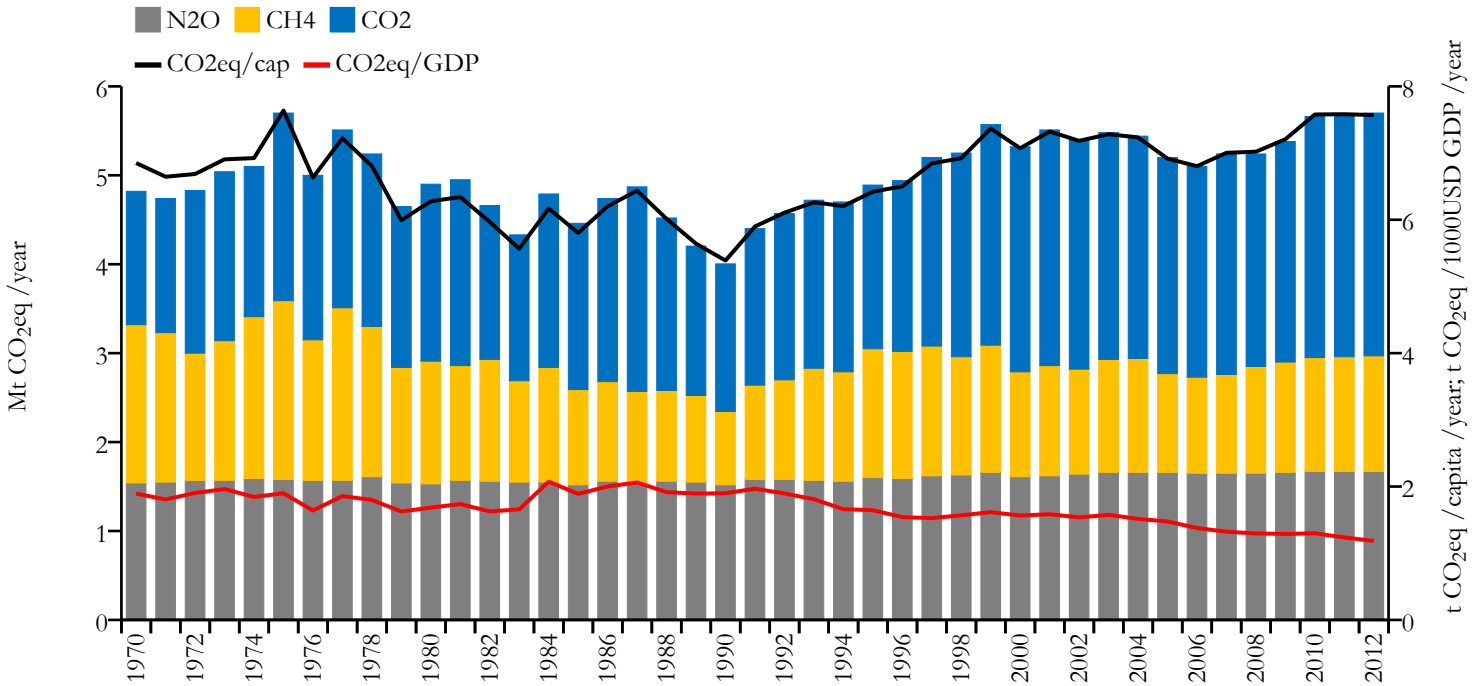
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 3.253 | 4.208 | 0.580 | 773303 |
| 1990 | 1.655 | 2.228 | 0.784 | 743309 |

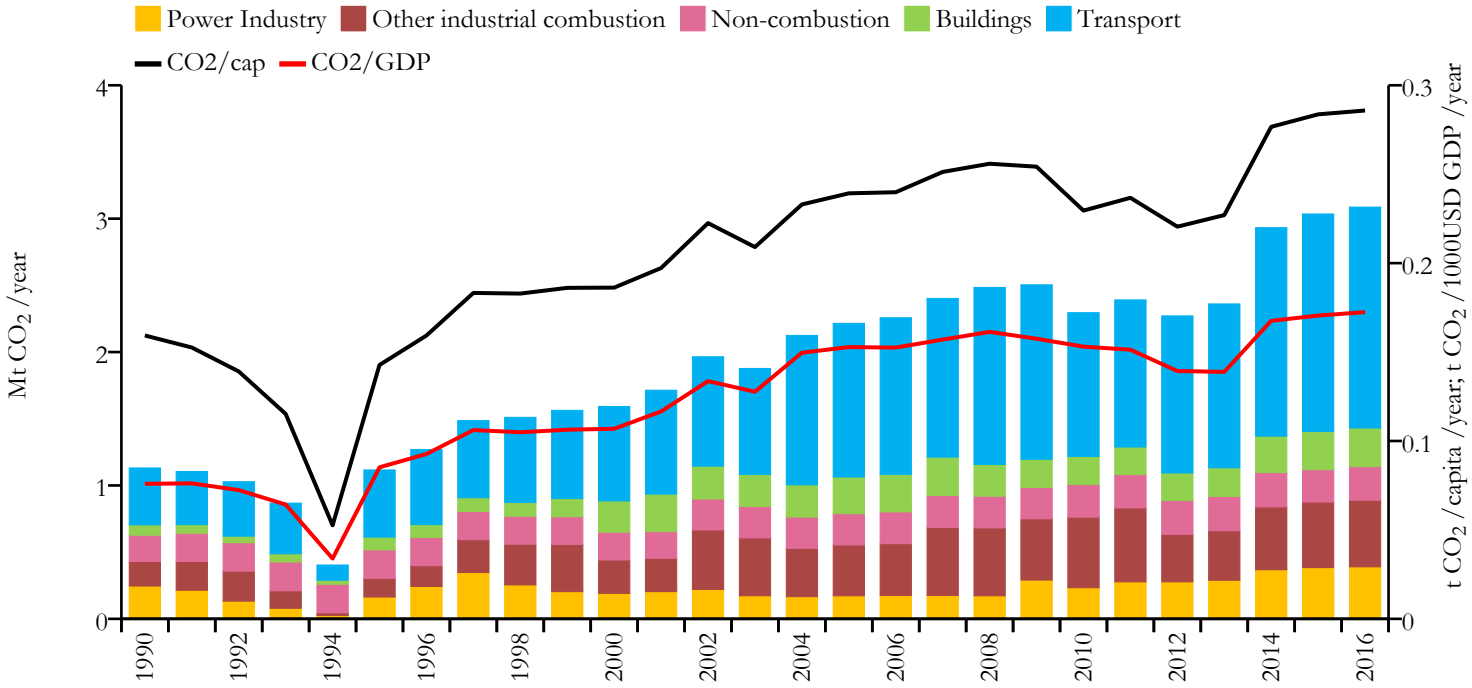
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Haiti

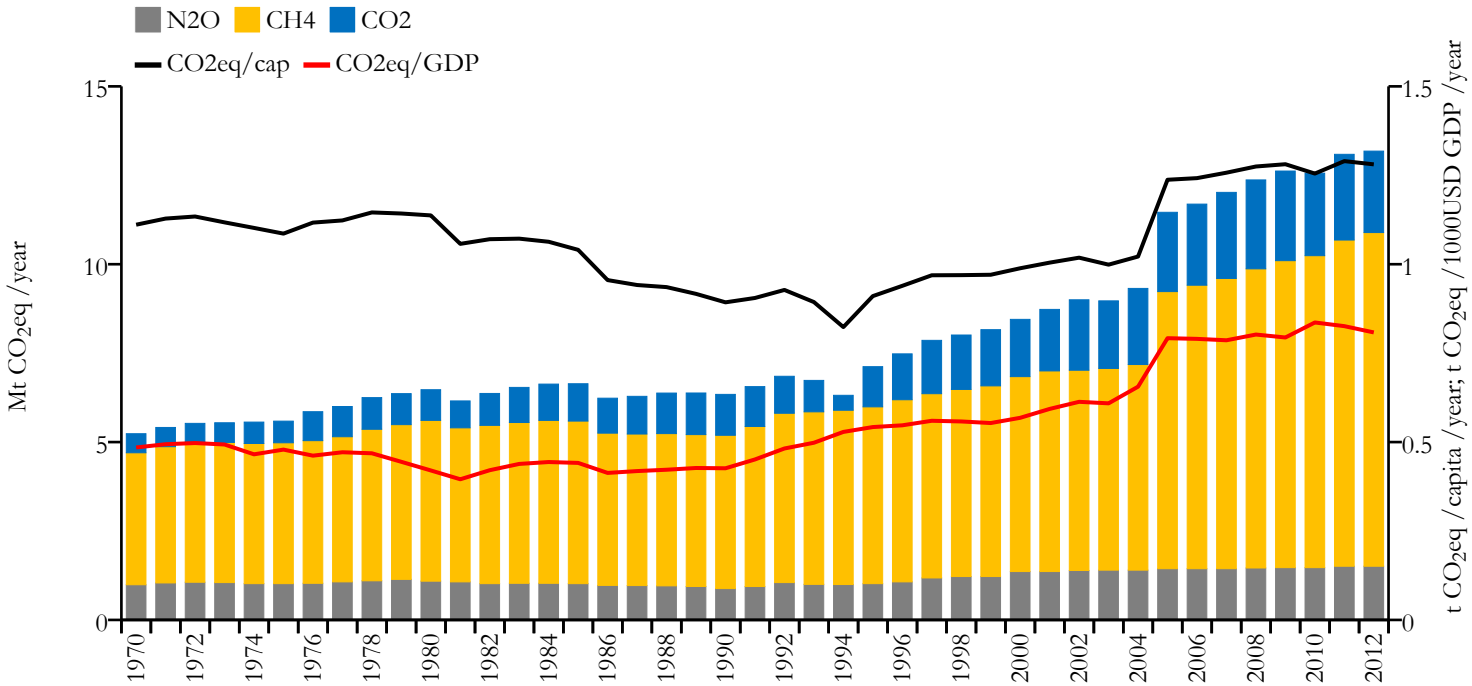
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 3.087 | 0.286 | 0.172 | 10847334 |
| 1990 | 1.131 | 0.159 | 0.076 | 7099732 |

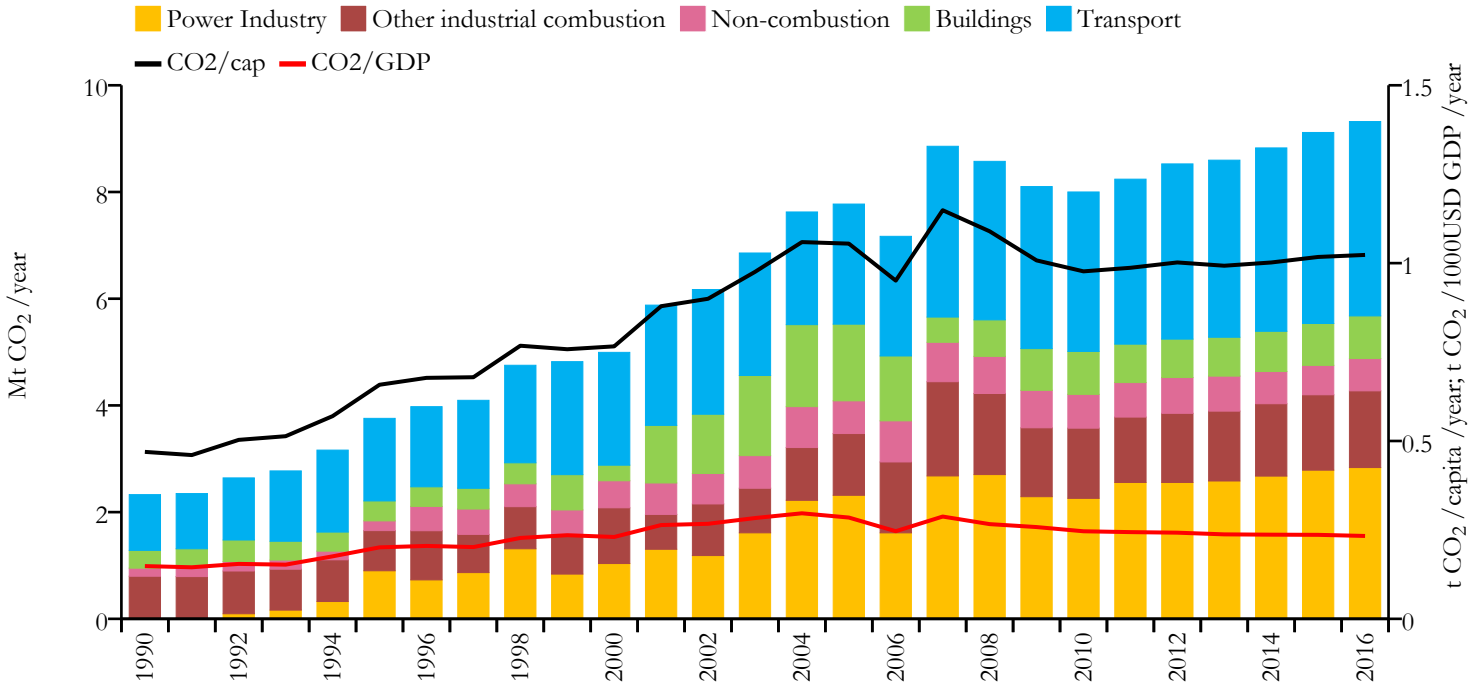
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



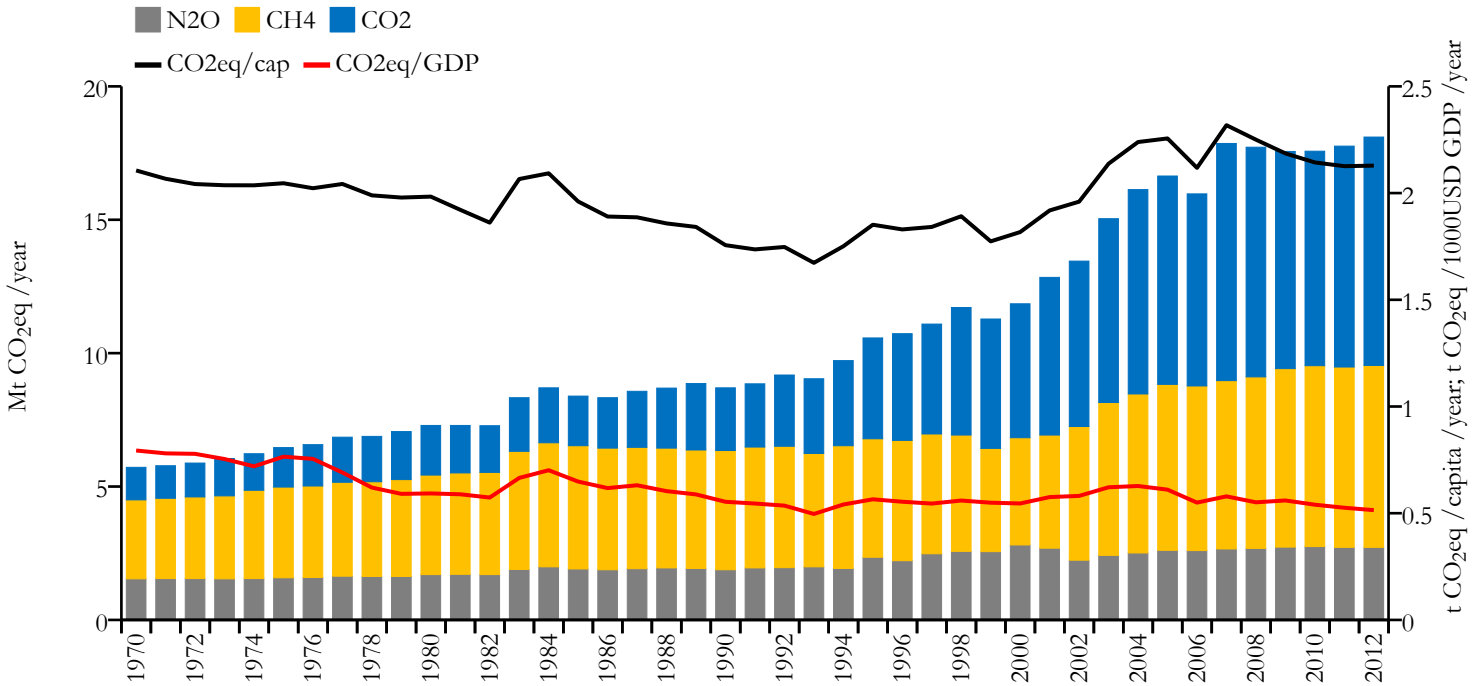
# Honduras

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



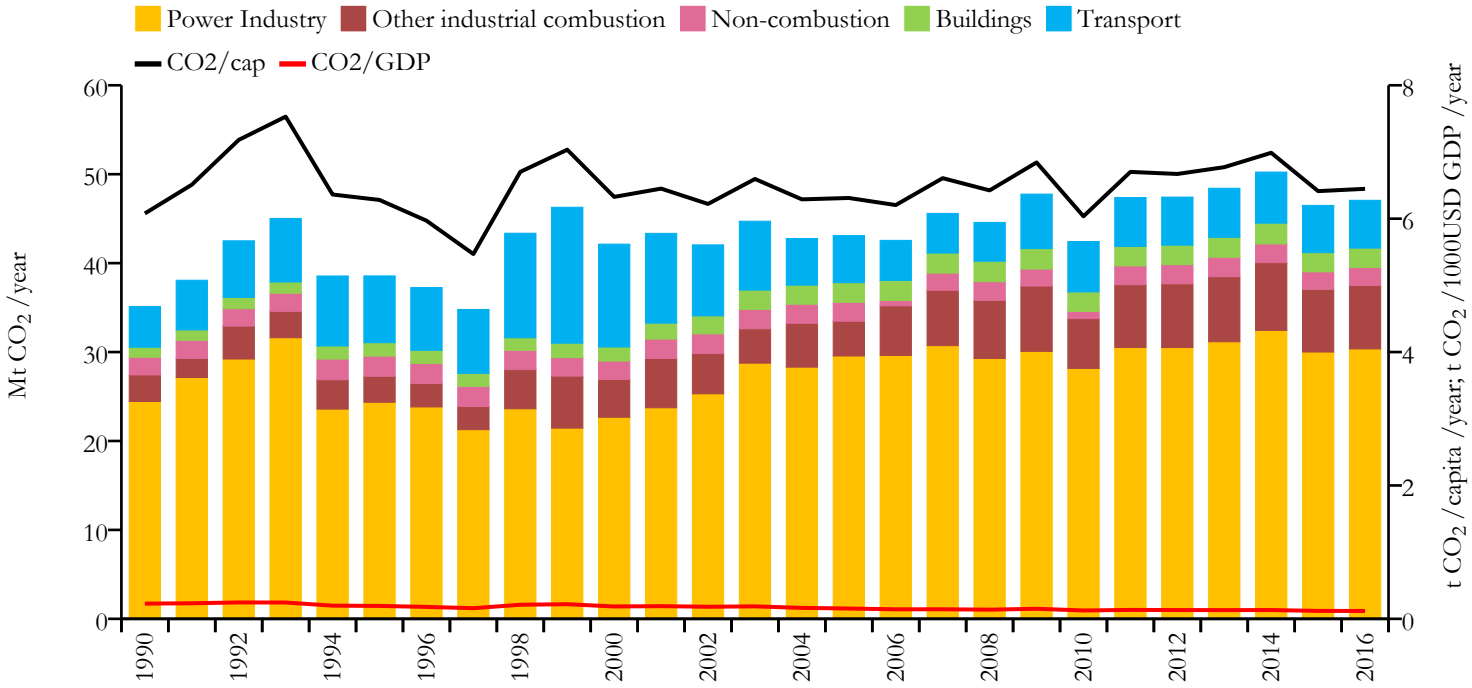

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 9.320 | 1.023 | 0.233 | 9112867 |
| 1990 | 2.328 | 0.469 | 0.148 | 4955328 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Hong Kong

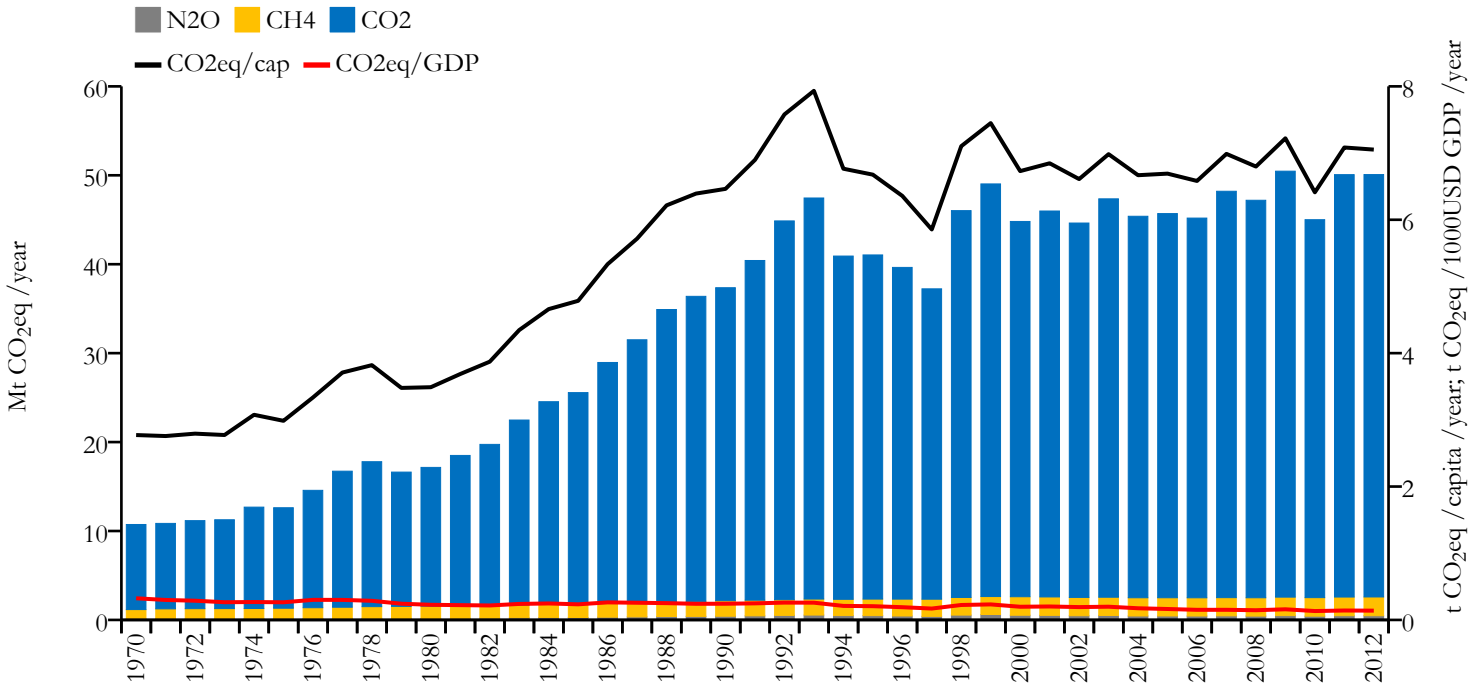
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 47.066 | 6.447 | 0.118 | 7302843 |
| 1990 | 35.131 | 6.078 | 0.228 | 5781459 |

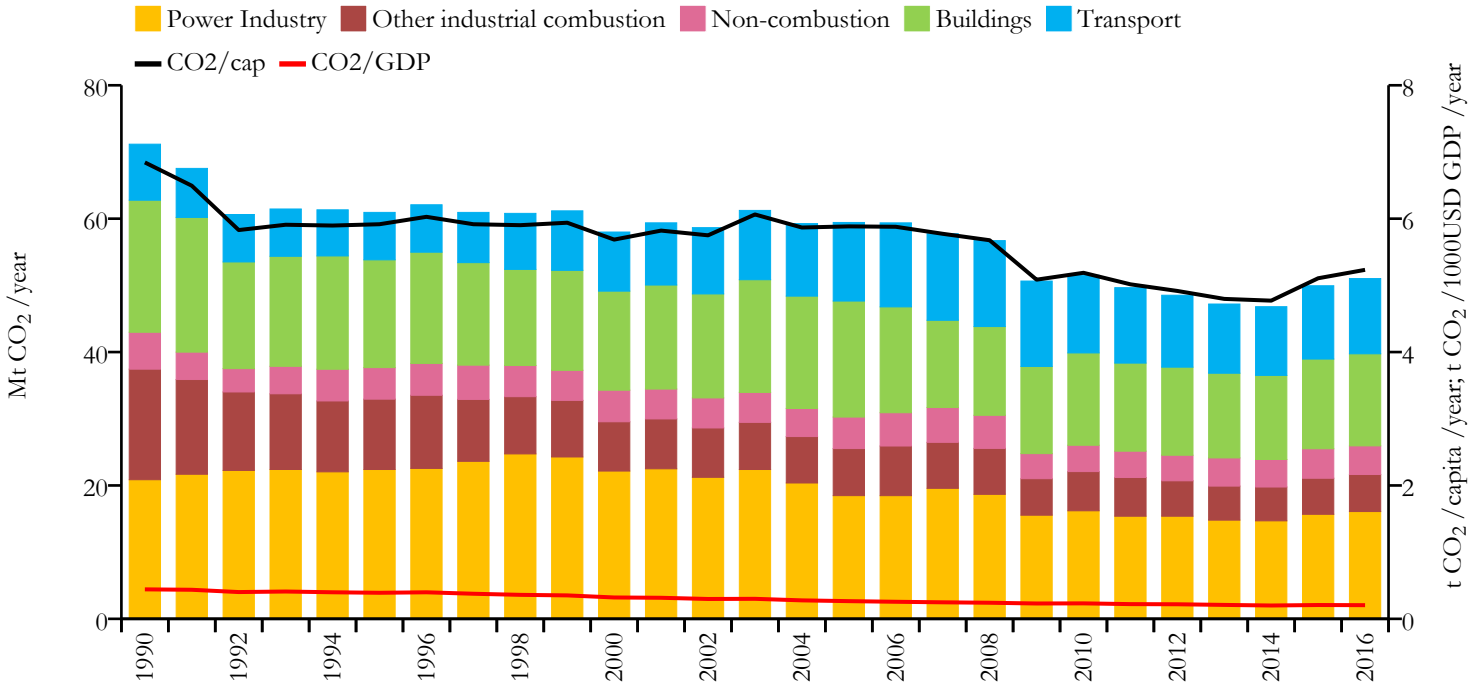
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Hungary

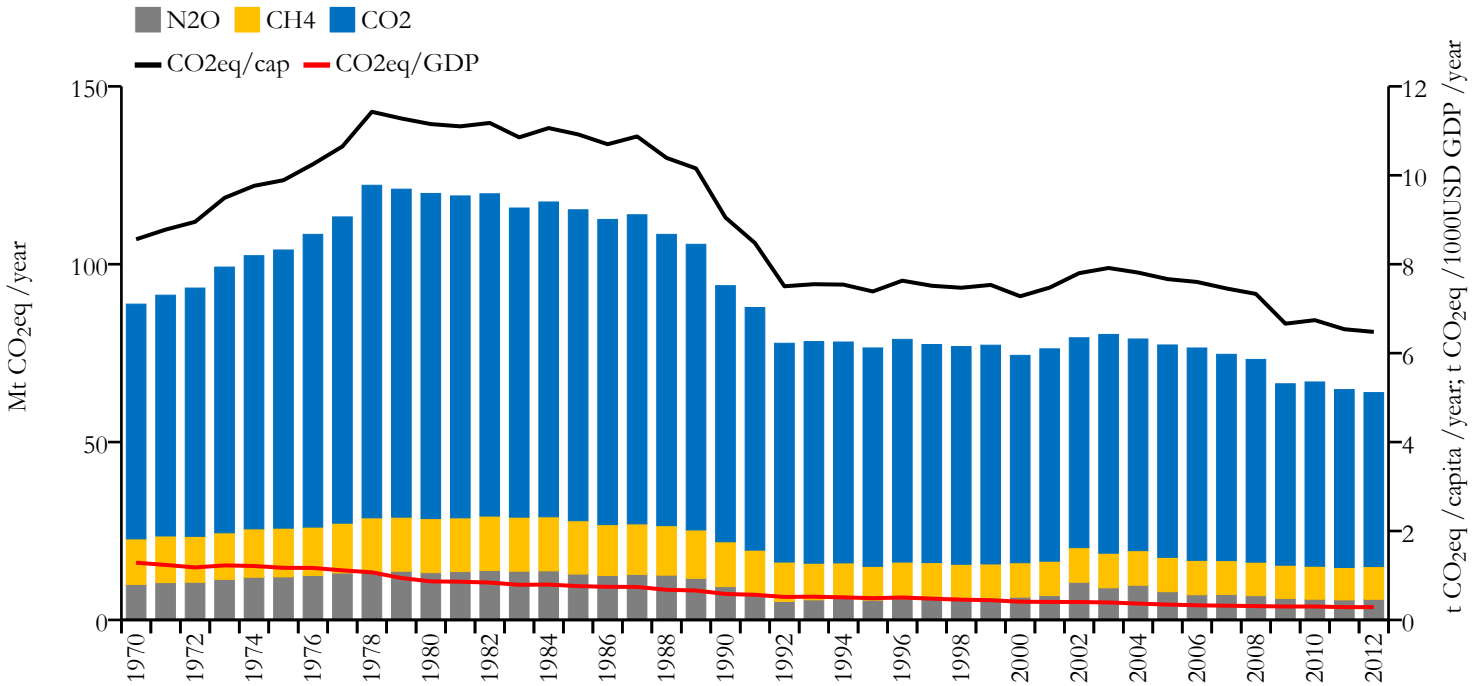
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 51.019 | 5.233 | 0.205 | 9753281 |
| 1990 | 71.170 | 6.843 | 0.442 | 10377651 |

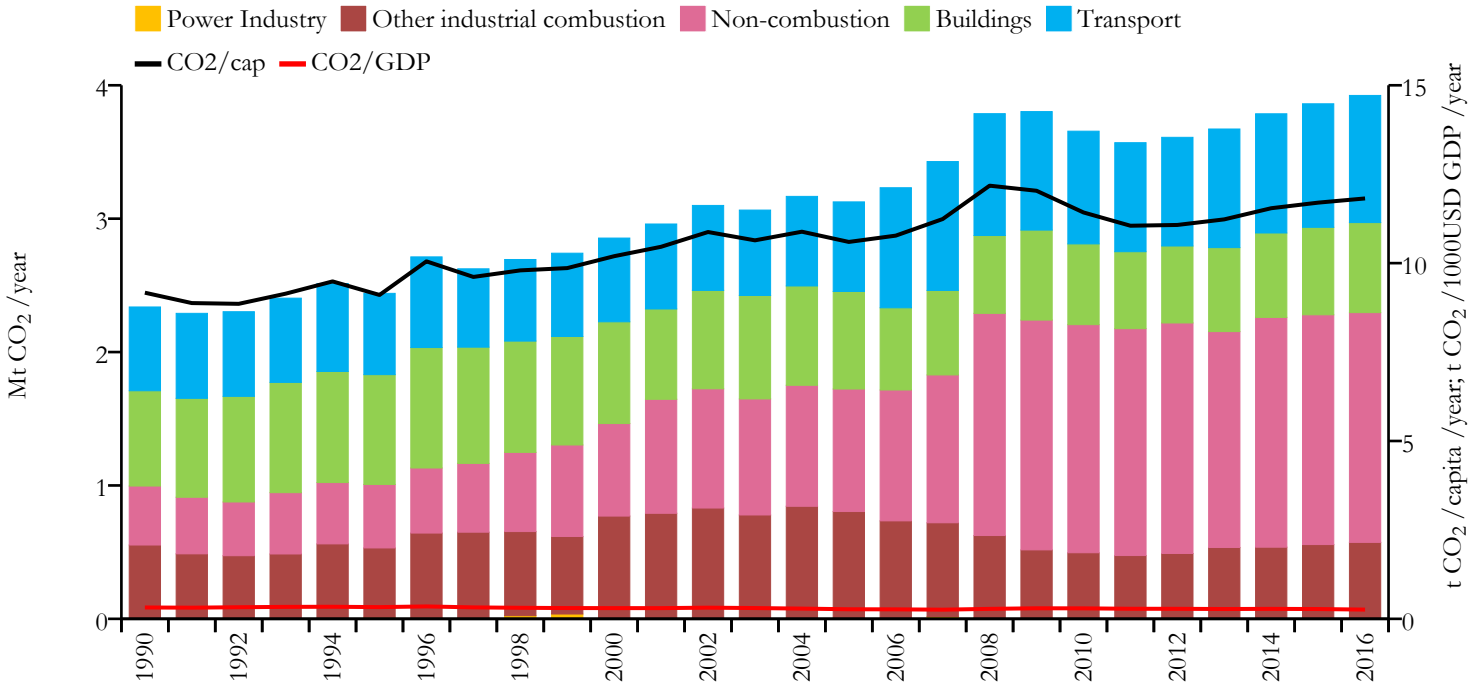
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Iceland

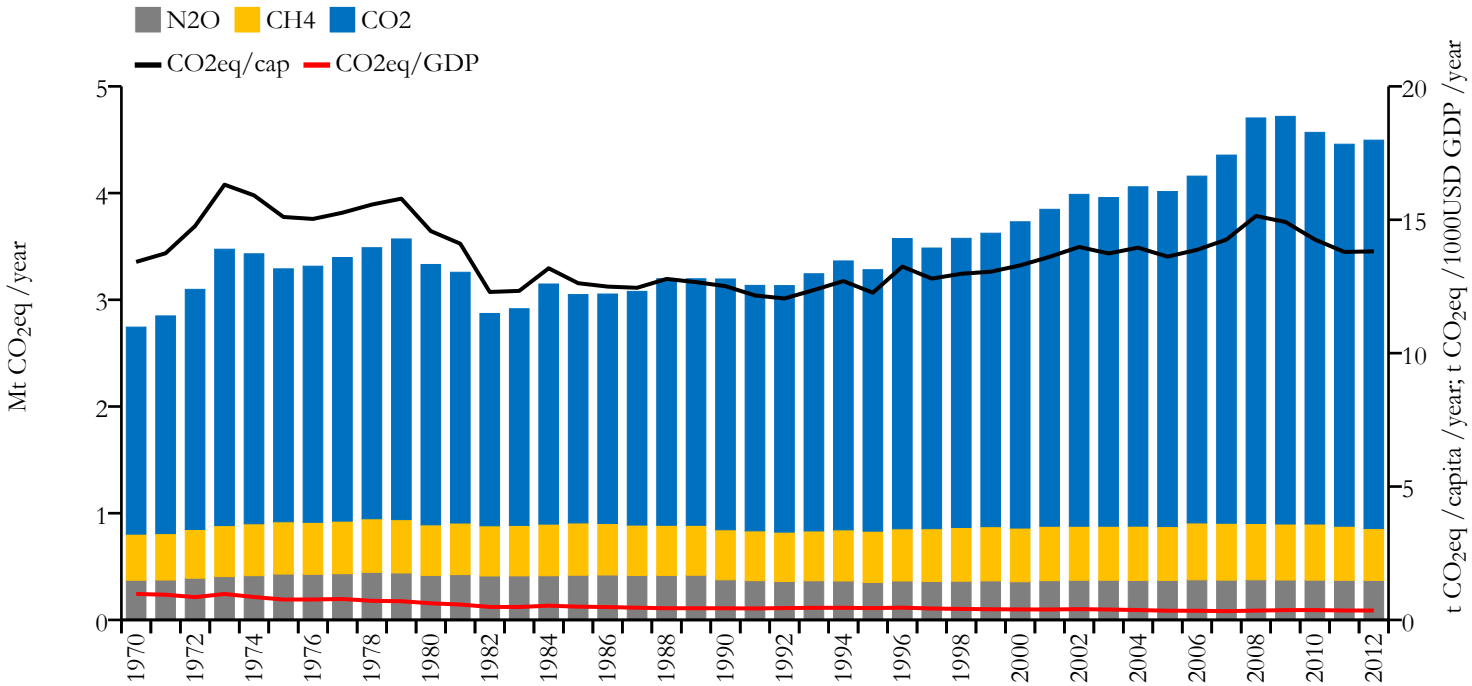
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



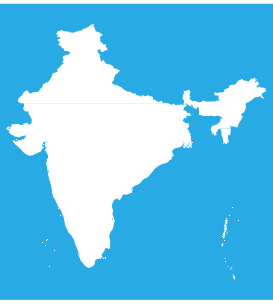

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 3.924 | 11.819 | 0.260 | 332474 |
| 1990 | 2.338 | 9.169 | 0.319 | 255043 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

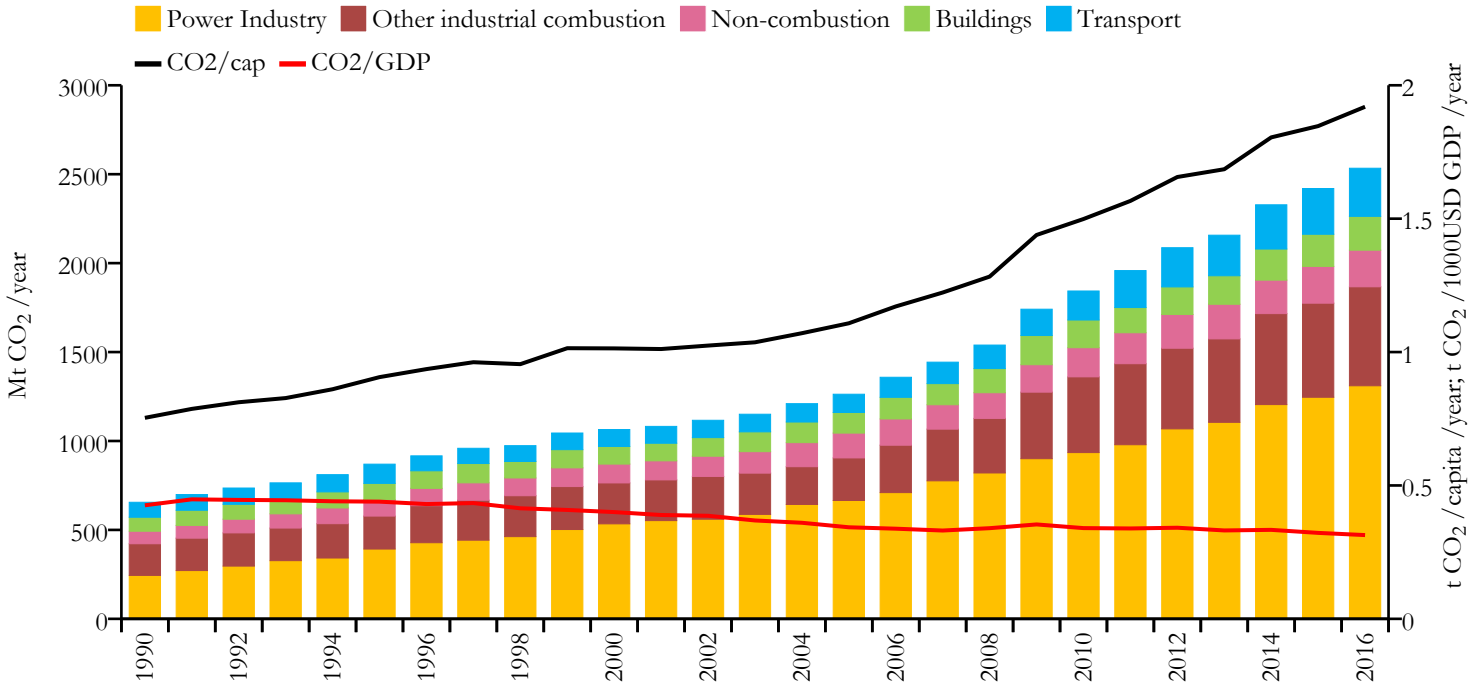
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# India

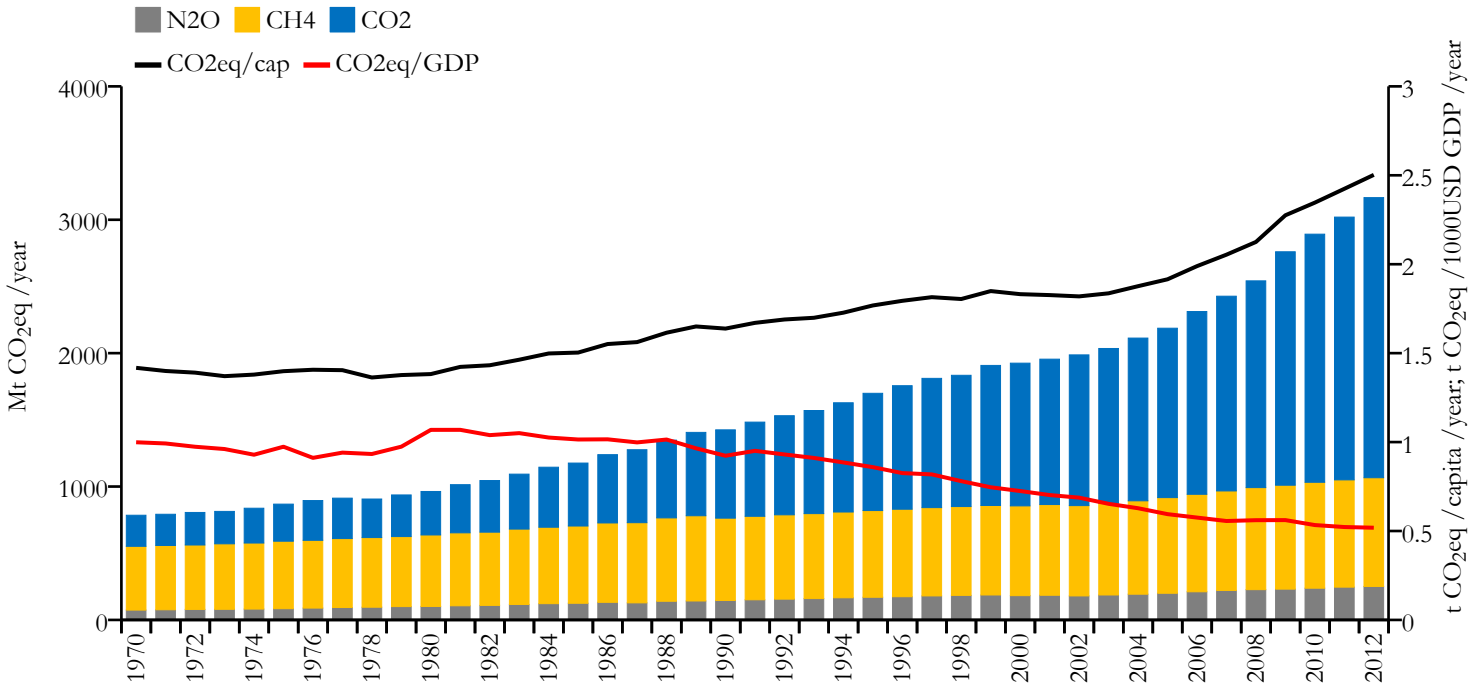


## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



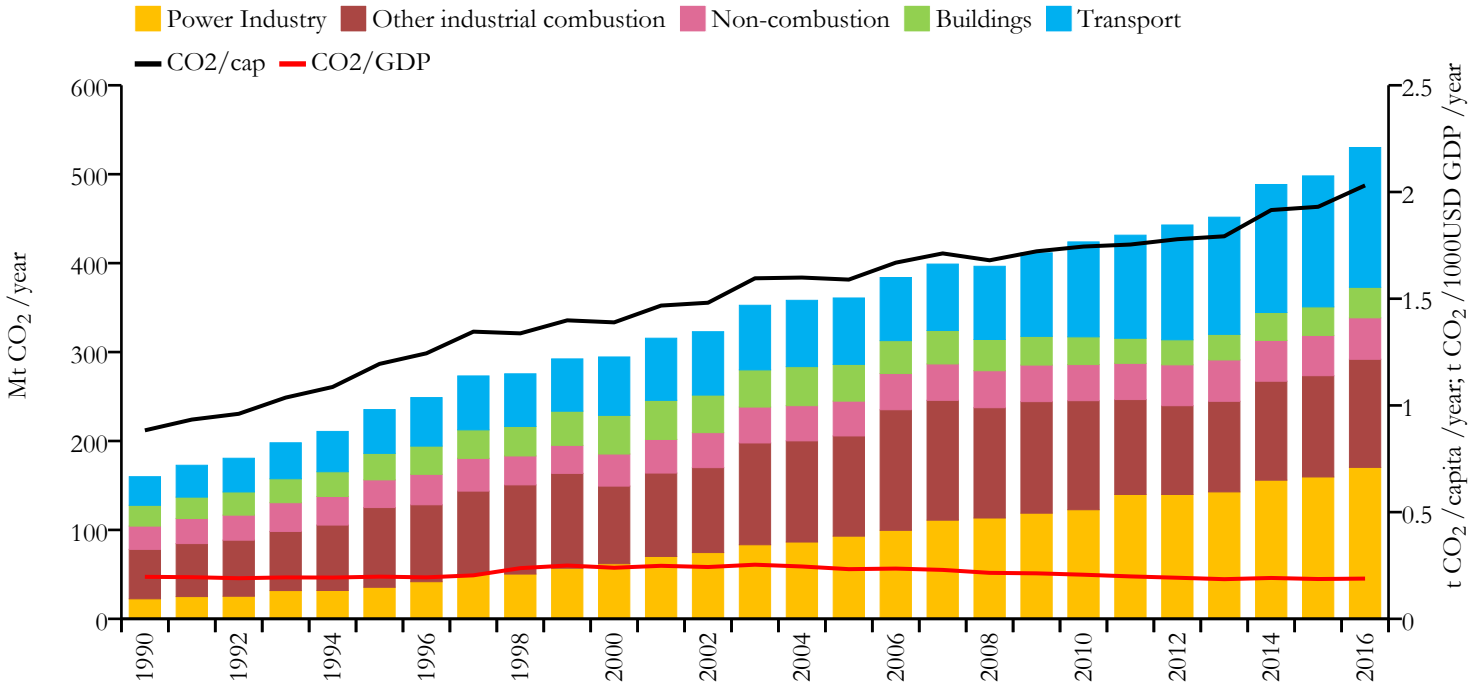

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 2533.638 | 1.919 | 0.314 | 1324171354 |
| 1990 | 655.462 | 0.753 | 0.426 | 870133480 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Indonesia

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 530.036 | 2.031 | 0.189 | 261115456 |
| 1990 | 159.852 | 0.883 | 0.197 | 181436821 |

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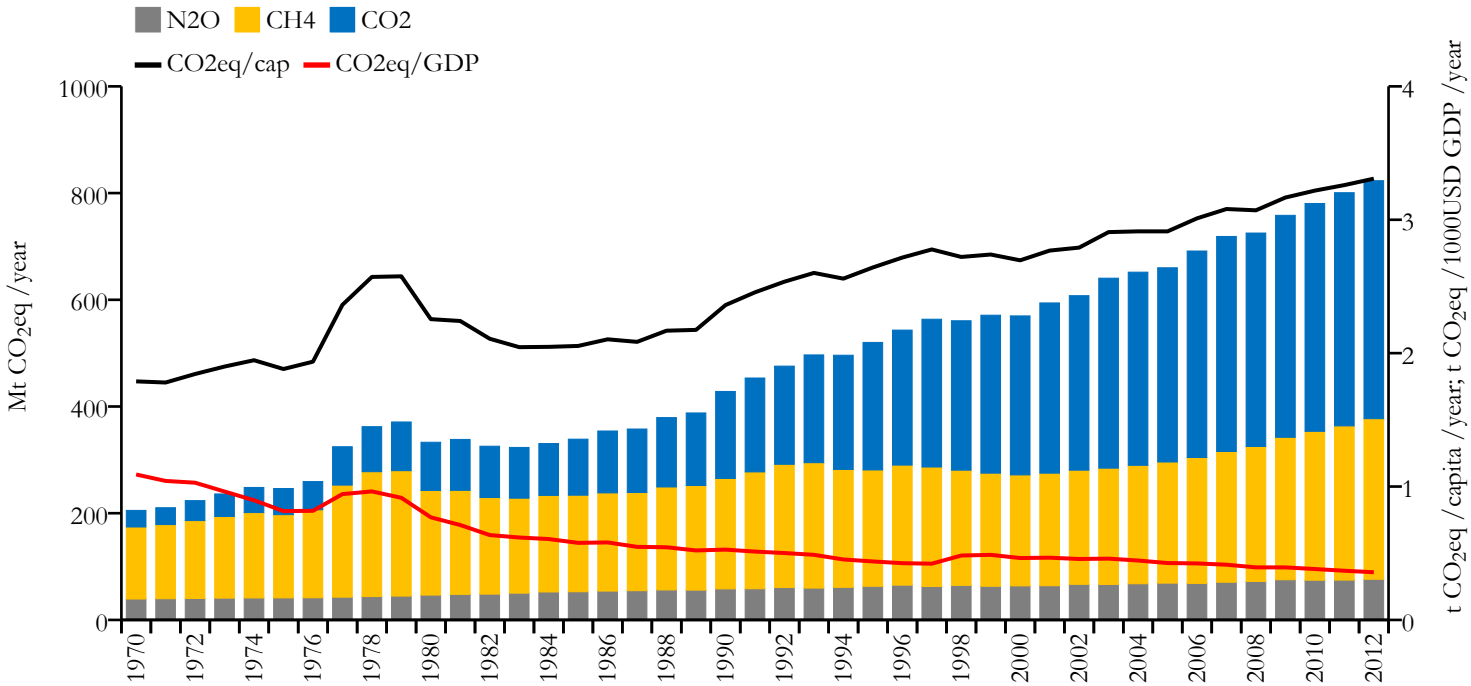
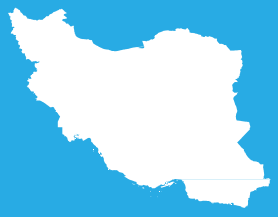
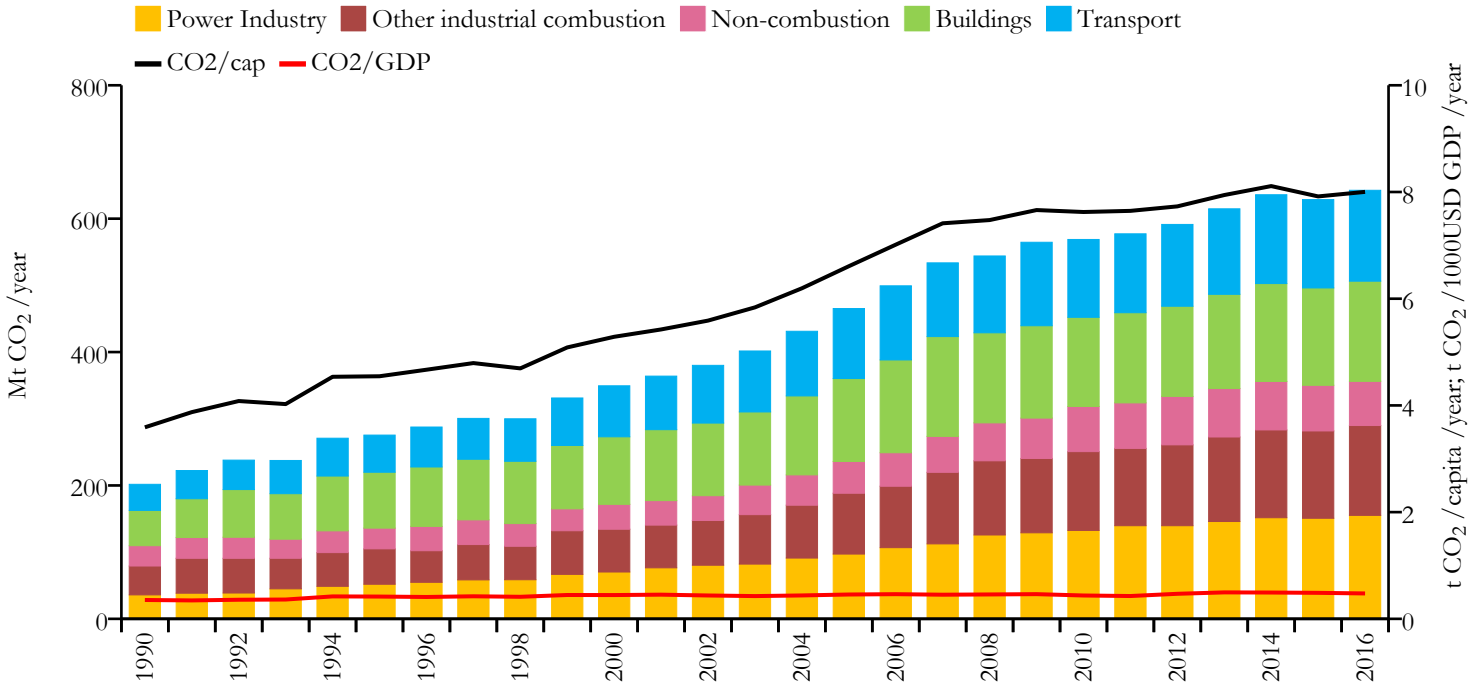
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Iran



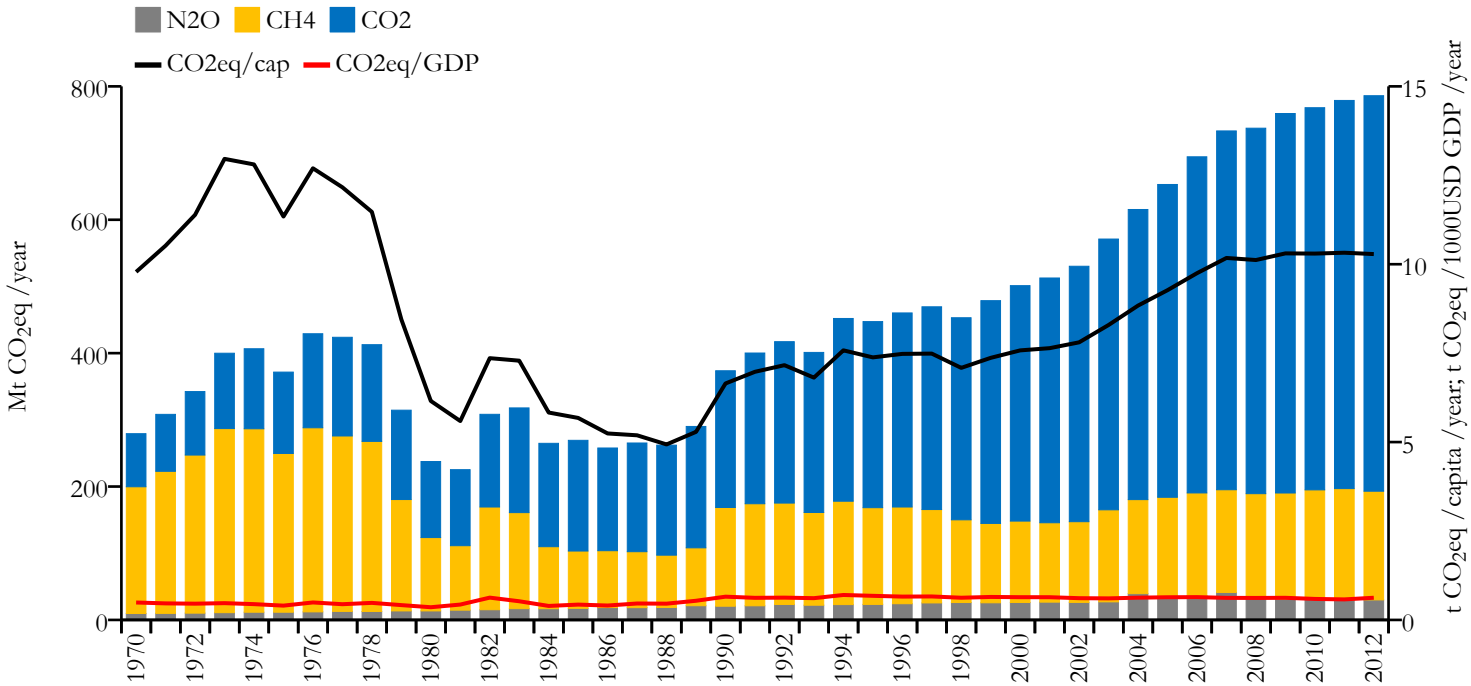
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



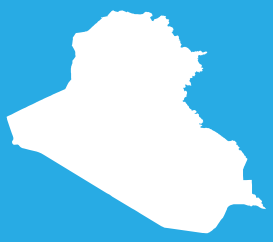

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 642.560 | 8.002 | 0.476 | 80277428 |
| 1990 | 201.720 | 3.589 | 0.353 | 56226185 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

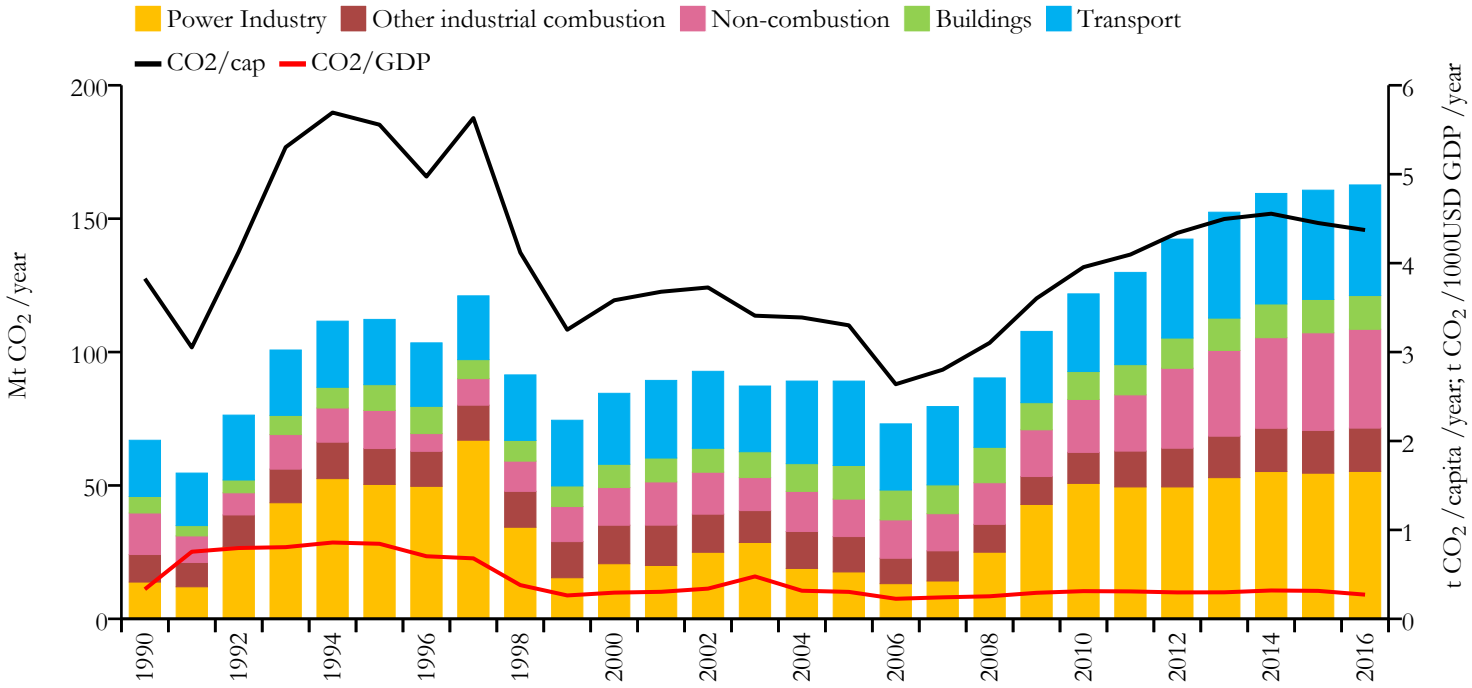
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Iraq

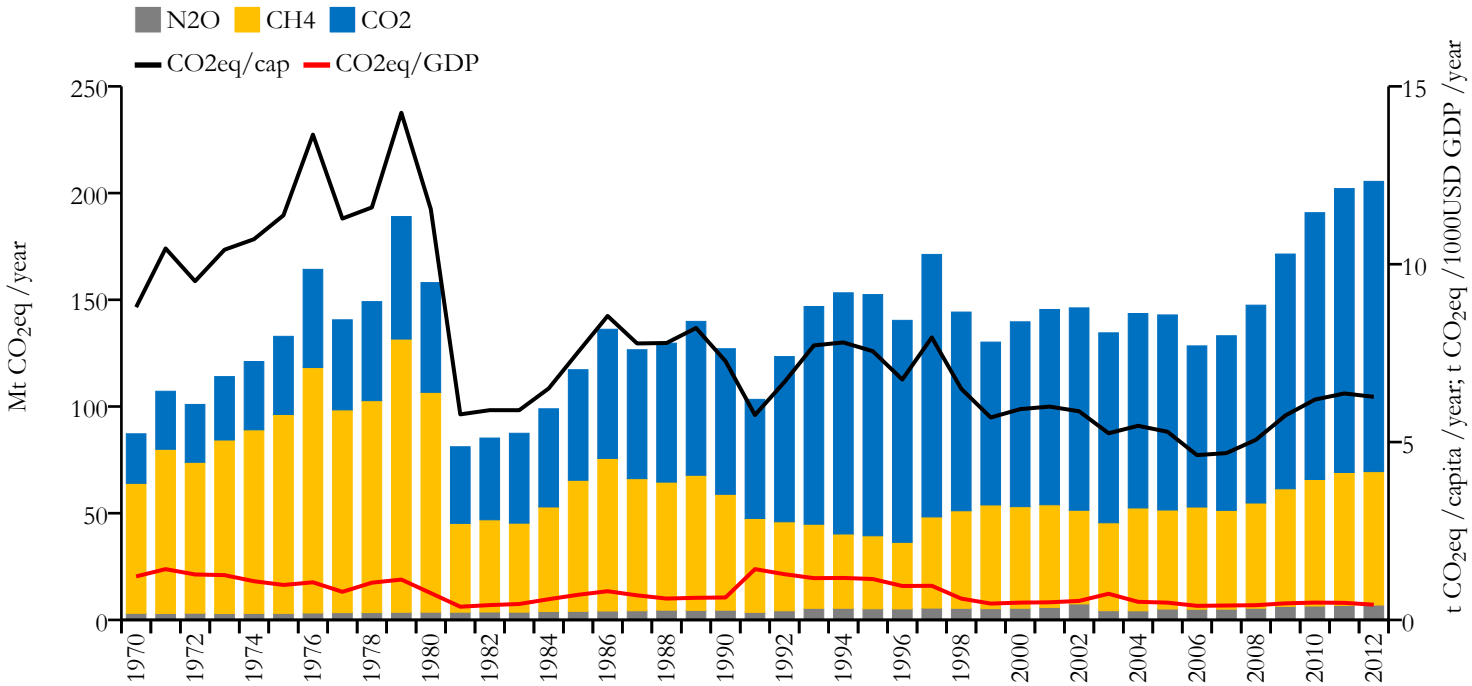


## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)

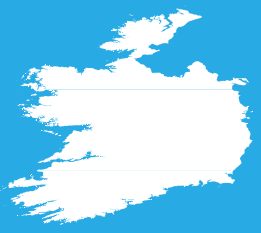



| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 162.646 | 4.372 | 0.272 | 37202572 |
| 1990 | 66.944 | 3.825 | 0.333 | 17469005 |

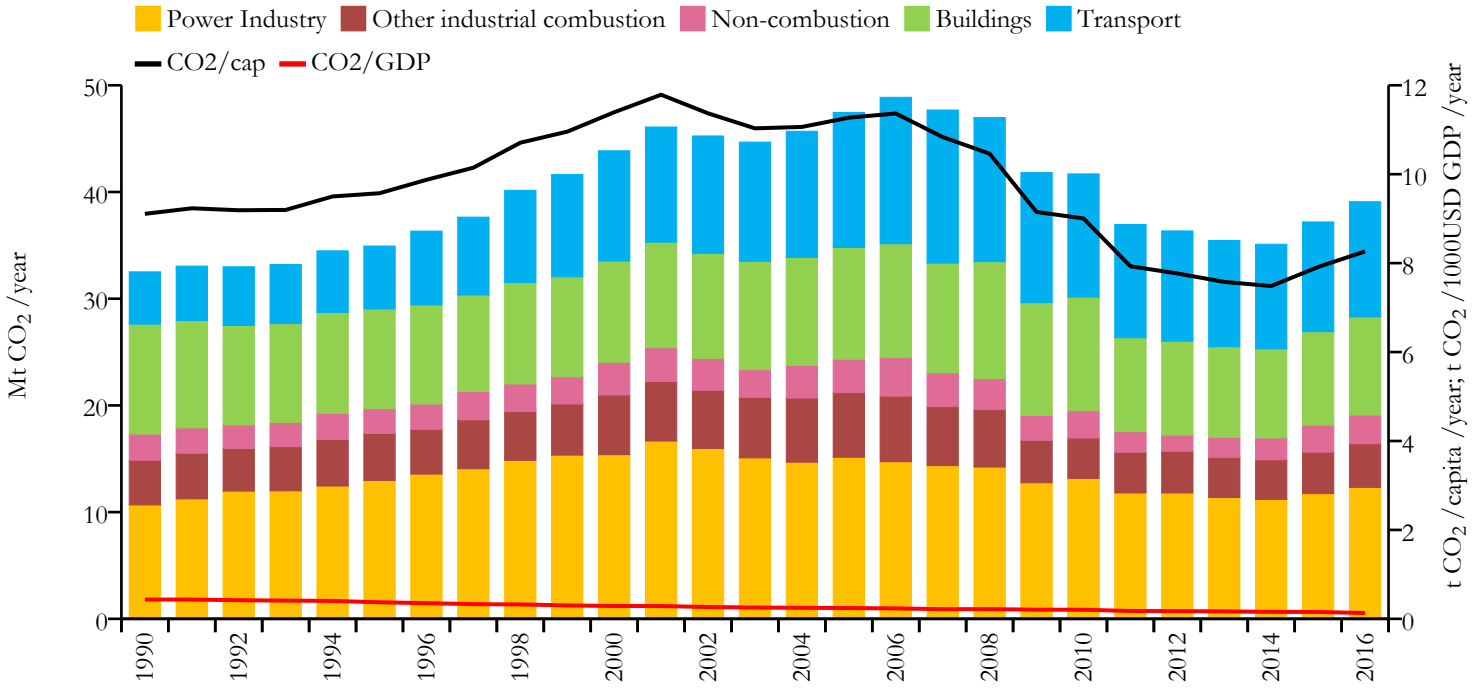
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Ireland



## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 39.087 | 8.264 | 0.130 | 4726078 |
| 1990 | 32.518 | 9.109 | 0.435 | 3569257 |

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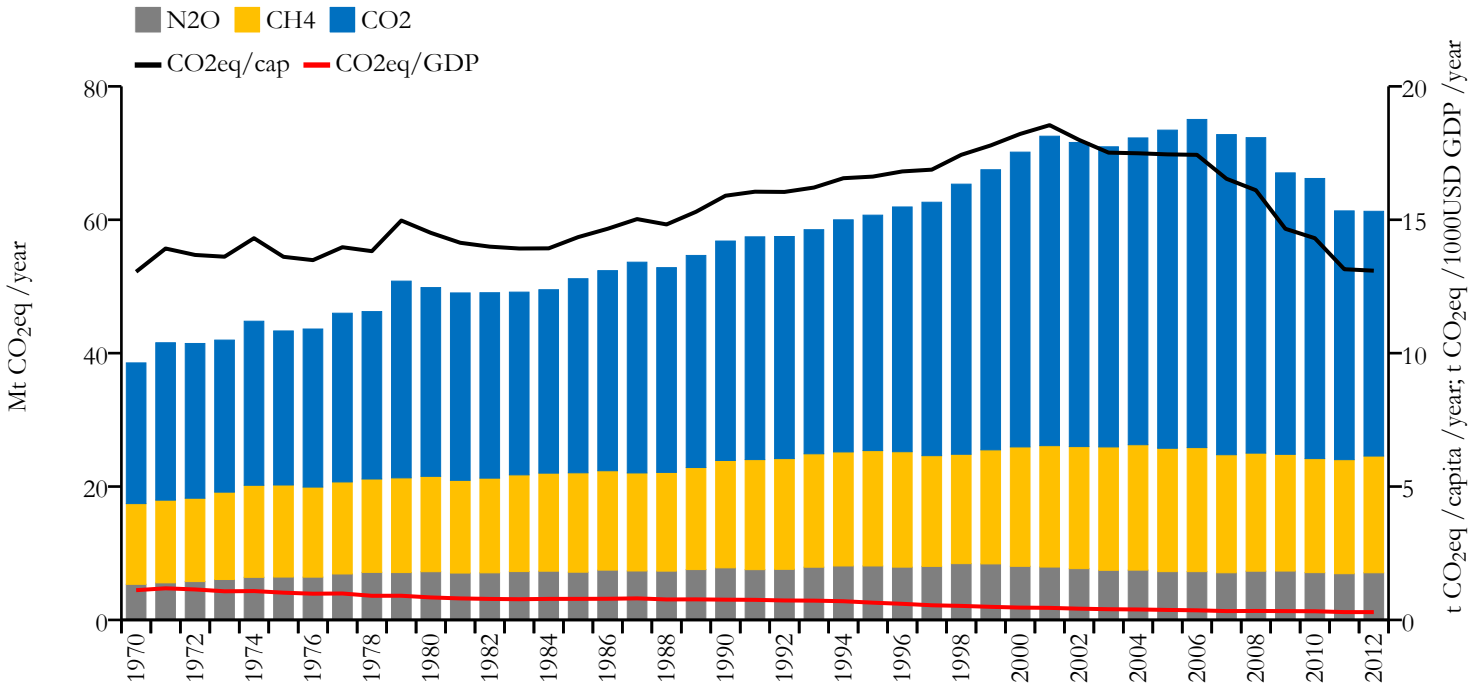
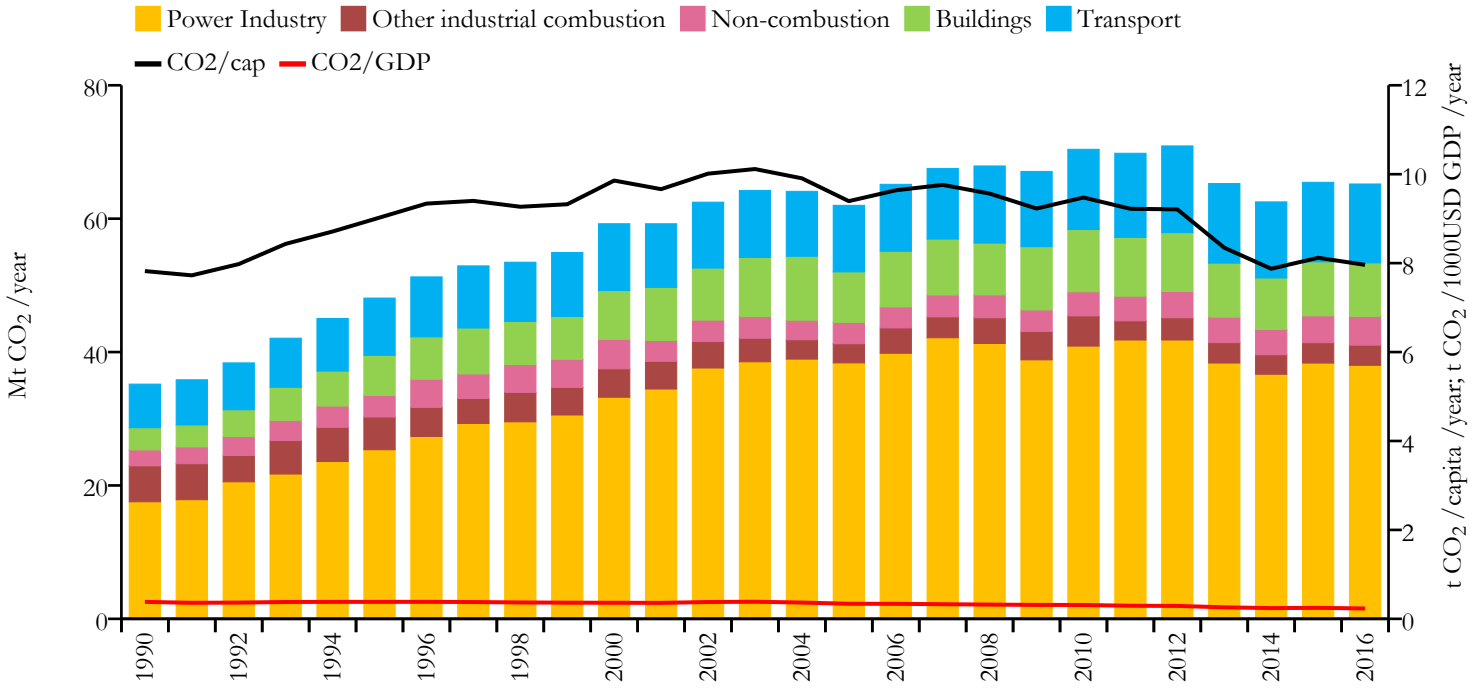
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Israel and Palestine, State of

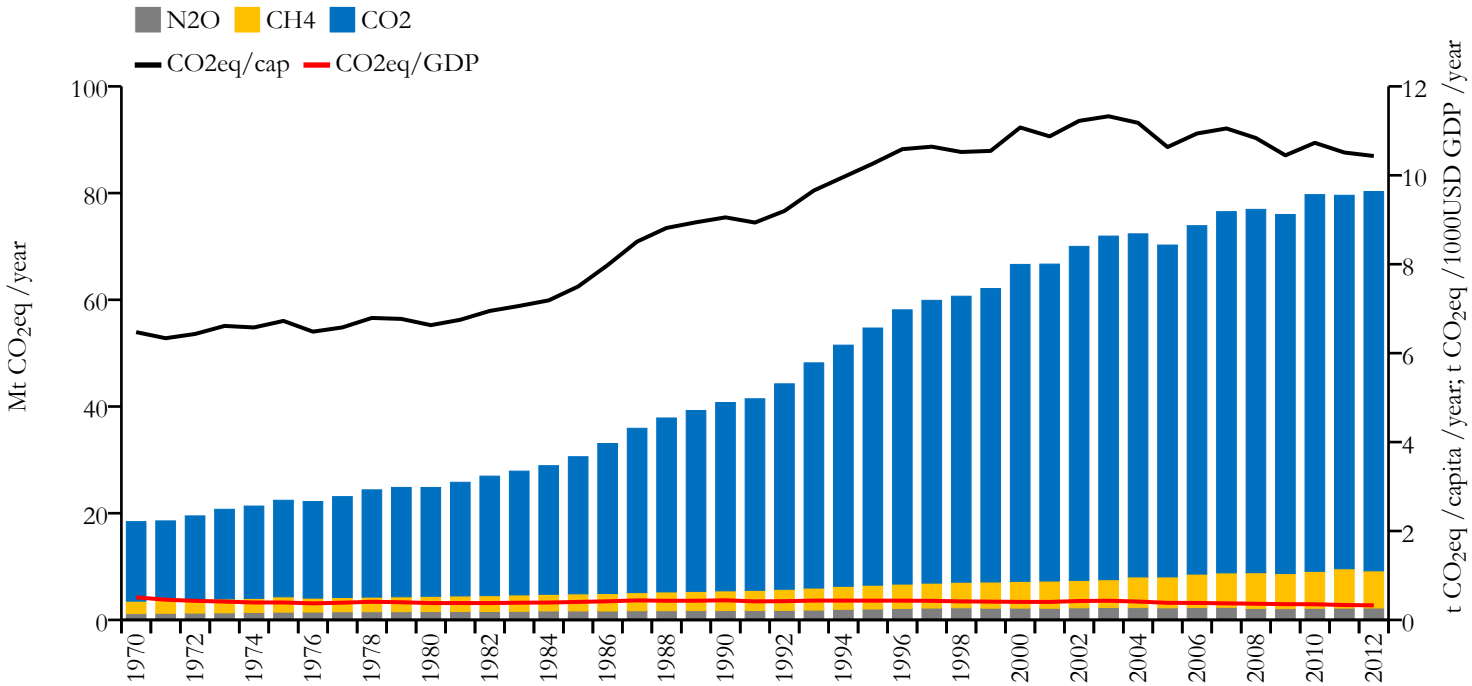
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 65.202 | 7.961 | 0.234 | 8191828 |
| 1990 | 35.195 | 7.821 | 0.382 | 4500475 |

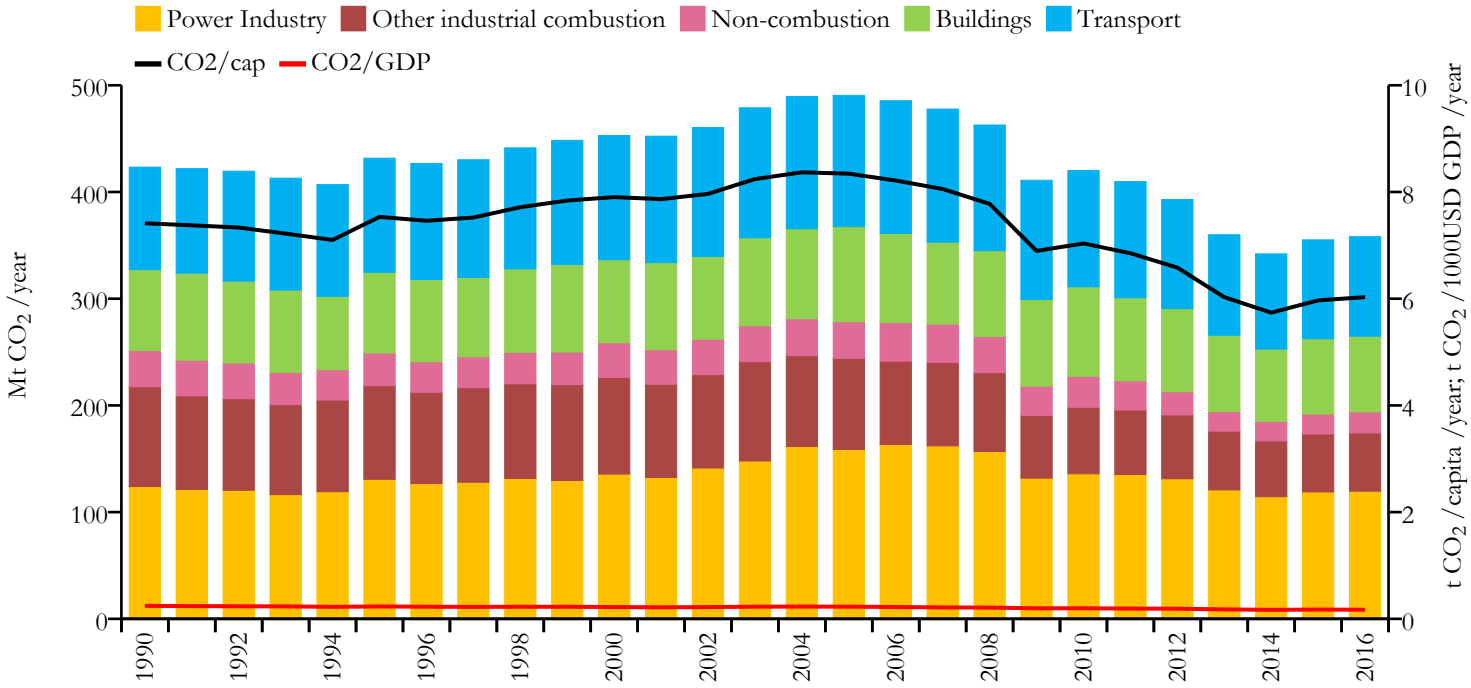
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Italy, San Marino and the Holy See

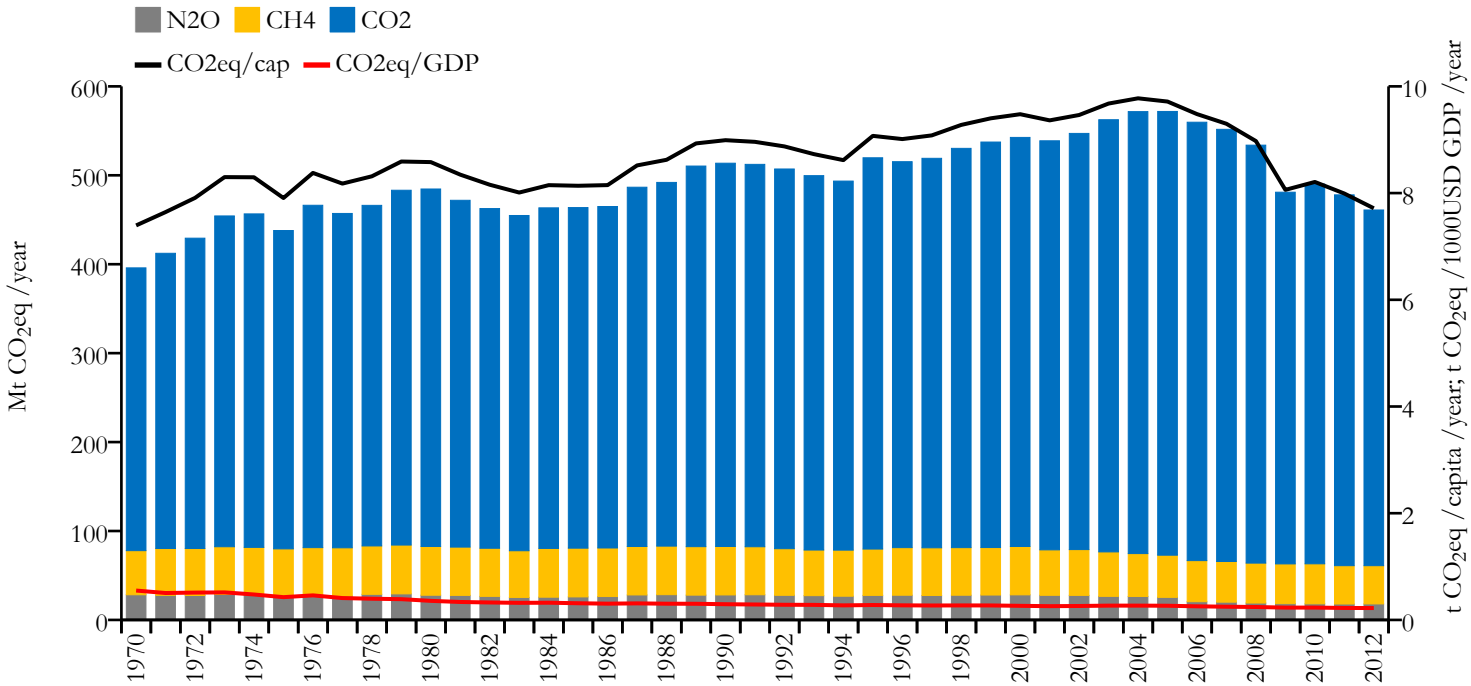
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 358.140 | 6.029 | 0.171 | 59429938 |
| 1990 | 423.297 | 7.413 | 0.243 | 57127120 |

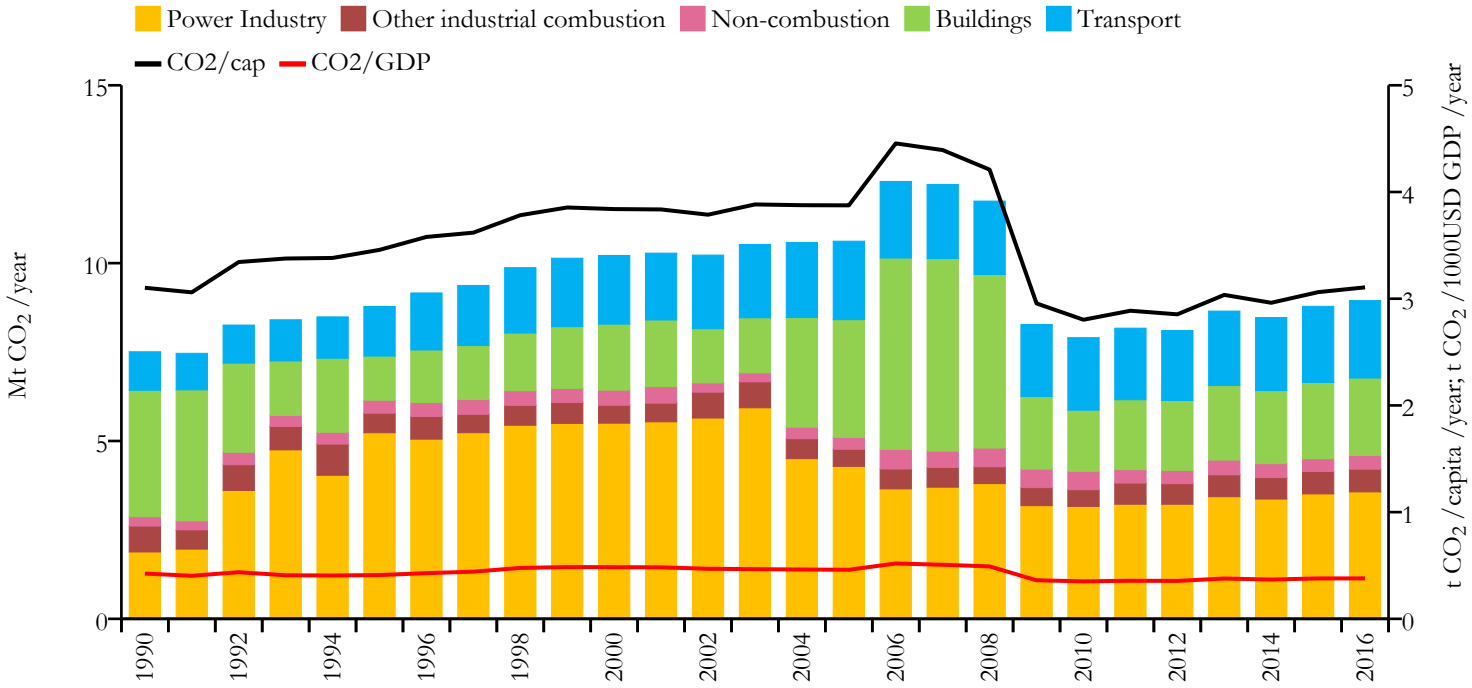
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Jamaica

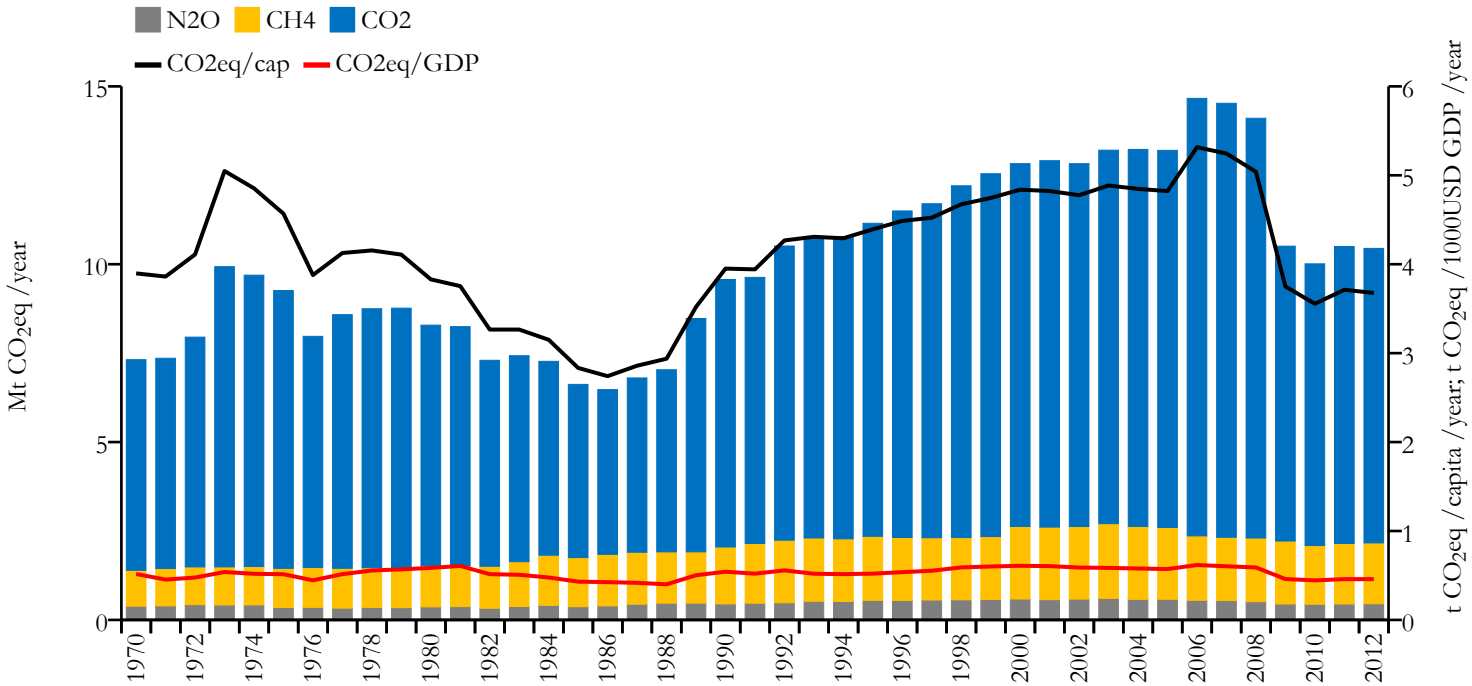
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 8.947 | 3.106 | 0.379 | 2881355 |
| 1990 | 7.508 | 3.103 | 0.424 | 2424242 |

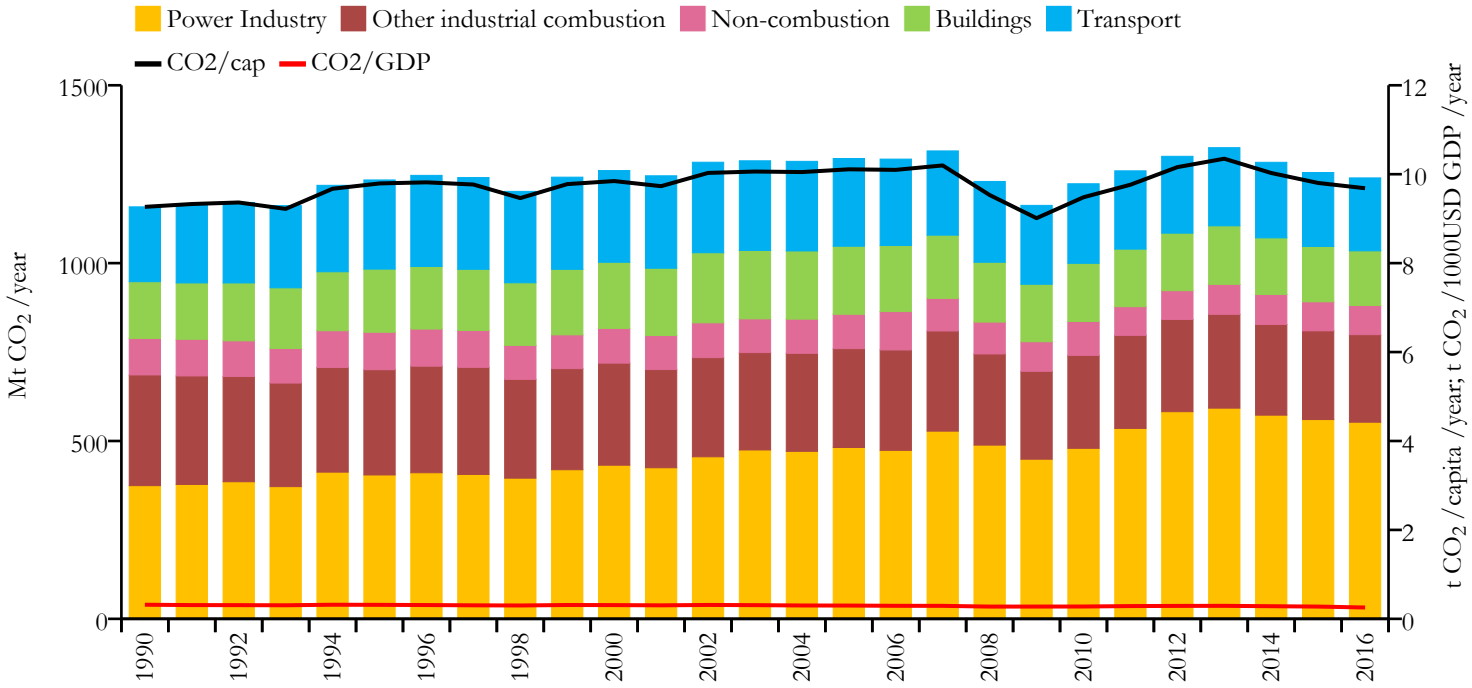
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



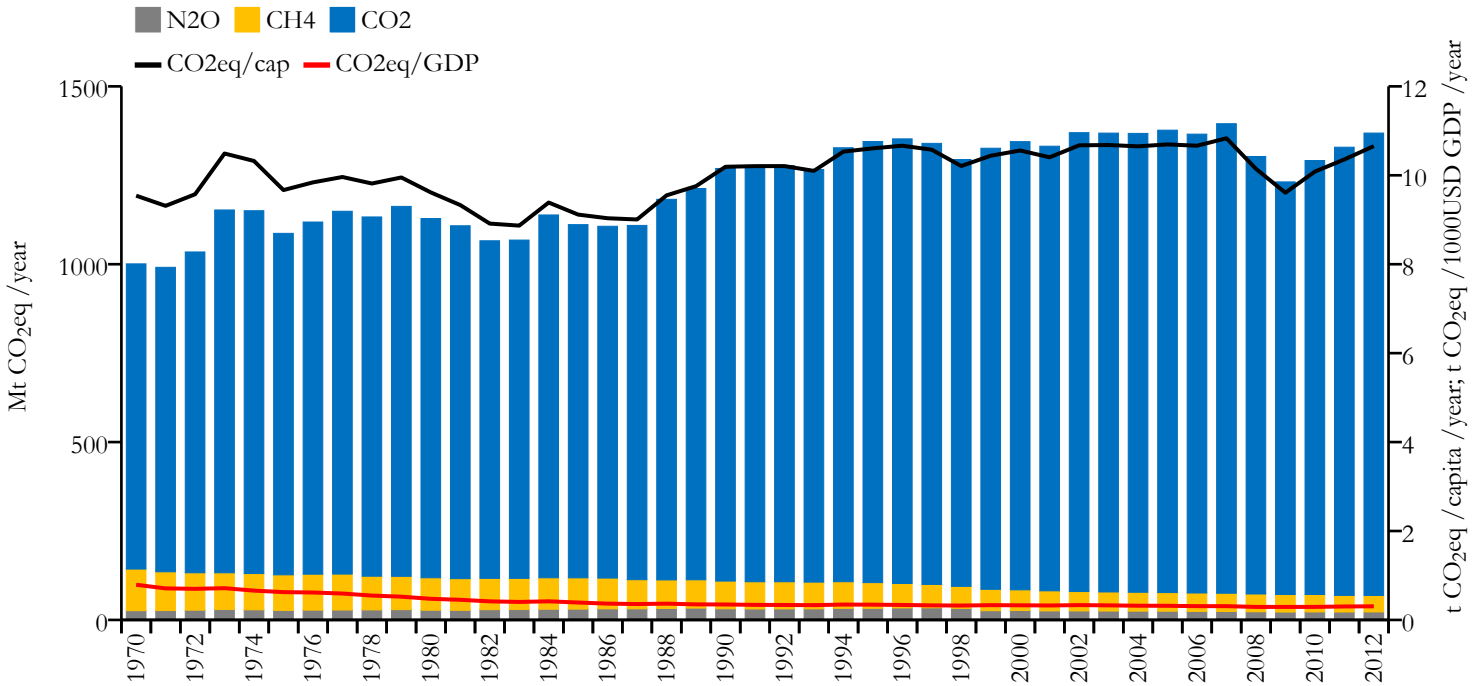
# Japan

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



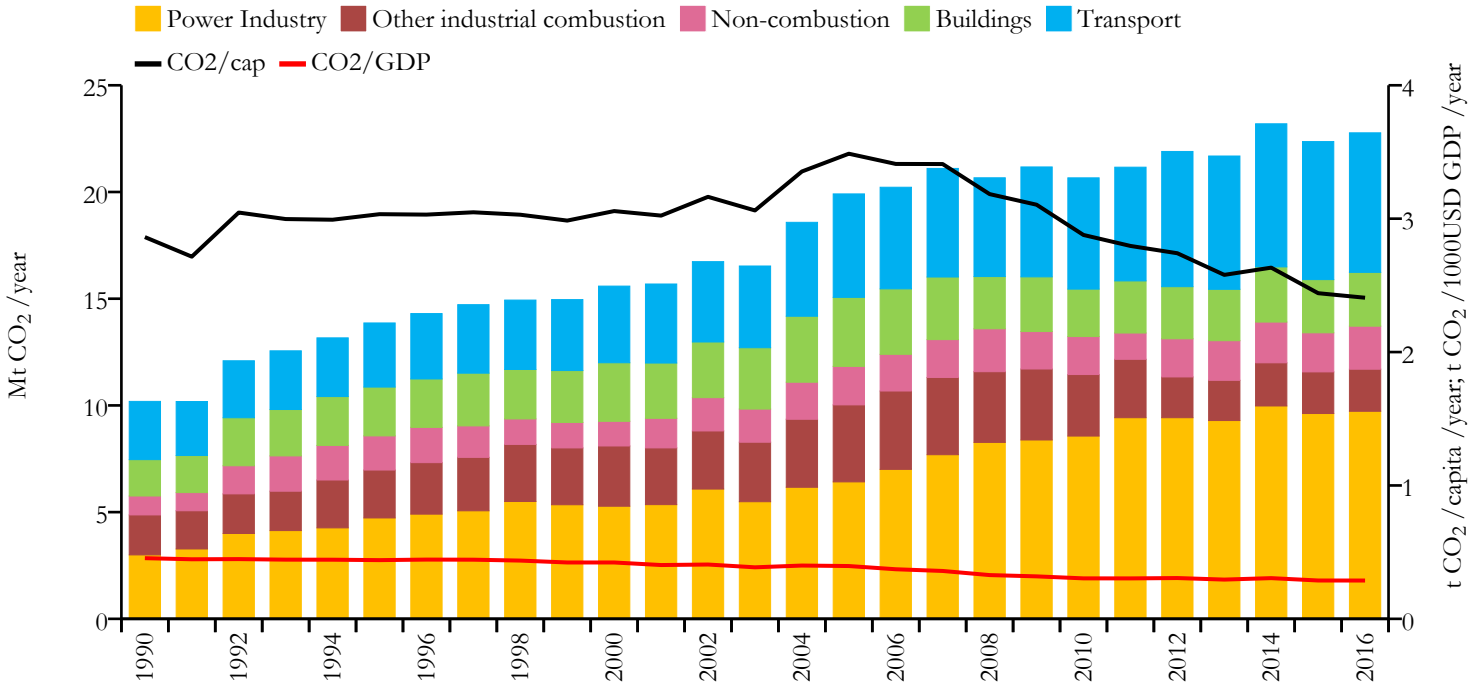

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 1239.592 | 9.684 | 0.255 | 127748513 |
| 1990 | 1158.222 | 9.266 | 0.317 | 124515561 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Jordan

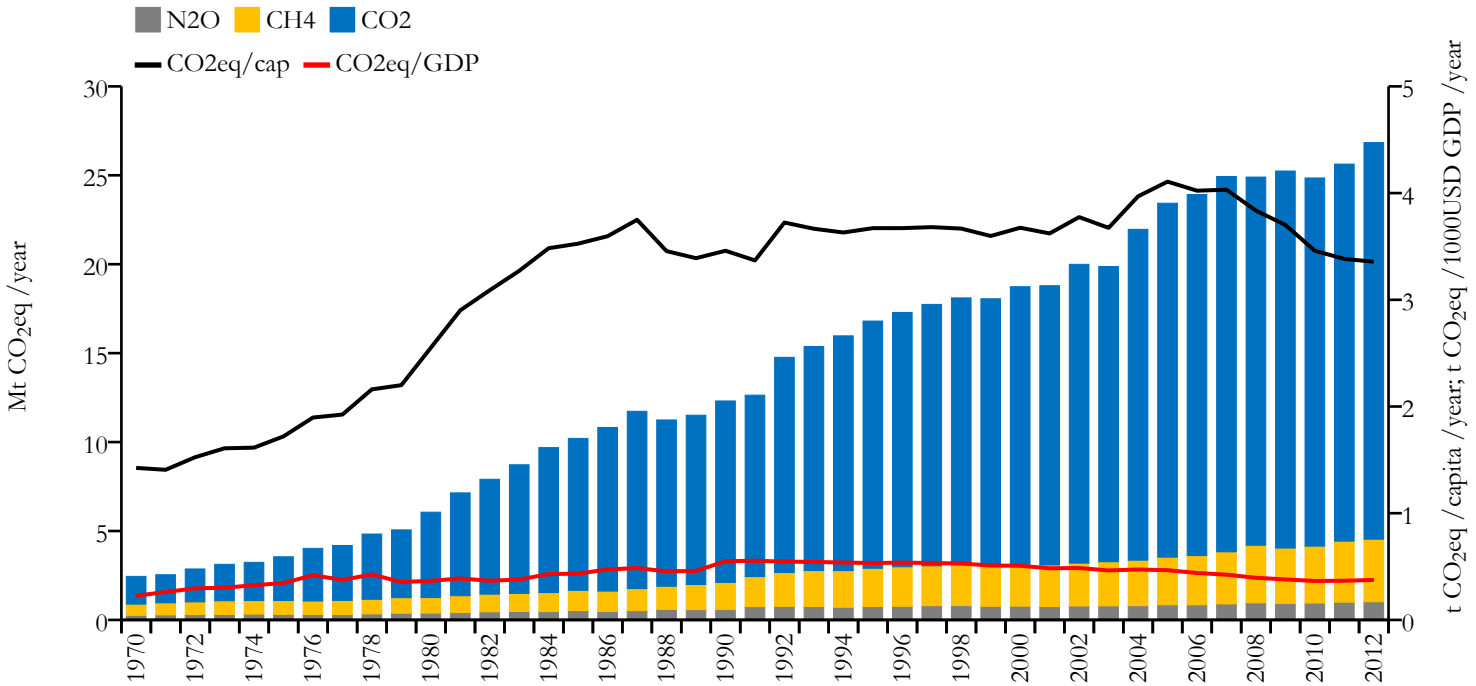
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 22.772 | 2.407 | 0.287 | 9455802 |
| 1990 | 10.189 | 2.862 | 0.455 | 3560582 |

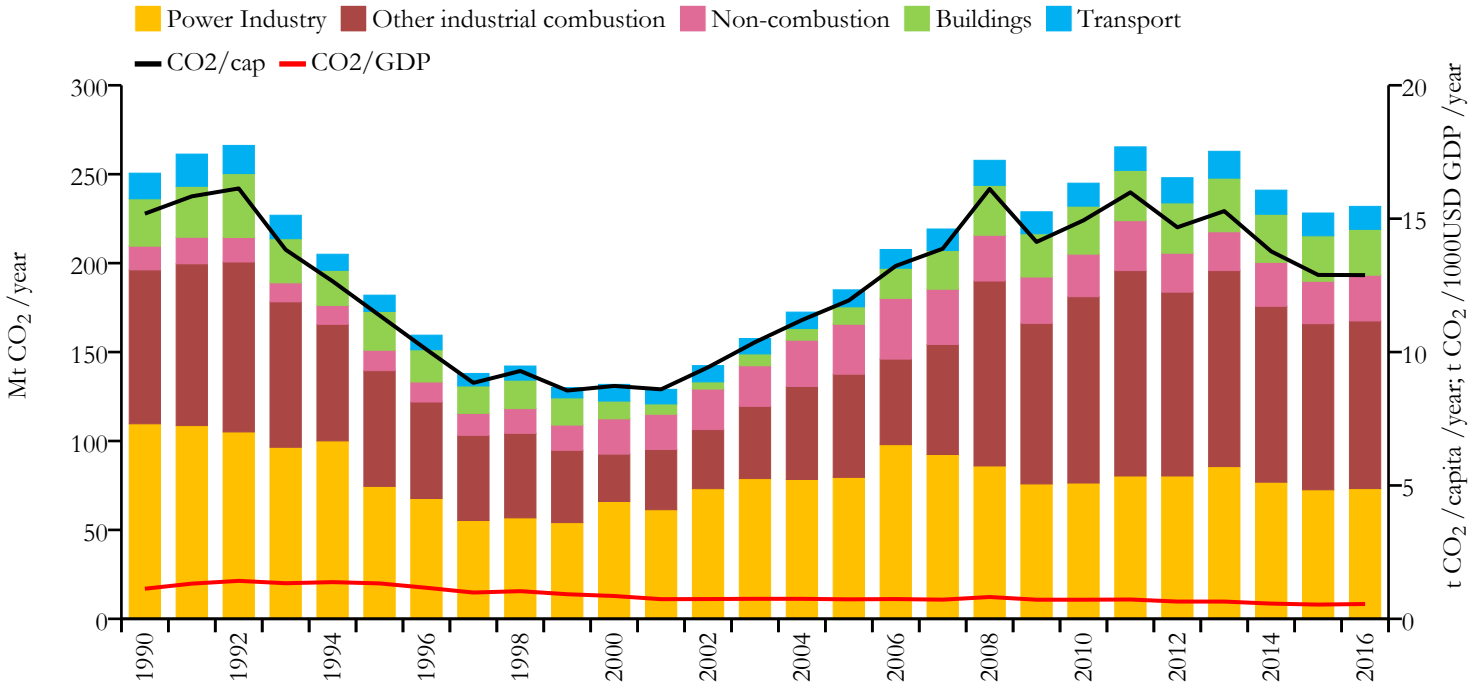
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Kazakhstan

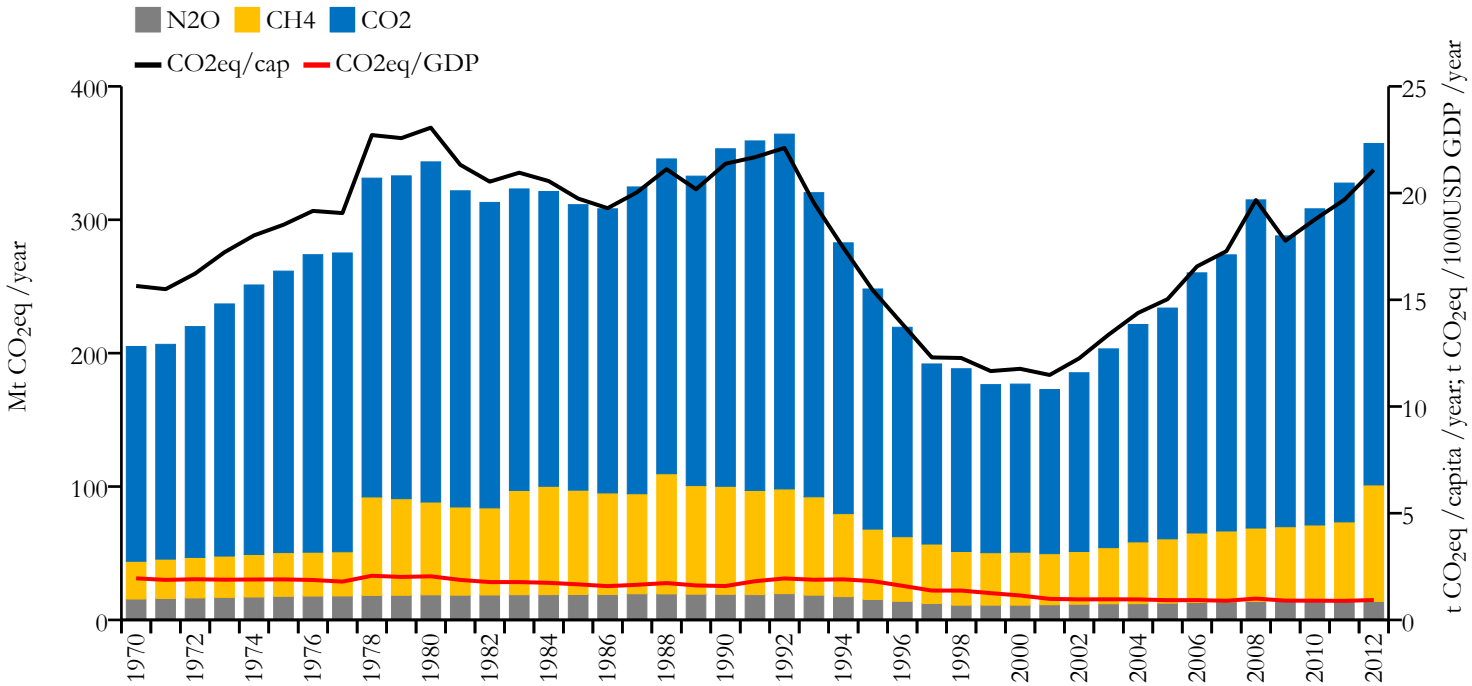
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 231.920 | 12.884 | 0.556 | 17987736 |
| 1990 | 250.590 | 15.187 | 1.129 | 16540258 |

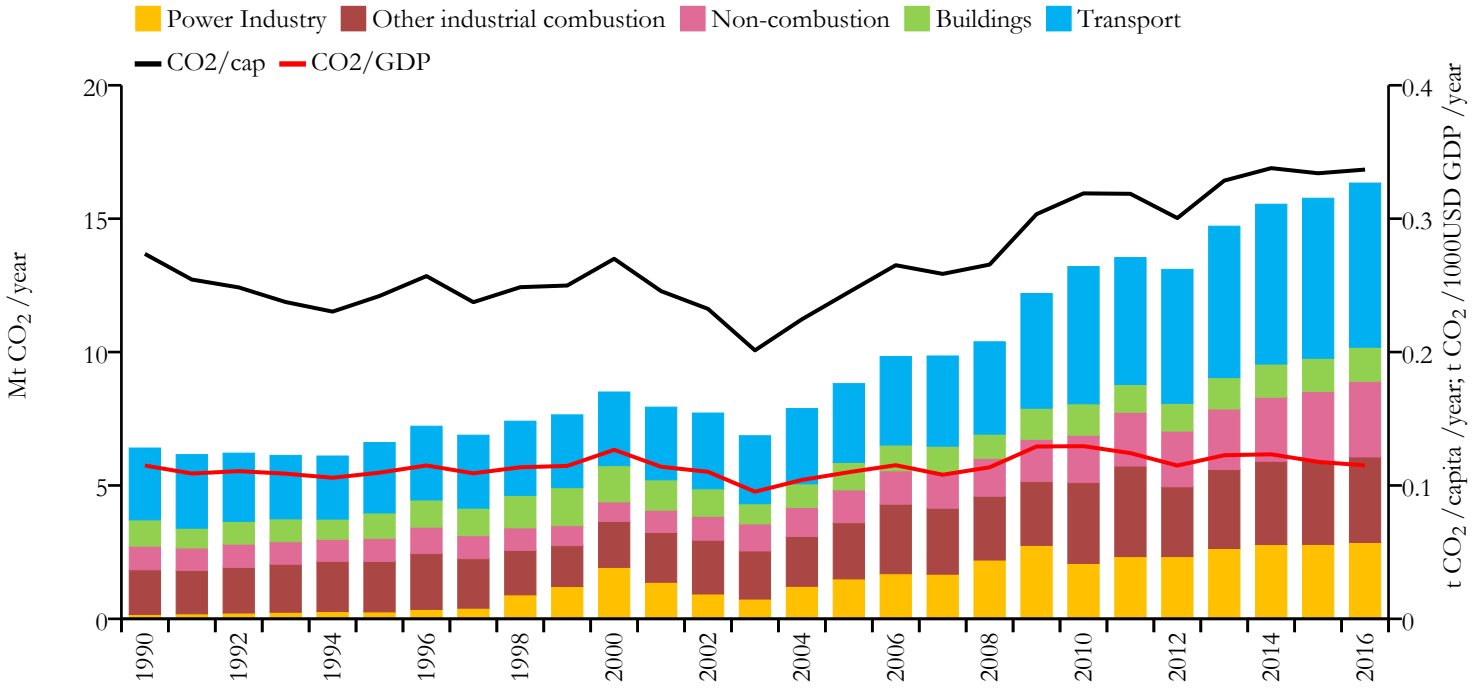
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



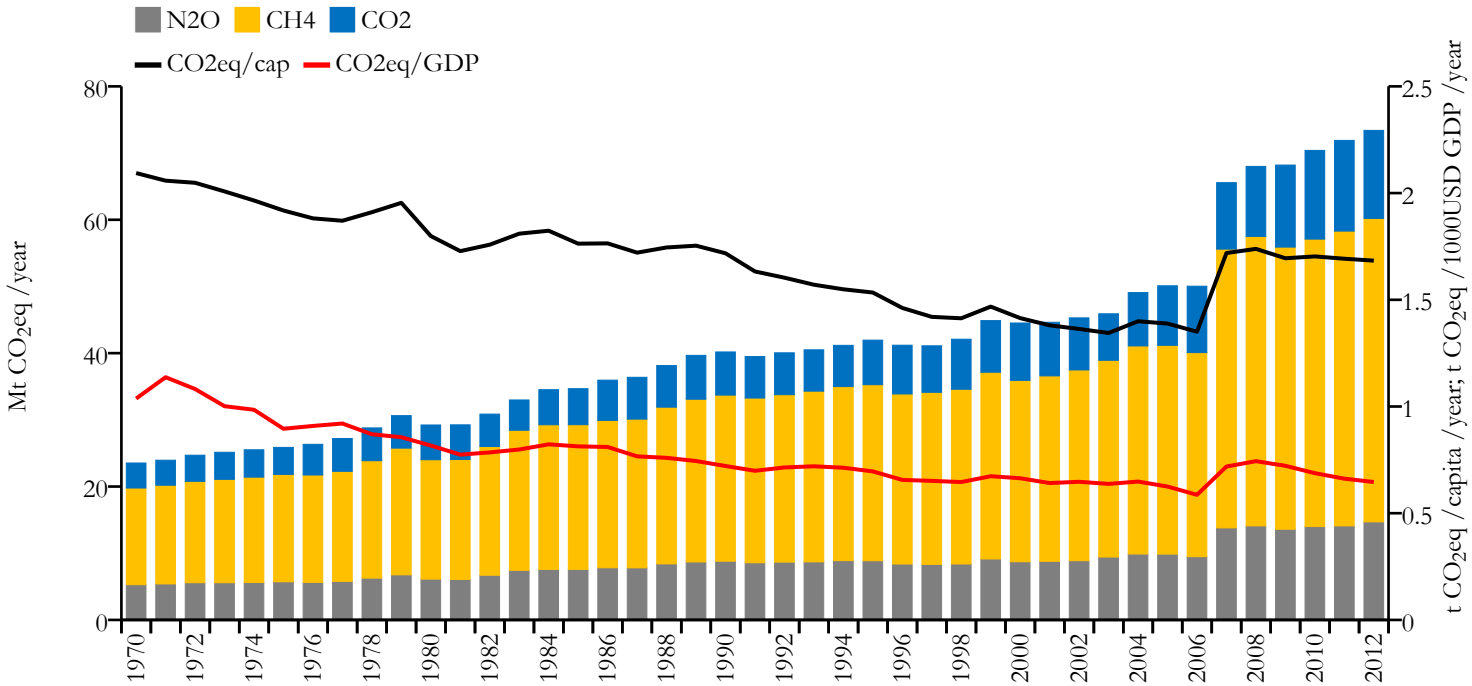
# Kenya

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



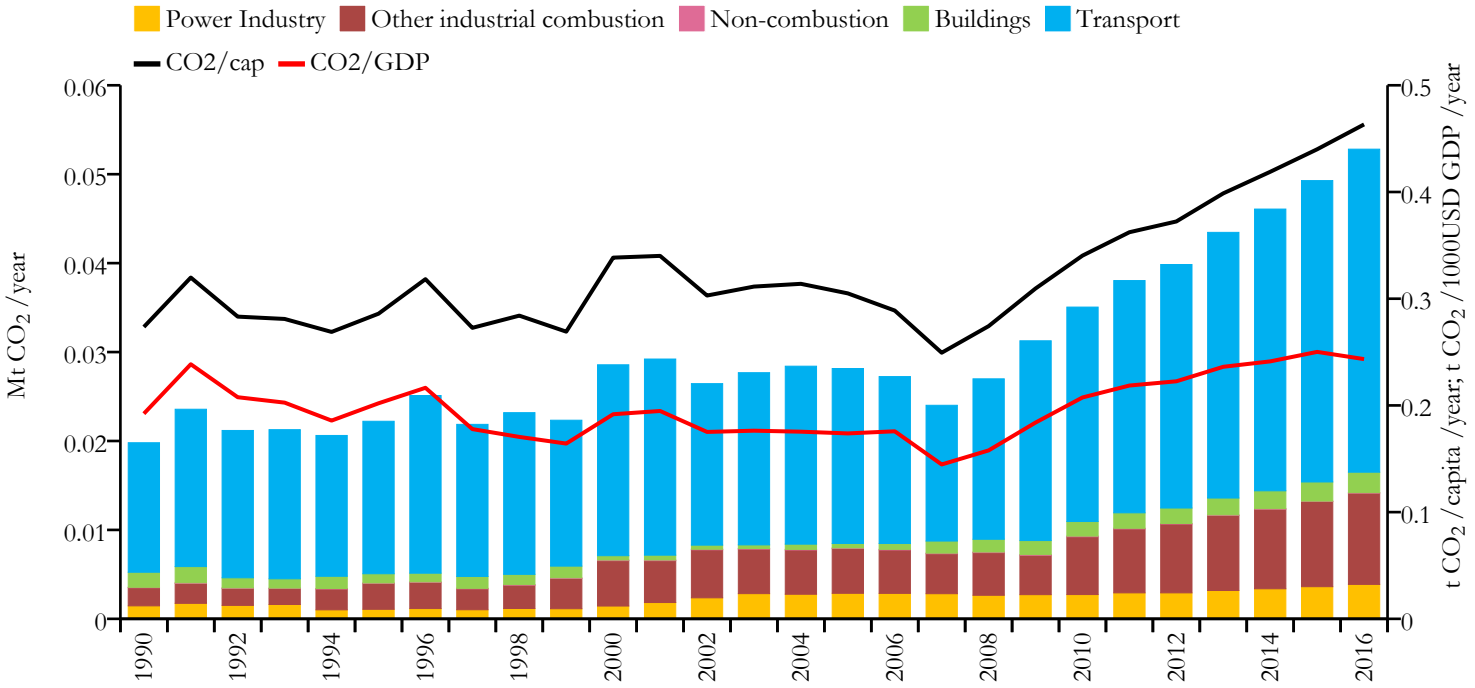

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 16.335 | 0.337 | 0.115 | 48461567 |
| 1990 | 6.402 | 0.274 | 0.115 | 23402507 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Kiribati

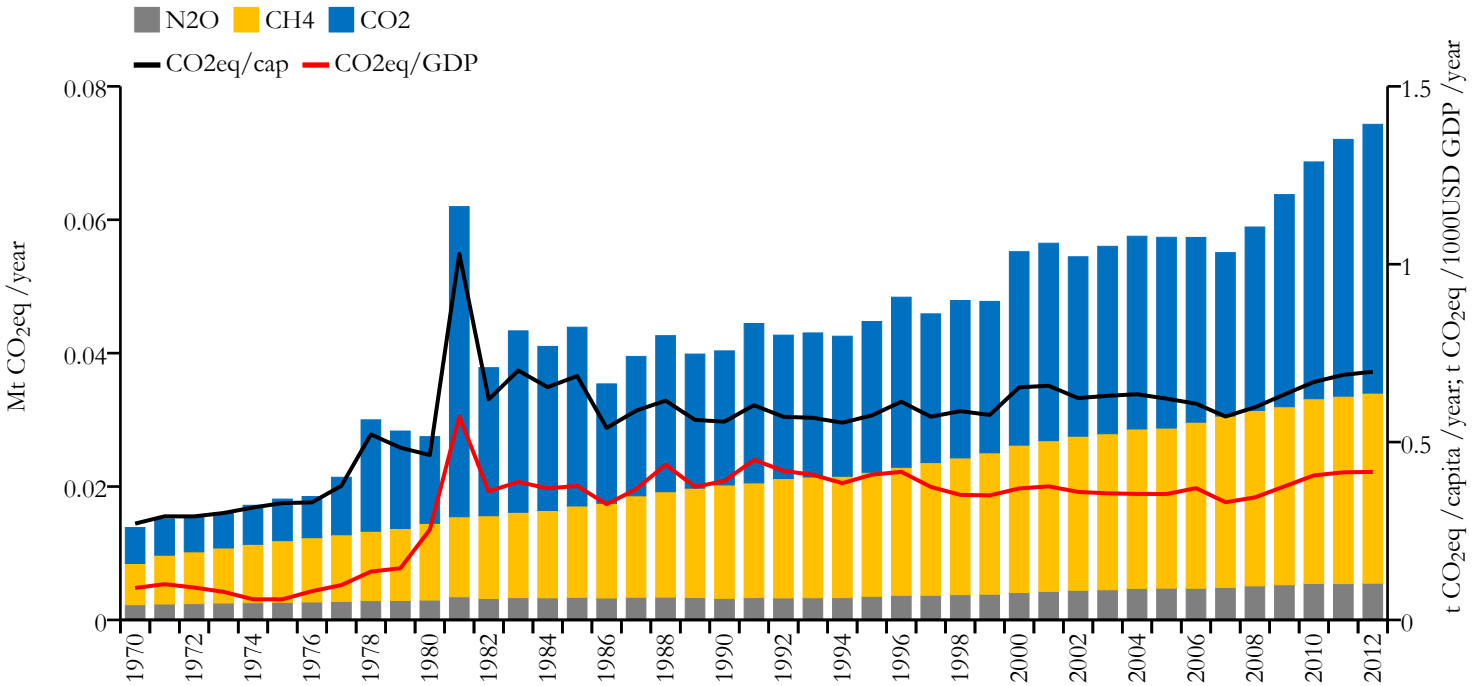
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.053 | 0.463 | 0.243 | 114395 |
| 1990 | 0.020 | 0.274 | 0.192 | 72412 |

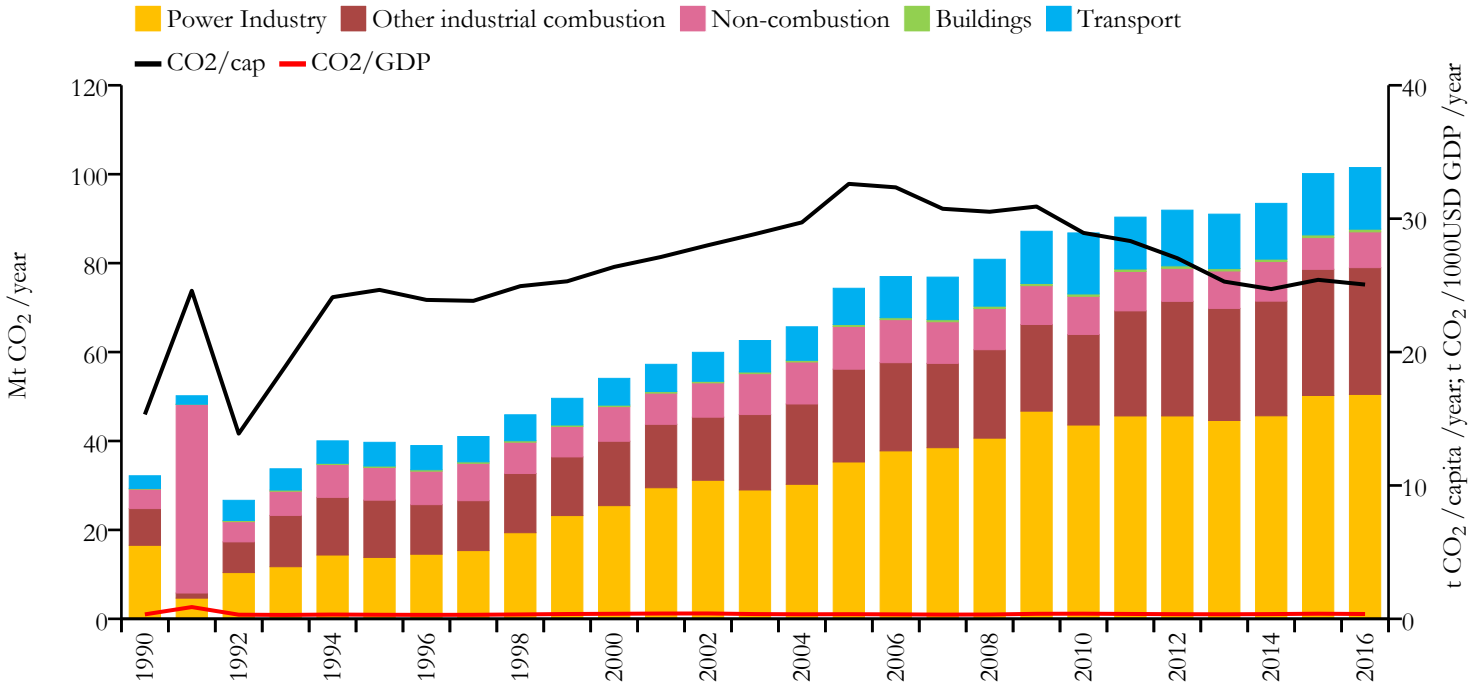
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



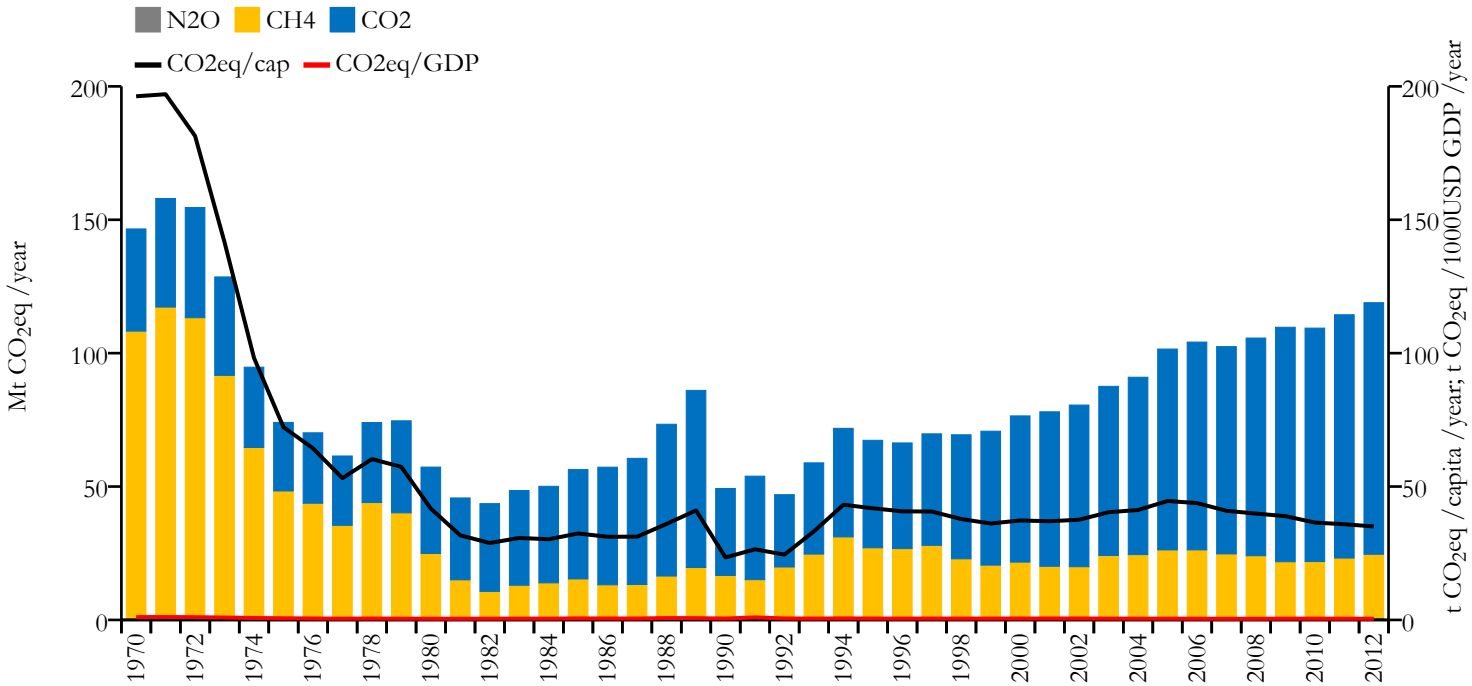
# Kuwait

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



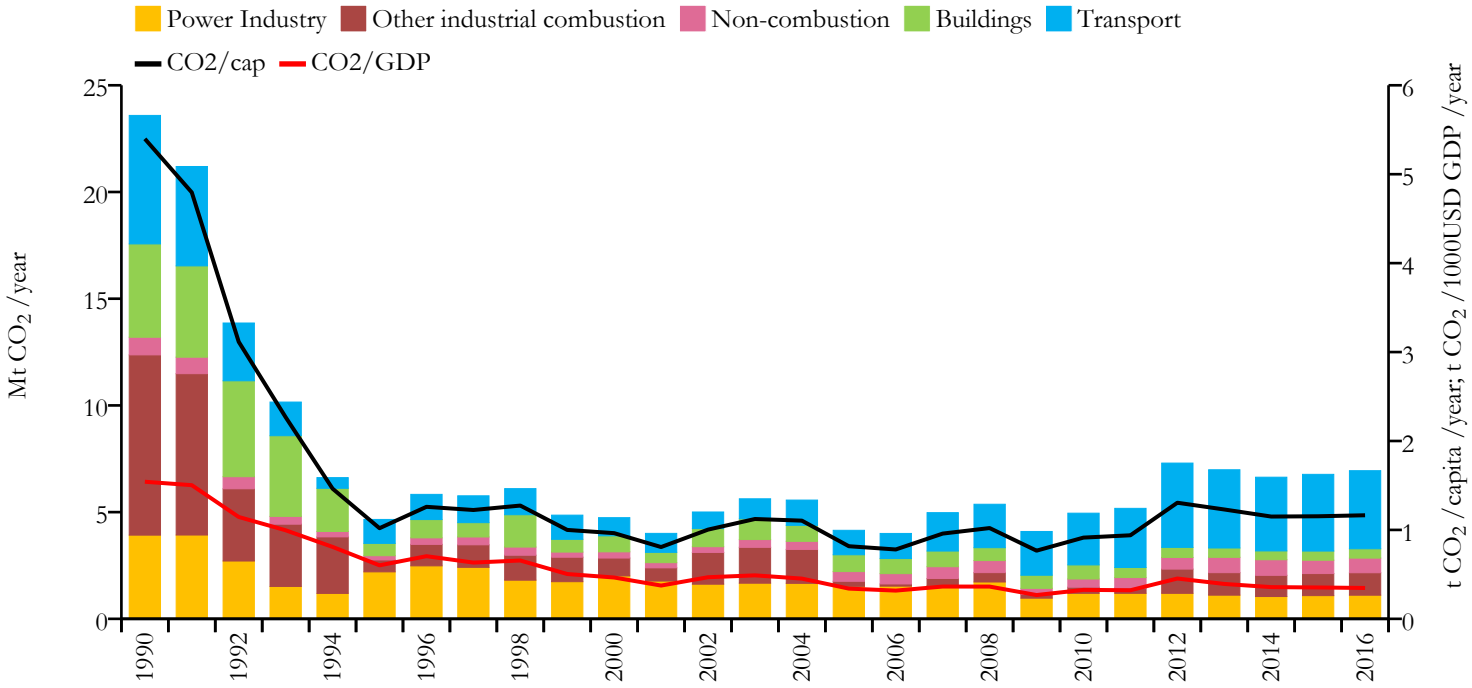

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 101.492 | 25.060 | 0.362 | 4052584 |
| 1990 | 32.178 | 15.323 | 0.334 | 2099615 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Kyrgyzstan

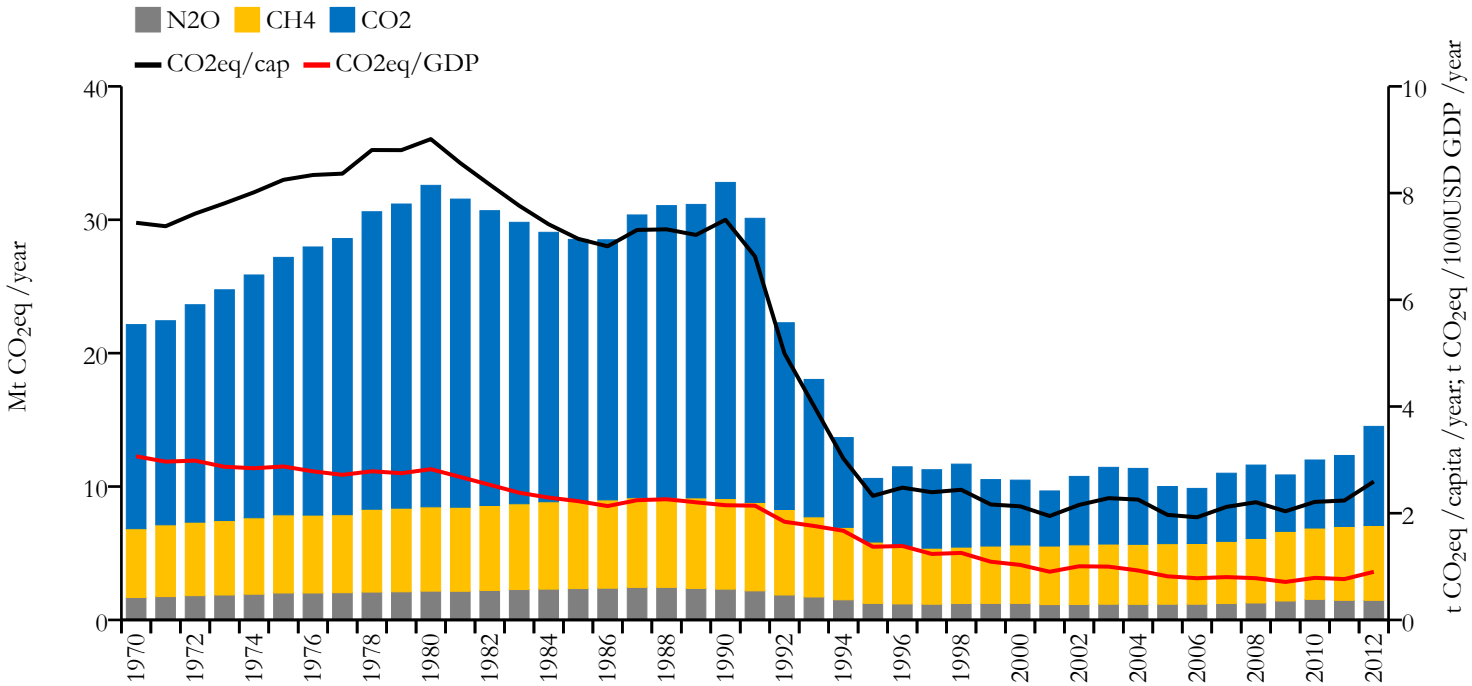
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 6.942 | 1.165 | 0.347 | 5955734 |
| 1990 | 23.588 | 5.398 | 1.542 | 4372890 |

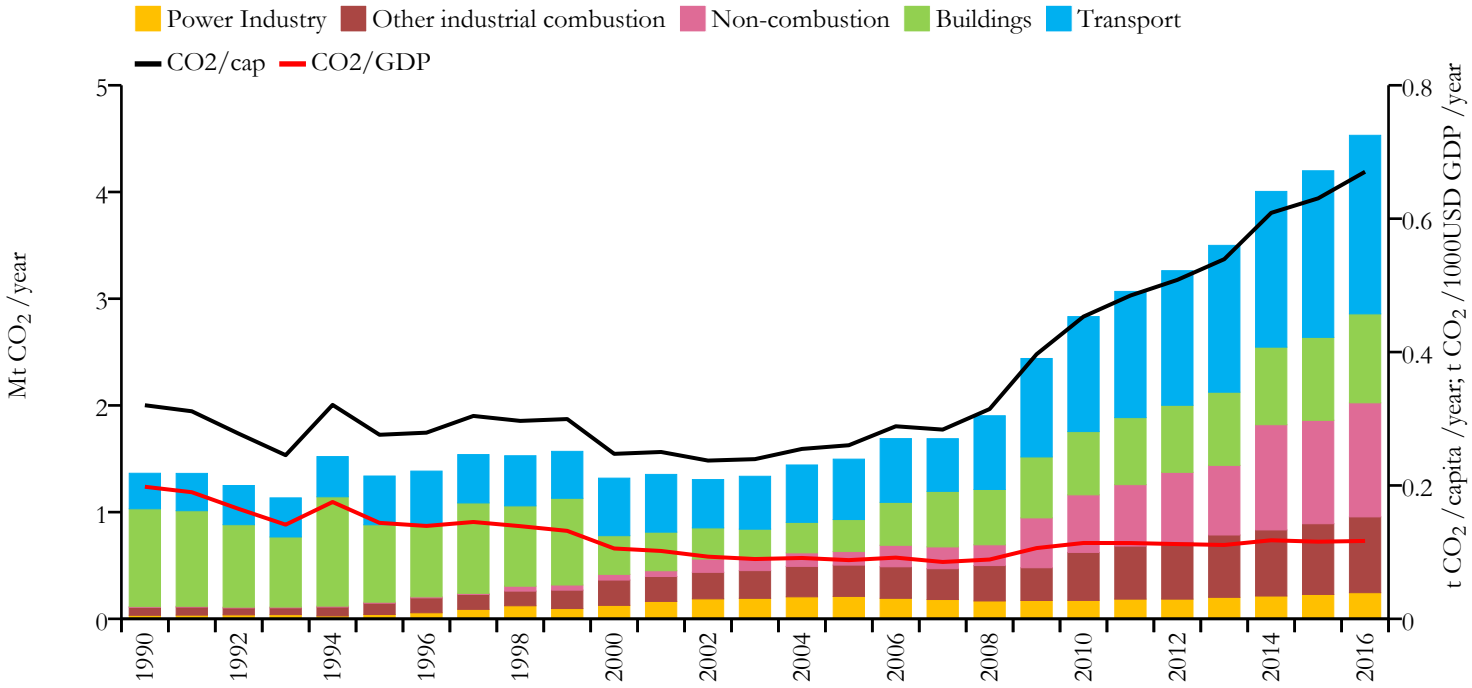
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



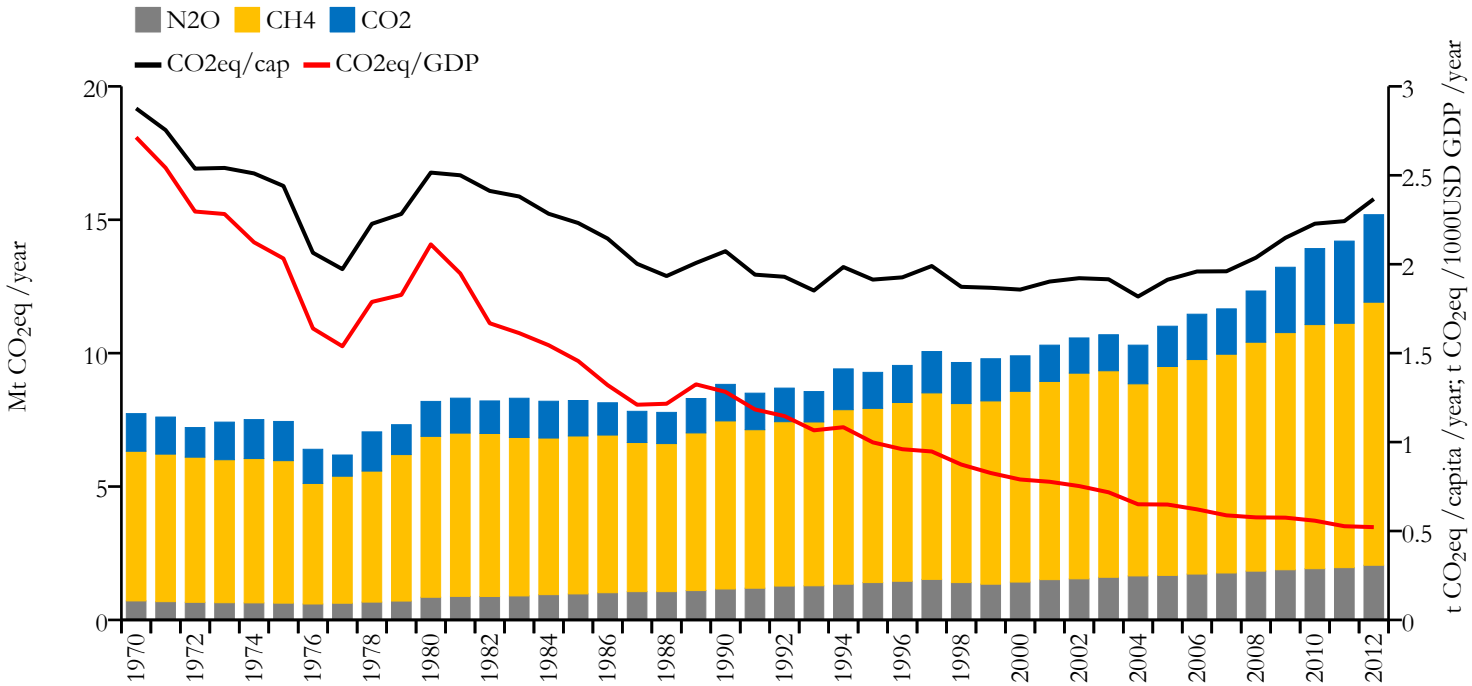
# Laos

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



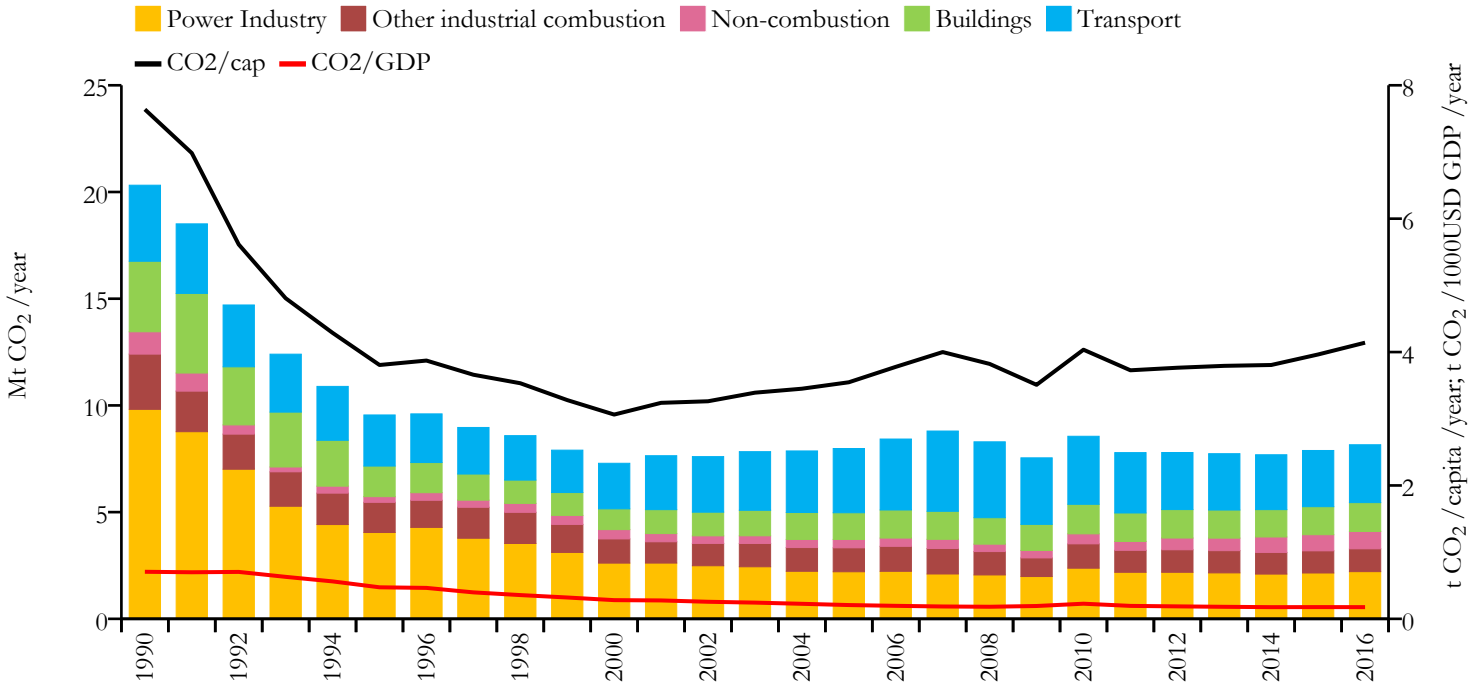

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 4.531 | 0.670 | 0.117 | 6758353 |
| 1990 | 1.364 | 0.320 | 0.198 | 4258472 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Latvia

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 8.157 | 4.141 | 0.175 | 1970530 |
| 1990 | 20.319 | 7.639 | 0.706 | 2664432 |

EDGAR
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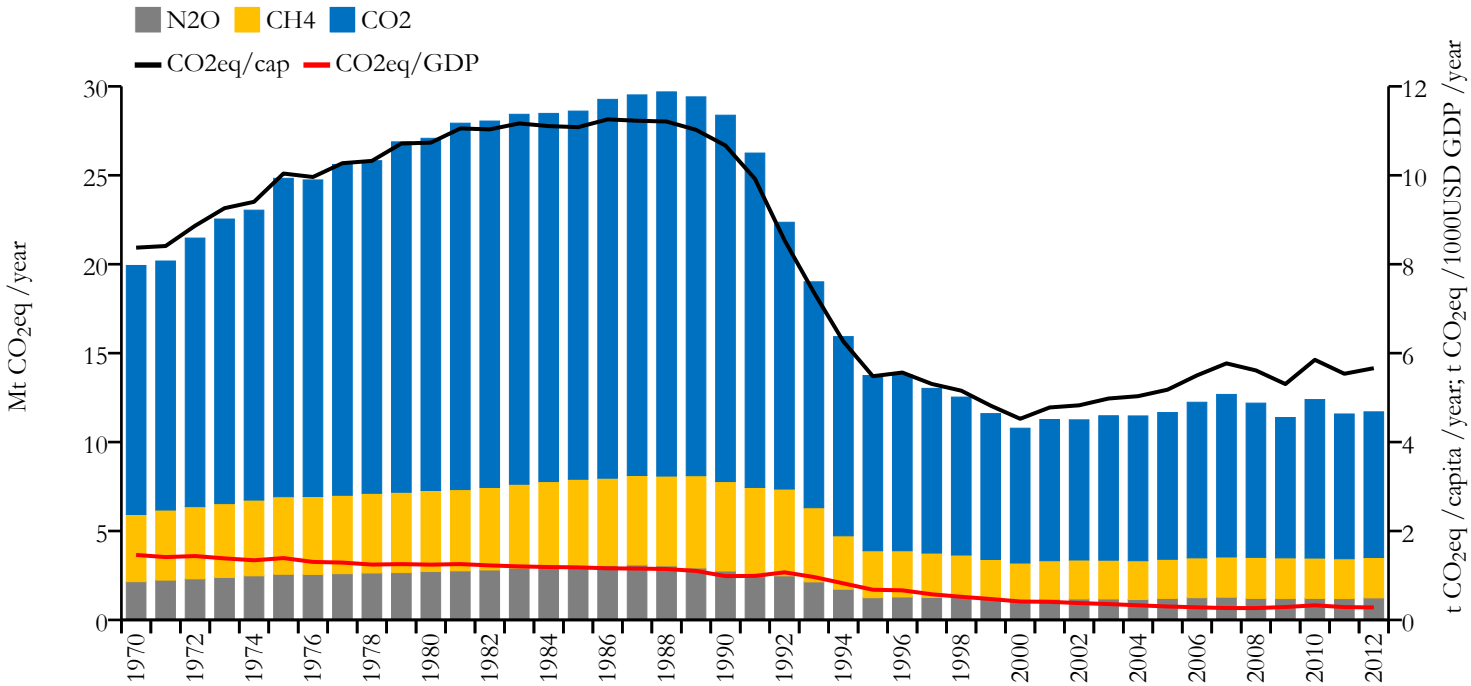
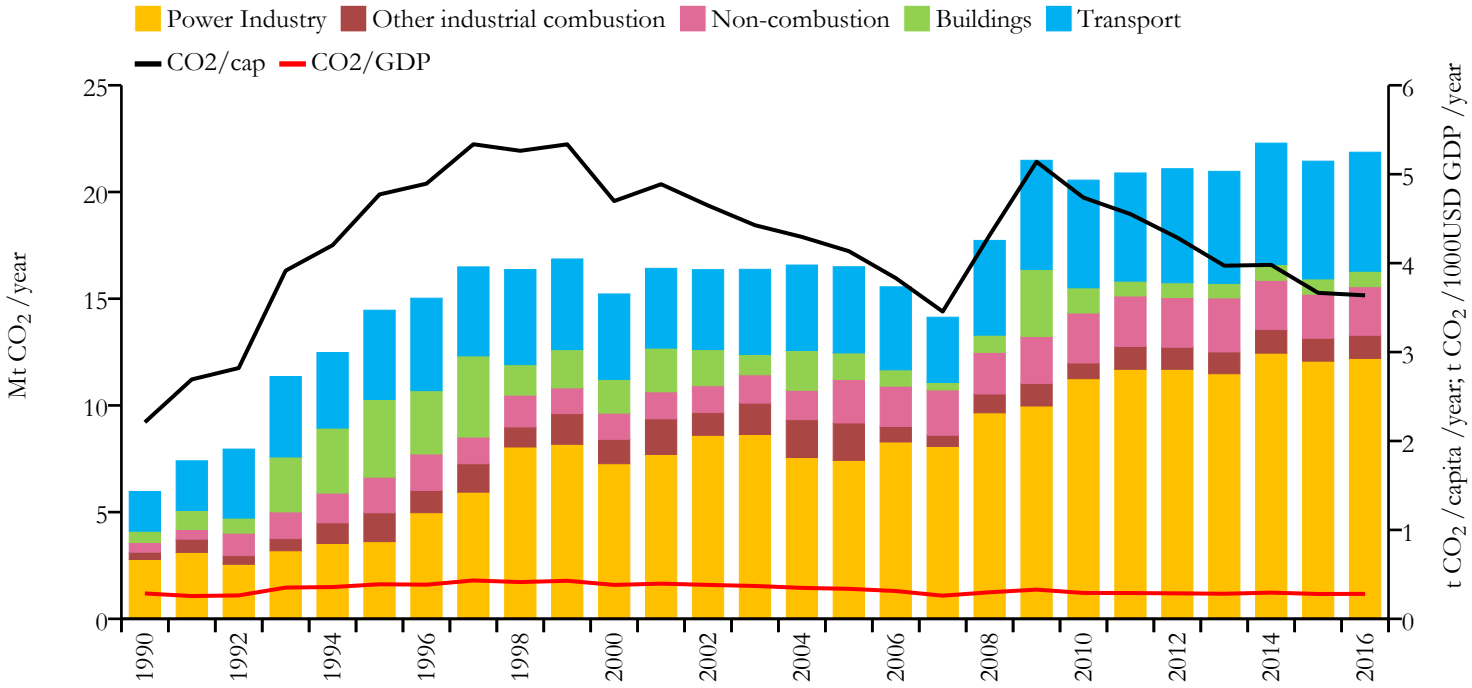
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Lebanon

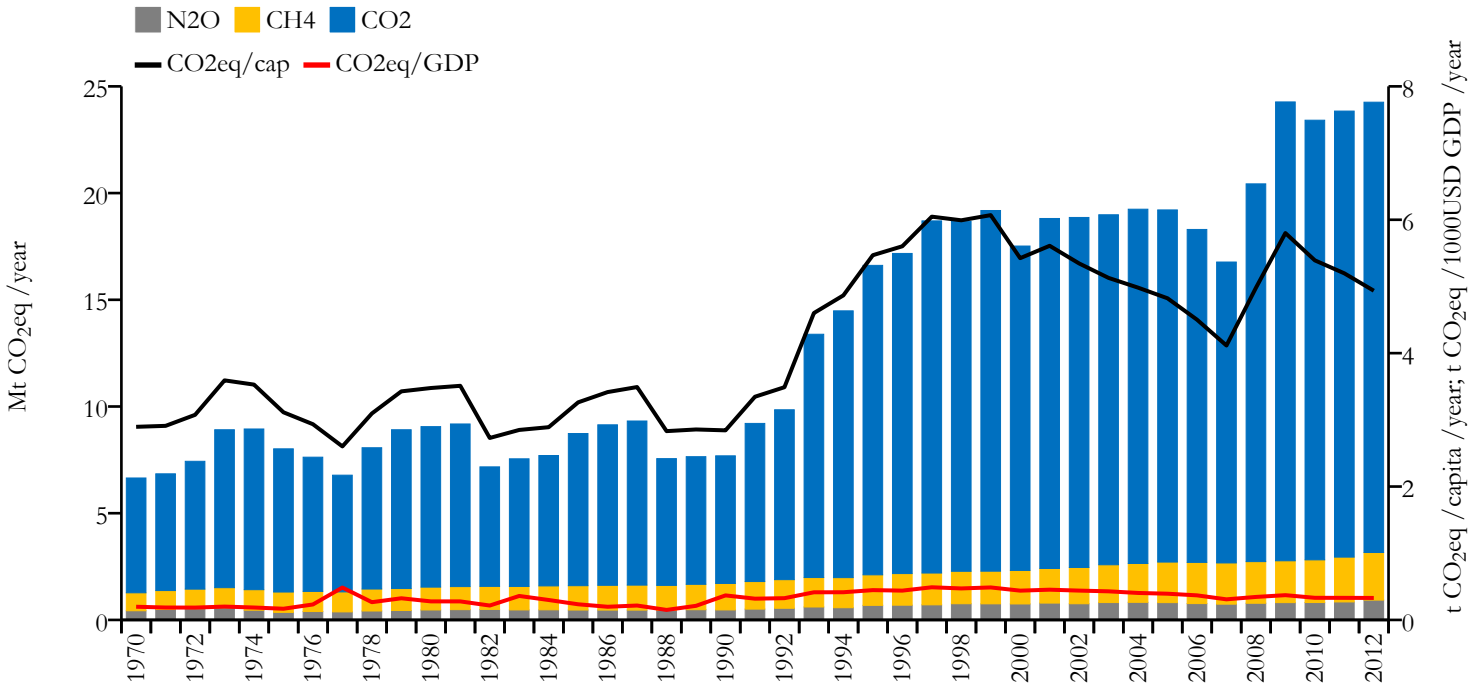
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



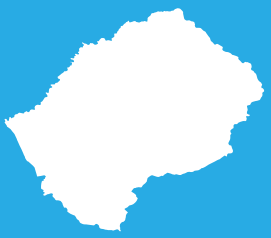

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 21.863 | 3.638 | 0.281 | 6006668 |
| 1990 | 5.969 | 2.211 | 0.286 | 2703016 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

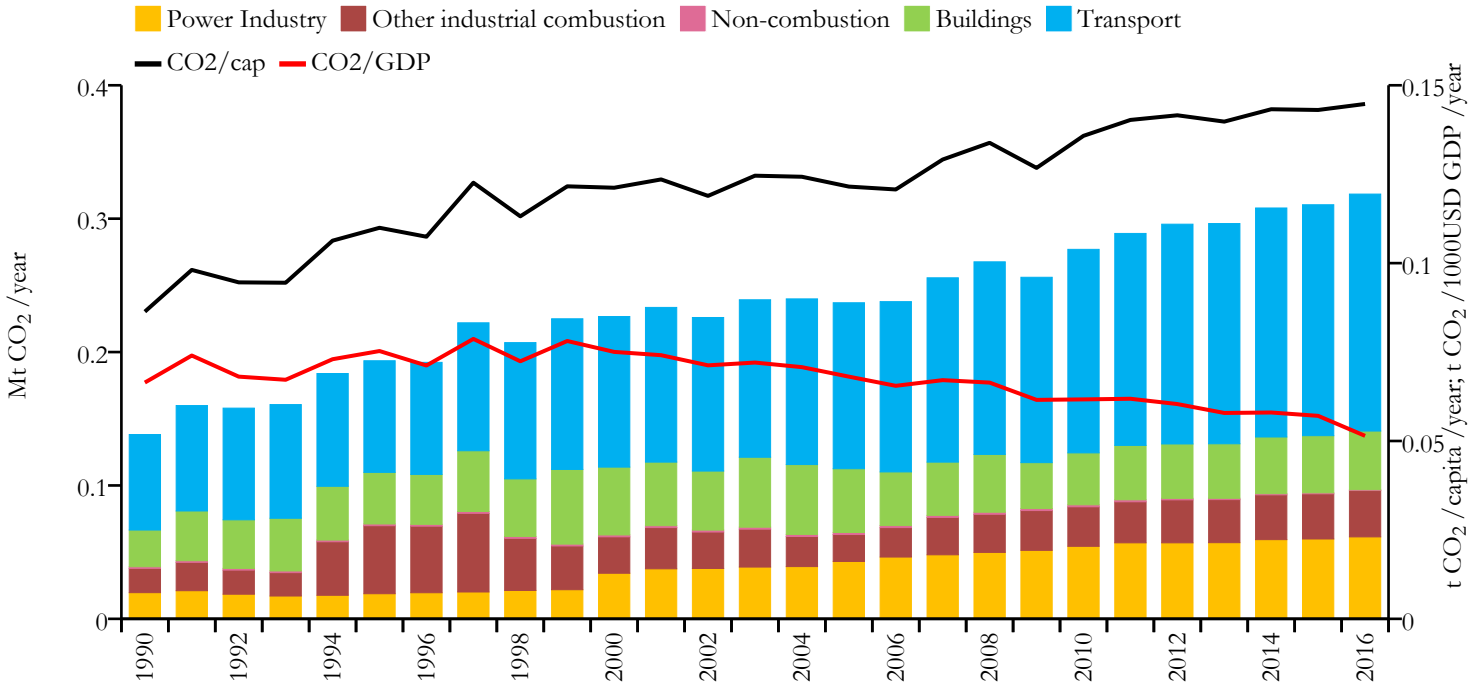
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Lesotho



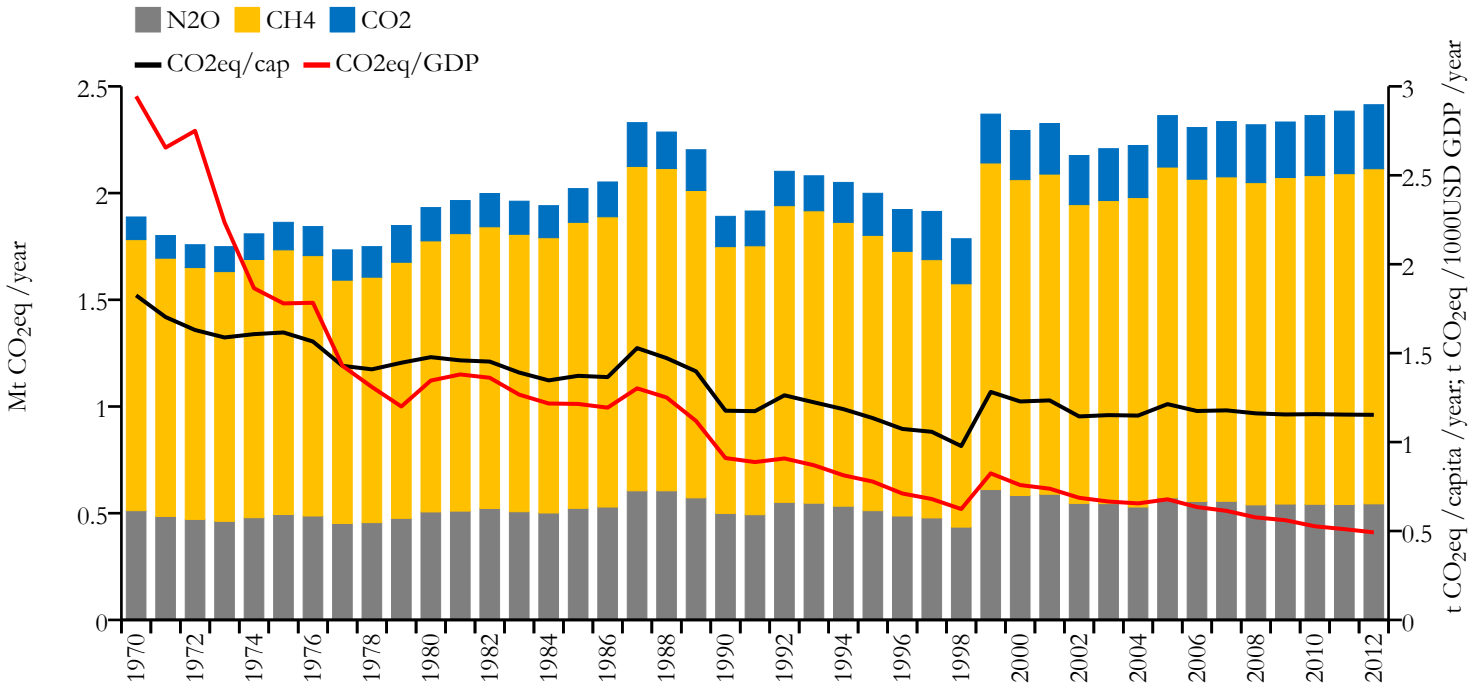
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.318 | 0.145 | 0.051 | 2203821 |
| 1990 | 0.138 | 0.086 | 0.066 | 1603938 |

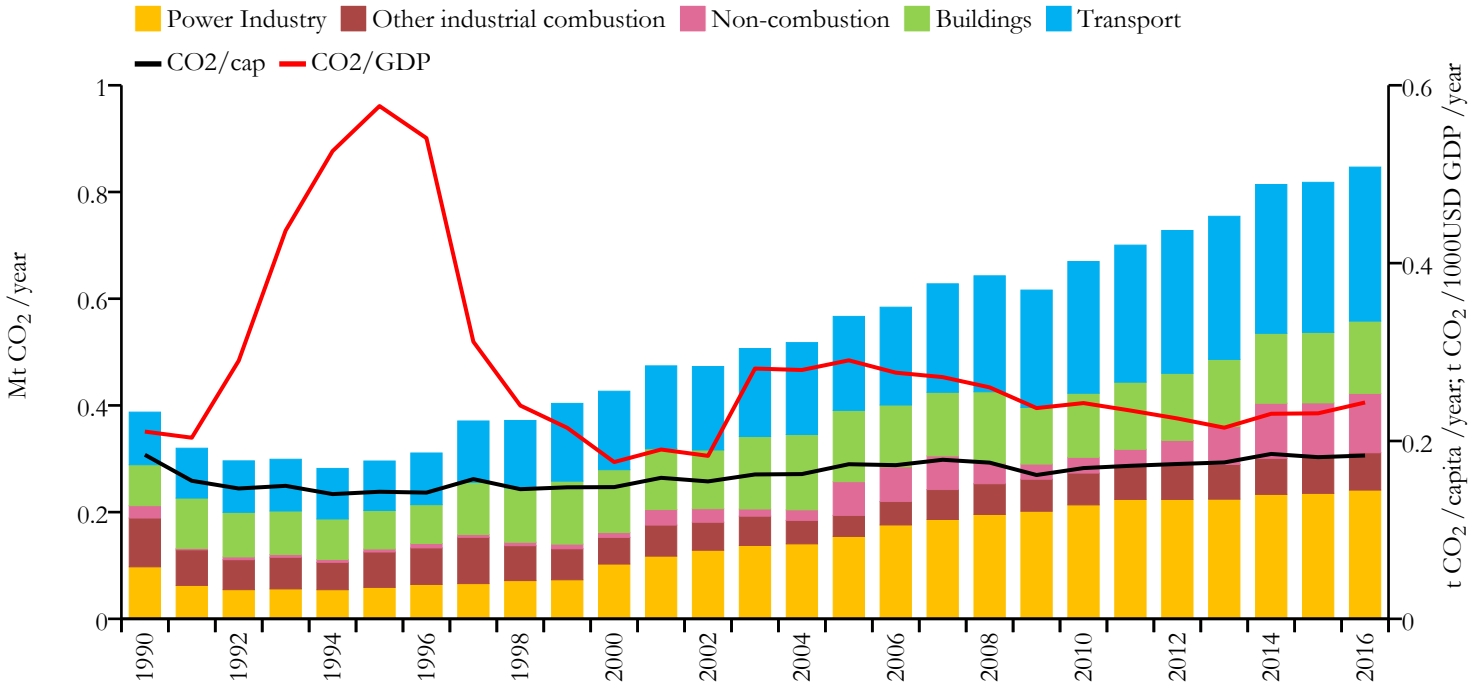
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Liberia

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.847 | 0.184 | 0.243 | 4613823 |
| 1990 | 0.387 | 0.184 | 0.211 | 2097232 |

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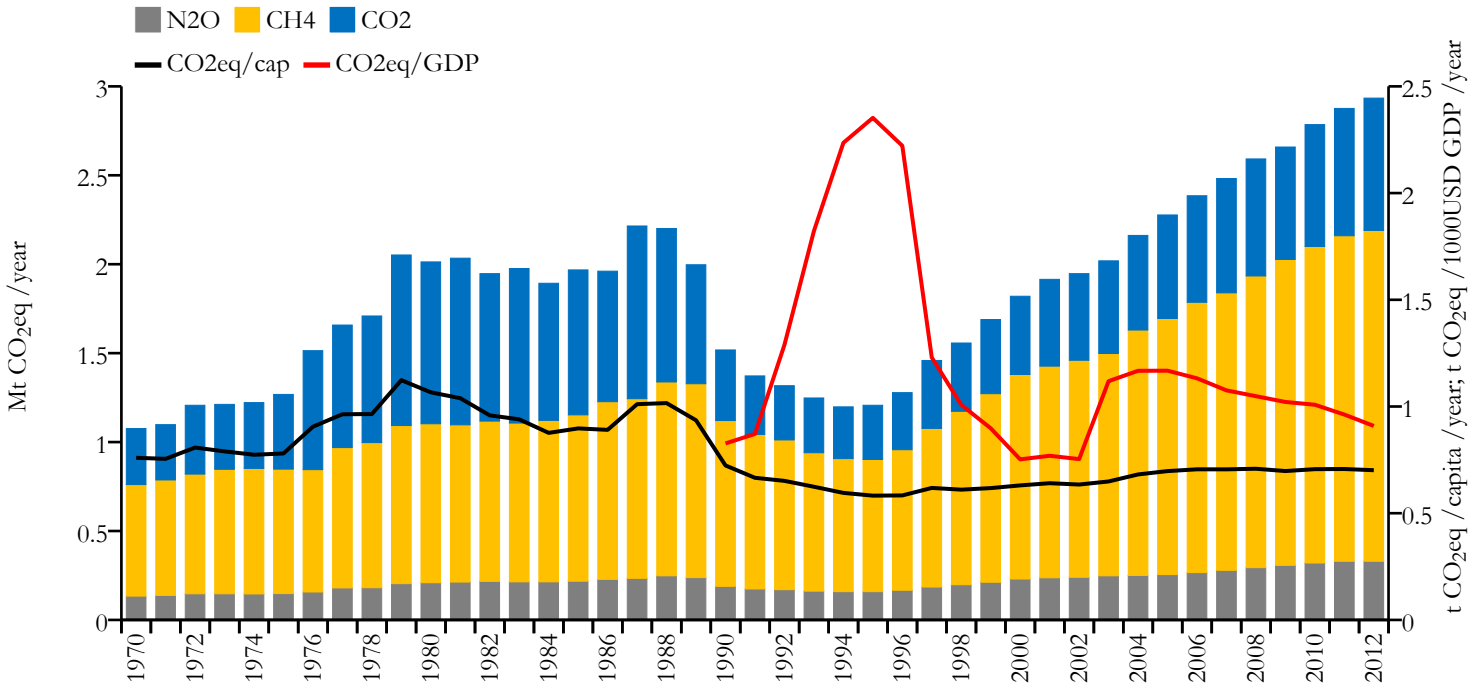
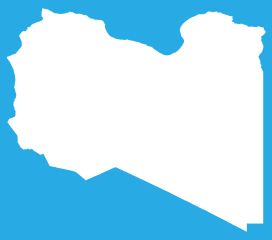
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

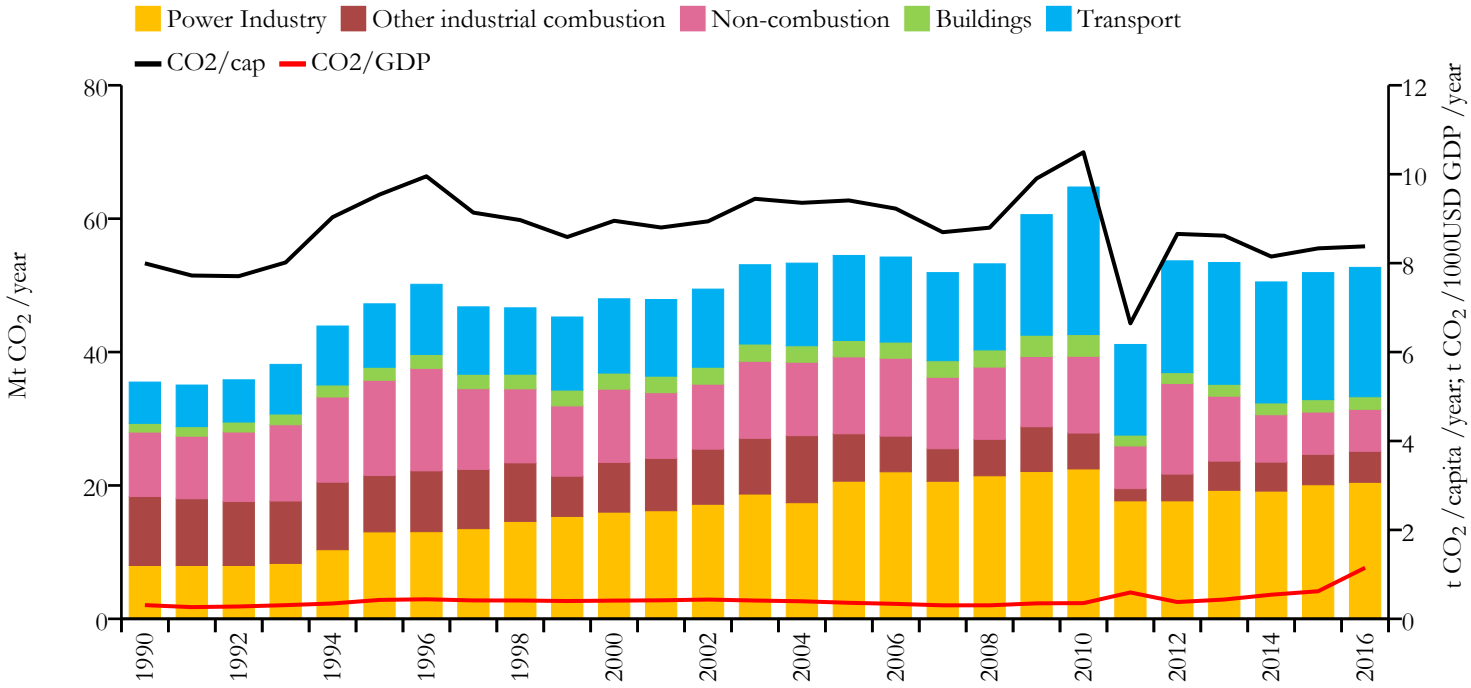
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Libya



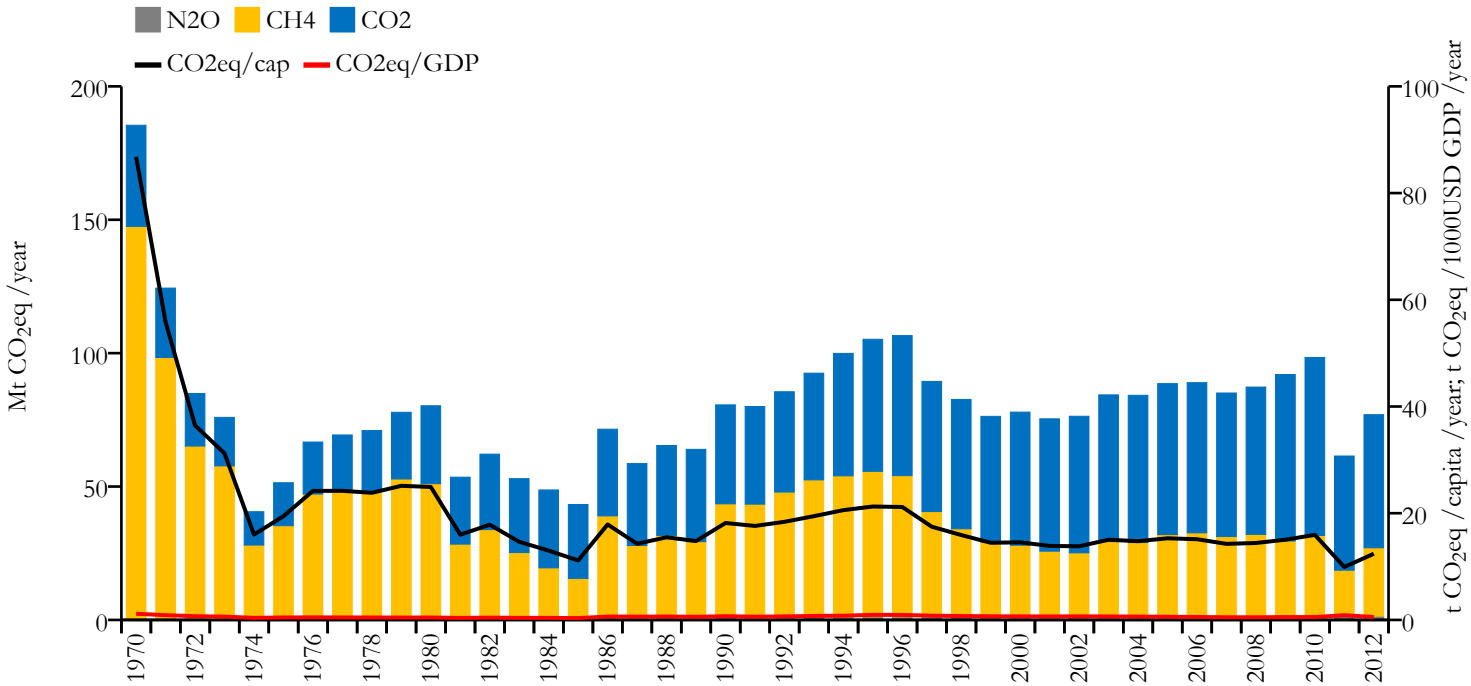
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 52.696 | 8.378 | 1.148 | 6293253 |
| 1990 | 35.500 | 7.996 | 0.309 | 4436661 |

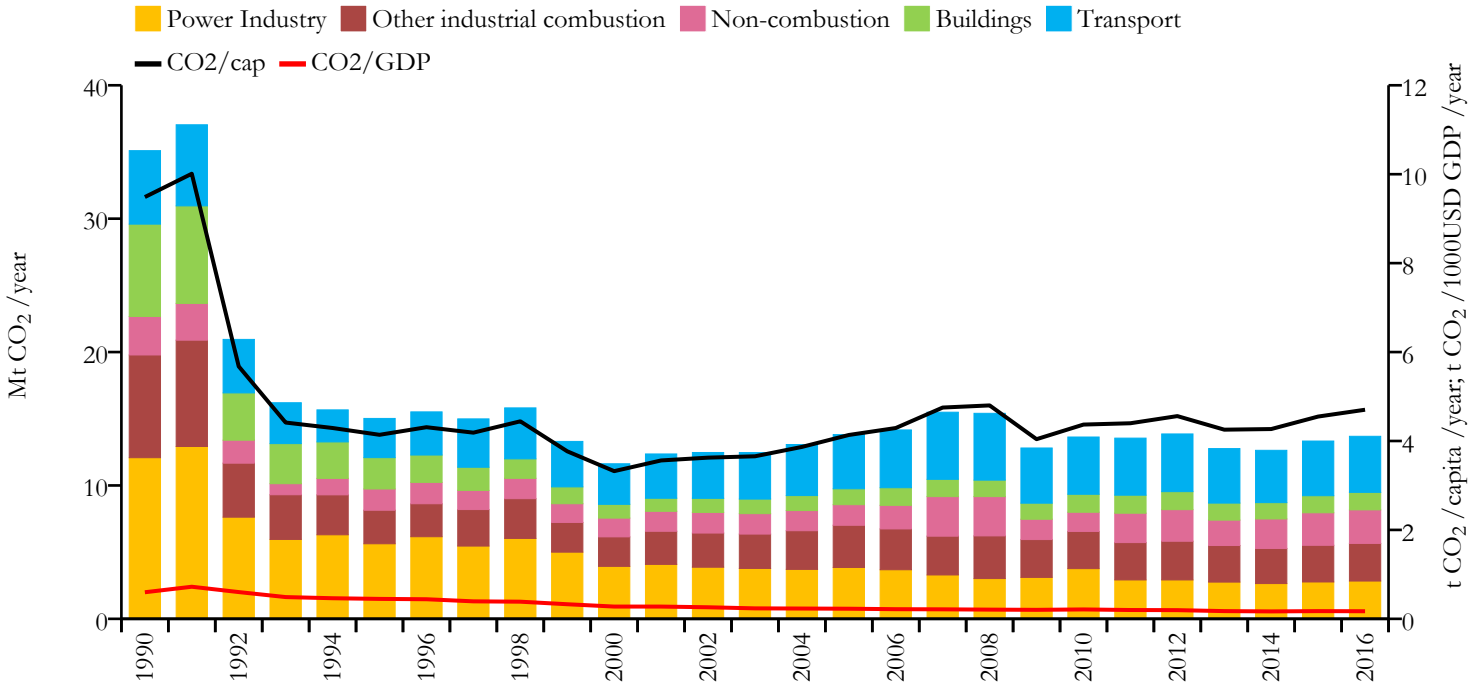
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Lithuania

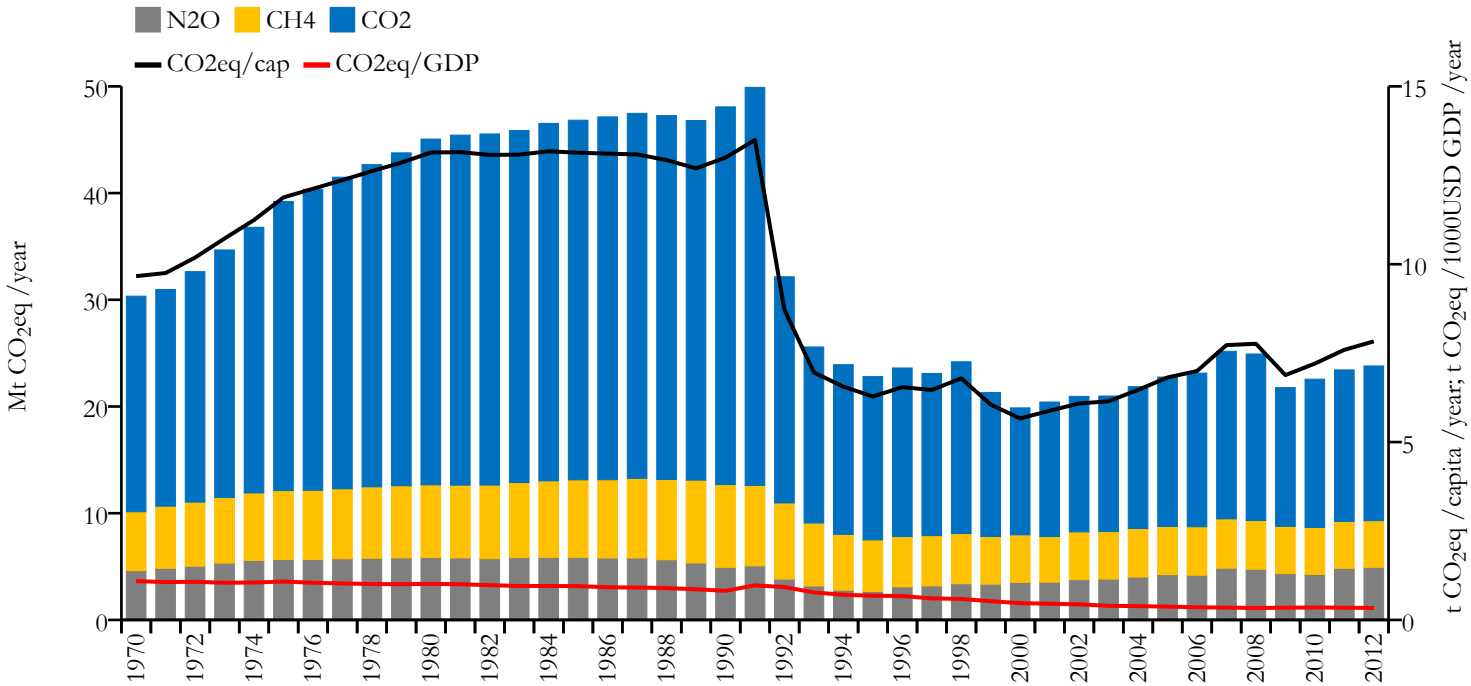
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



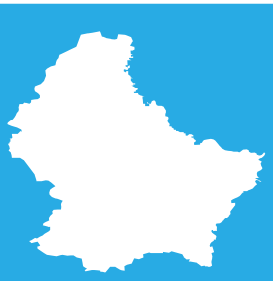

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 13.685 | 4.703 | 0.171 | 2908249 |
| 1990 | 35.099 | 9.486 | 0.598 | 3696034 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

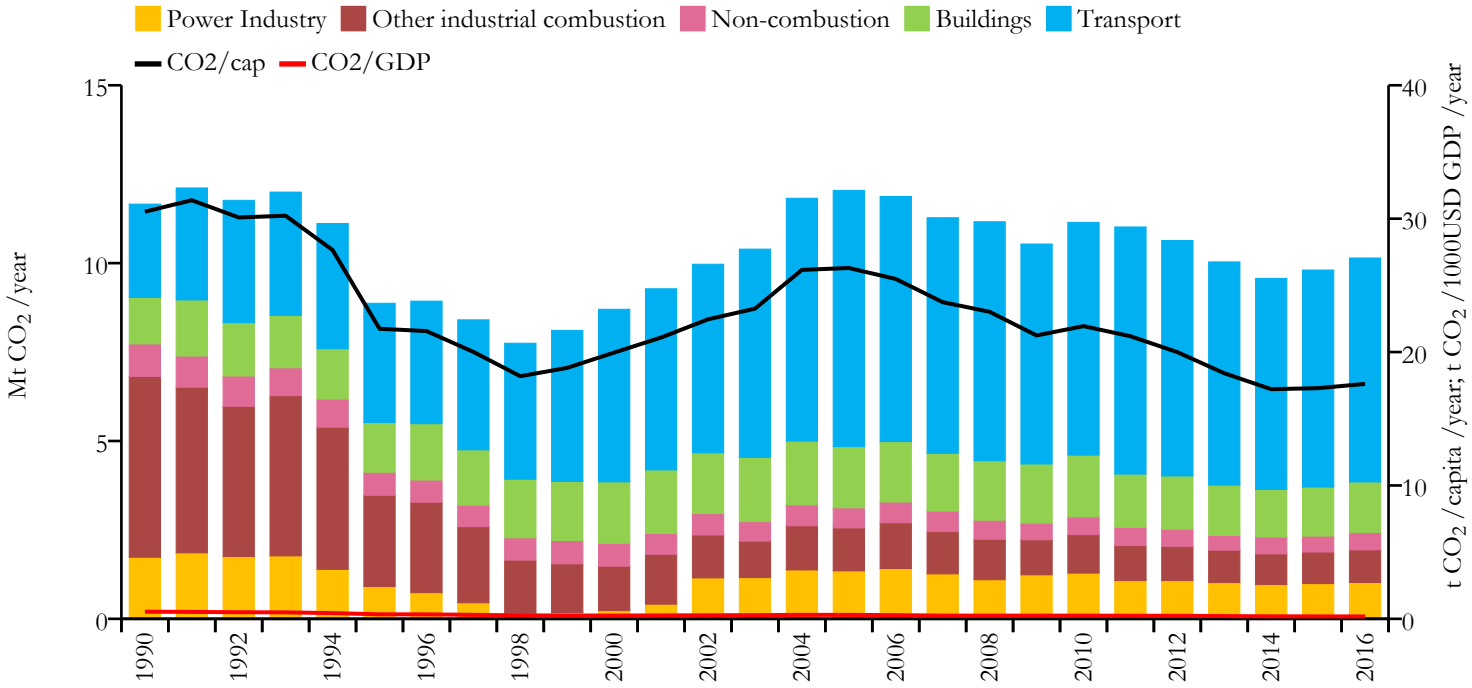
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Luxembourg



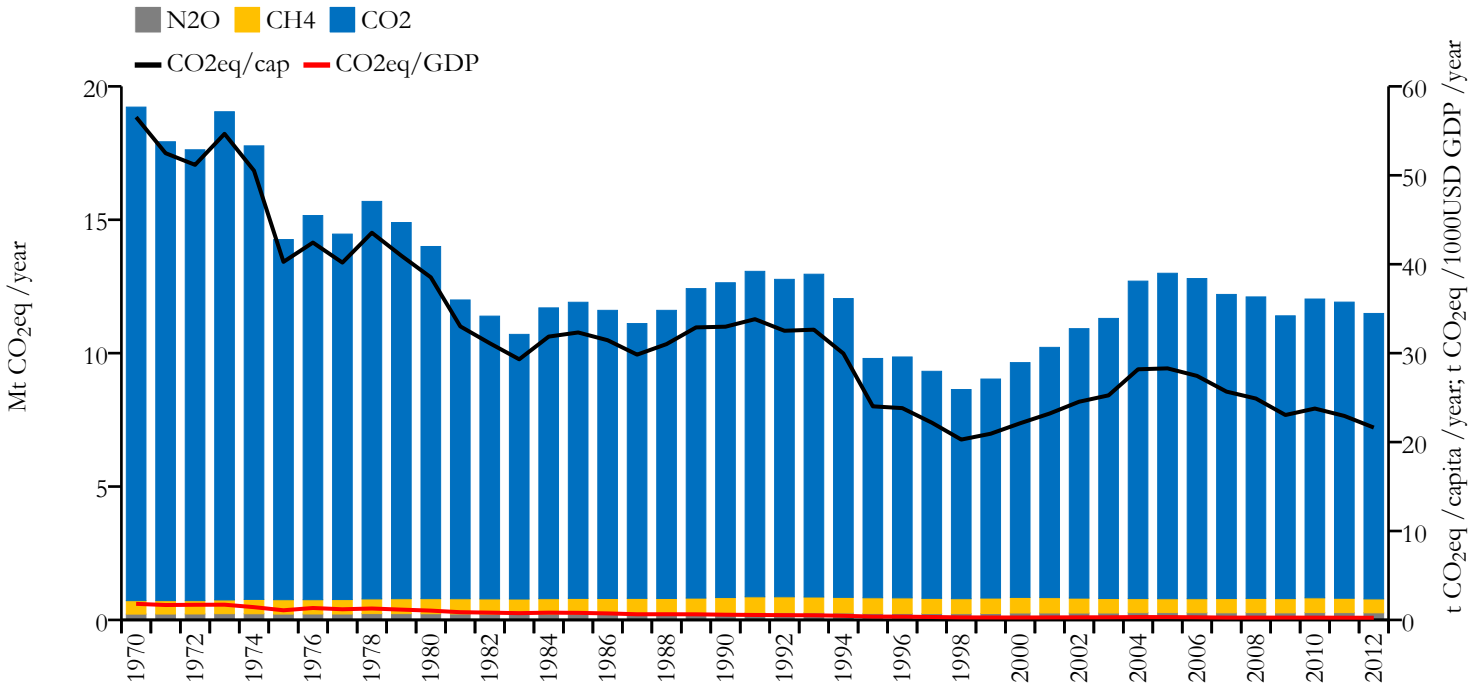
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 10.145 | 17.612 | 0.179 | 575747 |
| 1990 | 11.660 | 30.522 | 0.540 | 381791 |

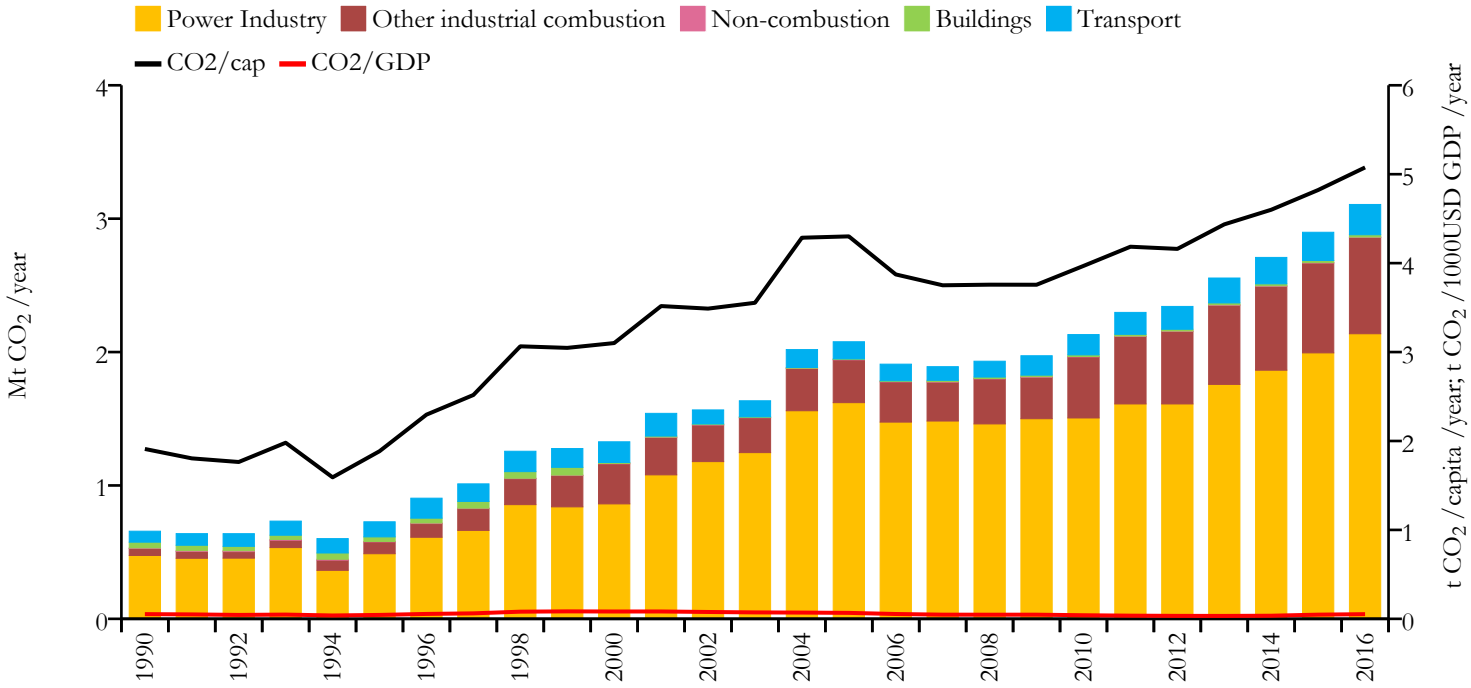
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Macao

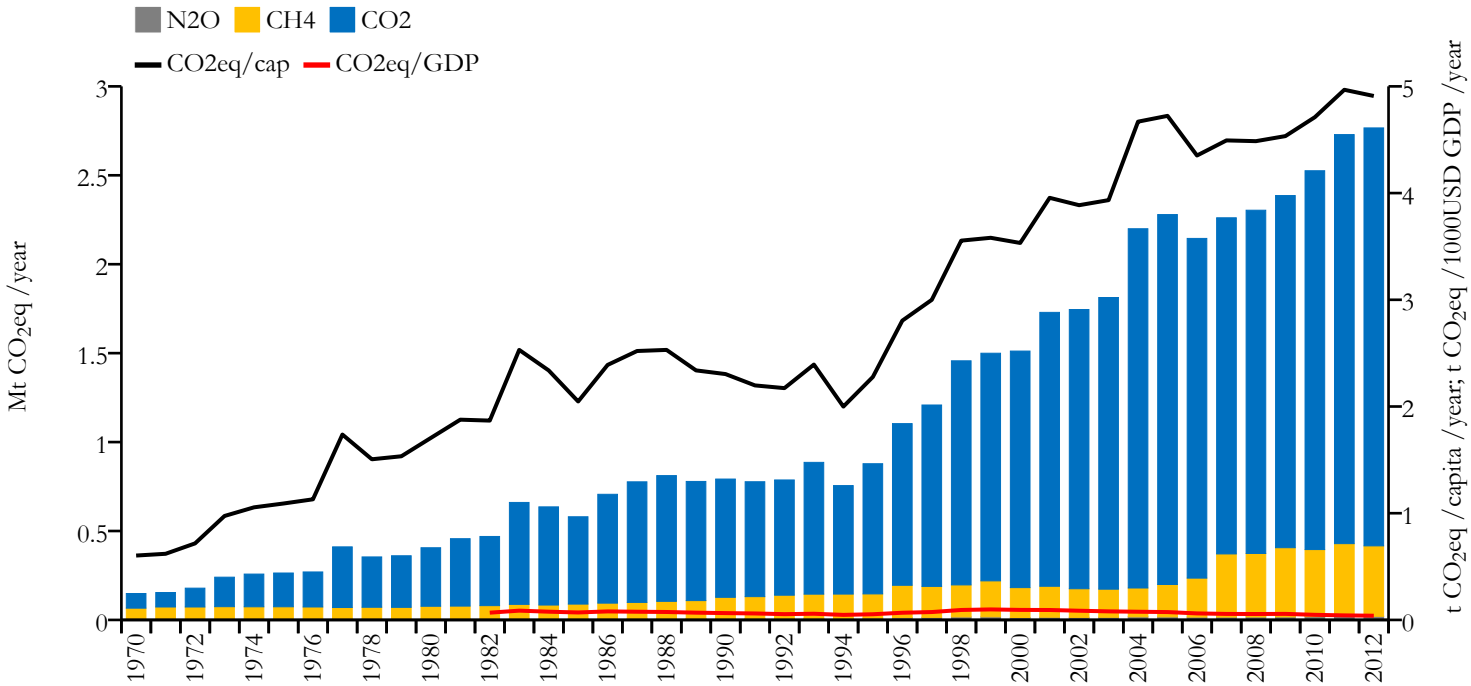
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 3.107 | 5.076 | 0.053 | 612167 |
| 1990 | 0.657 | 1.910 | 0.053 | 343935 |

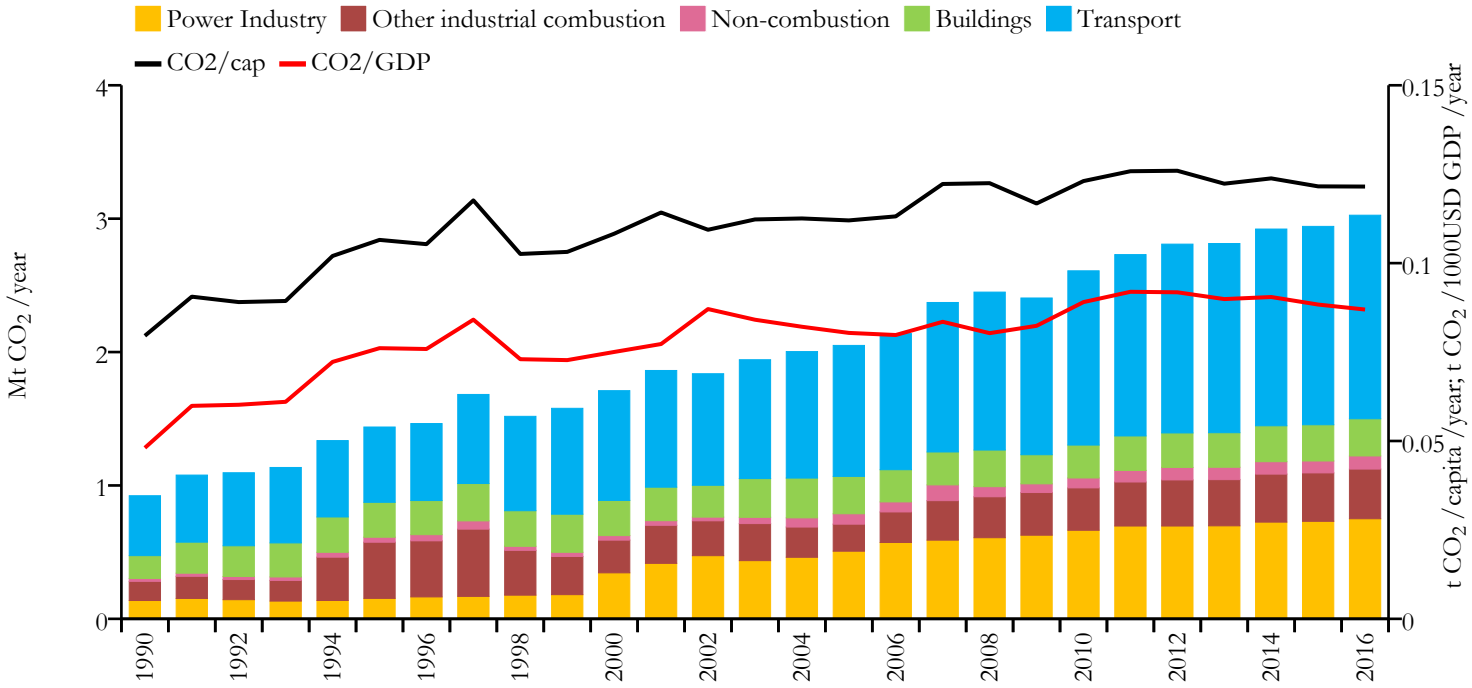
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Madagascar

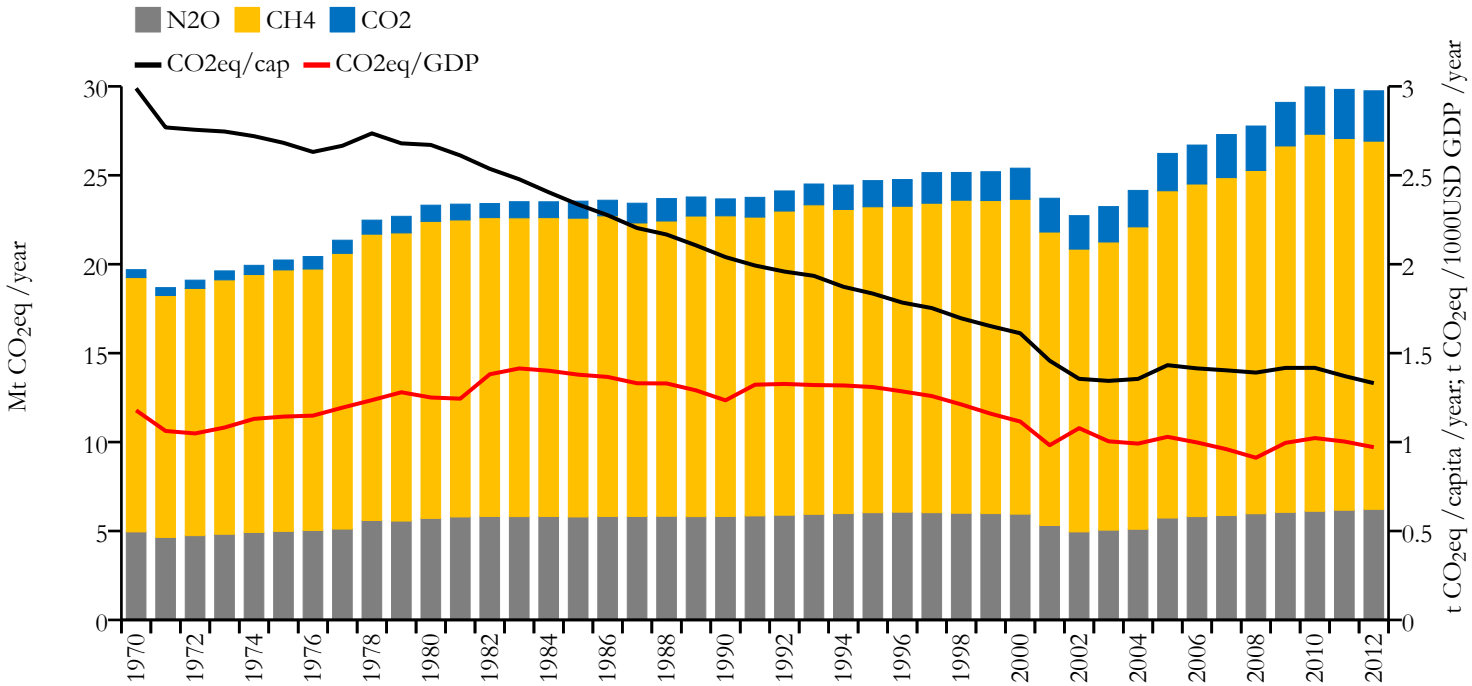
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 3.026 | 0.122 | 0.087 | 24894551 |
| 1990 | 0.923 | 0.080 | 0.048 | 11598633 |

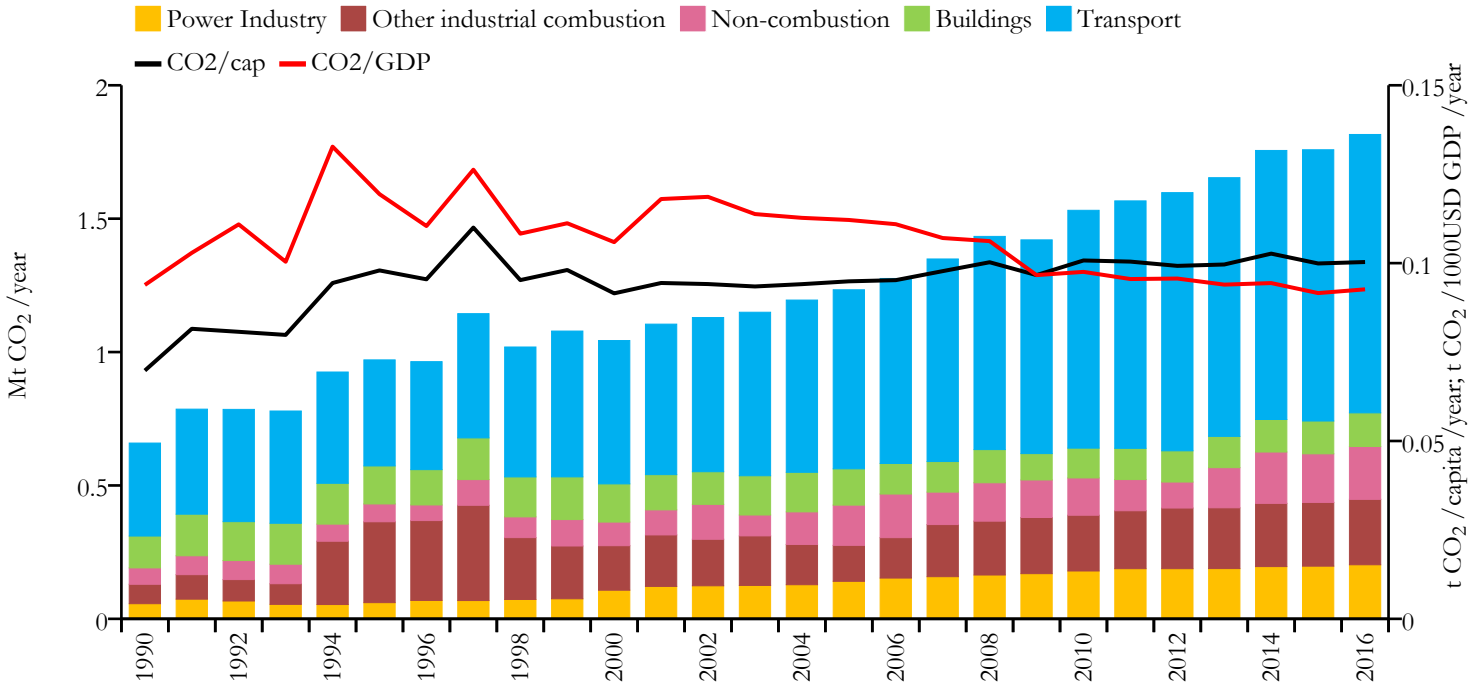
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



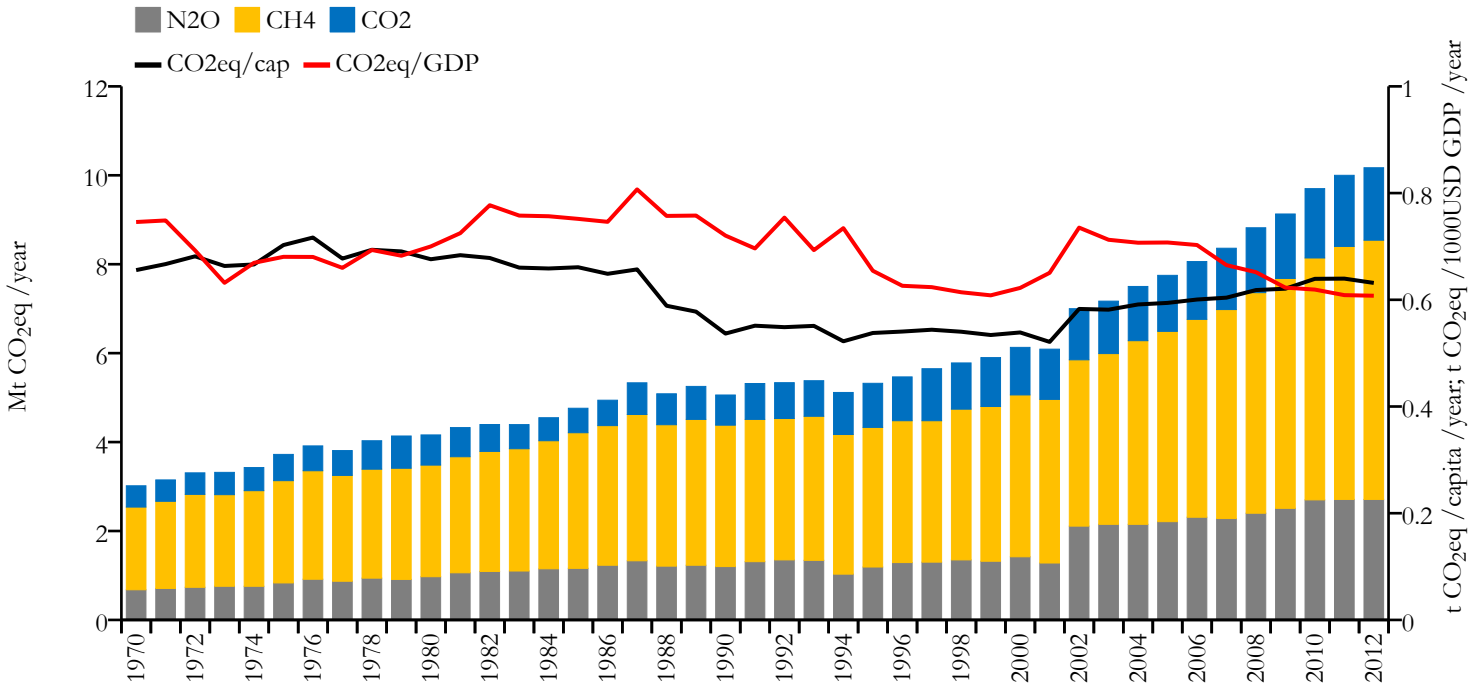
# Malawi

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



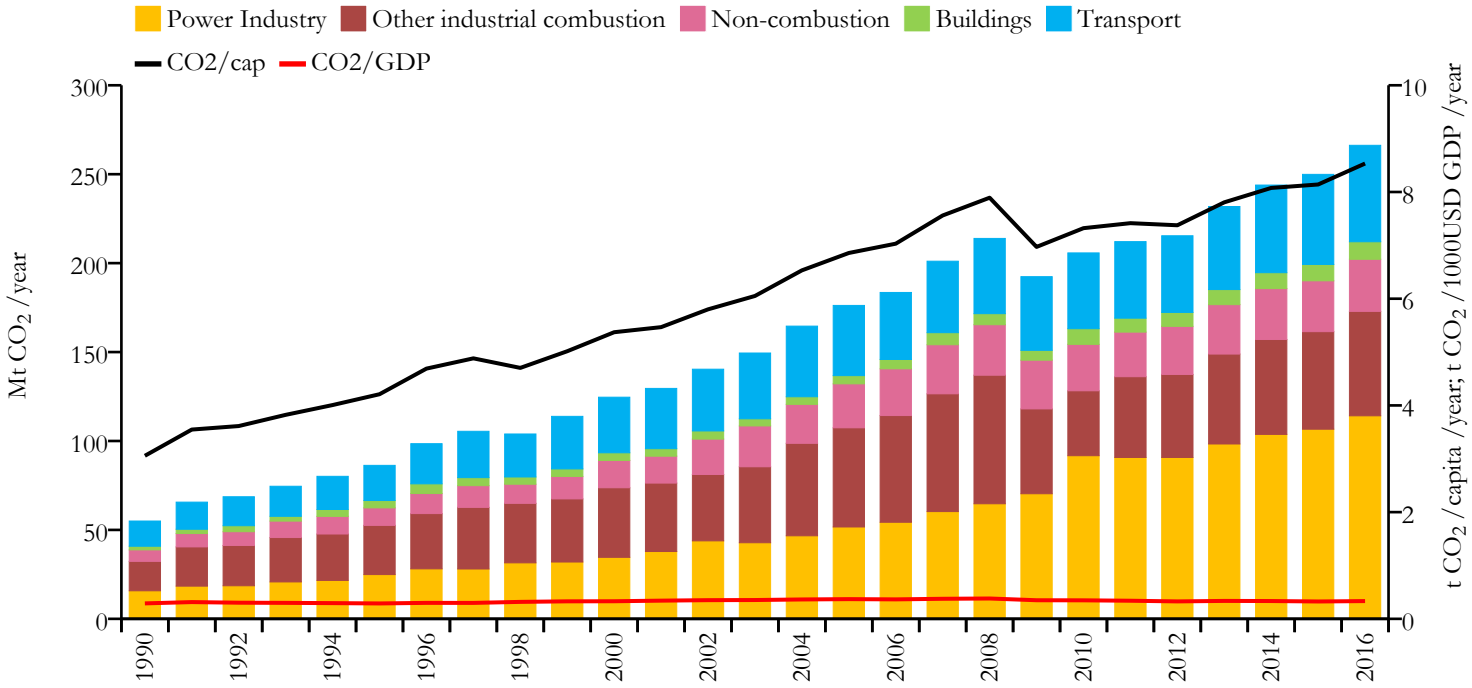

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 1.816 | 0.100 | 0.093 | 18091575 |
| 1990 | 0.659 | 0.070 | 0.094 | 9437553 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



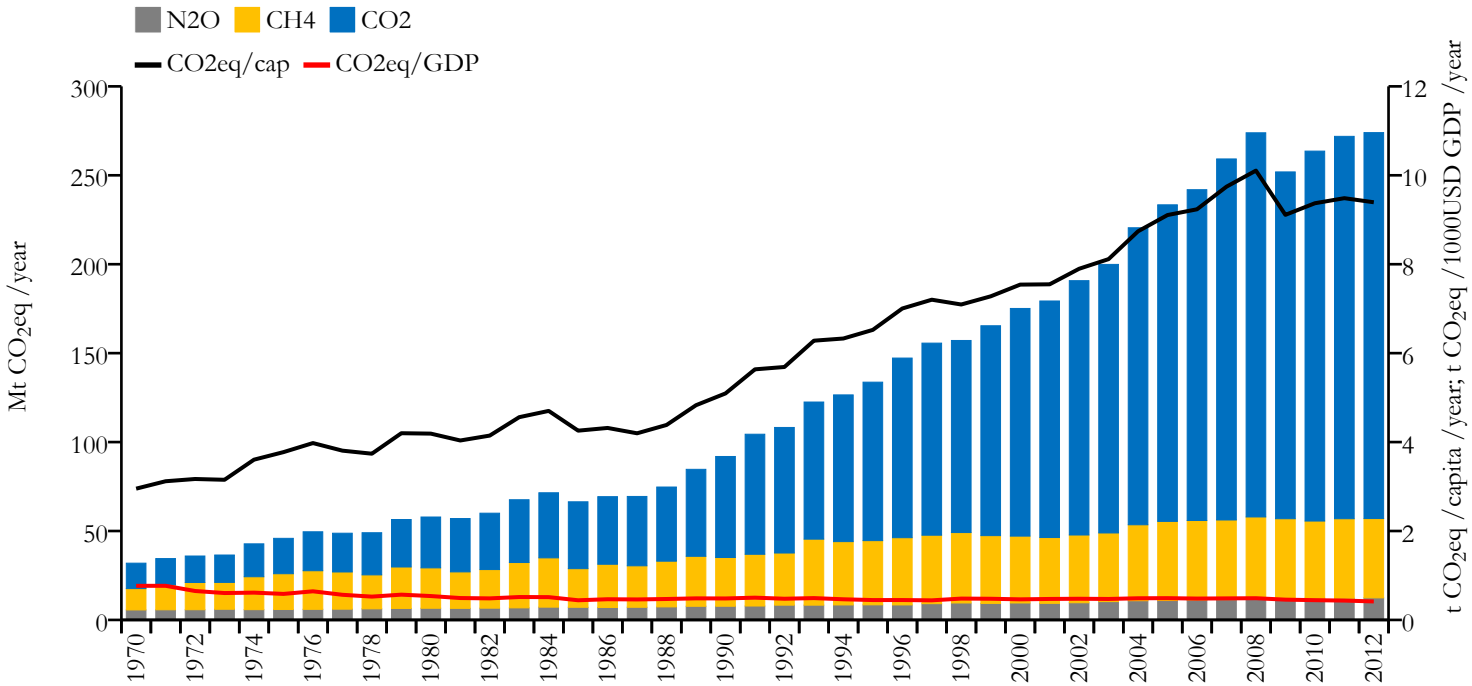
# Malaysia

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



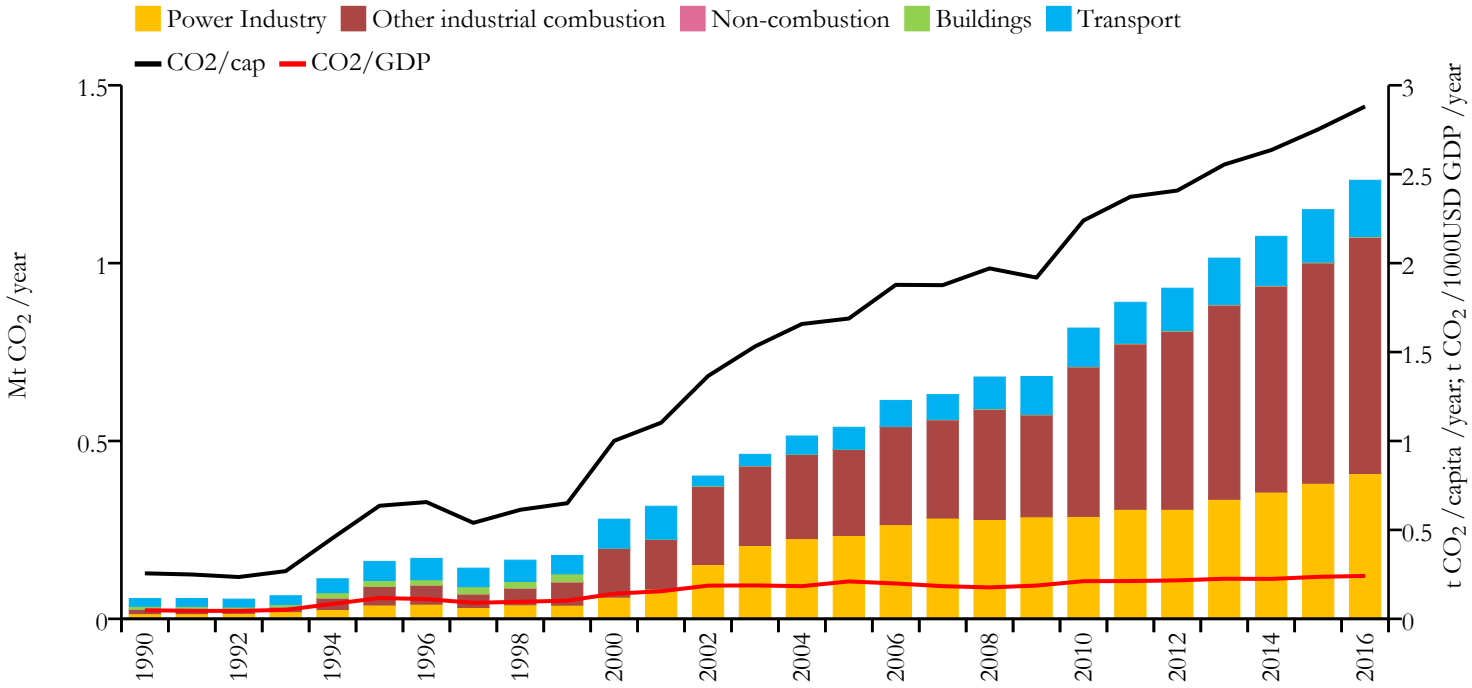

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 266.252 | 8.534 | 0.333 | 31187265 |
| 1990 | 55.004 | 3.056 | 0.289 | 18038321 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



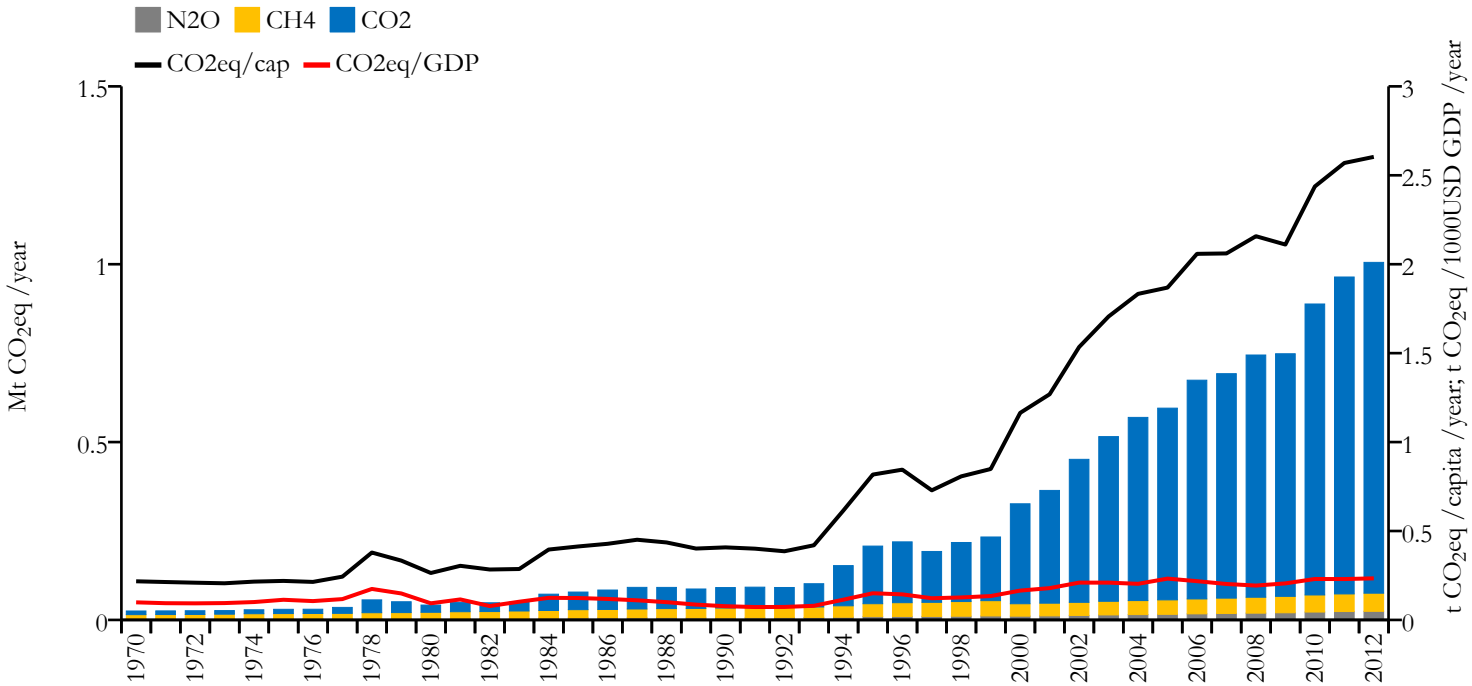
# Maldives

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)

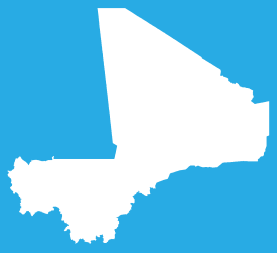



| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 1.233 | 2.881 | 0.241 | 427756 |
| 1990 | 0.057 | 0.256 | 0.048 | 223215 |

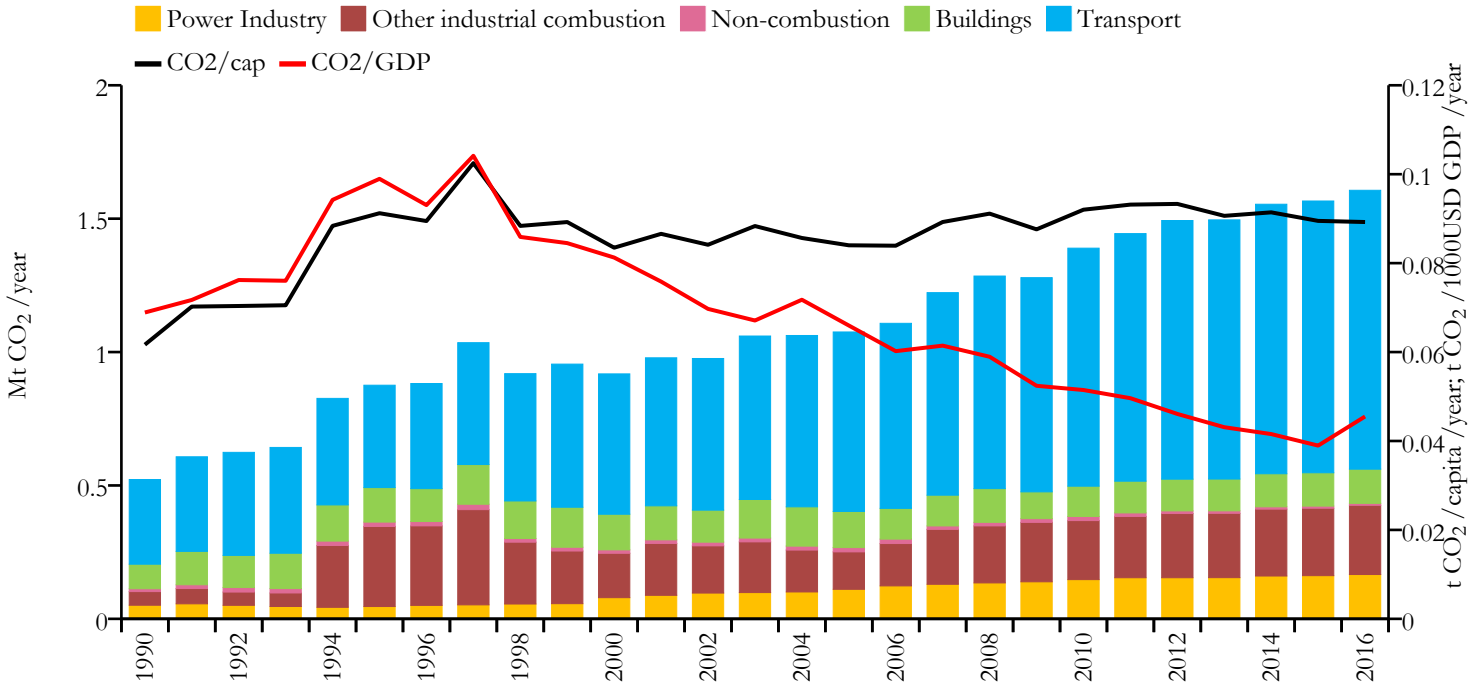
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Mali



## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 1.606 | 0.089 | 0.046 | 17994837 |
| 1990 | 0.522 | 0.062 | 0.069 | 8465188 |

EDGAR
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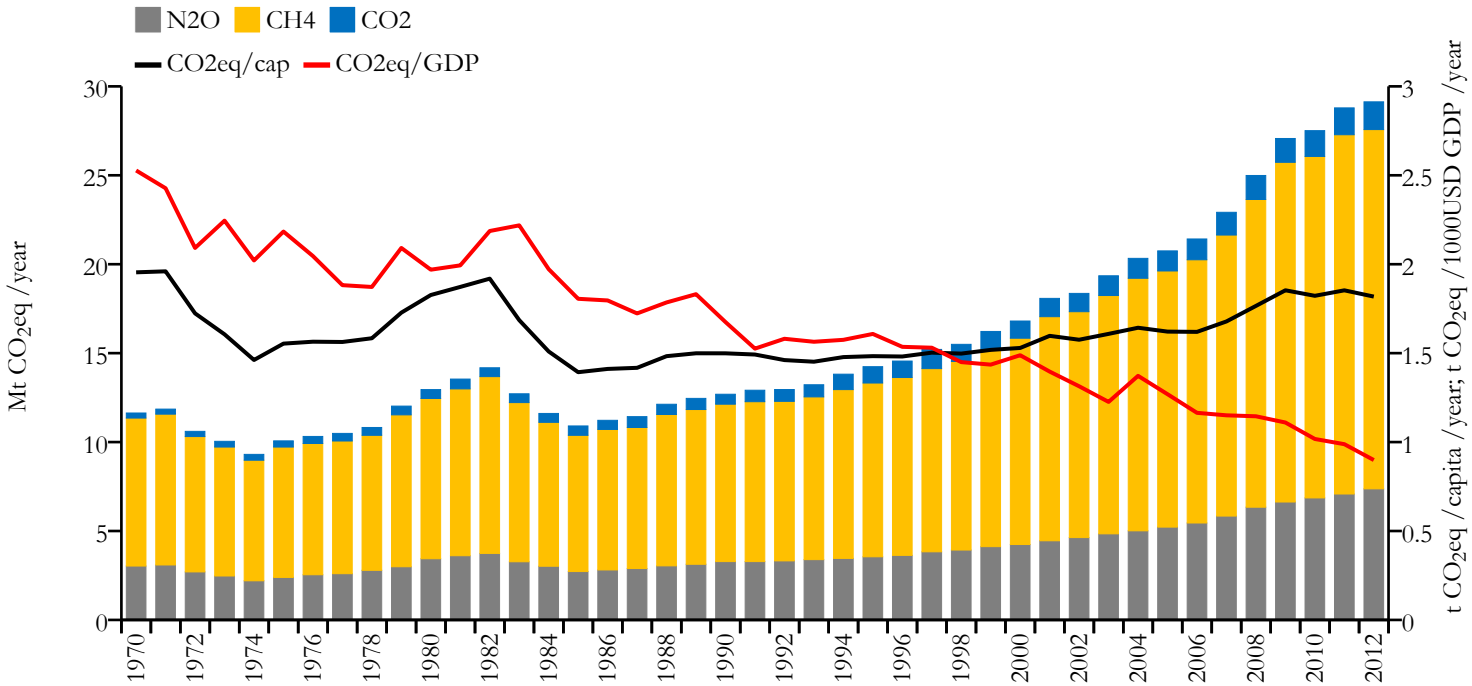
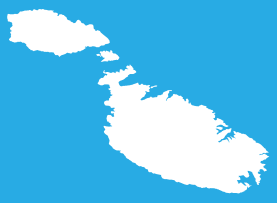
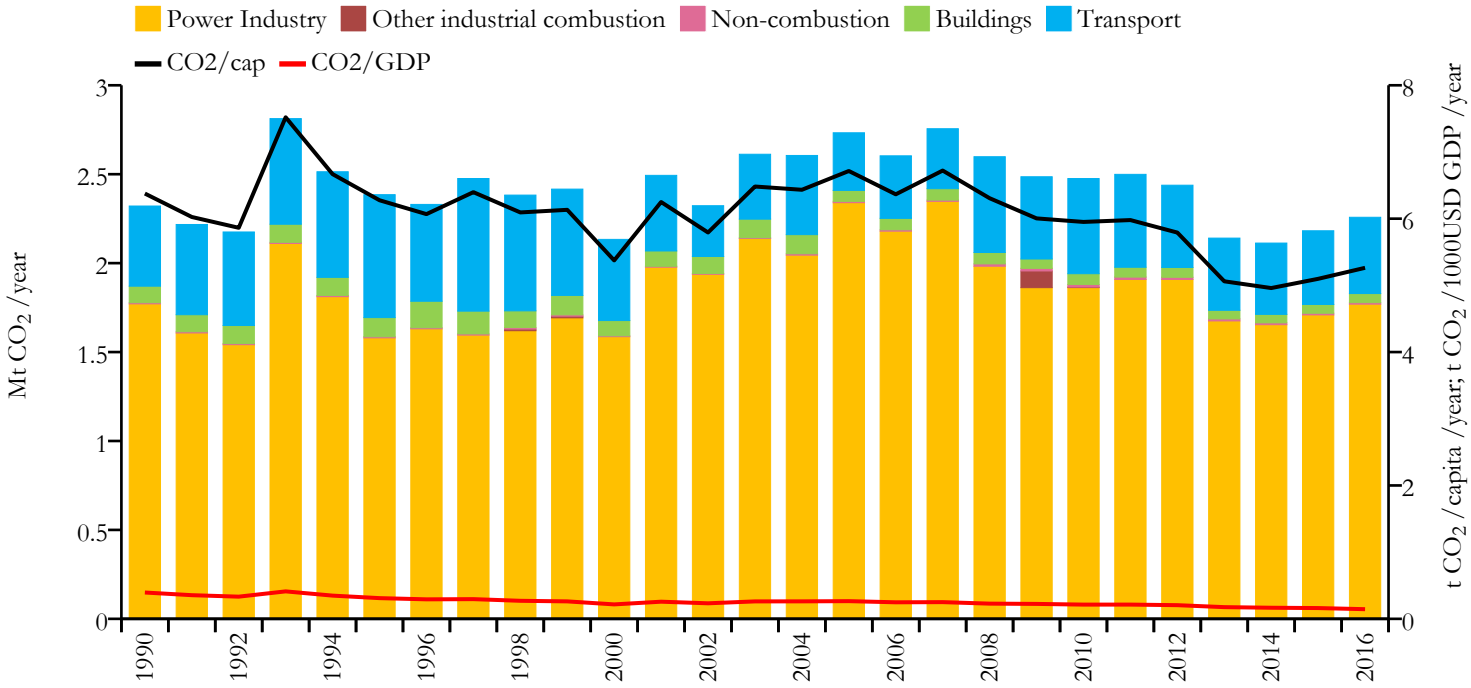
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Malta



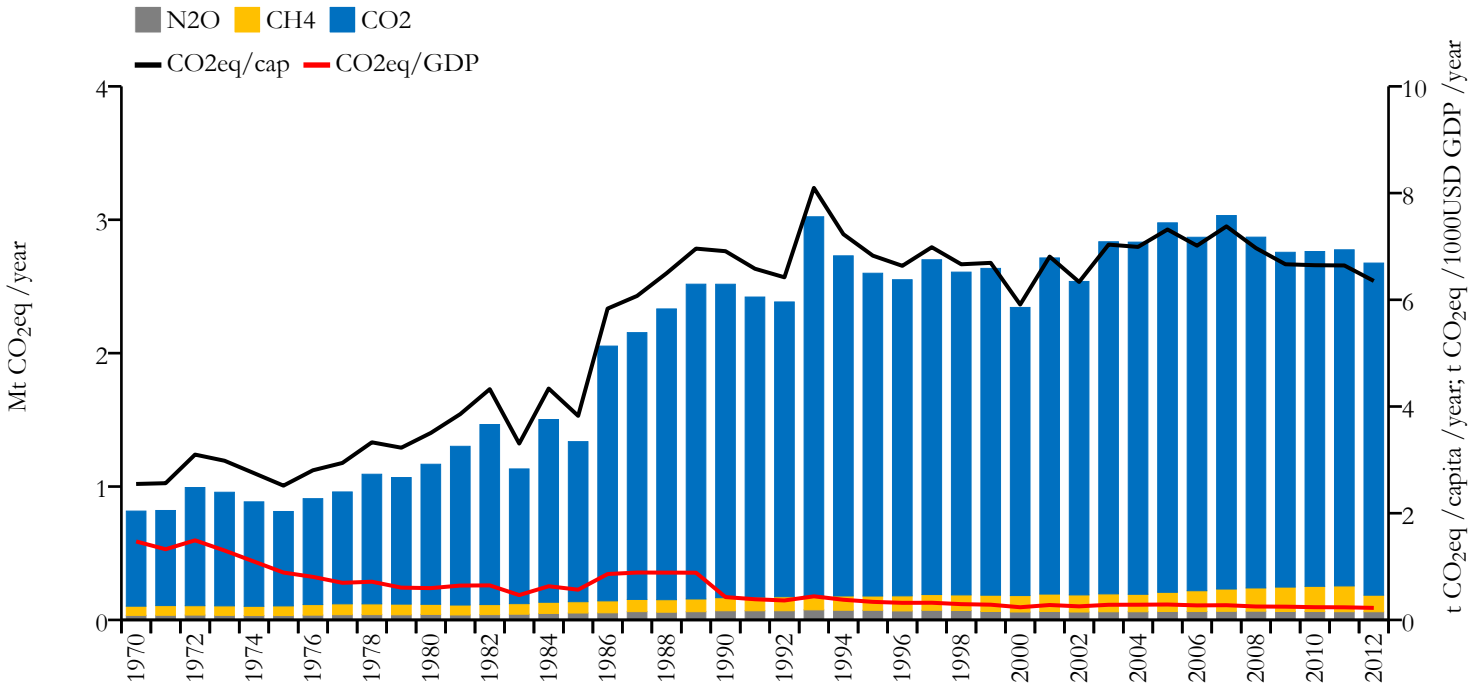
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 2.258 | 5.263 | 0.145 | 429362 |
| 1990 | 2.321 | 6.377 | 0.395 | 364431 |

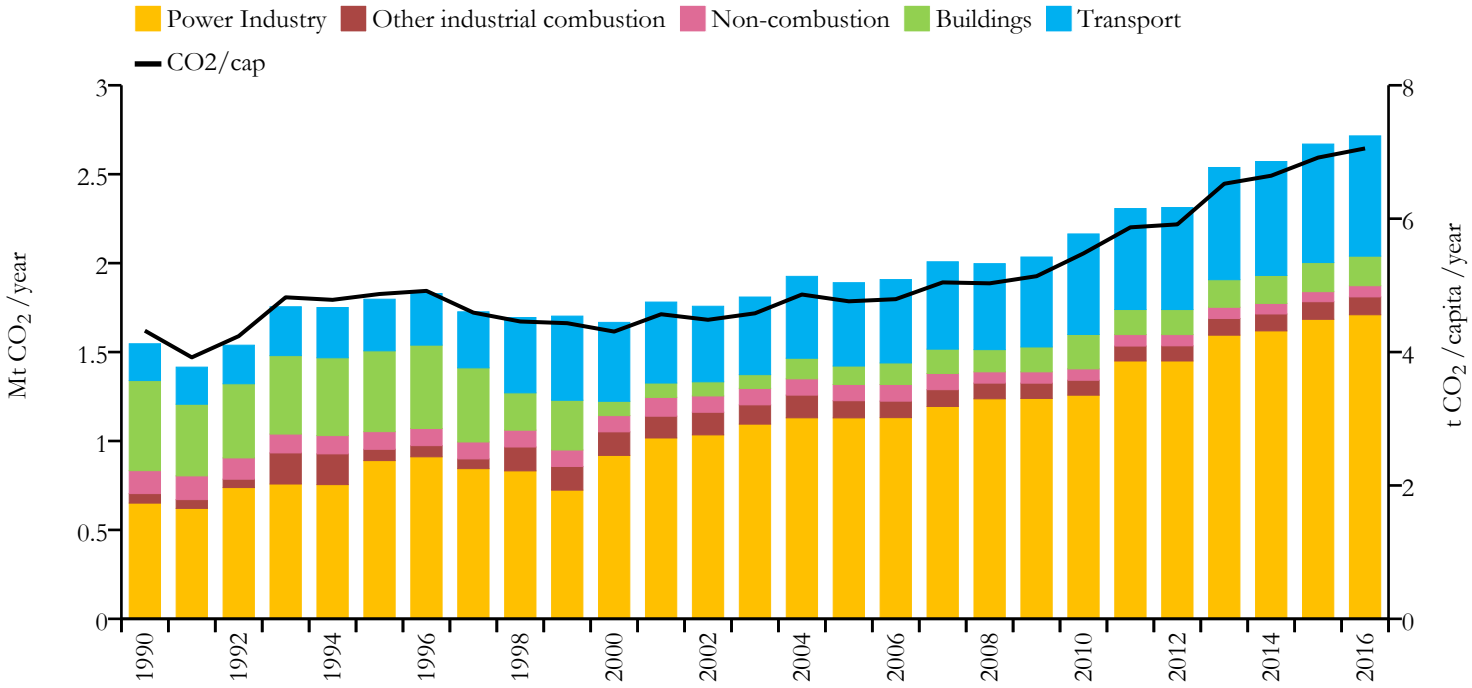
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Martinique

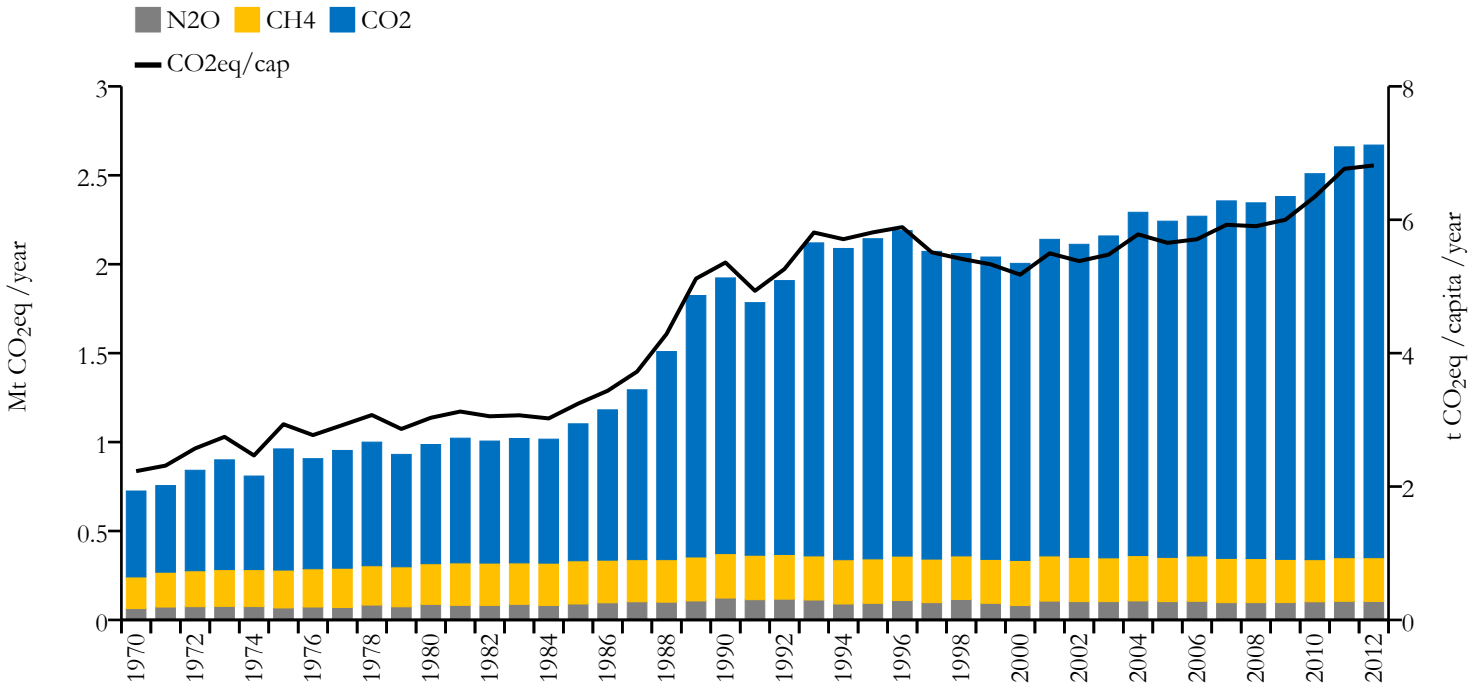
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 2.715 | 7.053 | n/a | 385103 |
| 1990 | 1.547 | 4.320 | n/a | 358449 |

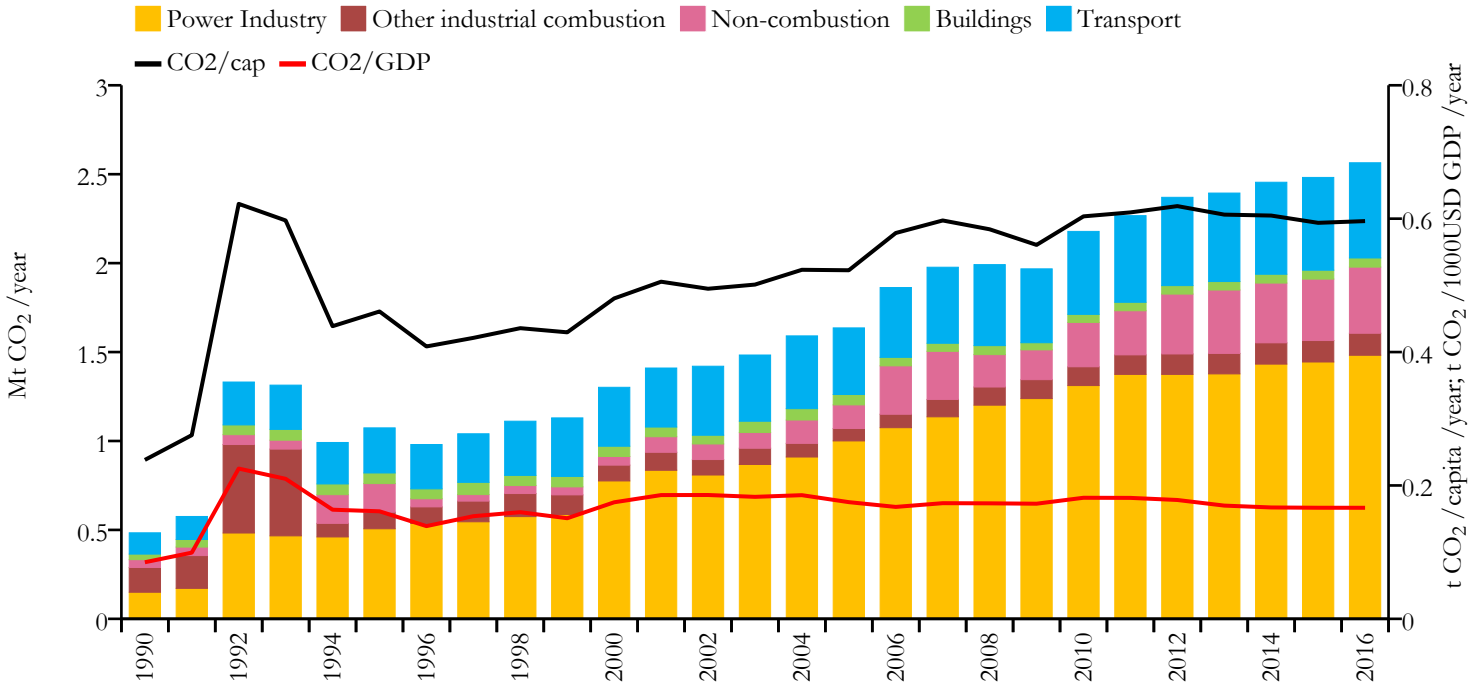
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Mauritania

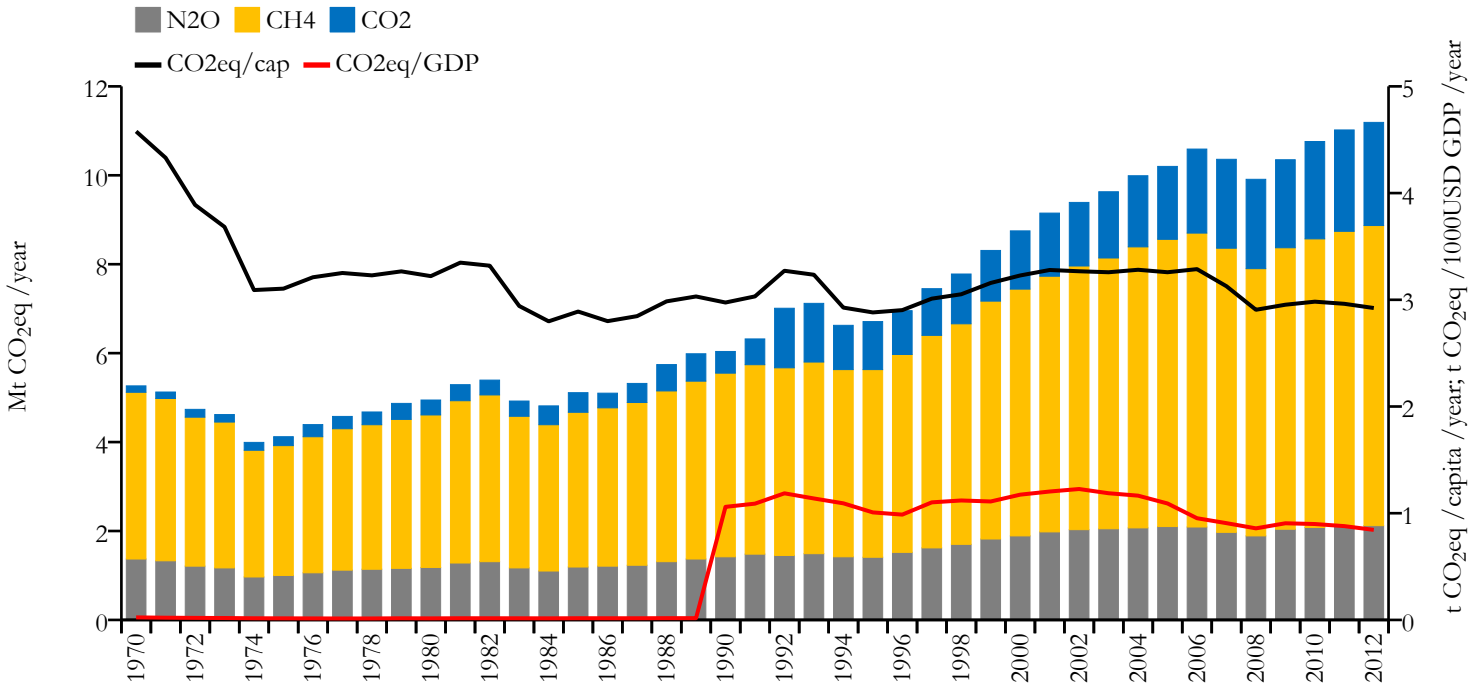
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 2.564 | 0.596 | 0.167 | 4301018 |
| 1990 | 0.484 | 0.238 | 0.085 | 2030140 |

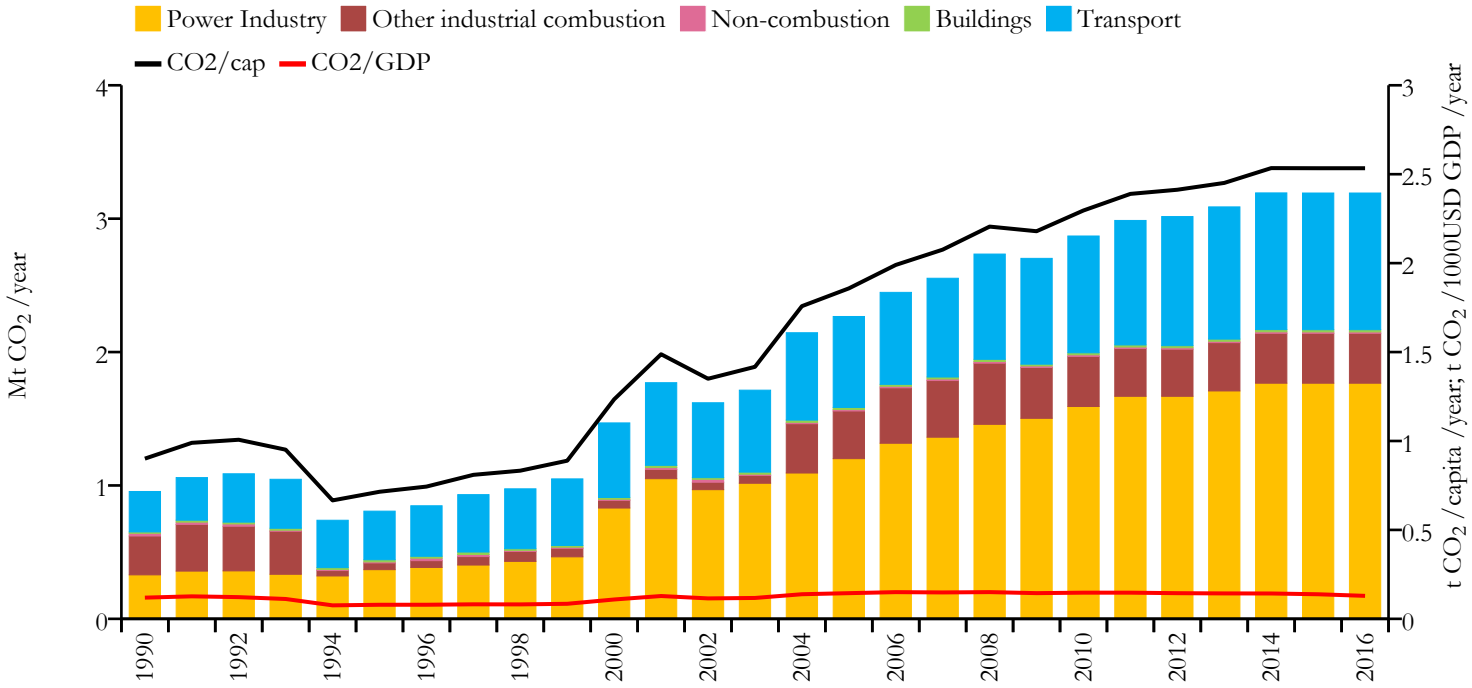
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



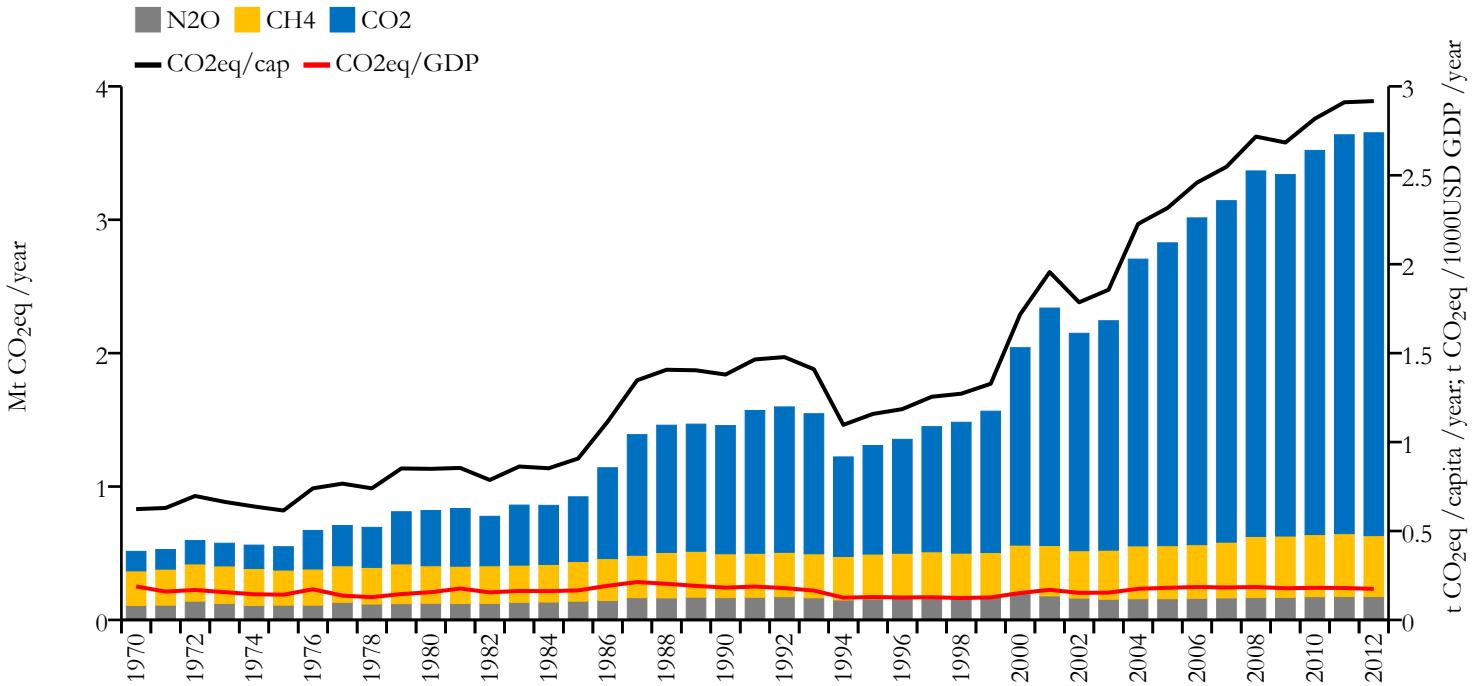
# Mauritius

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



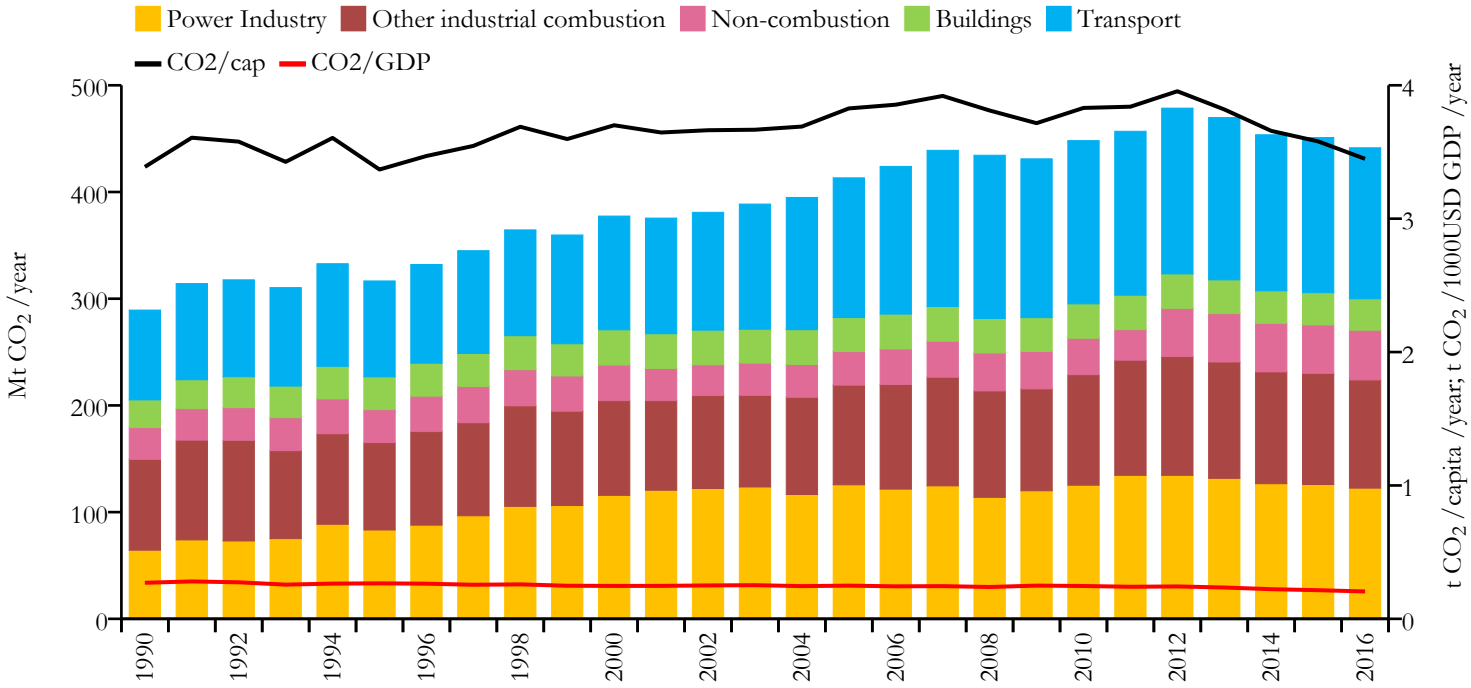

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 3.192 | 2.534 | 0.129 | 1262132 |
| 1990 | 0.955 | 0.901 | 0.119 | 1055868 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Mexico

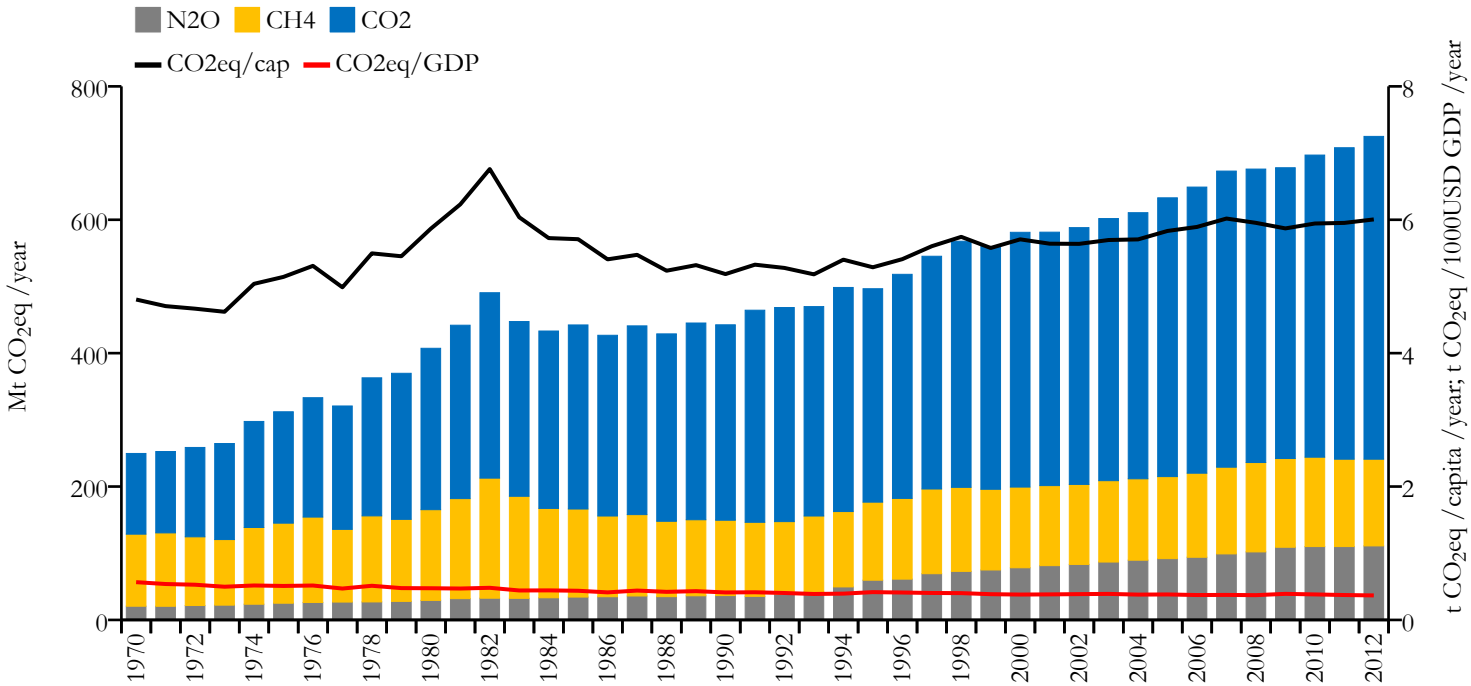
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 441.413 | 3.449 | 0.205 | 127540423 |
| 1990 | 289.350 | 3.388 | 0.270 | 85357874 |

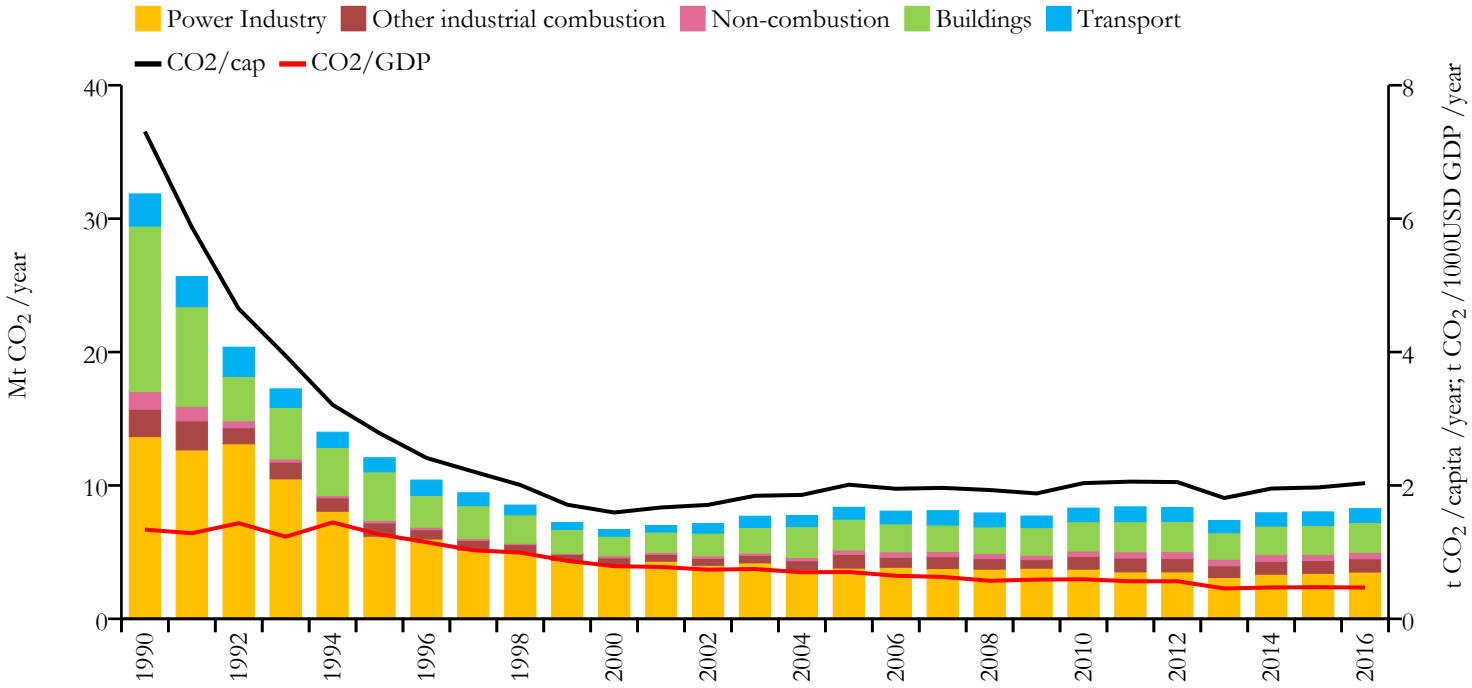
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Moldova

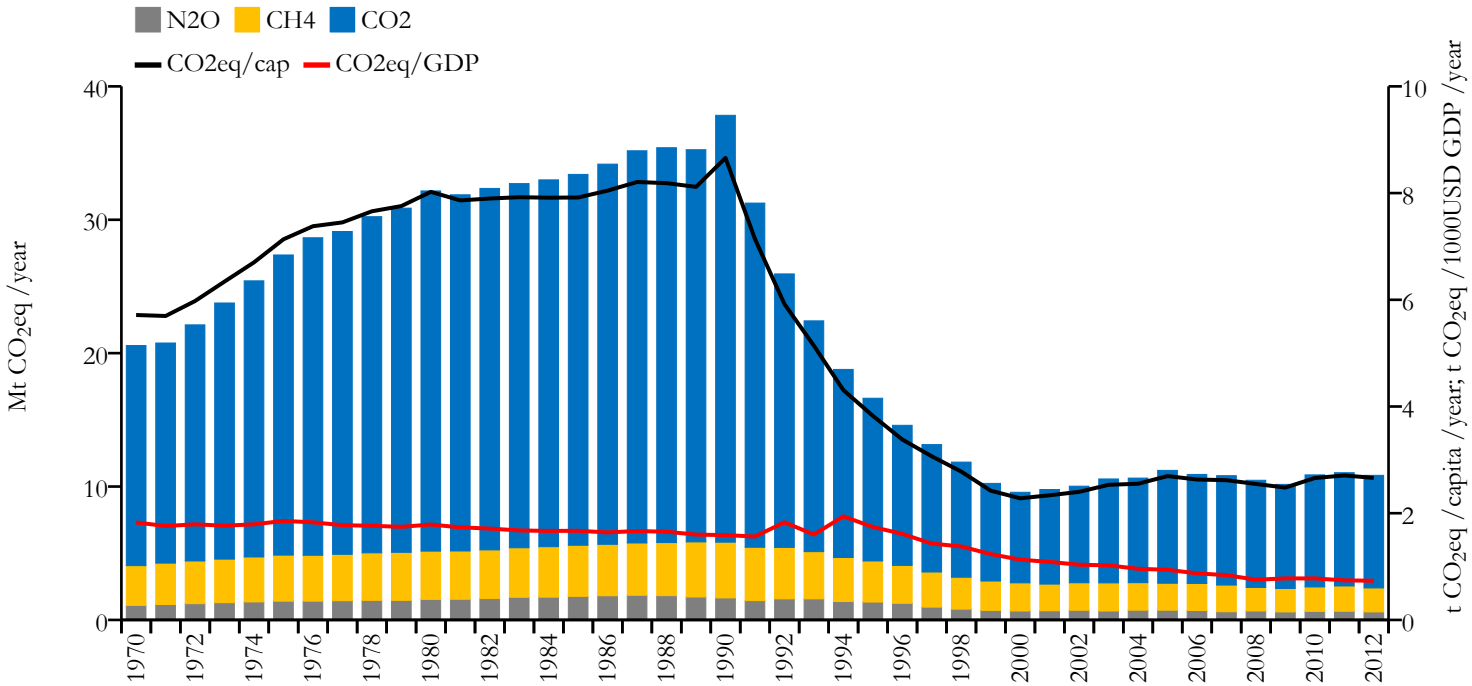
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 8.259 | 2.034 | 0.469 | 4059608 |
| 1990 | 31.858 | 7.307 | 1.339 | 4364116 |

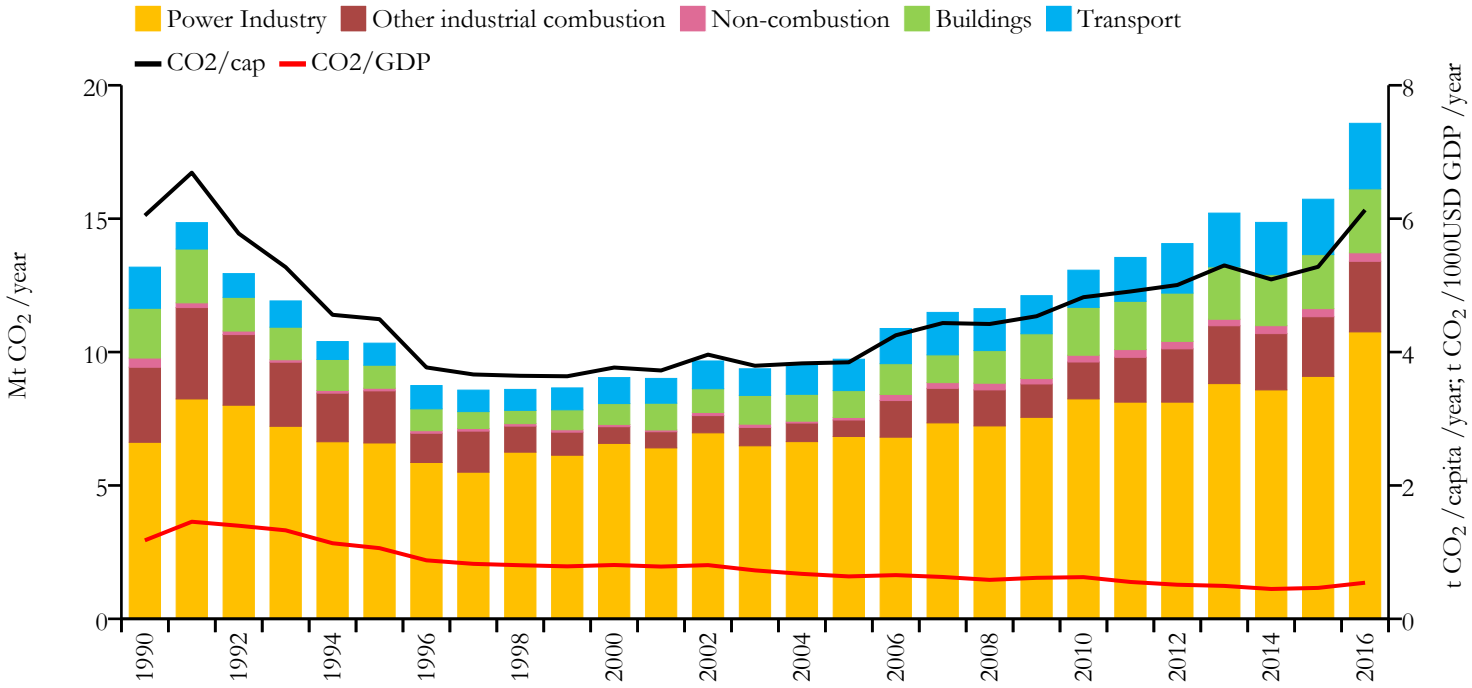
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Mongolia

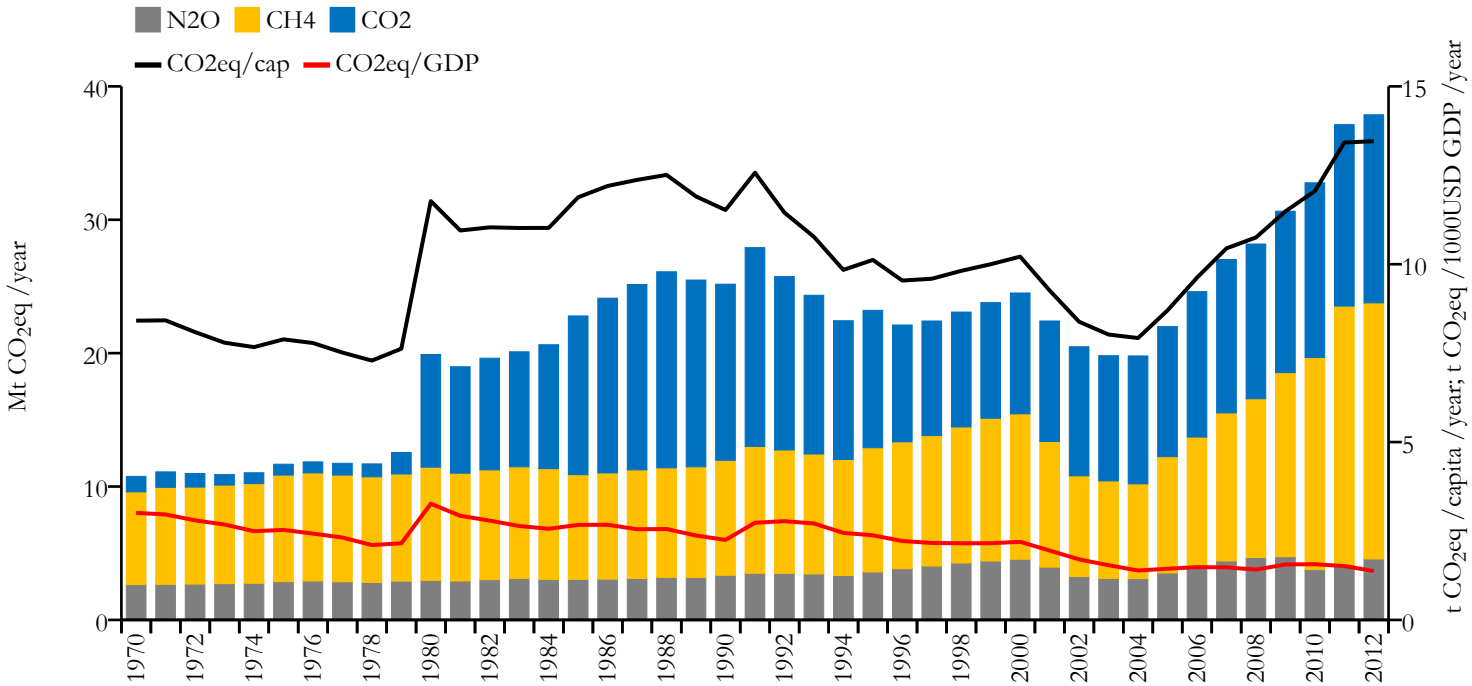
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 18.574 | 6.130 | 0.542 | 3027398 |
| 1990 | 13.183 | 6.047 | 1.177 | 2184145 |

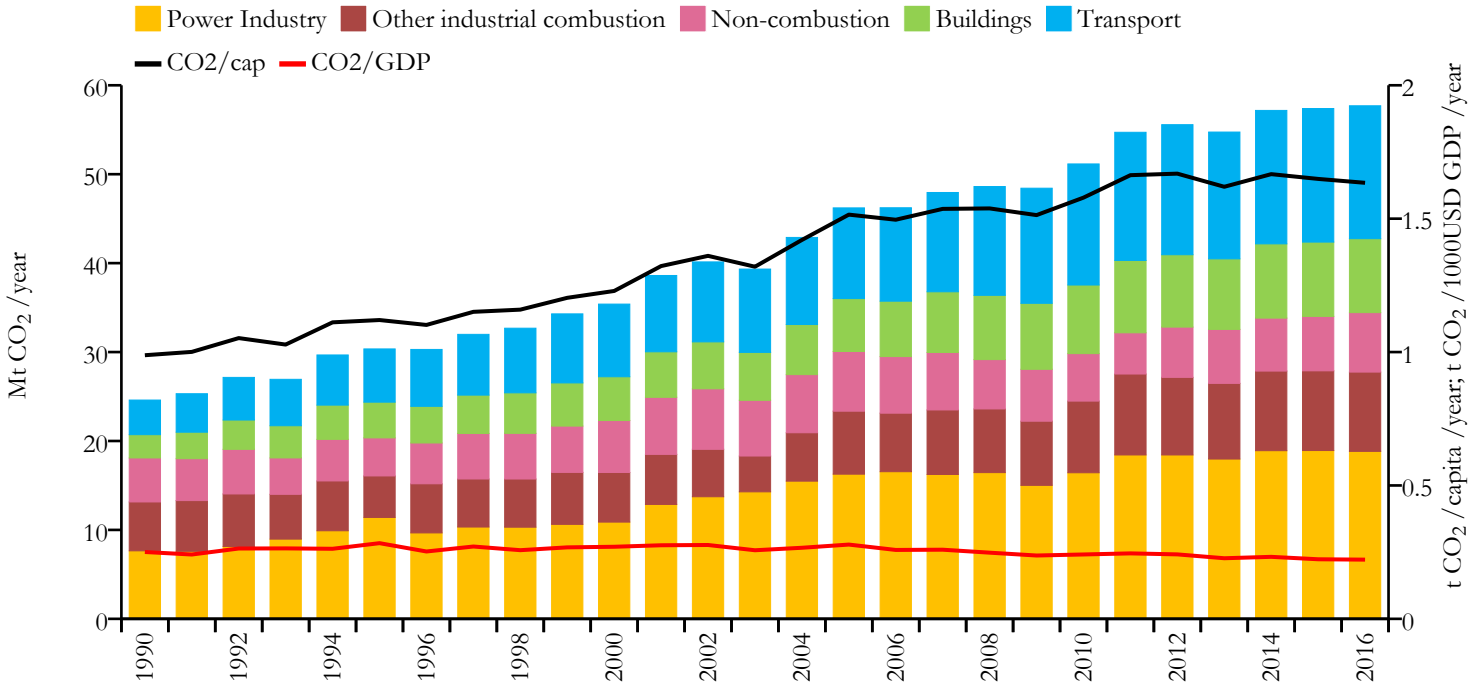
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



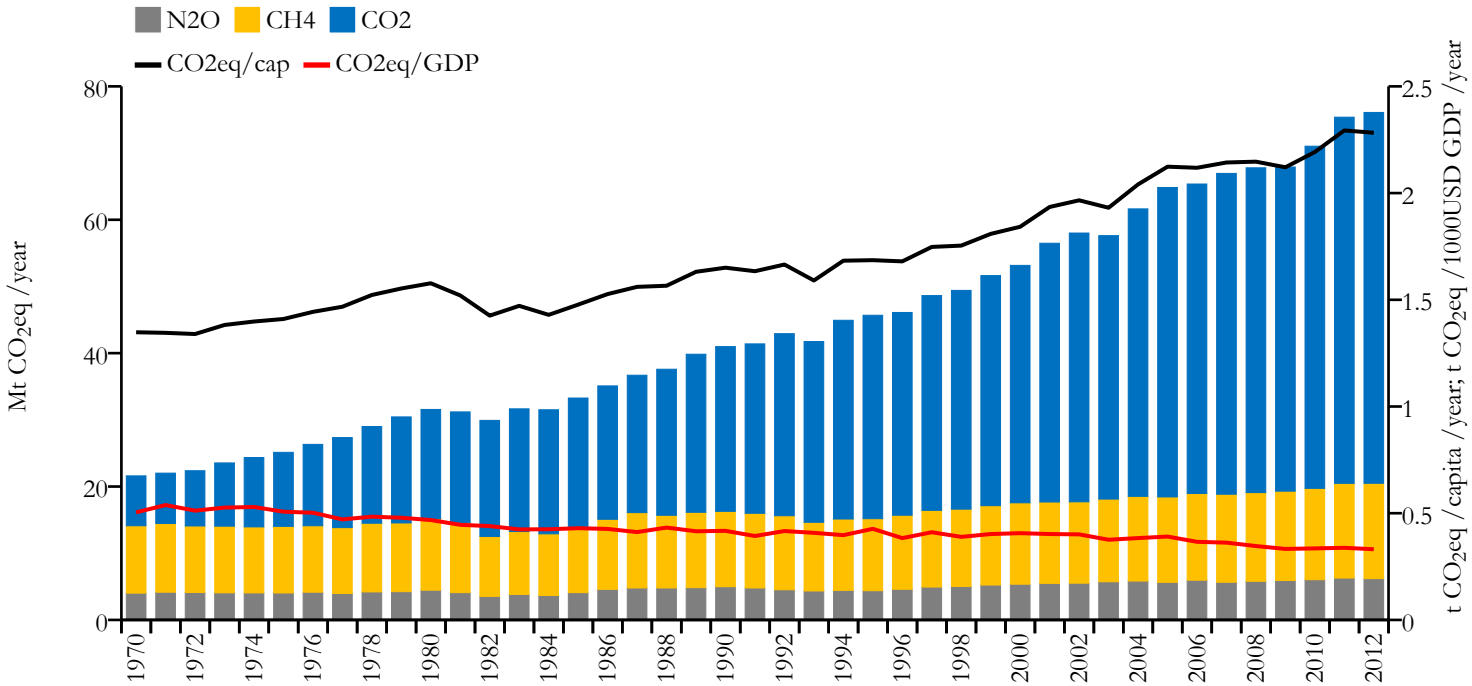
# Morocco

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



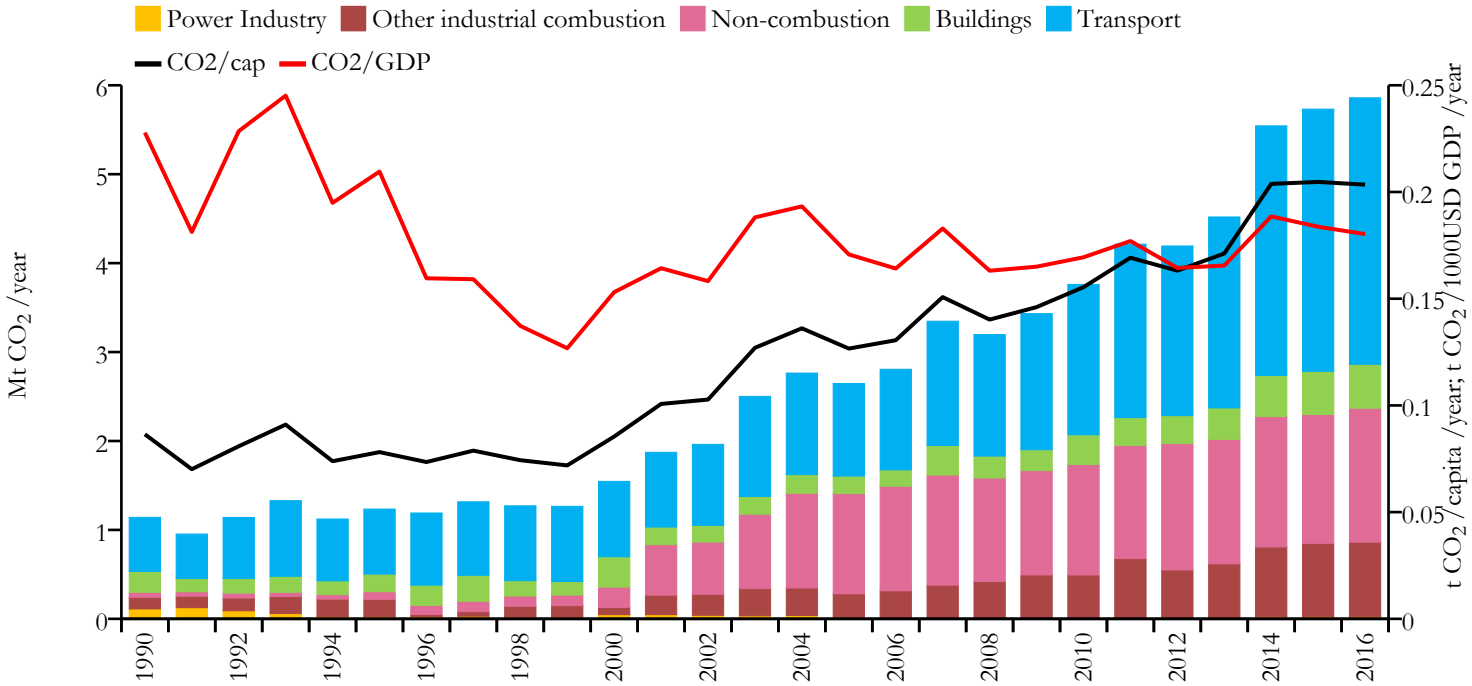

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 57.694 | 1.634 | 0.222 | 35276786 |
| 1990 | 24.604 | 0.988 | 0.251 | 24879136 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Mozambique

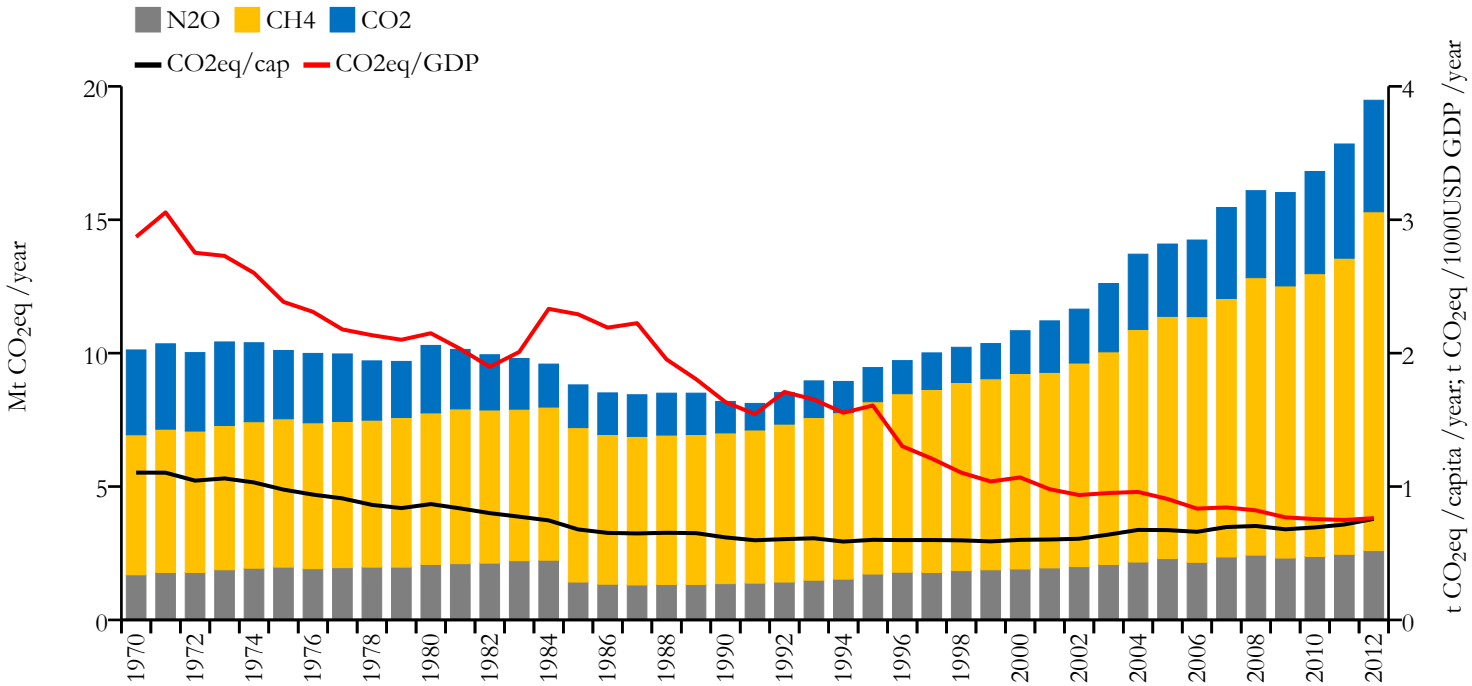
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 5.859 | 0.203 | 0.180 | 28829476 |
| 1990 | 1.141 | 0.086 | 0.228 | 13247649 |

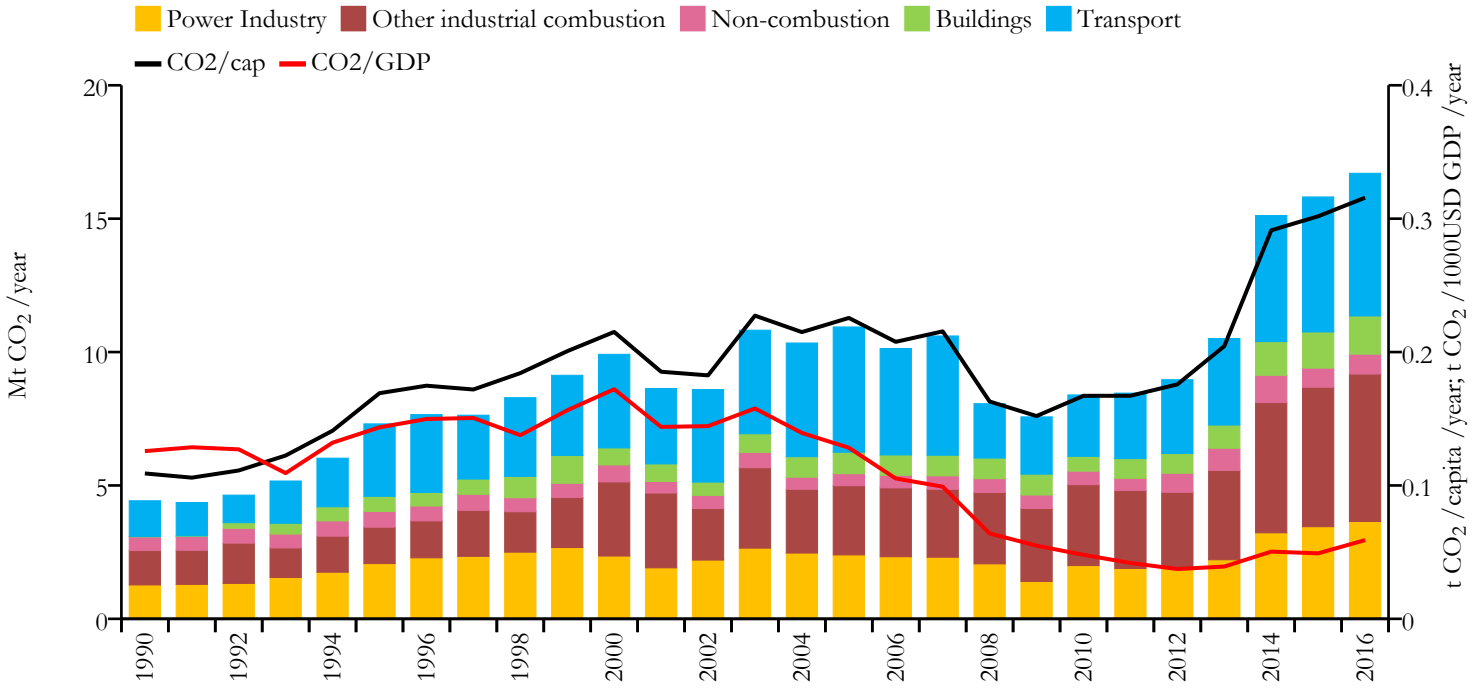
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Myanmar/Burma

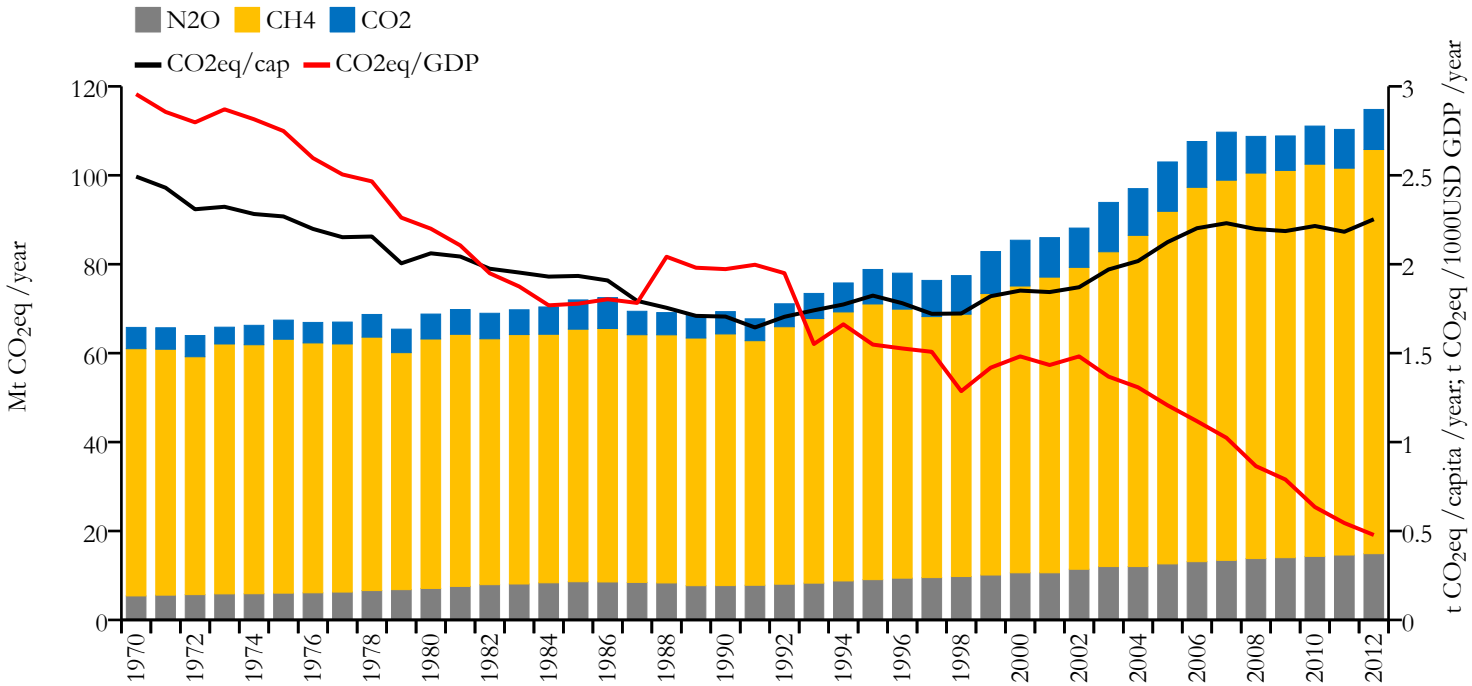
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



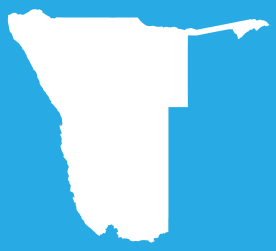

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 16.702 | 0.316 | 0.059 | 52885223 |
| 1990 | 4.426 | 0.109 | 0.126 | 40626250 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

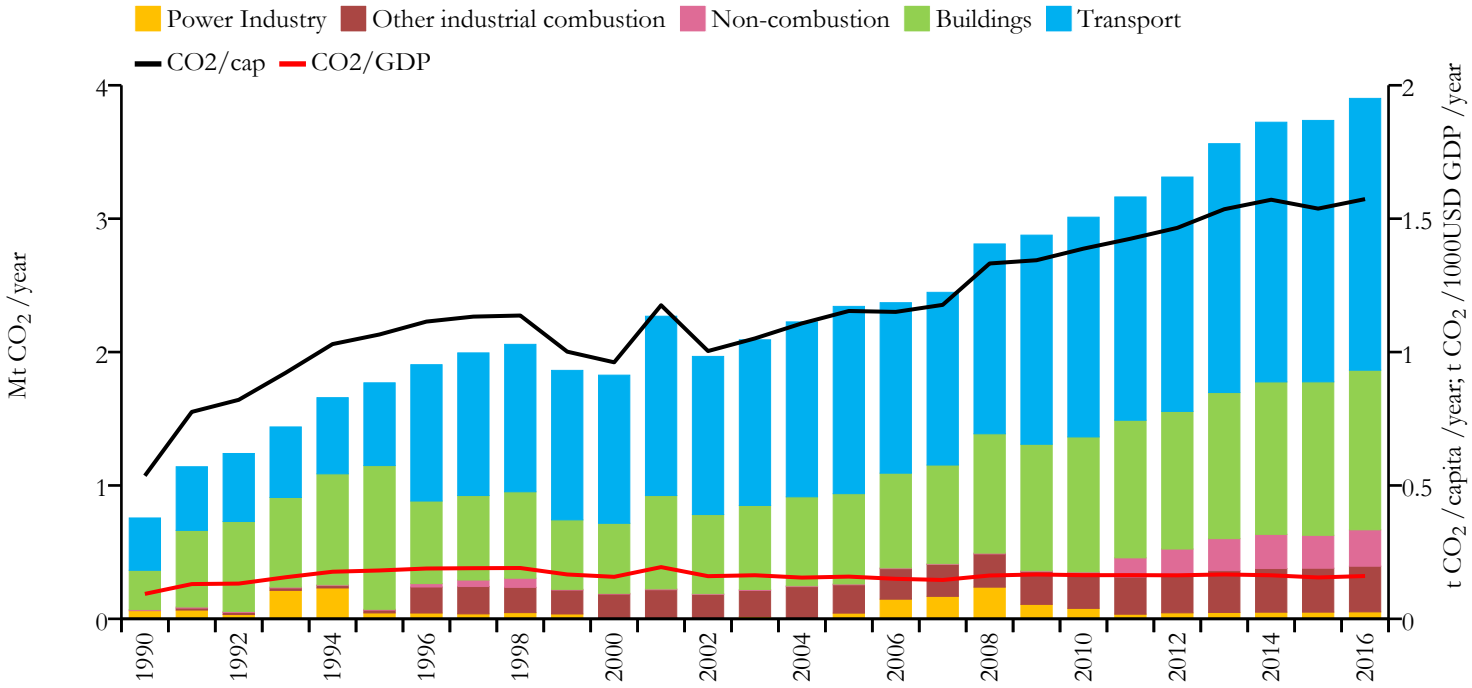
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Namibia



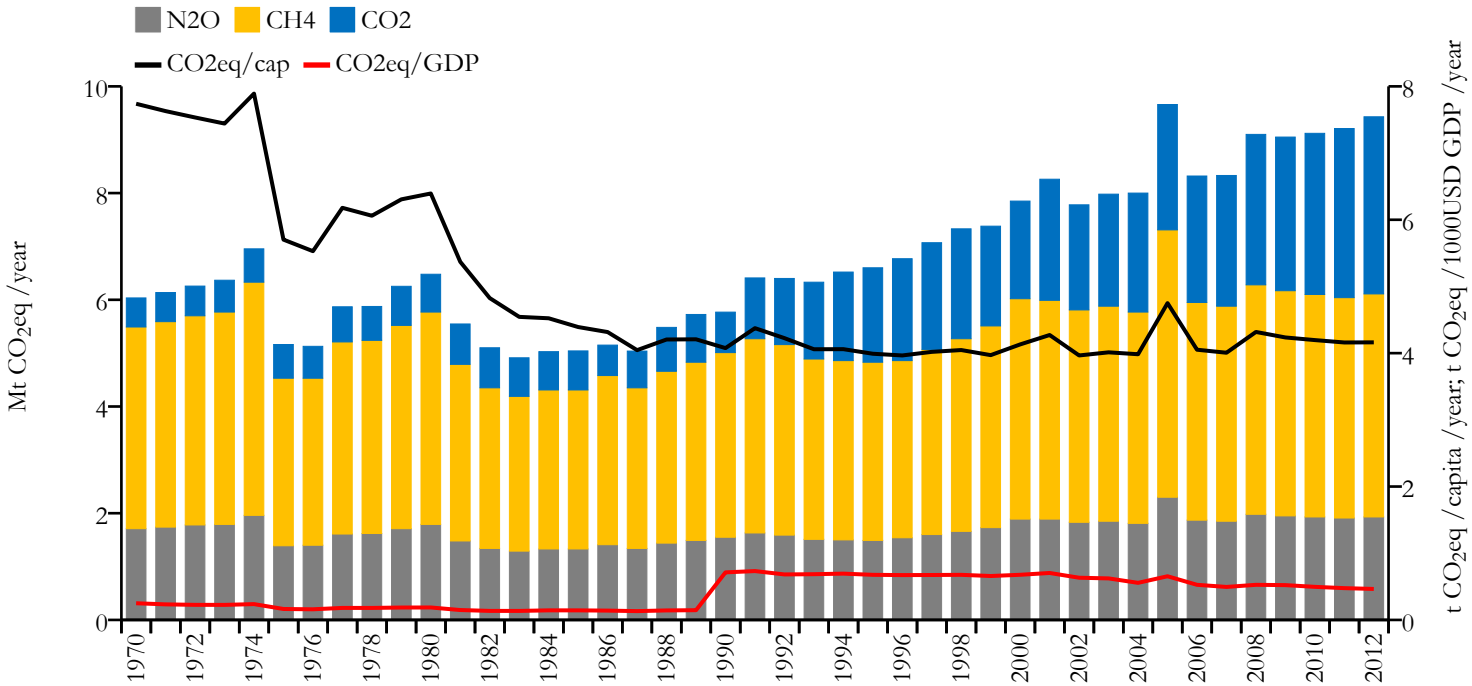
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 3.902 | 1.573 | 0.161 | 2479713 |
| 1990 | 0.756 | 0.536 | 0.093 | 1414692 |

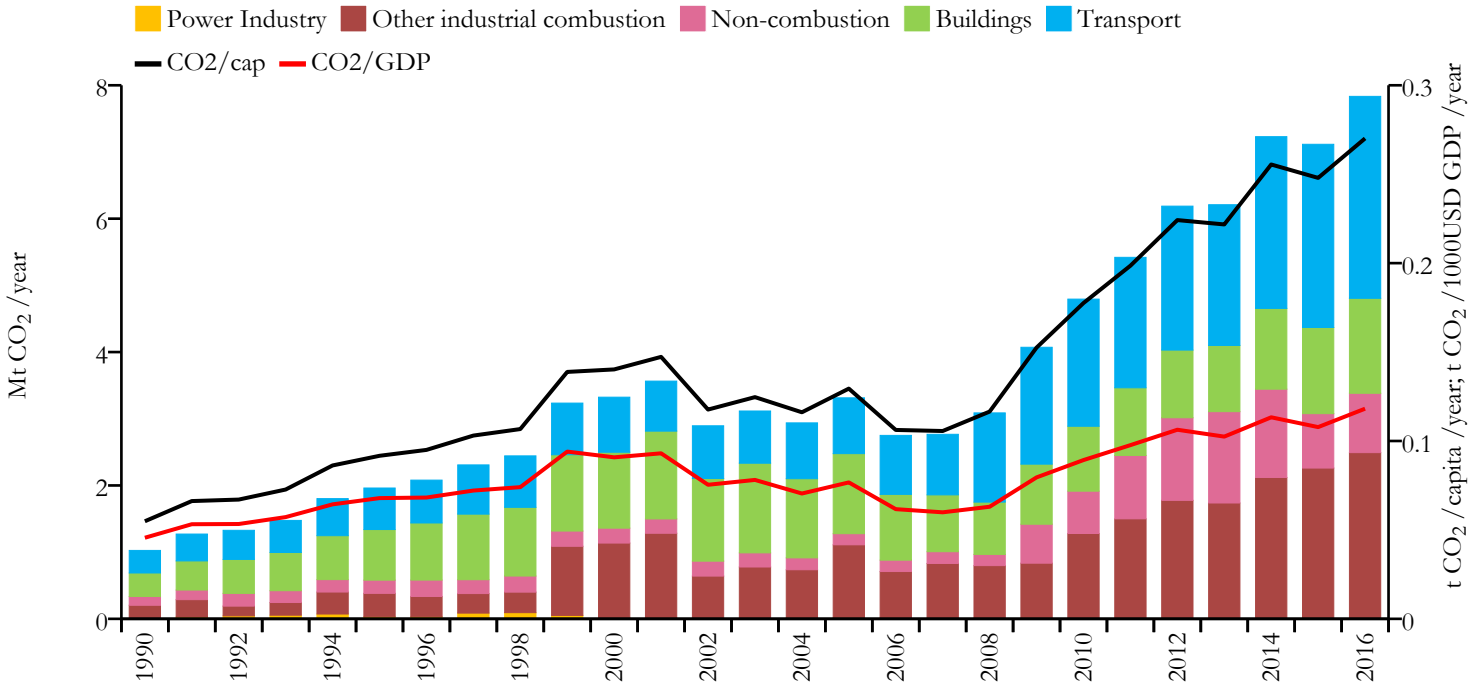
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



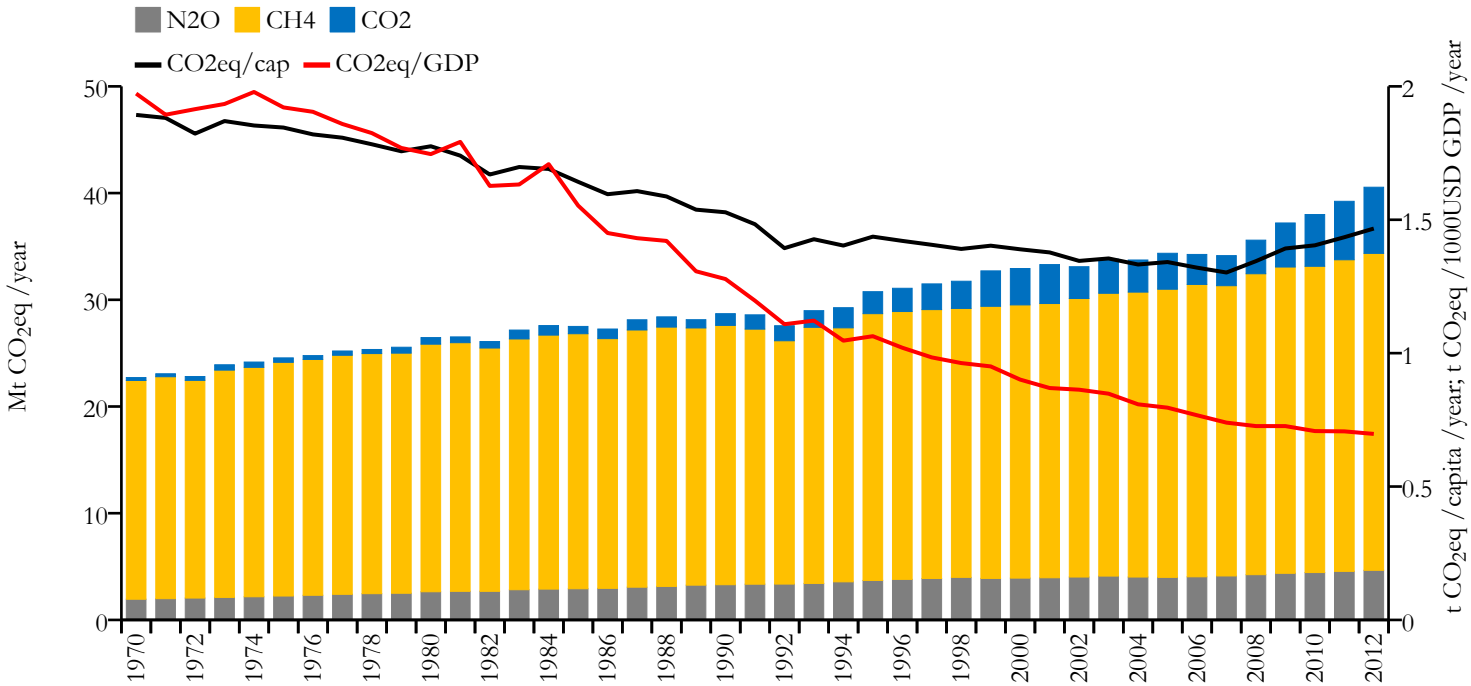
# Nepal

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



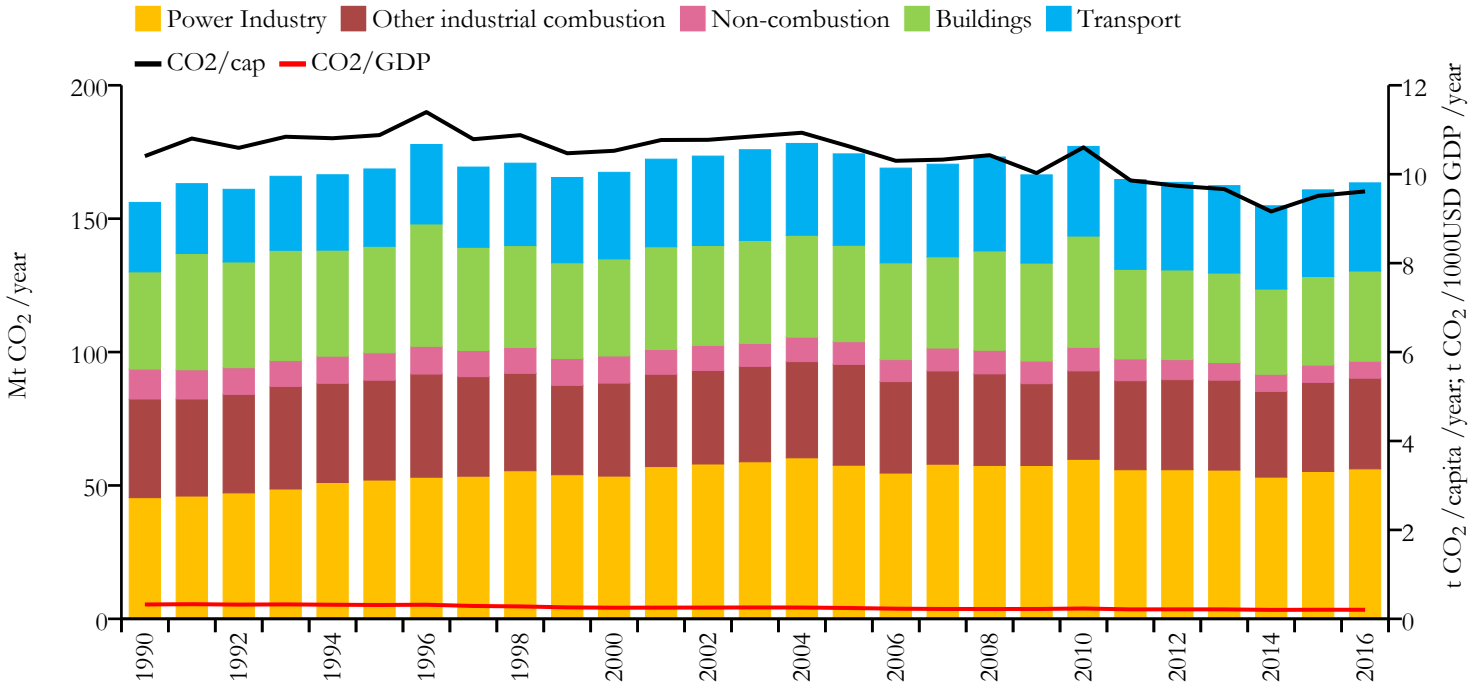

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 7.834 | 0.270 | 0.118 | 28982771 |
| 1990 | 1.026 | 0.055 | 0.046 | 18749406 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Netherlands

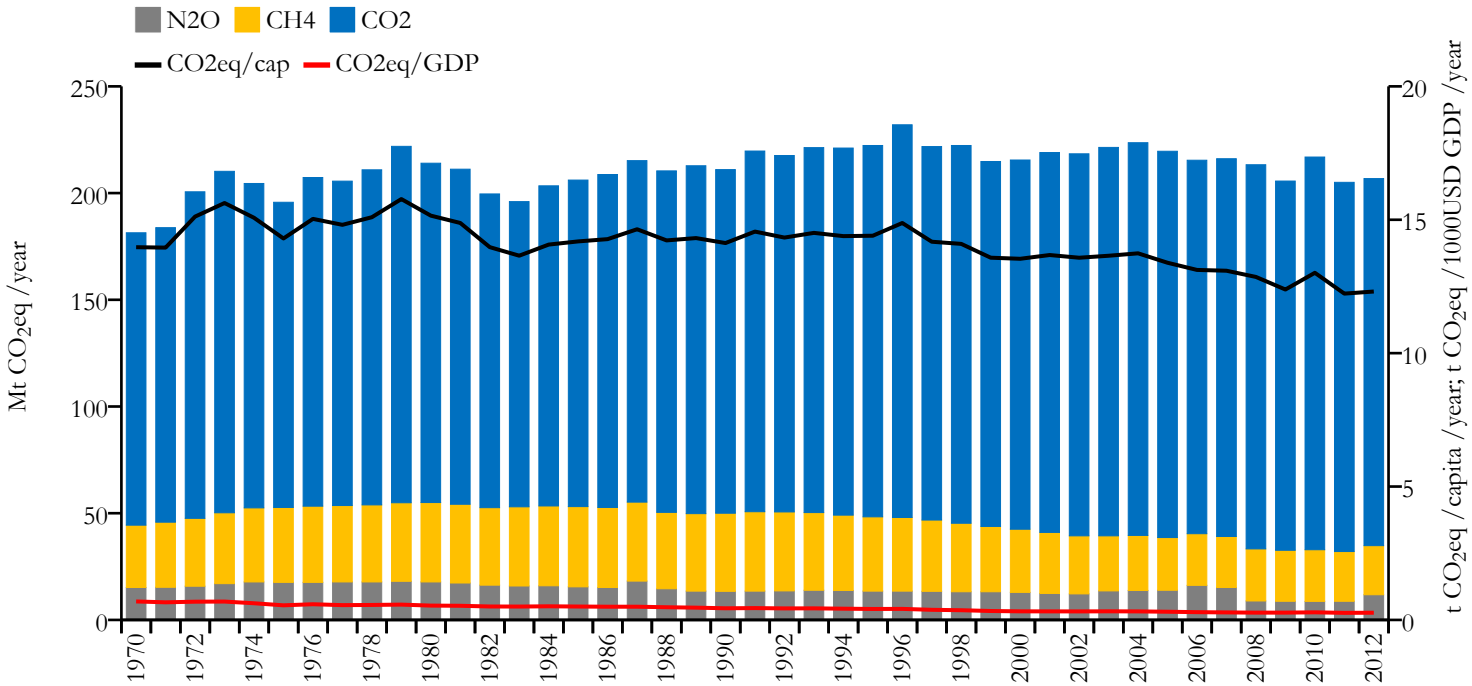
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 163.419 | 9.613 | 0.204 | 16987330 |
| 1990 | 156.099 | 10.407 | 0.323 | 14965448 |

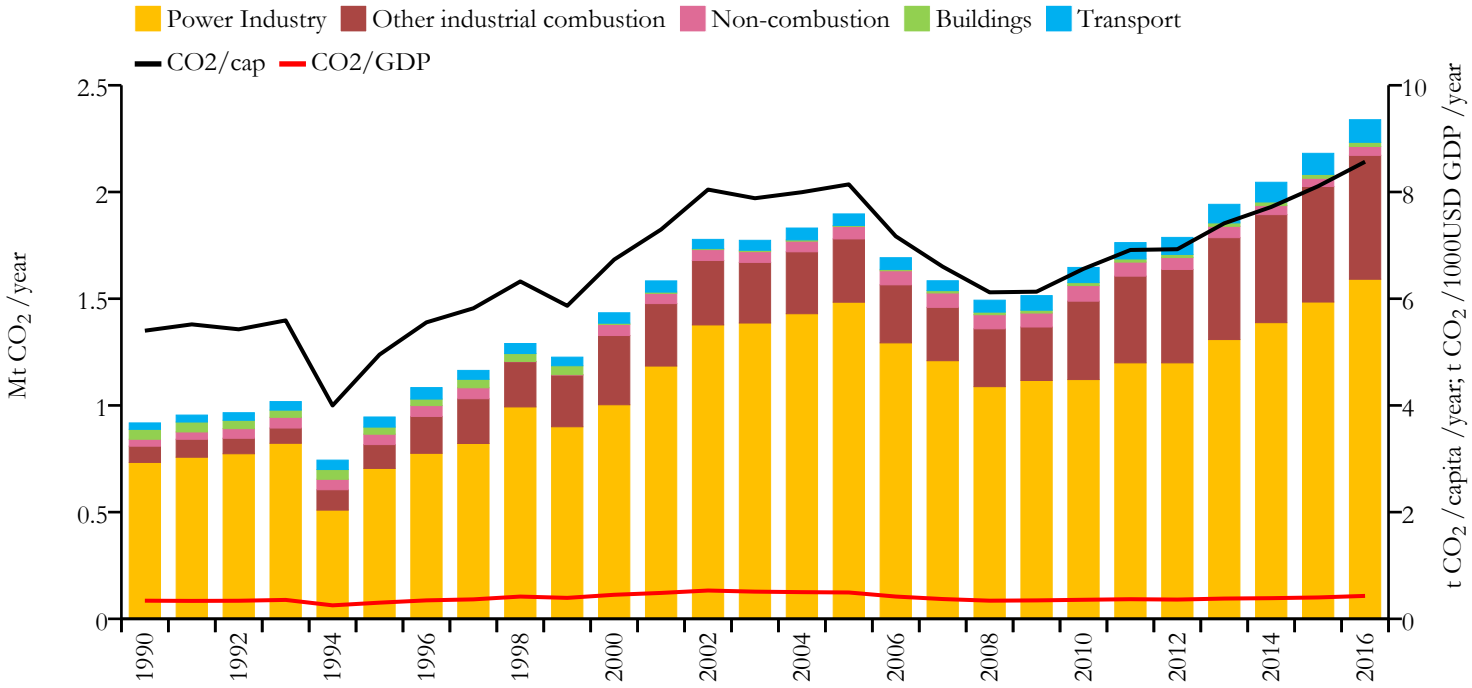
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# New Caledonia

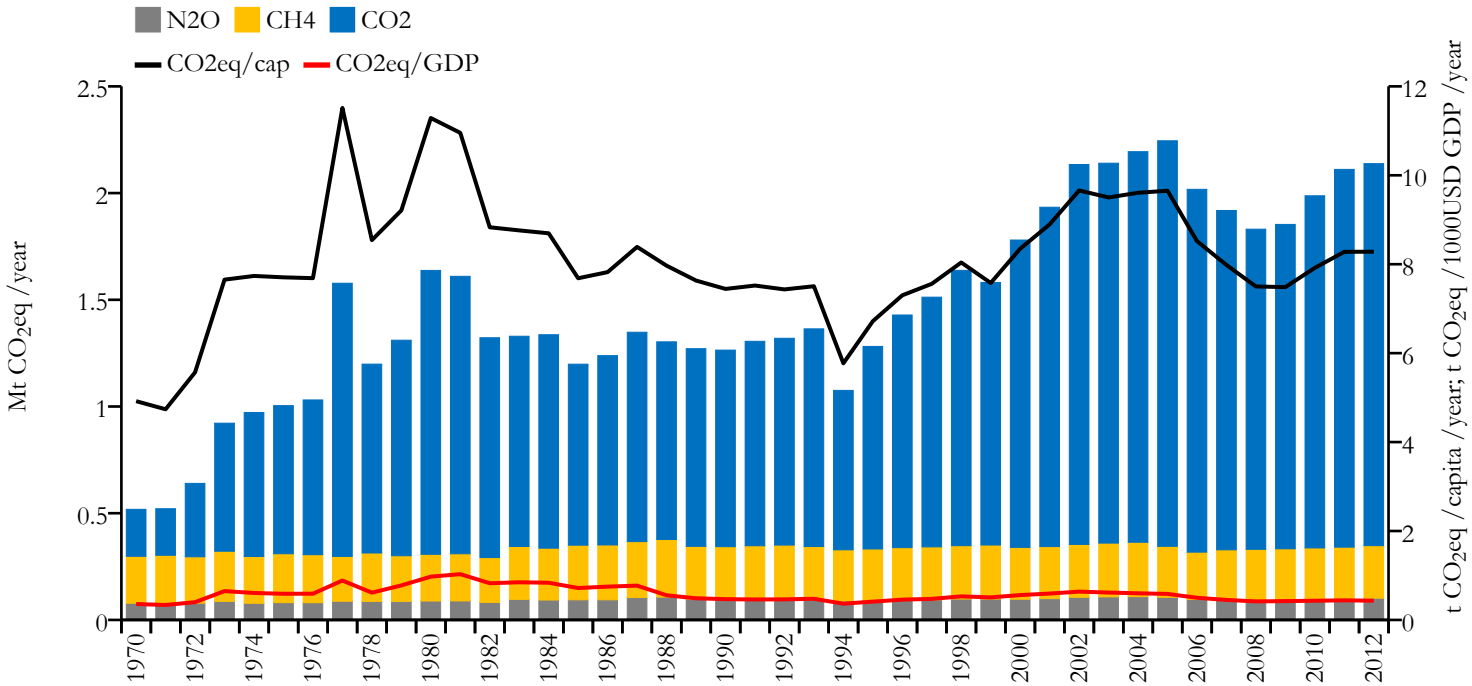
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 2.339 | 8.567 | 0.430 | 272677 |
| 1990 | 0.918 | 5.400 | 0.340 | 169787 |

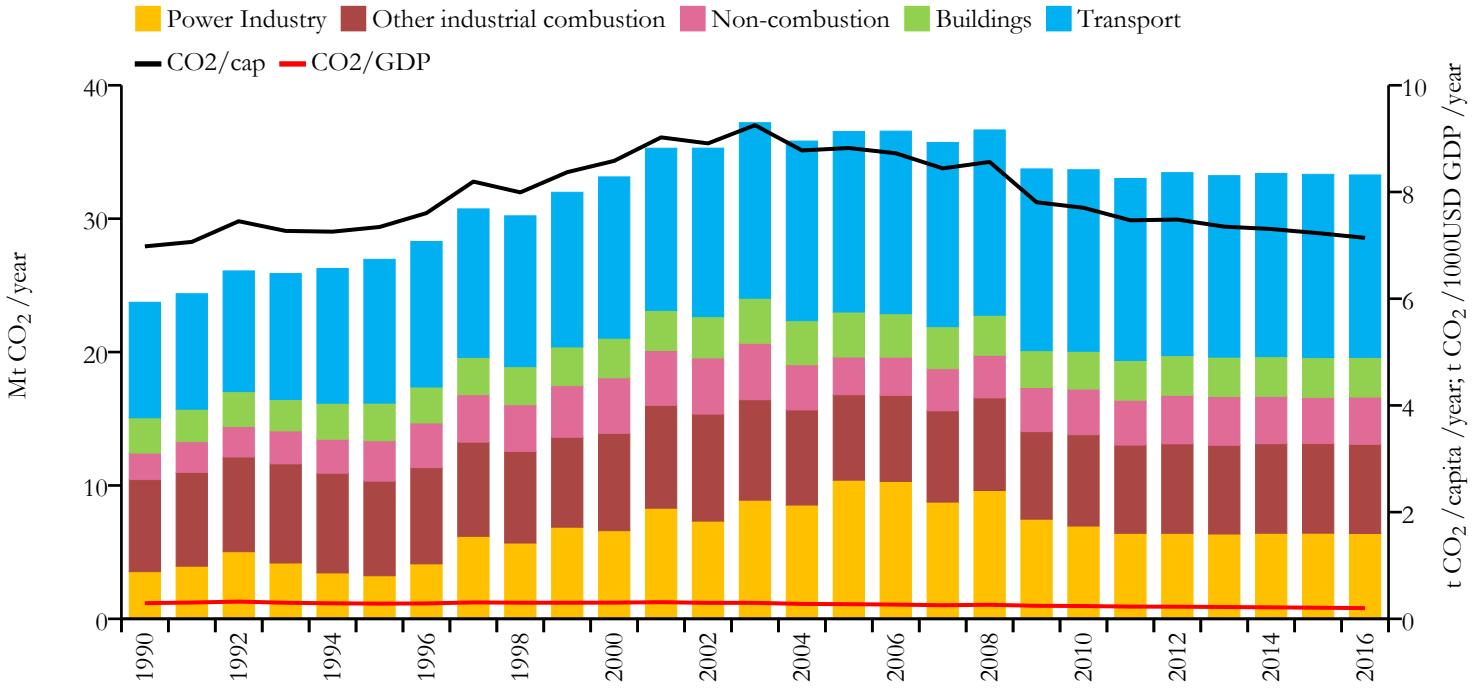
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# New Zealand

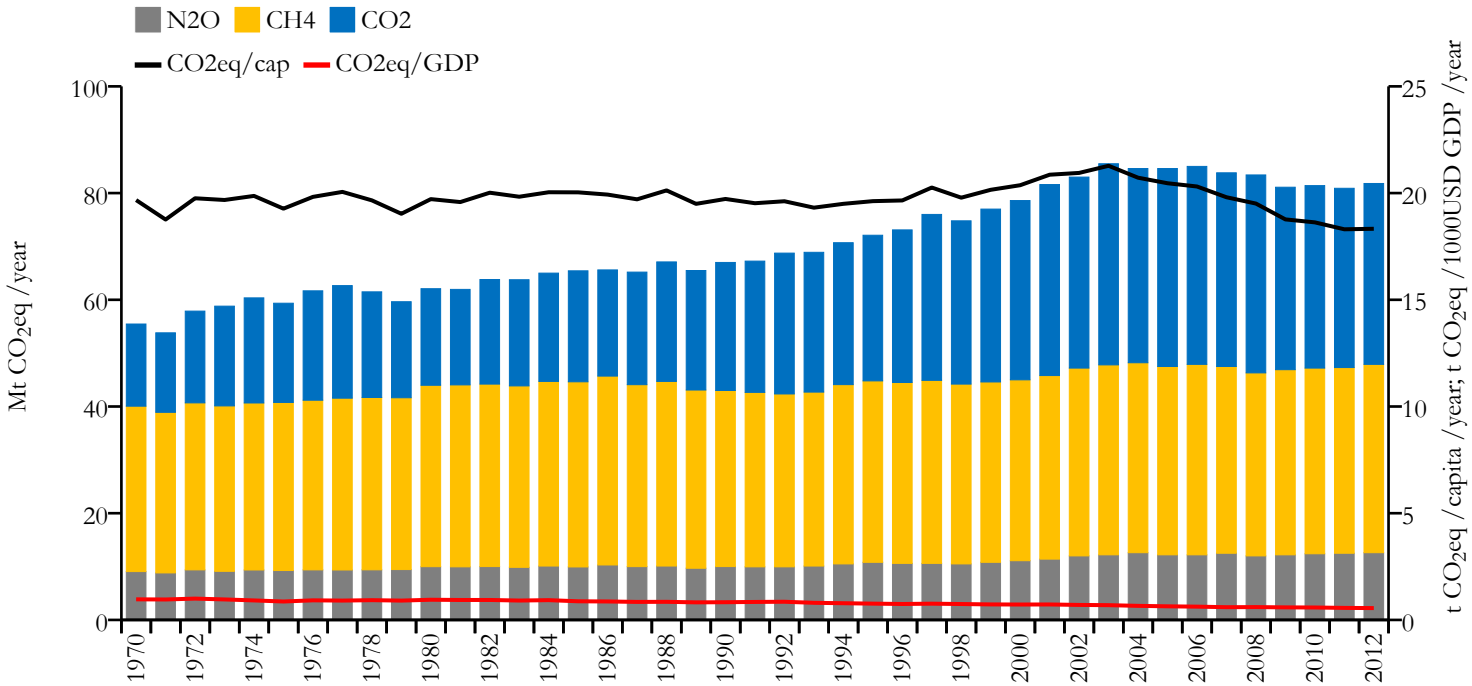
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 33.276 | 7.141 | 0.200 | 4660833 |
| 1990 | 23.734 | 6.981 | 0.294 | 3398172 |

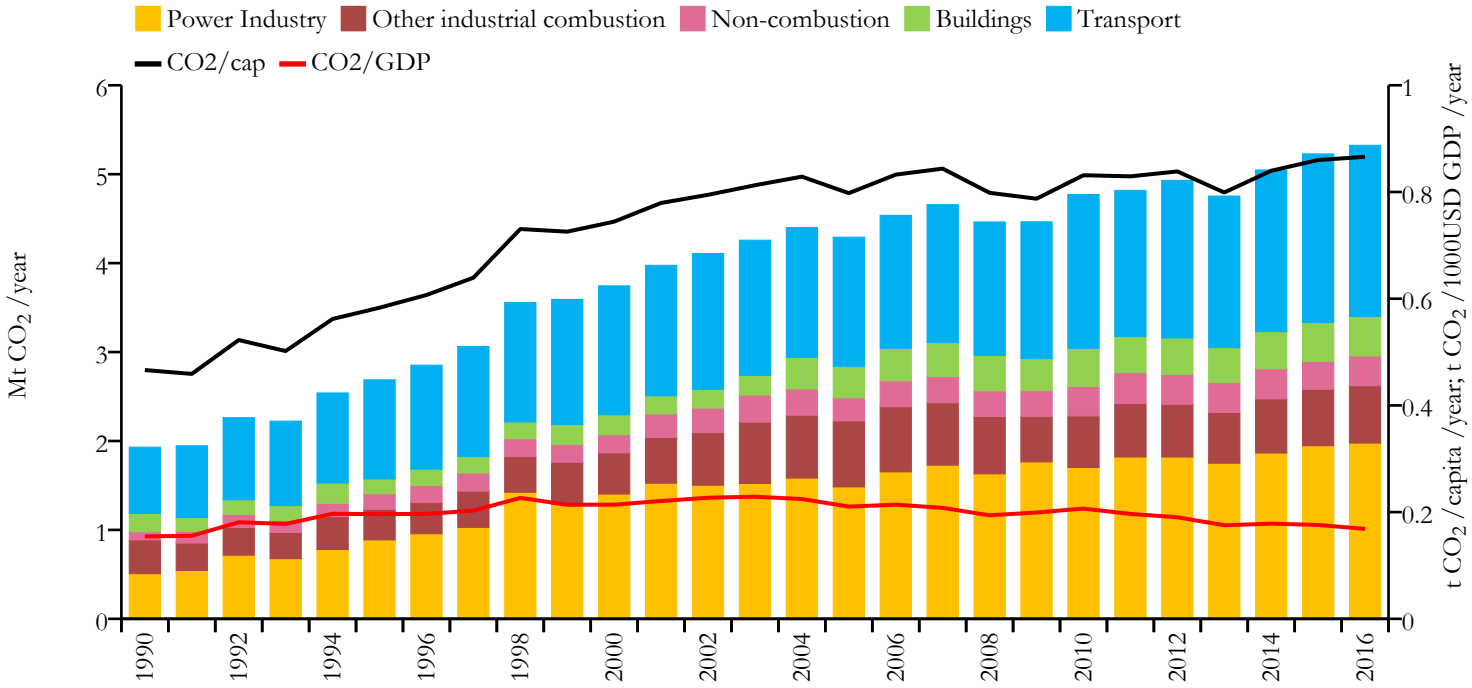
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Nicaragua

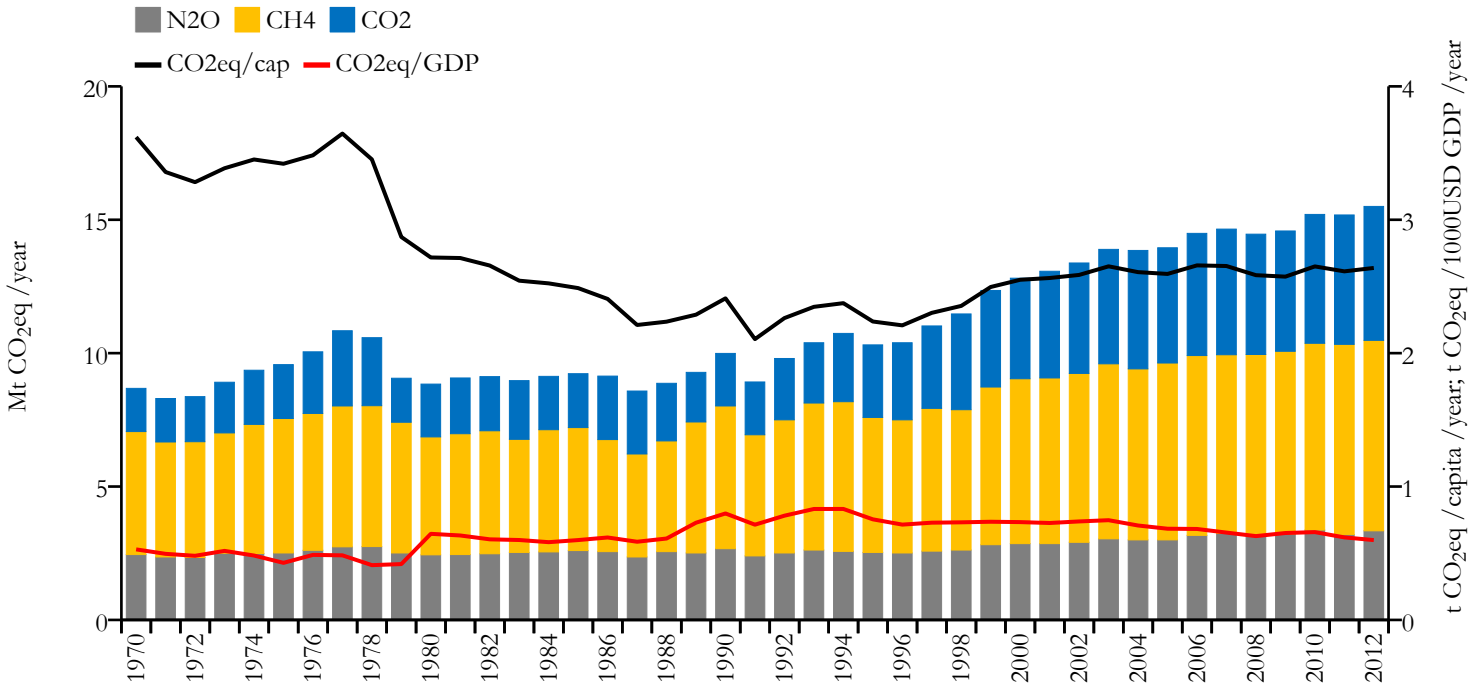
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 5.325 | 0.866 | 0.169 | 6149928 |
| 1990 | 1.930 | 0.466 | 0.154 | 4144565 |

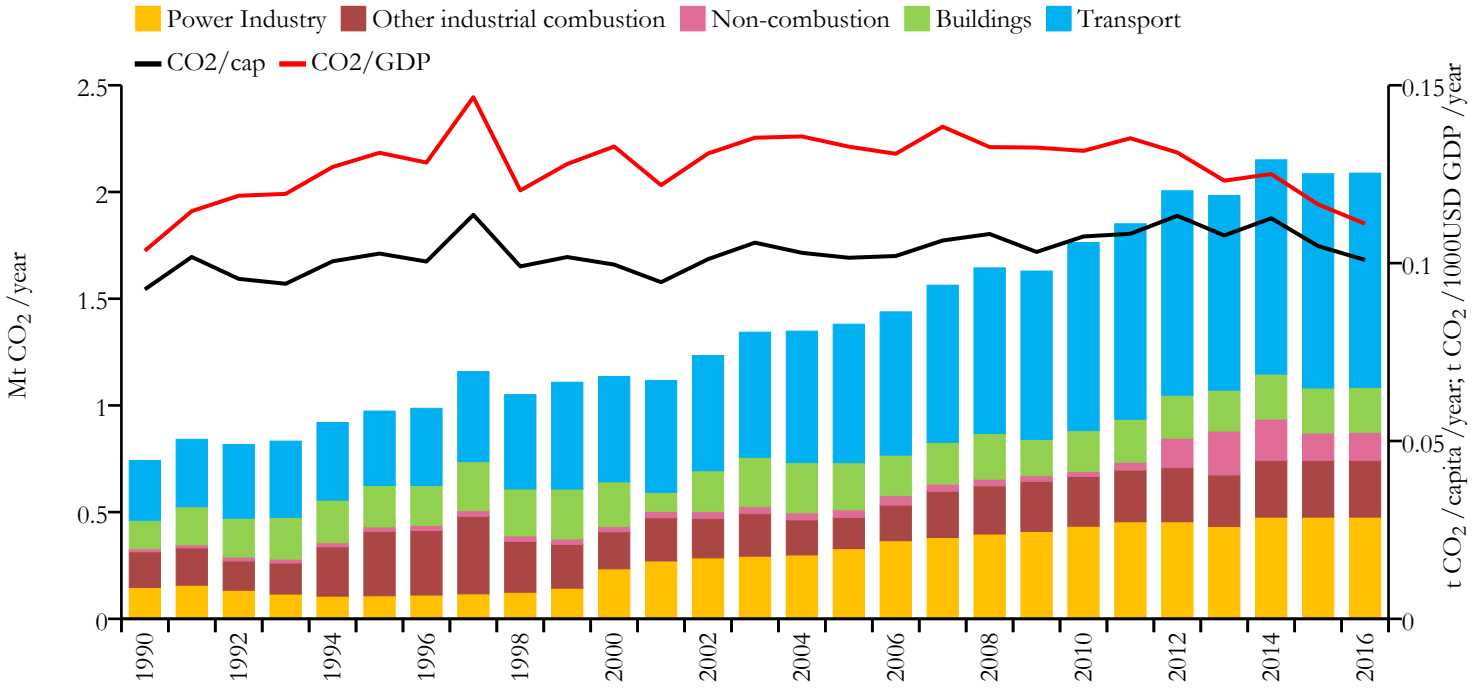
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Niger

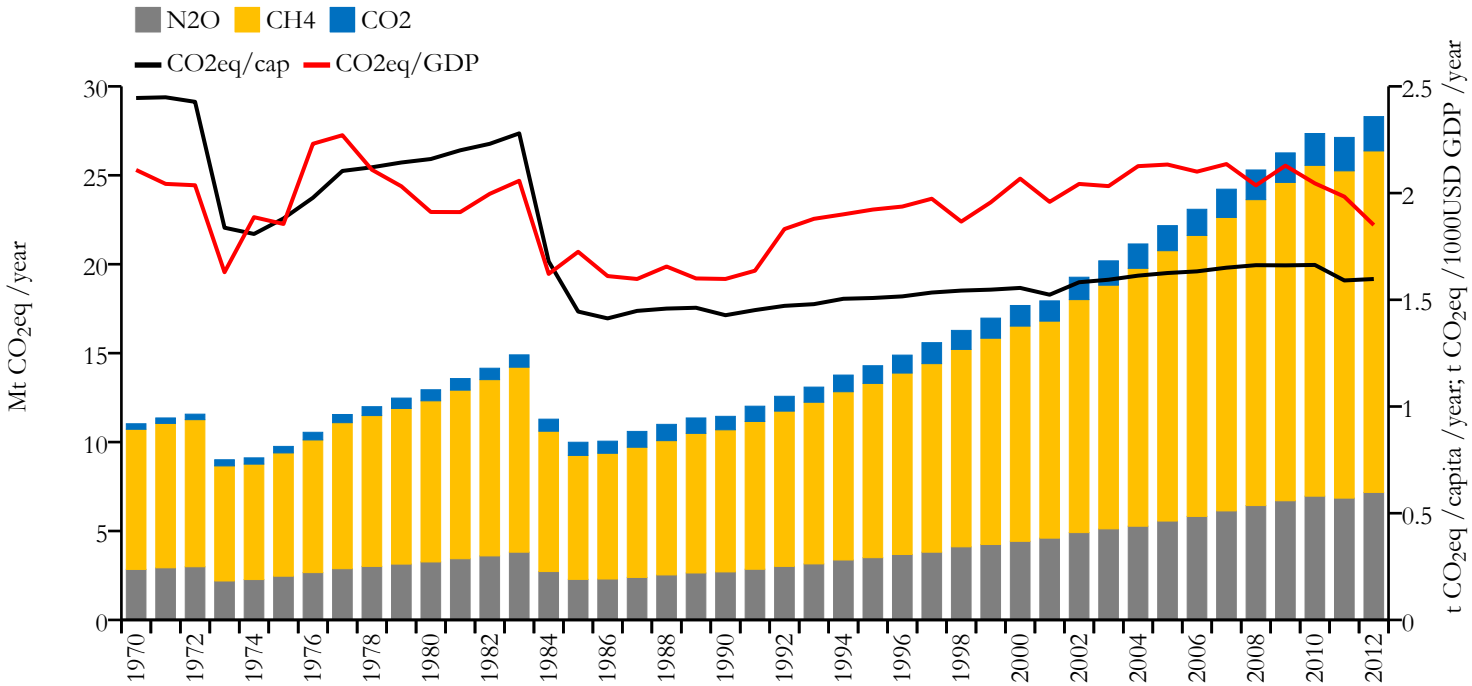
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



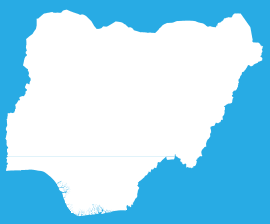

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 2.088 | 0.101 | 0.111 | 20672987 |
| 1990 | 0.742 | 0.093 | 0.103 | 8012861 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

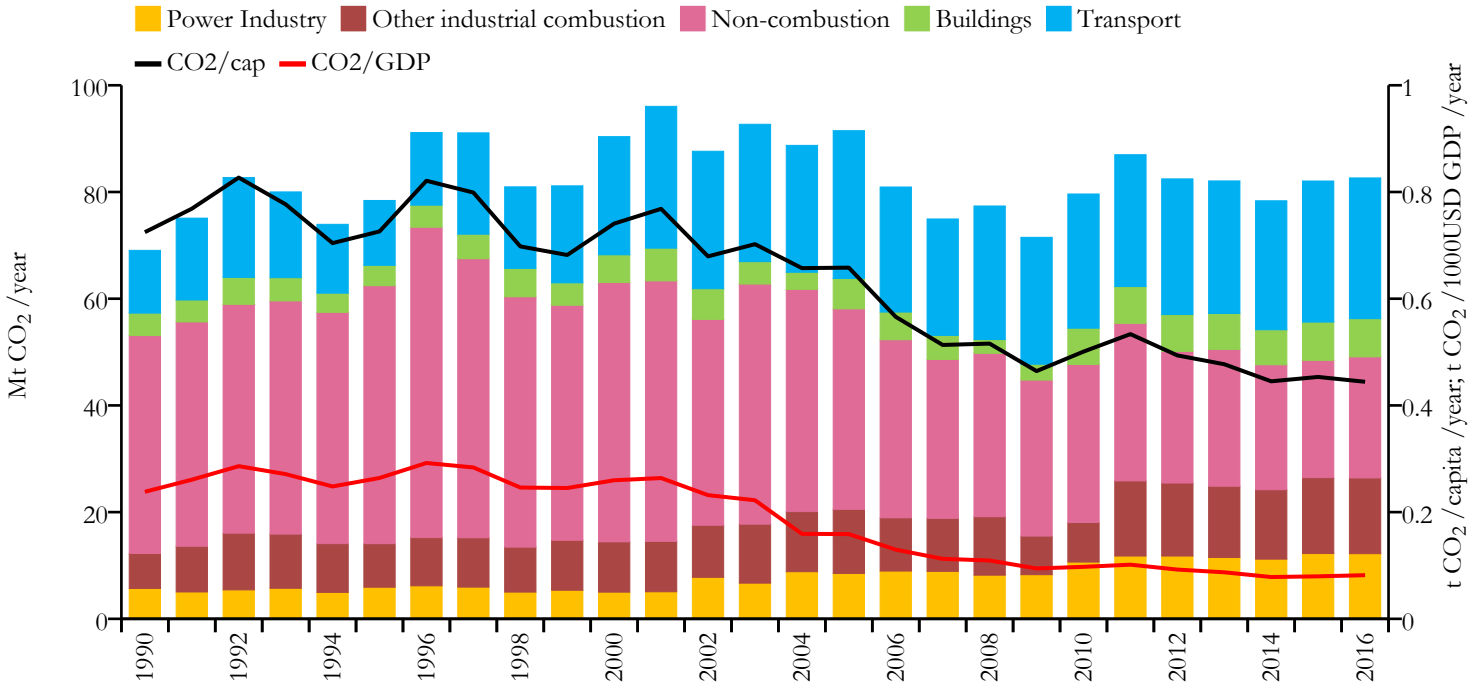
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Nigeria



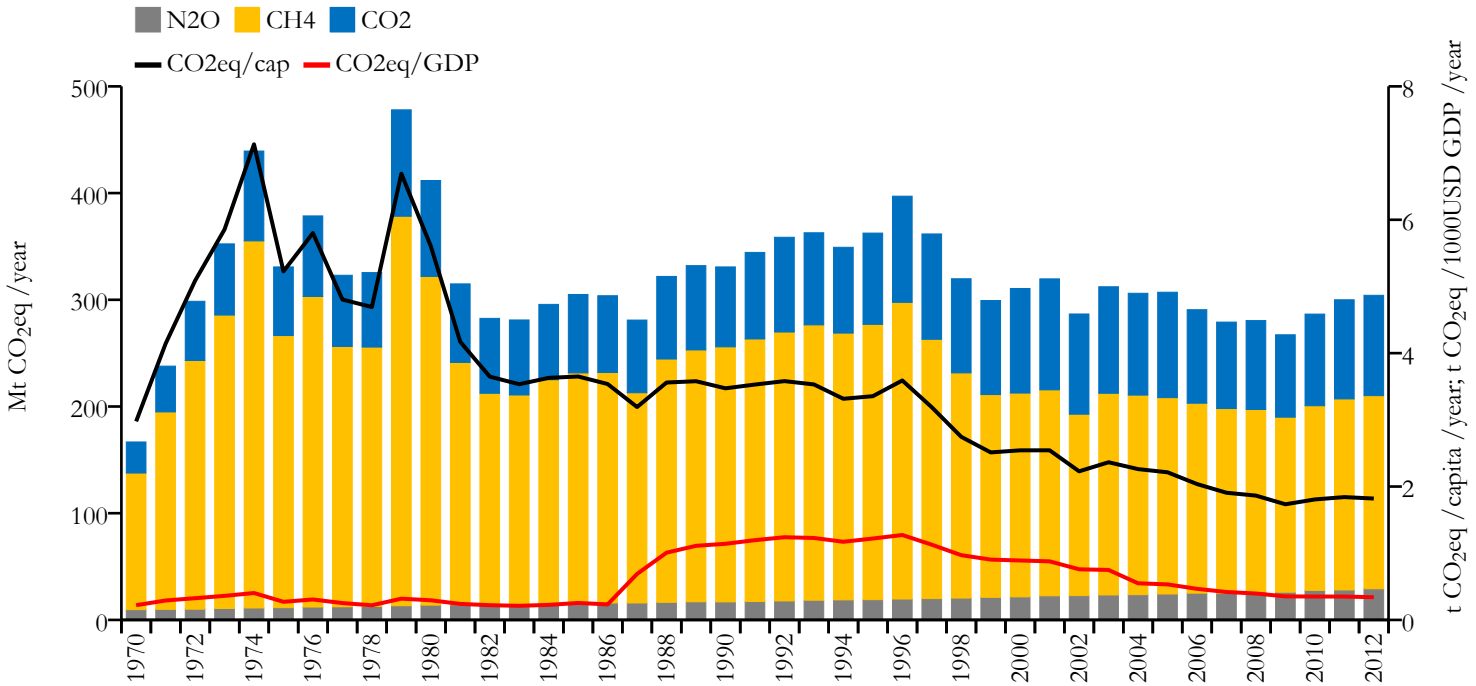
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



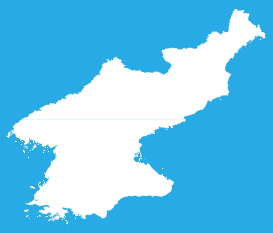

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 82.634 | 0.444 | 0.082 | 185989640 |
| 1990 | 69.062 | 0.725 | 0.238 | 95269988 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

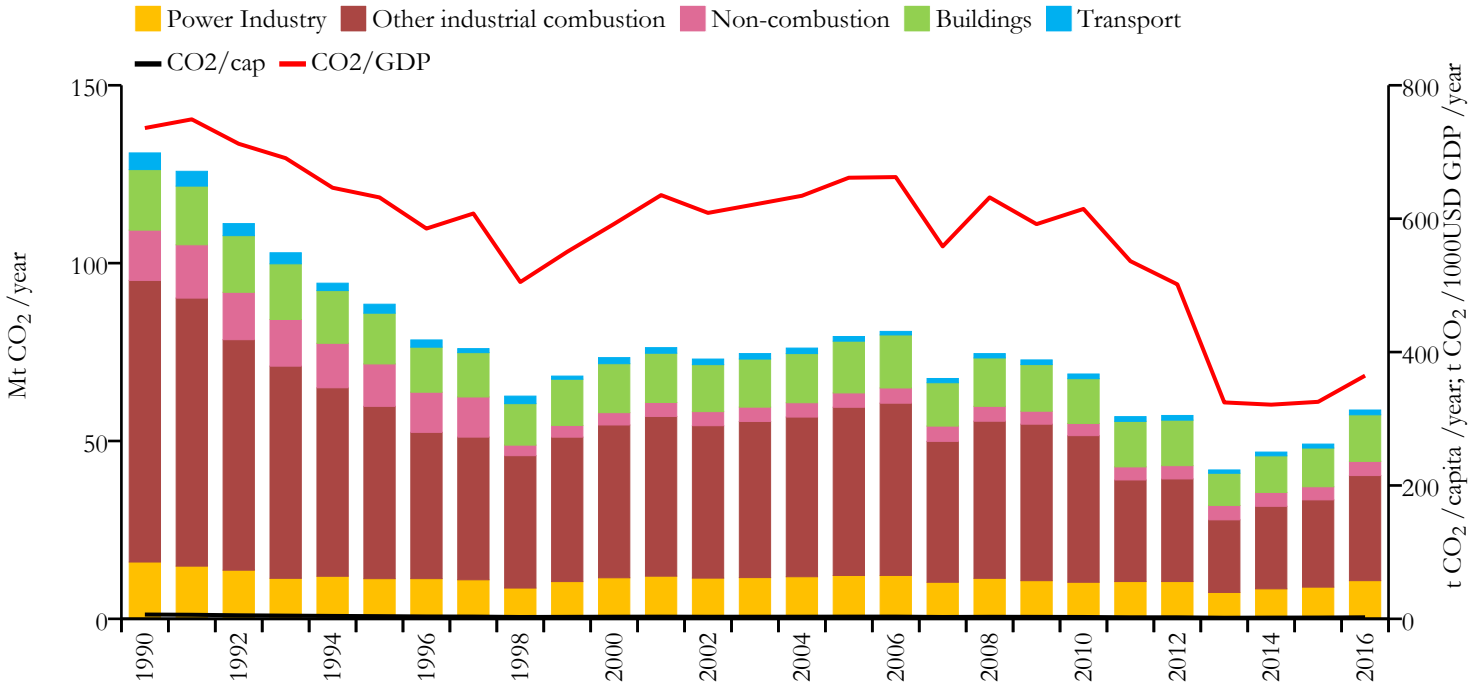
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# North Korea



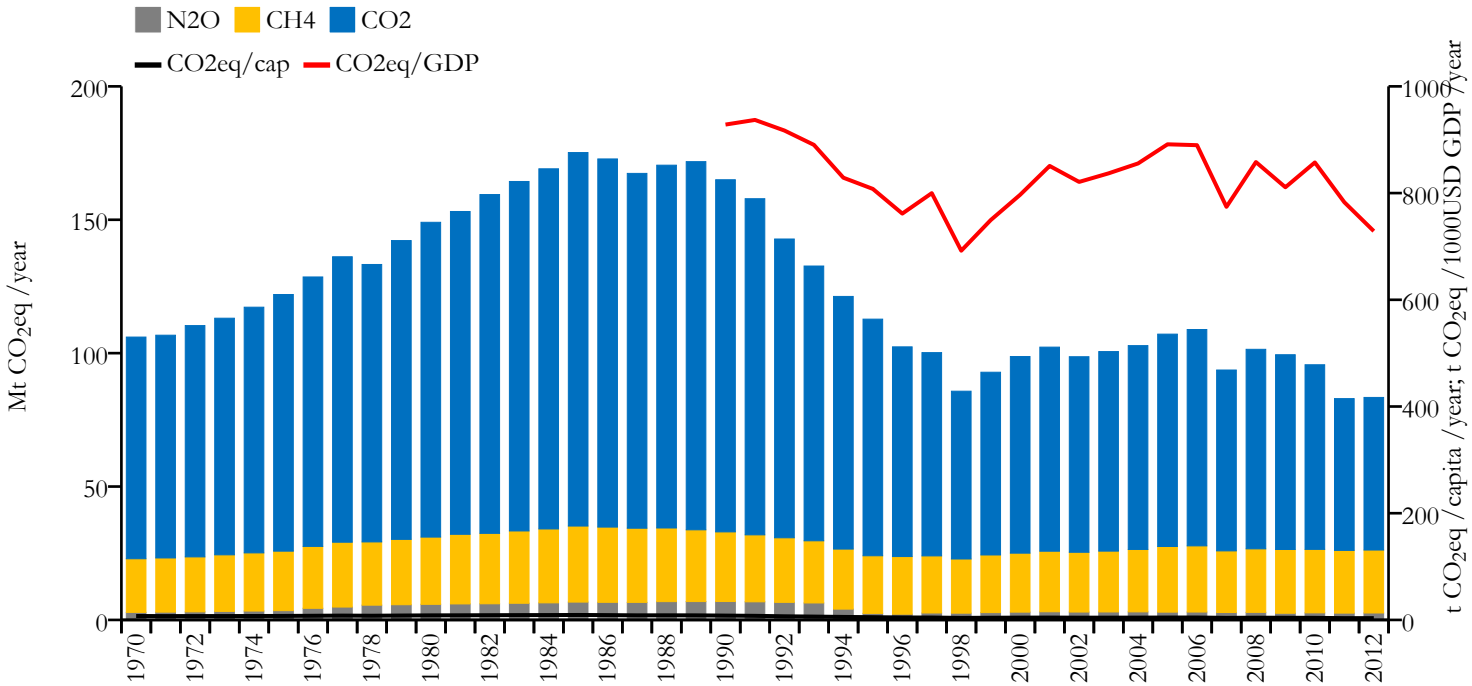
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 58.709 | 2.311 | 364.651 | 25368620 |
| 1990 | 130.986 | 6.453 | 735.878 | 20293054 |

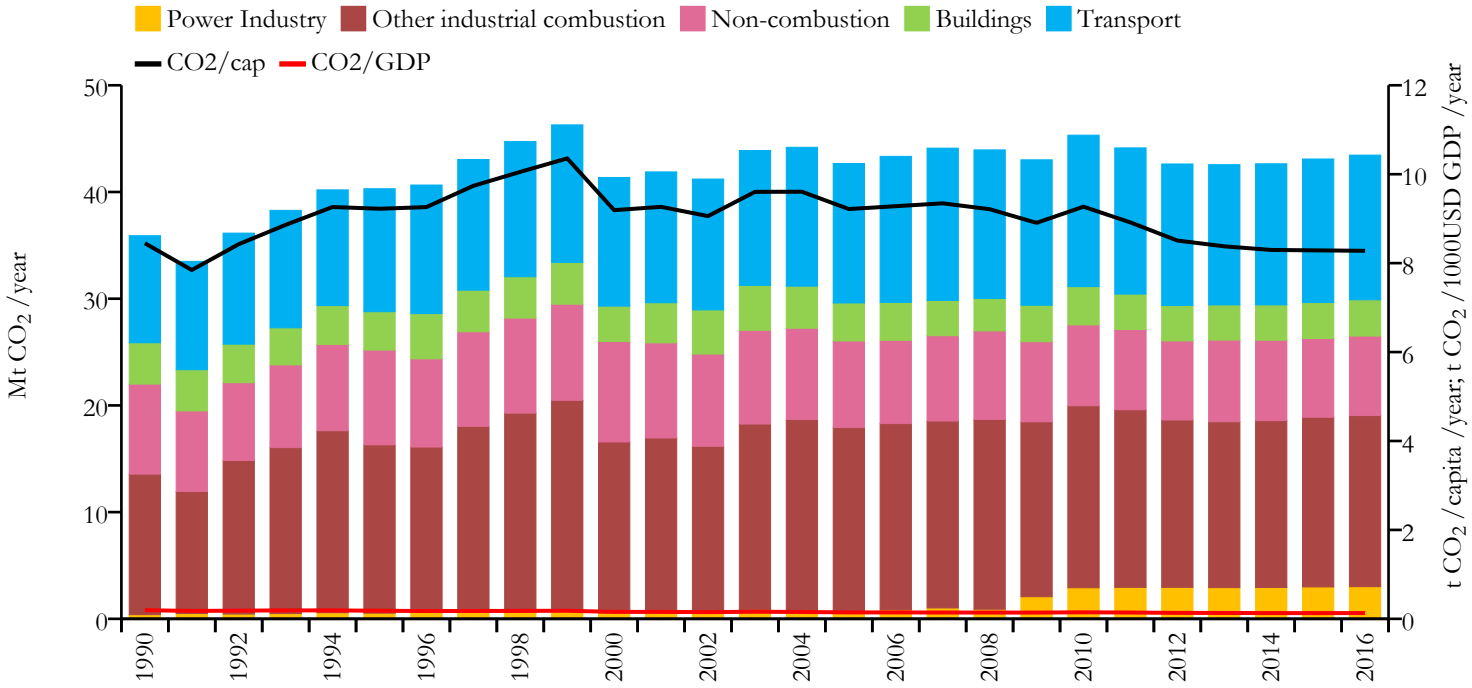
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Norway

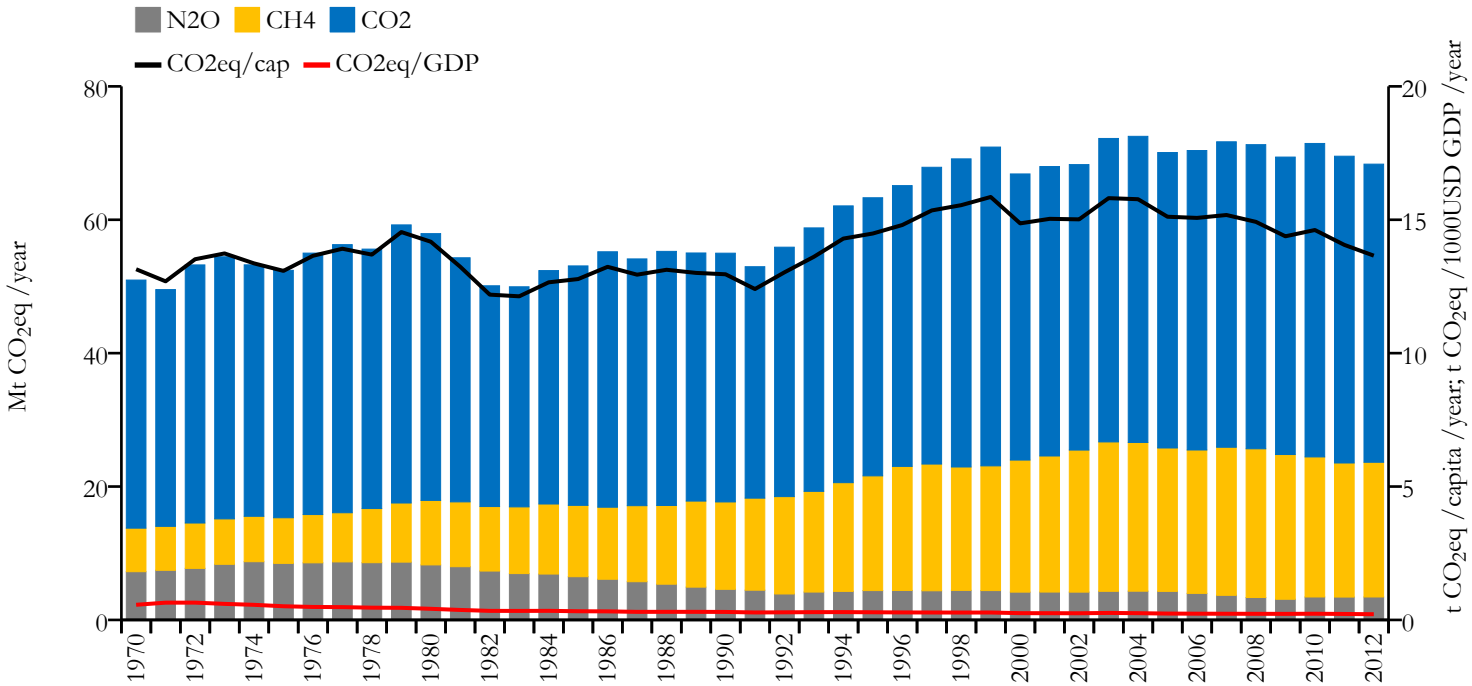
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 43.456 | 8.277 | 0.130 | 5254694 |
| 1990 | 35.903 | 8.448 | 0.195 | 4247285 |

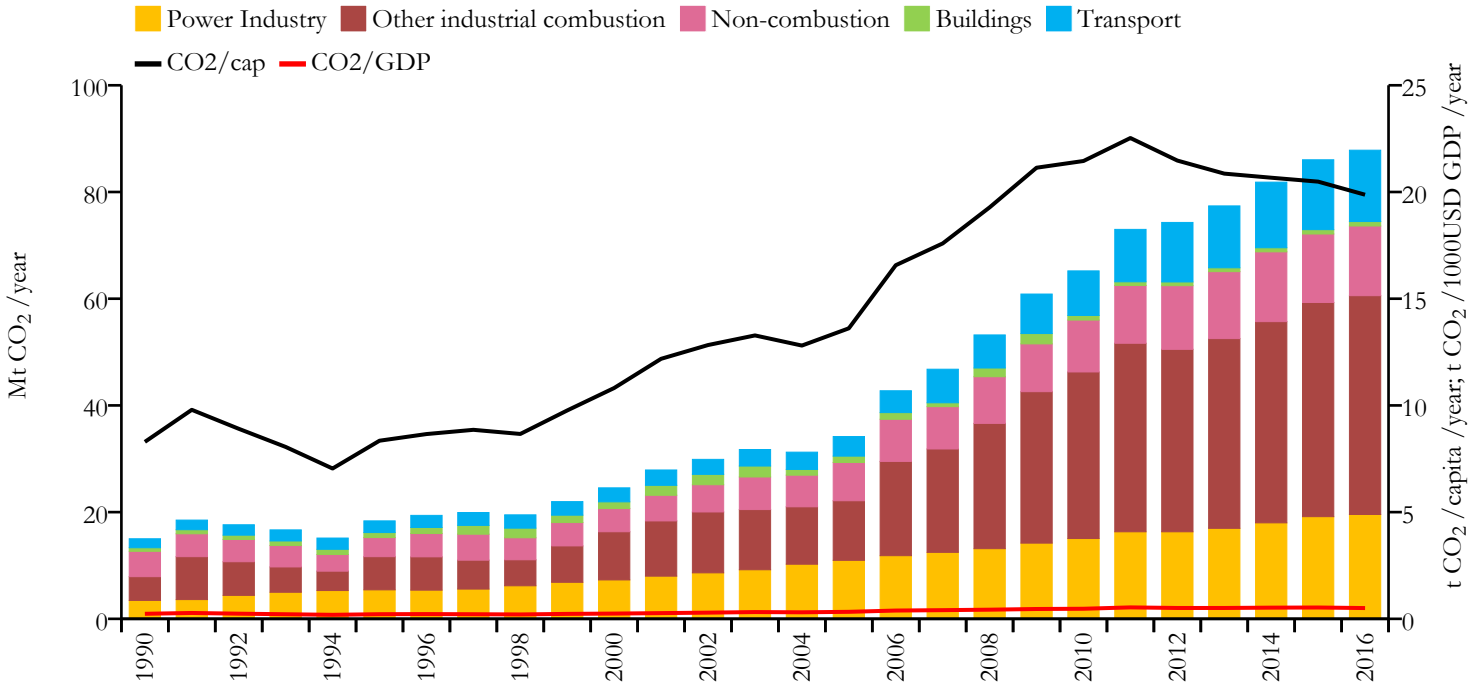
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



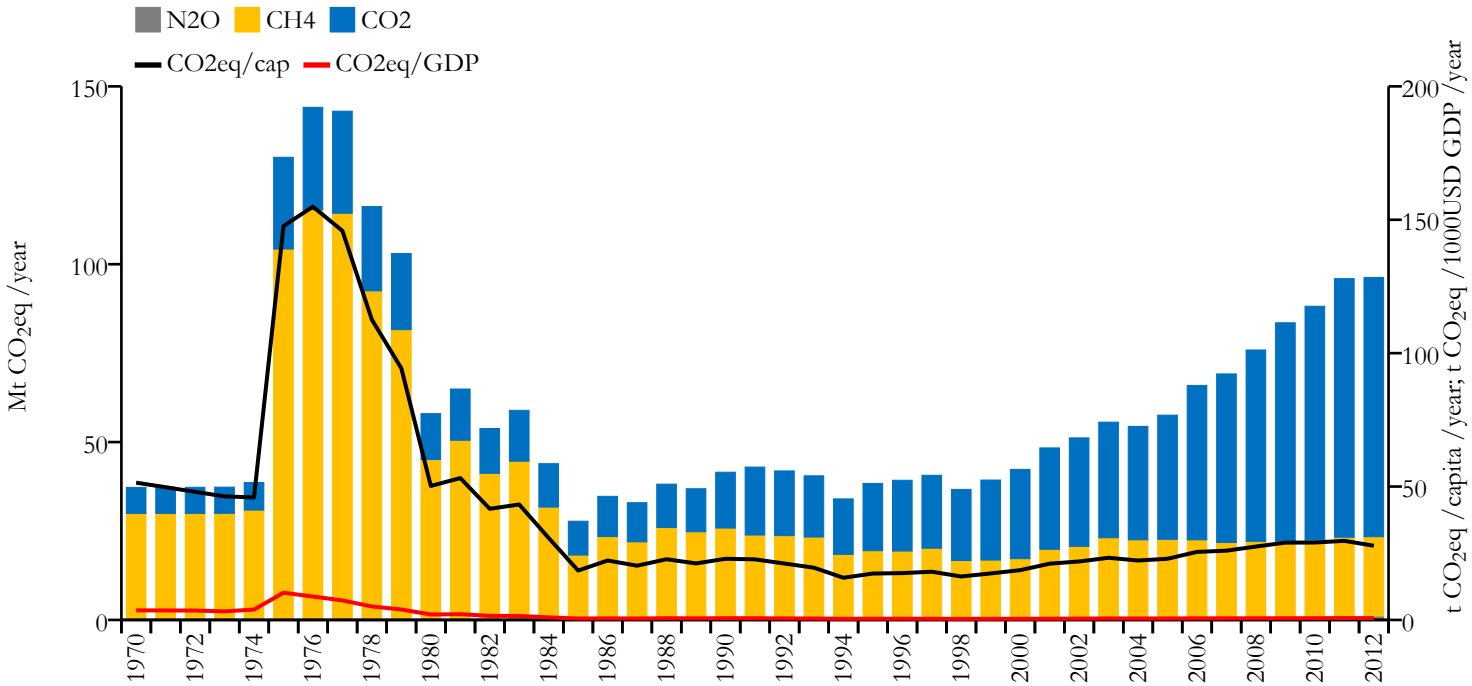
# Oman

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)

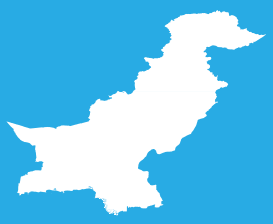



| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 87.836 | 19.872 | 0.505 | 4424762 |
| 1990 | 15.008 | 8.292 | 0.236 | 1812160 |

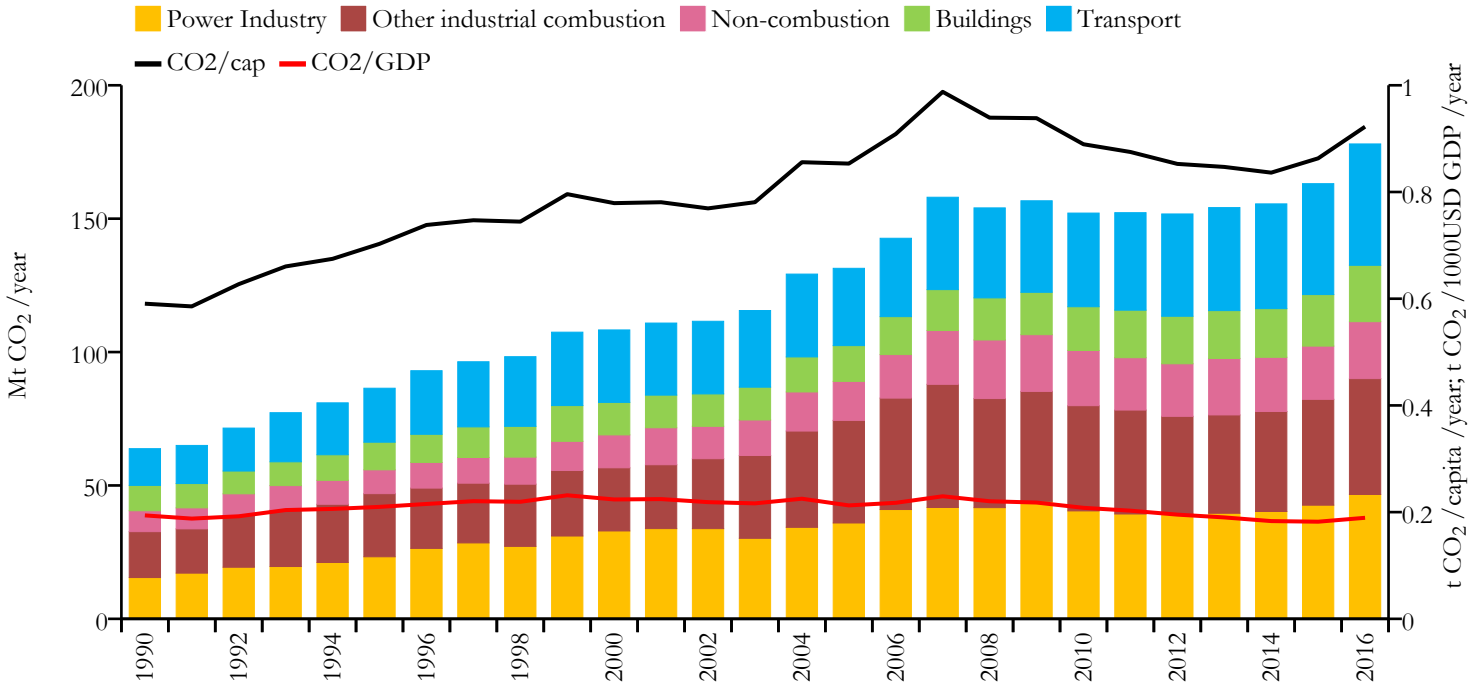
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Pakistan

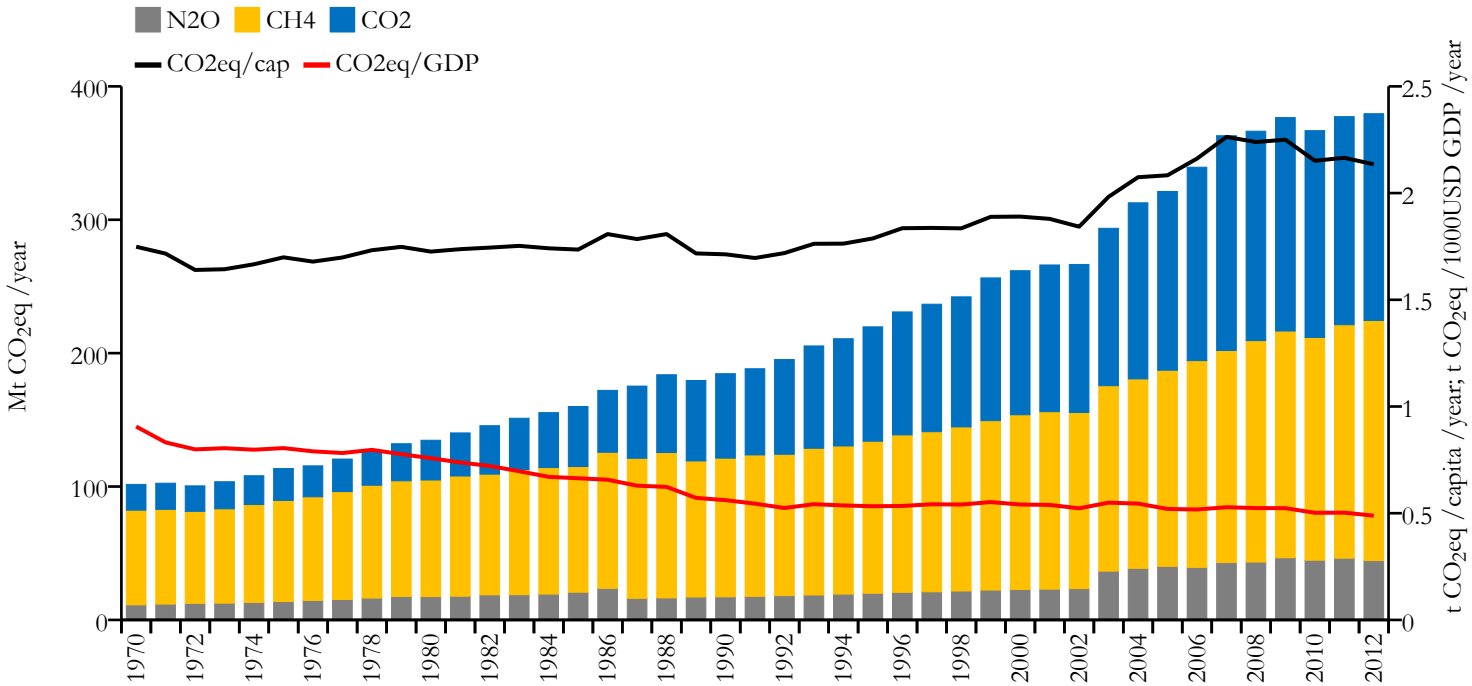


## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



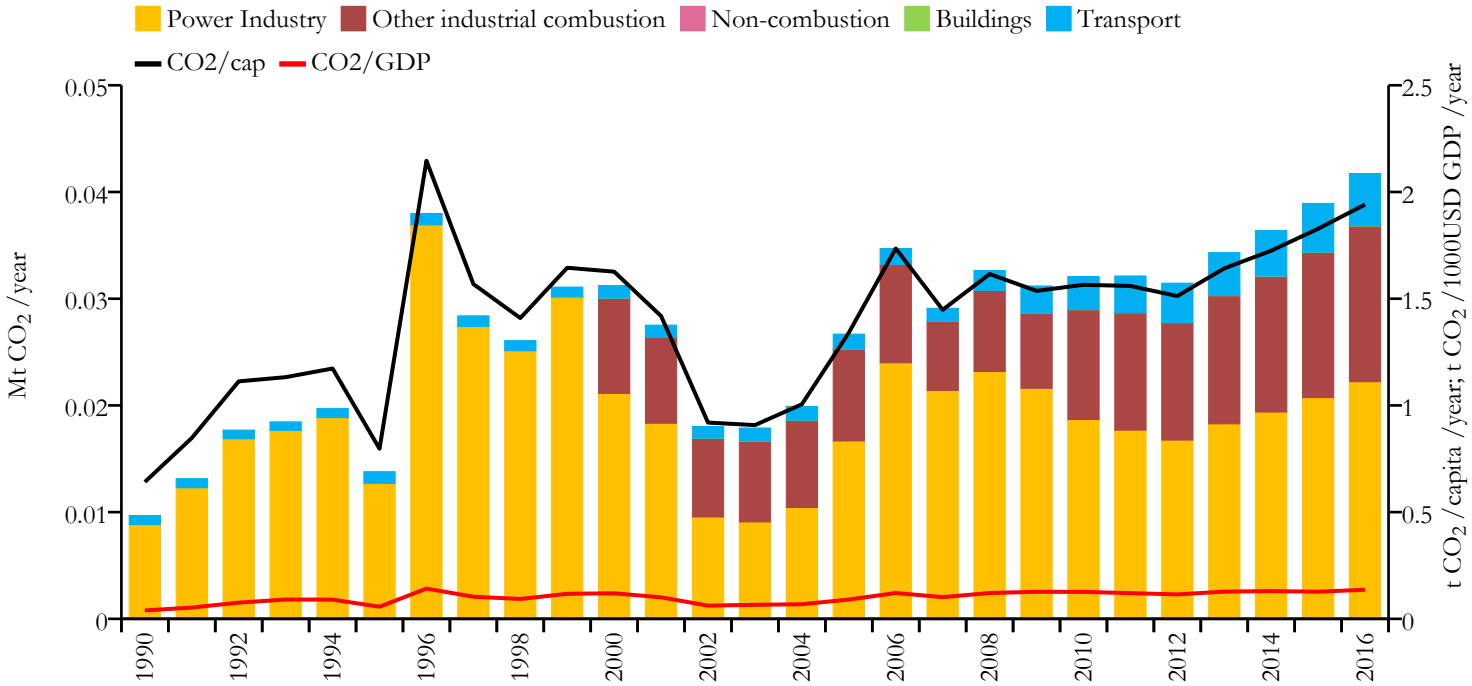

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 178.014 | 0.922 | 0.189 | 193203476 |
| 1990 | 63.791 | 0.591 | 0.194 | 107678614 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



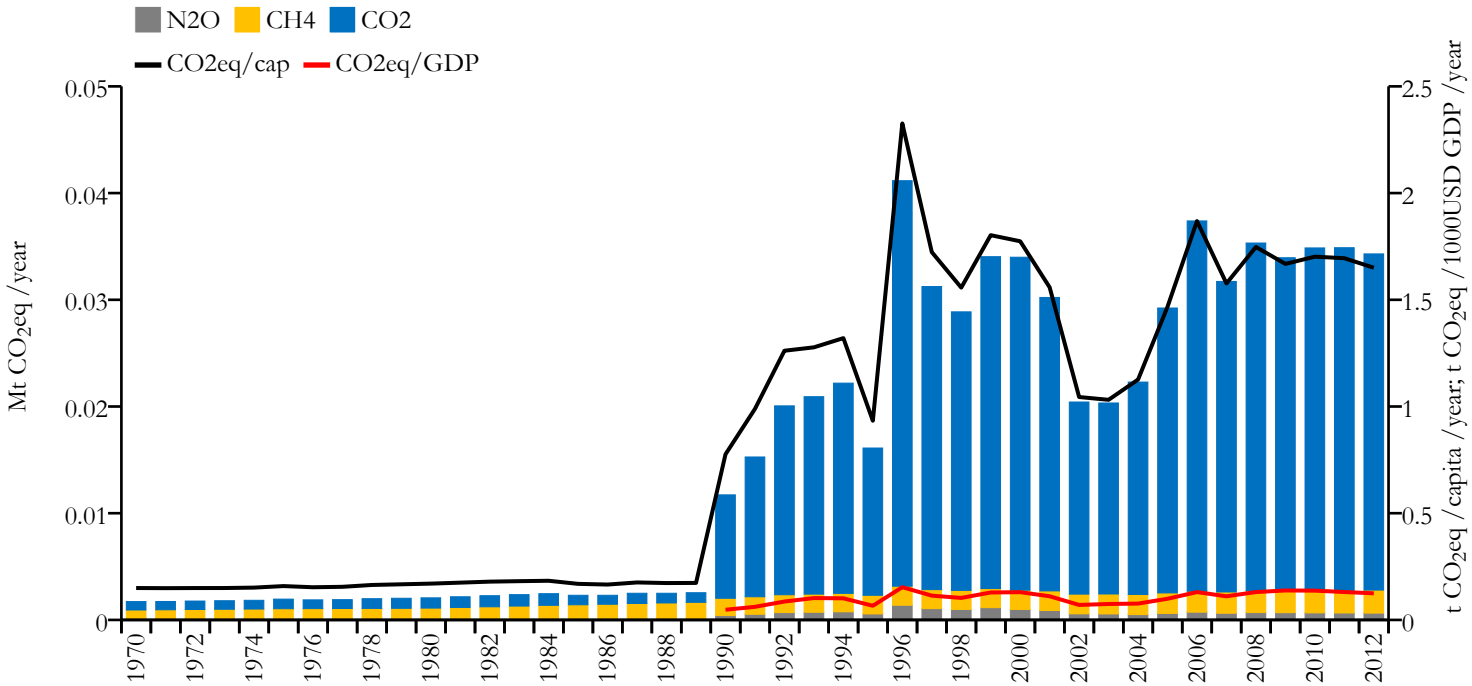
# Palau

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



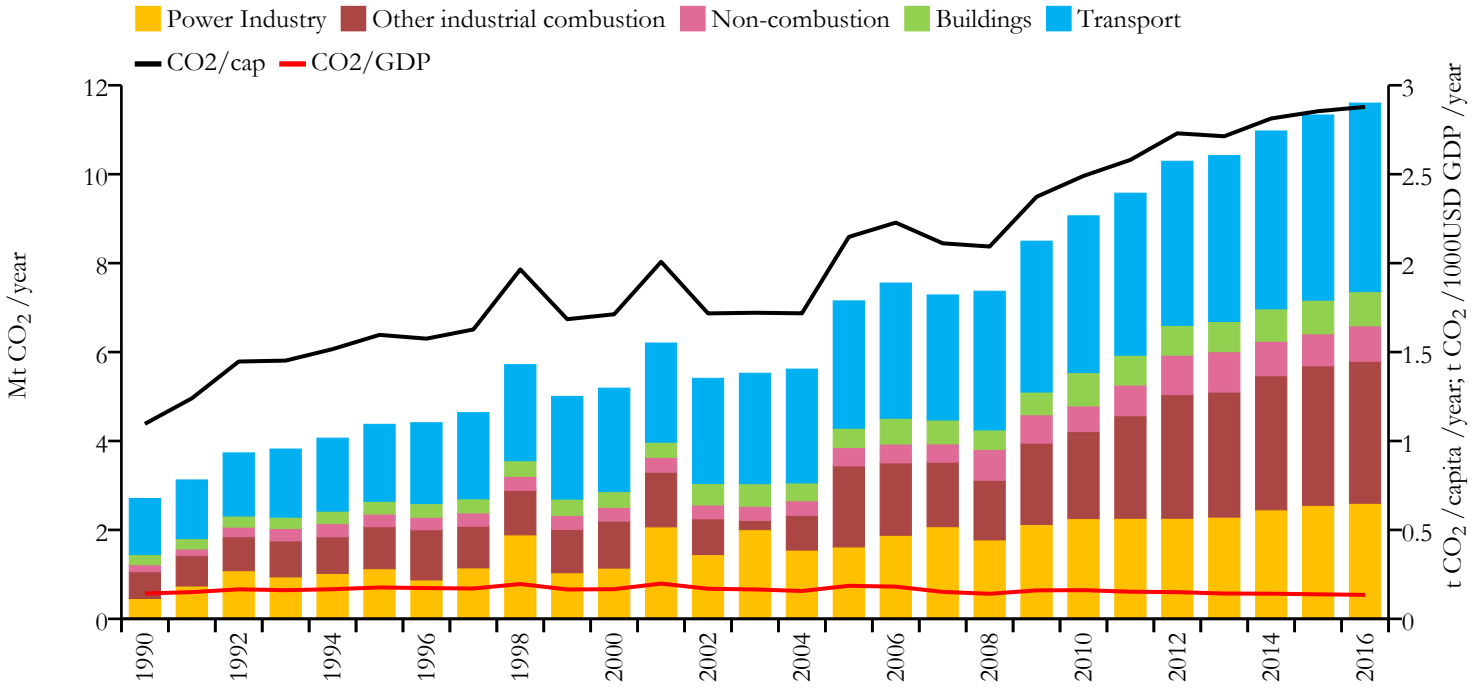

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.042 | 1.941 | 0.136 | 21503 |
| 1990 | 0.010 | 0.641 | 0.039 | 15088 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Panama

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 11.600 | 2.878 | 0.135 | 4034119 |
| 1990 | 2.708 | 1.096 | 0.143 | 2471009 |

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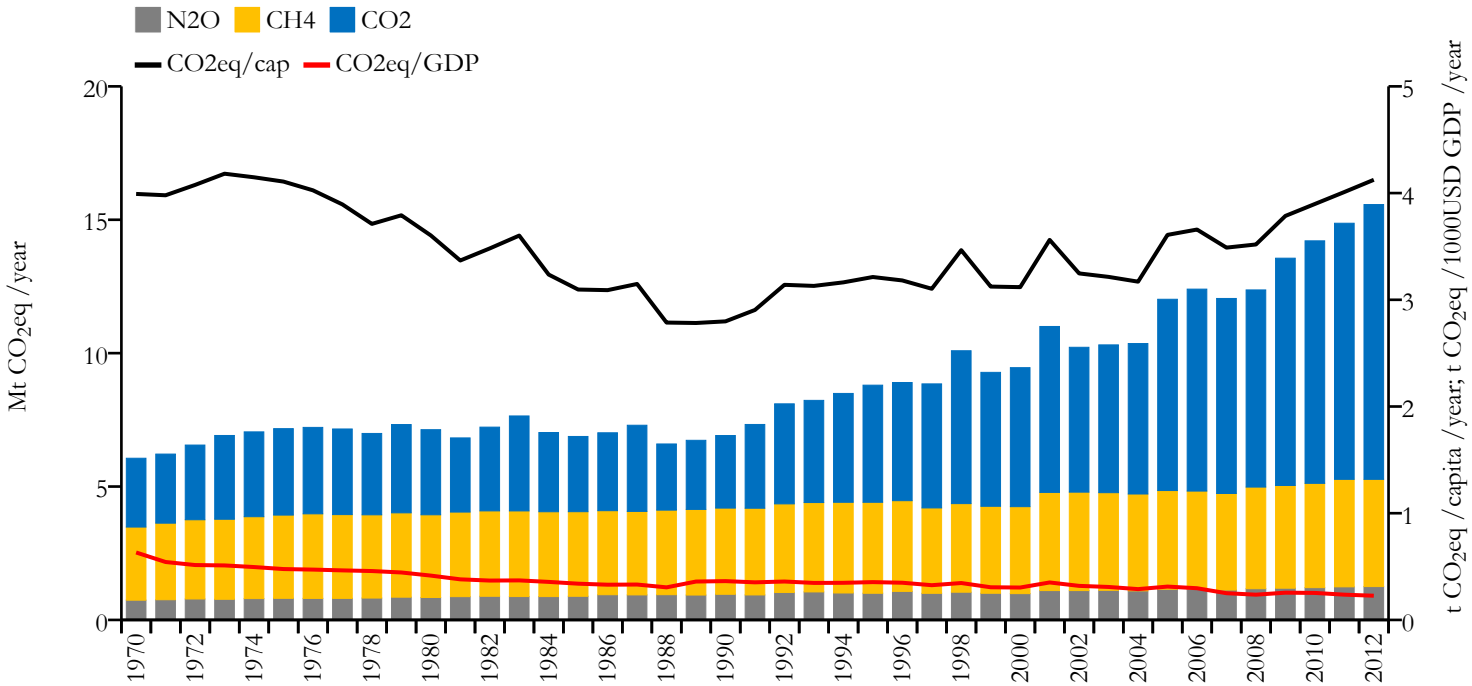
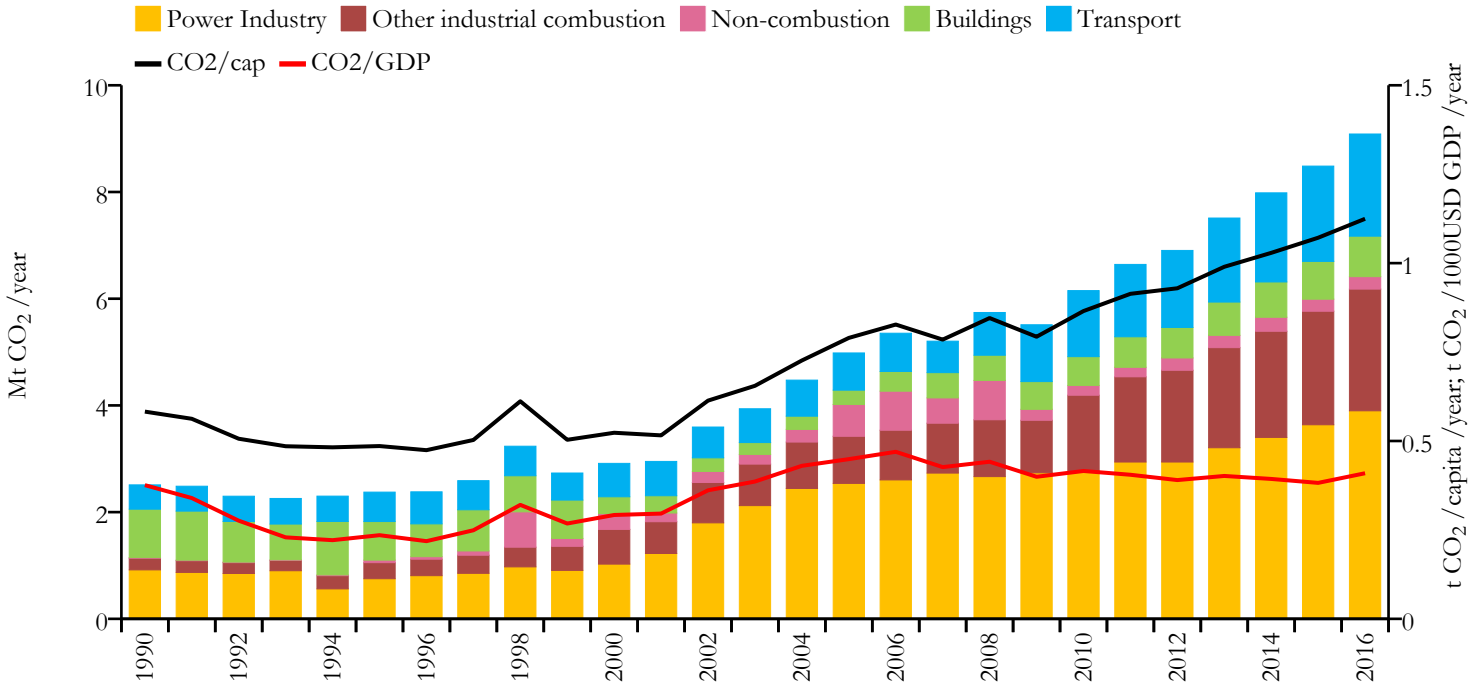
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



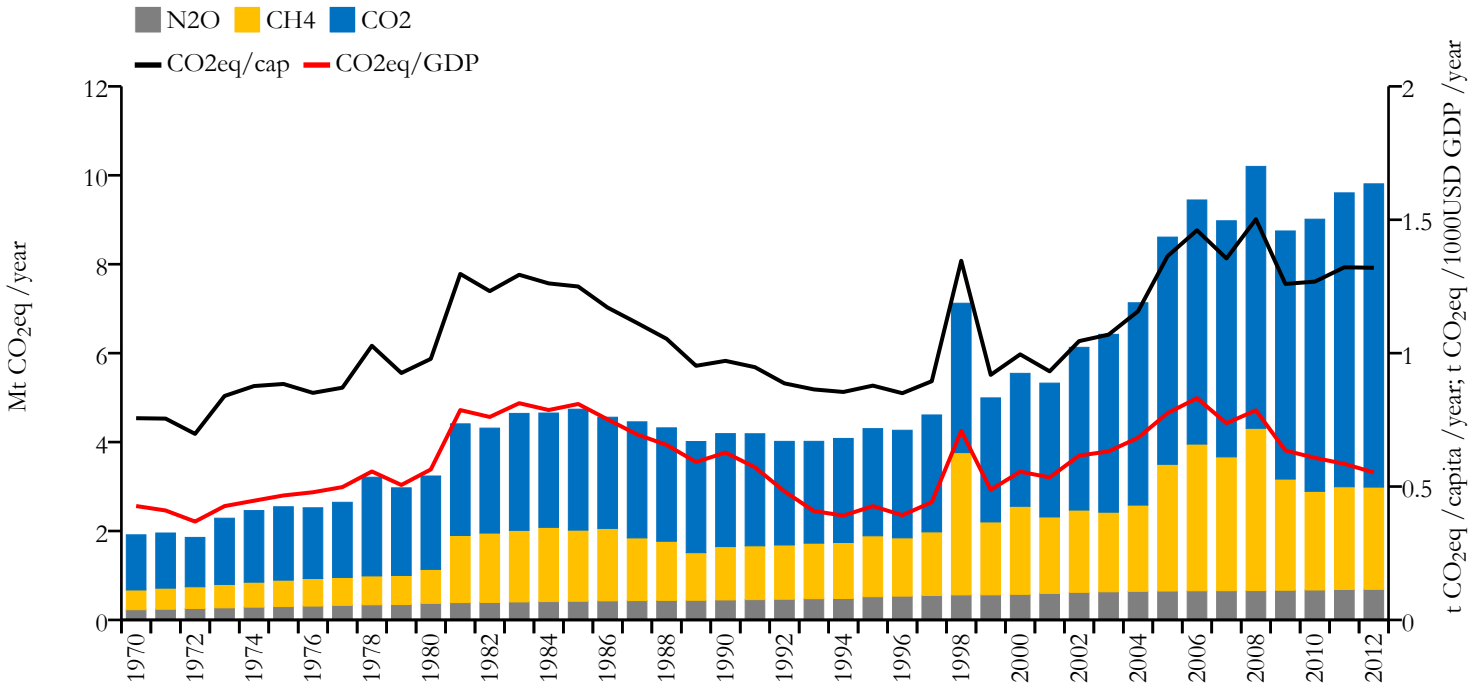
# Papua New Guinea

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



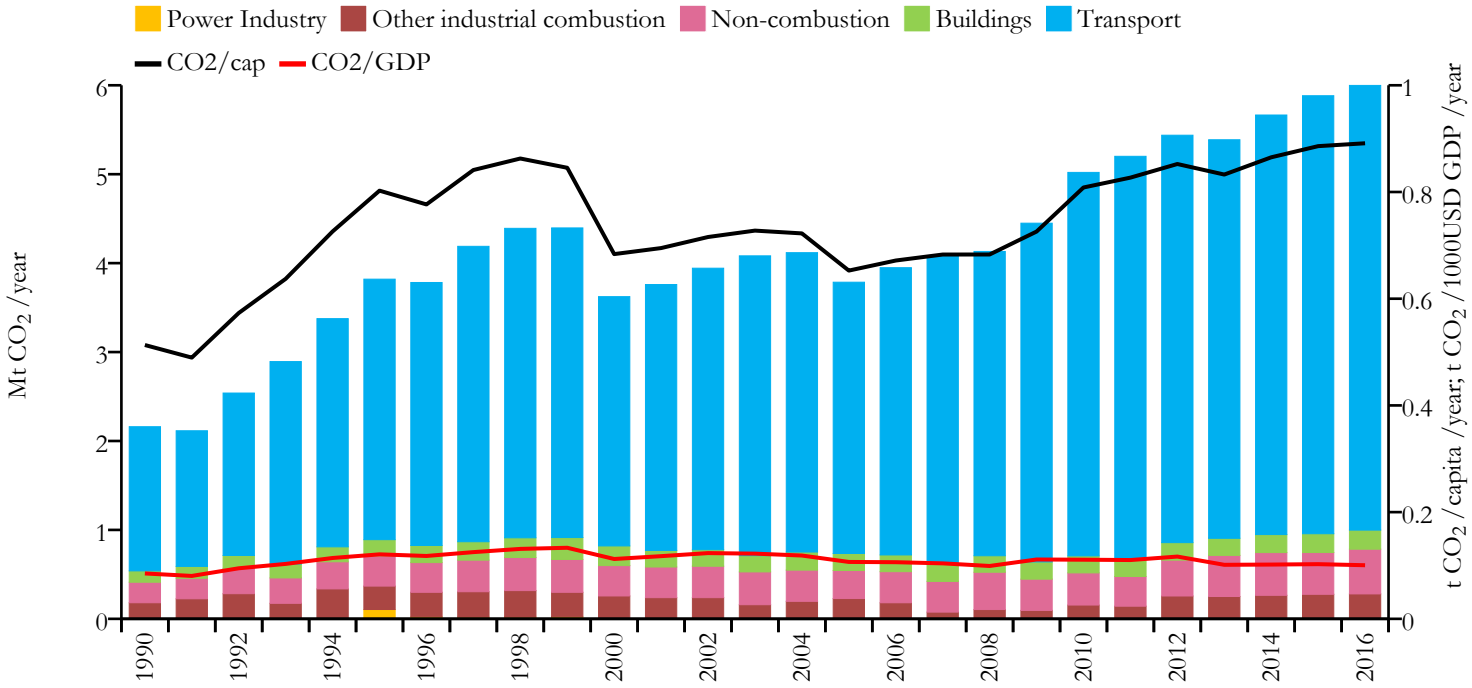

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 9.087 | 1.125 | 0.409 | 8084991 |
| 1990 | 2.511 | 0.583 | 0.376 | 4313059 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Paraguay

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 5.998 | 0.891 | 0.100 | 6725308 |
| 1990 | 2.161 | 0.513 | 0.085 | 4213742 |

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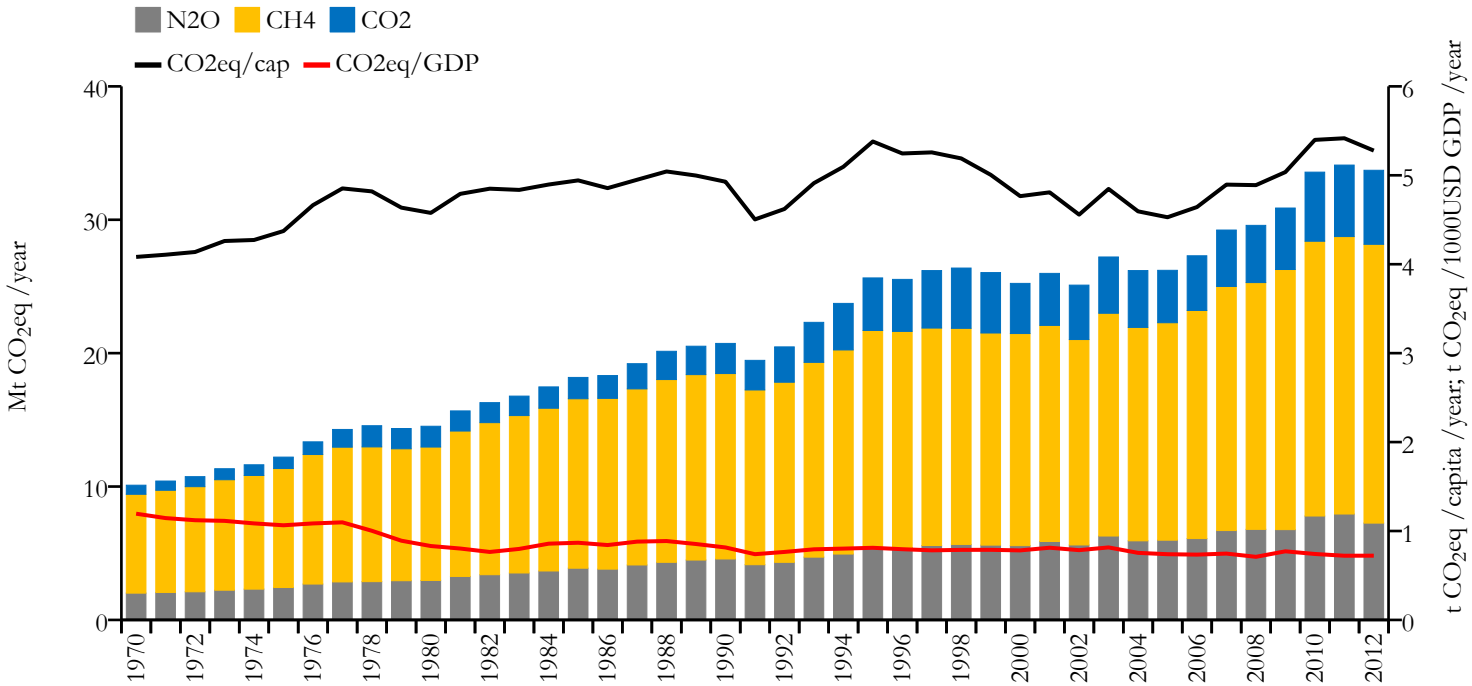
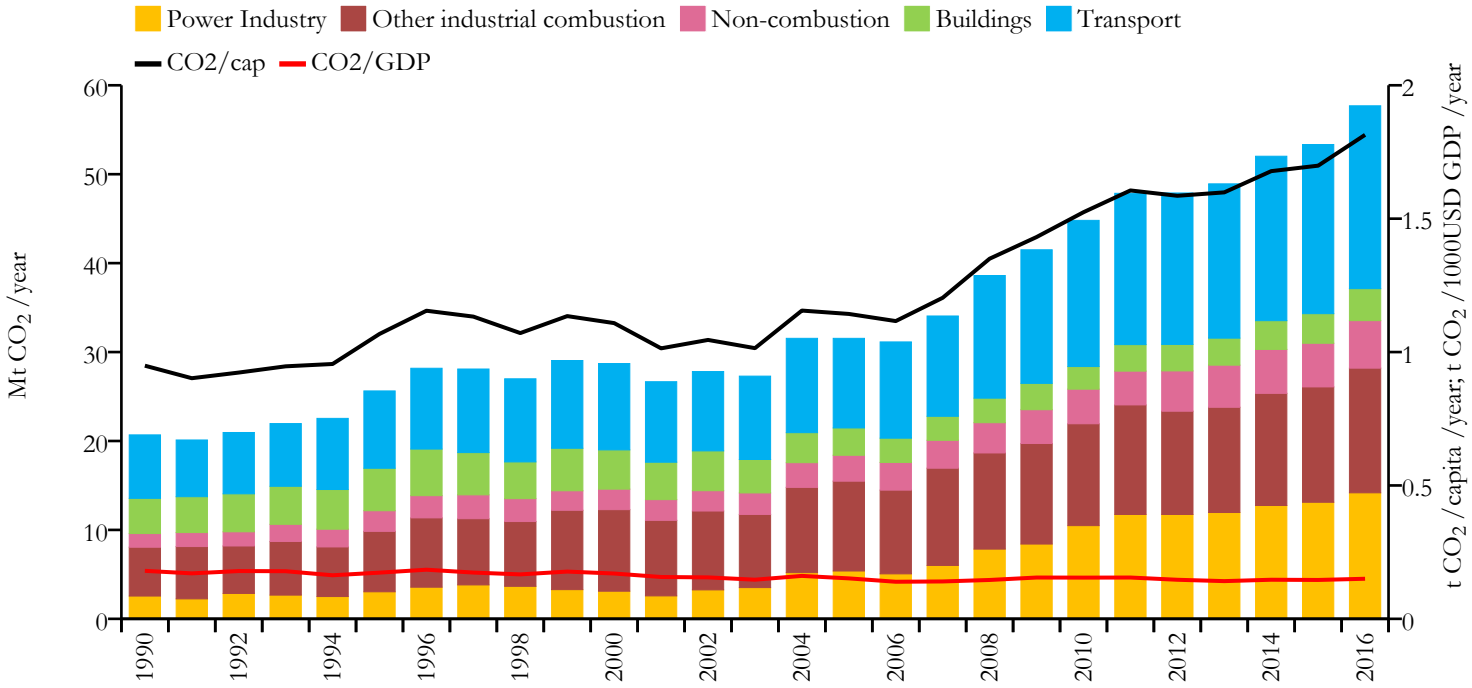
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



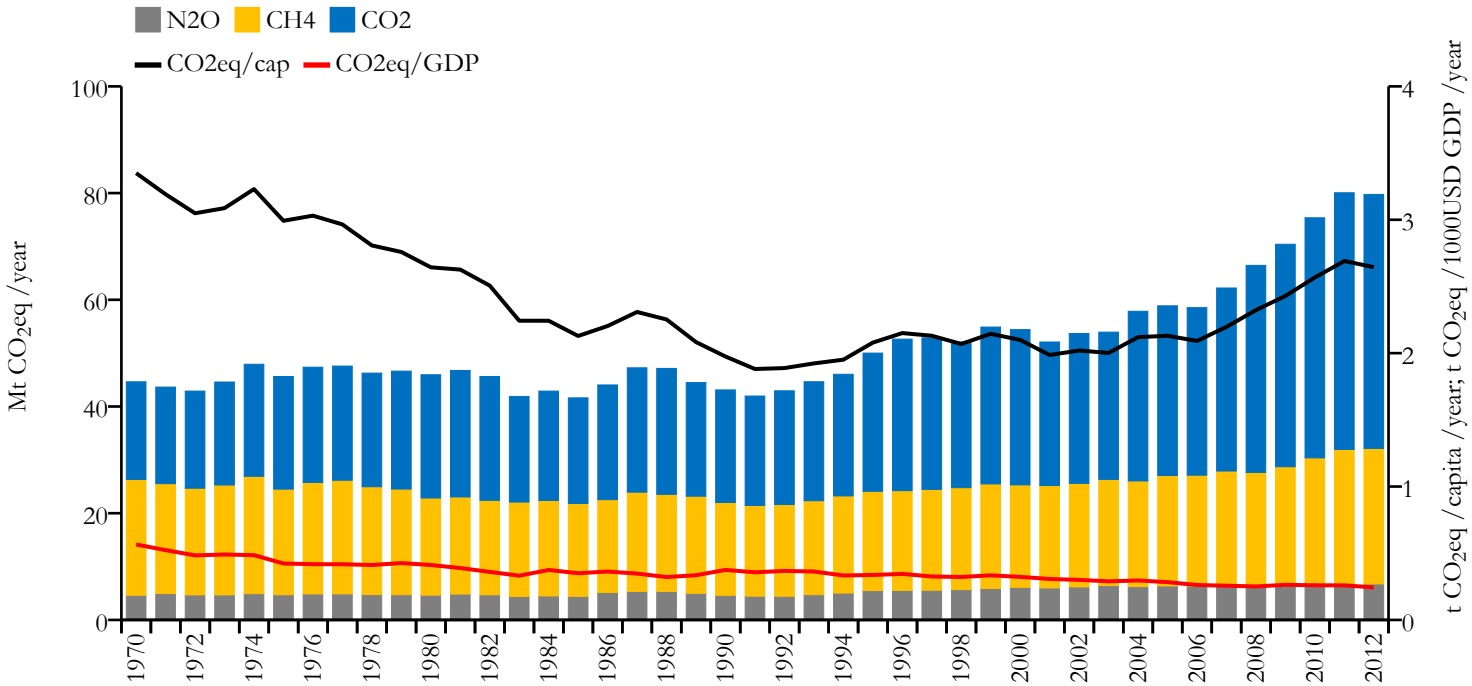
# Peru

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



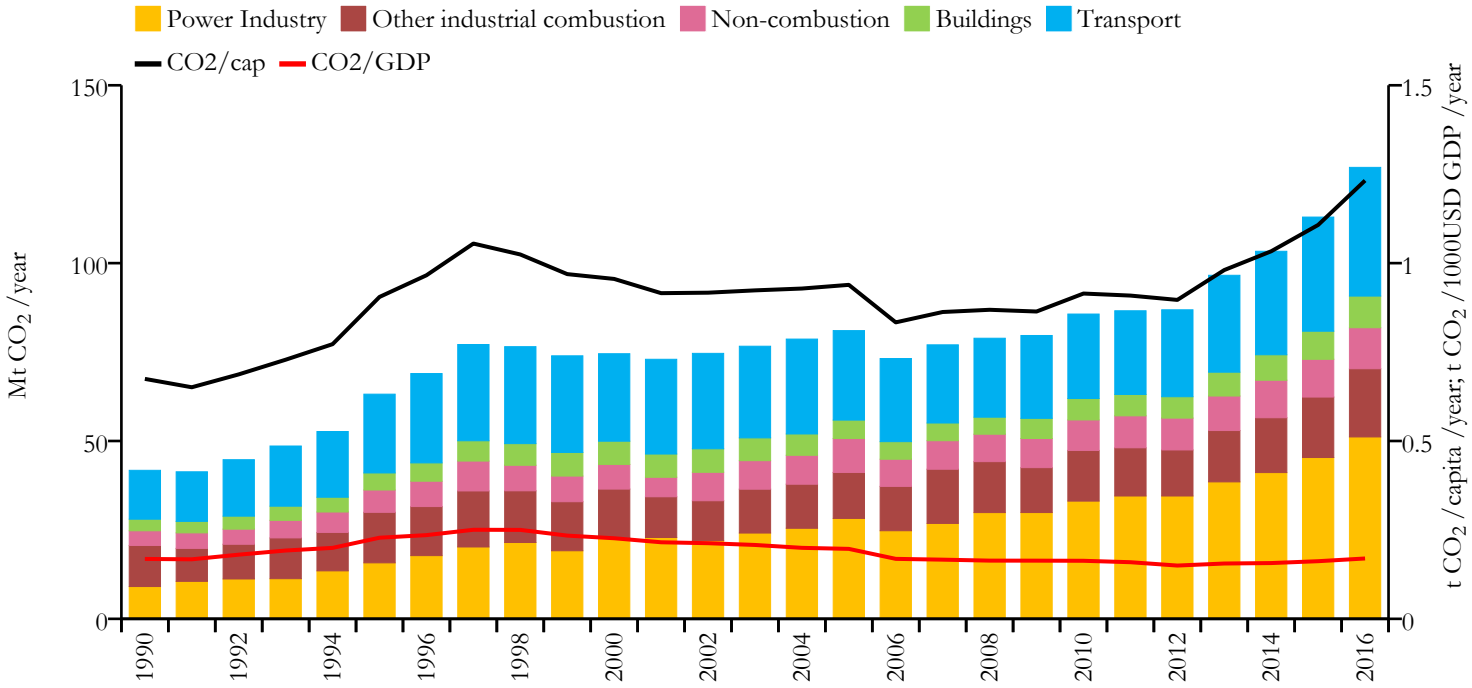

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 57.693 | 1.814 | 0.150 | 31773839 |
| 1990 | 20.687 | 0.949 | 0.180 | 21826658 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Philippines

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 126.923 | 1.232 | 0.170 | 103320222 |
| 1990 | 41.757 | 0.675 | 0.168 | 61947348 |

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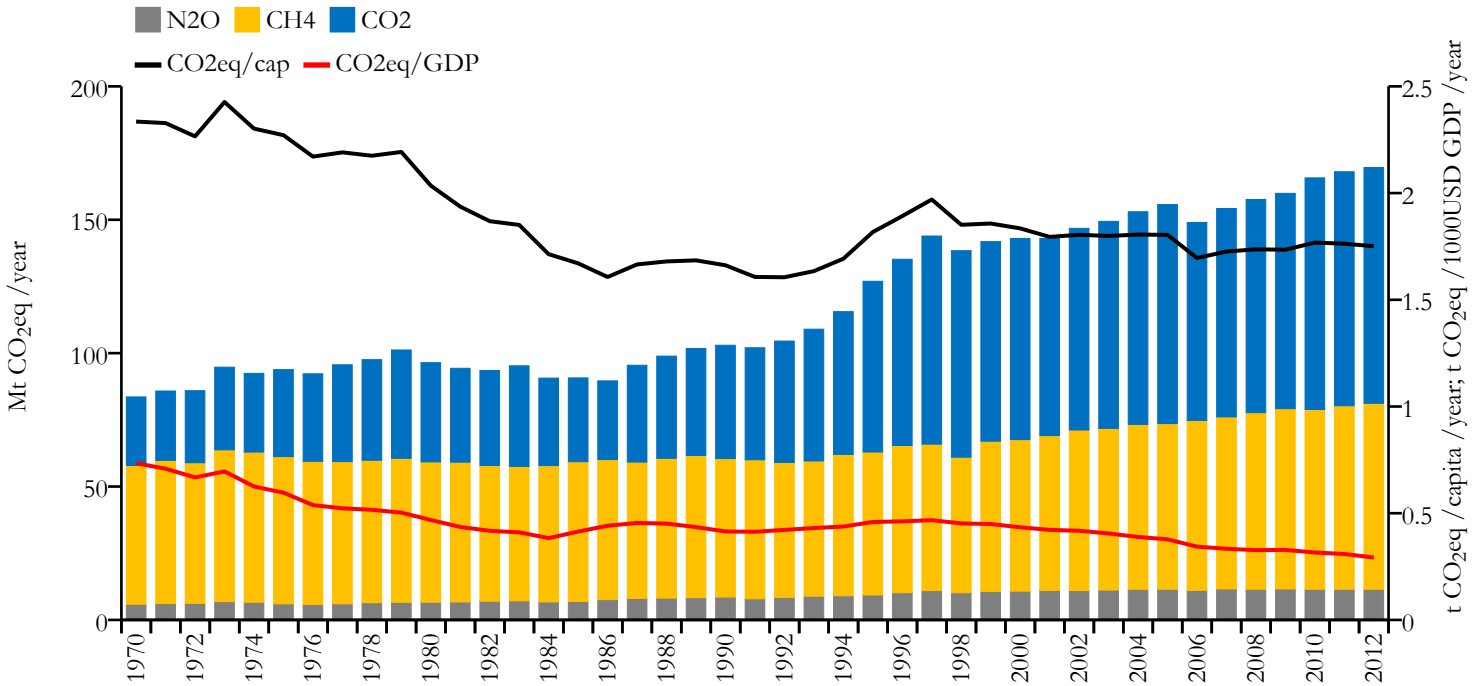
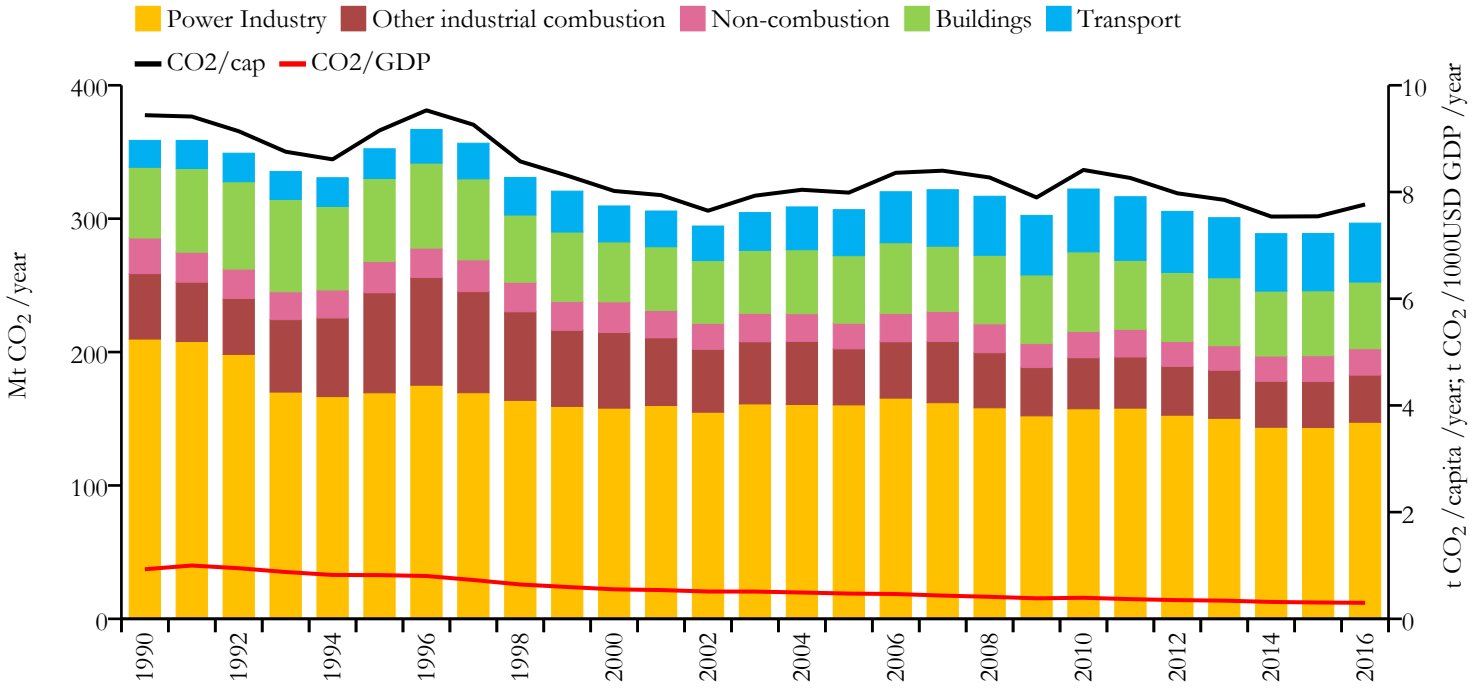
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Poland

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 296.660 | 7.766 | 0.301 | 38224410 |
| 1990 | 358.700 | 9.439 | 0.929 | 37954553 |

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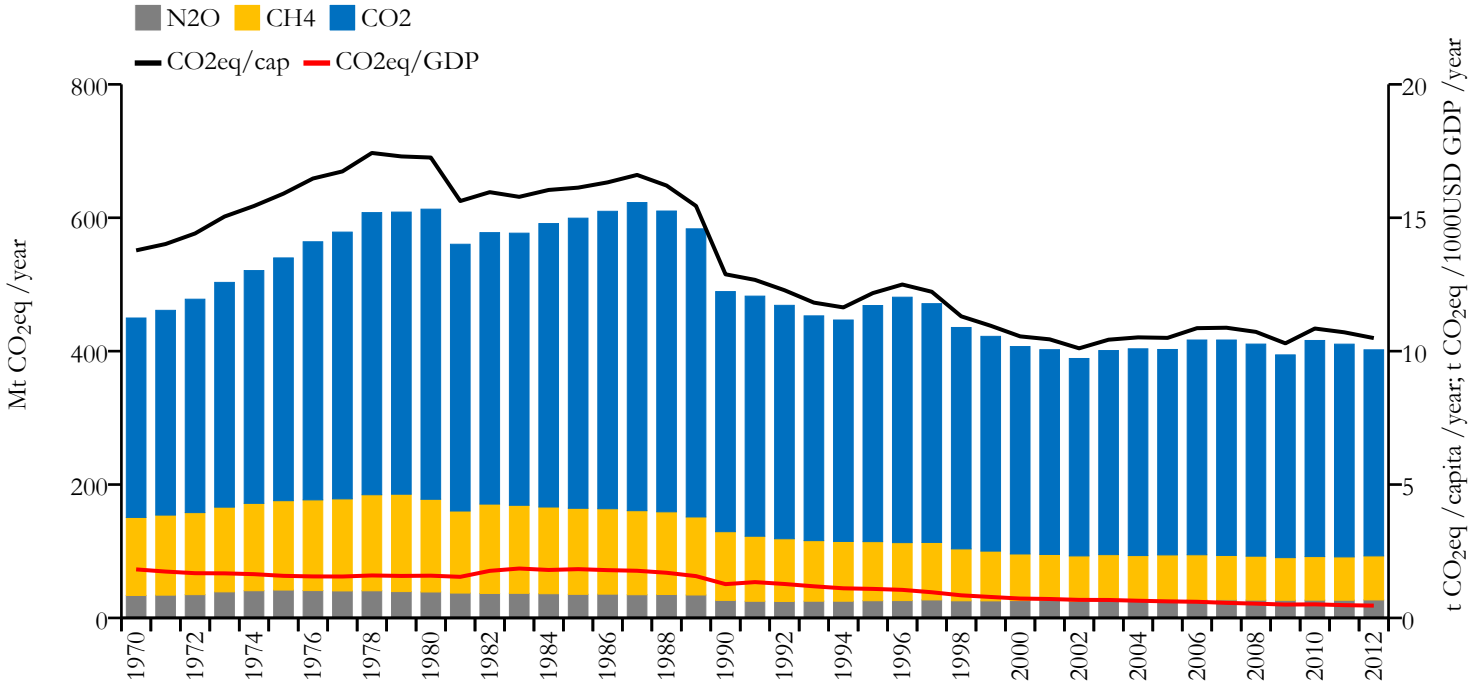
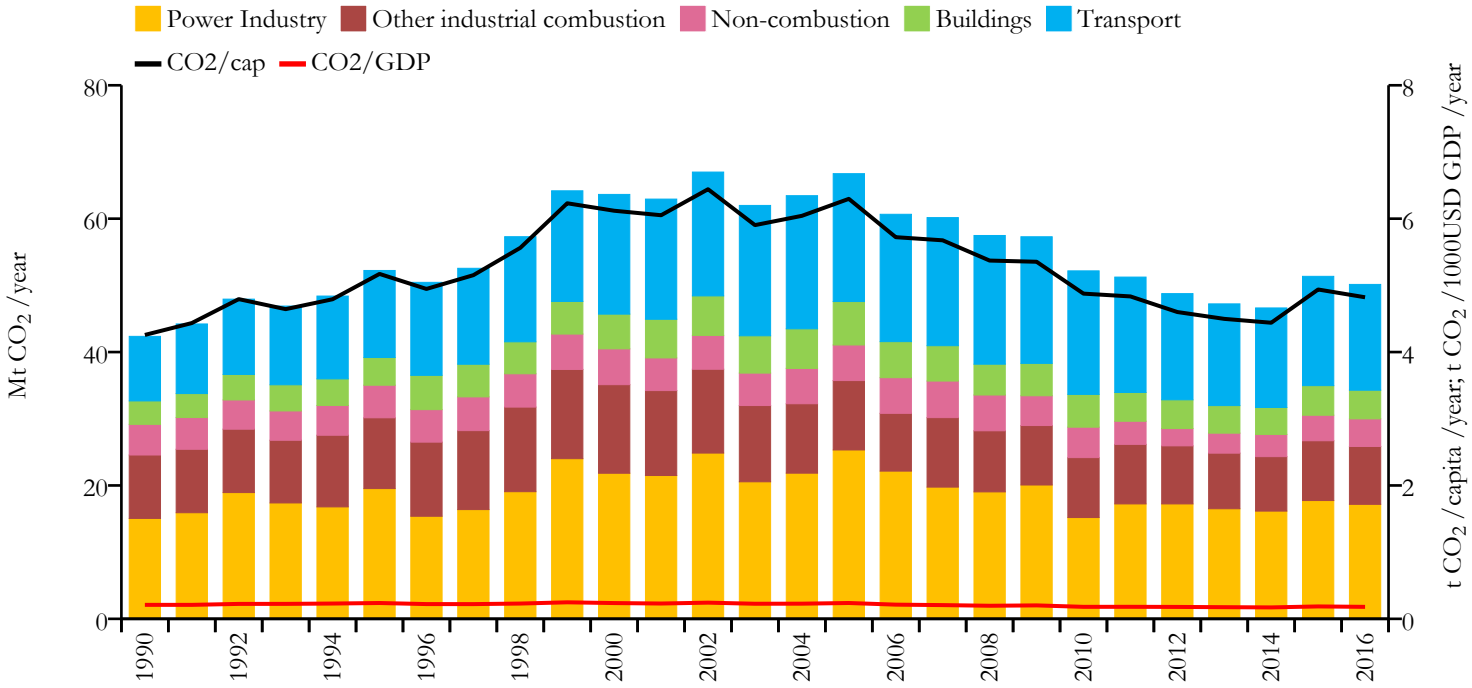
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



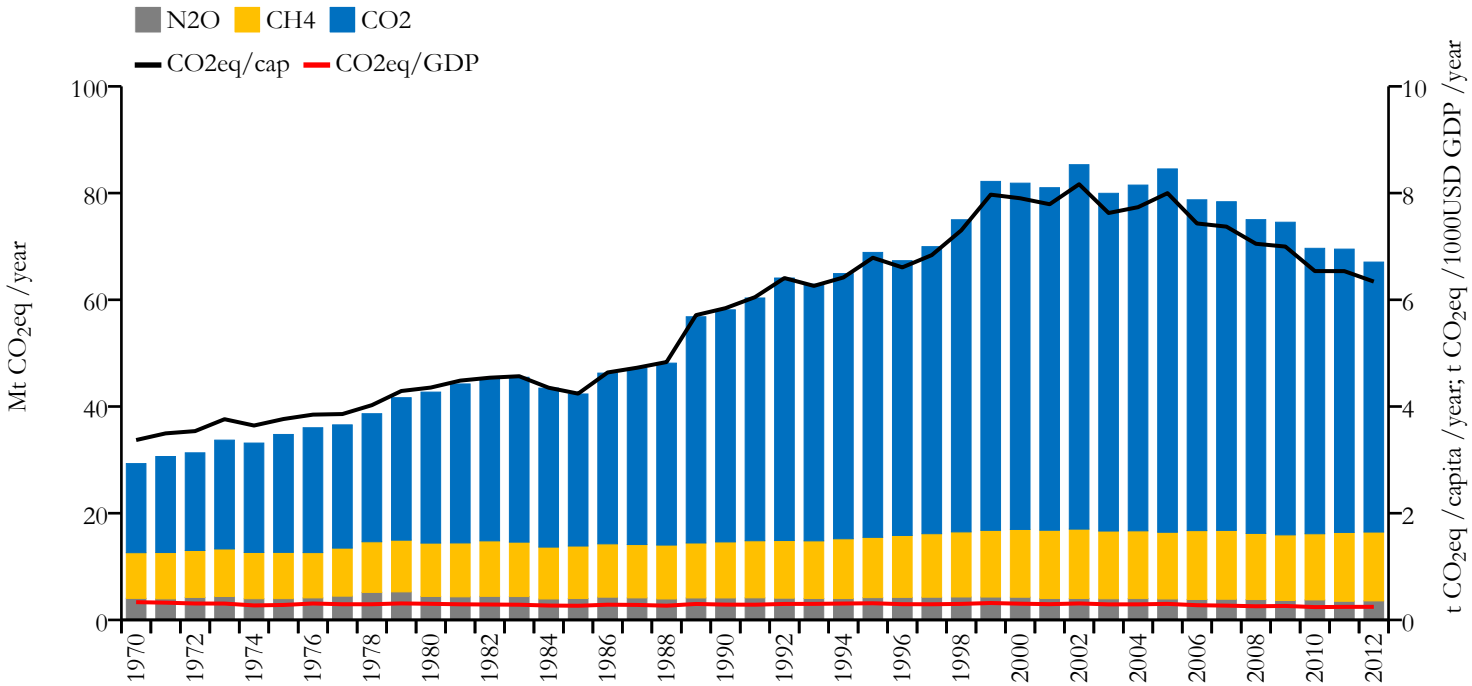
# Portugal

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



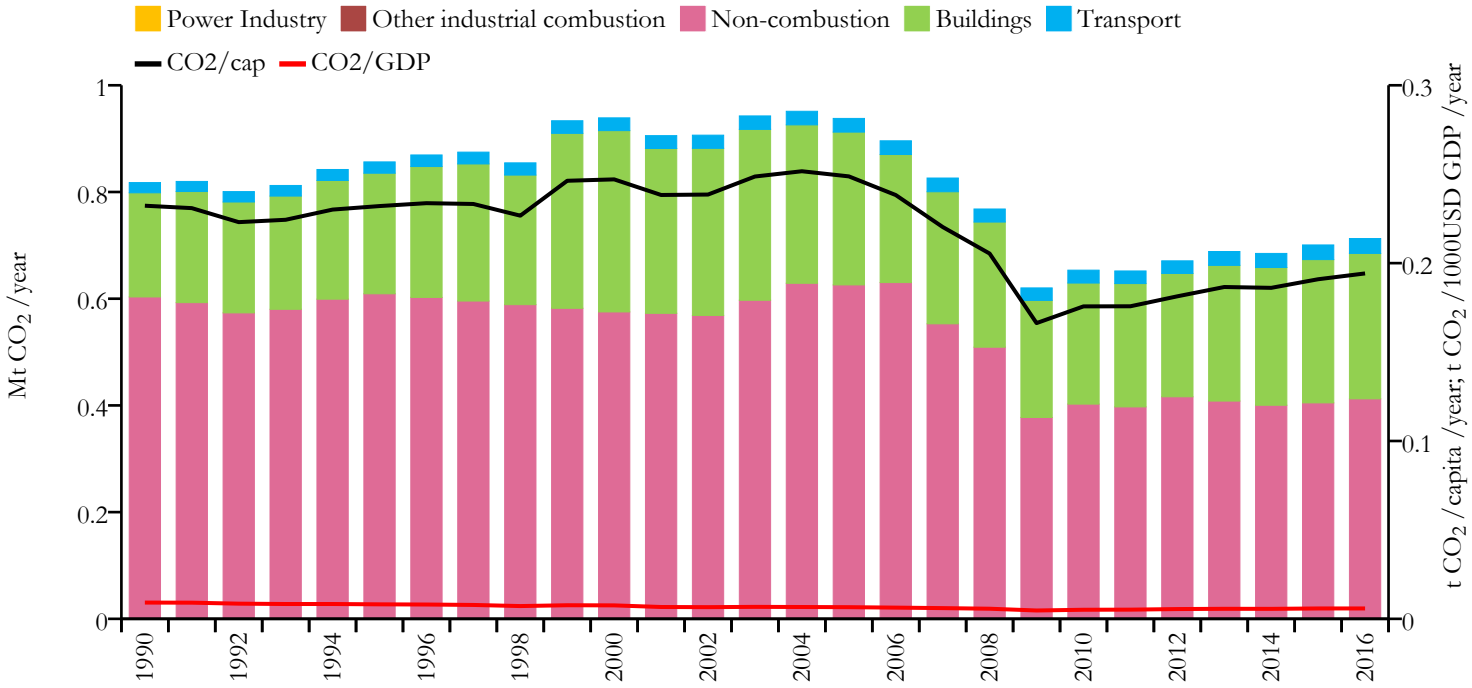

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 50.143 | 4.821 | 0.180 | 10371627 |
| 1990 | 42.355 | 4.257 | 0.210 | 9953327 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



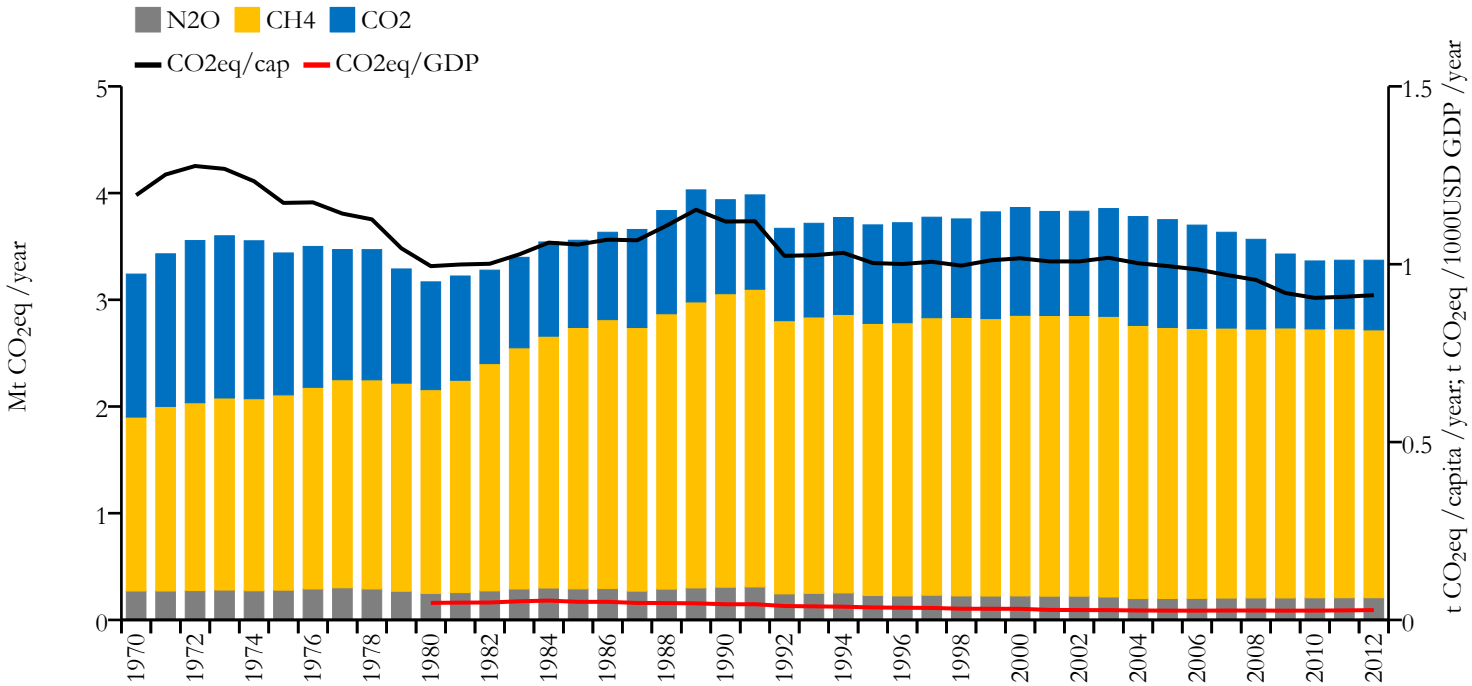
# Puerto Rico

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



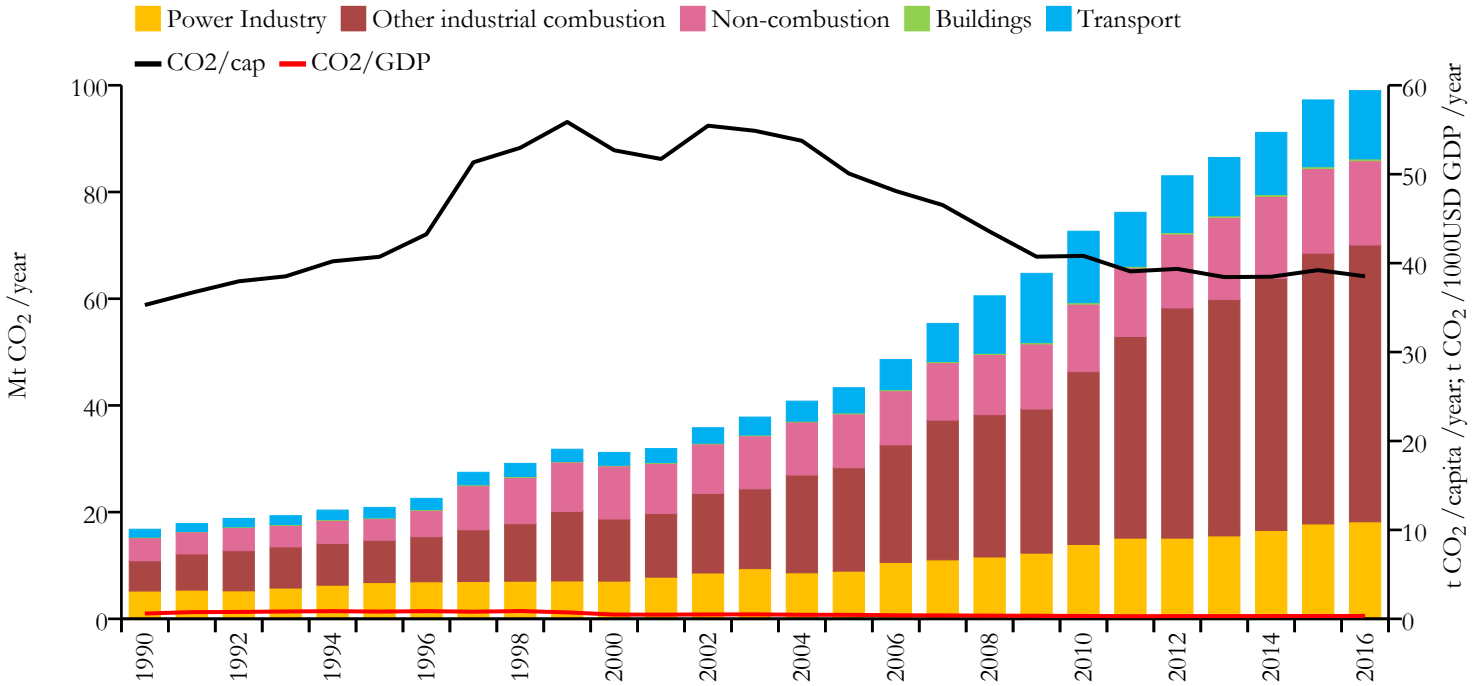

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.713 | 0.194 | 0.006 | 3667903 |
| 1990 | 0.818 | 0.232 | 0.009 | 3517975 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Qatar

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 98.990 | 38.518 | 0.326 | 2569804 |
| 1990 | 16.798 | 35.290 | 0.598 | 476445 |

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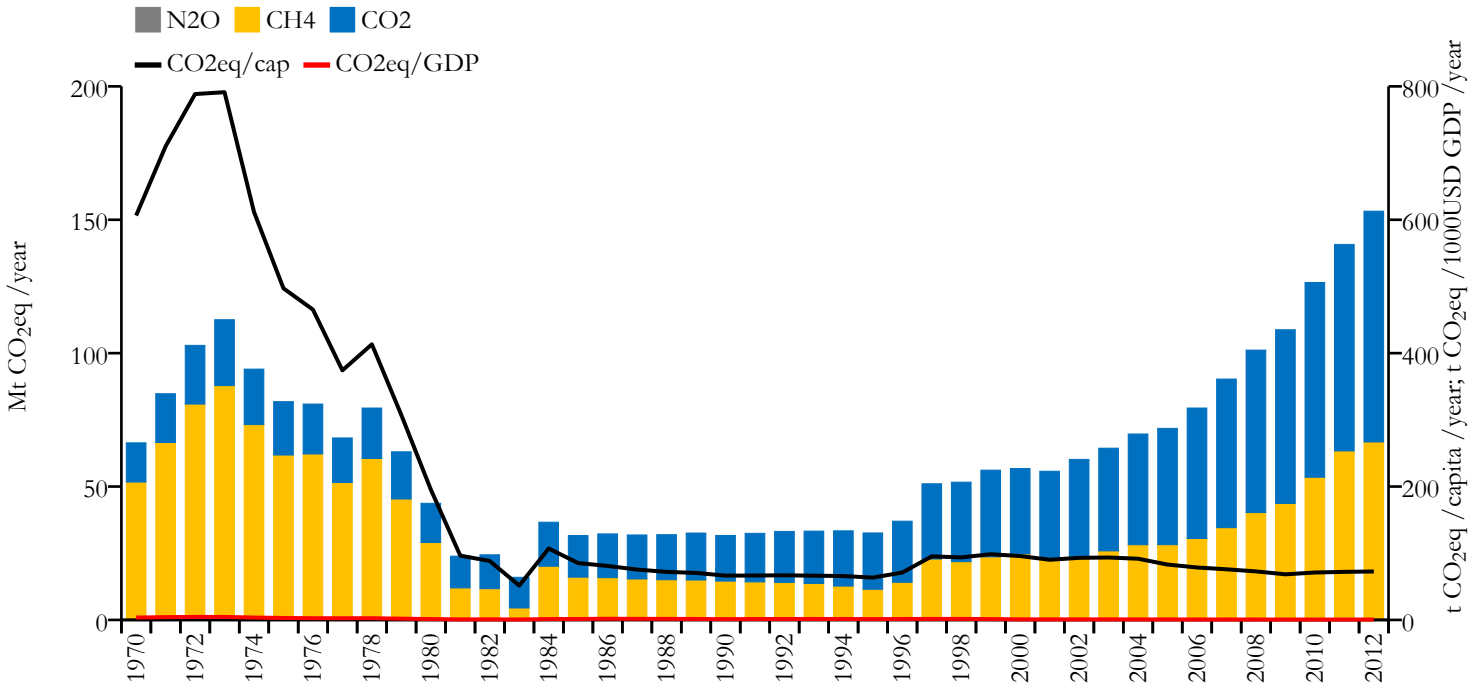
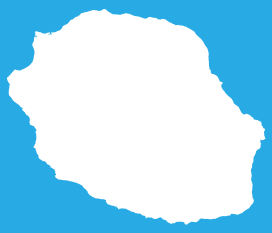
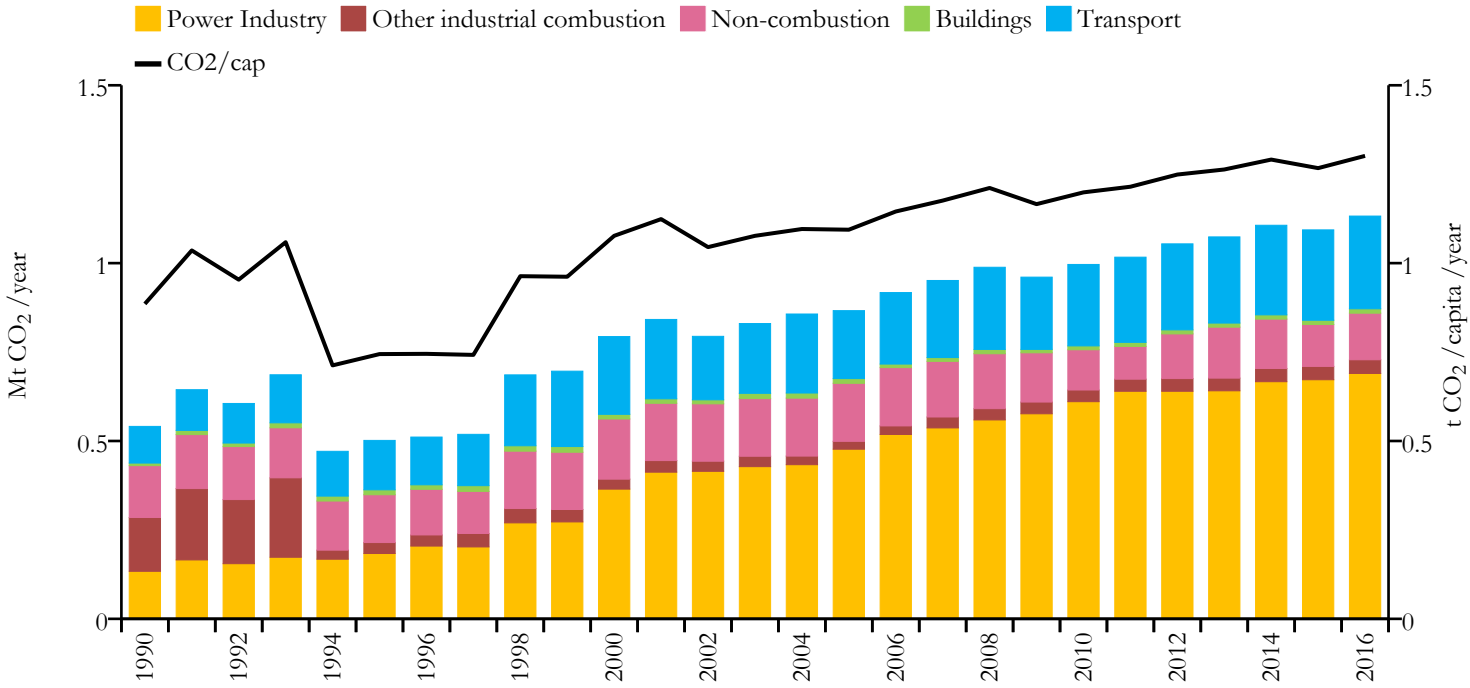
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Réunion



## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 1.132 | 1.302 | n/a | 869925 |
| 1990 | 0.541 | 0.885 | n/a | 610582 |

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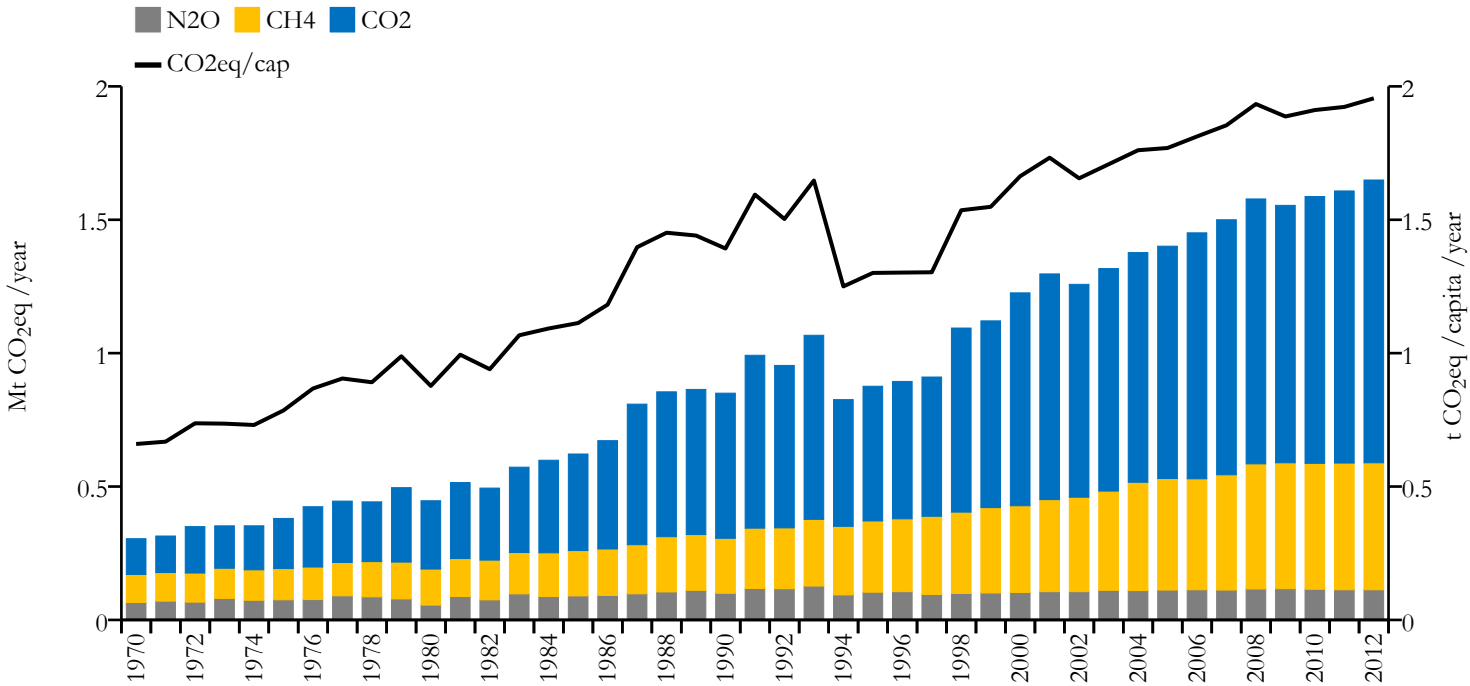
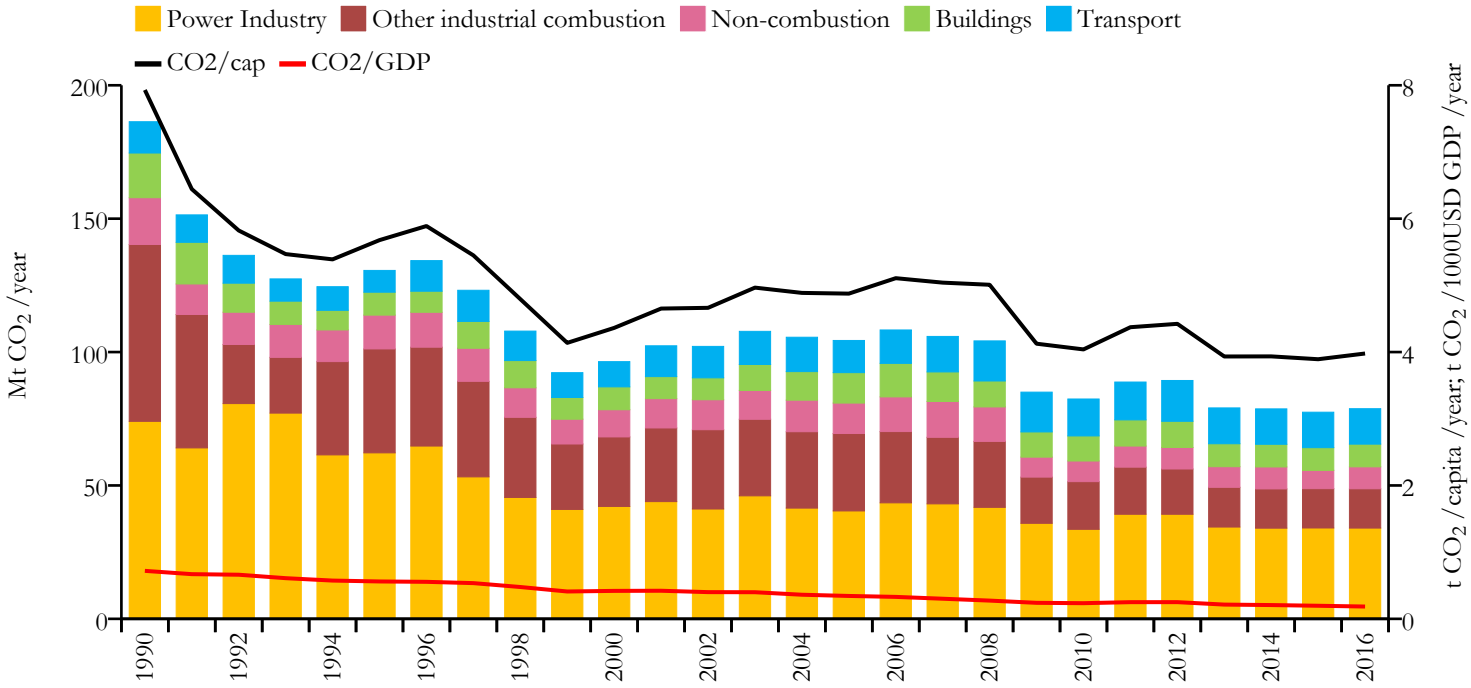
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Romania

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 78.771 | 3.978 | 0.184 | 19778083 |
| 1990 | 186.341 | 7.929 | 0.719 | 23489373 |

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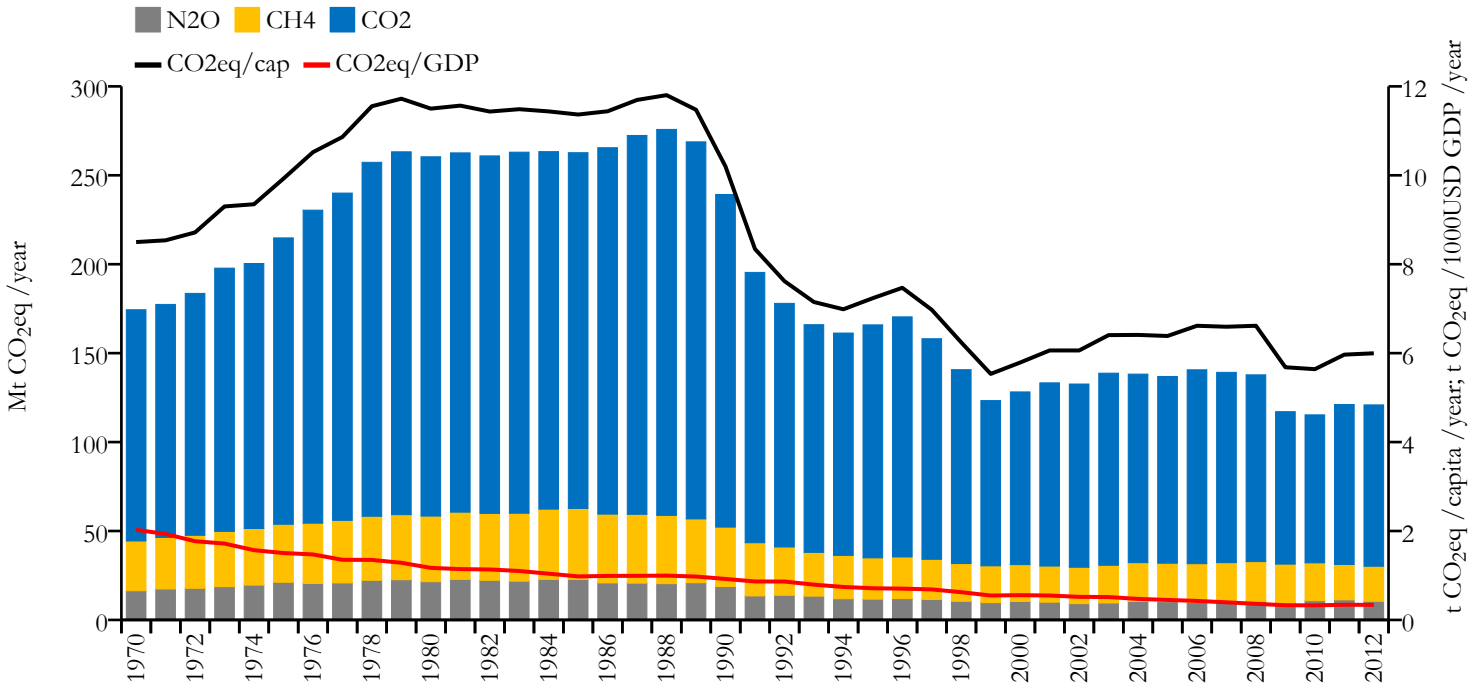
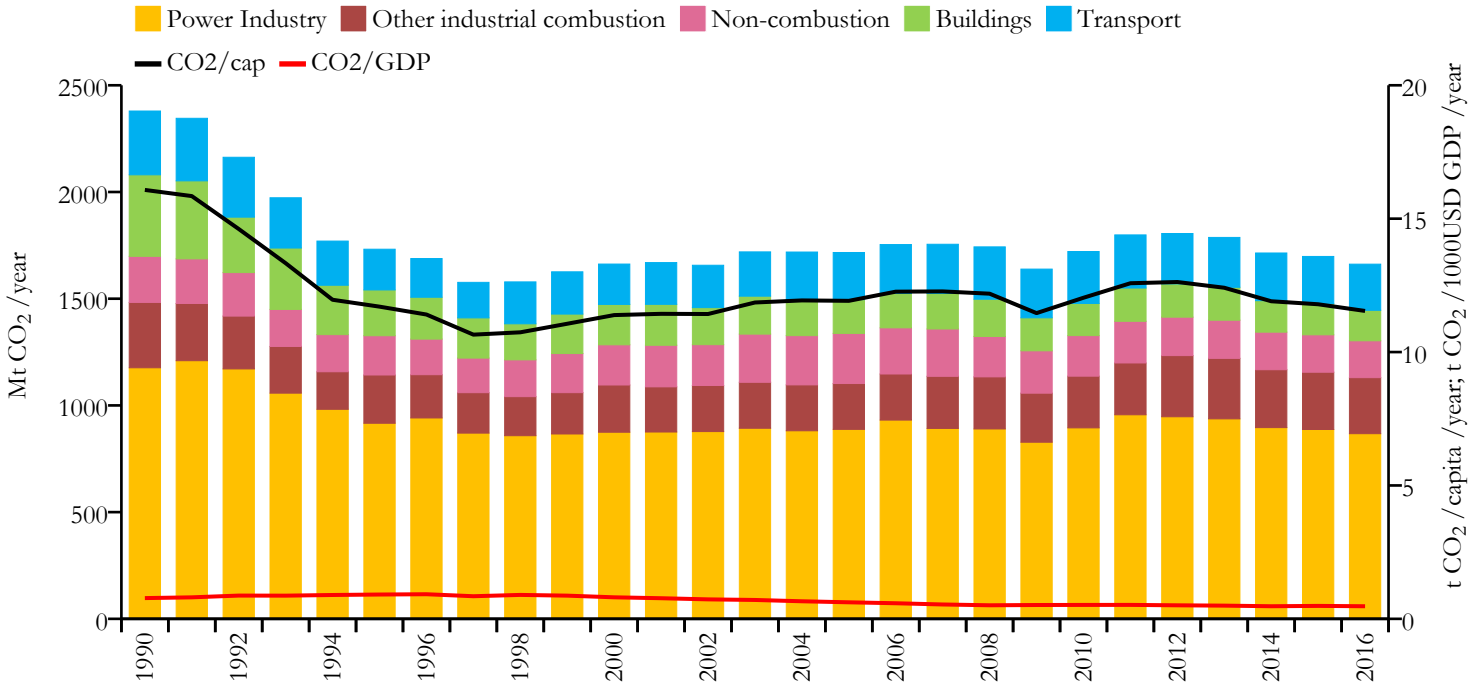
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



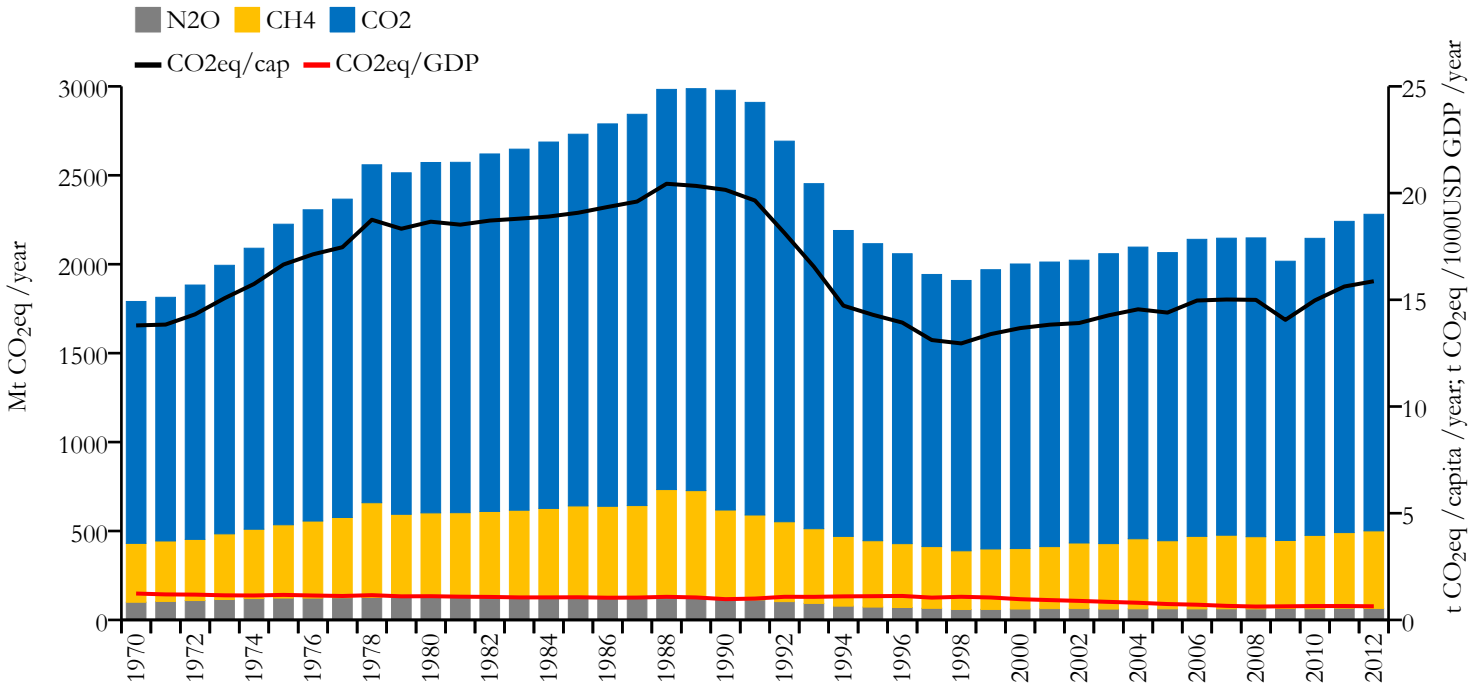
# Russia

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)

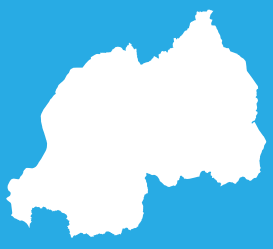



| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 1661.899 | 11.541 | 0.472 | 143964513 |
| 1990 | 2379.433 | 16.077 | 0.778 | 147564066 |

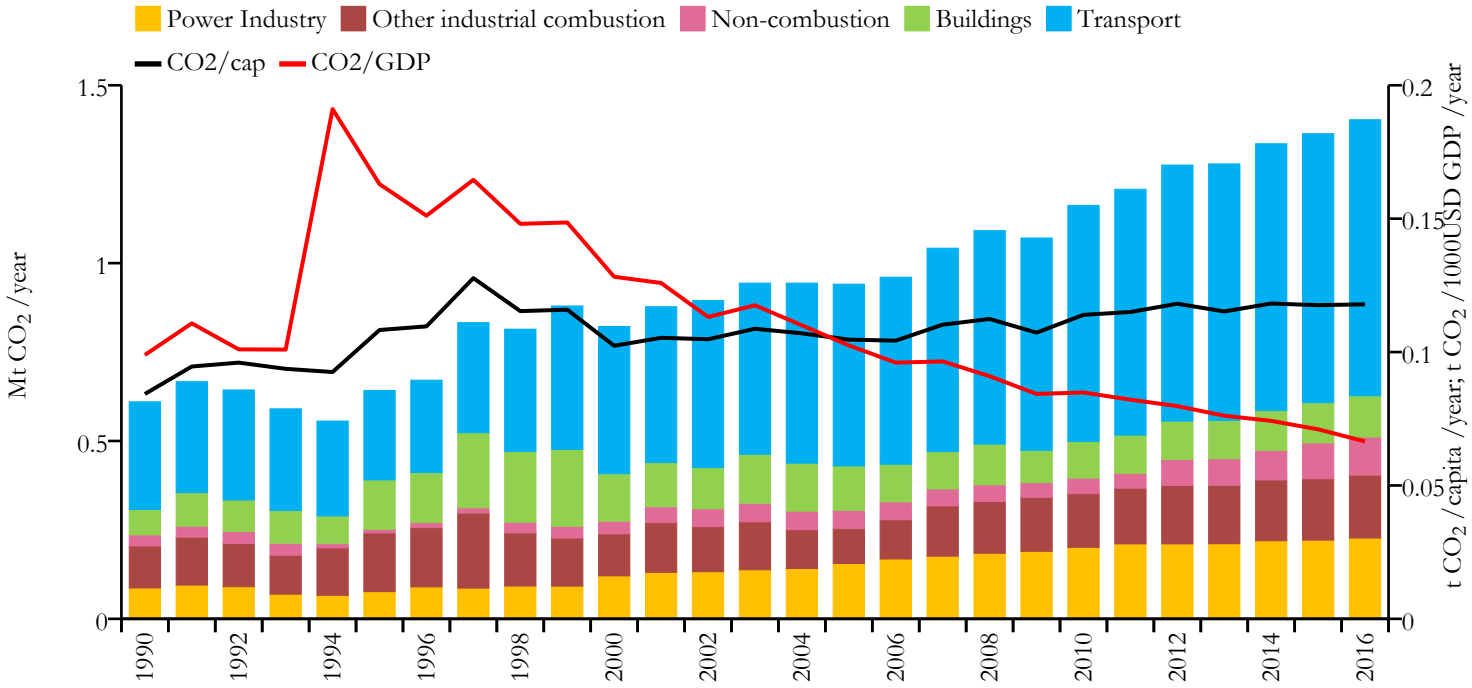
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Rwanda



## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 1.403 | 0.118 | 0.066 | 11917508 |
| 1990 | 0.610 | 0.084 | 0.099 | 7235798 |

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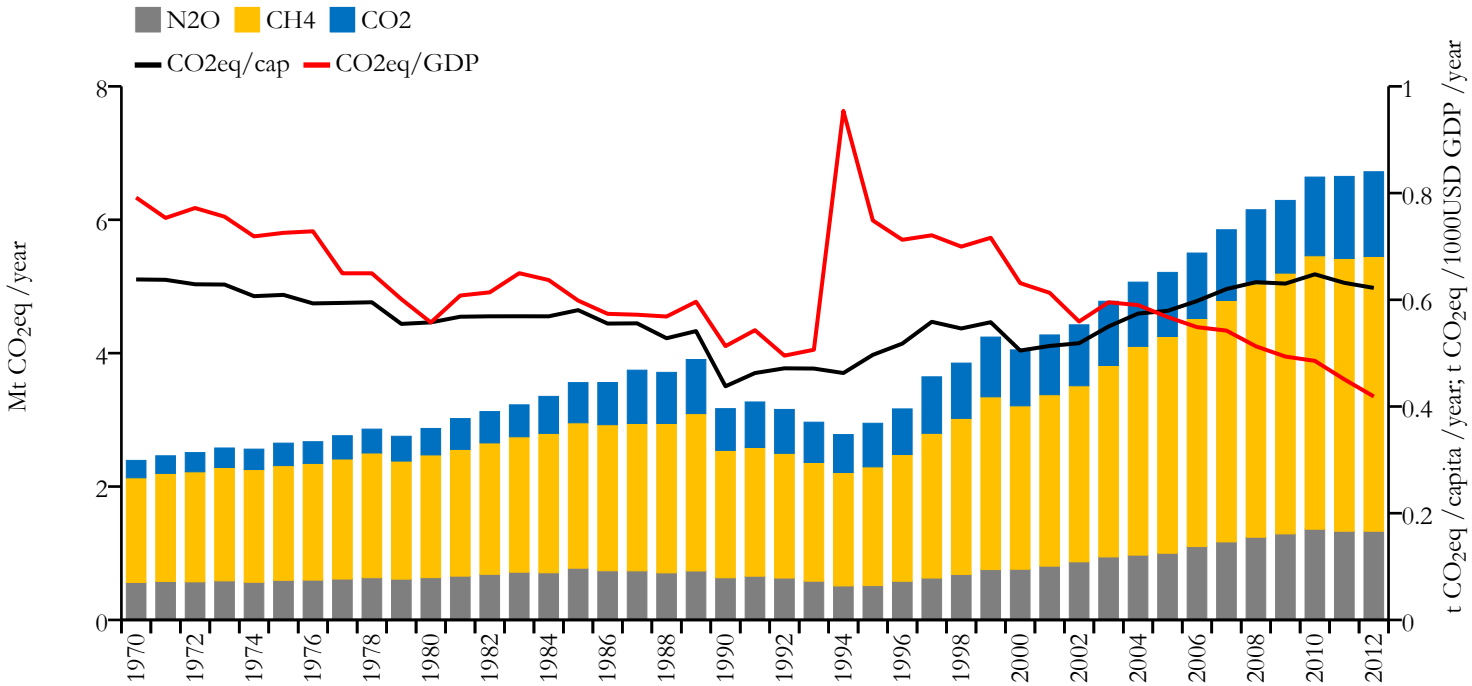
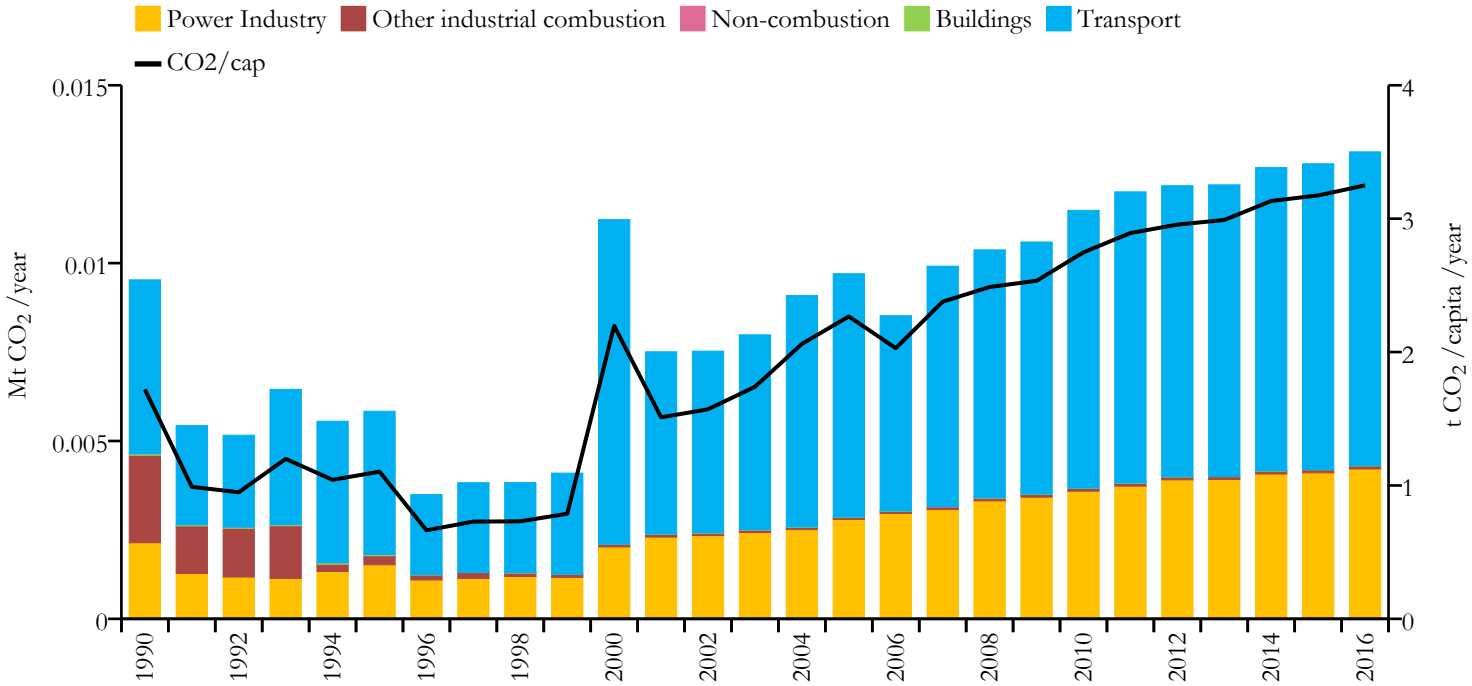
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Saint Helena, Ascension and Tristan da Cunha

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.013 | 3.250 | n/a | 4035 |
| 1990 | 0.010 | 1.720 | n/a | 5535 |

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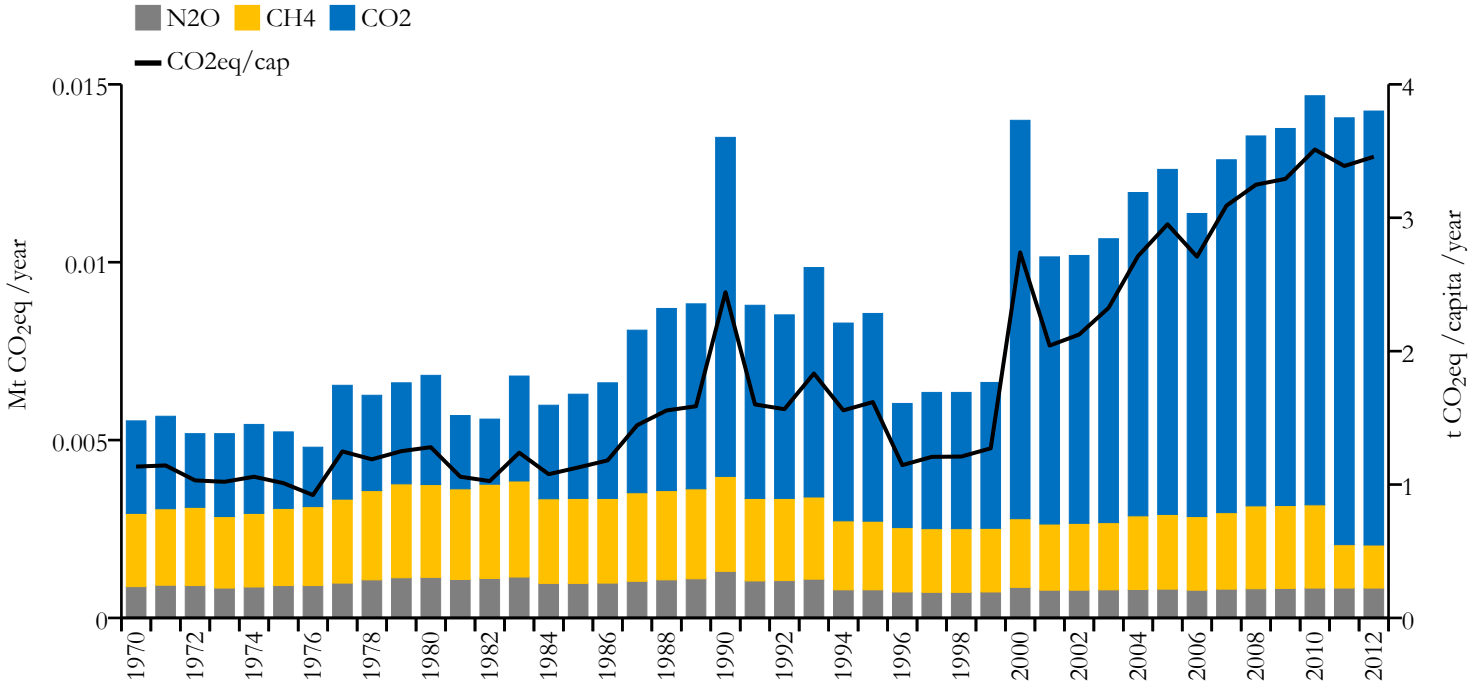
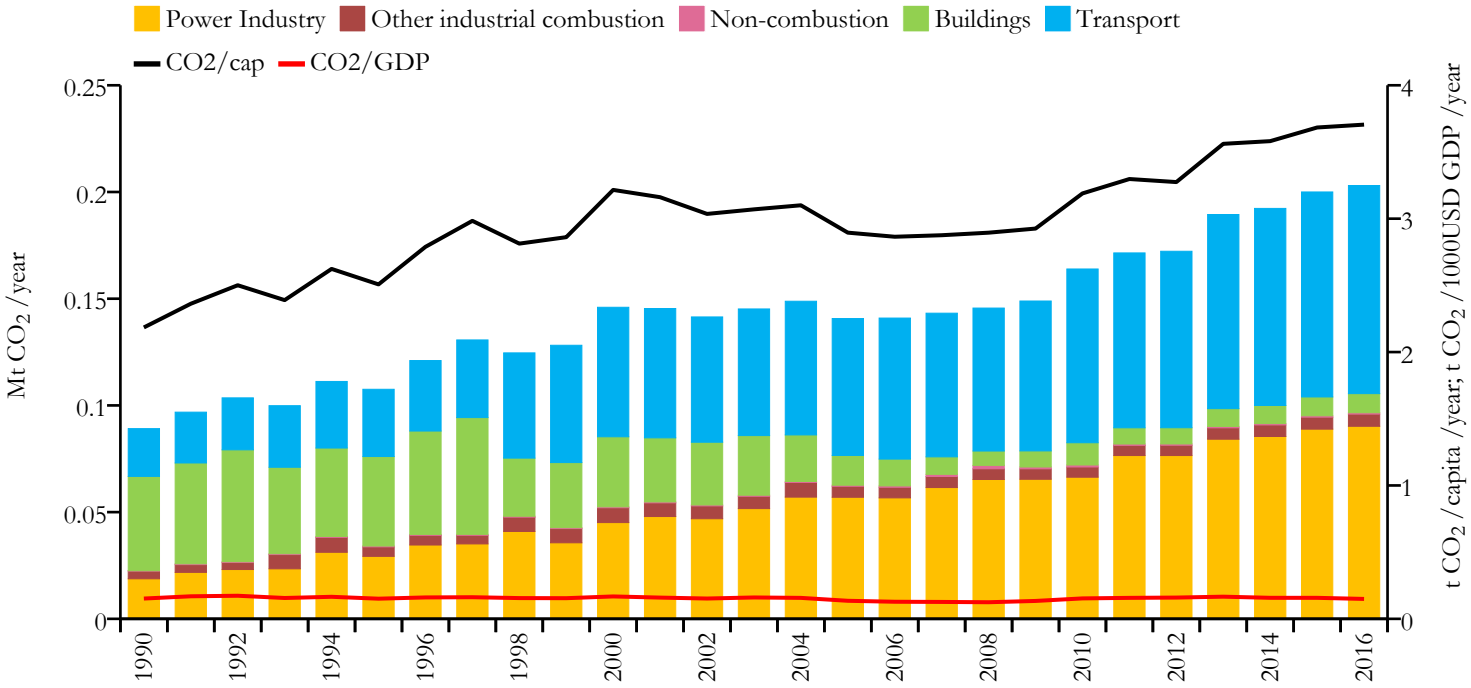
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Saint Kitts and Nevis

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.203 | 3.705 | 0.149 | 54821 |
| 1990 | 0.089 | 2.184 | 0.152 | 40834 |

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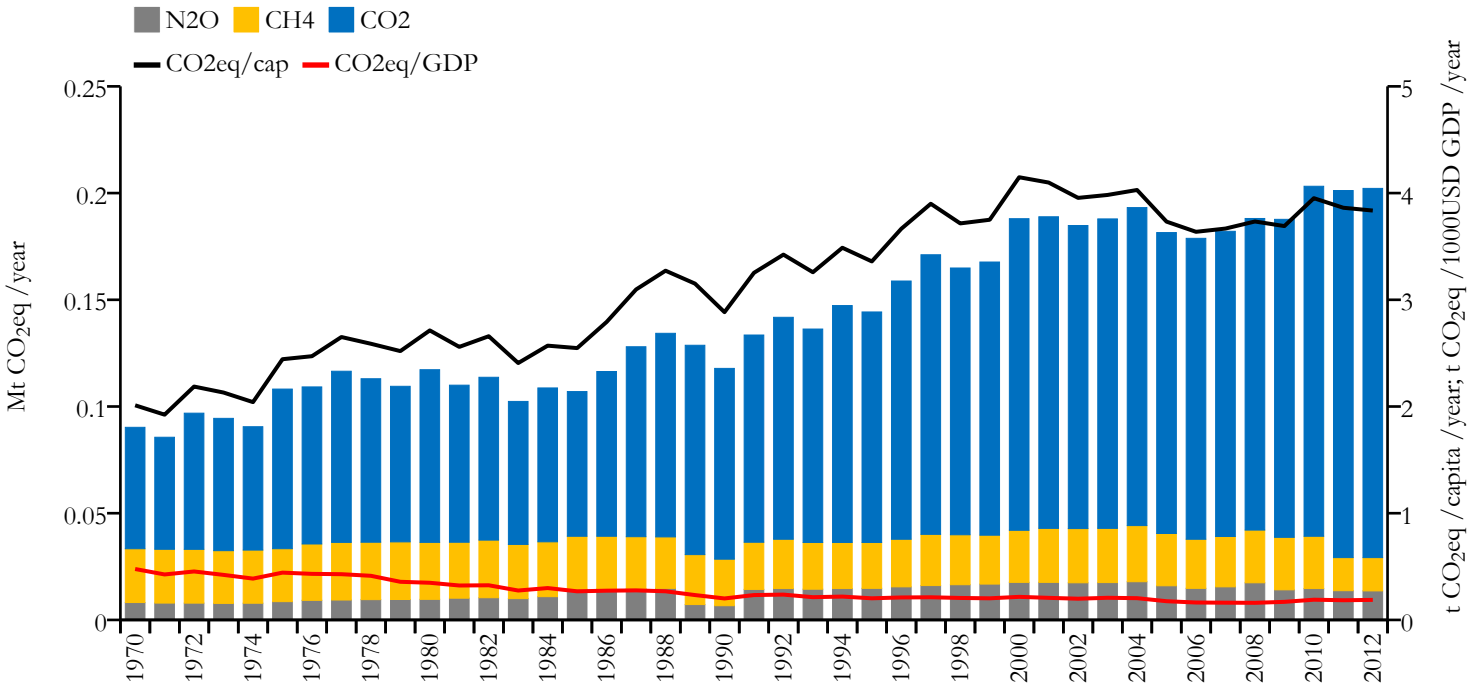
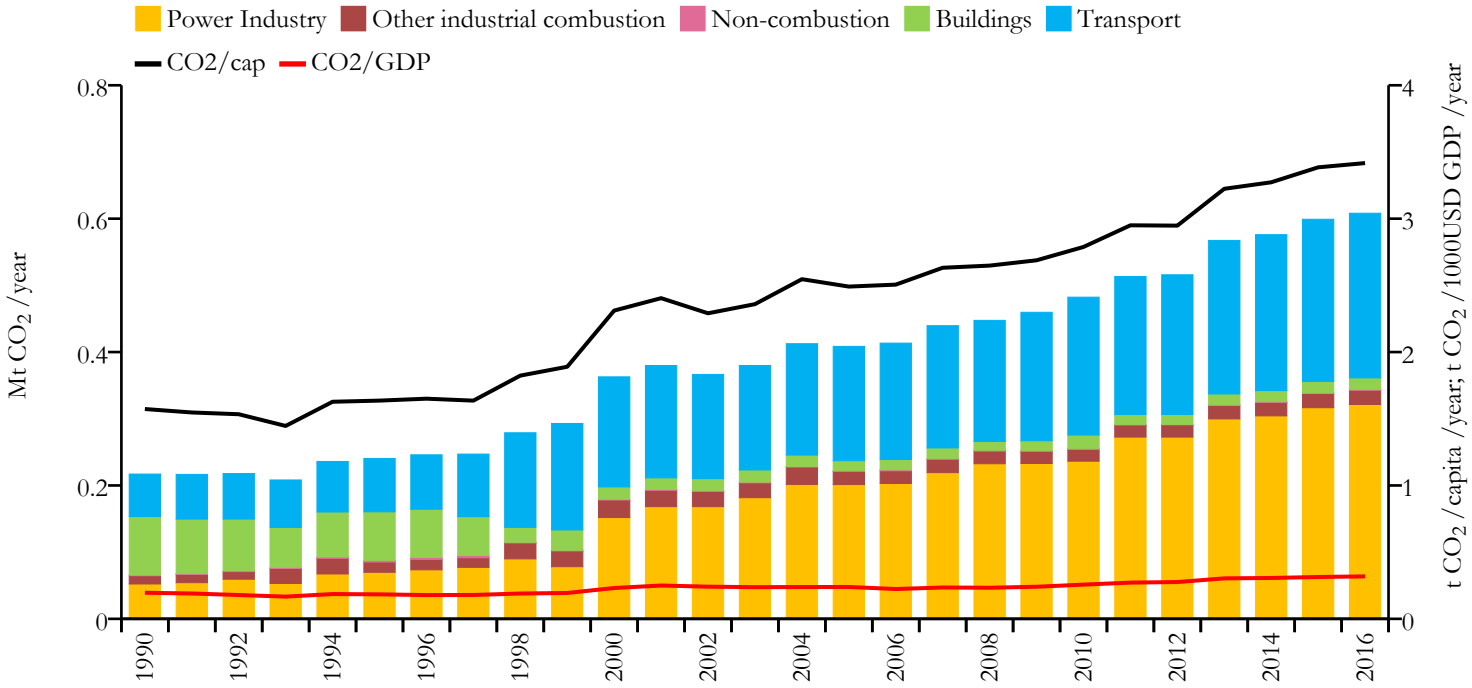
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Saint Lucia

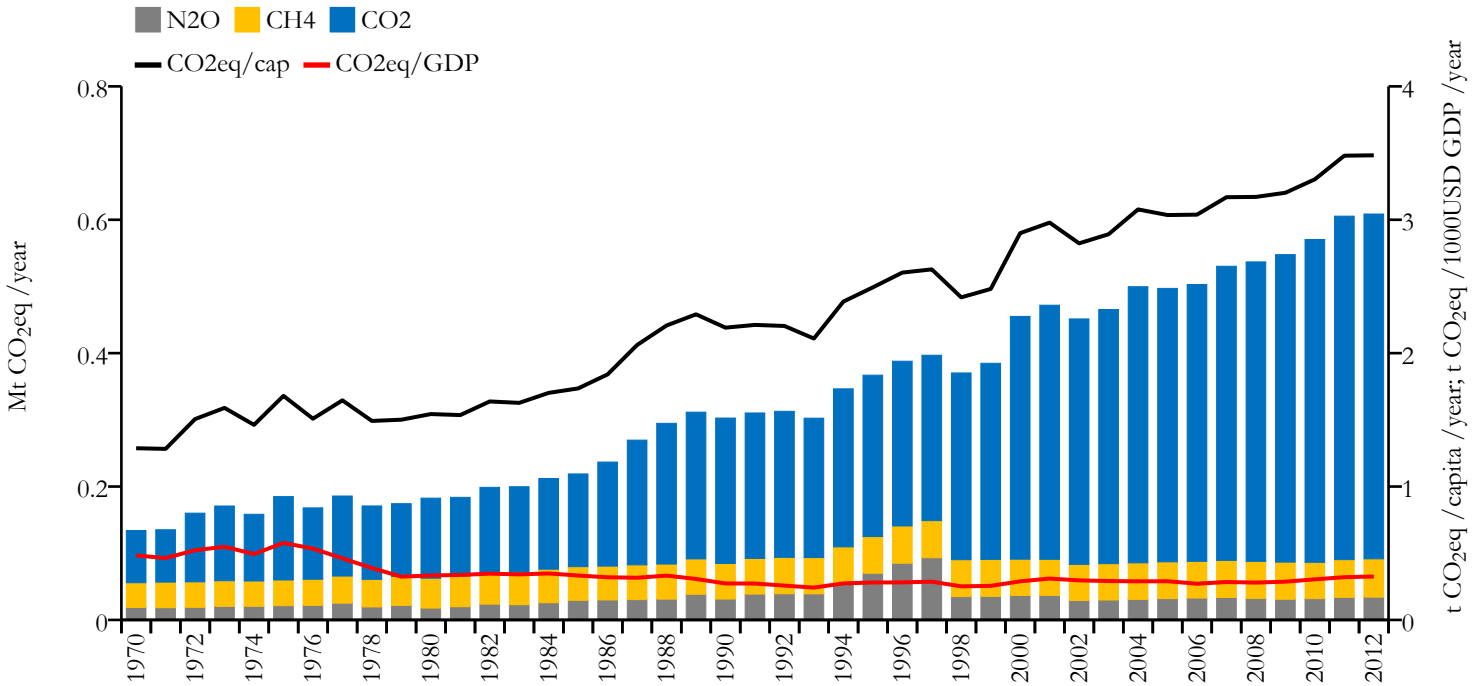
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.608 | 3.417 | 0.318 | 178015 |
| 1990 | 0.217 | 1.573 | 0.196 | 138185 |

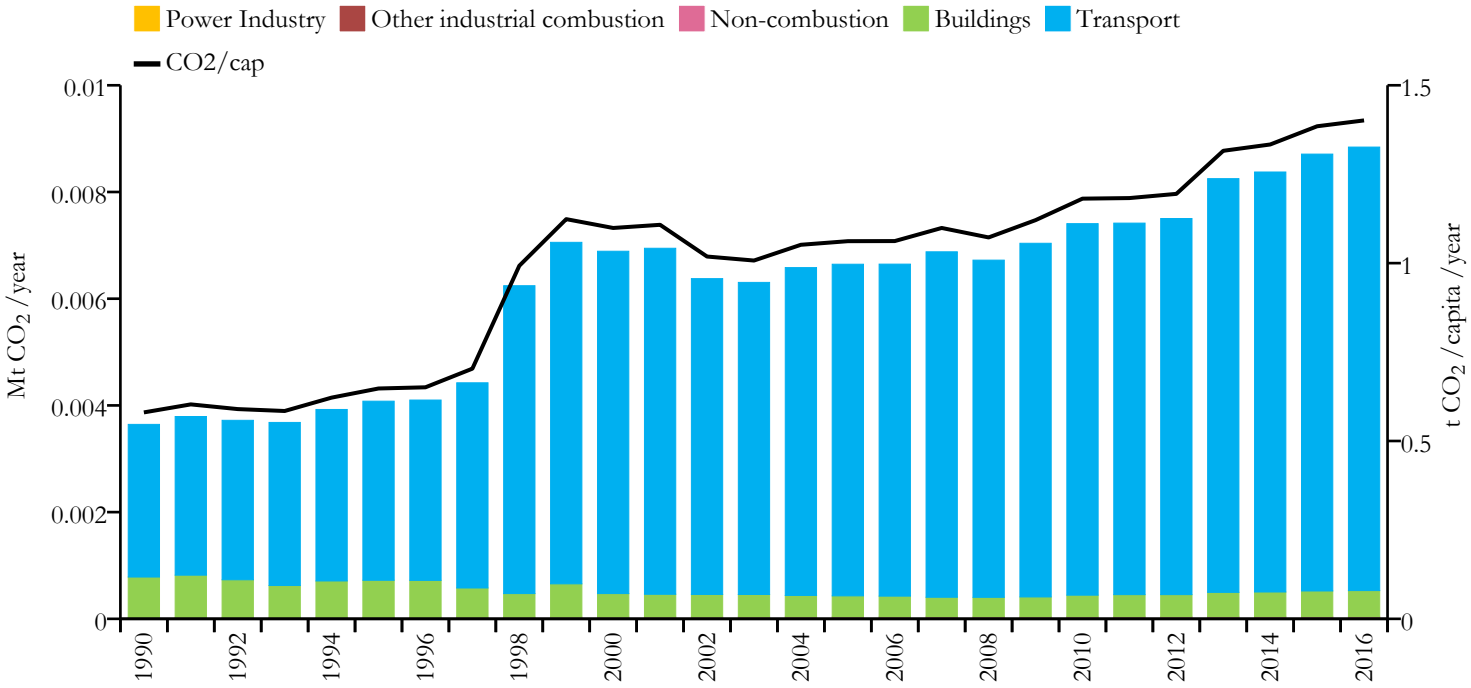
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Saint Pierre and Miquelon

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.009 | 1.401 | n/a | 6305 |
| 1990 | 0.004 | 0.580 | n/a | 6276 |

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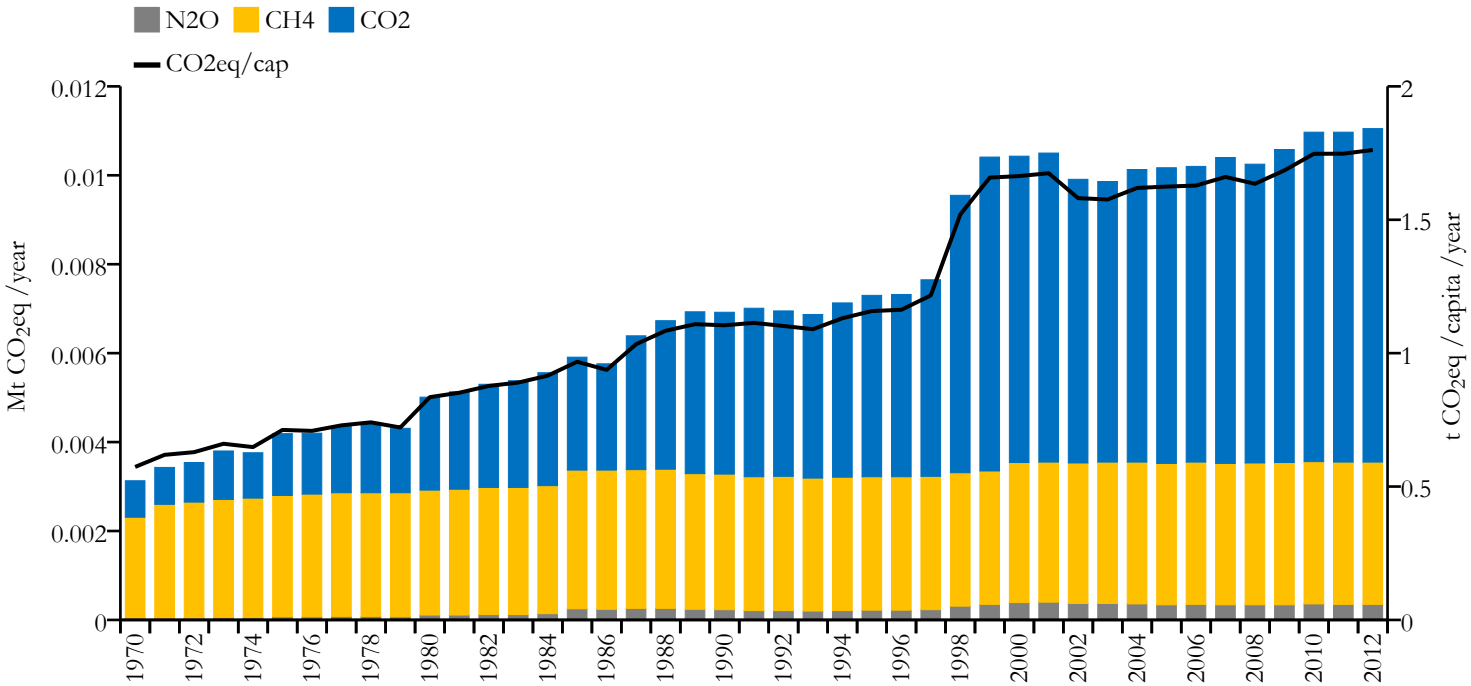
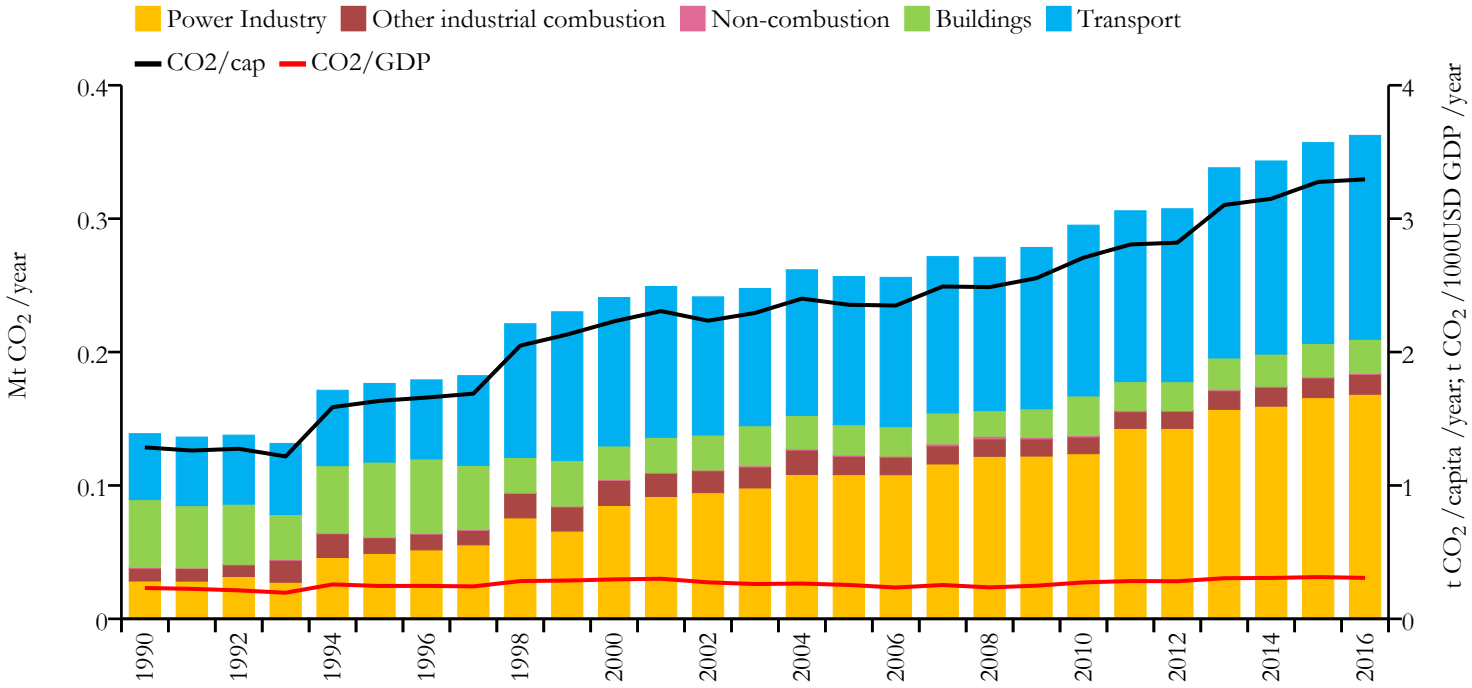
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Saint Vincent and the Grenadines

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.362 | 3.295 | 0.307 | 109643 |
| 1990 | 0.139 | 1.285 | 0.231 | 107505 |

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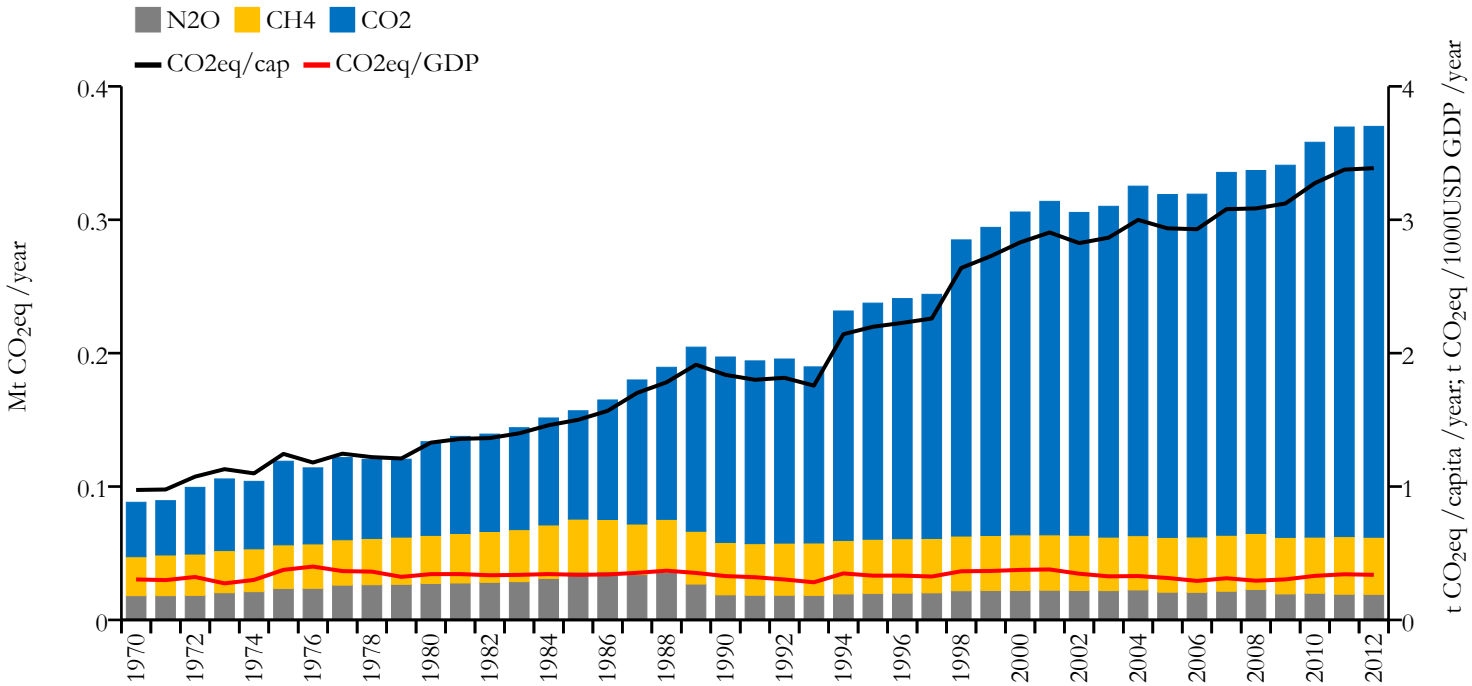
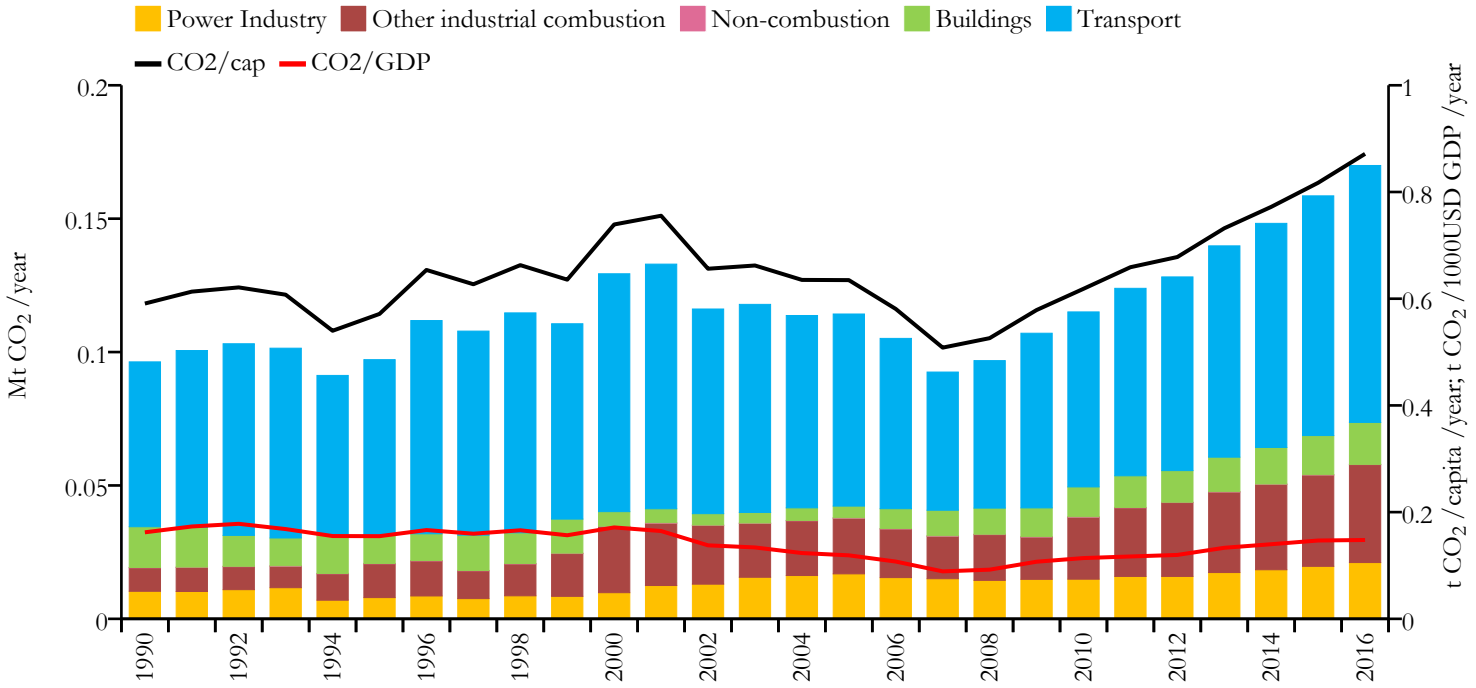
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Samoa

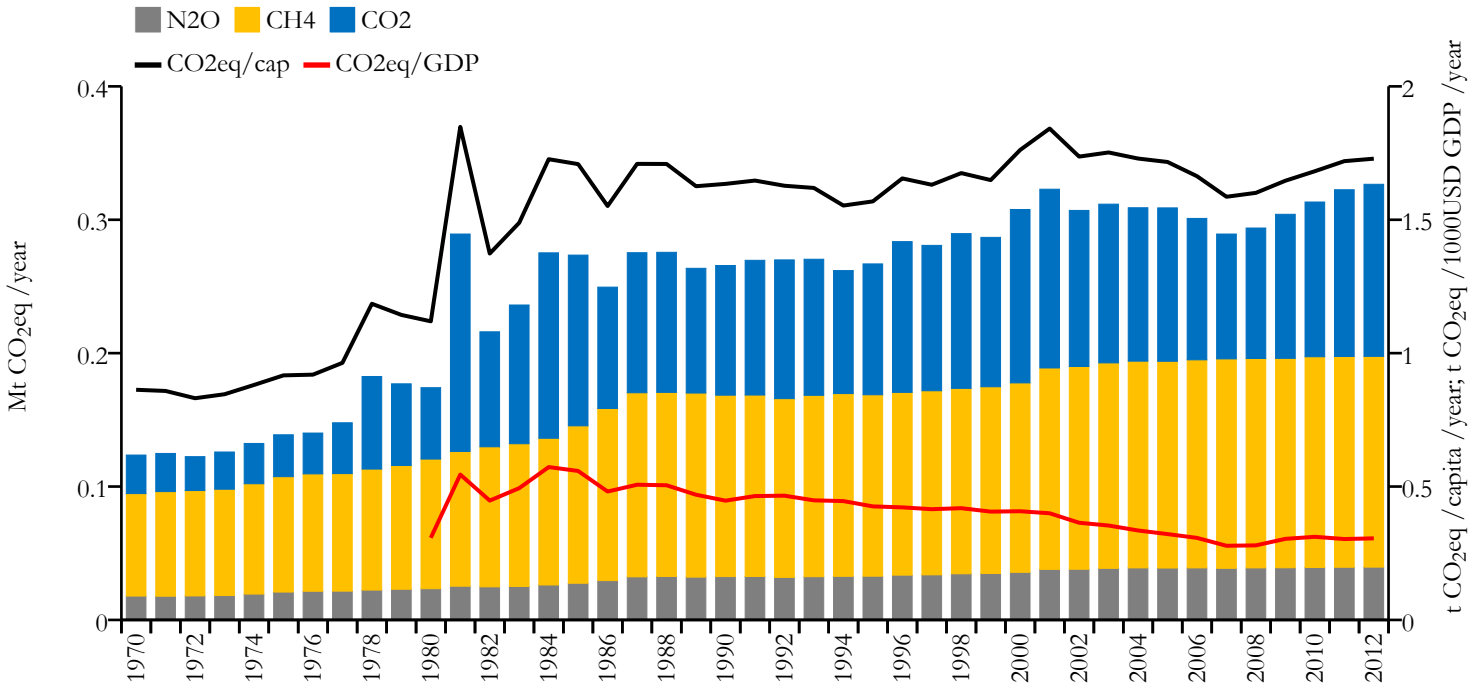
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.170 | 0.871 | 0.148 | 195125 |
| 1990 | 0.096 | 0.591 | 0.162 | 162866 |

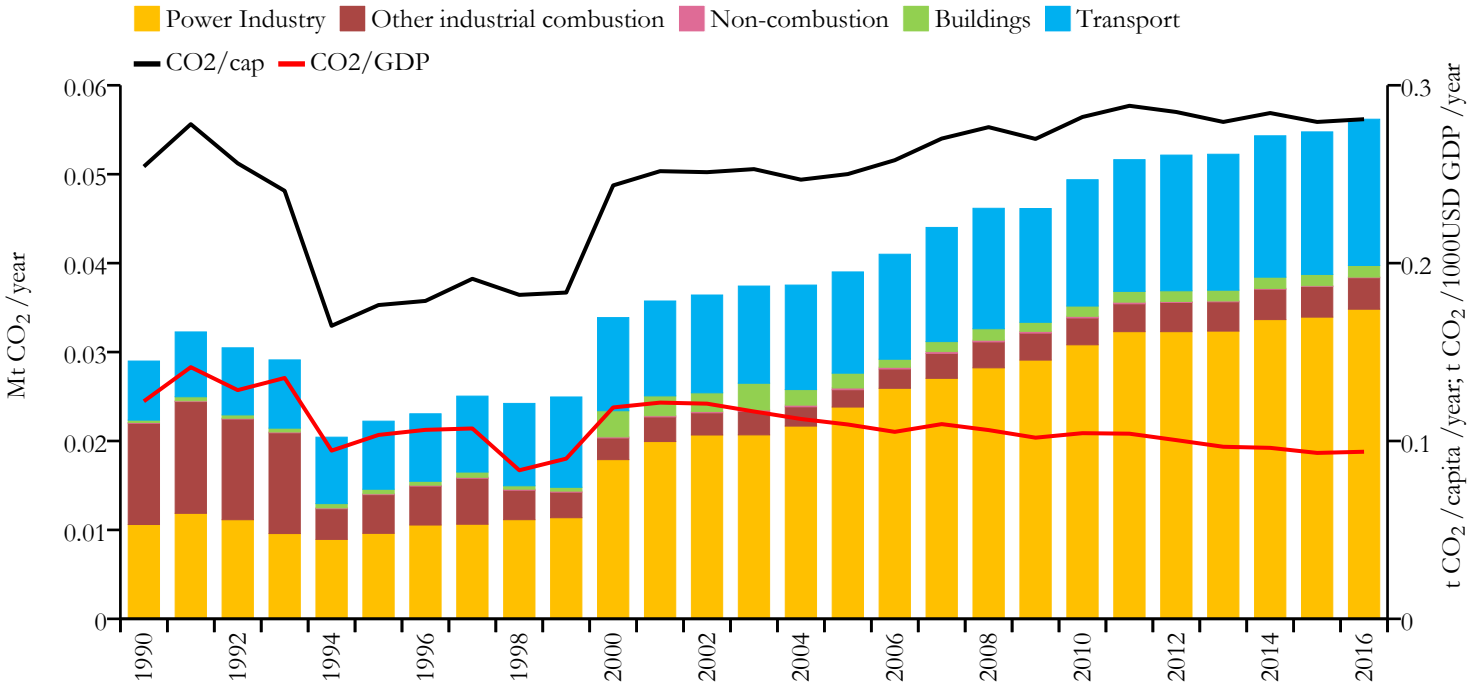
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# São Tomé and Príncipe

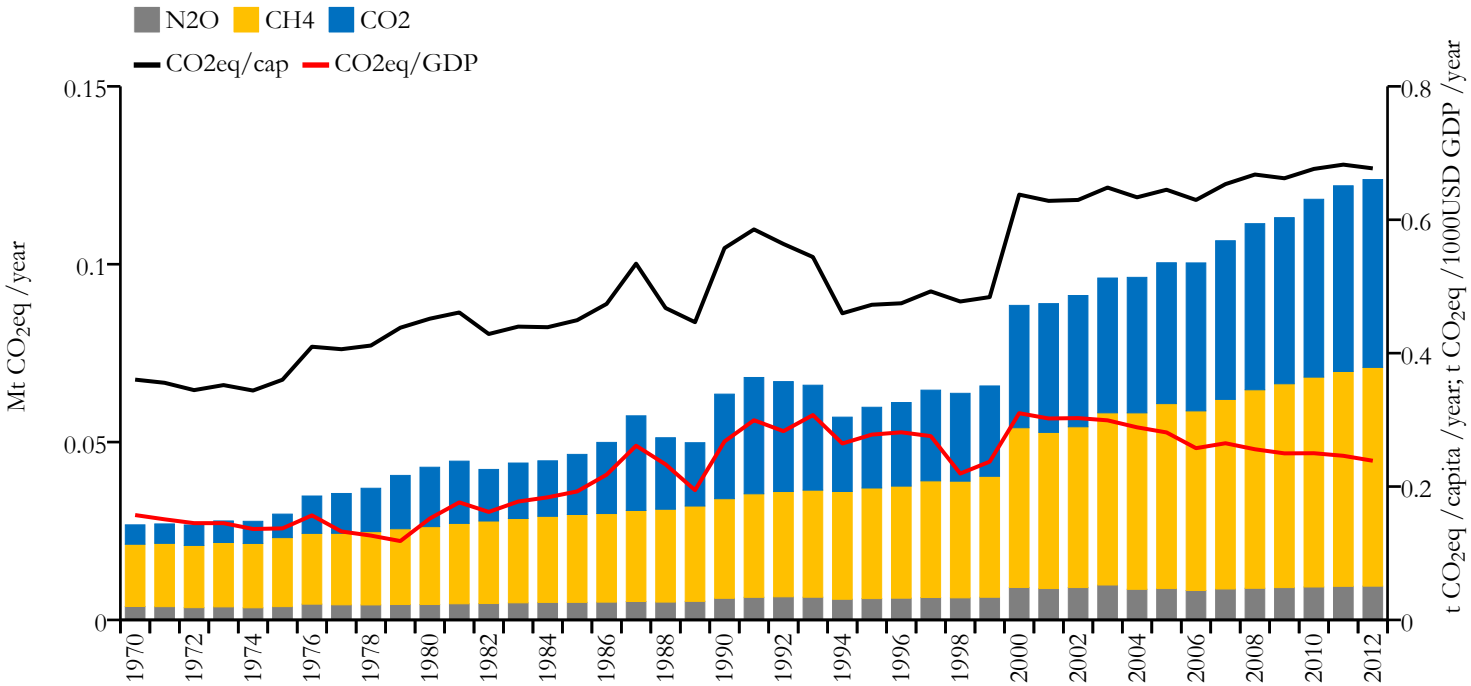
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.056 | 0.281 | 0.094 | 199910 |
| 1990 | 0.029 | 0.254 | 0.122 | 113893 |

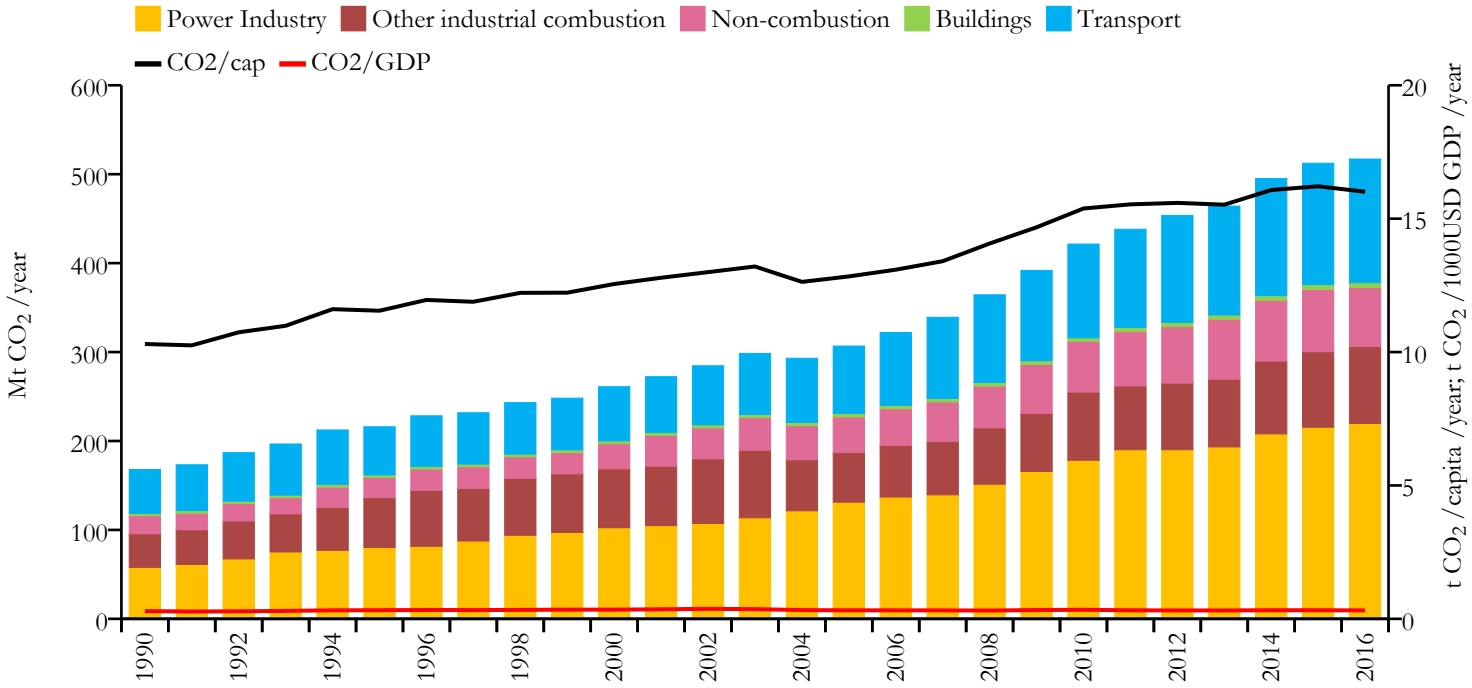
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Saudi Arabia

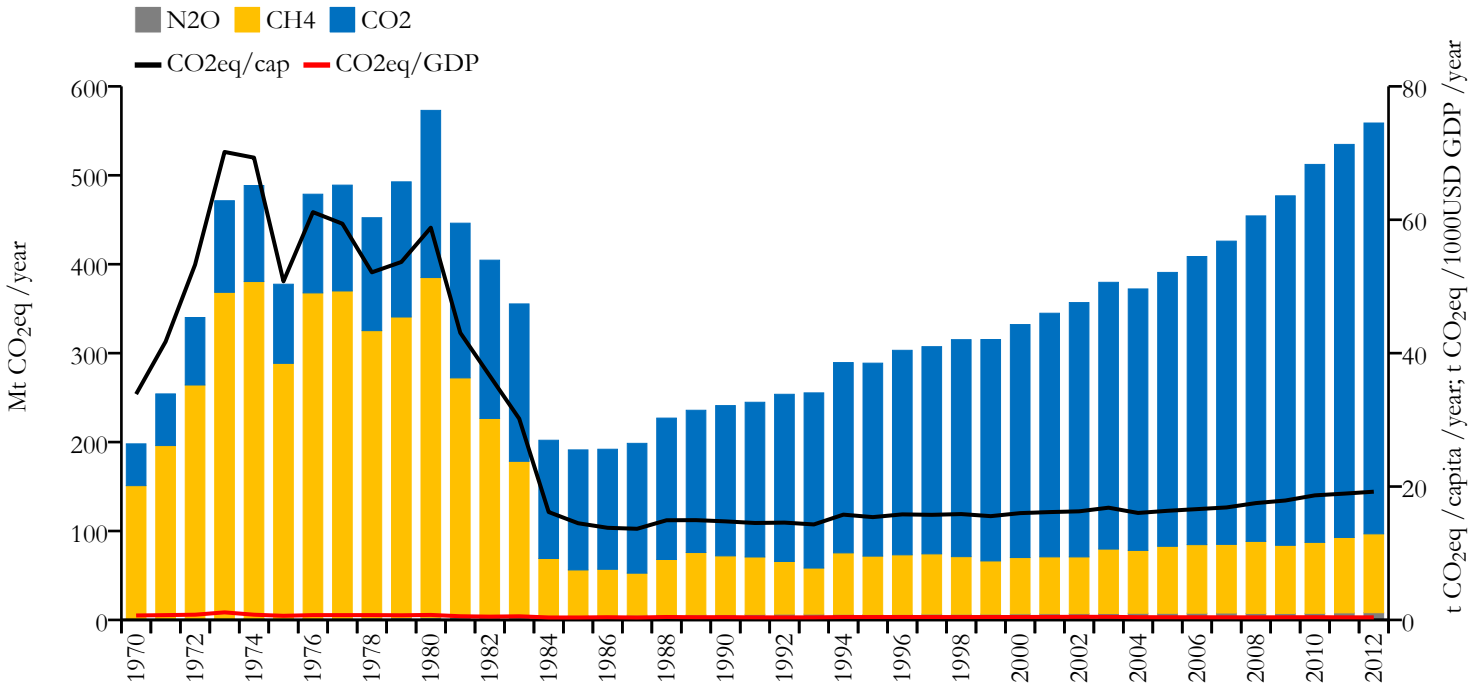
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



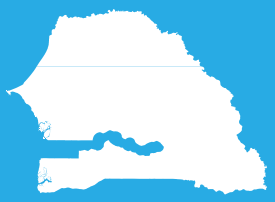

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 517.079 | 16.009 | 0.317 | 32275687 |
| 1990 | 167.929 | 10.302 | 0.291 | 16326815 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

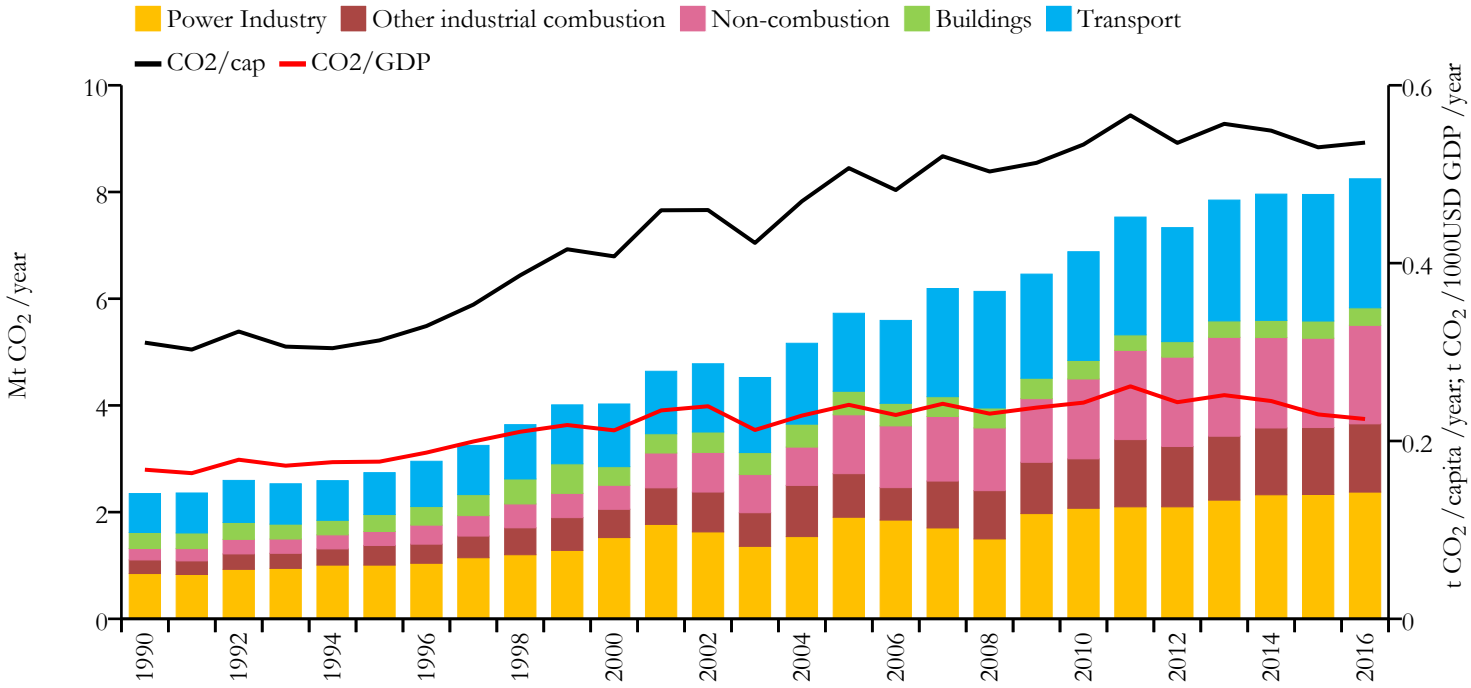
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Senegal



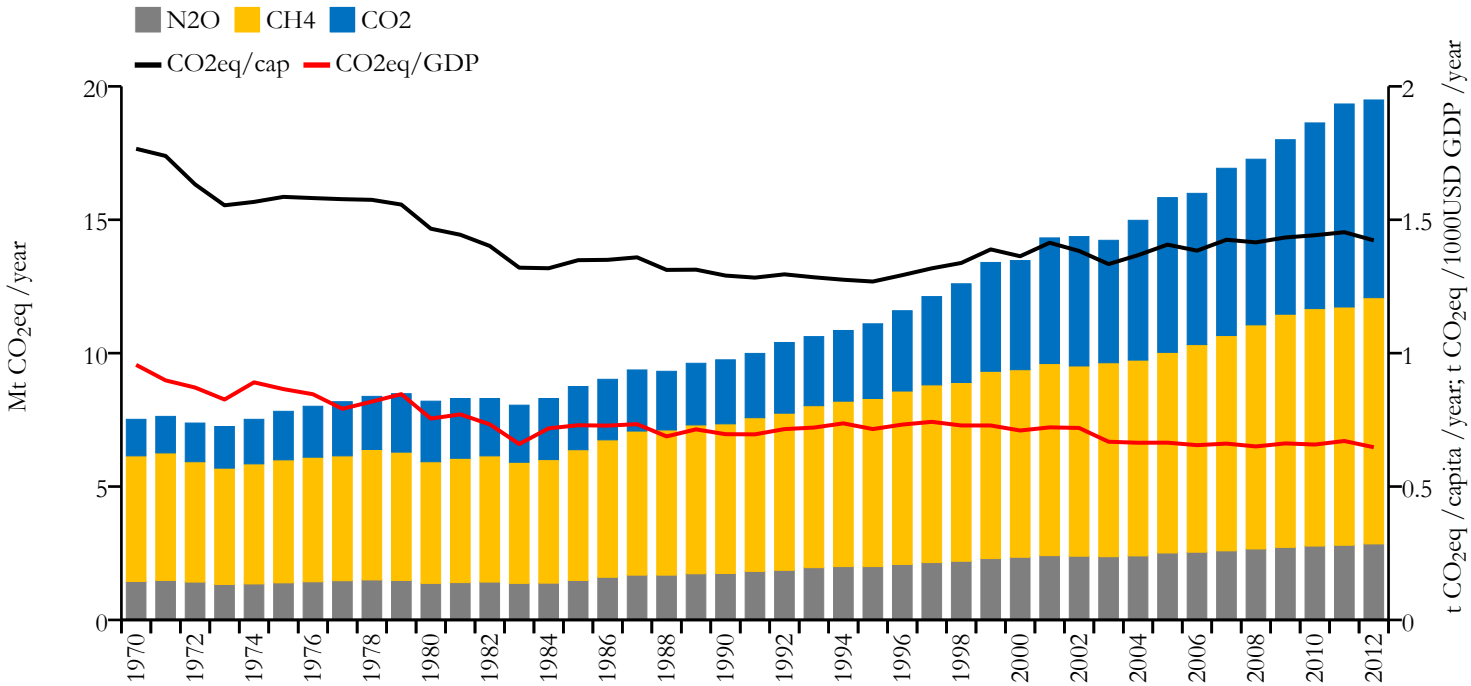
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 8.247 | 0.536 | 0.225 | 15411614 |
| 1990 | 2.348 | 0.311 | 0.168 | 7555617 |

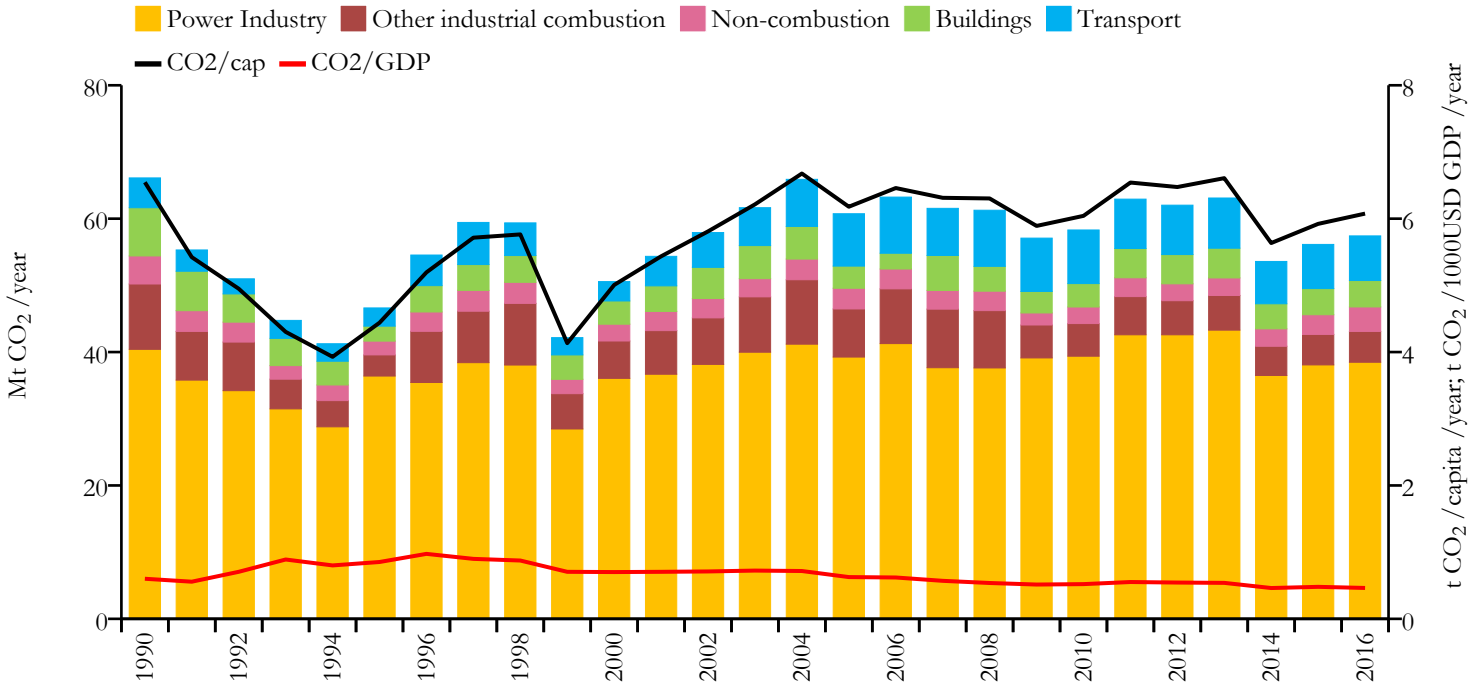
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Serbia and Montenegro

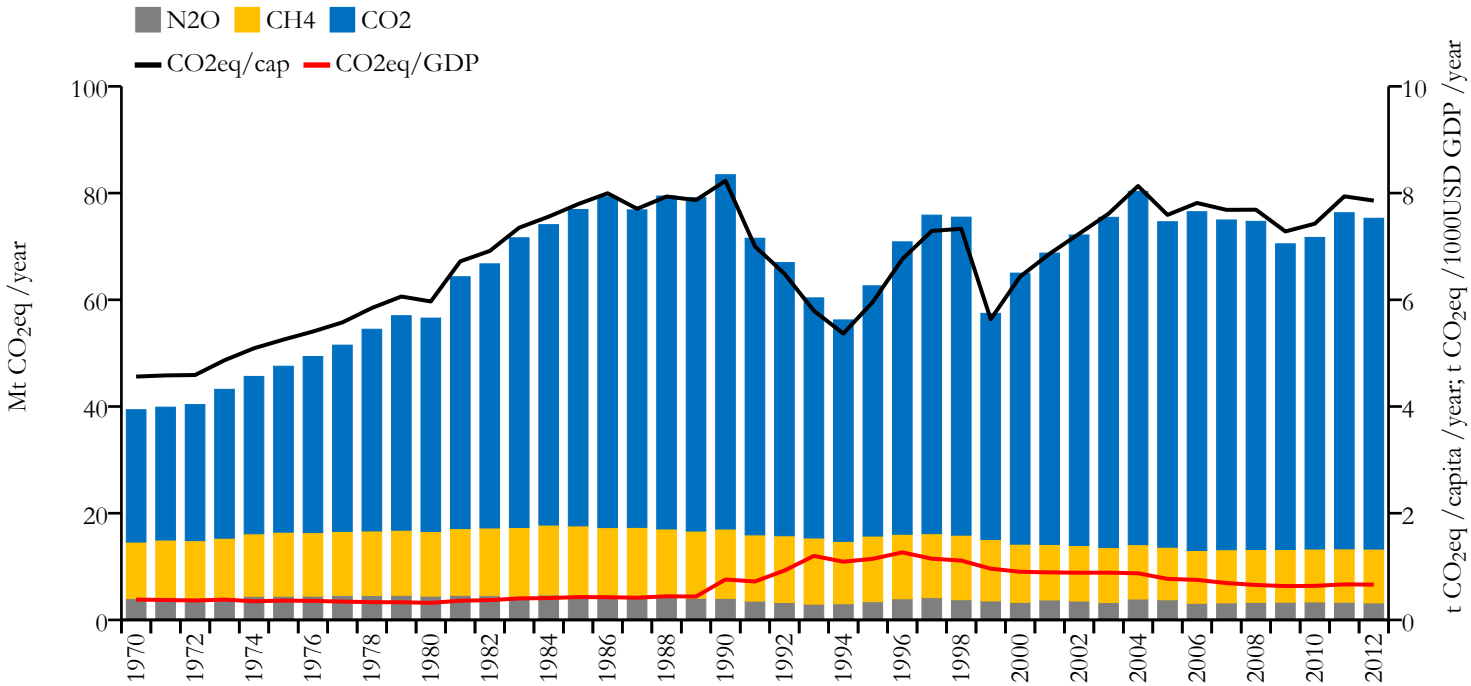
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 57.417 | 6.076 | 0.463 | 9448698 |
| 1990 | 66.111 | 6.546 | 0.601 | 10132676 |

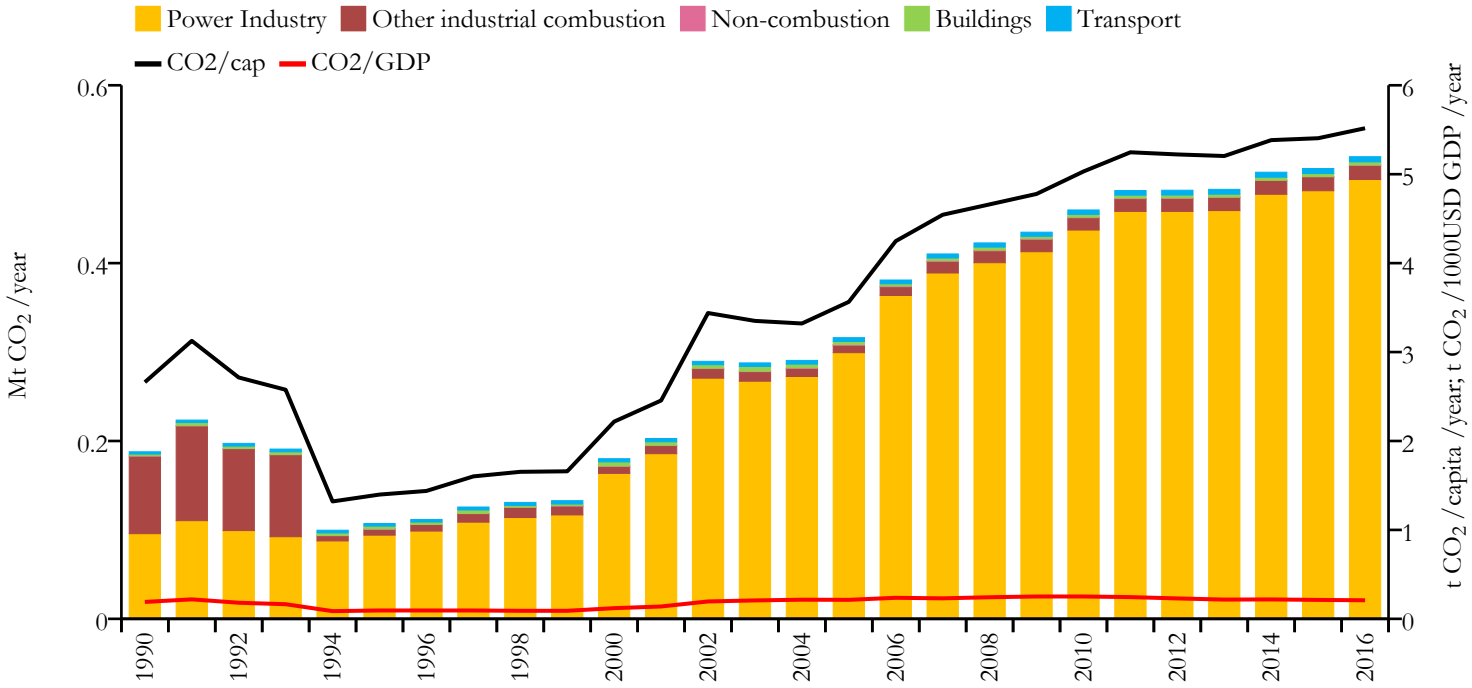
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Seychelles

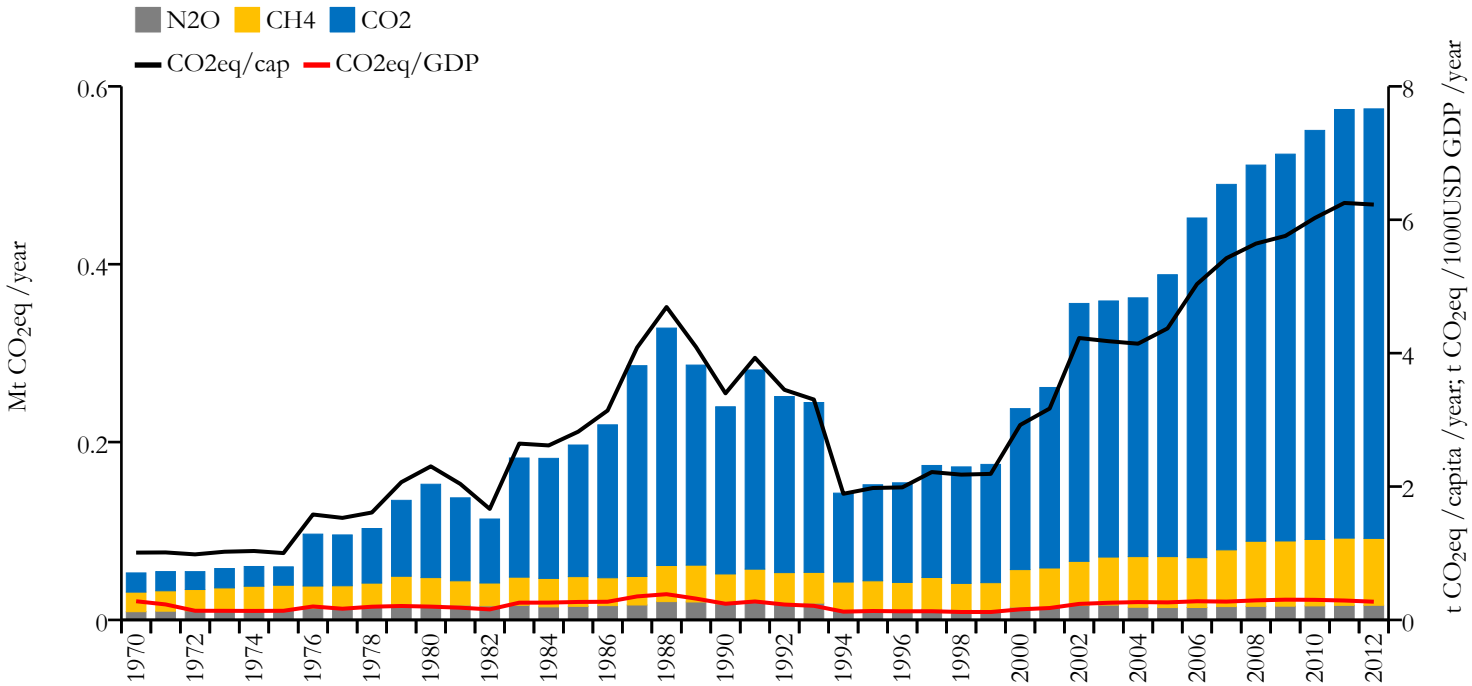
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.520 | 5.517 | 0.209 | 94228 |
| 1990 | 0.188 | 2.661 | 0.190 | 70624 |

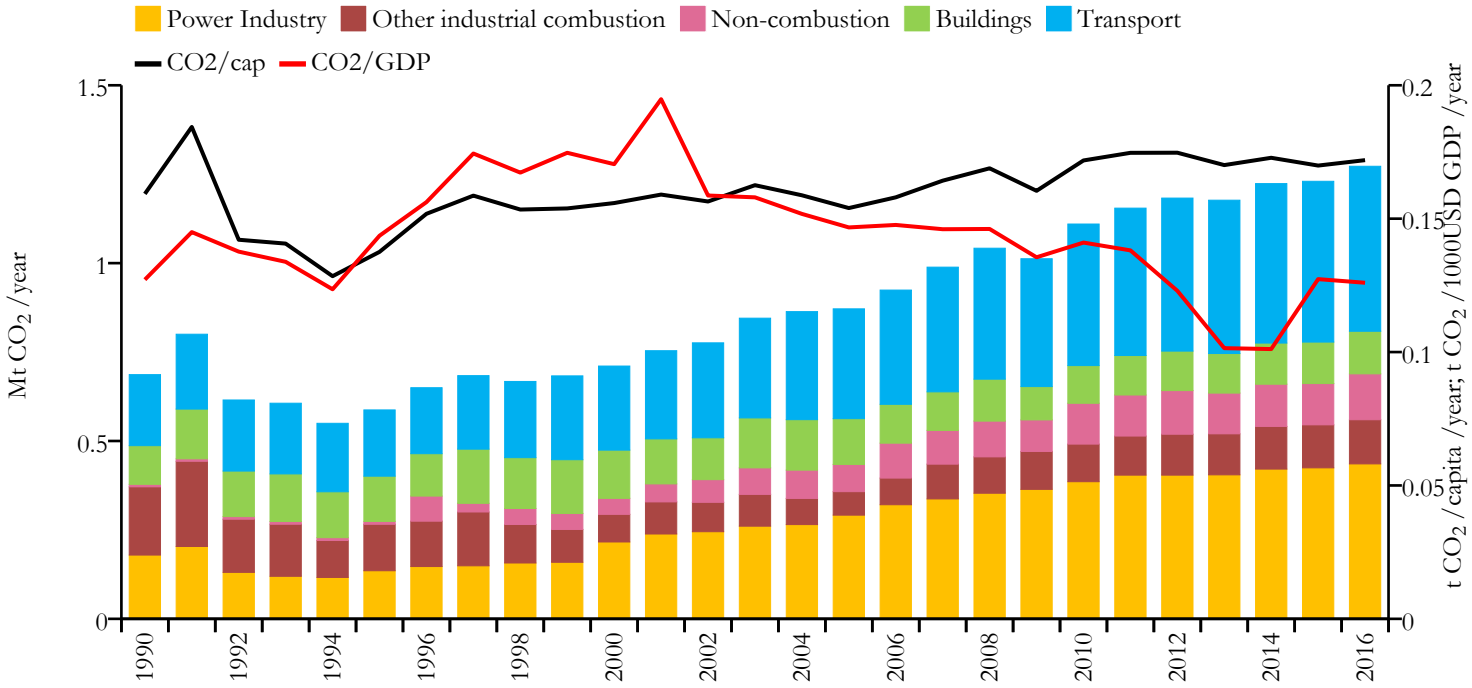
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Sierra Leone

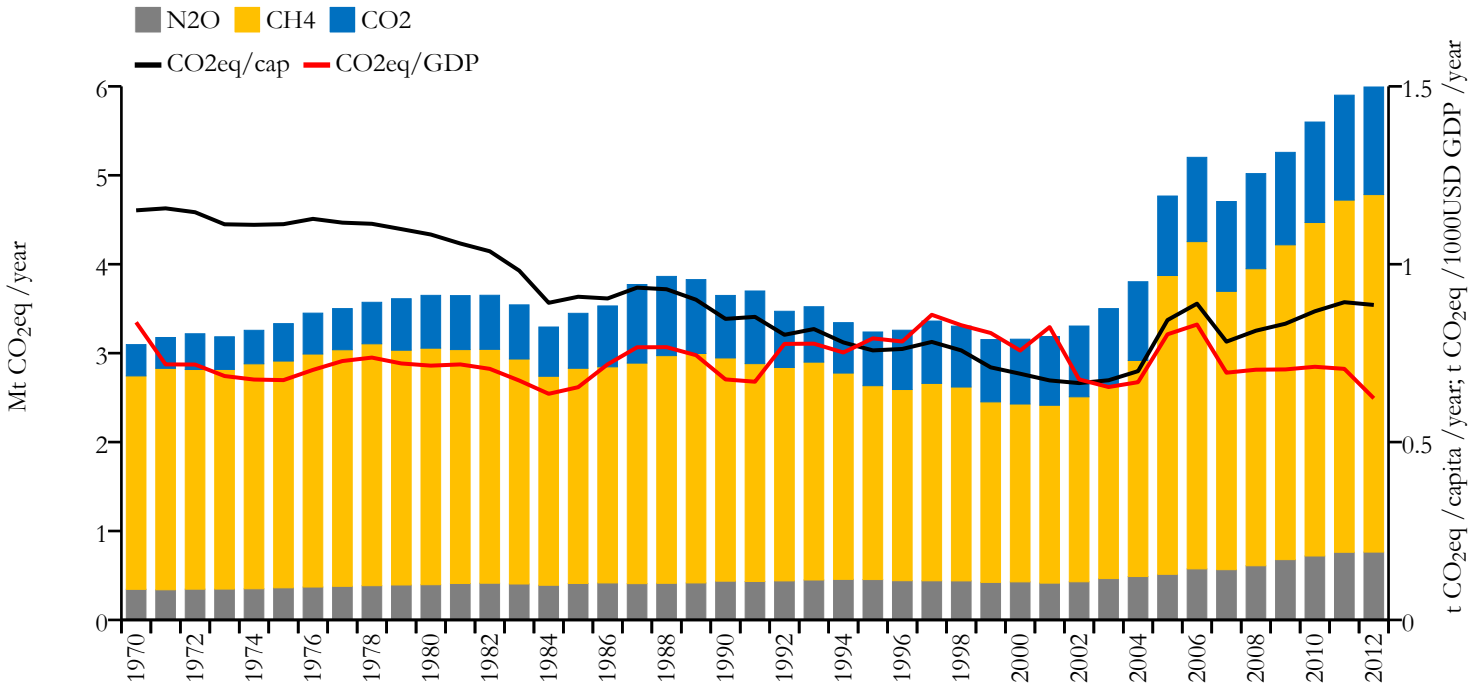
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 1.272 | 0.172 | 0.126 | 7396190 |
| 1990 | 0.687 | 0.159 | 0.127 | 4312246 |

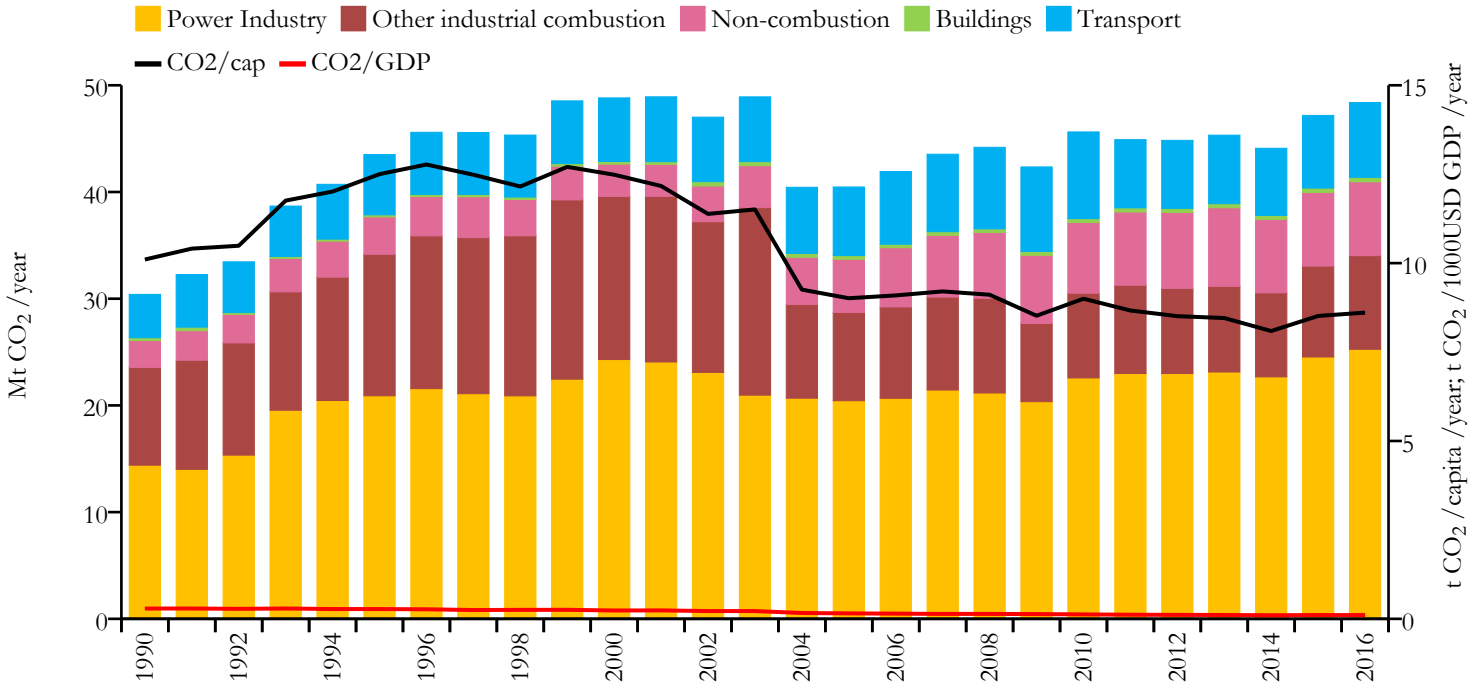
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Singapore

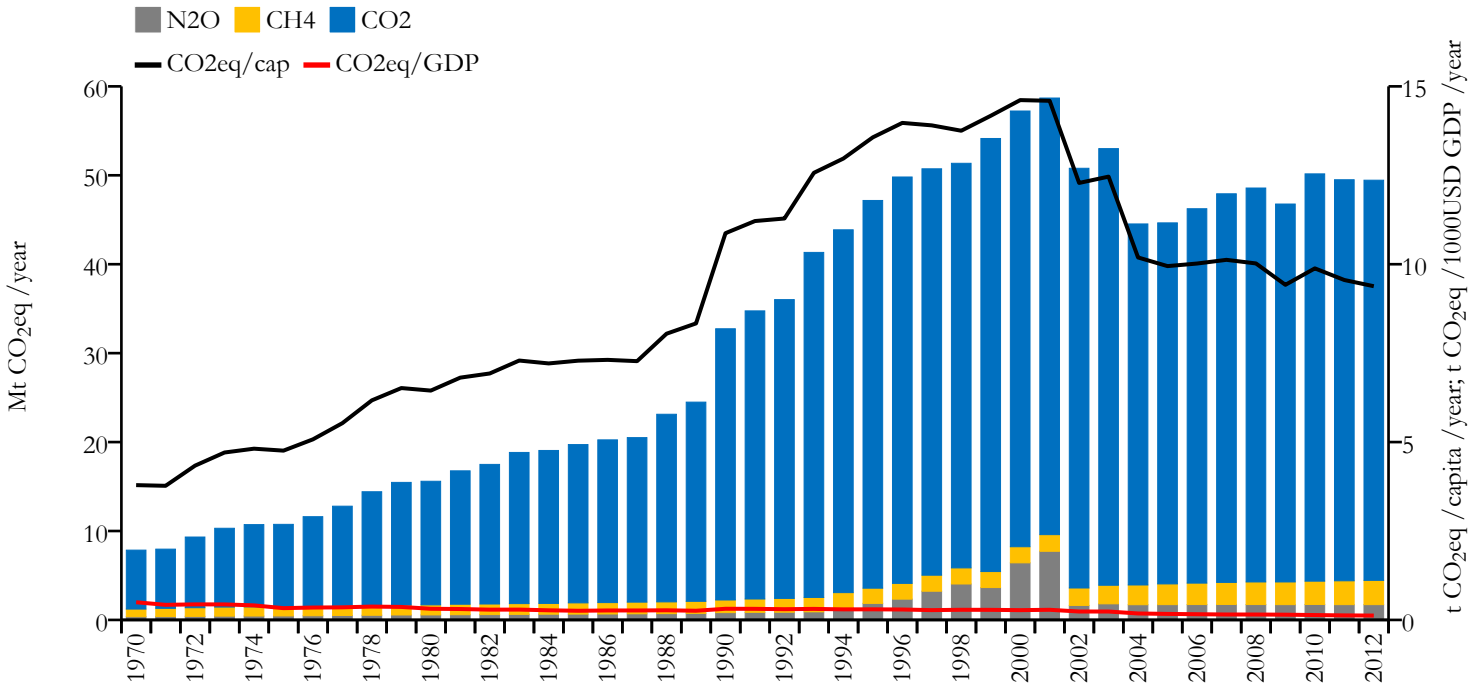
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 48.382 | 8.609 | 0.106 | 5622455 |
| 1990 | 30.407 | 10.102 | 0.290 | 3012953 |

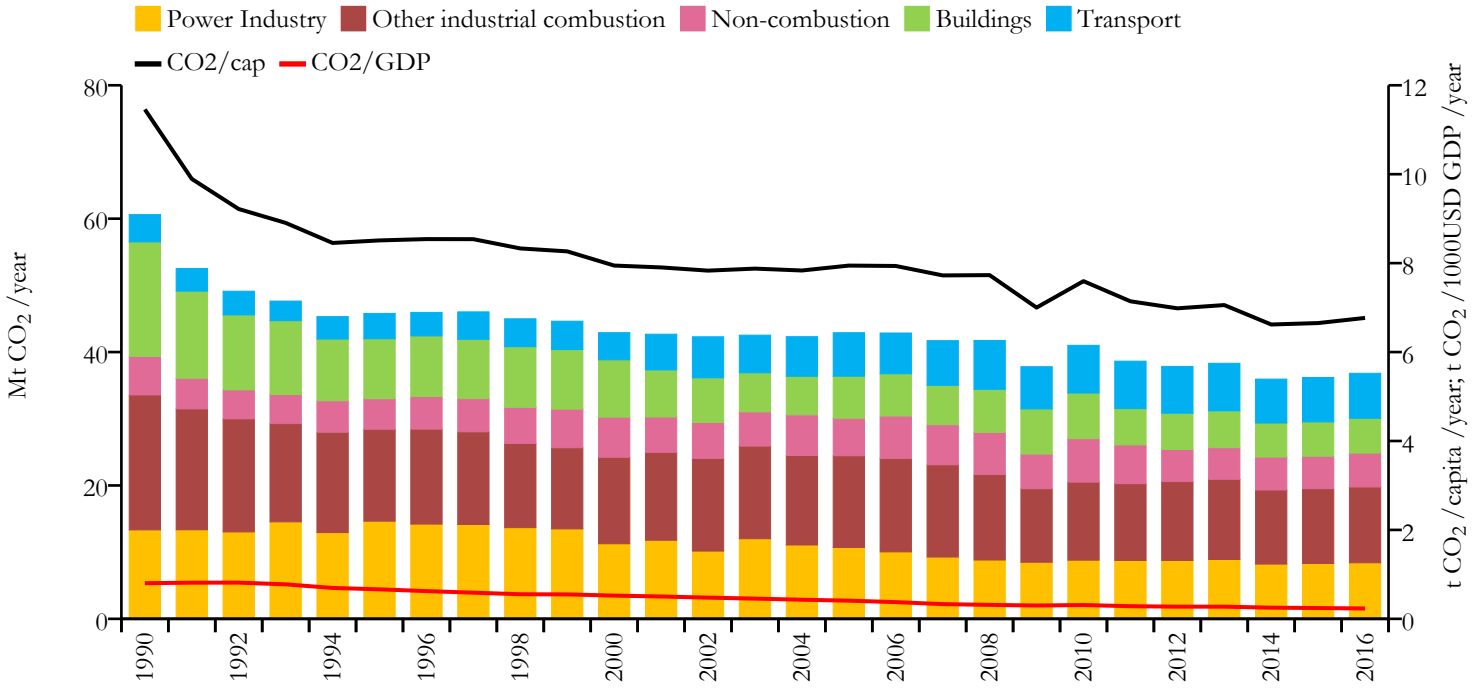
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Slovakia

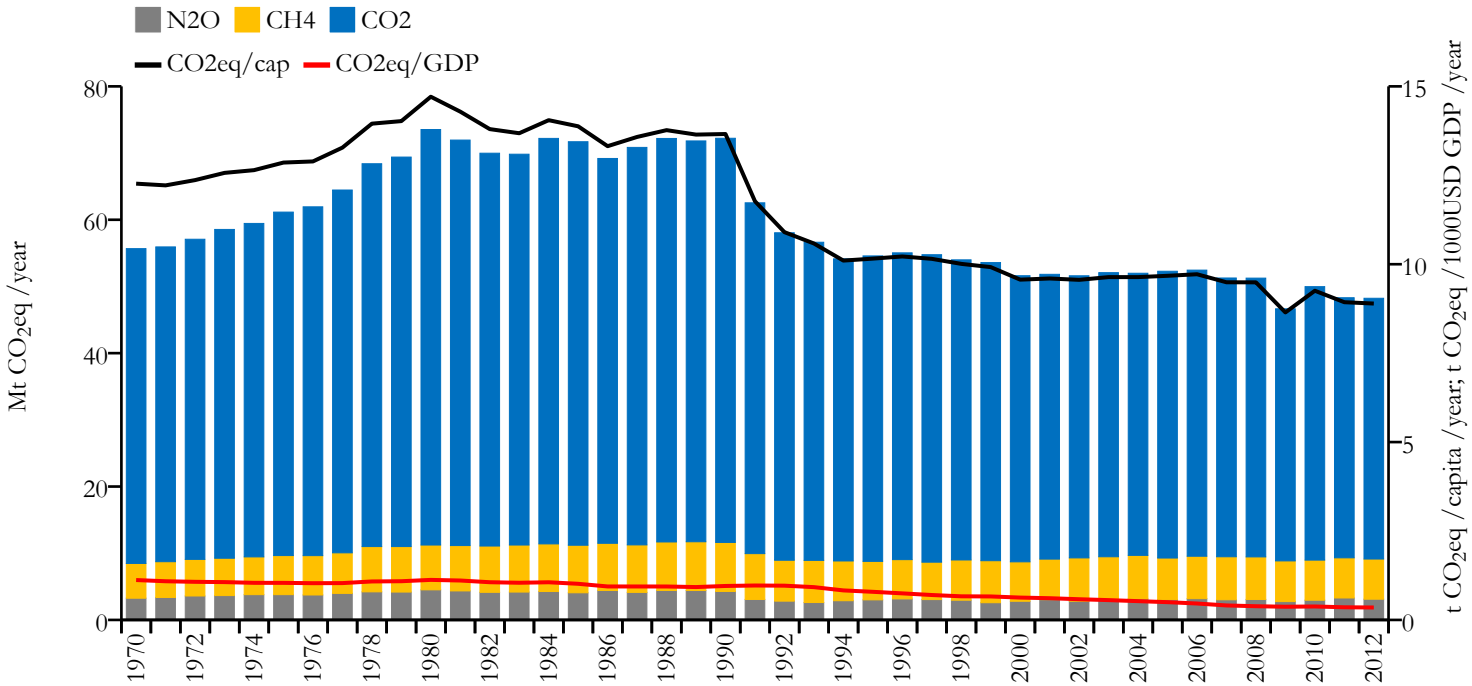
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 36.817 | 6.768 | 0.233 | 5444218 |
| 1990 | 60.608 | 11.457 | 0.802 | 5288454 |

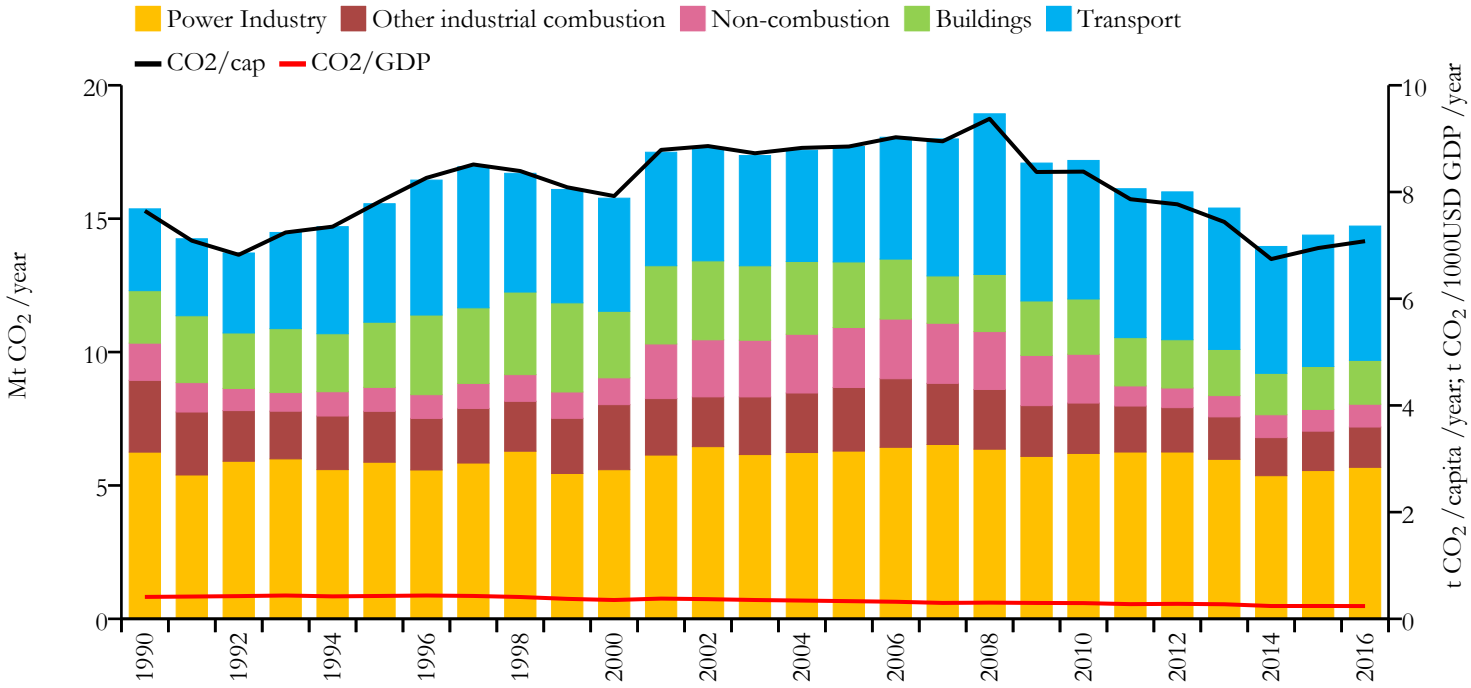
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



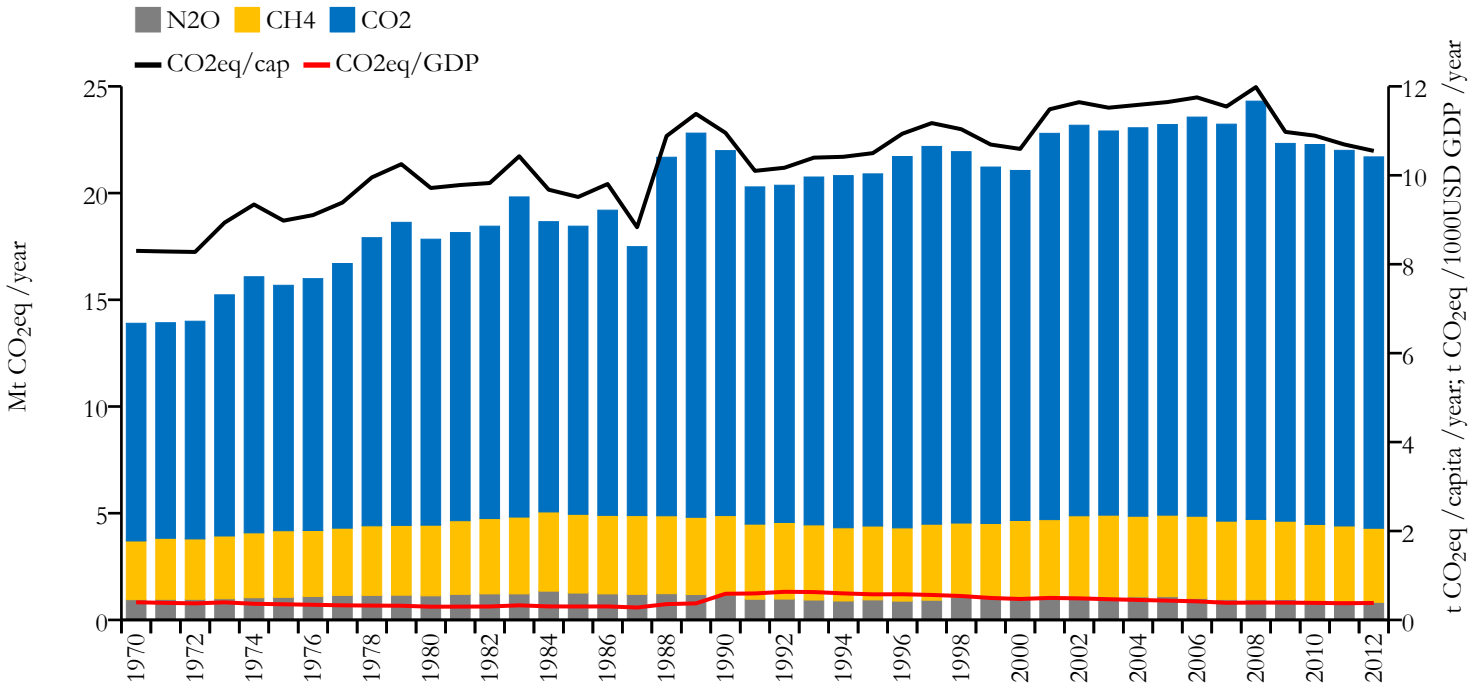
# Slovenia

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



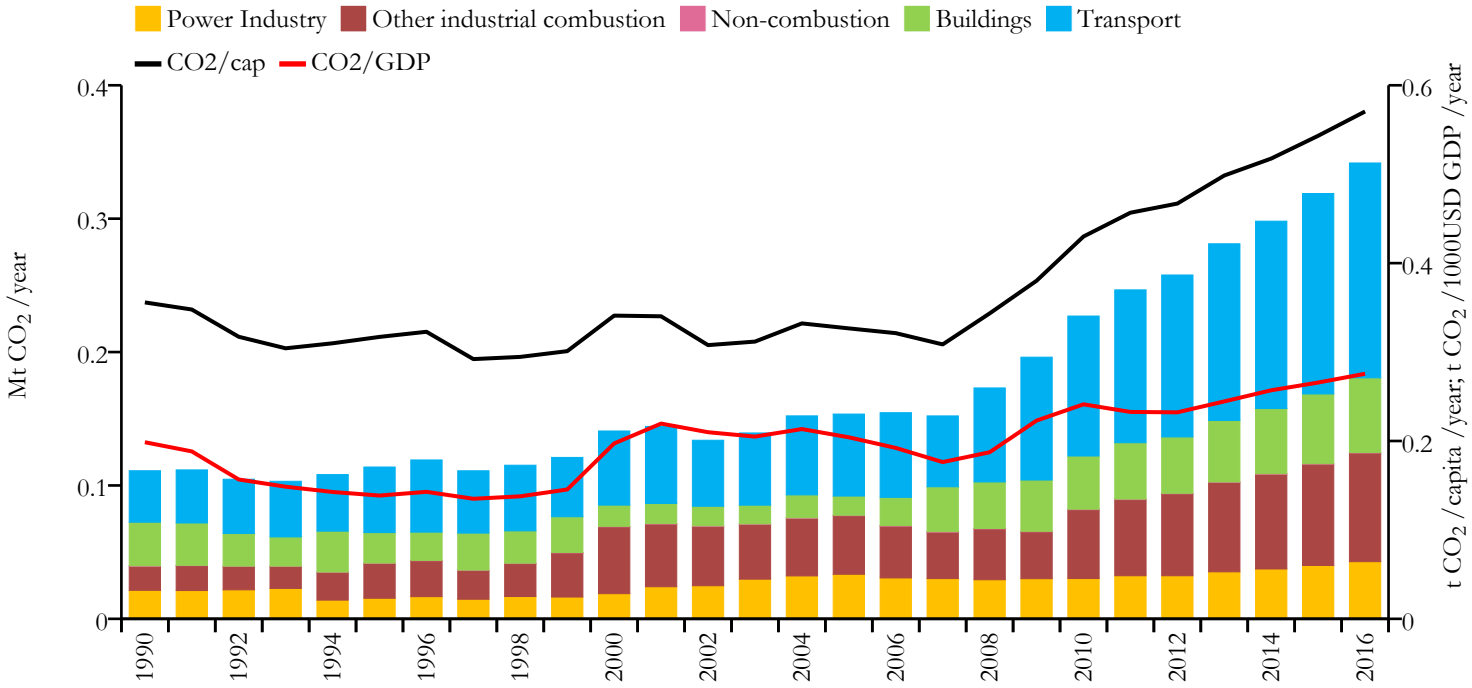

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 14.723 | 7.078 | 0.239 | 2077862 |
| 1990 | 15.368 | 7.646 | 0.411 | 2006479 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



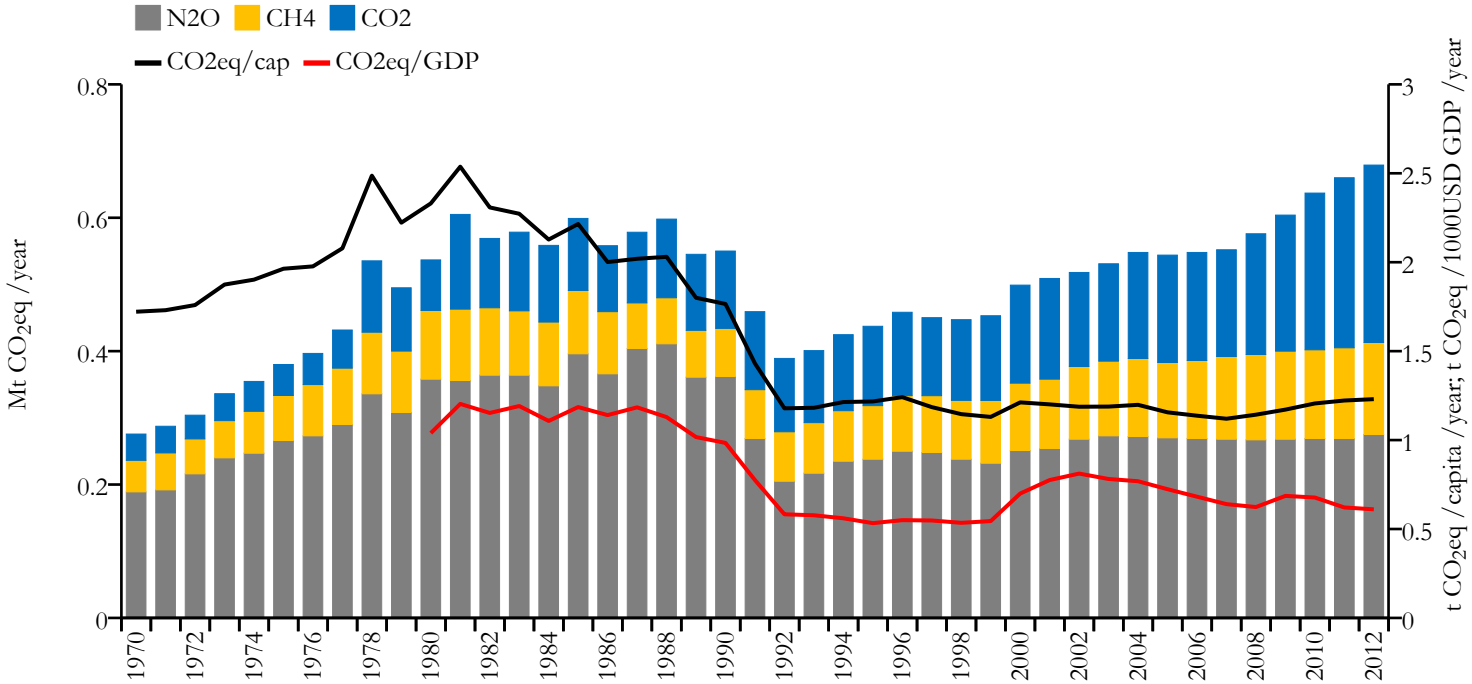
# Solomon Islands

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



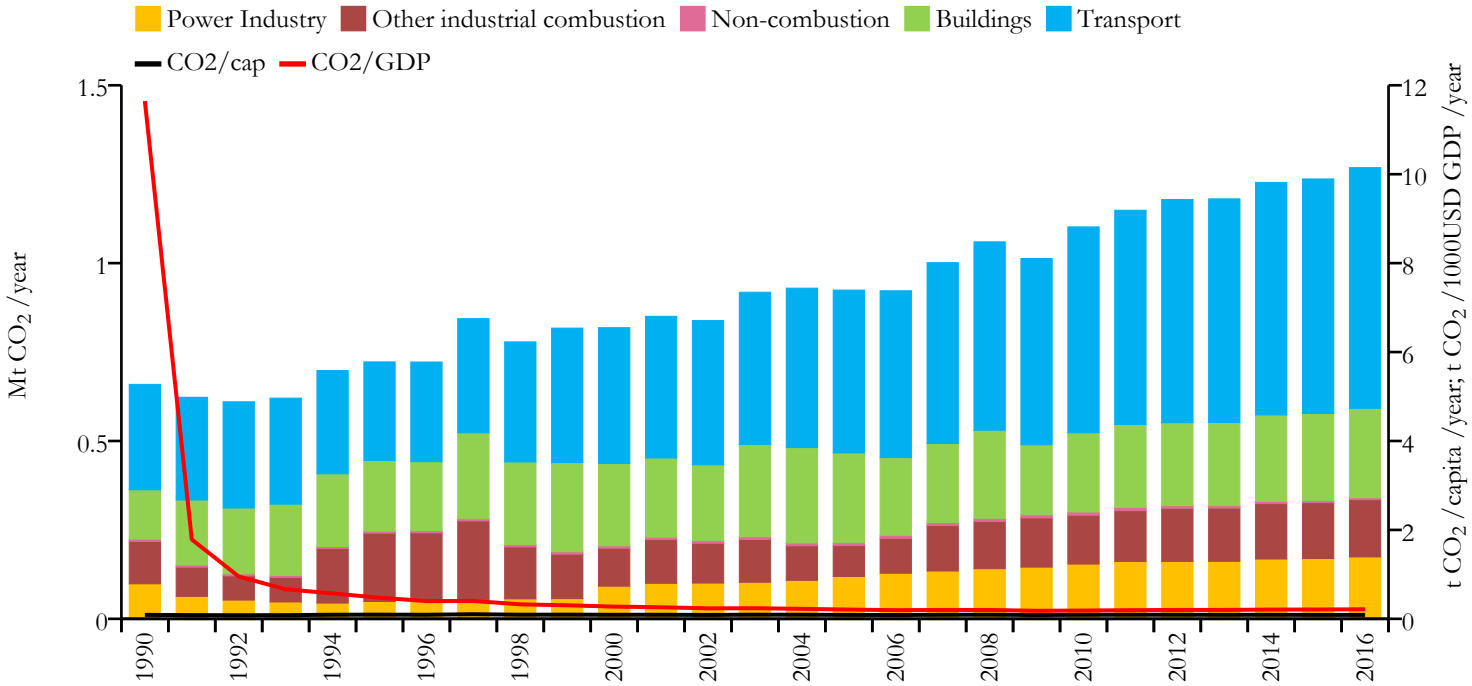

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.342 | 0.571 | 0.276 | 599419 |
| 1990 | 0.111 | 0.356 | 0.199 | 311840 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Somalia

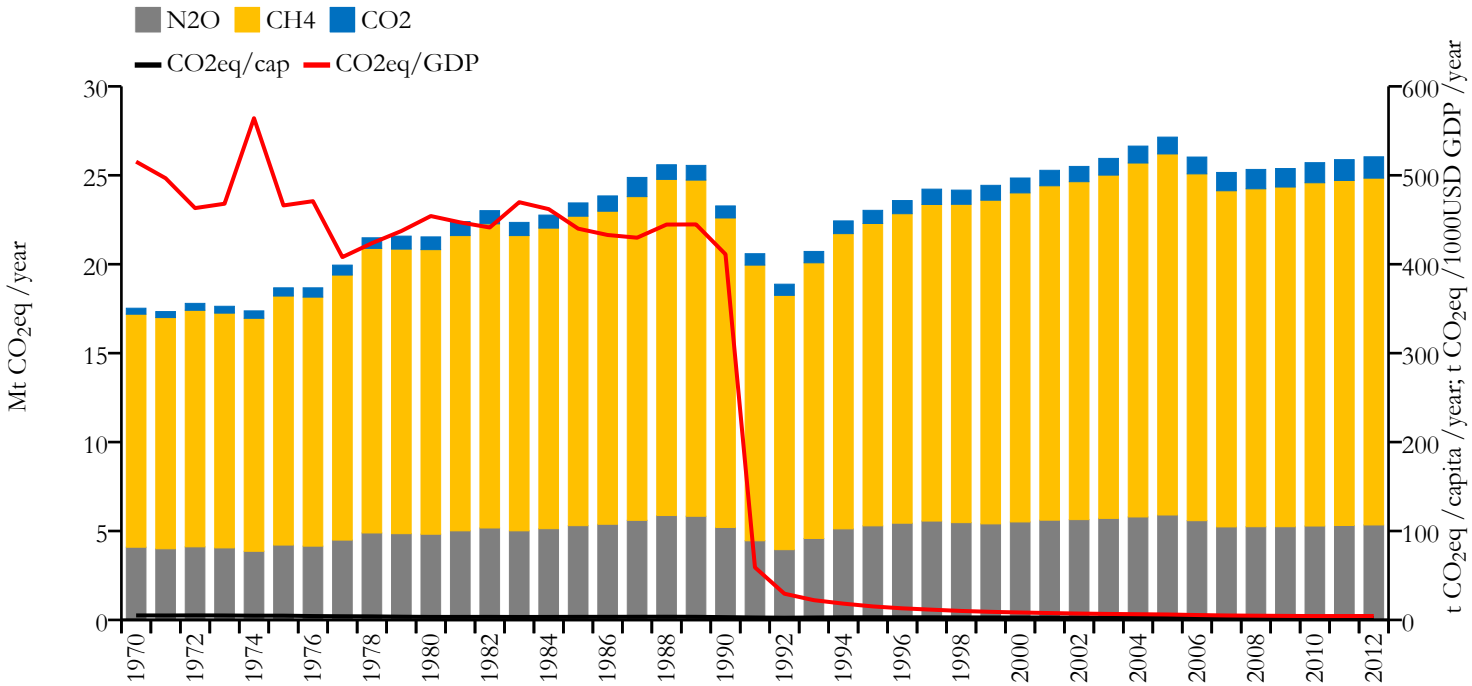
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 1.268 | 0.089 | 0.215 | 14317996 |
| 1990 | 0.659 | 0.089 | 11.646 | 7397347 |

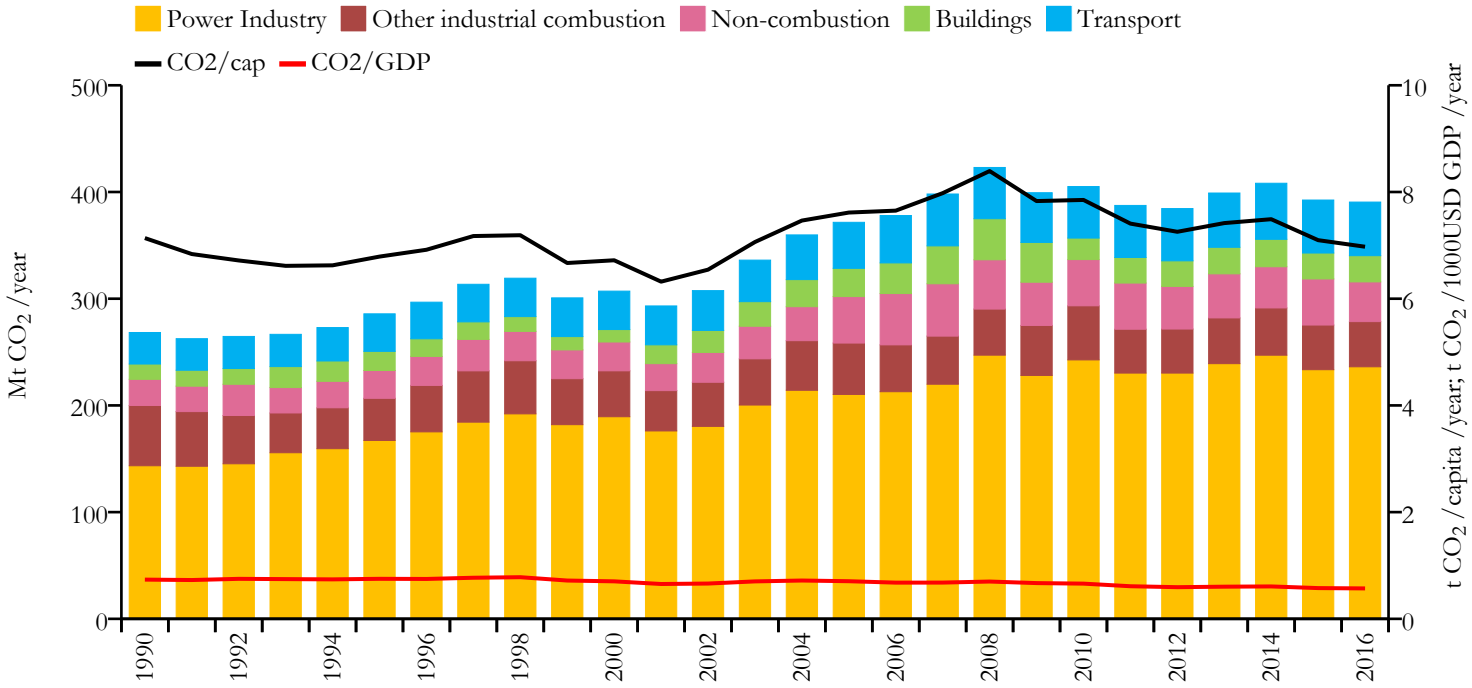
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



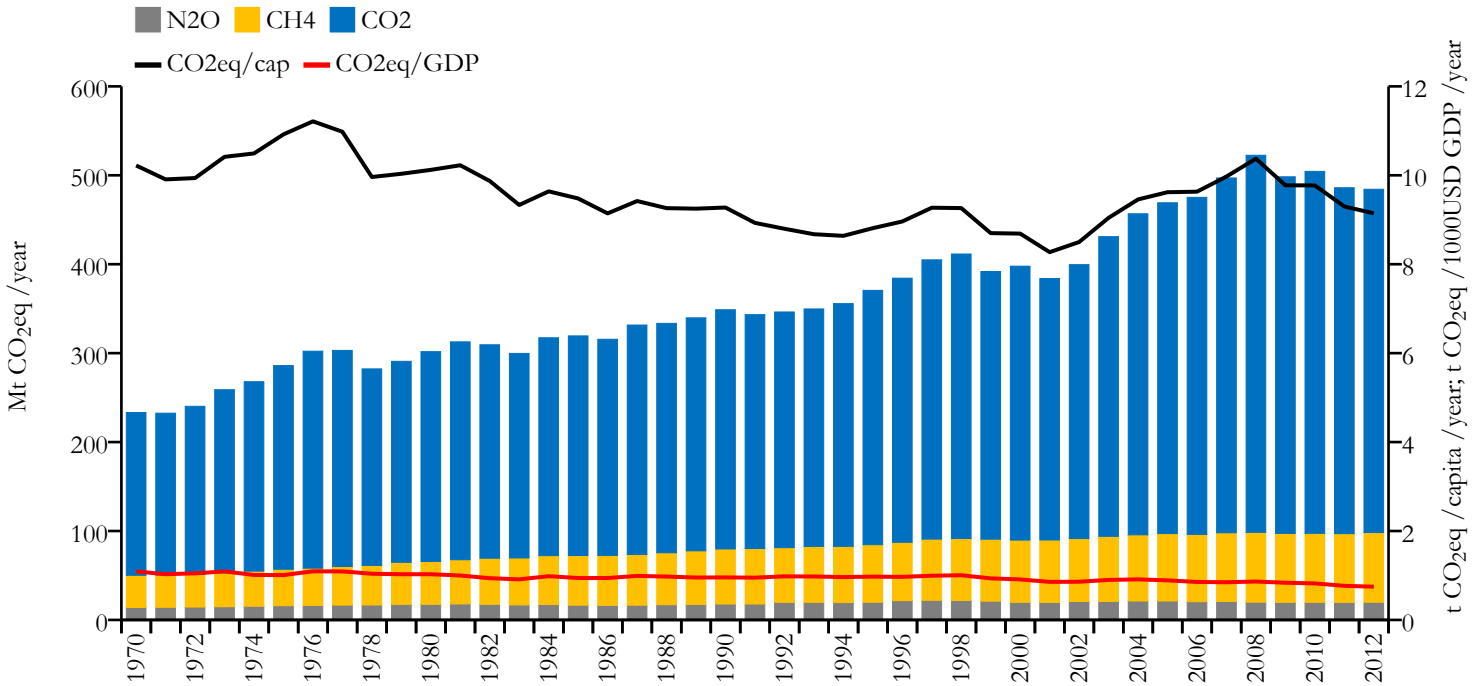
# South Africa

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



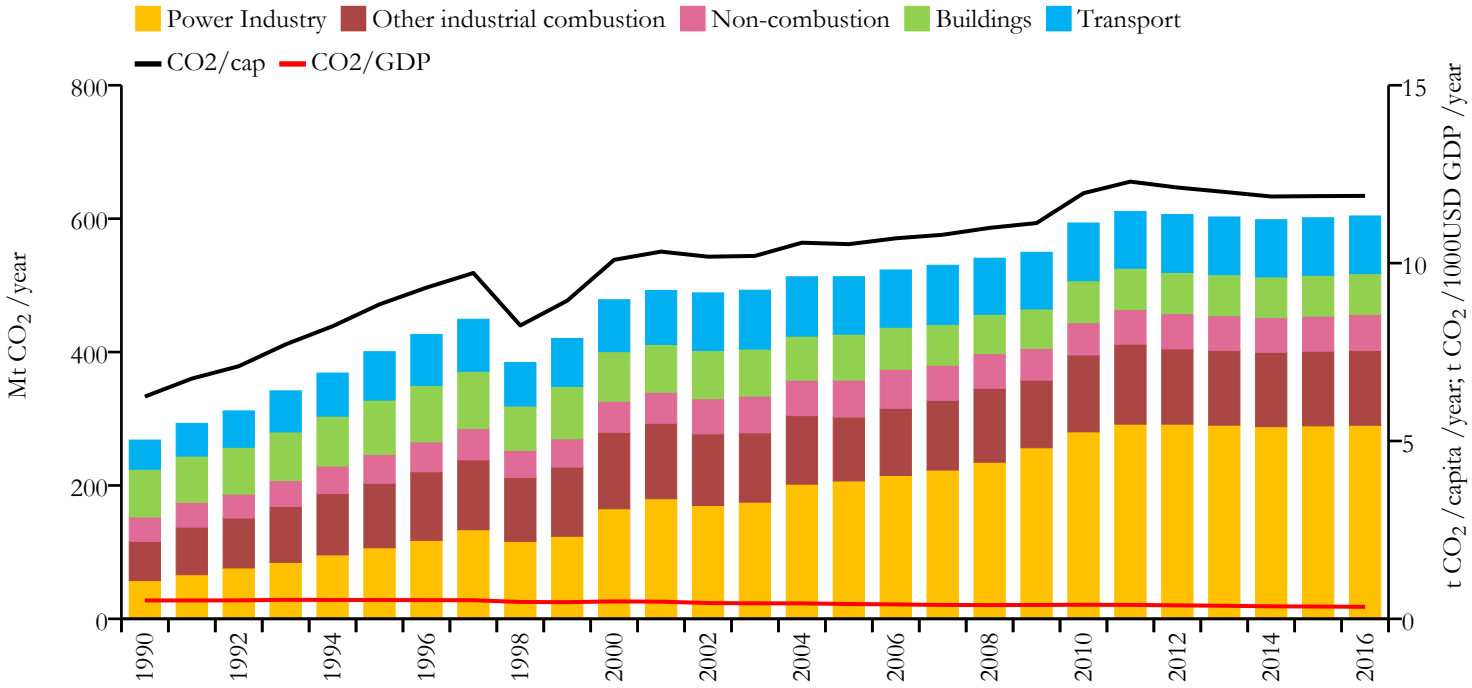

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 390.558 | 6.974 | 0.570 | 56015473 |
| 1990 | 268.333 | 7.137 | 0.735 | 37560525 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# South Korea

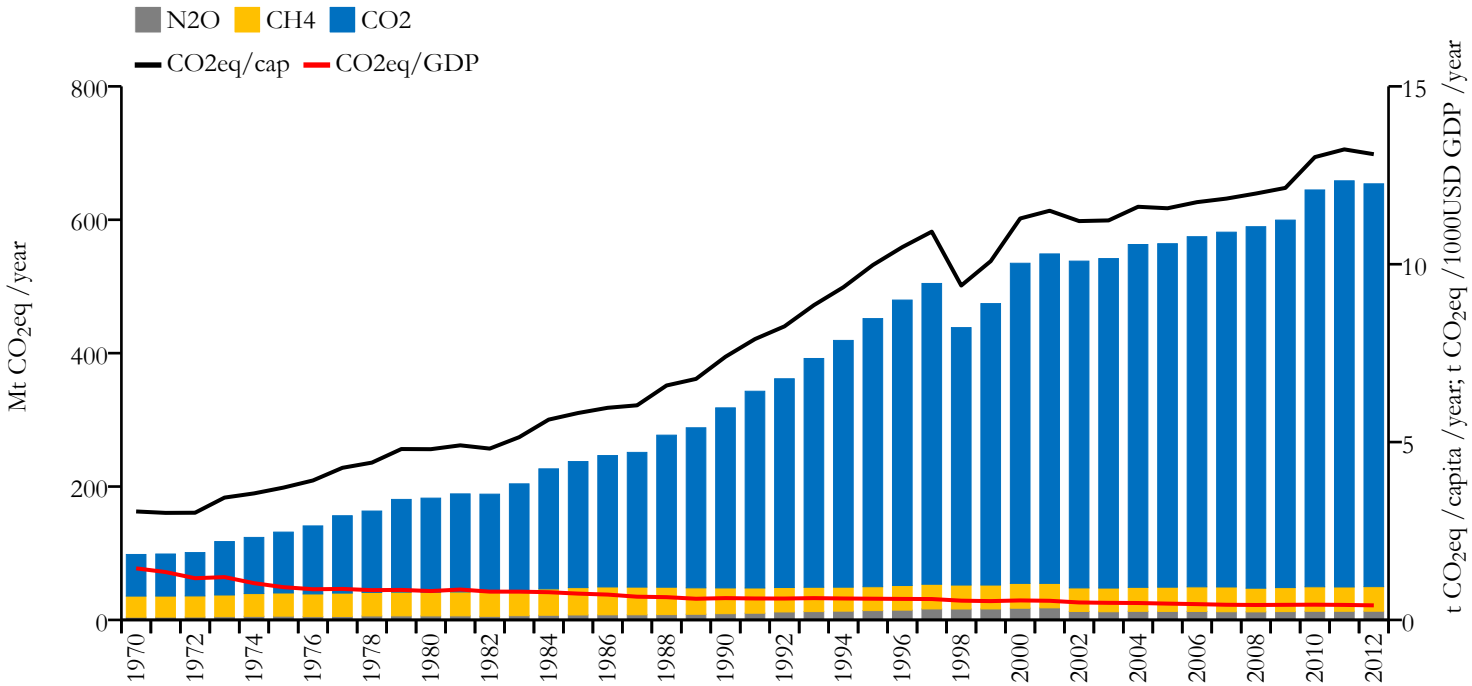
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 604.044 | 11.891 | 0.337 | 50791919 |
| 1990 | 268.057 | 6.248 | 0.517 | 42923131 |

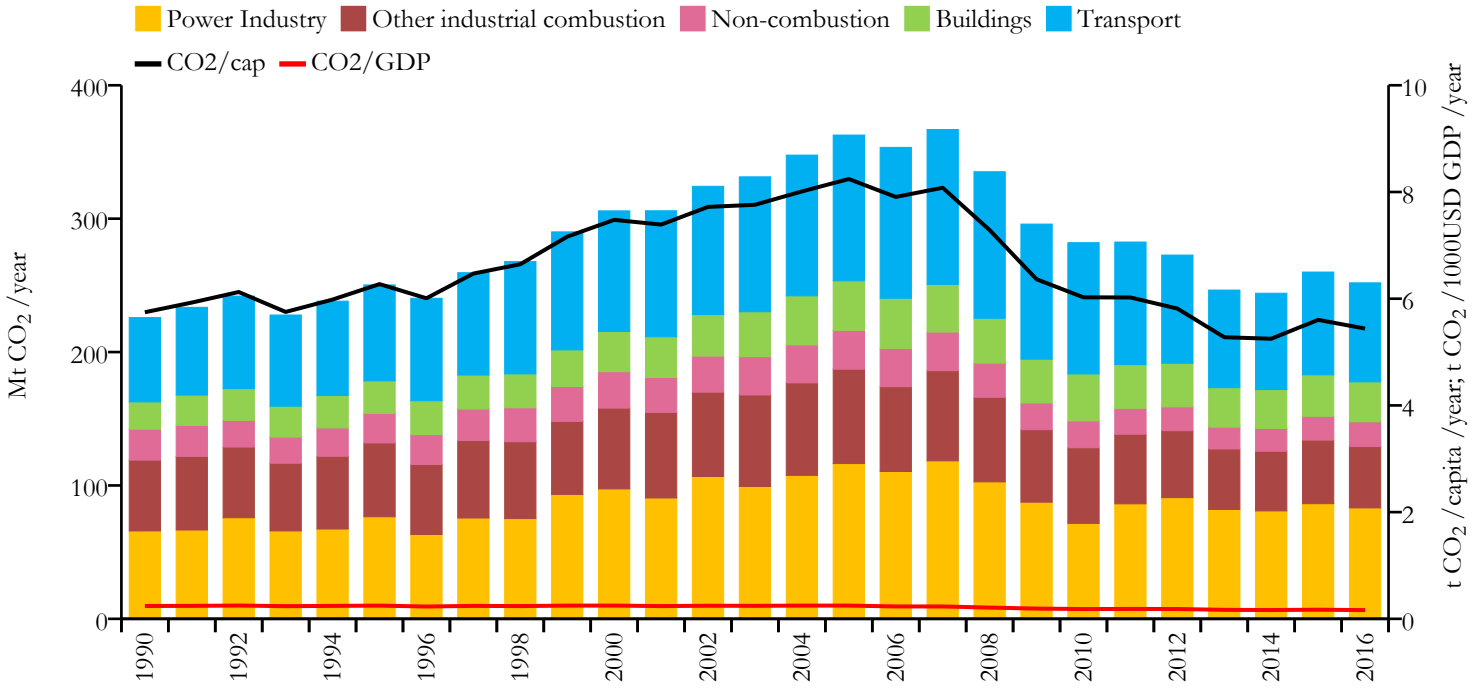
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Spain and Andorra

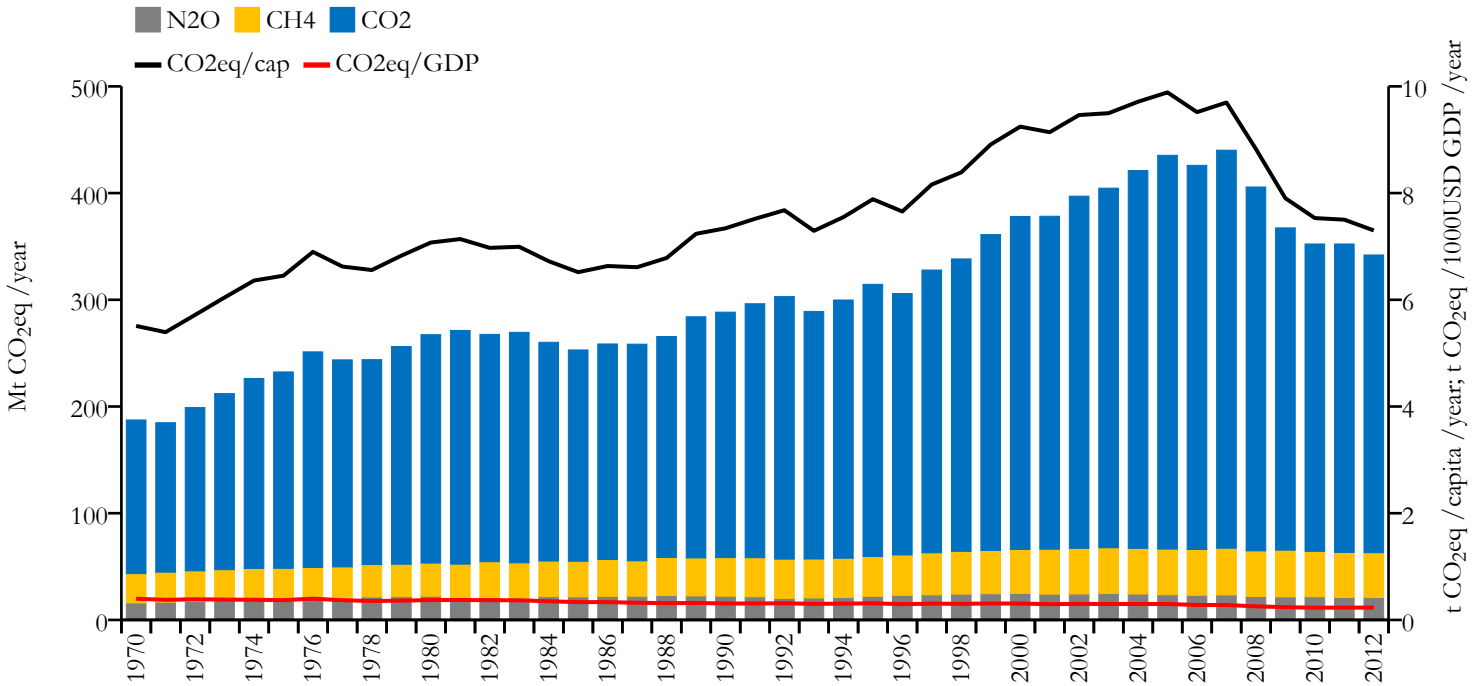
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 251.892 | 5.440 | 0.164 | 46347576 |
| 1990 | 225.833 | 5.746 | 0.241 | 39306102 |

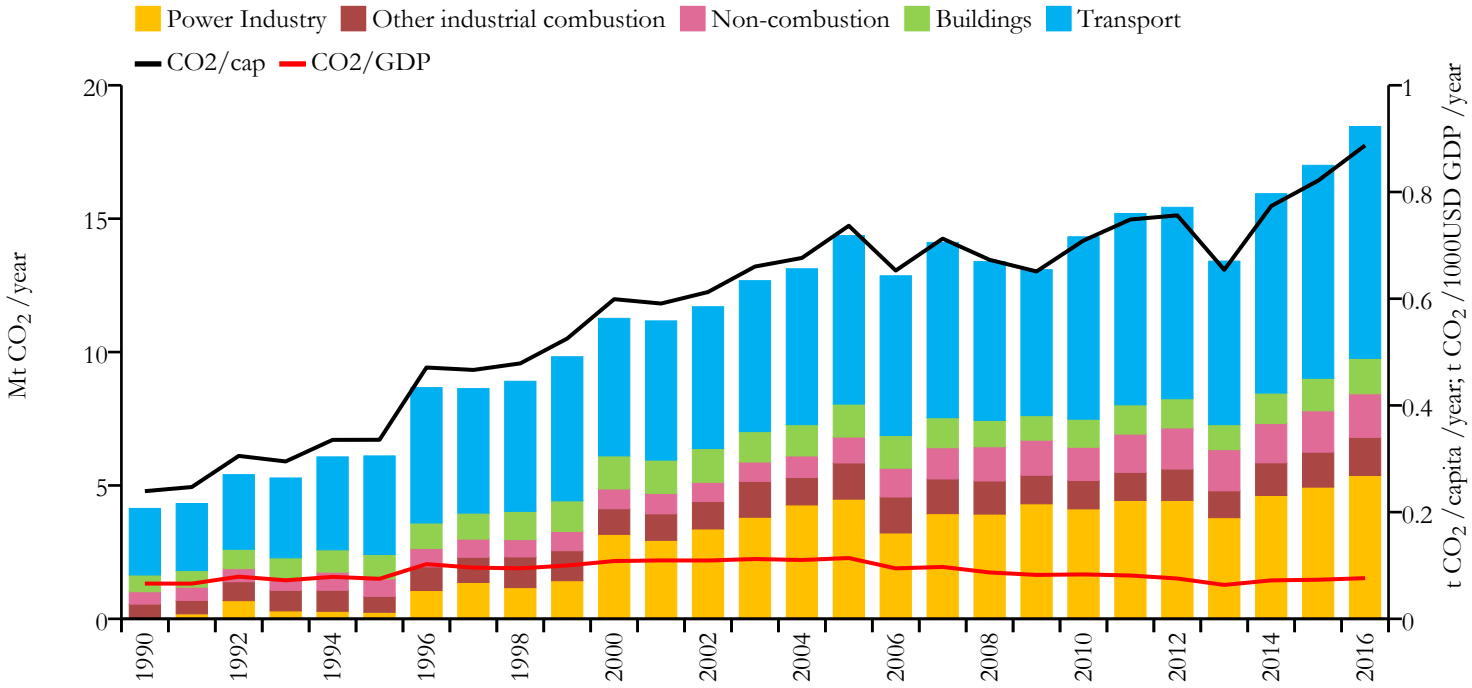
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Sri Lanka

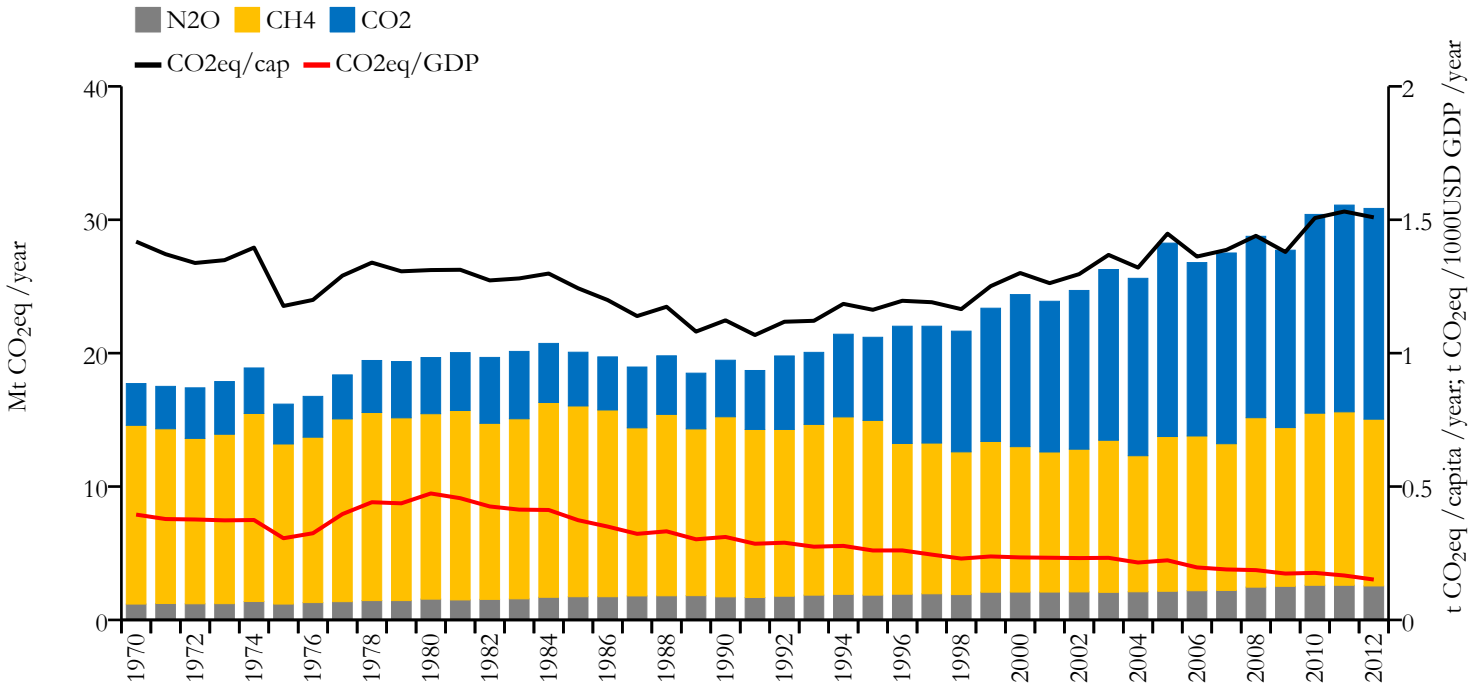
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 18.455 | 0.887 | 0.076 | 20798492 |
| 1990 | 4.140 | 0.239 | 0.066 | 17329713 |

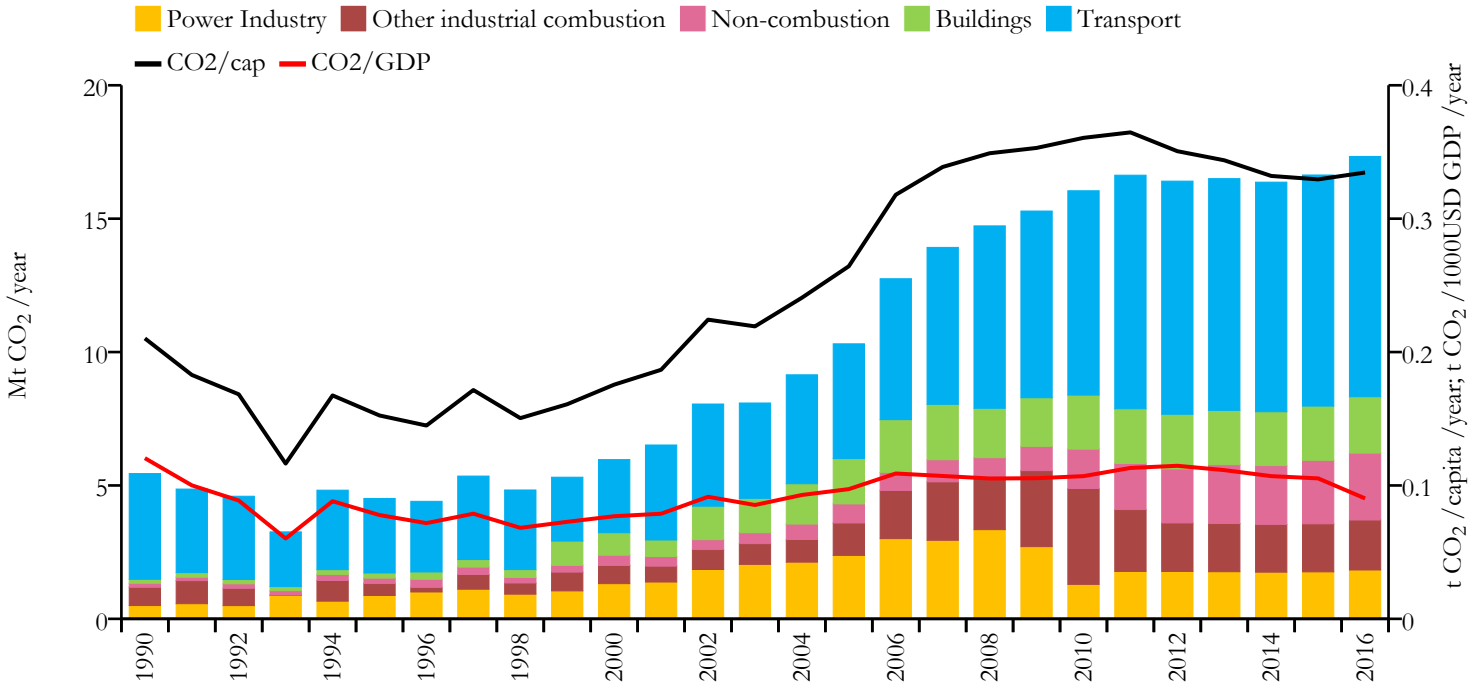
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Sudan and South Sudan

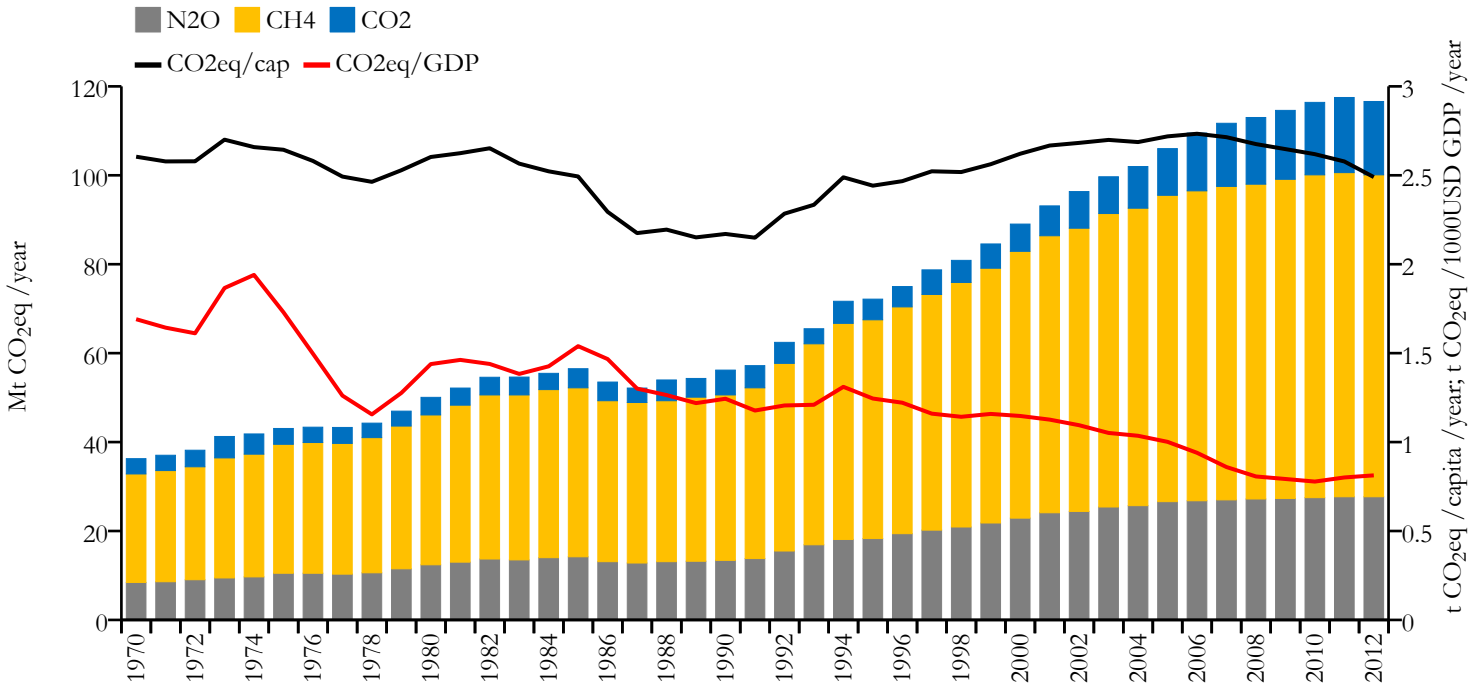
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 17.333 | 0.335 | 0.090 | 51809558 |
| 1990 | 5.445 | 0.210 | 0.120 | 25916071 |

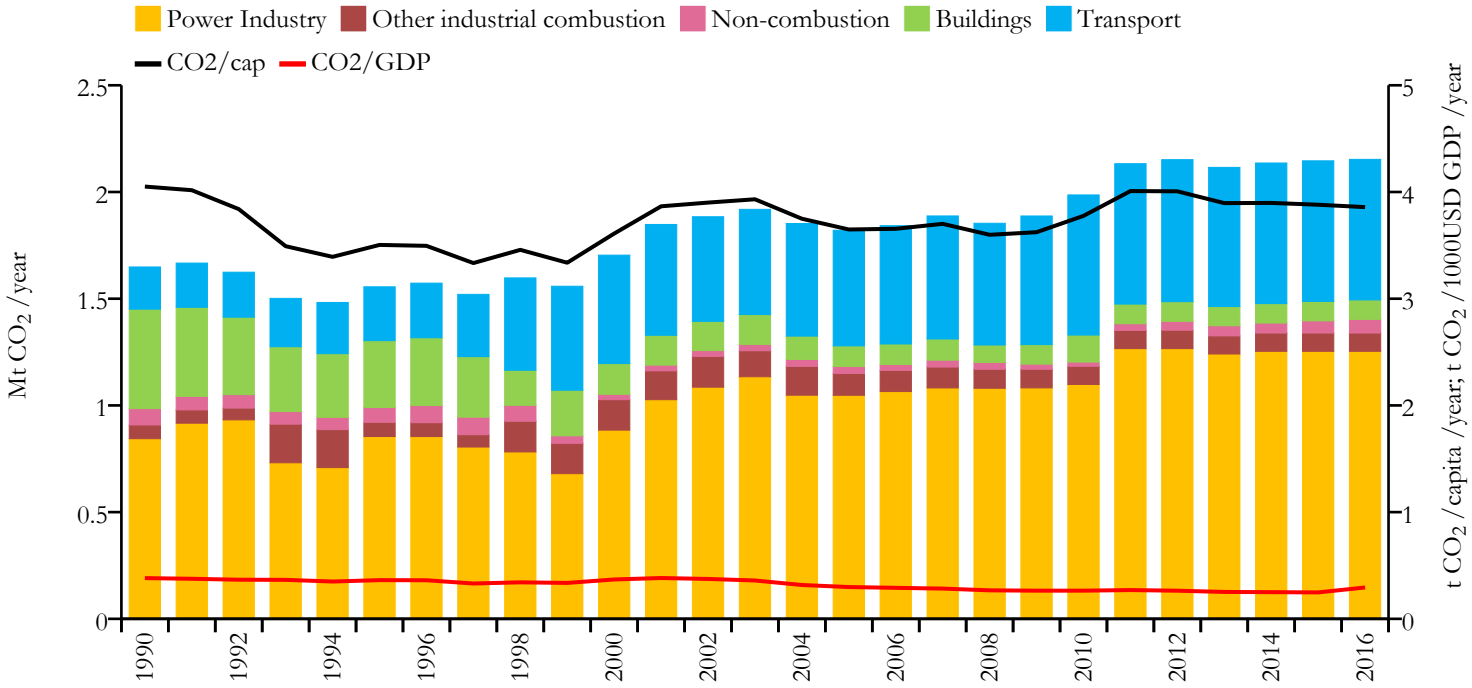
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



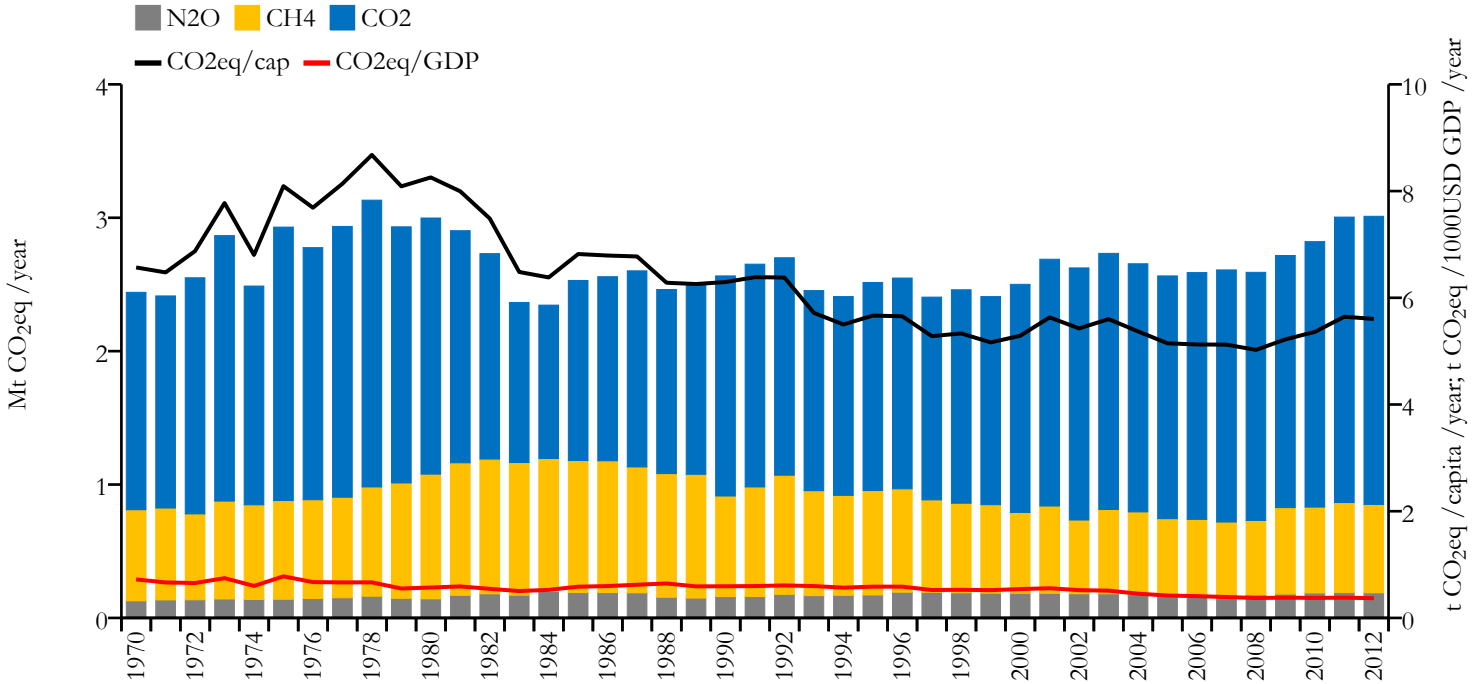
# Suriname

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



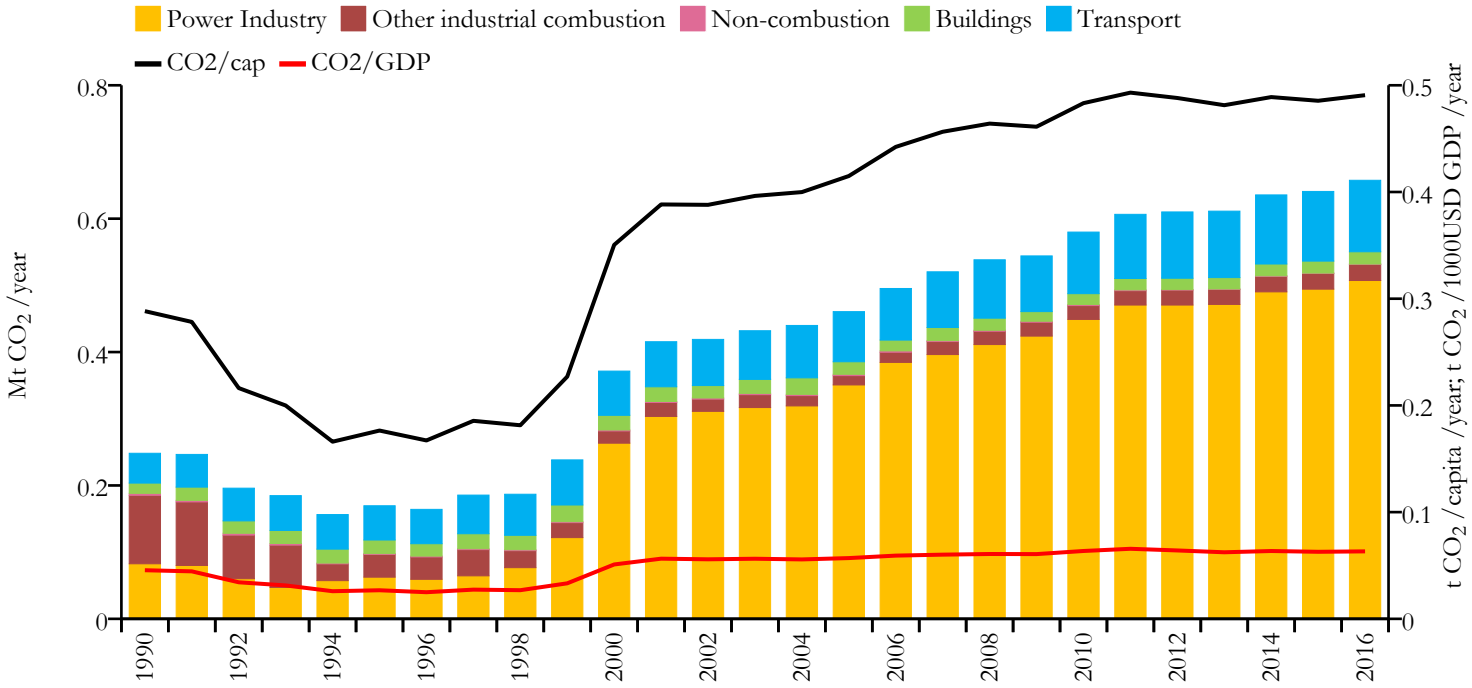

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 2.153 | 3.858 | 0.294 | 558368 |
| 1990 | 1.649 | 4.051 | 0.382 | 407472 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Swaziland

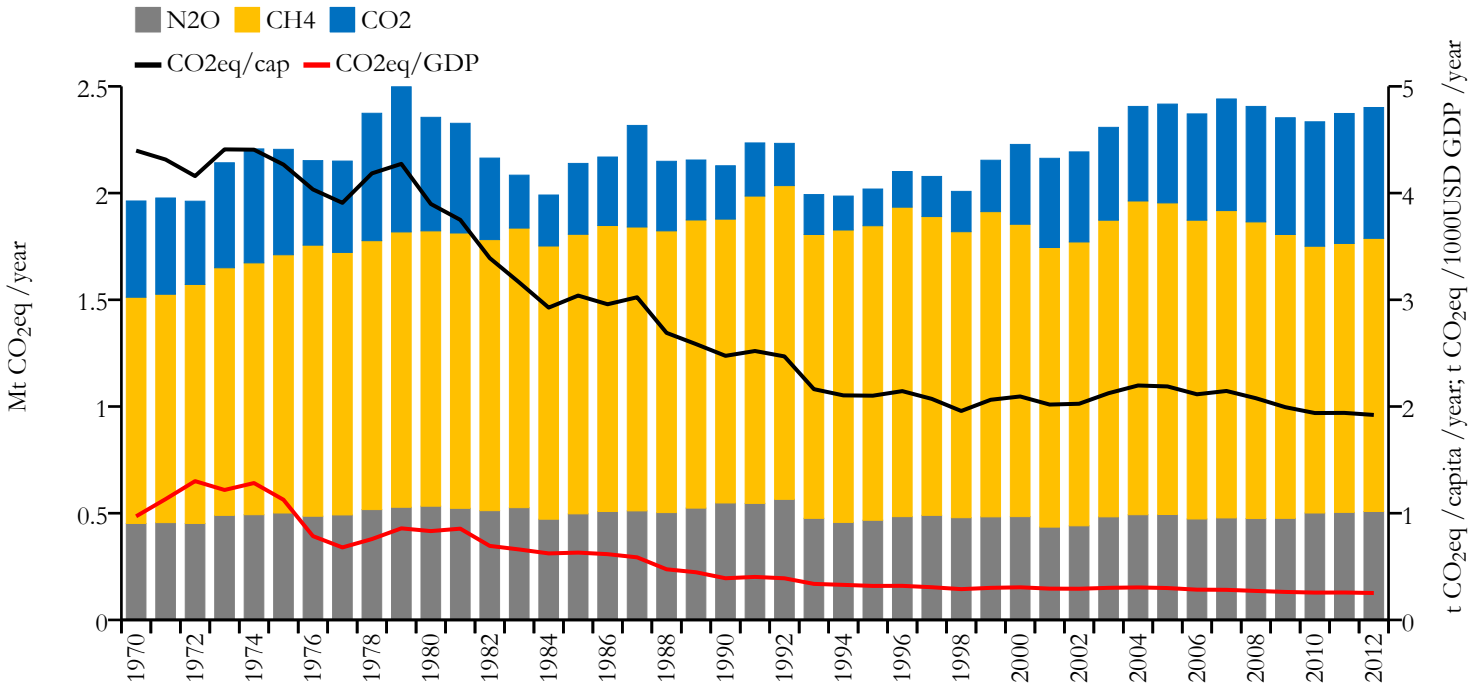
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



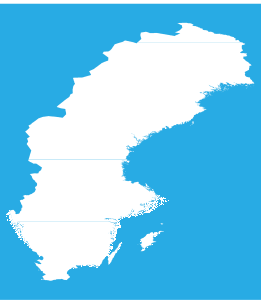

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.658 | 0.491 | 0.063 | 1343098 |
| 1990 | 0.248 | 0.288 | 0.046 | 861373 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

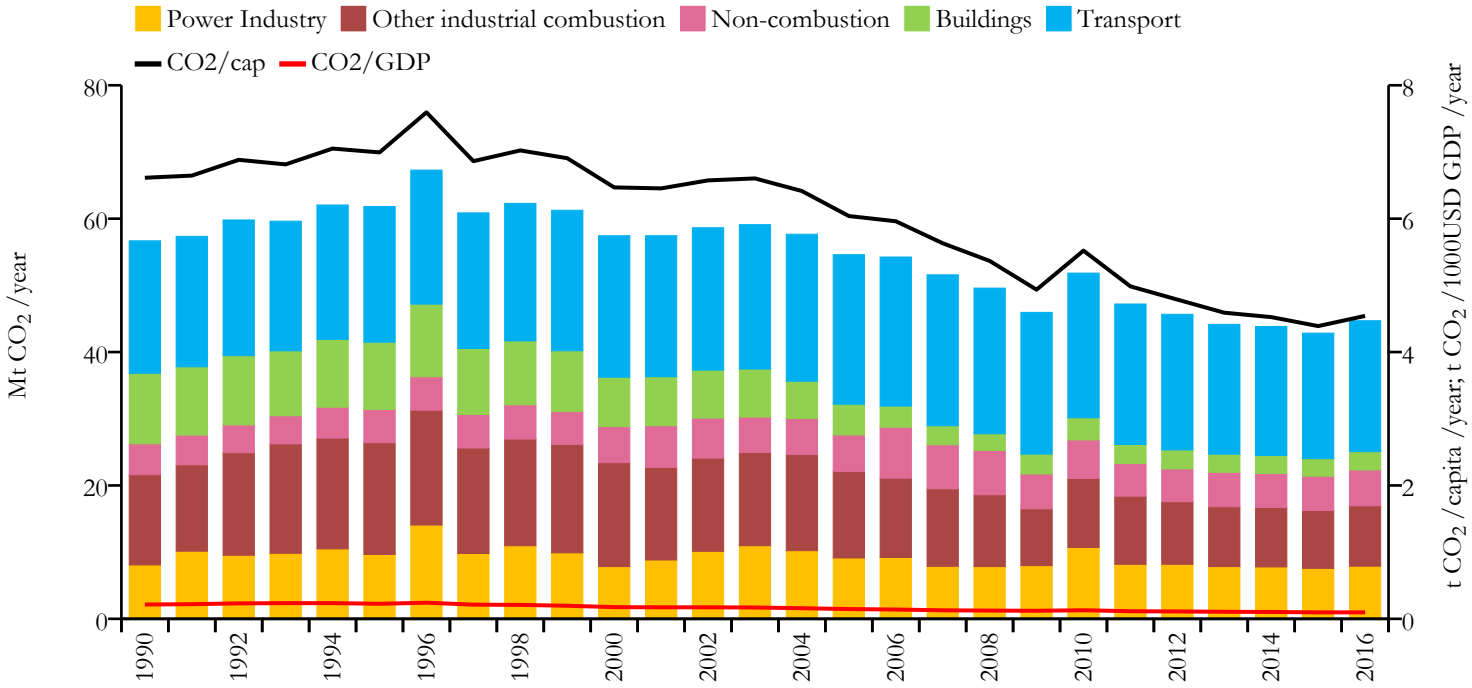
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Sweden



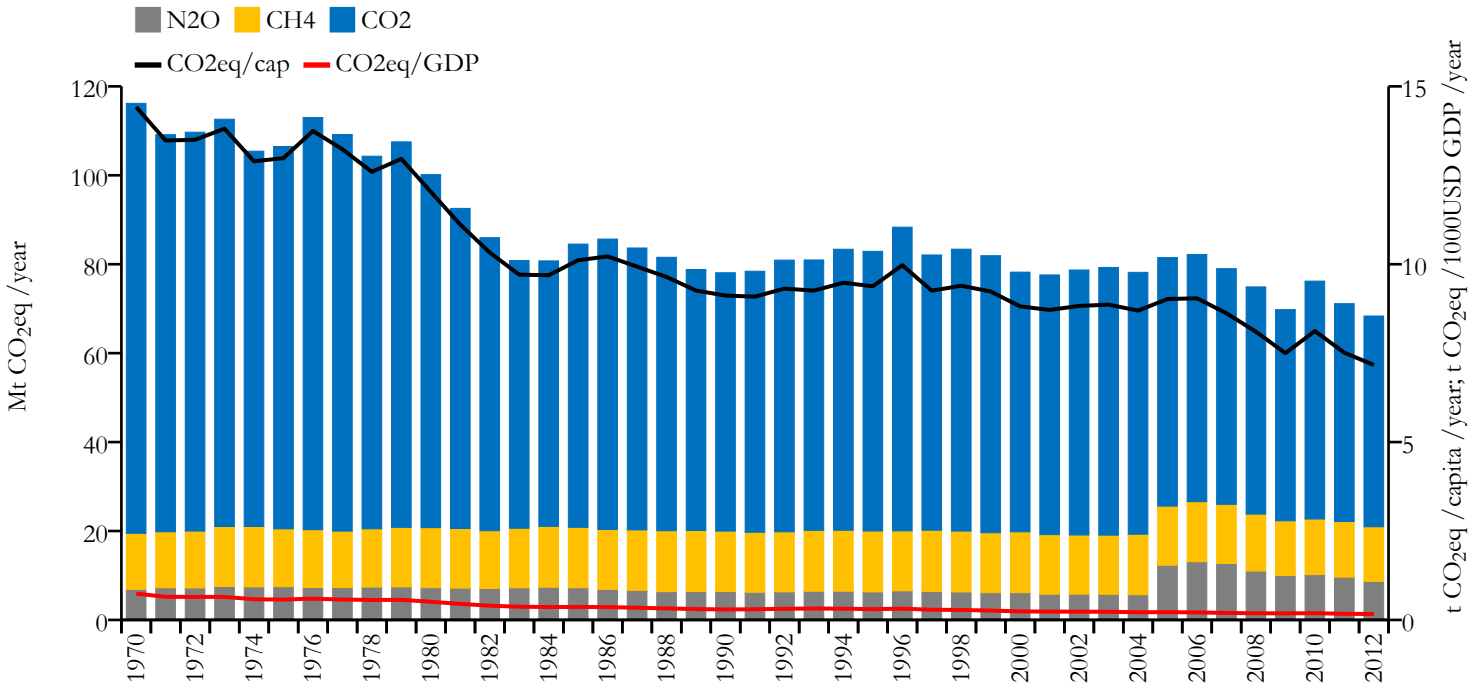
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 44.694 | 4.542 | 0.097 | 9837533 |
| 1990 | 56.678 | 6.614 | 0.215 | 8567384 |

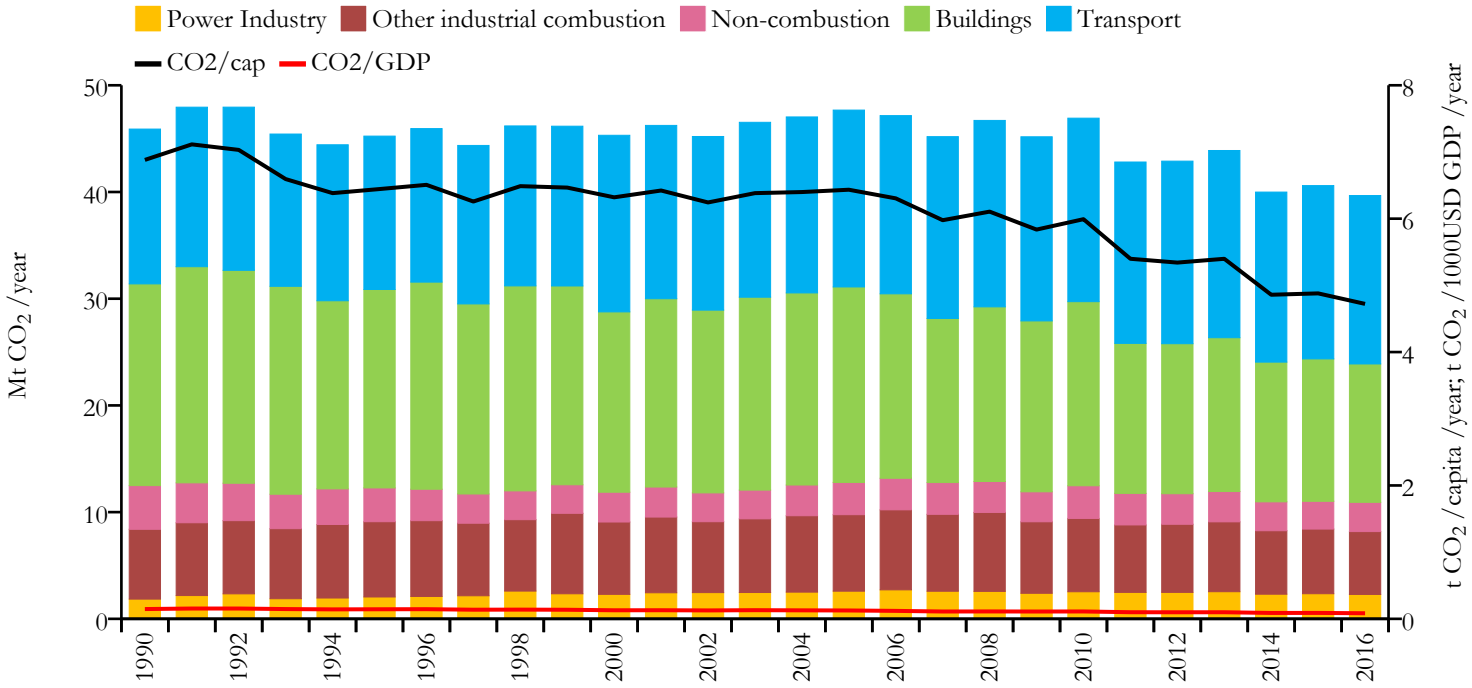
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Switzerland and Liechtenstein

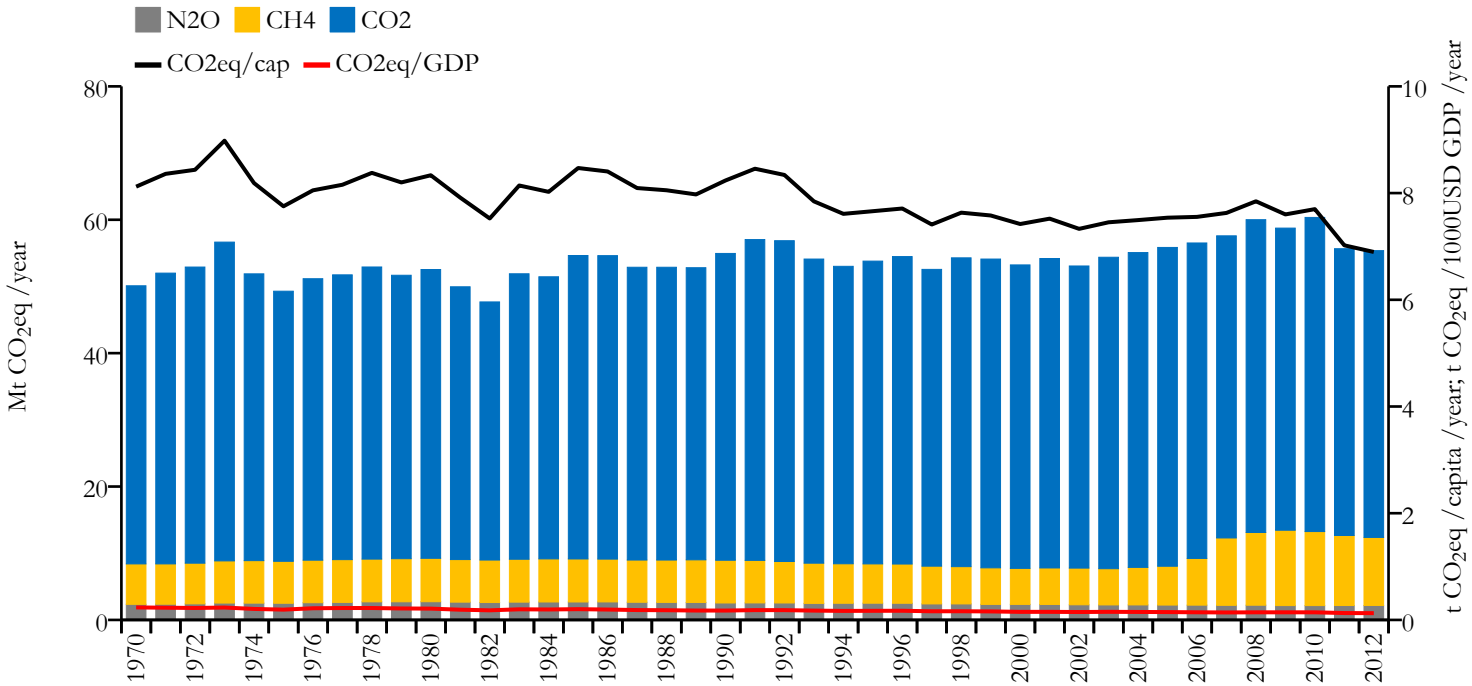
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 39.667 | 4.722 | 0.084 | 8401739 |
| 1990 | 45.897 | 6.881 | 0.147 | 6674890 |

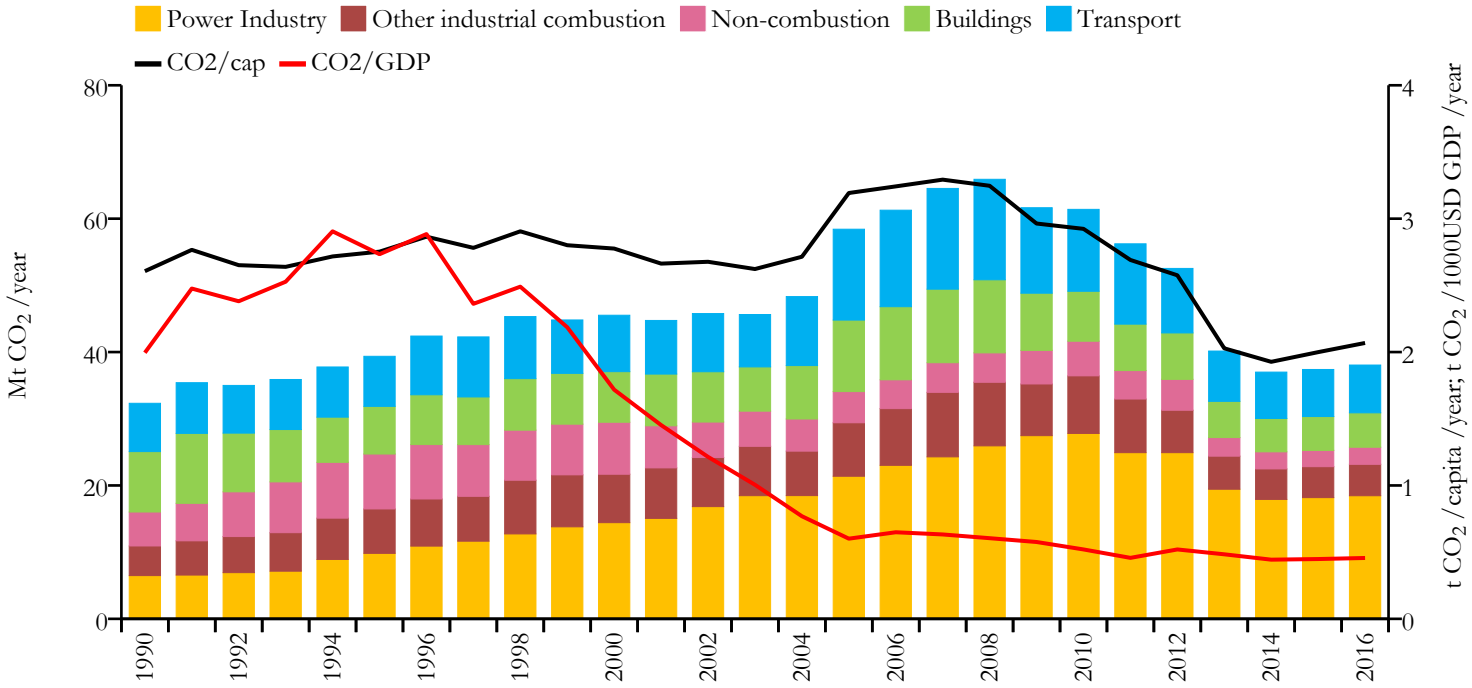
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Syria

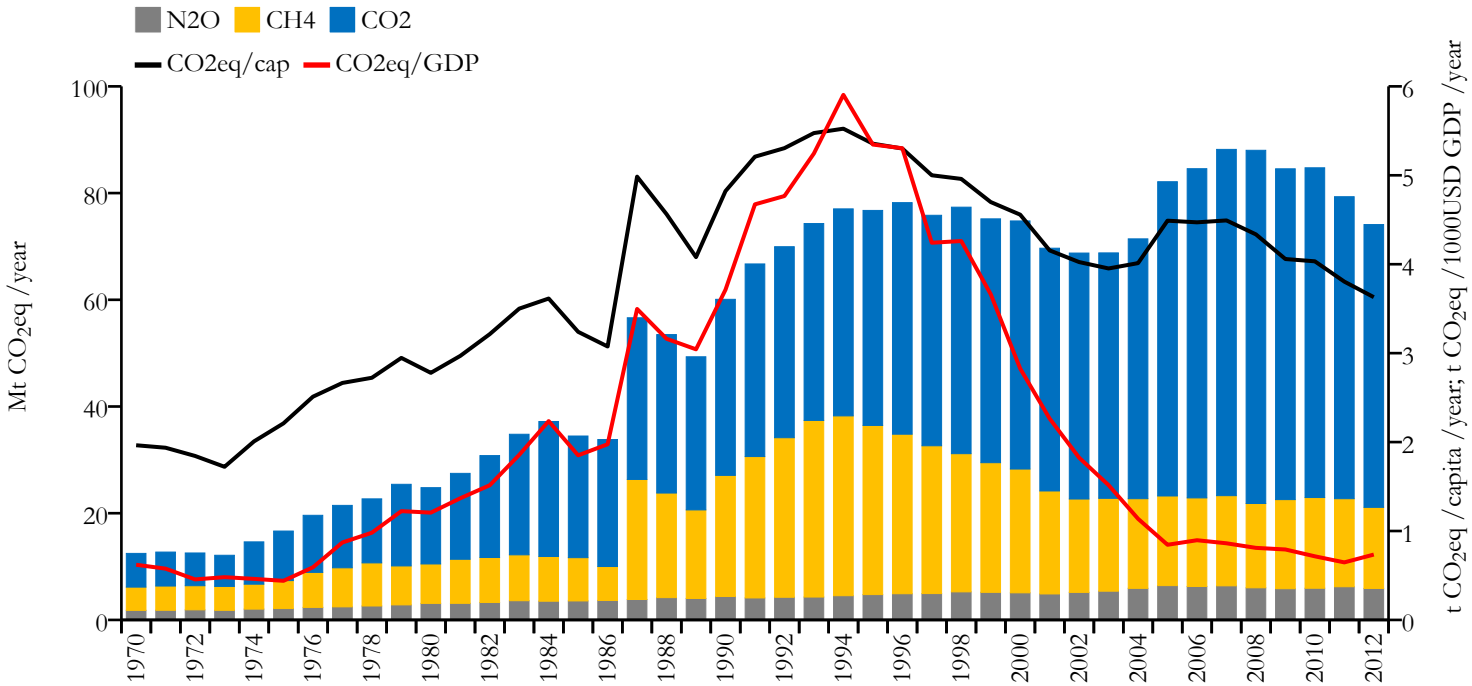
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 38.055 | 2.068 | 0.456 | 18430453 |
| 1990 | 32.319 | 2.606 | 1.995 | 12446171 |

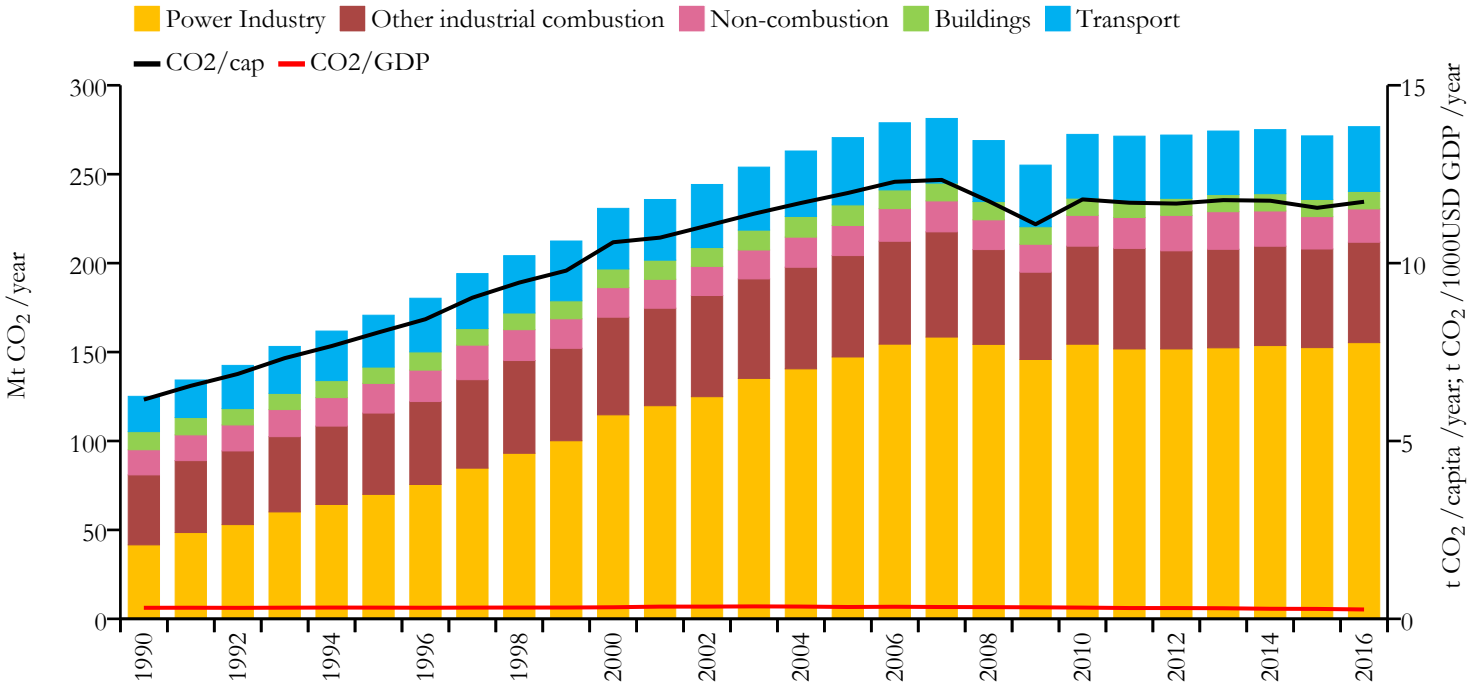
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Taiwan

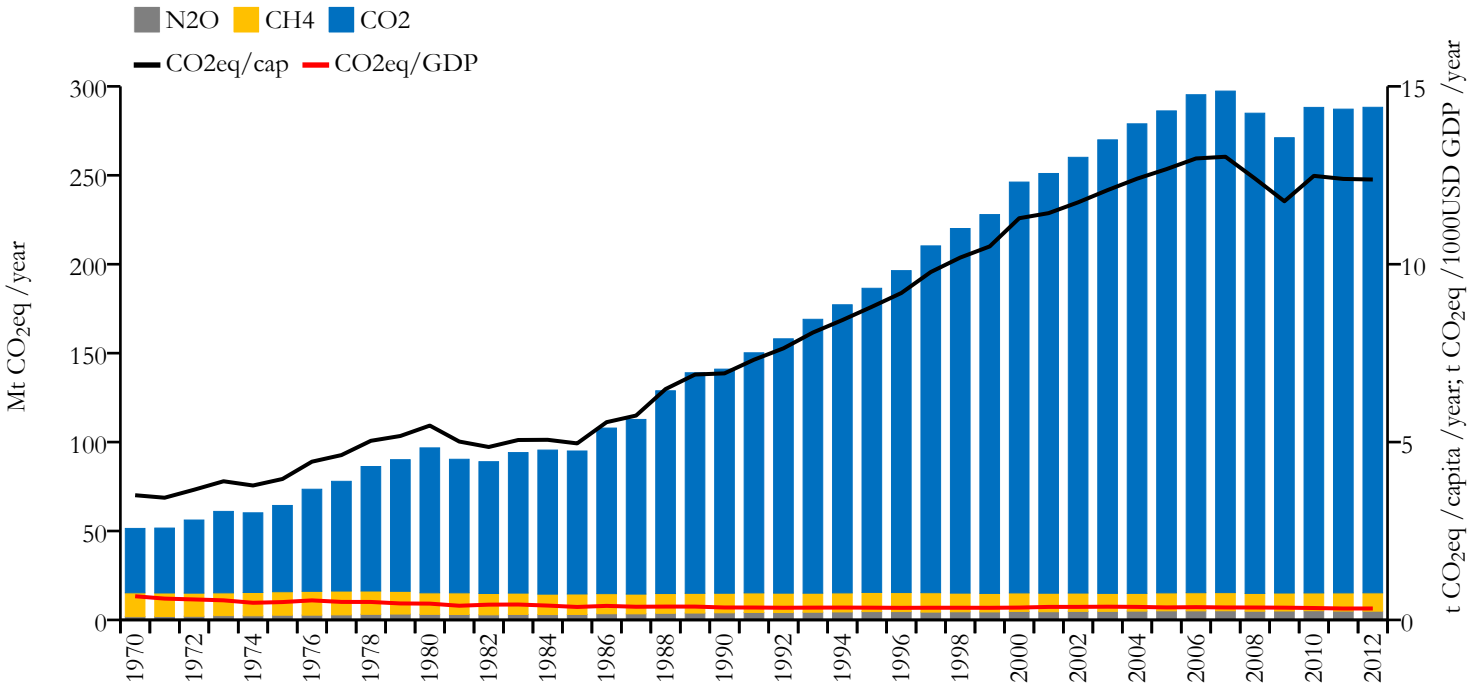
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



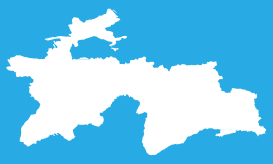

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 276.725 | 11.726 | 0.264 | 23556706 |
| 1990 | 125.109 | 6.163 | 0.310 | 20311698 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

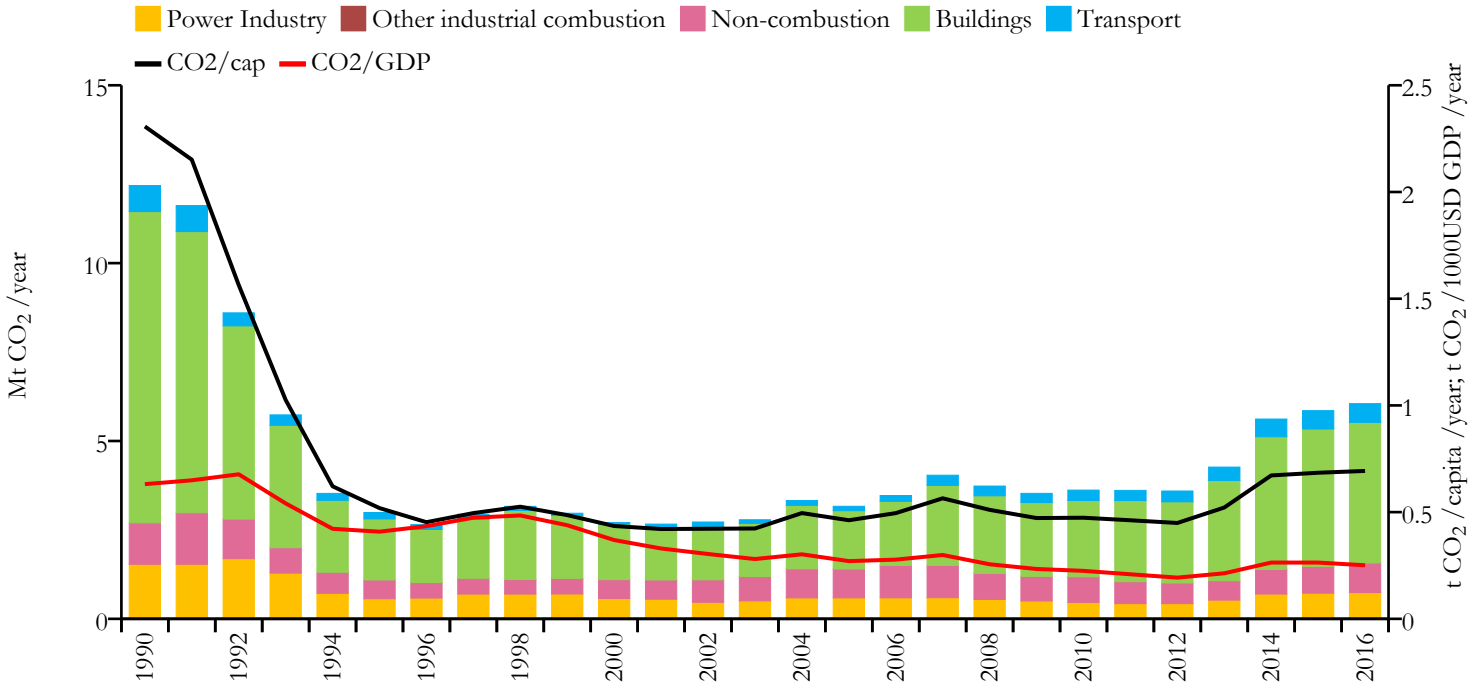
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Tajikistan



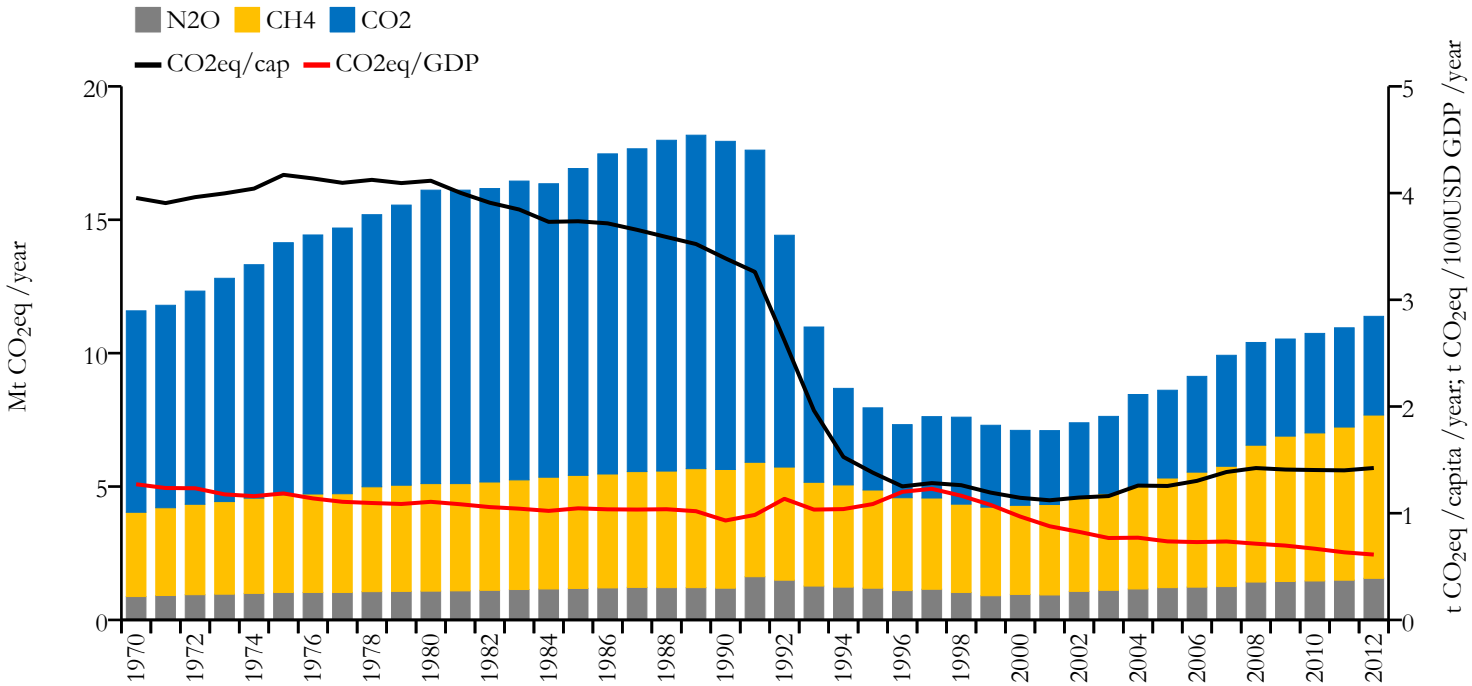
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 6.050 | 0.693 | 0.251 | 8734951 |
| 1990 | 12.181 | 2.307 | 0.631 | 5283728 |

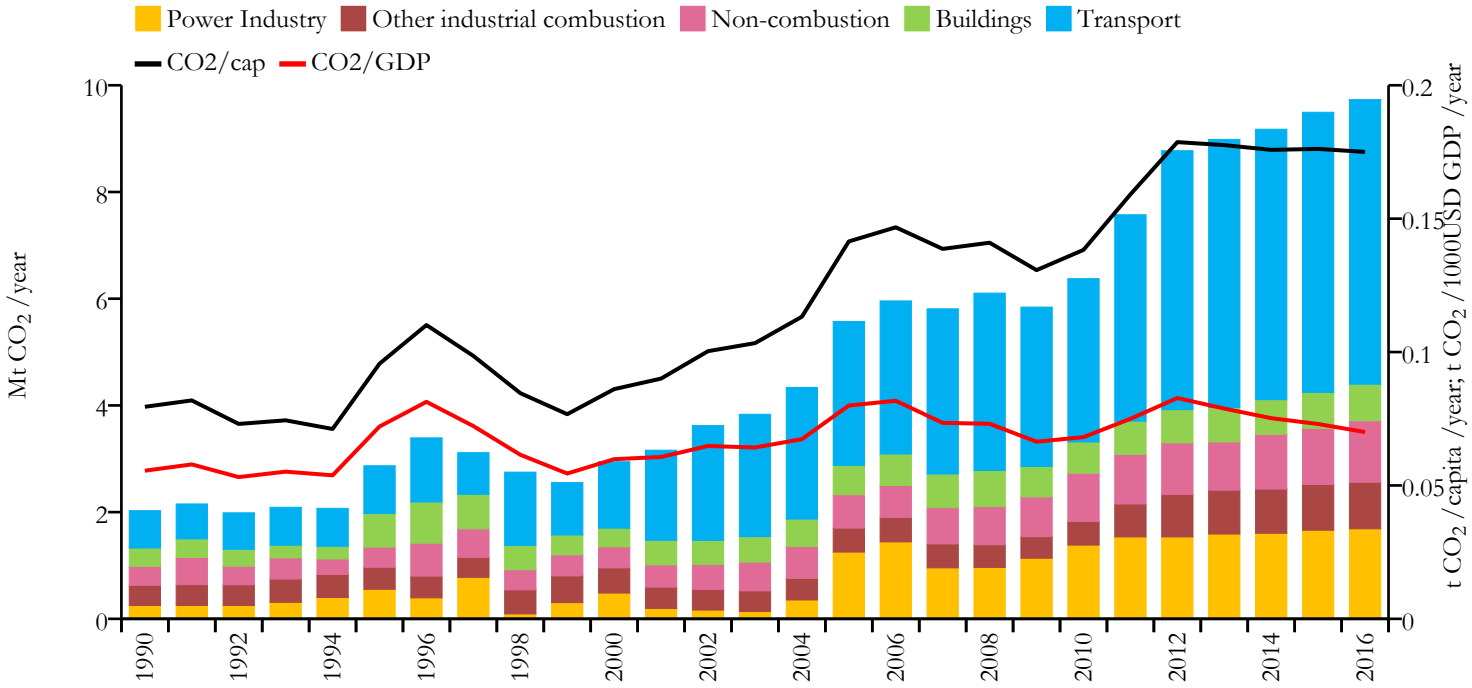
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Tanzania

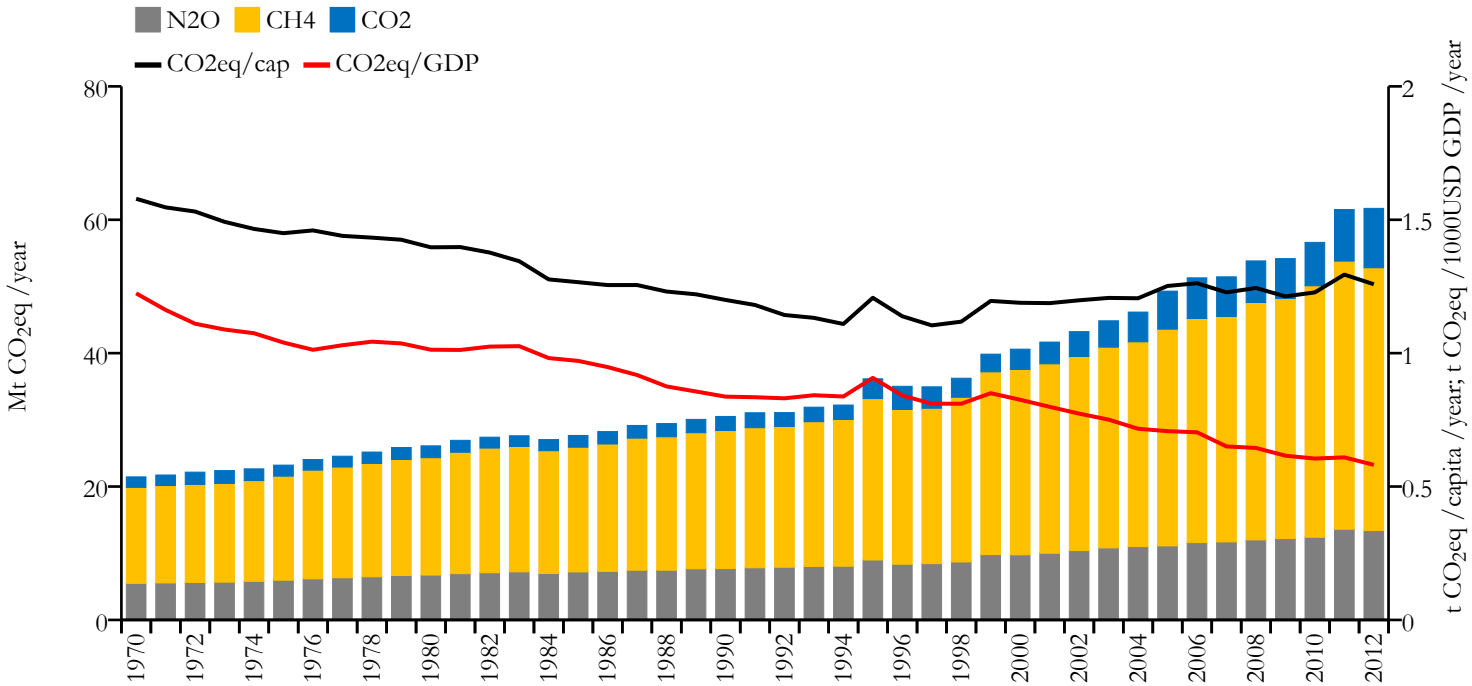
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 9.732 | 0.175 | 0.070 | 55572201 |
| 1990 | 2.027 | 0.079 | 0.056 | 25459604 |

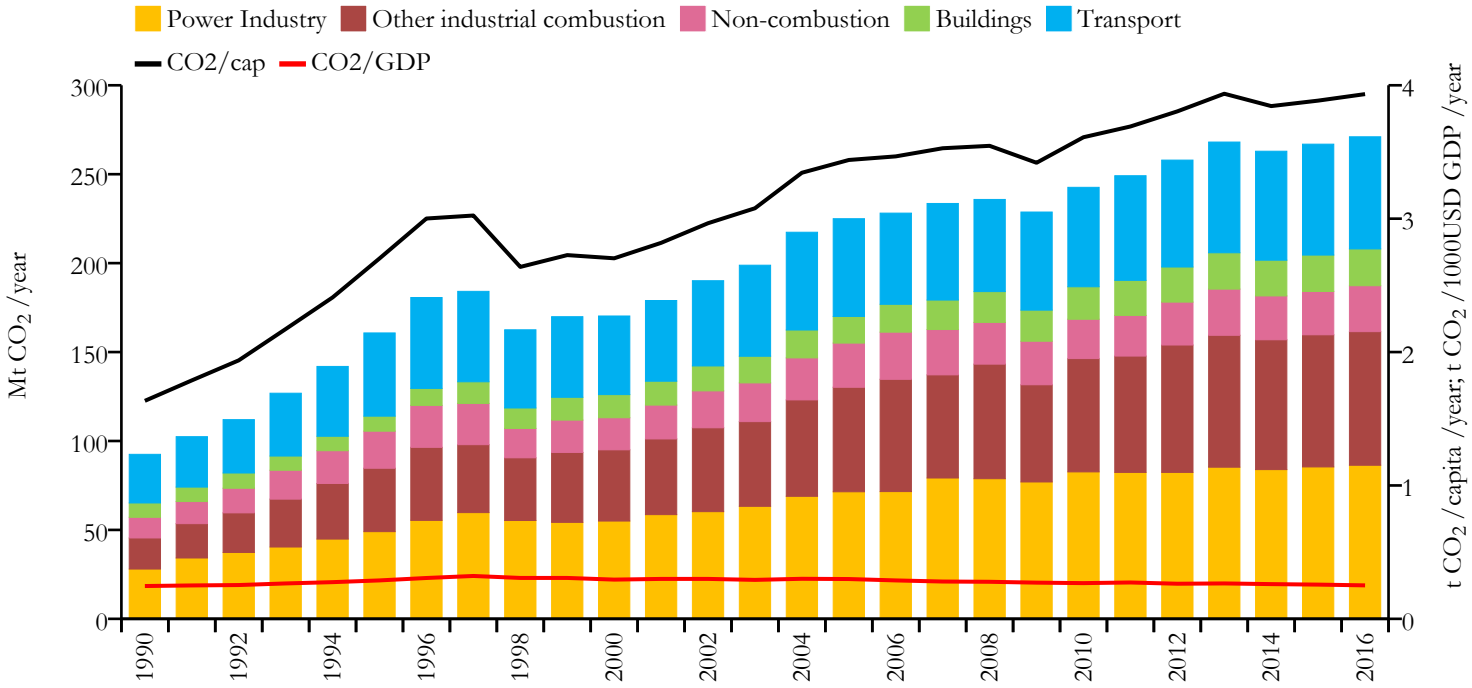
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Thailand

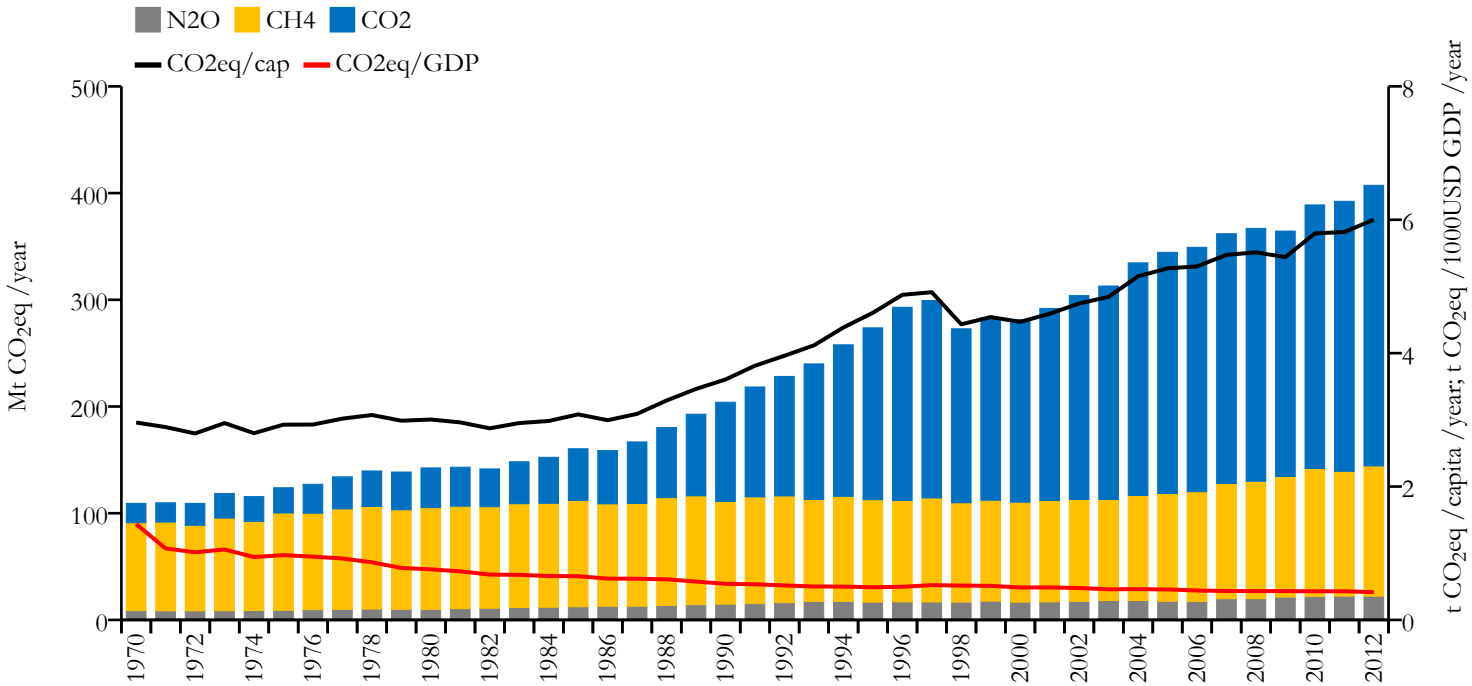
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 271.040 | 3.934 | 0.251 | 68863514 |
| 1990 | 92.500 | 1.634 | 0.246 | 56582821 |

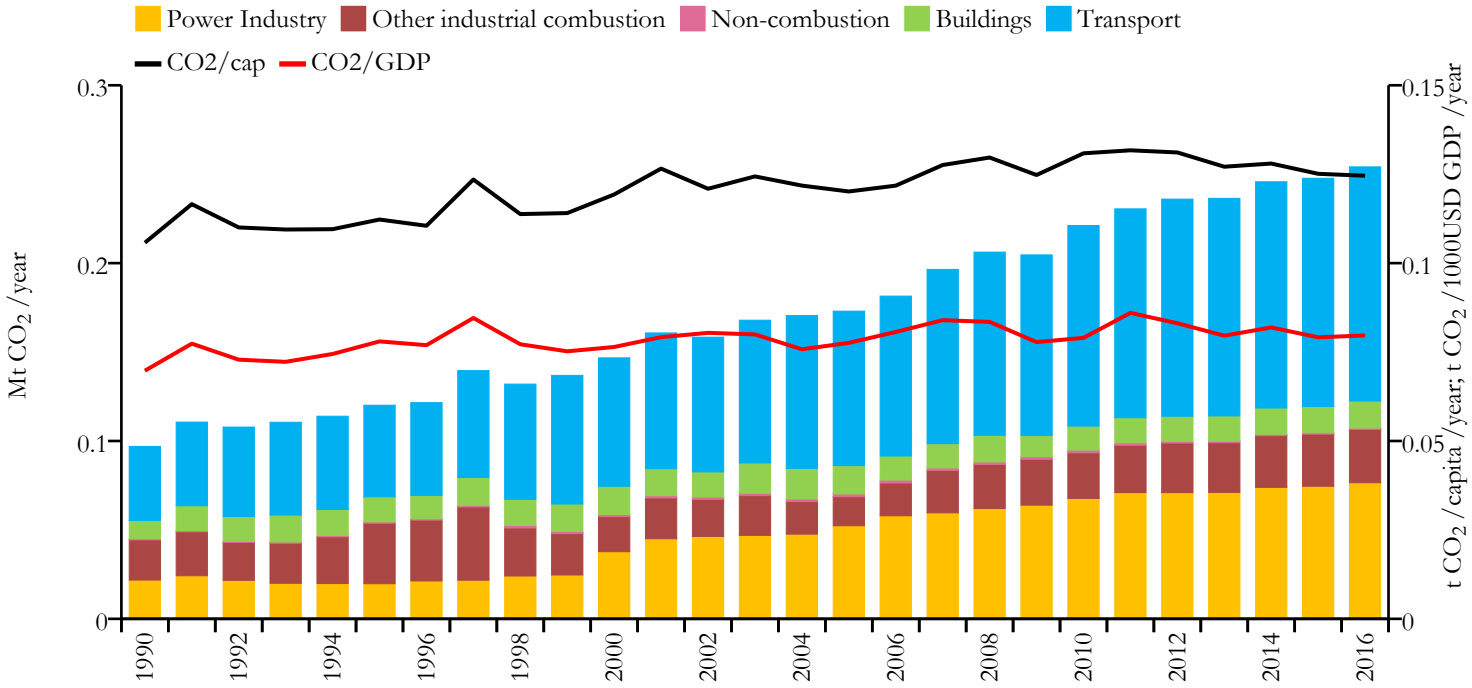
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# The Gambia

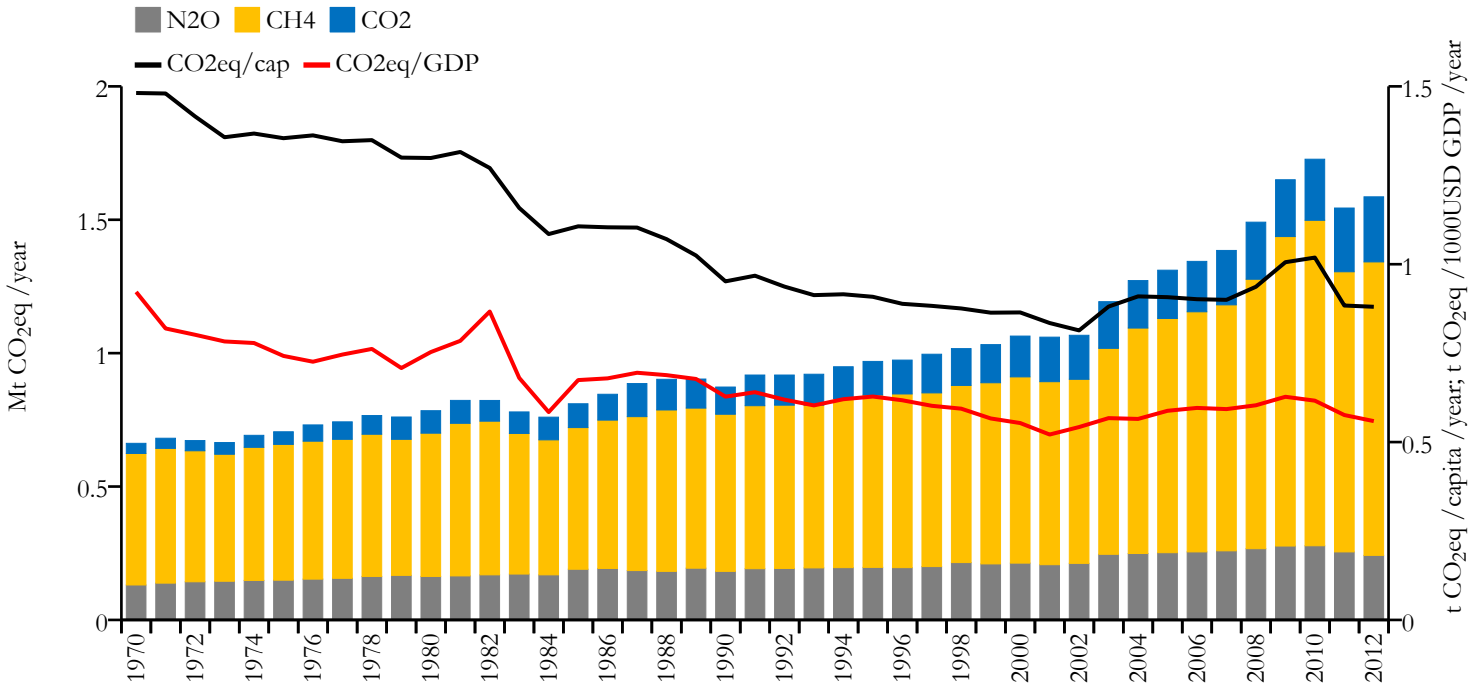
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.254 | 0.125 | 0.080 | 2038501 |
| 1990 | 0.097 | 0.106 | 0.070 | 916808 |

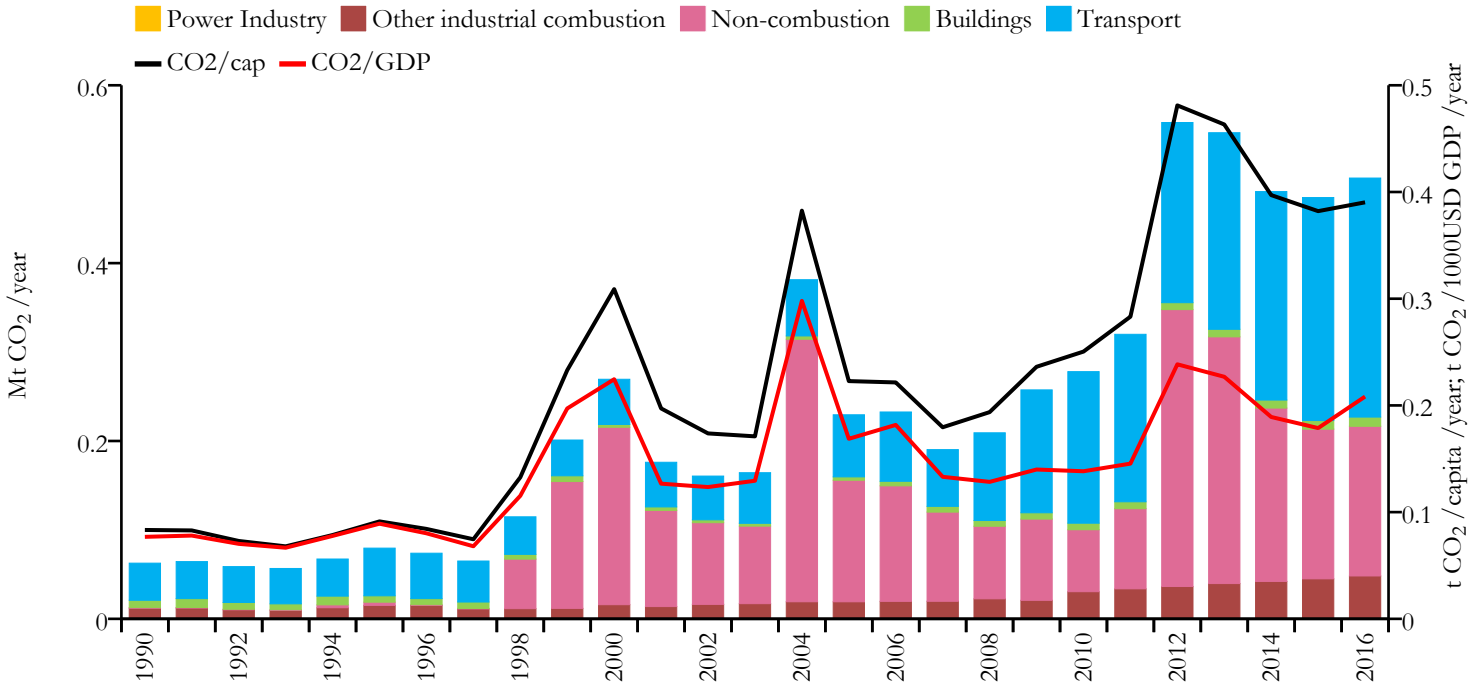
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Timor-Leste

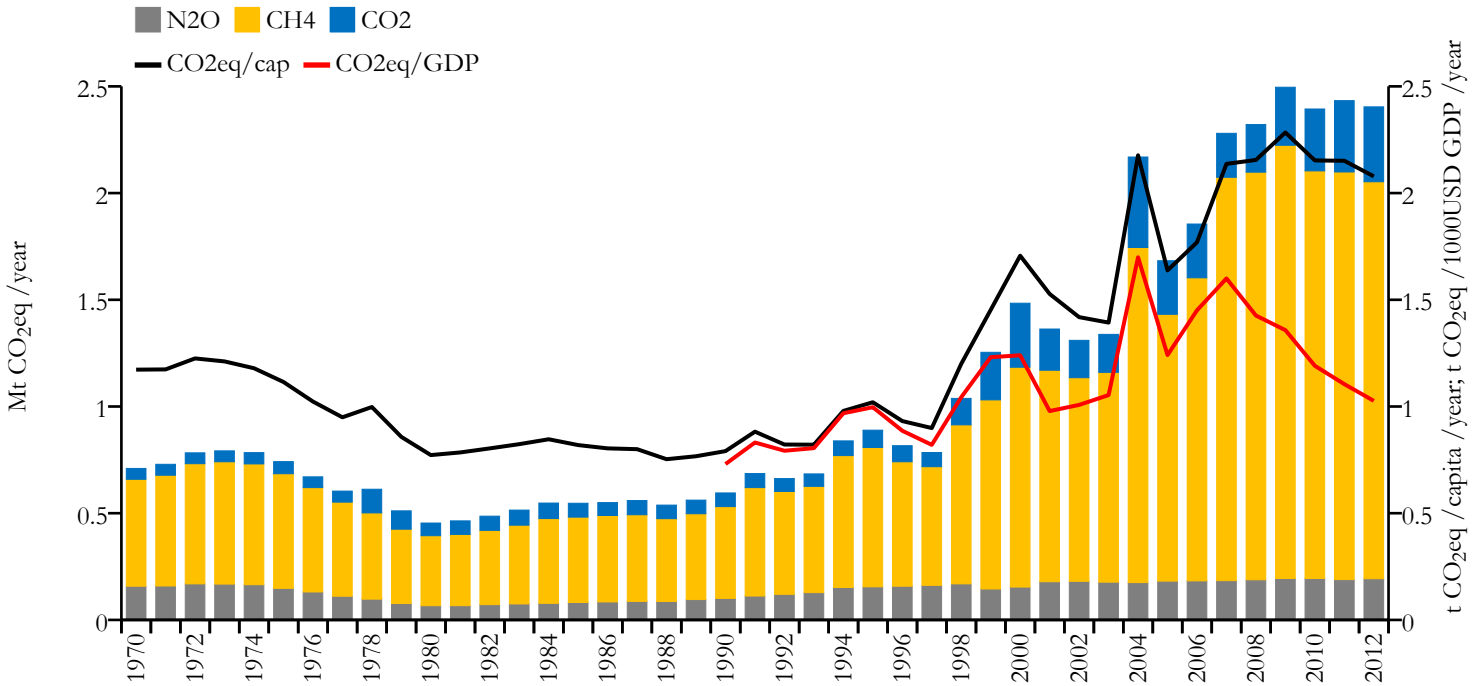
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.496 | 0.390 | 0.208 | 1268671 |
| 1990 | 0.063 | 0.083 | 0.077 | 751933 |

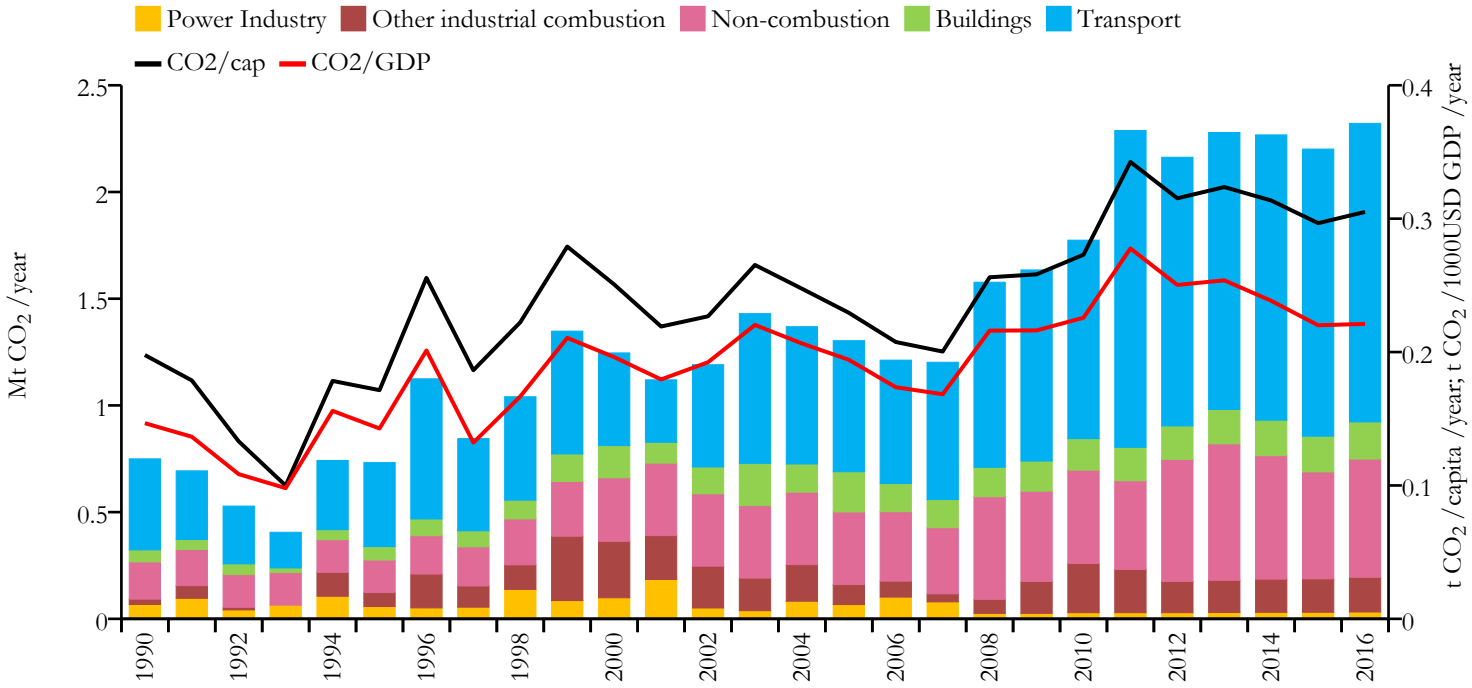
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



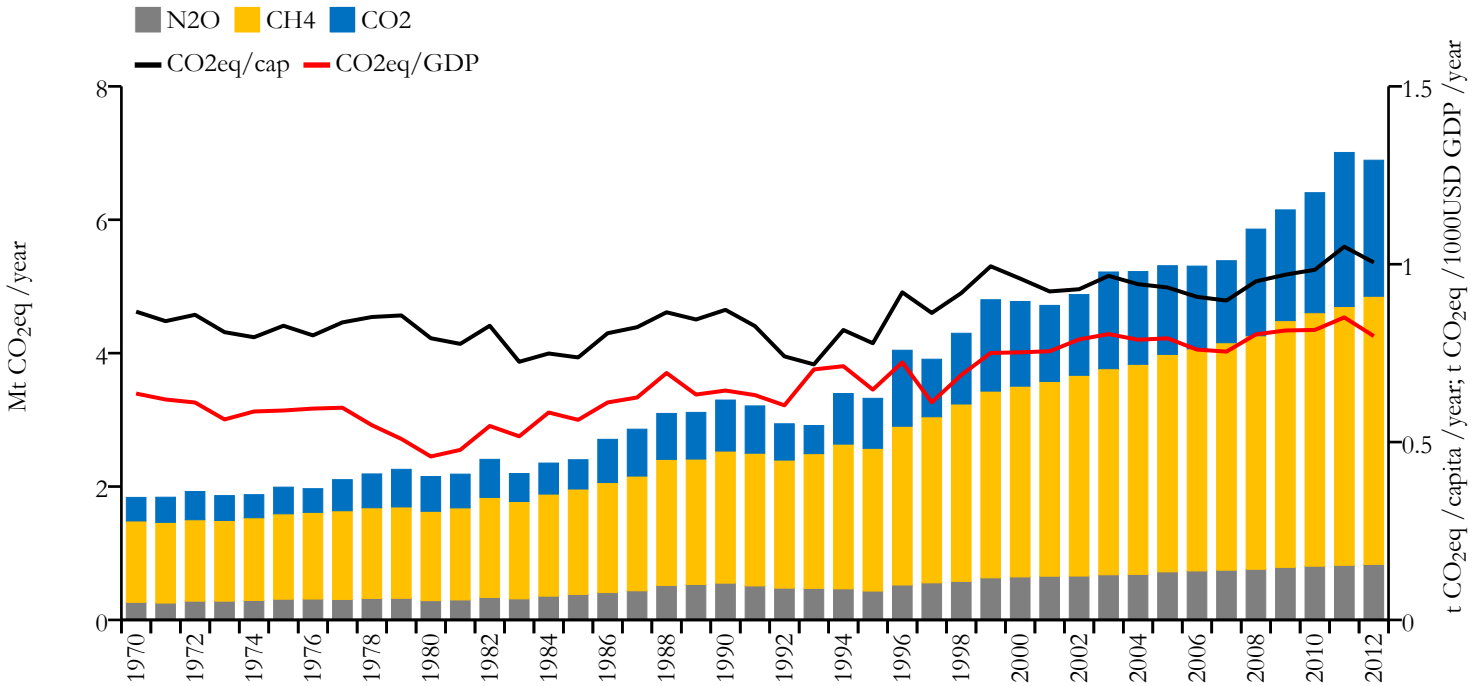
# Togo

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



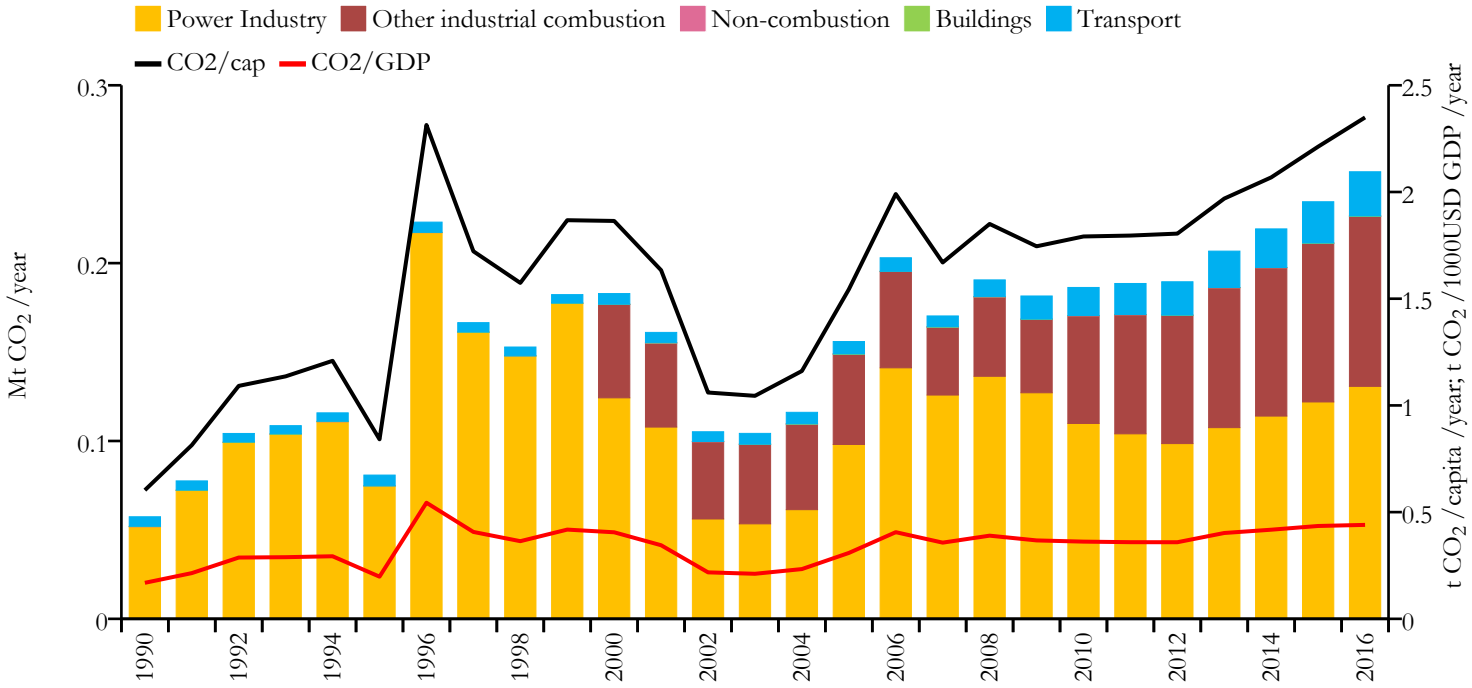

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 2.322 | 0.305 | 0.221 | 7606374 |
| 1990 | 0.750 | 0.198 | 0.147 | 3786940 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Tonga

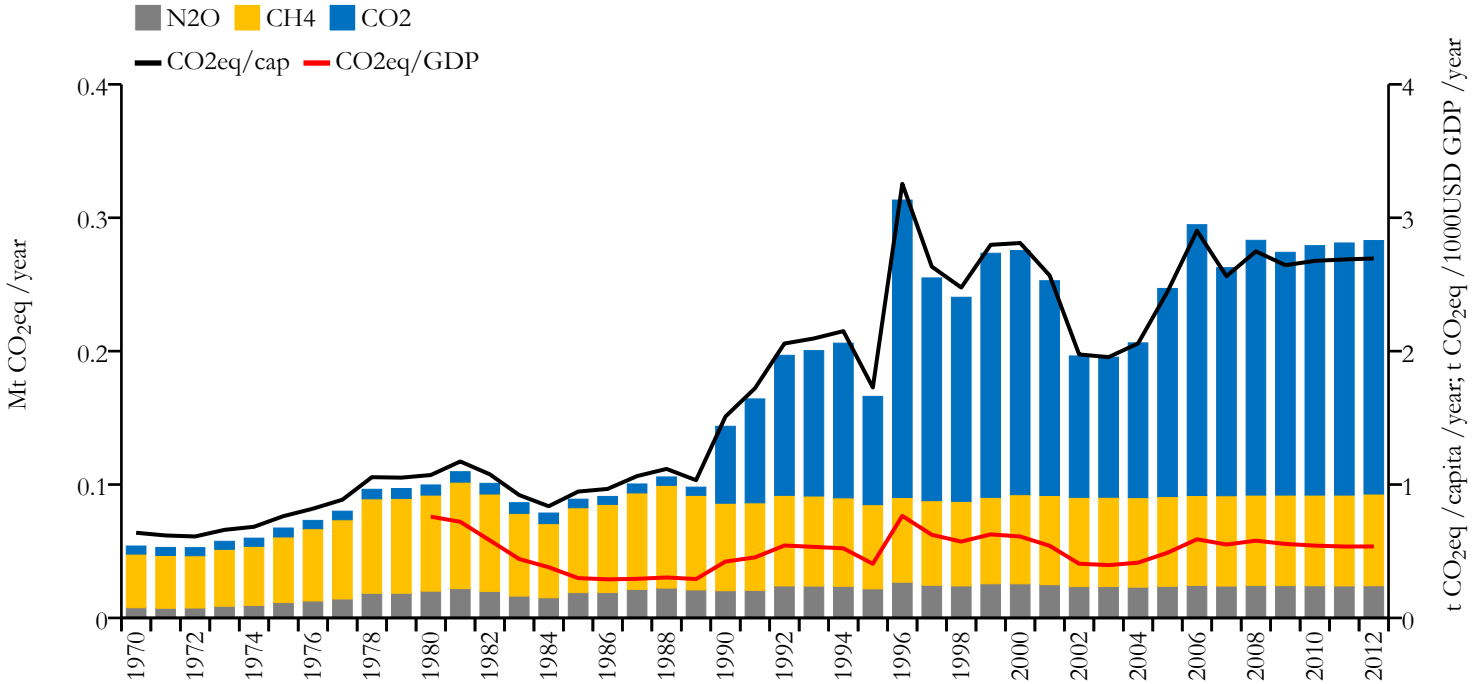
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



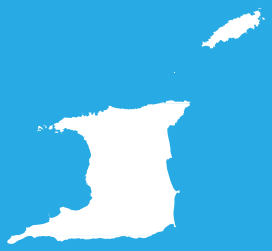

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.251 | 2.349 | 0.440 | 107122 |
| 1990 | 0.057 | 0.603 | 0.169 | 95153 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

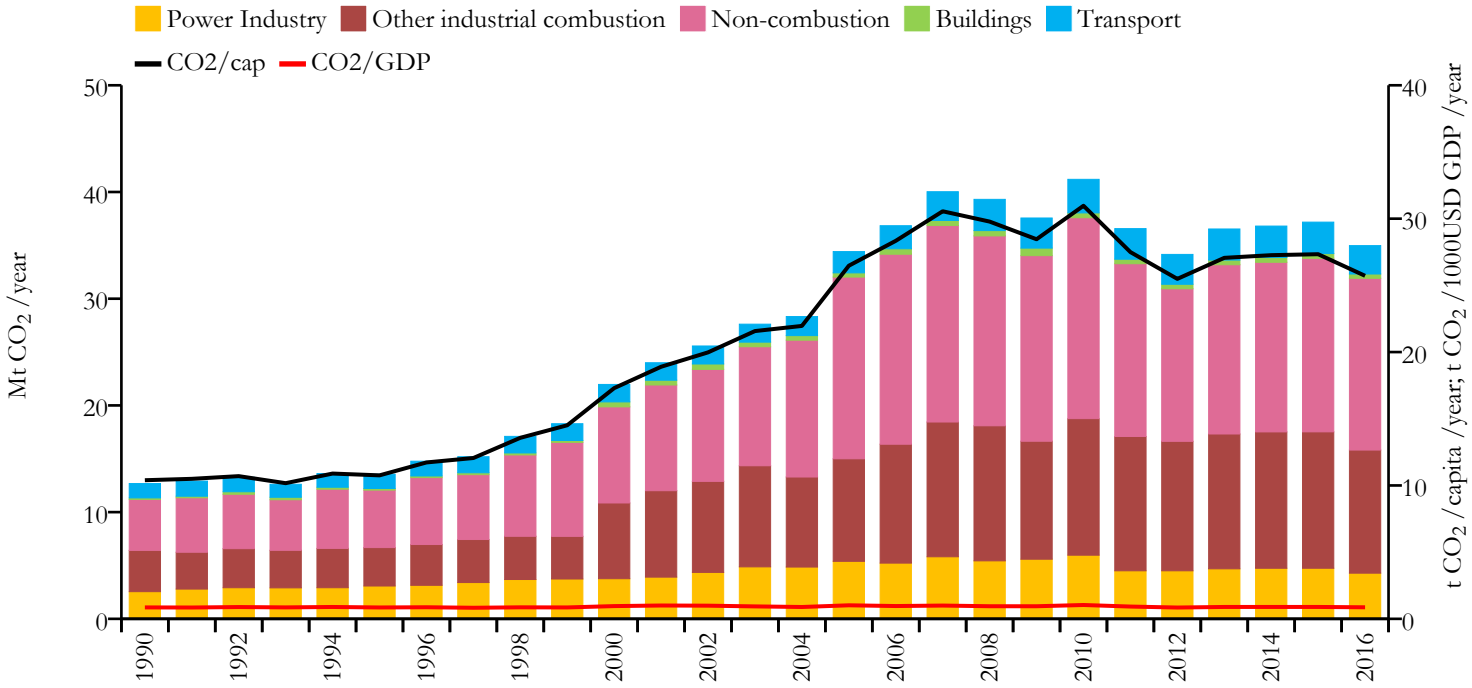
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Trinidad and Tobago

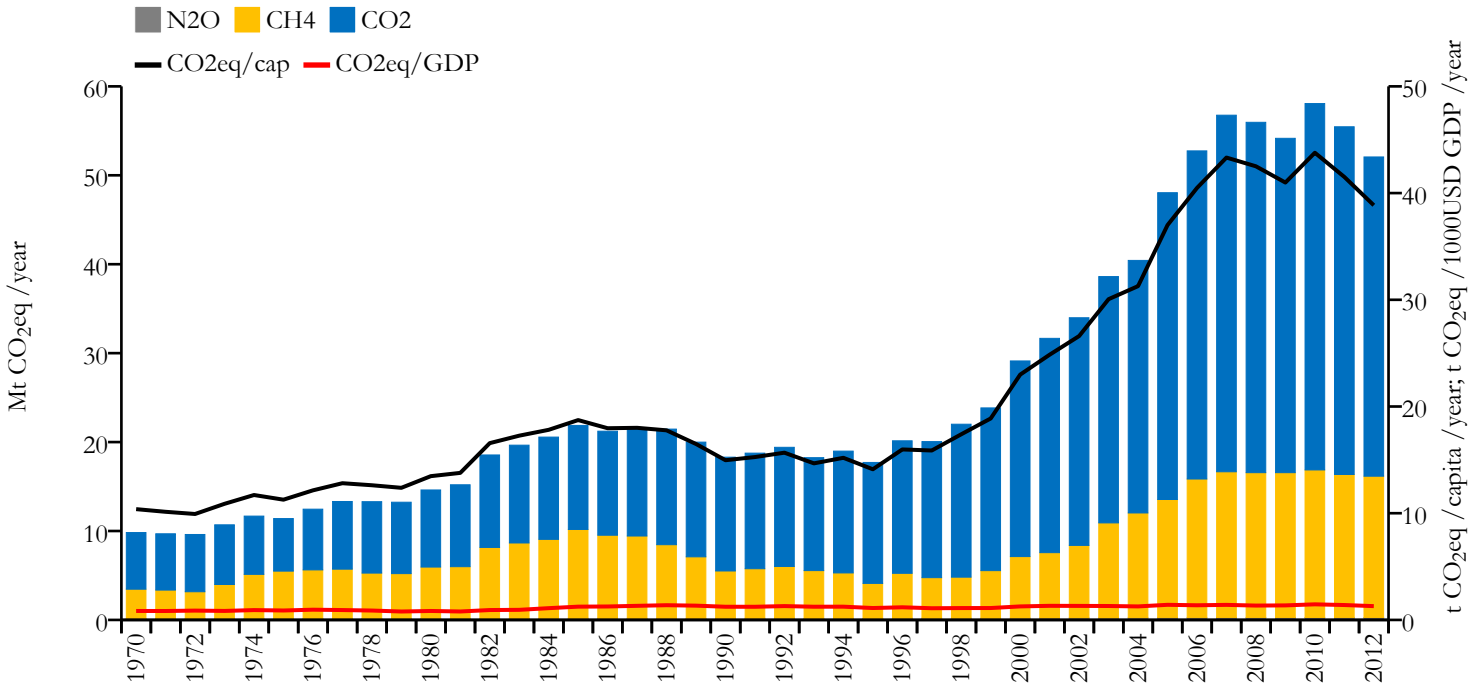


## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



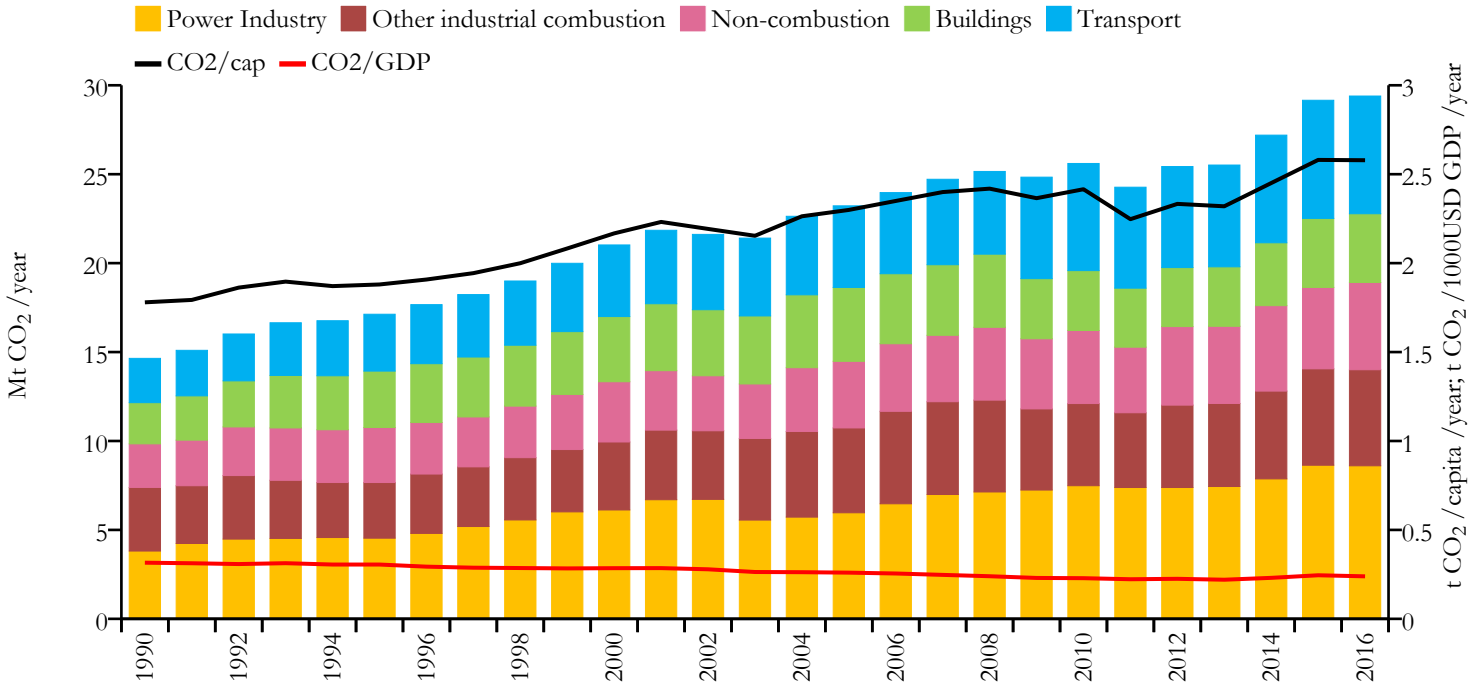

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 34.974 | 25.716 | 0.866 | 1364962 |
| 1990 | 12.678 | 10.392 | 0.857 | 1221900 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



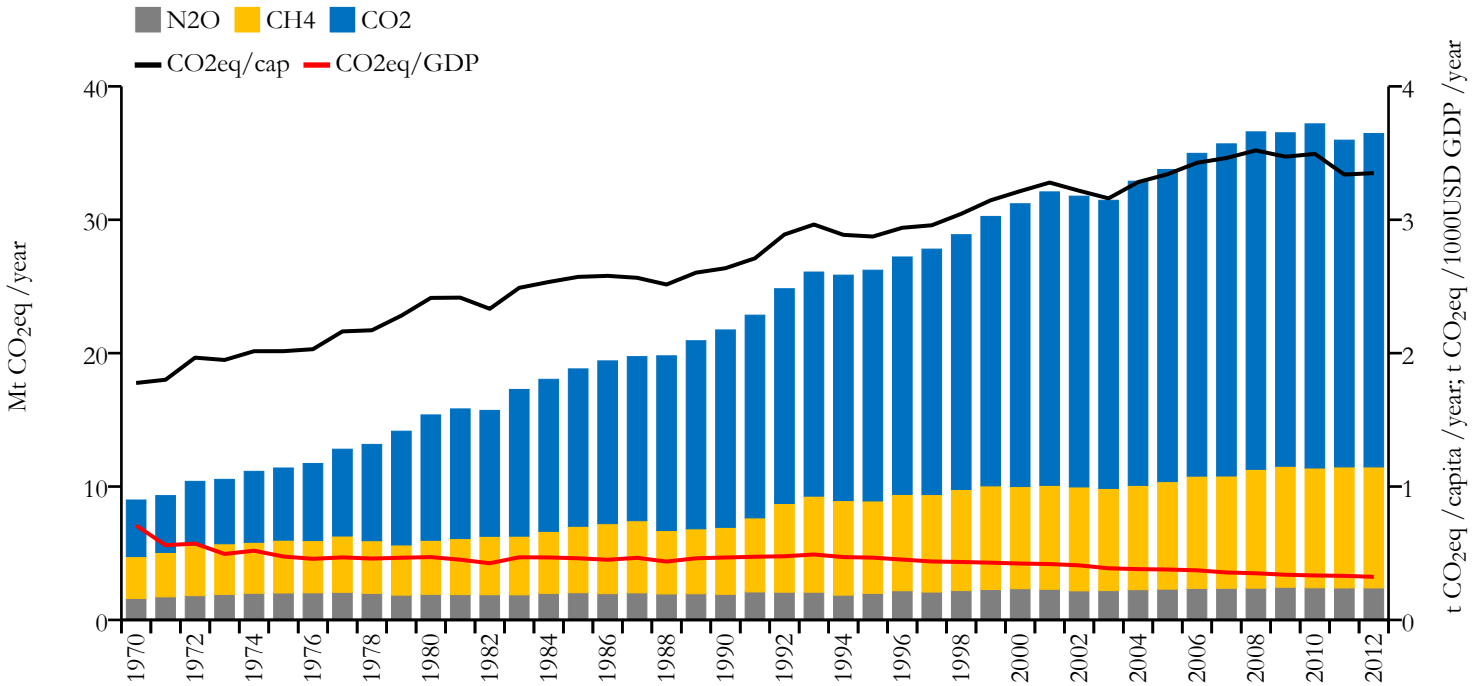
# Tunisia

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



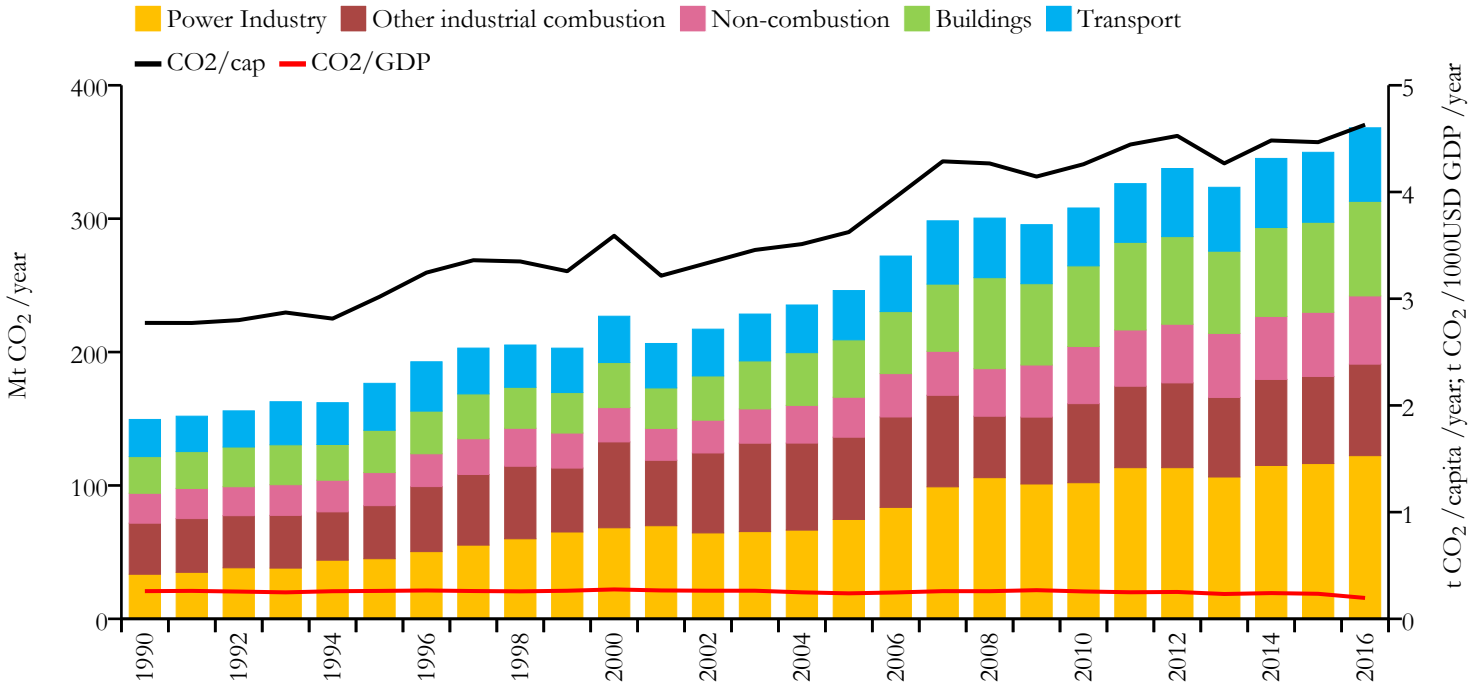

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 29.396 | 2.579 | 0.239 | 11403248 |
| 1990 | 14.646 | 1.780 | 0.316 | 8232797 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Turkey

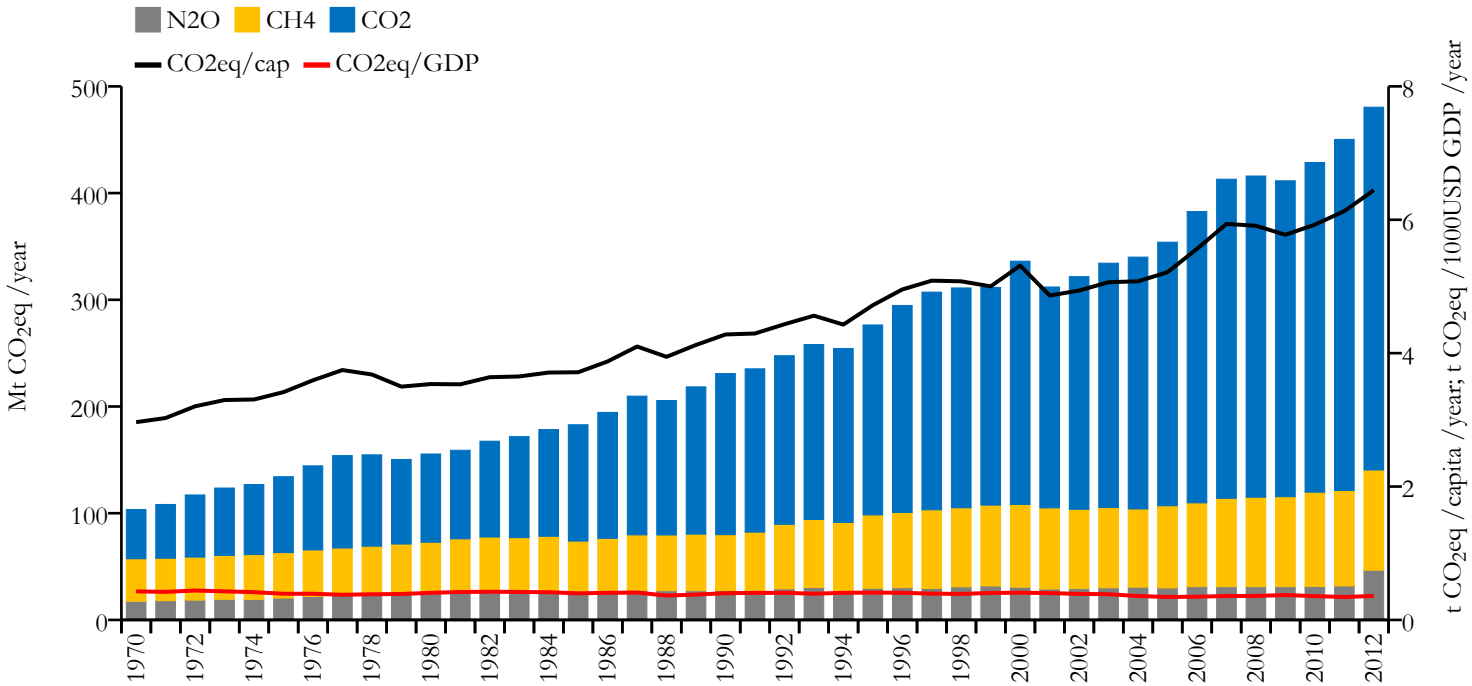
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 368.123 | 4.630 | 0.196 | 79512426 |
| 1990 | 149.477 | 2.773 | 0.260 | 53921699 |

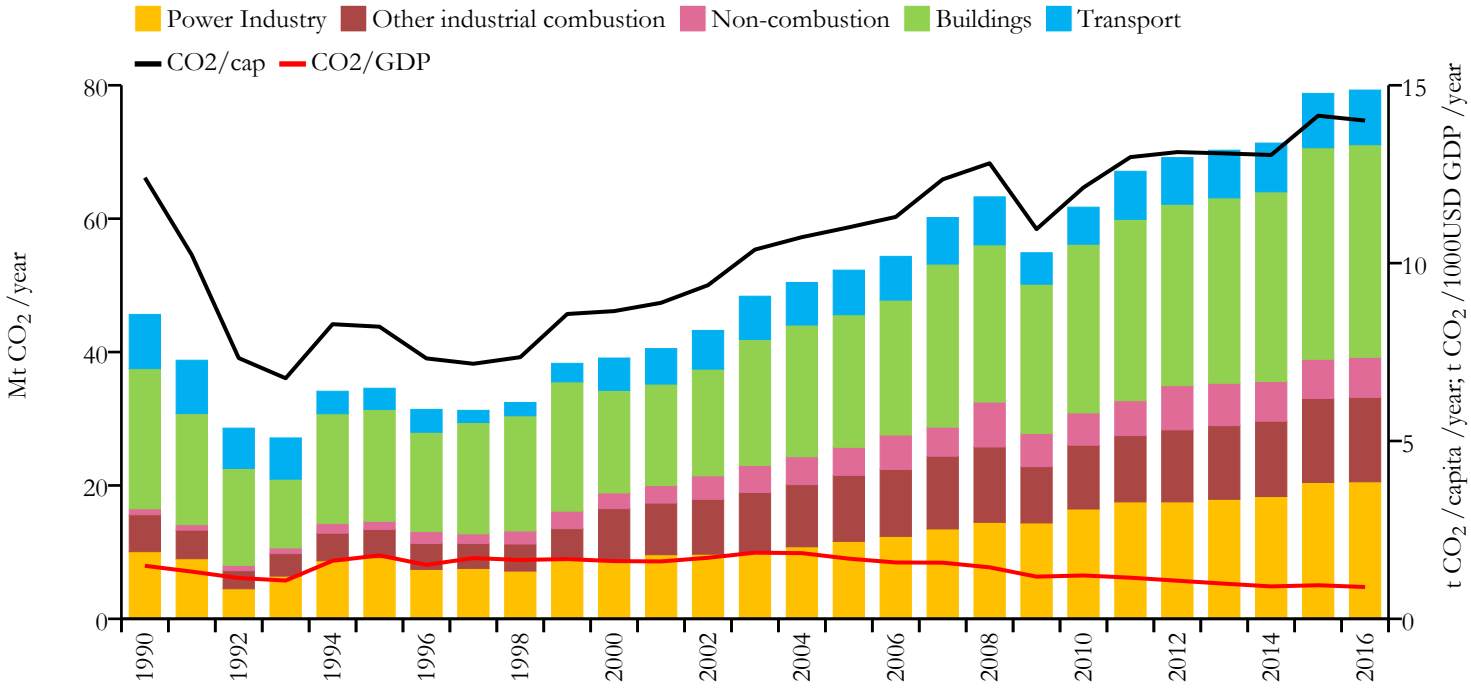
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



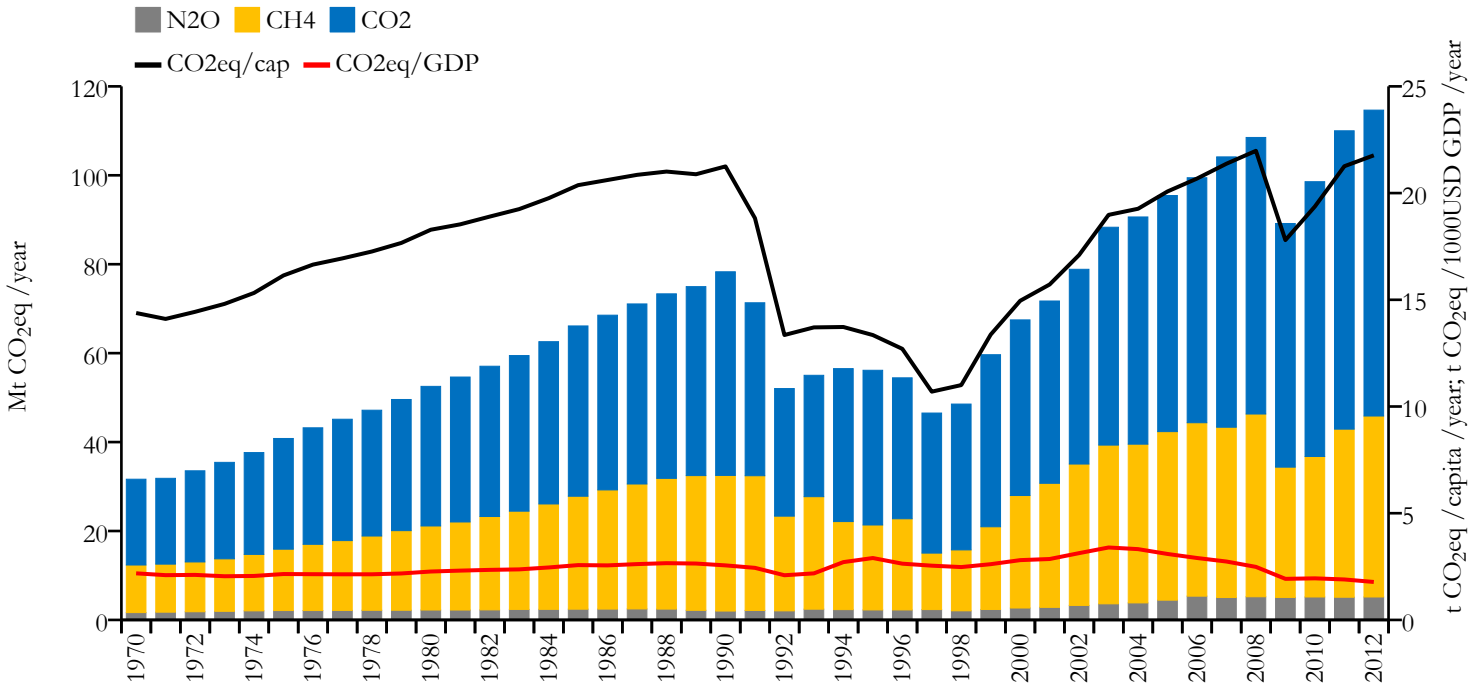
# Turkmenistan

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



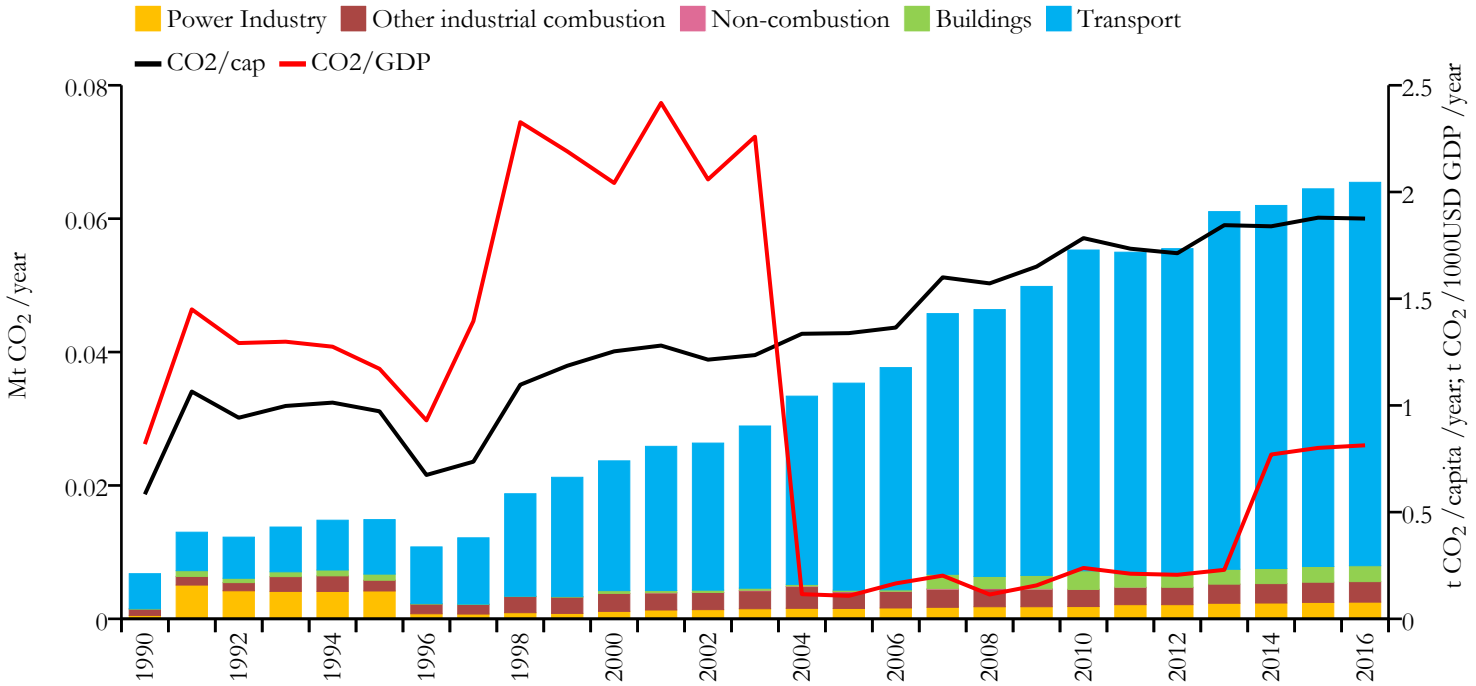

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 79.279 | 14.007 | 0.895 | 5662544 |
| 1990 | 45.641 | 12.403 | 1.492 | 3683966 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Turks and Caicos Islands

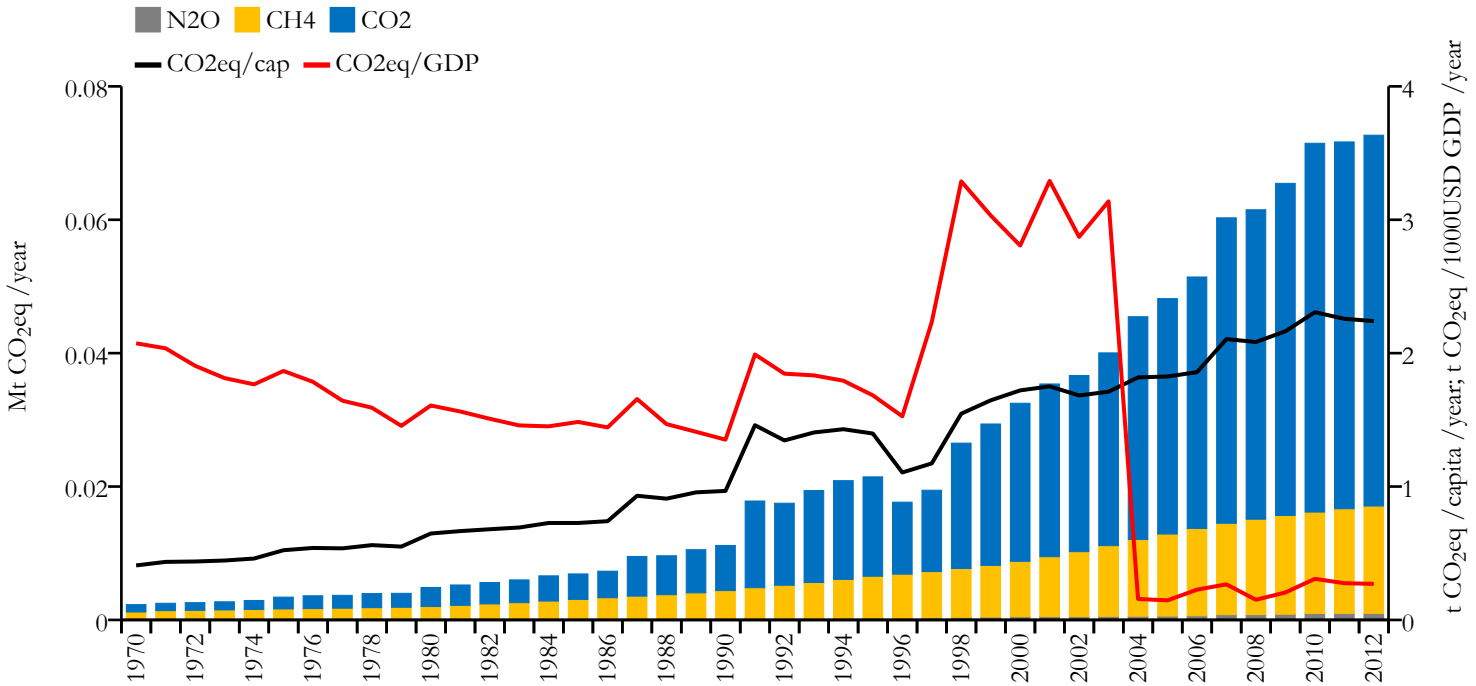
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.065 | 1.875 | 0.813 | 34900 |
| 1990 | 0.007 | 0.584 | 0.819 | 11552 |

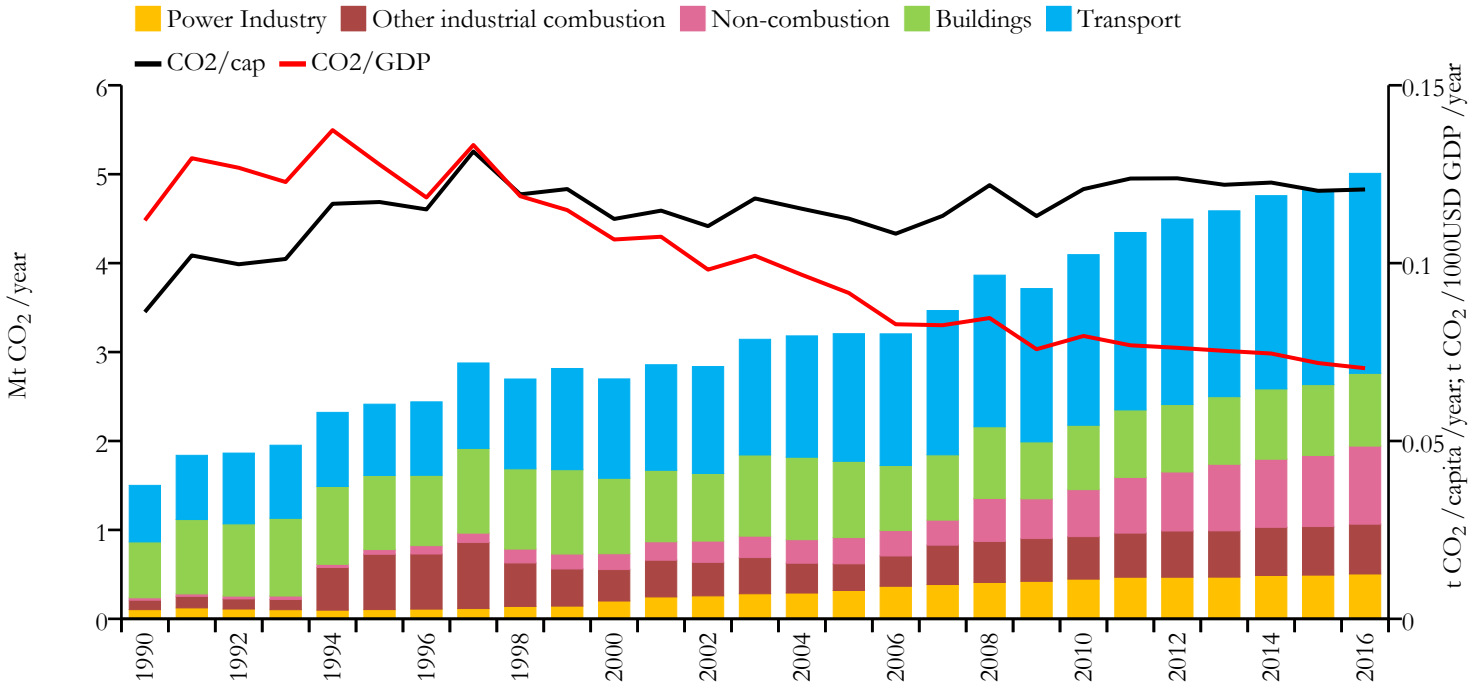
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



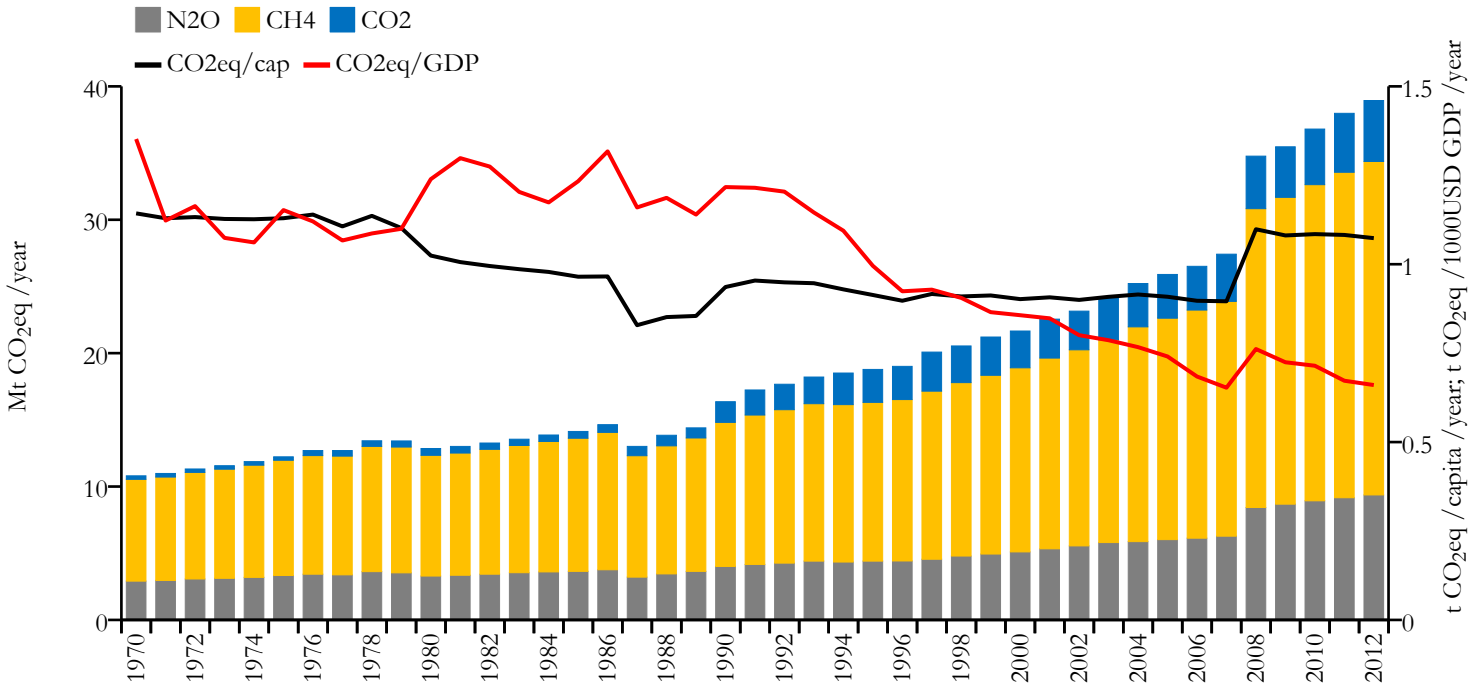
# Uganda

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



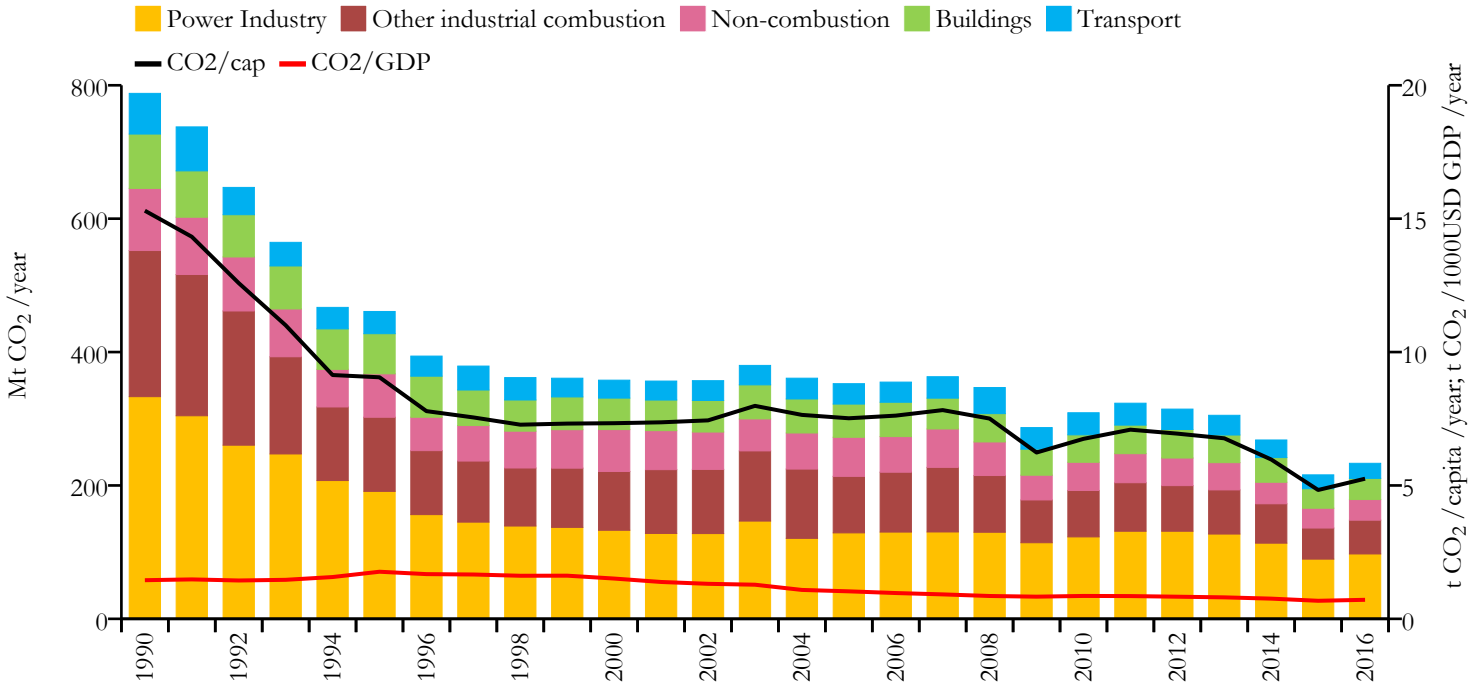

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 5.009 | 0.121 | 0.070 | 41487965 |
| 1990 | 1.501 | 0.086 | 0.112 | 17438907 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



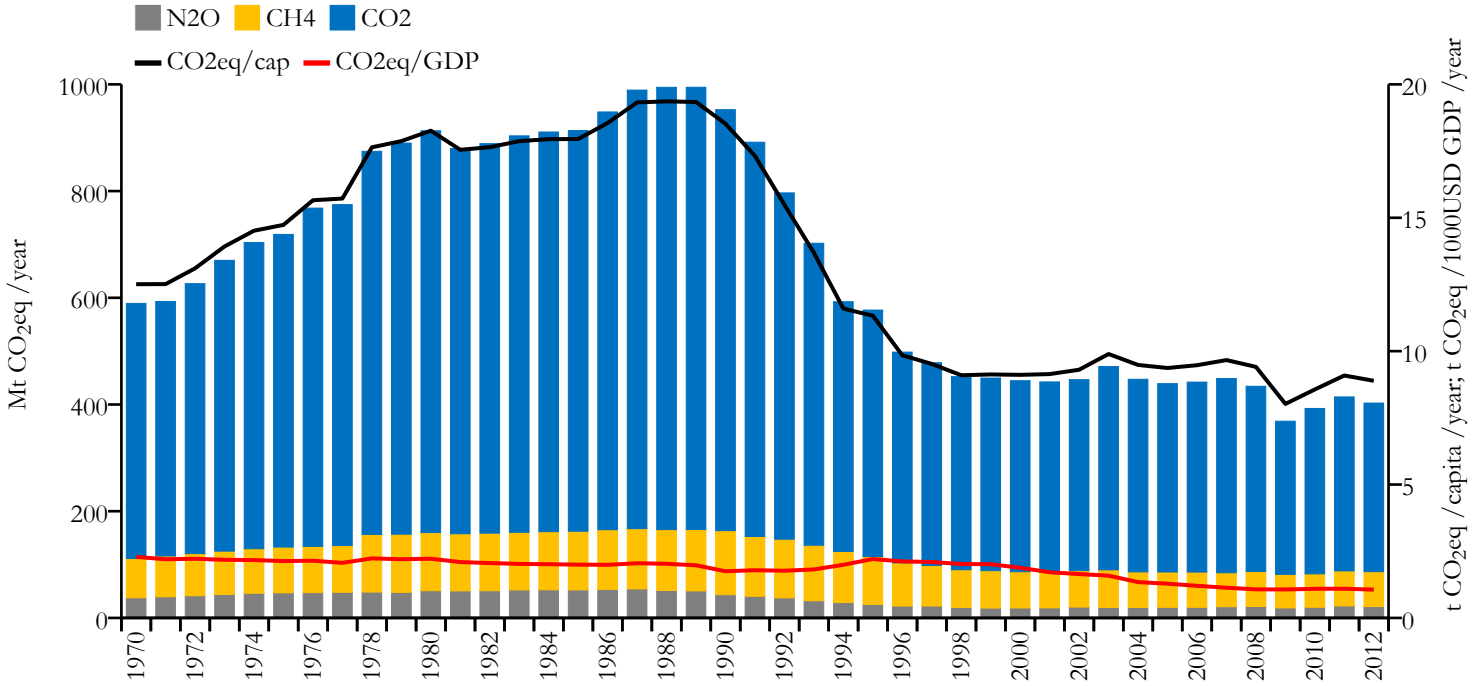
# Ukraine

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)

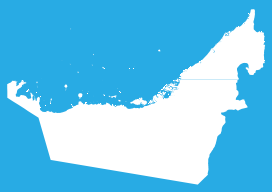



| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 233.220 | 5.253 | 0.713 | 44438625 |
| 1990 | 787.880 | 15.299 | 1.448 | 51464348 |

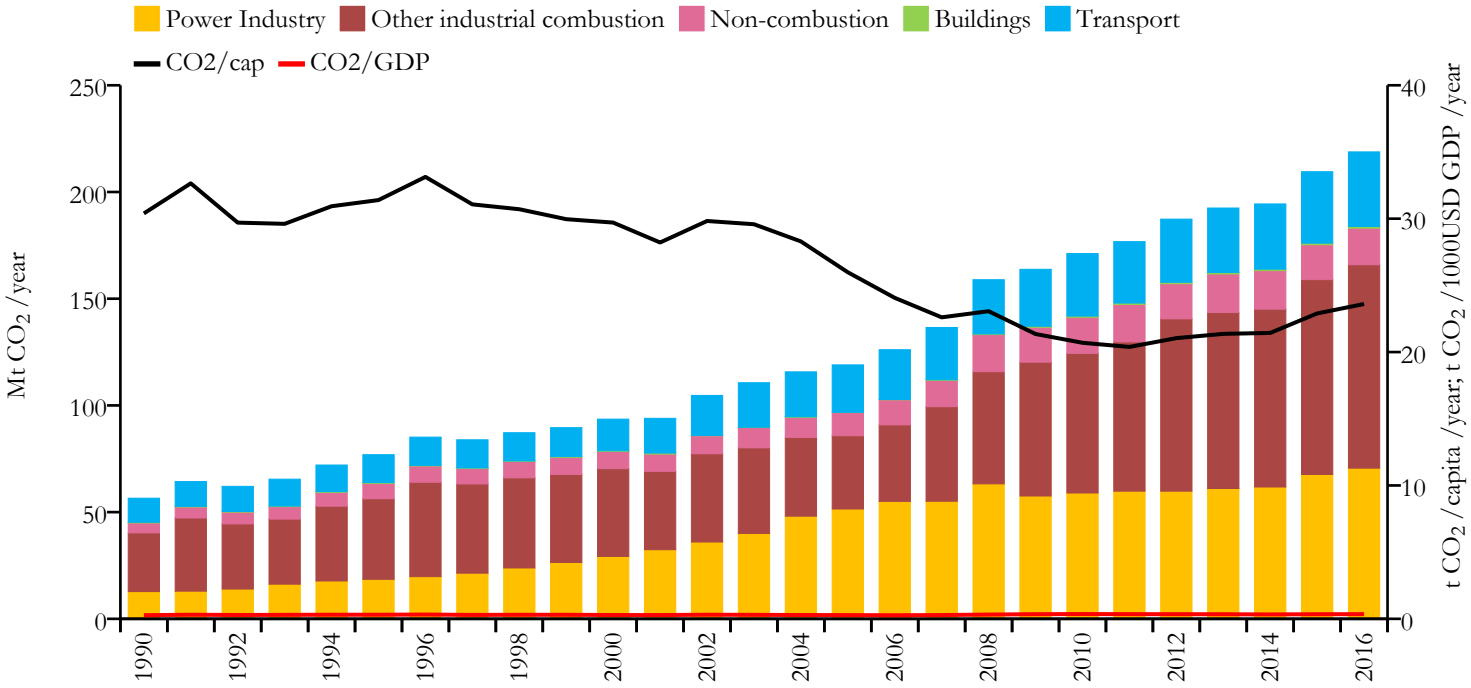
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# United Arab Emirates



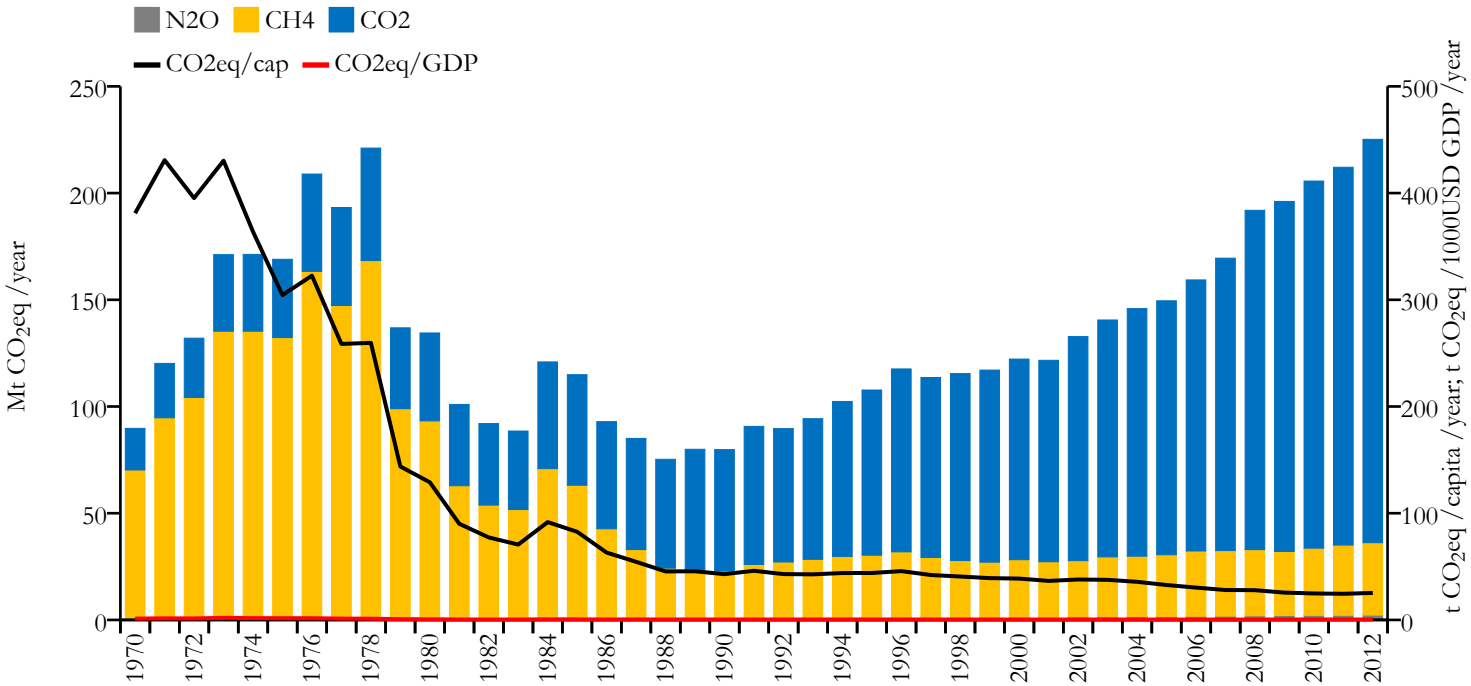
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 218.789 | 23.602 | 0.352 | 9269612 |
| 1990 | 56.528 | 30.391 | 0.273 | 1860174 |

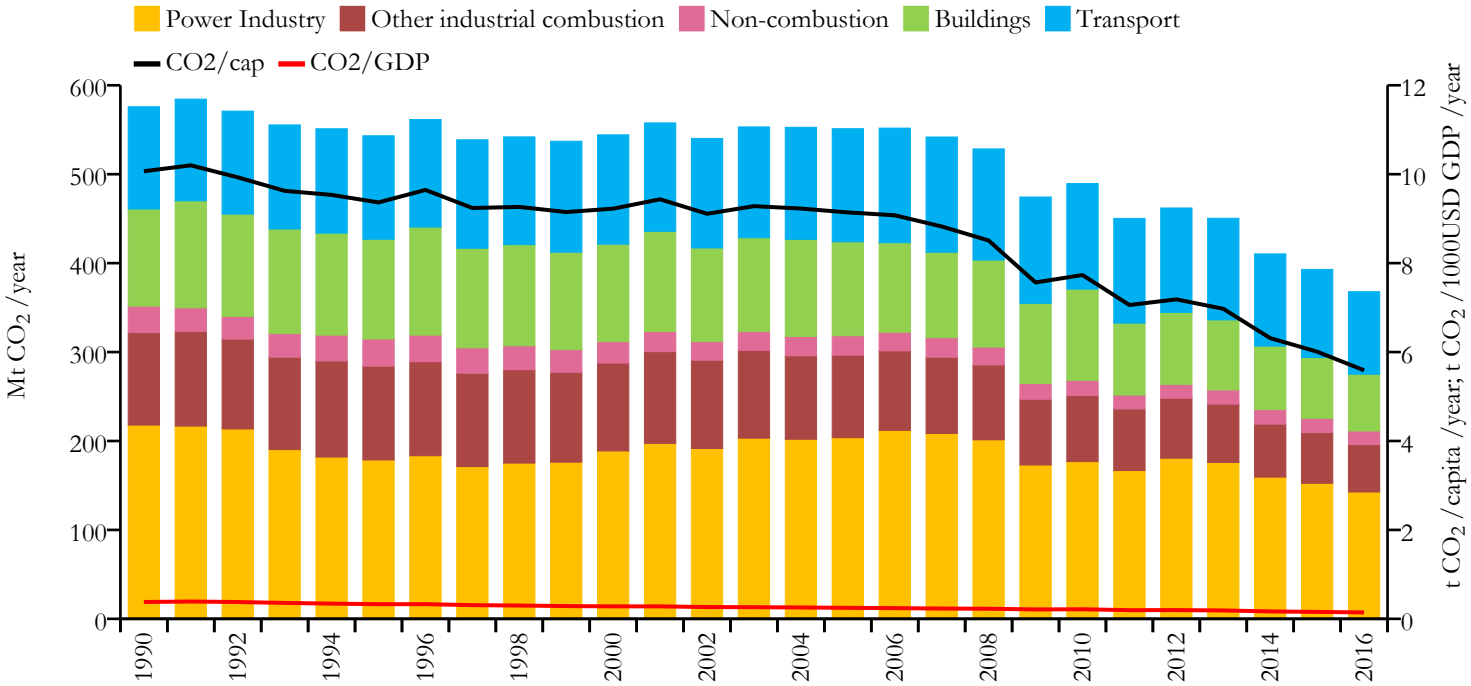
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# United Kingdom

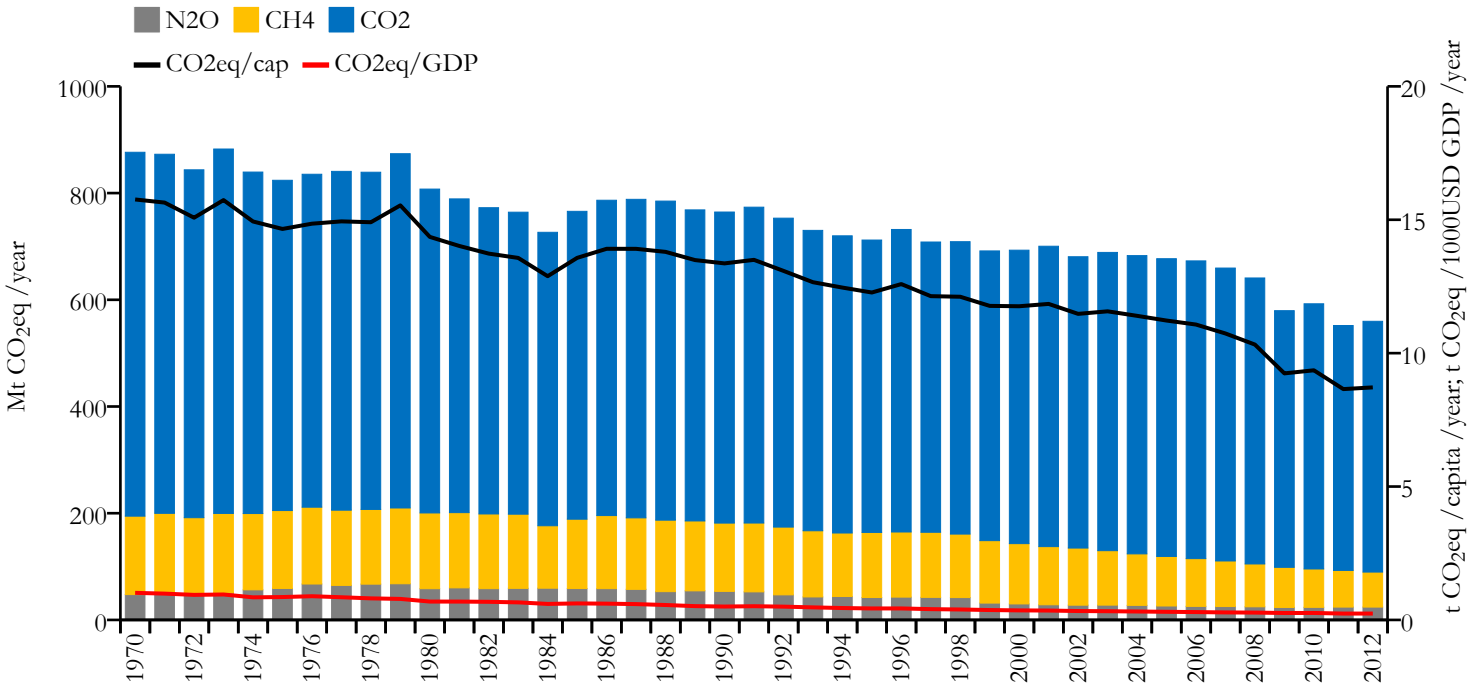
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 367.860 | 5.591 | 0.144 | 65788574 |
| 1990 | 575.834 | 10.067 | 0.379 | 57183331 |

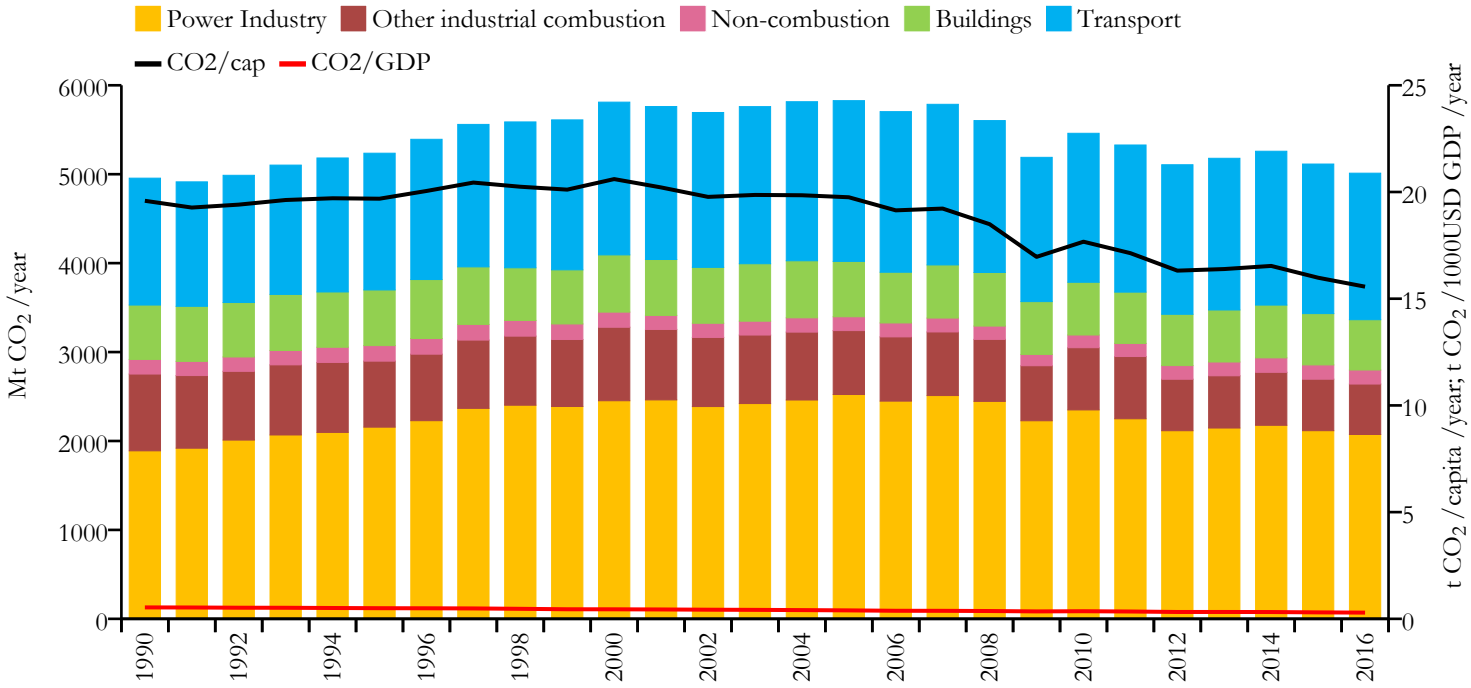
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



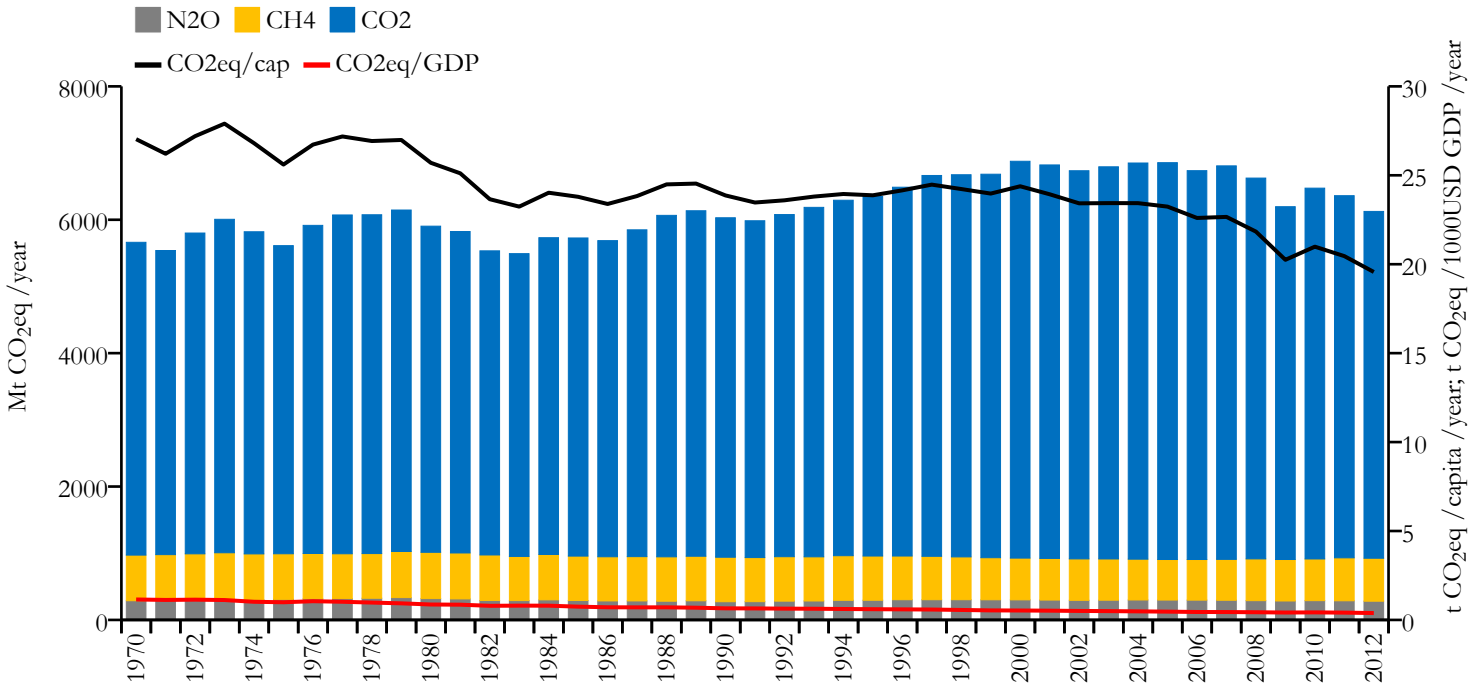
# United States

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



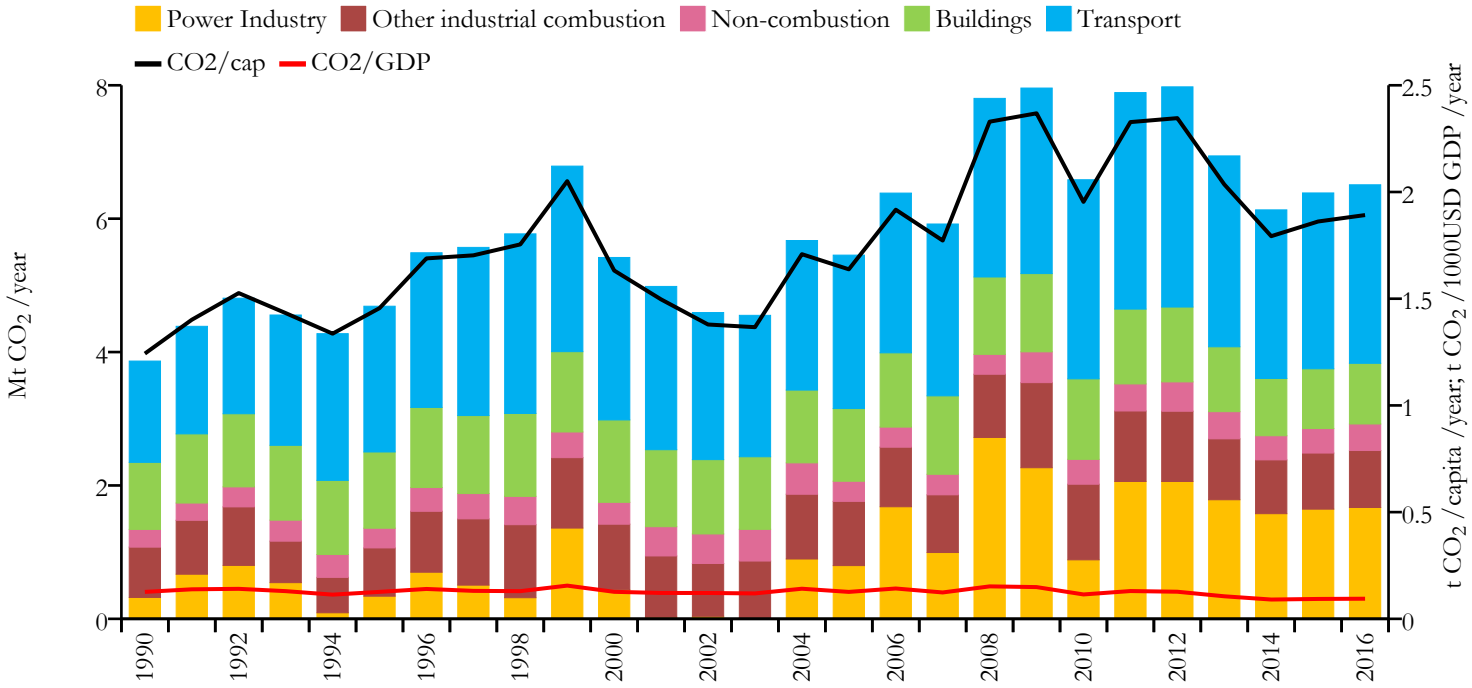

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 5011.687 | 15.564 | 0.291 | 322179605 |
| 1990 | 4955.641 | 19.588 | 0.536 | 252529950 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Uruguay

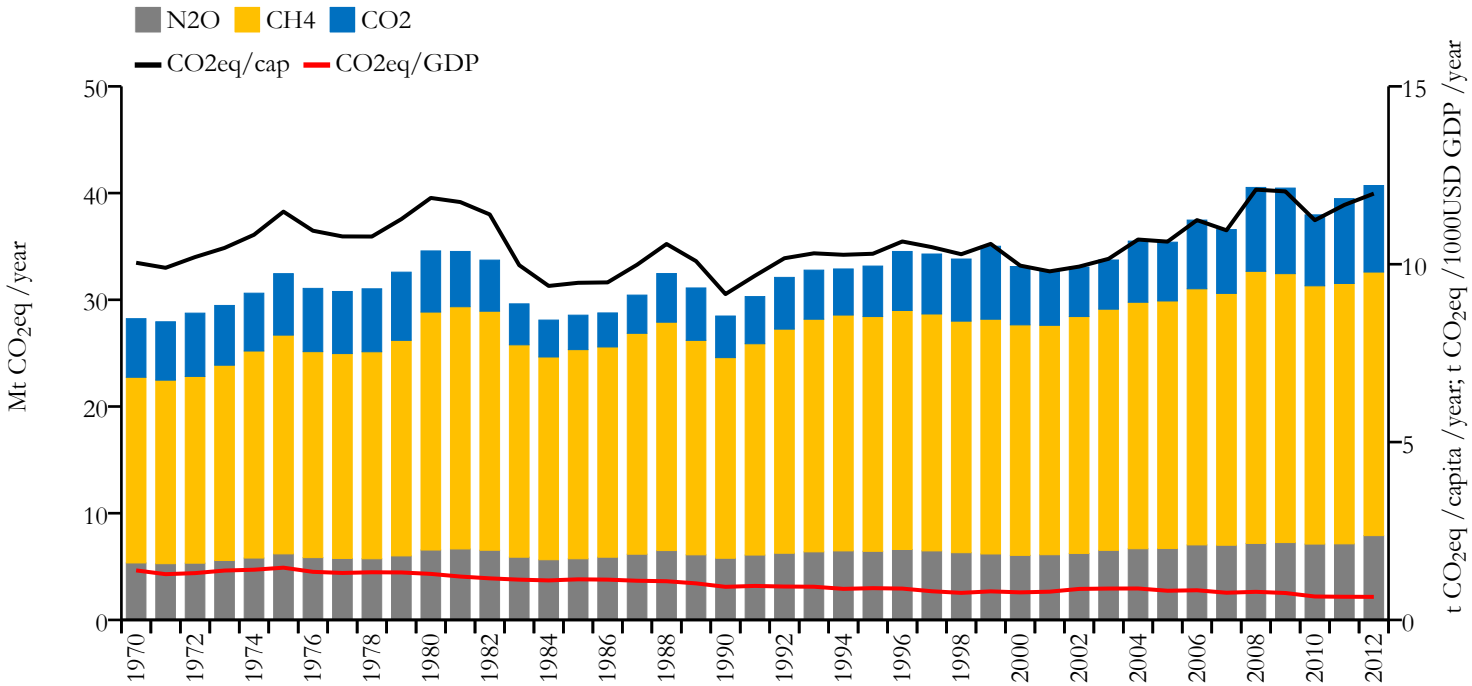
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 6.508 | 1.892 | 0.094 | 3444006 |
| 1990 | 3.865 | 1.243 | 0.126 | 3109989 |

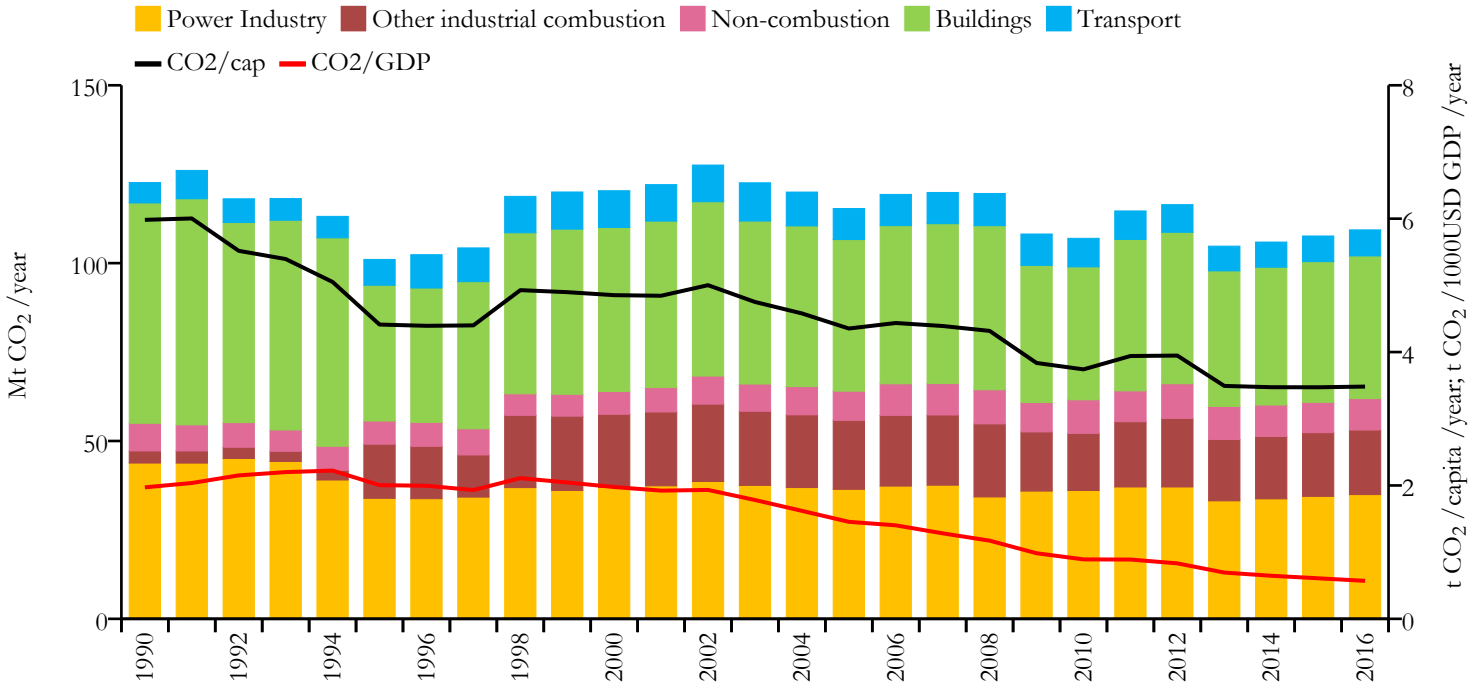
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Uzbekistan

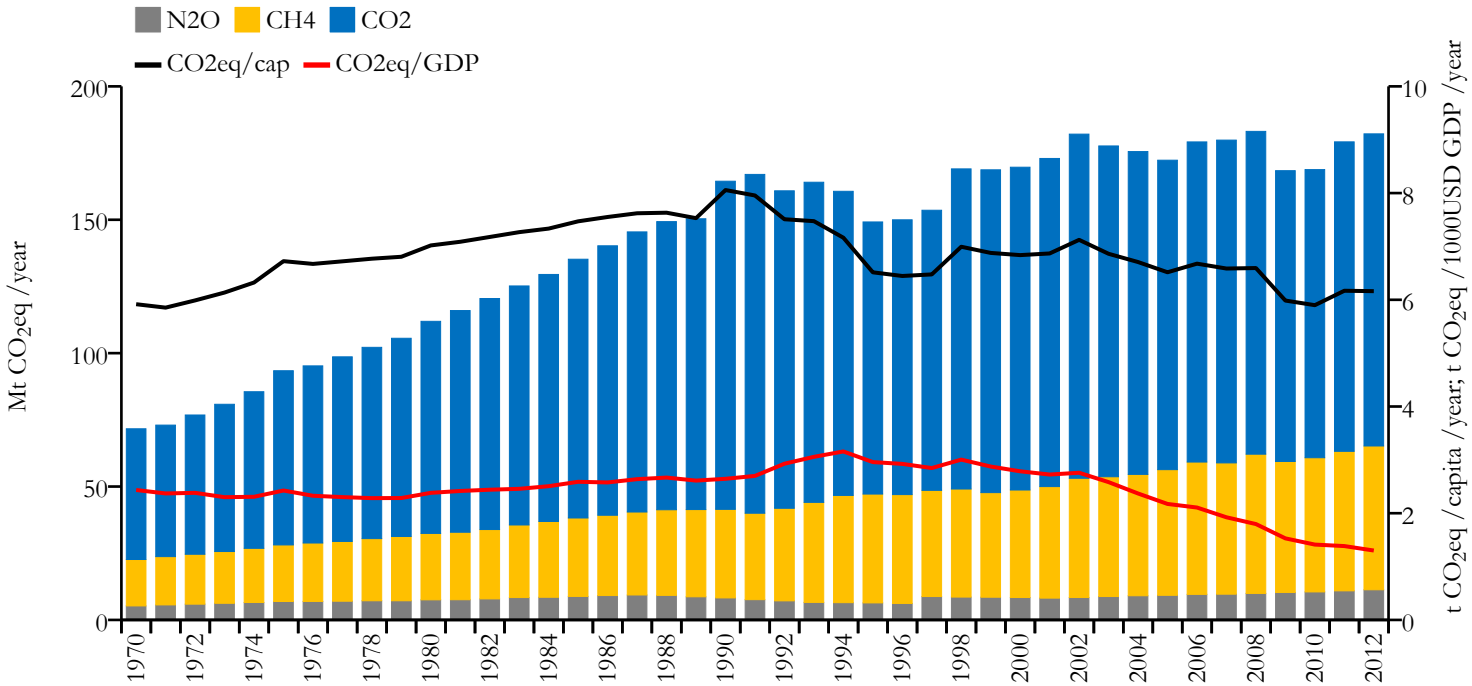
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 109.347 | 3.482 | 0.570 | 31446795 |
| 1990 | 122.643 | 5.983 | 1.972 | 20462463 |

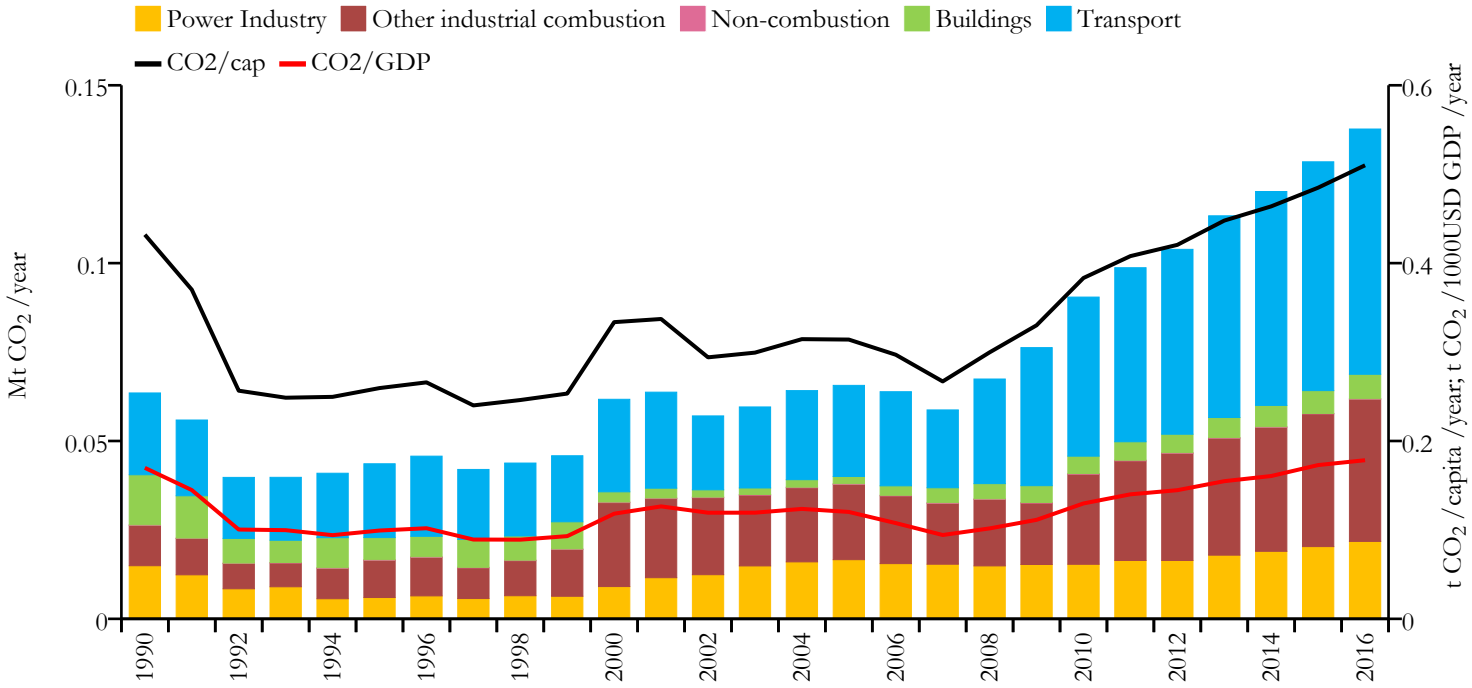
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Vanuatu

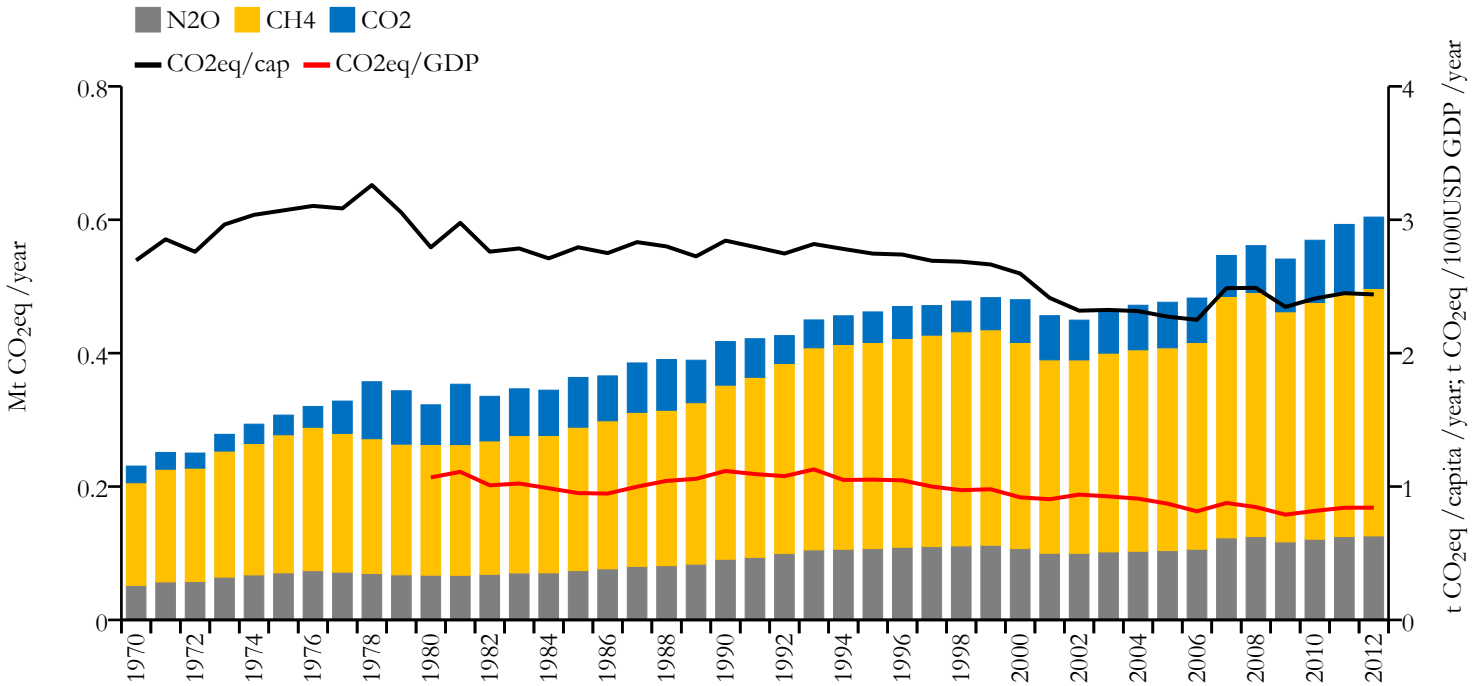
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.138 | 0.510 | 0.178 | 270402 |
| 1990 | 0.064 | 0.432 | 0.170 | 146634 |

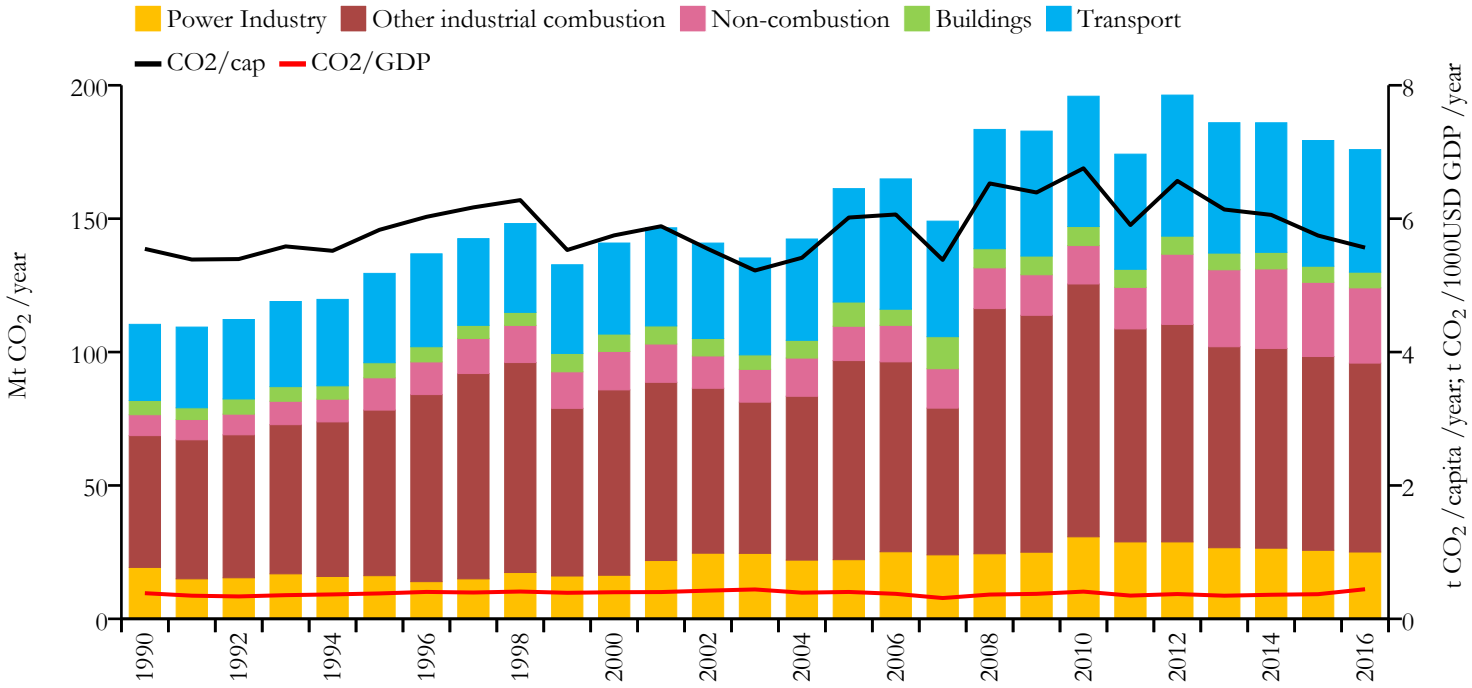
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Venezuela

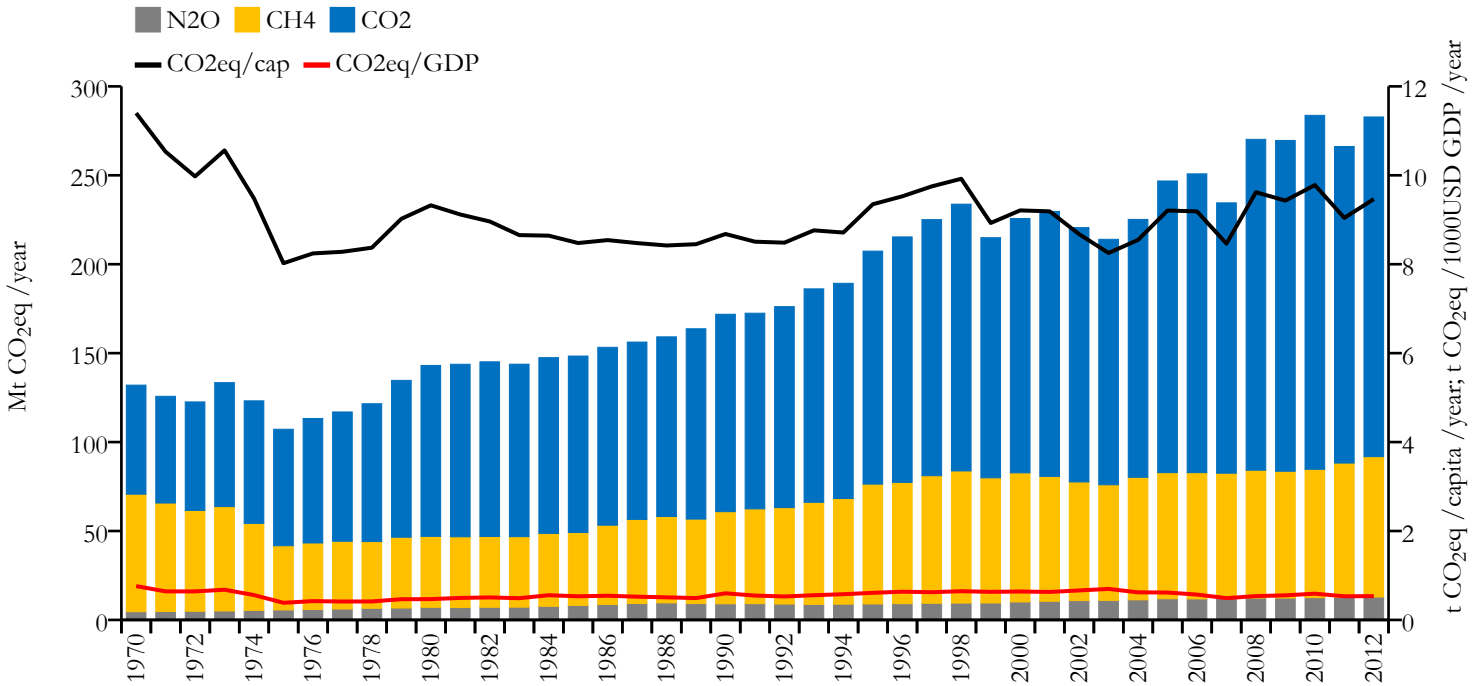
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 175.884 | 5.566 | 0.444 | 31568179 |
| 1990 | 110.392 | 5.547 | 0.385 | 19861956 |

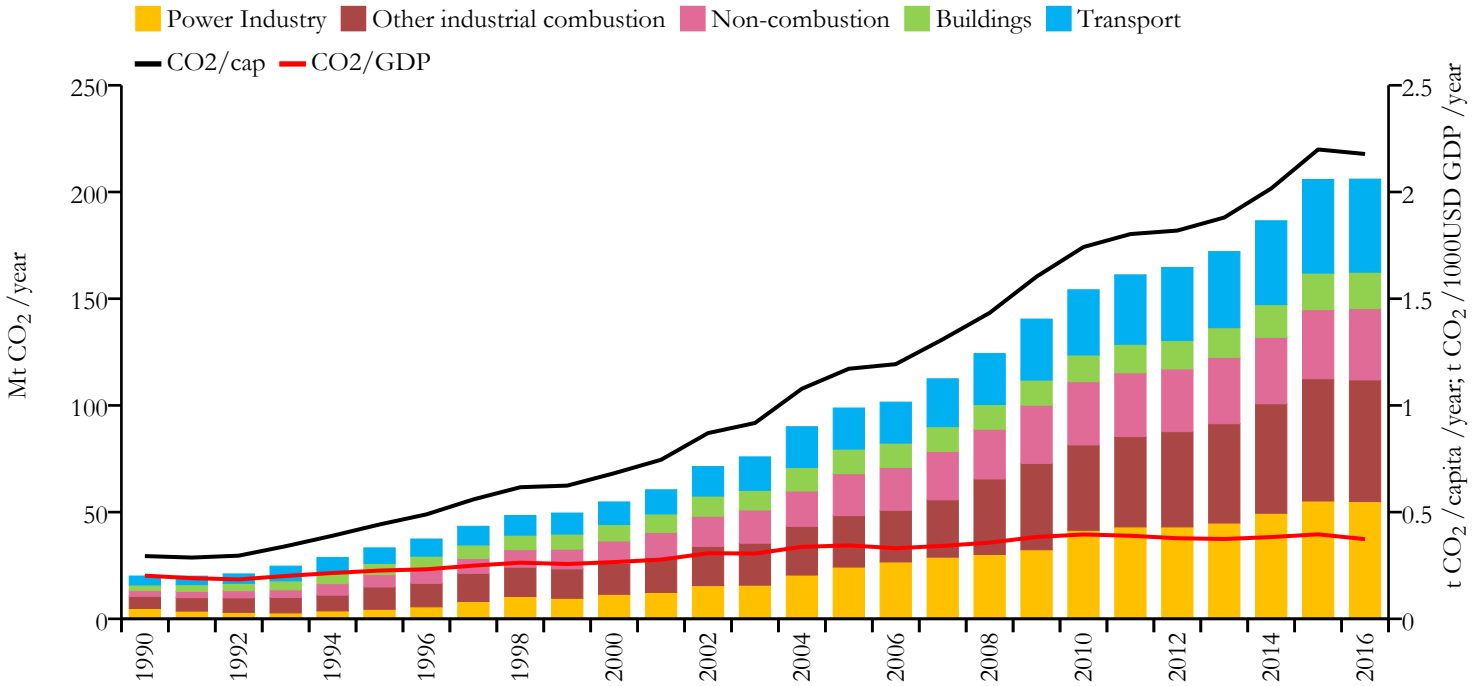
EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Vietnam

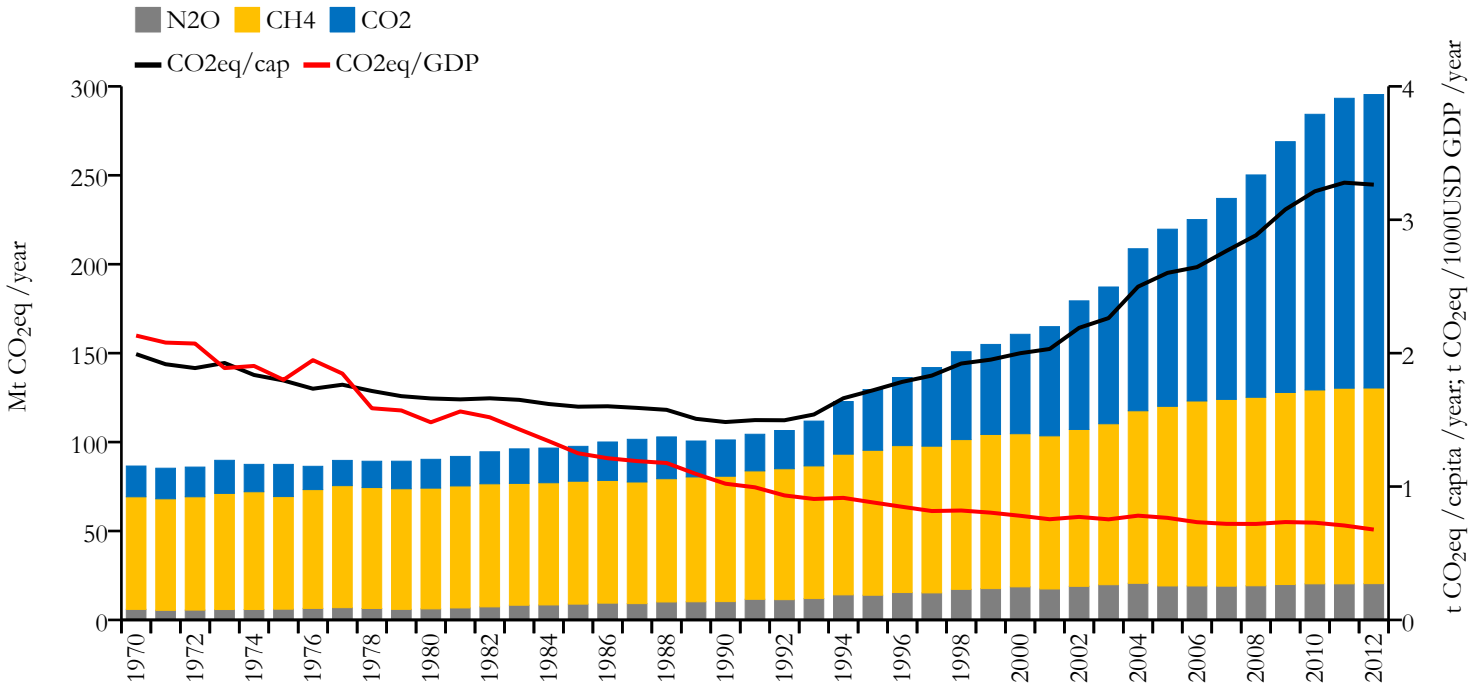
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



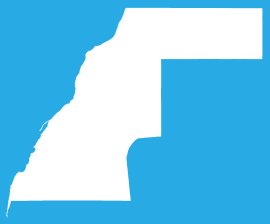

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 206.042 | 2.178 | 0.373 | 94569072 |
| 1990 | 20.056 | 0.294 | 0.202 | 68209605 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

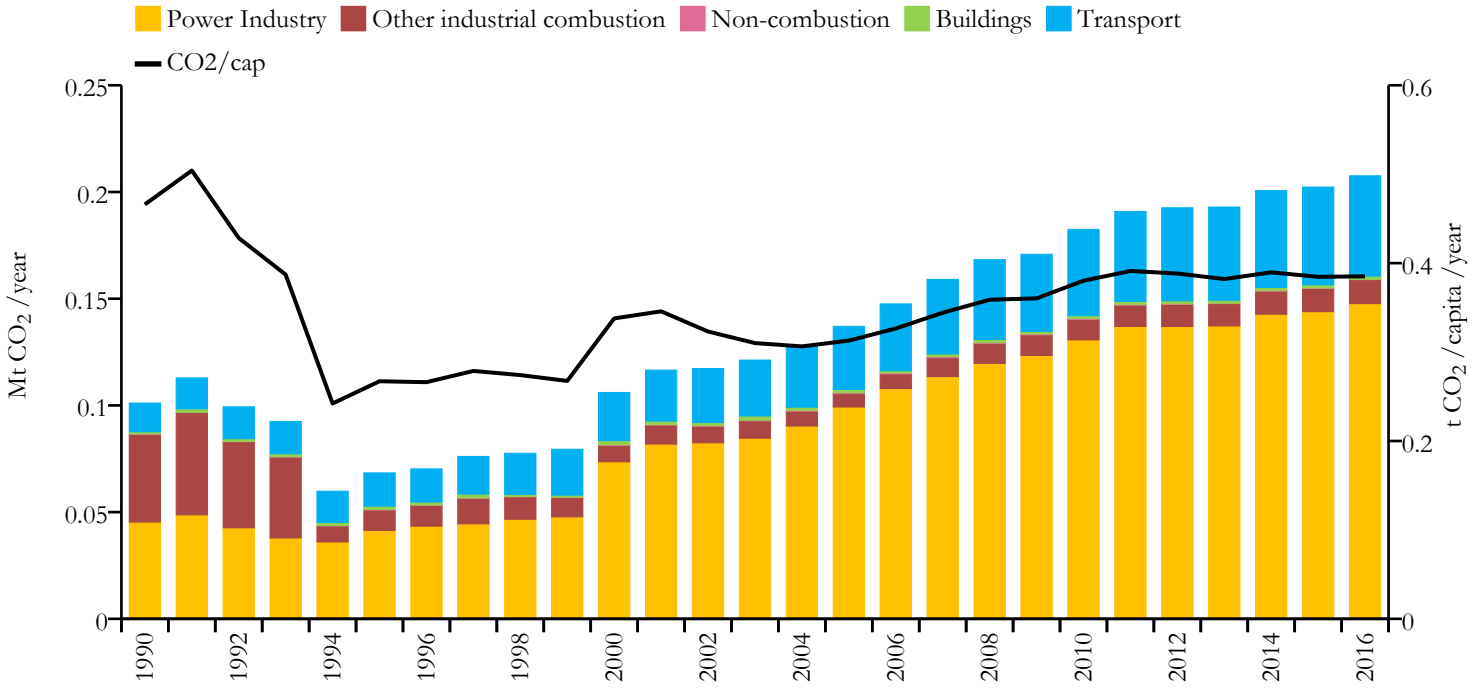
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Western Sahara

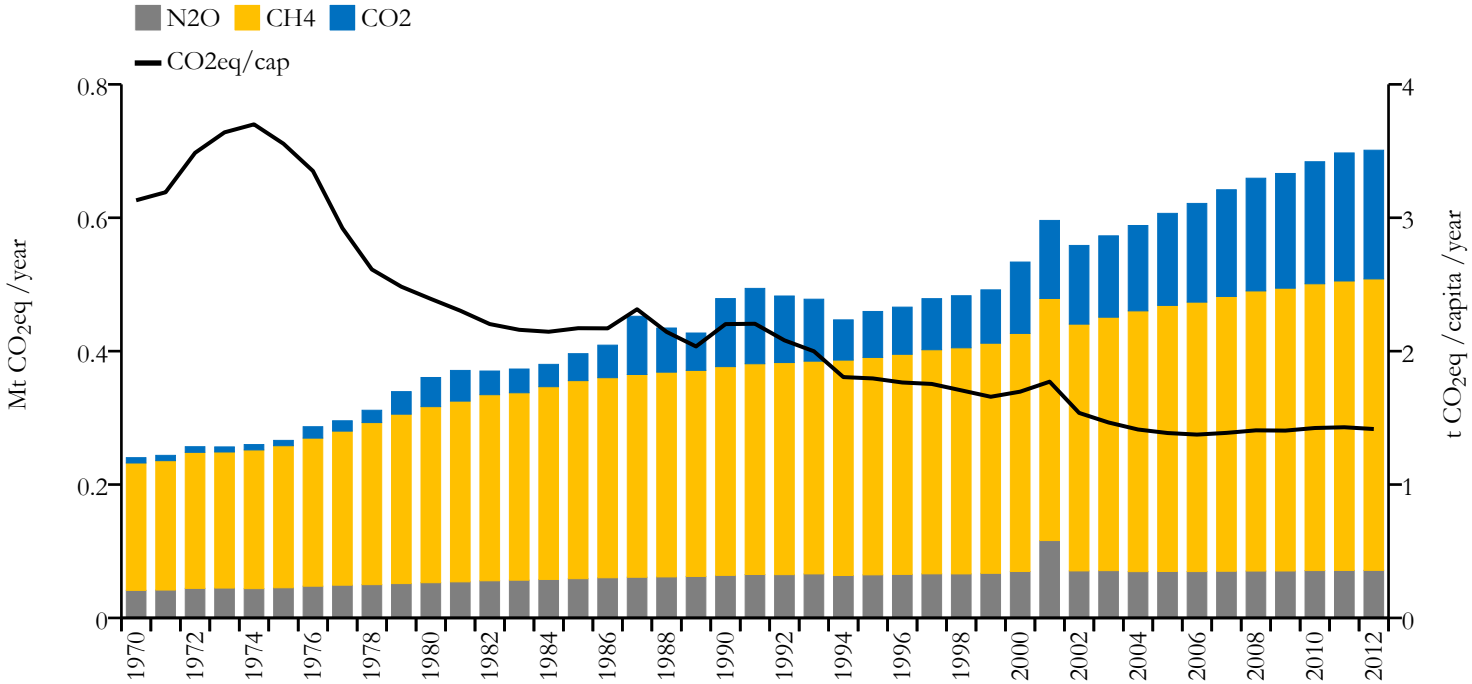


## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



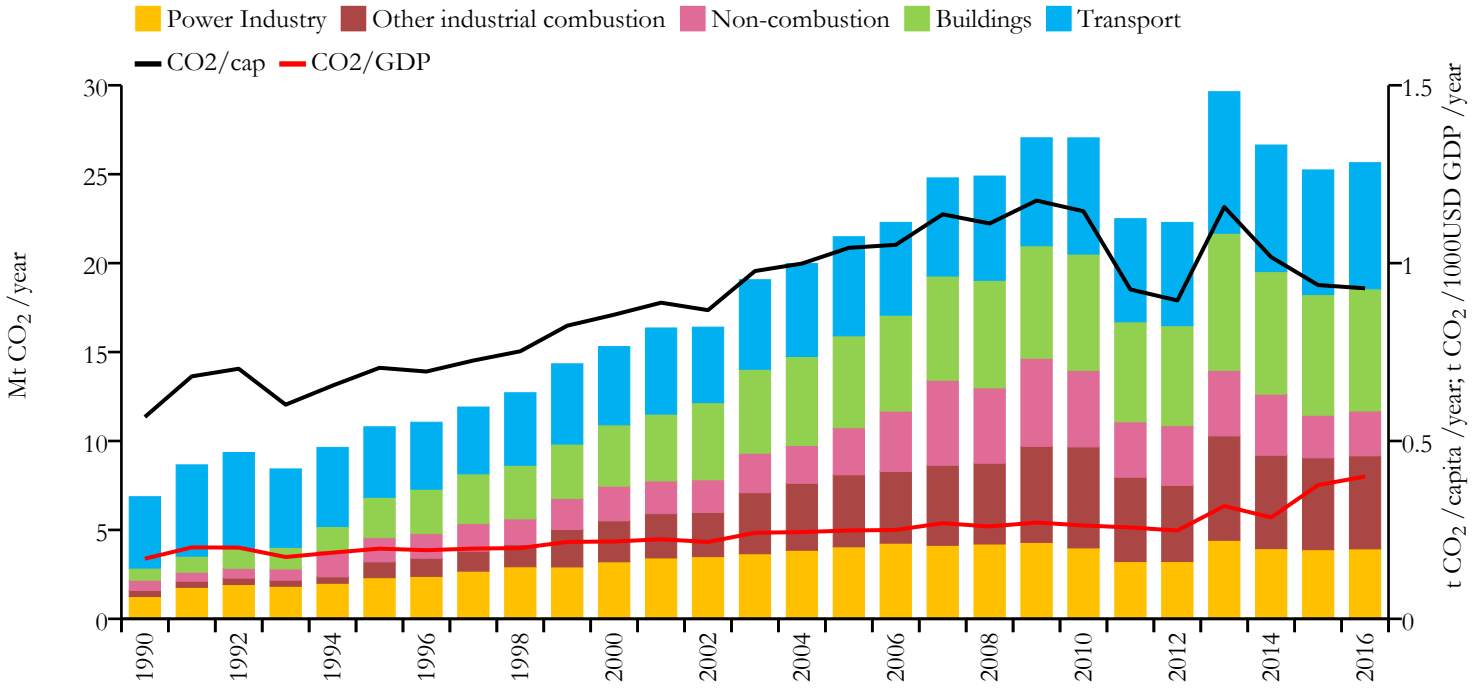

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 0.208 | 0.385 | n/a | 538755 |
| 1990 | 0.101 | 0.466 | n/a | 217258 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



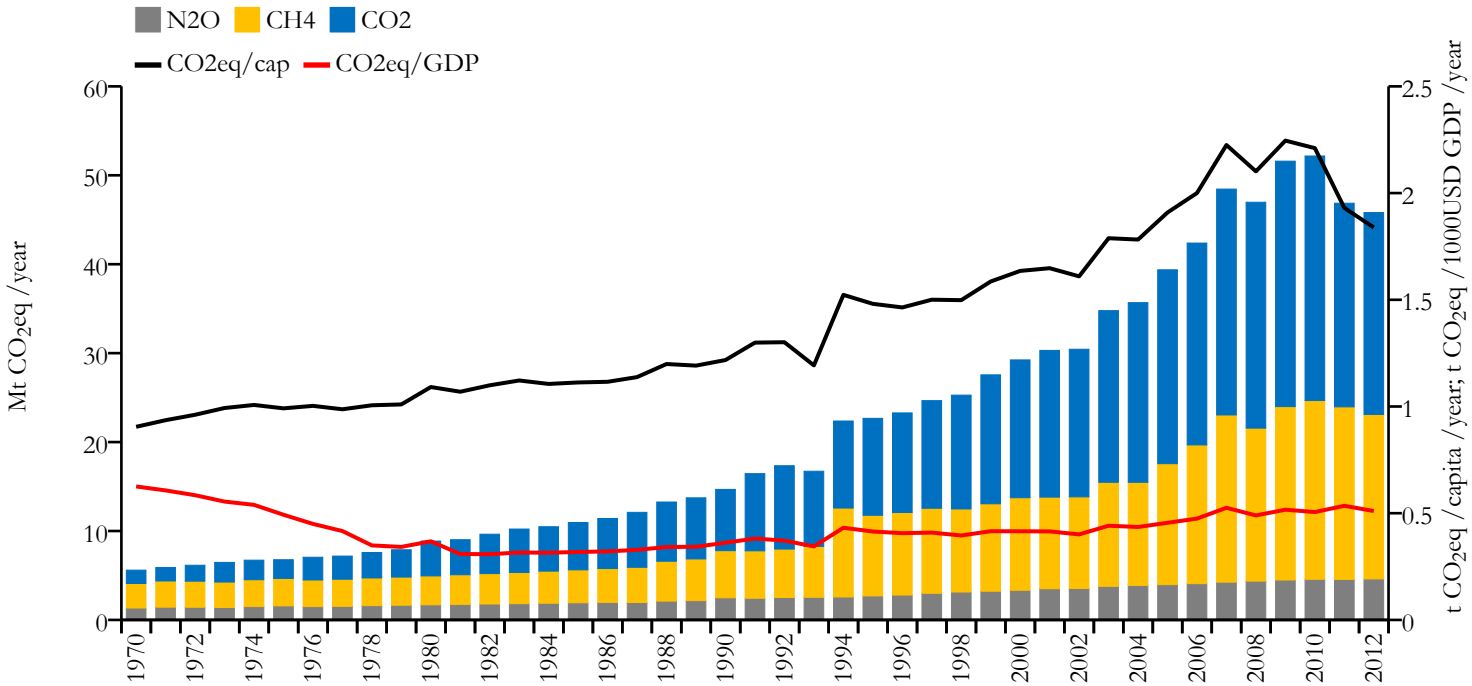
# Yemen

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)



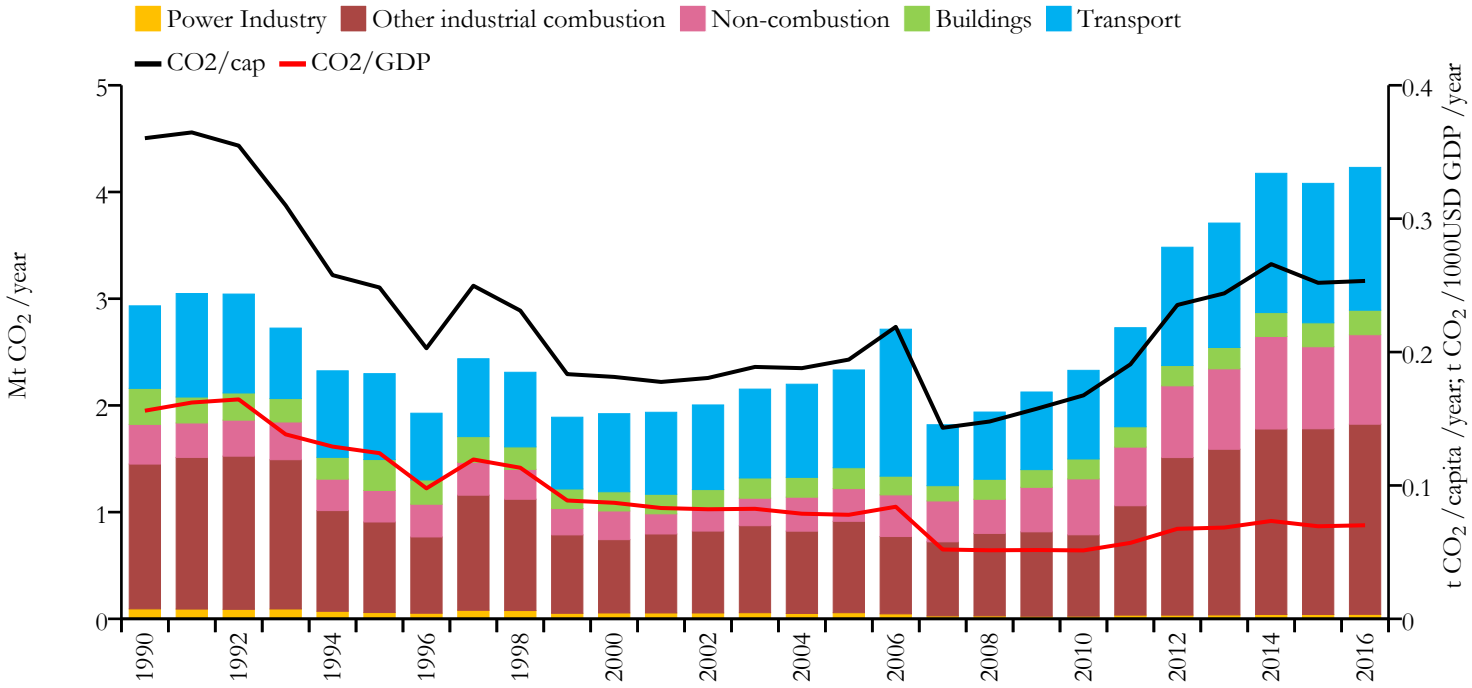

| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 25.648 | 0.929 | 0.400 | 27584213 |
| 1990 | 6.867 | 0.567 | 0.169 | 12057039 |

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



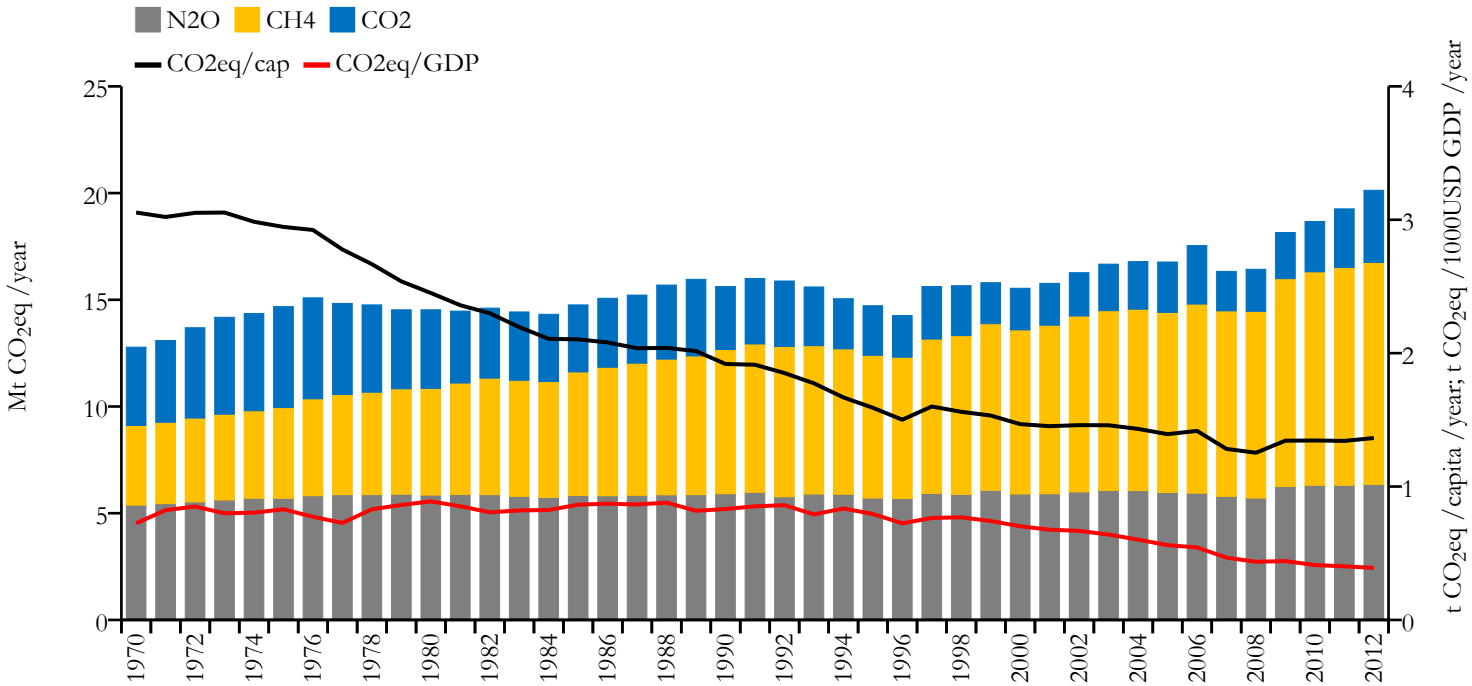
# Zambia

## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)

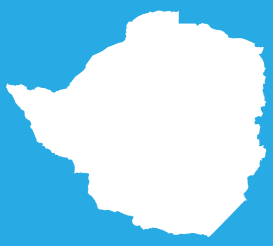



| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 4.231 | 0.253 | 0.070 | 16211800 |
| 1990 | 2.933 | 0.360 | 0.156 | 8143140 |

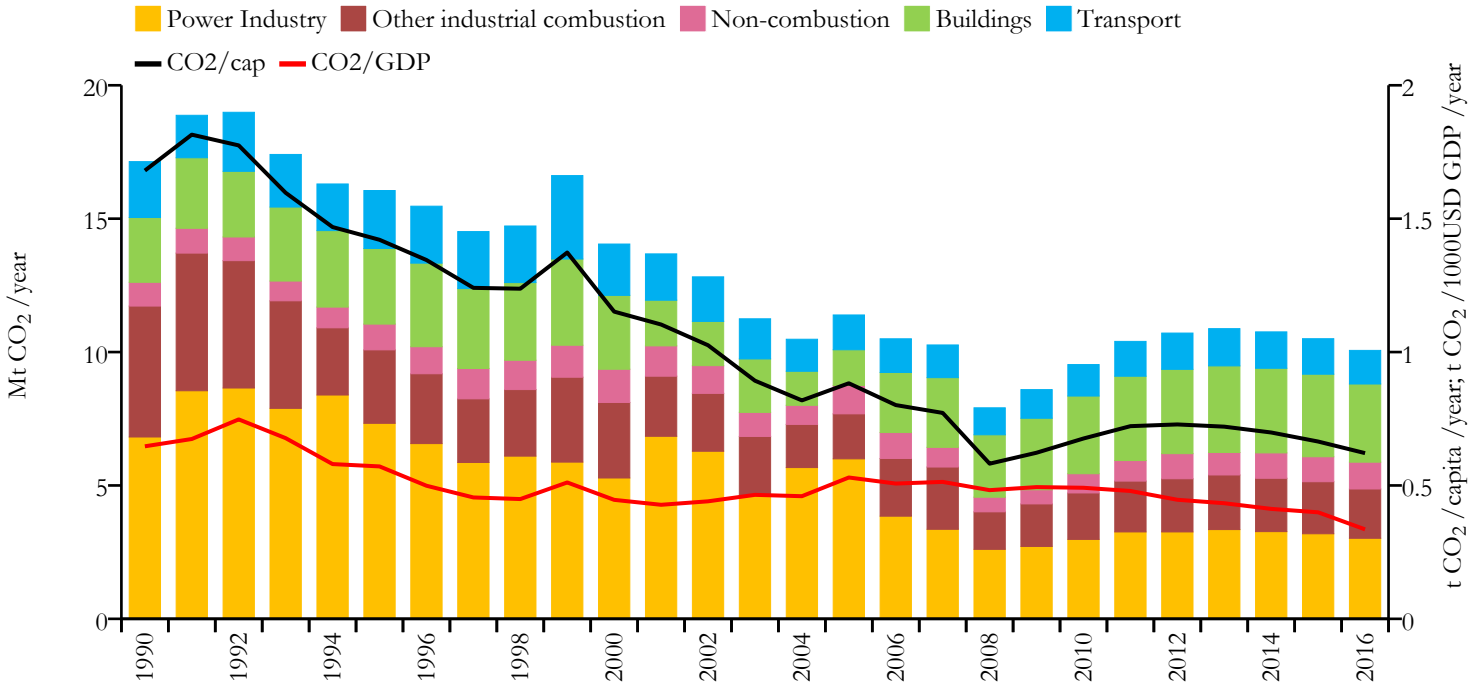
## Greenhouse gas emissions (EDGARv4.3.2 dataset)



# Zimbabwe



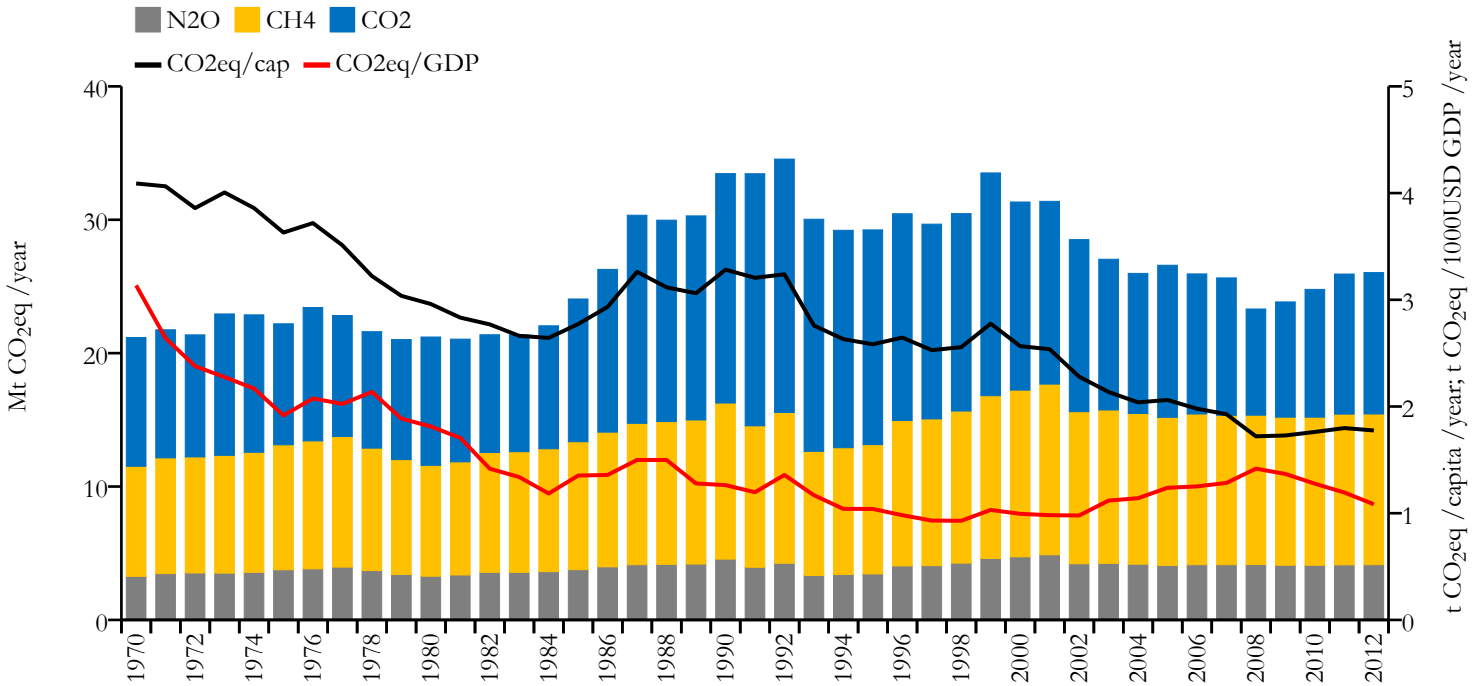
## Fossil $CO_2$ emissions by sector (EDGARv4.3.2_FT2016 dataset)




| Year | Mt $CO_2$/yr | t $CO_2$/cap/yr | t $CO_2$/kUSD/yr | population |
|---|---|---|---|---|
| 2016 | 10.063 | 0.621 | 0.335 | 16150362 |
| 1990 | 17.138 | 1.680 | 0.647 | 10183113 |

EDGAR
EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH

## Greenhouse gas emissions (EDGARv4.3.2 dataset)



## Bottom-up Methodology for the Emissions Compilation

The basis for the data time series presented in this report is the EDGAR v4.3.2 database of JRC/PBL, covering the period 1970-2012, documented by Janssens-Maenhout et al. (2017), which applies a consistent bottom-up technology-based emission factor approach for all countries. Emissions per country and compound are calculated on an annual basis and sector wise by multiplying the country-specific activity and technology mix data by country-specific emission factors and reduction factors for installed abatement for each sector. EDGAR v4.3.2 uses international activity data, principally energy balance statistics of IEA (2014, 2016 for China) and agricultural statistics of FAO (2014). For the emission factors the recommendations of the IPCC 2006 guidelines were followed as default and where recommended, region-specific values were applied.

The time series are extended for the period 2013-2016 using relative changes in activity data compared to 2012, reported in recent data sources:

**For energy:**
for 2012–2014, the IEA (2016) temporal changes are used, whereas the BP Review of World Energy 2017 is used to calculate the relative changes for 2015-2016. For $CO_2$ emissions from fossil-fuel combustion in China between 2000 and 2012, IEA (2016) is used instead of IEA (2014) because the former includes the significant revisions of coal statistics that China has made for this period. For oil consumption, BP figures are corrected for biofuel (fuel ethanol and biodiesel) which are included in the BP oil consumption data for road transport. For the change in international transport, we apply the reported change in oil consumption per country according to BP for the most contributing countries to global marine and aviation fuel sales.

**For the fugitive emissions:**
the $CO_2$ emissions from coke production follow the same relative change as reported for the crude steel production of WSA (2016), while $CO_2$ flared at oil and gas extraction is based on the total amount of gas flared derived from satellite observation of the intensity of flaring lights for the most important countries (NOAA, 2016) and kept constant from 2014 onwards.

**For non-metallic minerals:**
cement clinker production is calculated from cement production reported by the USGS (2016) and the decreasing clinker-to-cement ratio based on the clinker production data from UNFCCC (2014) for Annex I countries and on the China Cement Almanac (CCA, 2015) for China. For other countries, we use ratios from the Cement Sustainability Initiative of the World Business Council for Sustainable Development. The changes in the lime production from USGS (2016) are applied to extrapolate $CO_2$ emissions from all other carbonate uses (glass production etc.)

**For the feedstock use for chemicals production:**
ammonia production from USGS (2016) is used, except for urea production, for which data are provided by the International Fertiliser Industry Association IFA, (2016). It is assumed that the small soil liming emissions follow the gross ammonia production trend.

**For the metal industry:**
the largest contribution is from blast furnaces, which in addition to the $CO_2$ emissions from blast furnace gas combustion accounted under the energy sector, emit also $CO_2$ from the coke/coal input as reducing agent. Here the crude steel production changes reported by WSA (2016) are used. In addition iron production of WSA (2016) is used for the changes in the production of ferric alloys (accounting for the anode consumption $CO_2$). Non-ferrous metals follow the USGS (2014) trend which is kept constant for later years.

**For the other sources:**
indirect $CO_2$ emissions from consumption of lubricants and paraffin waxes and solvent use, as well as the relatively very small emissions of waste incineration, underground coal fires (mainly in China and India) and oil and gas fires (1992, in Kuwait) are based on EDGAR v4.3.2 and extrapolated under a zero growth assumption.

## Conclusions

The Emissions Inventory for Global Atmospheric Research (EDGAR) is a comprehensive database of anthropogenic emission time series from 1970 until 2016 for $CO_2$ and until 2012 for the other GHGs. A bottom-up emissions calculation methodology is consistently applied to all countries, demonstrating that inventories can be developed for all countries in a consistent way within the limitations of the quality of the available statistical data. Although most of Annex I countries have a good statistical data infrastructure and regular reporting system to the UNFCCC, EDGAR may provide useful information to countries with less strong statistical data infrastructure for their future inventory requirements. In particular the time series of EDGAR v4.3.2 can complete the emission trends for non-Annex I countries to produce the comprehensive picture needed for the UNFCCC's global stock take of 2023.

EDGAR v4.3.2 provides an important input to the analysis of global GHG trends with its 42 years long time series. Since the beginning of the 21st century GHG emissions increased compared to the three decades before, mainly driven by the increase in $CO_2$ emissions from countries with emerging economies. Conversely, in EU28 the GHG emissions trend is decreasing due to a rather stable $CO_2$ and a smooth but continuously decreasing $CH_4$ contribution.

EDGAR v4.3.2 FT2016 revealed that global $CO_2$ emissions from anthropogenic activities, excluding biomass burning and the land use, land-use change and forestry sector are for the third year in a row plateauing with no further increase to a total of 35.8 Gton $CO_2$ in 2016. The 0.3% increase in 2016 compared to 2015 is due to the extra day in the leap year of 2016. For the two largest emitting countries and the EU it was observed that $CO_2$ emissions in the US reduced with 2% in 2016 compared to 2015, but there was a status quo in emissions in China with -0.3% change in 2016 compared to 2015 and in the EU28 with +0.2% change. The EU28 emissions mainly decreased over the past two decades reaching in 2016 a total of 3.4 Gton $CO_2$, representing reduction levels of 20.8% compared to 1990 and 17.9% compared to 2005. This yields since 2015 a constant EU share to the global total of 9.6% and an averaged 6.8 ton $CO_2$/cap/yr.

Even though the overall global uncertainty in total emissions has increased because of the increasing share of GHG emissions from emerging economy countries, at the European scale the uncertainty has decreased because of the progress in inventory compilation and the decrease in more uncertain $CH_4$ emissions.

The purpose of the EDGAR database is providing useful information to the scientific and policy communities involved in field of GHG emissions and budget, in the compilation of national inventories, the UNFCCC global stock take, the analysis of co-benefits between air pollution and GHG emission mitigation strategies, the interpretation of satellite data and the understanding of emission uncertainties.

## Sources and References


**EDGARv4.3.2:**
Janssens-Maenhout, G., Crippa, M., Guizzardi, D., Muntean, M., Schaaf, E., Dentener, F., Bergamaschi, P., Pagliari, V., Olivier, J.G.J., Peters, J.A.H.W., van Aardenne, J.A., Monni, S., Doering, U., Petrescu, A.M.R. (2017): EDGAR v4.3.2 Global Atlas of the three major Greenhouse Gas Emissions for the period 1970-2012, Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2017-79, in review, 2017.

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**Other:**
UNDP population statistics (2017), World Population Prospects (WPP), The 2017 Revision Report United Nations, Department of Economic and Social Affairs, Population Division.

IMF/WEO data of GDP (expressed in 1000 US dollar adjusted to the Purchasing Power Parity of 2011) (2017). World Economic Outlook Update January 2017. International Monetary Fund.

Olivier et al., Trend in Global $CO_2$ and GHG Emissions - 2017 Report, PBL Report forthcoming 2017.

## List of abbreviations and definitions

AR4 - Fourth Assessment Report of IPCC
BP -BP plc (energy company; formerly British Petroleum Company plc)
cap - capita (head)
CCA - China Cement Association
CSA - China Statistical Abstract
$CH_4$ – Methane, greenhouse gas with GWP-100 = 25 under AR4
$CO_2$ - Carbon dioxide
$CO_2eq$ - $CO_2$ equivalent (using the GWP-100 metric of AR4)
DG CLIMA - Directorate General Climate Action, European Commission
EC - European Commission
EDGAR Emissions Database for Global Atmospheric Research
EIA - Energy Information Administration (of the U.S.)
EU28 - European Union with 28 Member States
FT - Fast Track
GDP - Gross domestic product
GHG - Greenhouse Gas
Gt - Gigatonnes (1000 megatonnes = $10^9$ metric tonnes)
GWP-100 - Global Warming Potential over a 100 years period
IEA - International Energy Agency of the OECD (Paris)
IFA - International Fertiliser Association
IMF - International Monetary Fund
IPCC - Intergovernmental Panel on Climate Change
ISO - International Organization for Standardization
JRC - Joint Research Centre of the European Commission
kUSD - 1000 US Dollar GDP
LULUCF - Land use, land-use change and forestry
Mt - Megatonnes ($10^6$ ton or 1 teragramme) mass of a given (greenhouse gas) substance
NBSC - National Bureau of Statistics of China
NOAA - U.S. National Oceanic and Atmospheric Administration
$N_2O$ - Nitrous oxide, greenhouse gas with GWP-100 = 298 under AR4
n/a - Not Available
OECD - Organisation for Economic Co-operation and Development
PBL - PBL Netherlands Environmental Assessment Agency
PPP - Purchasing Power Parity
t – tonnes (1 ton or 1 megagramme) mass of a given (greenhouse gas) substance
TPES - Total Primary Energy Supply
UNFCCC - United Nations Framework Convention on Climate Change
UNPD - United Nations Population Division
USD - U.S. Dollar
USGS - United States Geological Survey
WSA - Word Steel Association

## Definition of the legends in the fact sheets

Power Industry - Power and heat generation plants (public & autoproducers)
Other industrial combustion - Combustion for industrial manufacturing and fuel production
Non-combustion – Industrial process emissions & agriculture & waste
Buildings – Non-industrial stationary combustion
Transport – Mobile combustion (road & rail & ship & aviation)

GDP - Gross domestic product corrected for the 2011 purchasing power parity

## Disclaimer

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