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CO2 emissions of all world countries

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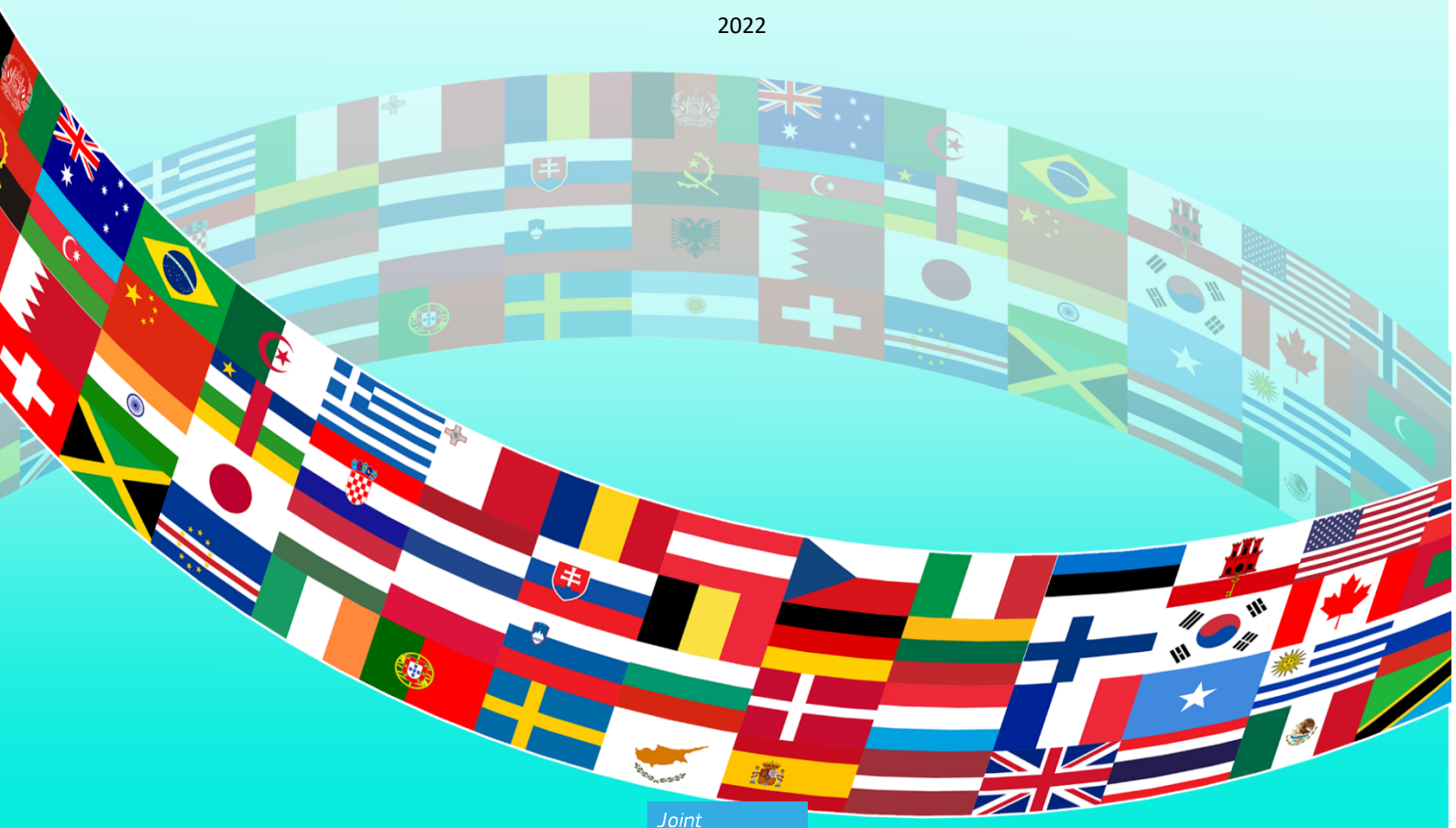

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Contents

Abstract

This report presents the fossil CO_2 emission time series of the Emissions Database for Global Atmospheric Research (EDGAR) from 1970 until 2021, together with CO_2 emissions and removals from land use and forestry for period 1990 to 2020. For the first time, the report uses IEA calculated fossil-fuel CO_2 emissions directly where appropriate, rather than calculating them from the underlying energy use statistics, to ensure greater coherence with the IEA data. The report contributes to the Paris Agreement process with an independent and quantitative view of global emissions.

Acknowledgements

This booklet was produced with input from many colleagues, gathered over several years. The International Energy Agency (IEA) energy use statistics and the corresponding CO_2 emissions are fundamental to the EDGAR database and the authors would like to thank IEA for the continuing collaboration. The authors would also like to thank United States Geological Survey (USGS) (R. Schulte, L. Apodaca, A. Hatfield), the International Fertiliser Association (IFA) (L. Cross), World Steel Association, BP plc, and the Global Gas Flaring Reduction Partnership (GGFR), Payne Institute at the Colorado School of Mines and U.S. National Oceanic and Atmospheric Administration (NOAA), for the provision of data. The authors are grateful to the Directorate-General for Climate Action (DG CLIMA) (V. Pollard, B. Goni-Ros, R. Lake, X. Seront, O. Juvyns, R. Colditz, S. Kay) for their reviews and guidance. An extra thanks to J. Wilson, and the anonymous reviewers for their thorough reviews and proofreading.

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Executive summary

Policy context

The European Union has set ambitious objectives as far as climate change is concerned. In the context of the European Green Deal[1] and European Climate Law[2], the European Union currently has a target of reducing its net domestic greenhouse gas (GHG) emissions by at least 55% by 2030 compared to 1990 levels and to become climate neutral (net zero greenhouse gas emissions) by 2050. On the 14th of July 2021, the European Commission adopted a package of legislative proposals (known as the "Fit for 55" package[3]) covering climate, energy, land use, transport and taxation that, when adopted and implemented, should achieve the 2030 GHG emissions reduction target.

All Parties to the Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC) are required to prepare emission reduction pledges, known as Nationally Determined Contributions (NDCs). Under the transparency framework of the Paris Agreement, all Parties have to report bottom-up inventories of national greenhouse gas emissions and track progress towards the implementation and achievement of their NDCs.

This reporting is to be contained in Biennial Transparency Reports (BTRs), which are first due at latest end of 2024. Parties may submit their inventory reports as part of the BTR or separately, and Annex-I countries must continue submitting inventories annually. Bottom-up national emission inventories are an essential component of reporting and tracking progress towards the goals of the Paris Agreement. However, national inventory reports are not yet available for all countries and years. In addition, they are dependent on individual national reporting processes and methodological choices, they can present data gaps for specific sectors and currently, except for Annex I parties, there is no obligation to include long-term series of emissions up to the most recent year.

The European Commission's in-house Emissions Database for Global Atmospheric Research (EDGAR) offers an alternative that complements national inventories and has the advantage of producing timely emission estimates that are comparable across countries.

EDGAR depends on several sources of international statistics for the underpinning data. Foremost among these is the International Energy Agency (IEA). To harmonise global CO_2 emission estimates, for the first time this booklet already incorporates IEA CO_2 emissions from fossil fuel combustion sources and represents the first IEA-EDGAR CO_2 emission dataset. EDGAR completes the global picture with a time-series for each country, contributing to enhanced transparency and providing an additional source with which national and global estimates can be compared.

This report focuses on the update to most recent years of the emission time series, including emissions from anthropogenic sectors up to 2021 and Land Use, Land Use Change and Forestry (LULUCF) up to 2020. For all countries, including the EU and its 27 Member States[4], EDGAR emissions may differ from official national inventories due to differences in data sources, methodologies, and approaches, although both are, in principle, based on the Intergovernmental Panel on Climate Change (IPCC) guidelines for GHG reporting. However, the overall EU27 CO_2 emissions reduction trend is similar to that reported by the EU to the UNFCCC even though the figures do not match completely.

Key conclusions

This booklet includes time series of anthropogenic fossil CO_2[5] from 1970 to 2021 together with estimates of CO_2 emissions and removals stemming from the Land Use, Land-Use Change and Forestry (LULUCF) sector, which are discussed for the EU27 and world macro-regional levels for the years from 1990 to 2020.

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(1) See the Communication from the European Commission on the European Green Deal: COM(2019) 640 final.
(2) Regulation (EU) 2021/1119, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32021R1119
(3) https://ec.europa.eu/clima/eu-action/european-green-deal/delivering-european-green-deal_en
(4) Hereafter EU27.
(5) In this booklet, fossil CO_2 emissions include emissions from fossil fuel combustion (coal, oil and gas), from fossil fuel use (combustion, flaring), industrial processes (cement, steel, chemicals and urea) and product use; no short-cycle carbon CO_2 emissions are included for any sector.

The most recent data for CO_2 emissions in 2021 clearly show a rebound in emissions compared to 2020, which was strongly affected by COVID-19 globally: global CO_2 emissions in 2021 increased by 5.3% compared to 2020[6] and were just 0.36% smaller than in 2019.

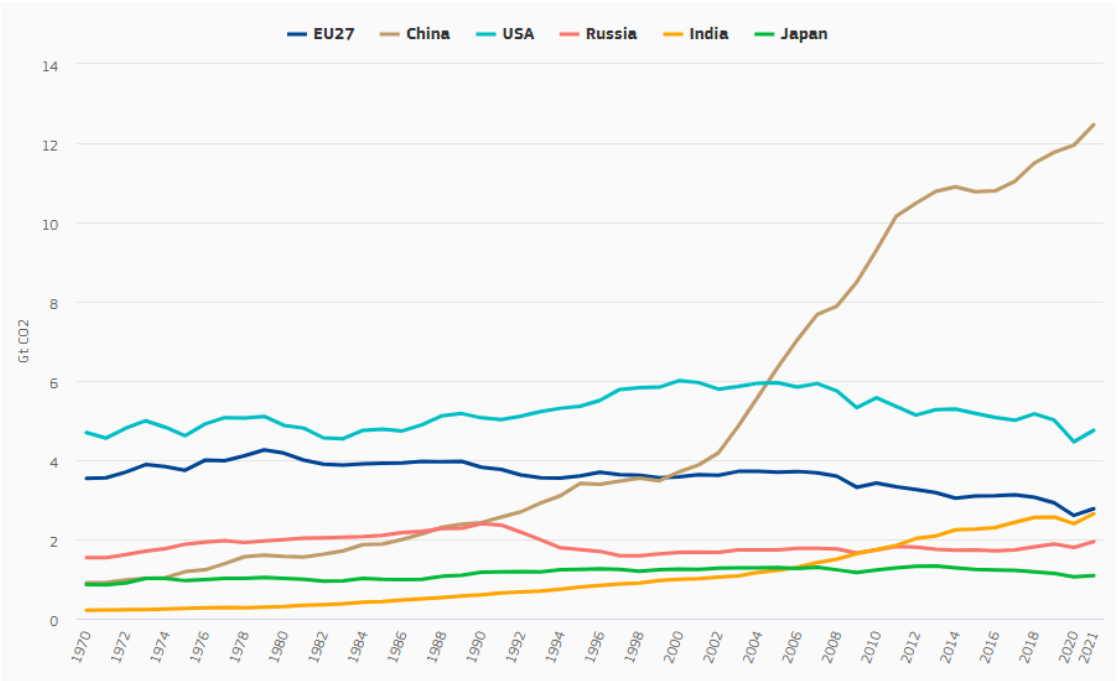
When considering the top six emitting economies, from a longer-term perspective, fossil CO_2 emissions in the EU27 showed the largest relative decrease among top emitters and were 27.3% lower in 2021 than in 1990. Russian CO_2 emissions follows considerably decreasing by 18.9% between 1990 and 2021. Again, among the top emitters, both the United States and Japan had 2021 fossil CO_2 emissions below 1990 levels, although by a lesser extent (by 6.2% and 7.4%, respectively). Conversely, fossil CO_2 emissions of the emerging economies of China and India remained well above their 1990 levels being respectively 5.1 and 4.4 times larger in 2021 than in 1990.

Globally, LULUCF has acted as a fairly stable net sink for CO_2 emissions since 2000. In 2020, we estimate that this sector was a net sink of about 3.9 Gt CO_2, equivalent to 10.9% of global fossil CO_2 emissions. The large variation between the estimates from different global models, as reflected in the IPCC Reports (net emissions of about 5 Gt CO_2/yr, can be largely explained by differences in the definition of what is meant by "anthropogenic" CO_2 removals. Global deforestation was responsible for net CO_2 emissions of 4.0 Gt CO_2 in 2020, equivalent to 11.2% of the total anthropogenic CO_2 emissions. In the EU27, LULUCF in 2020 was a net sink of about 0.3 Gt CO_2 emissions, approximately half the magnitude of the sink in the 1990s.

Main findings

Since the beginning of the 21st century, global fossil CO_2 emissions have grown steadily in comparison to the three previous decades, mainly due to the increase in fossil CO_2 emissions by China, India, and other emerging economies. The COVID-19 crisis slowed down the global economy in the first half of 2020, resulting in an interruption in the global growth in CO_2 emissions, followed by a rebound in 2021. Emission estimates for 2021 from EDGAR show that global anthropogenic fossil CO_2 emissions increased by 5.3% from 2020, at 37.86 Gt CO_2, just 0.36% below the 37.99 Gt CO_2 emissions registered in 2019.

Figure 1. Fossil CO_2 emissions of the major emitting economies, 1970-2021 (in Gt)



Source: JRC, 2022

(6) All calculations presented in the report do not consider that the year 2020 was a leap year. Evaluations including leap year analysis for 2020 are presented in Crippa et al., 2021.

In 2021, China, the United States, the EU27, India, Russia and Japan remained the world's largest CO_2 emitters. Together they account for 49.2% of global population, 62.4% of global Gross Domestic Product (World Bank, 2022), 66.4% of global fossil fuel consumption (BP, 2022[7]) and 67.8% of global fossil CO_2 emissions. All six increased their fossil CO_2 emissions in 2021 compared to 2020, with India and Russia having the largest increases in relative terms (10.5% and 8.1%, respectively). In 2021, the EU27's fossil CO_2 emissions were 27.3% lower than in 1990 at 2.77 Gt, representing 7.3% of global emissions and equivalent to 6.25 t CO_2/cap in per-capita terms.

Among other countries that count for more than 1% of the total global CO_2 emissions, only Australia reduced its fossil CO_2 emissions in 2021 relative to 2020, by 2.4% with an emission intensity of its economy that has decreased in the last decade with an annual average of 3.2%. Conversely, Brazil had the largest increase of 11.0% compared with 2020. Over the last decade the emission intensity of its economy has increased with an annual average of 0.1%.

Emissions from international aviation and shipping, which together represented 2.9% of global fossil CO_2 emissions in 2021, increased by 15.4% and 4.9 %, respectively, between 2020 and 2021. CO_2 emissions from international aviation decreased by almost half between 2019 and 2020, partially rebounding in 2021, when they account for 63% of the 2019 value. Concerning international shipping, the increase in CO_2 emissions was almost twice the 2020 reduction (in absolute terms) in CO_2 emissions, with emissions in 2021 being 2.2% higher than in 2019.

Table 1 shows CO_2 emissions and GDP PPP[8] changes in 2021 compared with 2020 for the whole world and the largest economies, including the EU27. Table 1 also illustrates the comparison of CO_2 intensity of economy (defined as CO_2 emissions per unit of GDP PPP) between 2021 and 2020, 2021 and 2019, 2020 and 2019. All the reported economies had increases in GDP PPP in 2021. It can be noticed that in the countries where the recovery pace of GDP PPP in 2021 was higher than the recovery of emissions, a decrease of the CO_2 intensity of economy[9] was observed and vice-versa.

Table 1. GDP PPP and CO_2 emissions intensity of economy (t CO_2/k USD) in 2021 and their compared to 2020[10], change of CO_2 emissions intensity for period 2020-2021, 2019-2020, and 2021-2019.

Country	GDP PPP 2021	GDP PPP change	Emissions change	Emissions/GDP PPP	Emissions/GDP PPP change		
		2021-2020	2021-2020	2021	2021-2020	2020-2019	2021-2019
World	131682	5.75%	5.3%	0.281	-0.4%	-2.3%	-2.8%
China	24861	8.11%	4.3%	0.501	-3.5%	-0.7%	-4.2%
United States	20932	5.67%	6.5%	0.227	0.7%	-7.8%	-7.1%
EU27	19251	5.38%	6.5%	0.141	1.1%	-5.2%	-4.2%
India	9301	8.95%	10.5%	0.285	1.5%	0.1%	1.5%
Japan	5124	1.62%	2.8%	0.212	1.2%	-3.3%	-2.1%
Russia	4080	4.82%	8.1%	0.476	3.1%	-1.8%	1.2%
Indonesia	3246	3.69%	1.9%	0.186	-1.7%	-6.7%	-8.4%
Brazil	3128	4.6%	11.0%	0.157	6.1%	-4.0%	1.9%
UK	3086	7.44%	2.2%	0.109	-2.1%	-4.4%	-6.4%
Turkey	2658	11.0%	8.0%	0.169	-2.7%	-1.9%	-4.5%
Mexico	2416	4.80%	4.3%	0.173	-0.5%	-9.3%	-9.7%
Germany	4400	2.89%	5.8%	0.151	2.9%	-6.0%	-3.3%
France	3050	7.0%	8.3%	0.099	1.2%	-6.3%	-5.1%
Italy	2477	6.56%	8.2%	0.129	1.6%	-2.9%	-1.4%

Source: JRC, 2022

It should be noted that year-to-year change in emission is estimated with a degree of accuracy of ±0.5% (Olivier et al., 2016), when based on robust statistical activity data (e.g., IEA energy balance data, or CO_2 emissions from

(7) Defined as the sum of all coal, liquid fossil fuel and natural gas primary energy consumption.

(8) GDP: Gross Domestic Product GDP, expressed in Purchasing Power Parity (PPP) (constant 2017 international $, USD). The difference with GDP nominal consists in the fact that GDP PPP is adjusted for the effects of inflation and is at current market prices. GDP PPP data are mainly sourced from World Bank (WB, 2022). For the following countries GDP data used in this report are from the IEAGDP (expressed as billion USD, 2015 prices and PPPs): CUB, ERI, GIB, PRK, SDN, SYR, VEN and YEM (IEA, 2022).

(9) In the column of CO_2 intensity (in terms of GDP PPP) the following colour code for circles is applied when comparing the 2021 and 2020 data: Red for "increase" and, Green (with check mark) for "decrease".

(10) Relative changes versus 2020 do not consider that 2020 was a leap year. This is applied in all inputs that refer to year 2020.

fossil fuel combustion for 1970-2019) and up ±2% for the data for 2020-2021 (based on a Fast-Track[11] approach), depending on regional, sectorial and fuel contributions. Emission magnitudes, on the other hand, have a range of accuracy that depends on the level of aggregation (for example global or country level, total emission, or specific sector, as detailed by Solazzo et al., 2021). Global total CO_2 emissions are estimated with a ±6.5% accuracy, while the range of accuracy for country level total CO_2 emissions is between ±4% and ±35% (95% confidence interval). These uncertainties should be considered when using these data for any kind of analysis by readers of this booklet and policy makers.

Related and future JRC work

The reliability, independence and completeness of the EDGAR estimates of CO_2 emissions make them a valuable quantitative information source in support of the complex international scientific and political discussions on climate mitigation. The EDGAR database compiles global greenhouse gas and air pollutant emissions, making use of international global statistics and a globally consistent methodology across countries, whereas national inventories represent the official emissions data reported by the EU Member States to the European Environmental Agency and the UNFCCC, which are used for tracking progress towards policy targets. However, for a number of countries or regions, official inventories provide a more robust and complete picture than the data available under EDGAR, given the need for an approach under EDGAR that can be applied to all countries. For the EU, for example, the national inventory data is more complete/ accurate and should be used as the basis for assessing EU climate progress.

The goals of the EDGAR database are to inform policy makers and the scientific community involved in the field of GHG emissions and budgets, complement and support the compilation of national inventories and the upcoming UNFCCC Global Stocktakes foreseen under the Paris Agreement, underpin analyses of the co-benefits of air pollution and GHG emission mitigation strategies, interpret satellite data and understand emission uncertainties.

EDGAR depends on a number of sources of international statistics for the underpinning data. Foremost among these is the International Energy Agency (IEA). IEA and JRC are committed to the future co-production of consistent fossil CO_2 emissions estimates, directly using IEA CO_2 emissions from fossil fuel combustion and JRC computations of CO_2 process emissions every year t, making use of the latest IEA statistics up to the year t-1. This booklet already incorporates IEA CO_2 emissions from fossil fuel combustion sources up to the year t-3 since when this report was produced the latest IEA statistics were not yet available and represents the first IEA-EDGAR CO_2 emission dataset. Next report editions will make use of the IEA statistics and emissions up to t-1, where revisions of the 2019 IEA CO_2 emissions estimates may be included.

In addition, the EDGAR framework and the JRC experience in compiling emissions inventories are shared and compared within the international emissions community of the Global Emissions InitiAtive (GEIA) where EDGAR is represented in the Scientific Steering Committee.

While this booklet summarises data for CO_2 emissions for 1970-2021, it should be noted that EDGAR is a comprehensive global emission database, including also non-CO_2 GHGs and air pollutant emissions for all countries. Both CO_2 and non-CO_2 GHG emissions presented in the yearly EDGAR booklets contribute to the Sixth Assessment Report (AR6) of the Intergovernmental Panel on Climate Change (IPCC) Working Group III on climate mitigation, as well as to the yearly UNEP Emission Gap Reports.

EDGAR also supports the IPCC Task Force on National Greenhouse Gas Inventories, compiling and refining guidelines for national GHG emission inventories and providing training support and knowledge databases to visualise emission hot spots. Finally, EDGAR is supporting the Arctic Monitoring and Assessment Programme (AMAP) of the Arctic Council by providing methane (CH_4), Persistent Organic Pollutant (POPs) and mercury (Hg) emission data. Thanks to their transparency and completeness, EDGAR data are also being used by an ever-increasing pool of researchers and policy makers.

(11) The IEA Greenhouse gas emissions from energy - 2021 Edition is used as source of CO_2 emissions from fossil fuel combustion for the 1990-2019 period. These emissions are extended until 2021 using a fuel dependent Fast-Track approach based on BP trends (BP, 2022). As a consequence, emissions for the last two years are characterized by higher uncertainty. Further details on the Fast Track methodology are provided in Annex 1.

Quick guide

The main sections of this booklet present an overview of the global and regional trends of fossil CO_2. Through a short and representative analysis, the role of top emitters (country/sector) in the evolution of fossil CO_2 emissions over a 51-year time framework is shown. Section 3 is devoted to preliminary estimation of LULUCF CO_2 emissions and removals, and fires. In the Annex 7 the CO_2 emissions and removals from LULUCF subsectors and fires for world macro-regions are shown.

For each country, a fact-sheet is provided with time-series of fossil CO_2 emissions from all anthropogenic activities except land use, land-use change, forestry, and large-scale biomass burning. The upper panel of the fact-sheet includes fossil CO_2 annual totals from 1990 until 2021 by sector, together with emissions per capita and per GDP PPP. An overview table with total emissions by country for the years 1990, 2005, 2020 and 2021 is also reported, together with per capita and per GDP emissions and population data. Finally, the bottom panel of each fact-sheet shows the changes in fossil CO_2 emissions by sector for the last available year (2021) compared to 1990, 2005 and 2020.

All data presented in this booklet are available for download and further analysis from the EDGAR website *https://edgar.jrc.ec.europa.eu/report_2022*.

1 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 the agreement to put forward their best efforts through "nationally determined contributions" (NDC). Acknowledging the need to ensure environmental integrity, a transparency framework was created and 5-yearly Global Stocktakes were planned from 2023 onwards.

The Emissions Database for Global Atmospheric Research (EDGAR) contributes to global climate action with an independent and quantitative view of global GHG emissions. EDGAR is a global database that provides estimates of country and sector-specific emissions of GHGs, including CO_2, and air pollutants implementing a transparent state-of-the-art methodology. As such, it supports efforts to provide consistent and transparent emission estimates that are global in scope and can inform climate action under the Paris Agreement, although the conception and early versions of EDGAR precede by far the Paris Agreement. EDGAR estimates of greenhouse gas emissions use global statistics and state-of-the-art scientific knowledge of emission mechanisms for a wide range of anthropogenic activities. The methodology used is transparent and in line with the most recent scientific literature and Intergovernmental Panel on Climate Change (IPCC) recommendations. As a change compared to the previous editions of the booklet, the IEA CO_2 emissions from fossil fuel combustion are used directly, together with JRC computed CO_2 process emissions for the period 1970-2019. For 2020 and 2021, a Fast-Track[12] (FT) methodology is applied. This edition of the booklet includes also annual macro-regional estimates of CO_2 emissions from Land Use, Land Use Change and Forestry (LULUCF) sector up to 2020, including fires from the Global Wildfire Information System (GWIS)[13], as part of the continuous improvement and expanding outreach of the EDGAR database.

A combination of reliability, independence, and completeness makes EDGAR a valuable quantitative tool to support the complex international scientific and political discussions on climate mitigation. EDGAR data can contribute to provide a comprehensive picture needed for the UNFCCC's Global Stocktake envisaged from 2023 onwards. Previous editions of this booklet have been presented to the annual Conference of Parties (COP) under UNFCCC.

Overview

This booklet presents the trends of global fossil CO_2 emissions from 1990 to 2021 together with emissions and removals from LULUCF, including fire emissions, up to 2020. For each country as well as for the world and EU27 emissions, a fact-sheet is created with time series of fossil CO_2 emissions, also in per capita and per GDP terms, including sector-specific trends. EDGAR applies a bottom-up methodology a summary of which is available in the Annex 1 of this booklet, together with data sources and references. Additional analyses can be found in the companion publication "Trends in Global CO_2 and Total Greenhouse Gas Emissions – 2022 Report" by Olivier et al., (2022).

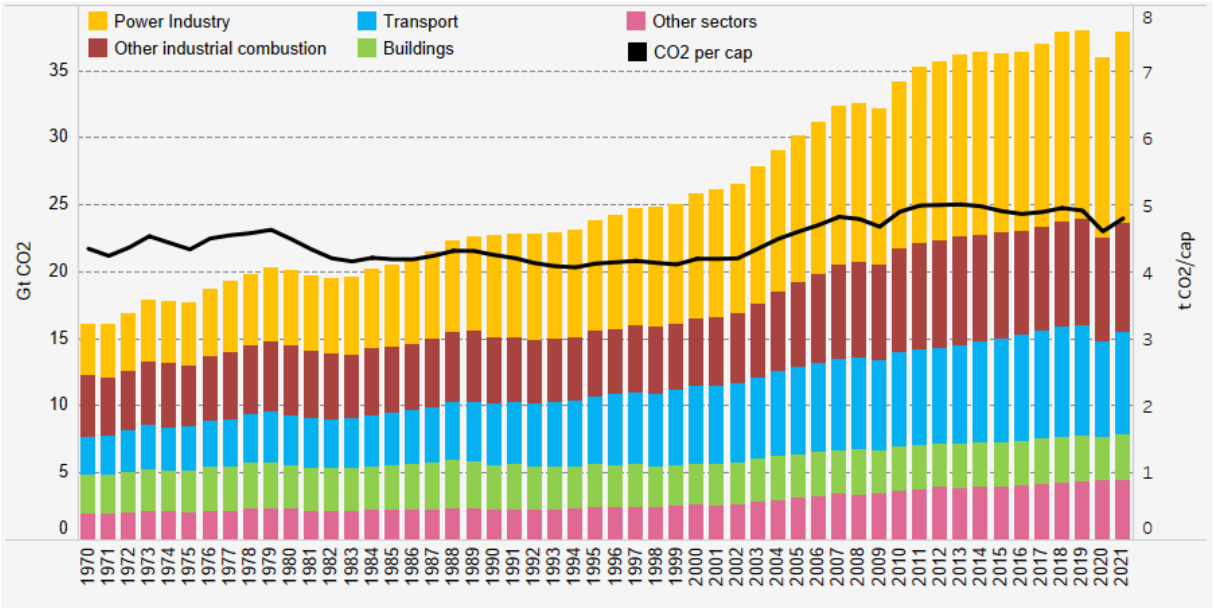
(12) The Fast-Track methodology is based on indicators of volume trends for estimating the emissions in the last years (four years at maximum) of the period under analysis.

(13) https://gwis.jrc.ec.europa.eu/

2 Global fossil CO_2 emissions from 1970 until 2021

The evolution of global fossil CO_2 emissions over the period 1970-2021 as estimated by IEA-EDGAR CO_2 is illustrated in Figure 2. Emission trends for the main activity sectors (namely power industry[14], other industrial combustion[15], transport[16], buildings[17], and other sectors[18]) are also shown. In 2020 global fossil CO_2 emissions decreased by 5.3% in comparison to 2019. However, in 2021, global emissions bounced back almost to the level of 2019 (the year before the COVID pandemic), reaching 37.9 Gt (0.36% lower than in 2019). After the large drop observed in 2020 as a result of the pandemic, global fossil CO_2 emissions from the transport sector increased in 2021 to 7.6 Gt (although they are still 7% lower than in 2019, before COVID). Global per capita fossil CO_2 emissions in 2021 returned to the same level they had in 2008 (4.81 t CO_2/cap) with an overall increase by about 13% between 1990 and 2021.

Figure 2. Global fossil CO_2 emissions[19] by sector (left axis) and per capita (right axis), 1970-2021 (in Gt)



Source: JRC, 2022

Figure 3 shows the total annual fossil CO_2 emissions of the EU27 and other five top emitting countries in the world (China, the United States, India, Russia and Japan) from 1970 to 2021 while the corresponding per capita CO_2 emissions (in t CO_2/cap) and the world average are represented in Figure 4. Figure 5 depicts CO_2 emissions per unit of GDP PPP (in t CO_2/k USD) for top emitting economies and for the world average. Figures 3 to 5 include uncertainty bands showing the 95% confidence interval of the emission estimates[20].

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(14) Power industry includes power and heat generation plants (public and auto-producers).

(15) Other industrial combustion includes combustion for industrial manufacturing and fuel production.

(16) Transport includes road transport, rail transport, domestic aviation, domestic shipping and inland waterway transport for each country. International shipping and aviation also belong to this sector and are presented separately in the country factsheets due to their International nature.

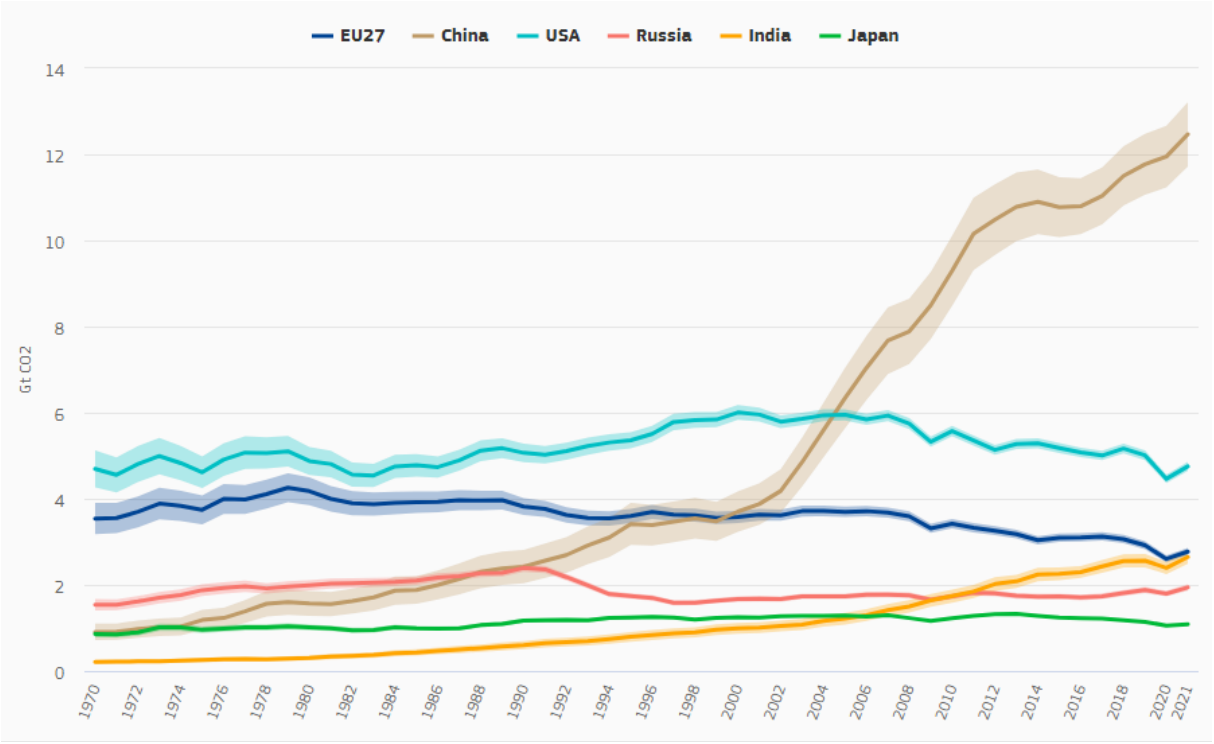
(17) Buildings includes small scale non-industrial stationary combustion

(18) Other sectors include industrial process emissions (non-metallic minerals, non-ferrous metals, solvents and other product use, chemicals), agricultural soils (urea fertilisation and lime application) and waste.

(19) Fossil CO_2 emissions include sources from fossil fuel use, industrial processes, and product use (combustion, flaring, cement, steel, chemicals, and urea).

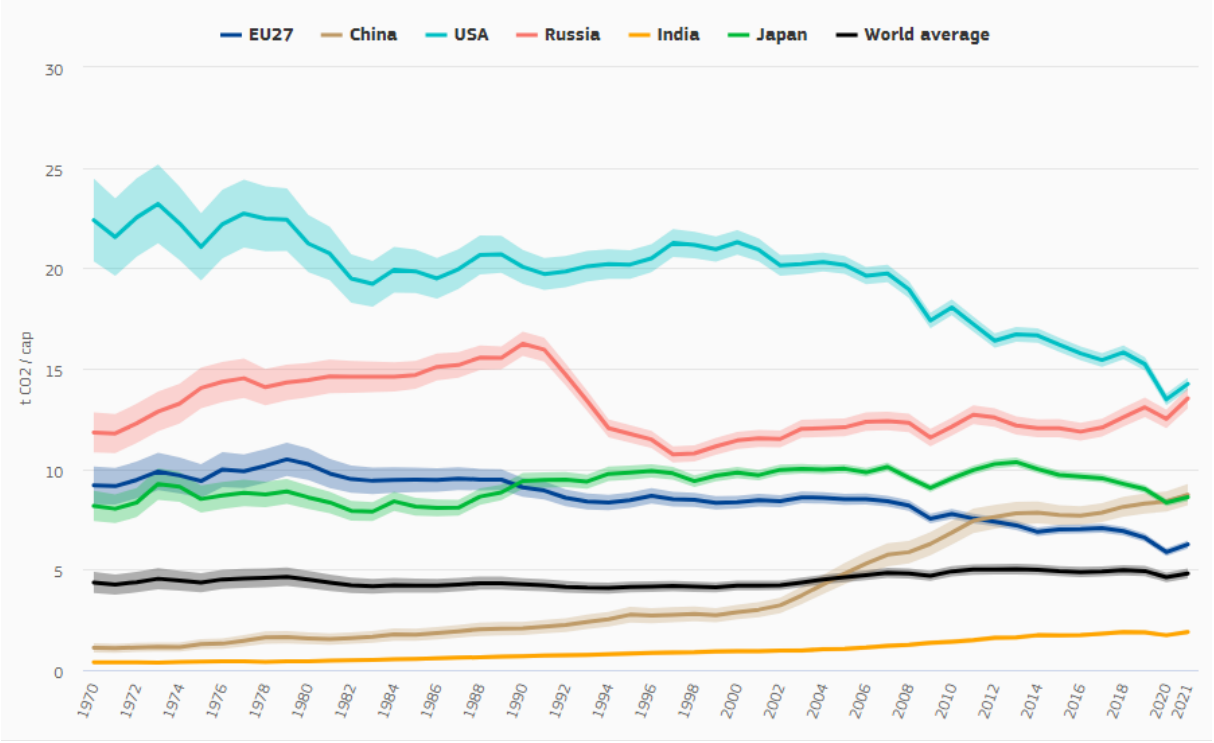
(20) The estimated uncertainty considers the accuracy of both activity data and emission factor statistics per type of fuel. The tiered model of IPCC (IPCC, 2006a) is used to estimate the uncertainty, assigning lower/higher uncertainty to more/least developed countries (Solazzo et al., 2021). The overall accuracy depends on the degree of aggregation (global or country level, total or sector-specific, etc.). To calculate the historic uncertainty, it is assumed that the activity data statistics were less accurate in past decades. An additional uncertainty of 0.1% to 0.4% is added due to the Fast-Track approach, varying with country and year. Overall, we estimate that emission changes are accurate to within ±0.5% (Olivier et al., 2016) for 1970- 2019 increasing to up to ±2% for the Fast-Track period 2020-2021, depending on regional, sectorial and fuel contributions.

Figure 3. CO_2 emissions in top emitting countries and estimated uncertainty (coloured bands), 1970-2021 (in Gt)



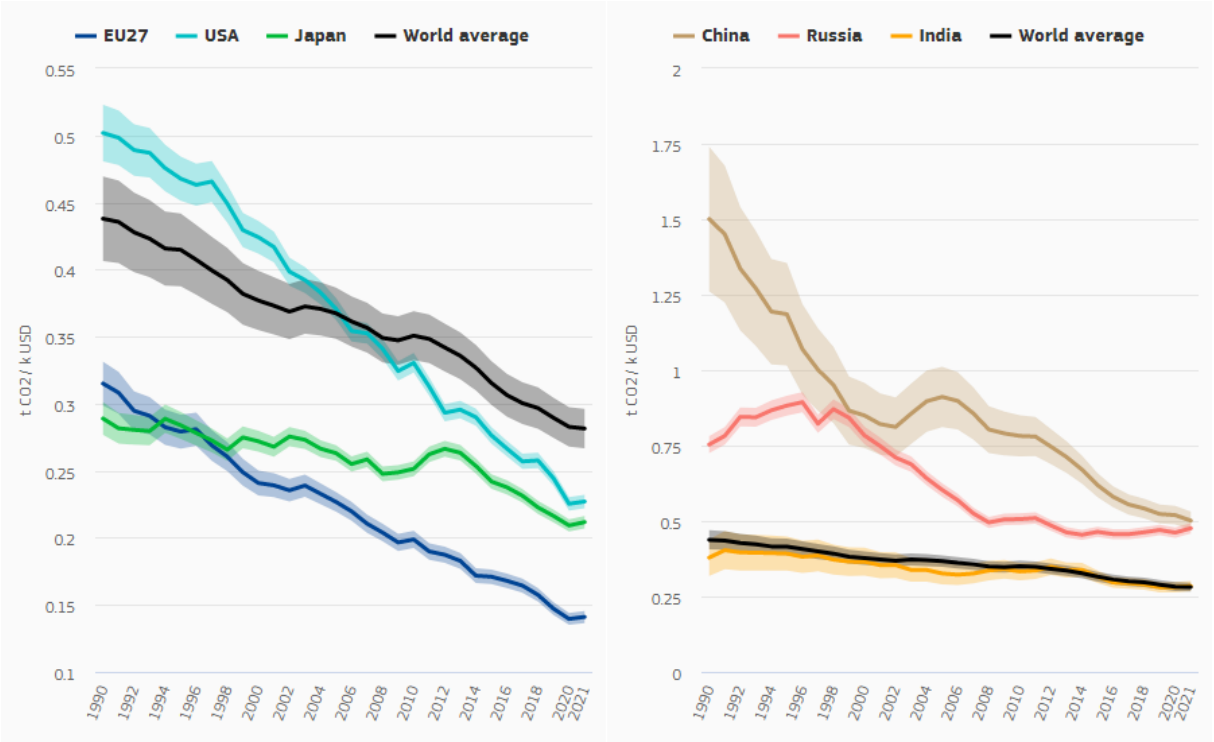
Source: JRC, 2022

Figure 4. CO_2 emissions per capita in top emitting countries and estimated uncertainty (coloured bands), 1970-2021 (t CO_2/cap)



Source: JRC, 2022

Figure 5. CO_2 emissions per unit of GDP PPP in top emitting countries and estimated uncertainty (coloured bands), 1990-2021 (t CO_2/k USD)[21]



Source: JRC, 2022

Global fossil CO_2 emissions in 2021 almost returned to 2019 levels, reaching 37.9 Gt (only 0.36% below the 2019 value). Compared with the pandemic year 2020, global CO_2 emissions in 2021 are 5.3% higher (see Table 2). Except for Australia, which continued the decreasing trend in 2021 (-2.4%), all other major emitters increased their fossil CO_2 emissions between 2020 and 2021. Among these, China and Iran, the only two countries with increased emissions in 2020 compared to 2019, also increased emissions in 2021 (by +4.3% and +2.9%, respectively). In 2021, Brazil (+11%) and India (+10.5%) showed the highest relative increase in fossil CO_2 emissions compared to 2020. Overall, seven countries (China, India, Russia, Iran, Saudi Arabia, Brazil, and Turkey) have higher CO_2 emissions in 2021 than in 2019 (before the pandemic), with Turkey showing the highest increase (+7.9%). By comparison, the EU27 and eight other countries (United States, Japan, South Korea, Indonesia, Canada, South Africa, Mexico, and Australia) emitted less in 2021 than in 2019, with Mexico showing the largest decrease (-13%). Global CO_2 per capita emissions have increased by about 13% from 4.26 t CO_2/cap to 4.81 t CO_2/cap between 1990 and 2021.

As shown in Table 2, in the **EU27,** total fossil CO_2 emissions increased by 6.5% (0.17 Gt) in 2021 compared with 2020. However, this increase is just half of the reduction that took place between 2019 and 2020 (-10.8%), consequently the EU27 emissions fell by 5% between 2021 and 2019. Almost all EU countries increased their fossil CO_2 emissions in 2021 in comparison to 2020; the largest increases were found in Bulgaria (+15.5%), Slovakia (+13.2%), Spain (+9.2%), Poland (+8.4%) and France (+8.3%). Nevertheless, only four member states emitted more CO_2 in 2021 than in 2019 (before the pandemic): Slovakia (+7.6%), Poland (+2.8%), Malta (+1.6%) and Bulgaria (+1.3%). In 2021, Germany remained the largest contributor to the EU27's total fossil CO_2 emissions (with a share of 24%), followed by Poland (11.6%), Italy (11.5%), France (10.9%) and Spain (8.4%).

In the EU27, all sectors increased their fossil CO_2 emissions in 2021 compared to 2020. The Power Industry and Other Industrial Combustion sectors showed the largest relative increases (+9.1% and +6.7%, respectively), whereas the transport sector recovered less than half of the decrease in annual emissions that it experienced in 2020. In per capita terms, the EU27's fossil CO_2 emissions correspond to 6.25 t CO_2 per person in 2021 (Figure 4),

([21]) On the left hand side industrialised countries are represented while the emerging economies are on the right hand side.

which is 6.5% higher than in 2020 (5.87 t CO_2/cap). CO_2 emissions per unit of GDP PPP amounted to 0.141 t CO_2/k USD in 2021, i.e., 1.1% higher than in 2020. From a longer-term perspective, fossil CO_2 emissions in the EU27[22] have followed a decreasing trend over the past two decades, and in 2021 they were 2.78 Gt, i.e., 27.4% below the 1990 level (see Figure 3). The EU27's share of global emissions has also decreased over the last decades (from 16.8% in 1990 to 8.5% in 2015 and 7.3% in 2021).

Table 2. CO_2 emission changes[23] in the periods 2019-2020, 2020-2021, 2019-2021 and the CAGR[24] in 1990-2021 (%)

	Share in global	Change 2019-2020	Change 2020-2021	Change 2019-2021	CAGR 1990-2021
China	32.9%	1.5%	4.3%	5.9%	5.4%
United States	12.6%	-10.9%	6.5%	-5.2%	-0.2%
EU27	7.3%	-10.8%	6.5%	-5.0%	-1.0%
India	7.0%	-6.5%	10.5%	3.3%	4.9%
Russia	5.1%	-4.5%	8.1%	3.2%	-0.7%
Japan	2.9%	-7.6%	2.8%	-5.0%	-0.2%
Iran	1.9%	3.1%	2.9%	6.1%	4.1%
South Korea	1.7%	-6.9%	3.5%	-3.6%	2.7%
Indonesia	1.6%	-8.7%	1.9%	-6.9%	4.3%
Saudi Arabia	1.5%	-0.4%	2.0%	1.6%	4.0%
Canada	1.5%	-9.9%	2.8%	-7.4%	0.8%
Brazil	1.3%	-7.7%	11.0%	2.4%	2.5%
South Africa	1.2%	-9.1%	1.8%	-7.4%	1.1%
Turkey	1.2%	-0.1%	8.0%	7.9%	3.6%
Mexico	1.1%	-16.7%	4.3%	-13.1%	1.2%
Australia	1.0%	-7.4%	-2.4%	-9.6%	0.9%
Global		-5.3%	5.3%	-0.4%	1.7%
International aviation	1.0%	-45.3%	15.4%	-36.8%	1.3%
International shipping	1.8%	-2.6%	4.9%	2.2%	2.1%

Source: JRC 2022

China's fossil CO_2 emissions increased by 4.3% in 2021 compared to 2020, reaching 12.5 Gt. Added to the 1.5% increase observed in 2020, China's annual emissions were 5.9% higher in 2021 than in 2019 (before the pandemic). China's emissions in 2021 were more than five times larger than in 1990 and accounted for 32.9% of global emissions (in 1990, this share was 10.7%). This increase in emissions in 2021 is mainly due to increases in oil and gas consumption (by 6.5% and 12.5%, respectively) and a 4.6% increase in coal consumption, which continued to be the largest fraction of fossil fuel consumption (54.7%). In 2021, oil and gas consumption represented 19.4% and 8.6% of China's fossil fuel consumption, respectively. In 2021, the sectors contributing the most to the fossil CO_2 emissions were power generation (44%) and other industrial combustion (27%). In 2021, the emissions from these sectors increased by 4.7% and 5.6%, respectively, compared to 2020. The per capita CO_2 emissions in 2021 (8.73 t CO_2/cap) were 4.0% higher than in 2020 (8.39 t CO_2/cap), while CO_2 emissions per GDP PPP amounted to 0.501 t CO_2/k USD, which is the highest CO_2 intensity of top emitting economies (see Table 1).

Emissions of fossil CO_2 in the **United States** increased in 2021 by 6.5% in comparison with 2020 (see Table 2), reaching about 4.8 Gt (see Figure 3). If this is combined with the 10.9% decrease that took place between 2019 and 2020, this explains why the fossil CO_2 emissions of the United States in 2021 were 5.2% lower than in 2019. Overall, emissions were 6.2% lower in 2021 than in 1990. Emissions mostly fell between 2005 and 2020 (see Figure 3), primarily due to a decrease in coal consumption (-5.2% per year, on average) (BP, 2022). In comparison, the increase in CO_2 emissions in 2021 was driven by substantial increases in coal (+14.9%) and oil (+8.6%) consumption. The shares of oil and coal in the total fuel consumption of the United States in 2021 were 37.0% and 9.9%, respectively. In 2021, after the decreases of 5.2% in 2019 and 7.8% in 2020, emissions per unit of GDP PPP were 0.227 t CO_2/k USD, i.e., 0.7% higher than in 2020 (see Table 1). Emissions per capita have increased by

(22) As mentioned in the executive summary, EDGAR emission estimates aim to contribute to the upcoming UNFCCC Global Stocktakes, complementing officially reported national emission inventories which are also based on IPCC reporting guidelines and reviewed by UNFCCC. The EDGAR data are different from those used to track the accomplishment of EU reduction policies and officially submitted to UNFCCC.

(23) In Table 2 countries are ranked by their CO_2 emission share in the global total (countries with share more than 1% are shown).

(24) Compound annual growth rate (CAGR) calculates annual changes over a specified number of years as if this change had happened steadily each year over that time period.

5.7% in 2021 compared to 2020 and they reached 14.2 t CO_2/cap (see Figure 4), the largest value among the top 6 emitting economies.

India's fossil CO_2 emissions increased by 10.5% (or 0.25 Gt) in 2021 compared to 2020, reaching a level 3.3% higher than the pre-pandemic 2019 level (see Table 2). In the last three decades, India's CO_2 emissions have increased almost continuously, and they were 3.4% higher in 2021 than in 1990 (see Figure 1). With a share of approximately 7% of total global CO_2 emissions in 2021, India is the fourth largest emitting economy after China, the United States and the EU27. However, India's per capita emissions (1.9 t CO_2/cap in 2021) are three/four times lower than those of the EU27 and China, seven times lower than those of the United States, and below the average per capita emissions of many developing countries (e.g. Brazil, Morocco, Thailand, etc.). India's emissions per unit of GDP PPP were 0.285 t CO_2/k USD in 2021, i.e., 1.5% higher than in 2020. The largest contribution to emissions comes from the energy sector, which increased its emissions by 15% in 2021 compared to 2020, and which is mostly supplied by coal (which represents 63.3% of total fossil fuel consumption in 2021, BP, 2022). Annual coal consumption, mostly domestically produced, increased by 15.4 %, whereas annual oil and gas consumption increased by 3.6% and 2.8% respectively according to BP (2022).

In 2021, **Russia**'s fossil CO_2 emissions increased by 8.1% compared to 2020, and by 3.2% compared to the pre-pandemic level of 2019 (see Table 2). Compared to 1990, in 2021 Russia's CO_2 emissions are 18.9% lower (see Figure 3). With a 5.1% share of global CO_2 emissions in 2021, Russia is the fifth largest emitter after China, the United States, EU27 and India. Russia's per capita emissions (13.5 t CO_2/cap in 2021) are higher than those of China (by 55%), EU27 (by 116%) and Japan (by 57%), but 5.0% lower than those of the United States (see Figure 4). Russia's emissions per unit of GDP PPP were 0.476 t CO_2/k USD in 2021, i.e., 3.1% higher than in 2020 (see Table 1).

In 2021, **Japan**'s, fossil CO_2 emissions increased by 2.8% compared to 2020 and reached 1.08 Gt. However, they were 5.0% lower than in 2019, thus continuing the decreasing trend observed in the last years (see Figure 1). In 2021, Japan's emissions were 7.4% lower than in 1990 and they represented 2.9% of global CO_2 emissions (see Table 2). Japan's per capita emissions in 2021 (8.6 t CO_2/cap) were similar to those of the Netherlands (8.5 t CO_2/cap) and slightly higher than those of Germany (8.1 t CO_2/cap). The country's emissions per unit of GDP PPP were 212 kg CO_2/k USD in 2021 (see Table 1), i.e., 1.1% higher than in 2020.

3 Global CO_2 from LULUCF from 1990 until 2020

This edition of the EDGAR booklet includes annual estimates of CO_2 emissions and removals from Land Use, Land-Use Change and Forestry (LULUCF), identified as one of the key sectors for tackling climate change and for compliance with emission reduction strategies (IPCC 2019a). The estimate of emissions from LULUCF helps to provide a more complete overview of global CO_2 fluxes. However, LULUCF is an extremely complex sector to account for in terms of carbon emissions and removals, due to the inherent complexity of terrestrial ecosystems and the difficulty of disentangling anthropogenic and natural fluxes.

In this version of the EDGAR-LULUCF dataset, only the living biomass pools (i.e., above- and below-ground biomass) of the "Forest Land" category have been estimated independently, while the other LULUCF fluxes (i.e., non-biomass forest pools and non-forest categories) were taken from a compilation of the official country reporting to the UNFCCC (Grassi et al., 2022a). Furthermore, a novelty of this booklet is the inclusion of CO_2 emissions from biomass burning estimated within the Global Wildfire Information System burned area products (GWIS) (Artés et al., 2019).

We focus on Forest Land (i.e. managed forest existing for at least 20 years and land converted to Forest Land within the previous 20 years) because this category is very important in terms of absolute CO_2 fluxes, but its reporting is often incomplete (especially in developing countries) and the attribution of anthropogenic vs. natural fluxes is very uncertain. Furthermore, within this category, we focus on living biomass because it is by far the most important carbon pool (typically representing >80% of the net CO_2 flux, based on data from Annex I countries).

The estimates for forest land presented here combine satellite-derived data to track land use with specific default IPCC factors for forest growth and country statistics for forest harvest (see Annex 2 for details). Since the IPCC factors derived from the literature are often very uncertain and show a high variability across different continents (also for the same tree species or forest types), we used additional literature and expert judgement to obtain a more homogeneous and consistent set of values. It should be noted that our estimates are based on the IPCC Tier 1 approach, i.e. the most basic approach to estimate GHG fluxes. Our estimates can provide useful information on areas for which no or little official estimations are available (e.g. several African countries), but are expressly not aimed at challenging nor verifying the estimates produced by individual countries when locally available data and methods (Tier 2 or Tier 3) are used.

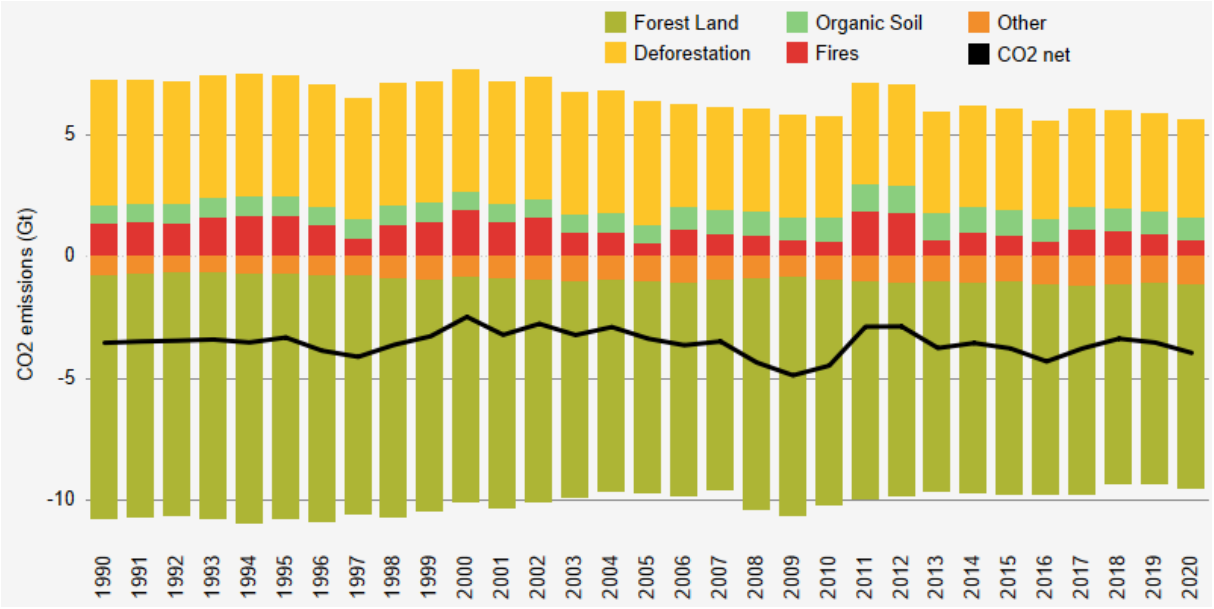
In terms of attribution of anthropogenic fluxes, the approach used here is, in principle, comparable with what most countries include in their GHG reporting prepared following the IPCC Guidelines for National GHG inventories (IPCC 2006a, IPCC 2019b), but differs from the global models used in the IPCC reports (e.g., IPCC 2022a). Global models typically consider as managed forest only those areas subject to intense harvest, whereas countries may define managed forest more broadly within their GHG Inventories and thereby include a much larger area. In addition, countries generally include in their GHG inventories most of the natural response of land to human-induced environmental changes (e.g., CO_2 fertilisation, etc.), while the global model approach treats this response as part of the non-anthropogenic flux (Grassi et al. 2021, IPCC 2019a). Our approach is closer to country GHG inventories because we filter the total satellite-derived forest area with non-intact forest area, which is a reasonable proxy for countries' managed forests (Grassi et al. 2021), and because the IPCC growth factors are expected to incorporate most of the recent human-induced environmental changes.

For the other LULUCF fluxes, we use a compilation of countries' data officially reported to the UNFCCC (Grassi et al. 2022a), including GHG Inventories for Annex I parties (complete time series 1990-2020) and other GHG reporting such as National Communications, Biennial Update Reports, Nationally Determined Contributions and REDD+ submissions for Non-Annex I parties (often incomplete time series, gap-filled when necessary). In this booklet, we aggregated the available data into categories aimed to be a minimum common denominator between the detailed reporting of Annex I countries, the often coarse reporting from non-Annex I countries, and the outputs by the global models (Grassi et al. 2022b, Friedlingstein et al. 2022).

These categories are 'deforestation', 'organic soil', and 'other'. Deforestation incudes CO_2 emissions reported under 'Forest conversion to other land use categories'. Organic soils includes data from all land uses, including peat fires (e.g., in Indonesia). The category 'other' includes all the fluxes not covered in the previous categories, e.g. from non-biomass forest pools and from other land use categories such as cropland, grassland, wetlands, settlements, and Other Land. For the first time, we include in EDGAR-LULUCF part of the emissions associated with wild fires from the GWIS database (see details in Annex 3). Since emissions from forest fires in tropical regions can be assumed to be mostly associated to deforestation practices (e.g. Van der Werf et al. 2017), to

avoid to double counting we excluded these emissions from the EDGAR dataset. Forest fire emissions in non-tropical regions were included in our estimates of net CO_2 fluxes in forest land. The CO_2 emissions and removals from LULUCF are here below presented for the world (see Figure 6) and for the EU27 (see Figure 7) from 1990 to 2020[25].

Figure 6. Global CO_2 emissions and removals from LULUCF sector (in Gt), 1990-2020



Source: JRC, 2022

Global: The LULUCF sector was estimated to remove about 3.9 Gt CO_2 in 2020, approximately the same level of the previous decade and 12% less than in 2010. This net removal is equivalent to approximately 10% of global anthropogenic fossil CO_2 emissions.

Based on our estimates, managed forests (living biomass, excluding deforestation) are by far the largest CO_2 removal category, with an estimated 8.4 Gt in 2020, equivalent to about 22% of global anthropogenic CO_2 (excluding LULUCF) emitted in the same period. This independently estimated net removal is larger than what countries include in their GHG reports (about 6.3 Gt CO_2, Grassi et al. 2022a); the difference may be partly explained by incomplete country reports and by different methodologies and assumptions between country reports and our approach. In particular, we estimate a larger C gain in the boreal area (e.g., in Russian Federation and Canada), mostly due to the IPCC default factors suggesting a greater tree growth than the country GHG reports, and larger C losses in some tropical areas, mostly due to the high values of harvest reported by some countries to FAOSTAT (e.g., India, Ethiopia). In most cases, it can be assumed that the local data and approaches used in country GHG reports are better suited for GHG reporting than the global-scale implementation of a default IPCC Tier 1 approach, as done in our study.

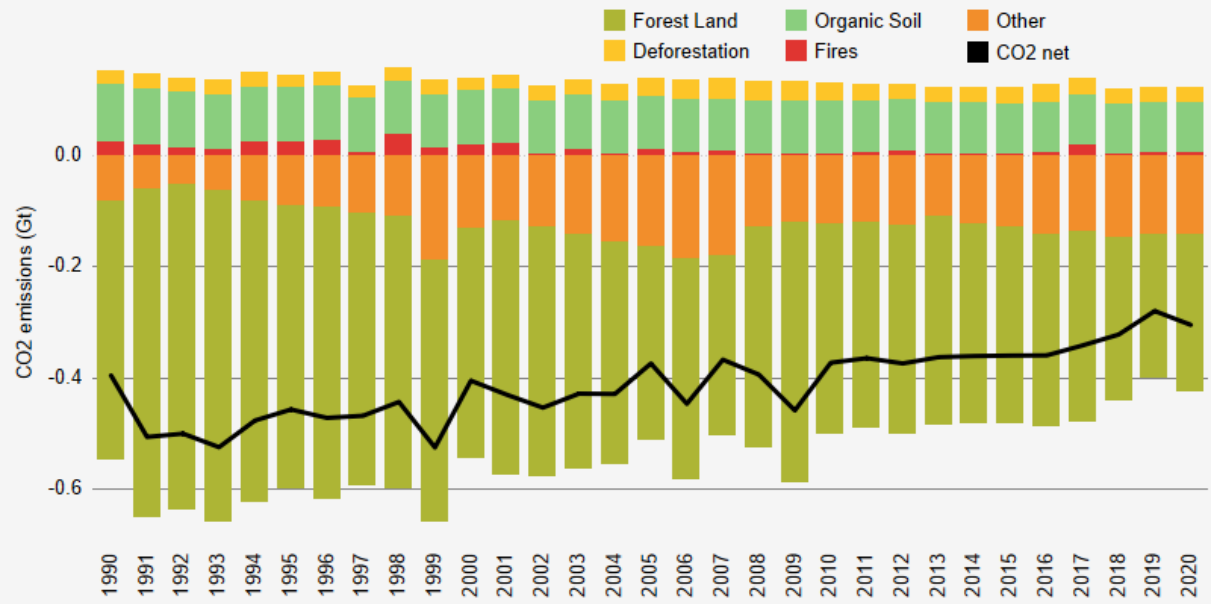
In 2020 based on GWIS data, global wildfires contributed to LULUCF emissions for 0.66 Gt CO_2. For the same year, based on country GHG reports, global deforestation was responsible for net CO_2 emissions of 4.0 Gt CO_2, equivalent to 10.6% of the total anthropogenic CO_2 emissions. Among the other components, in 2020 organic soils are a rather stable emission of about 0.9 Gt CO_2. In 2021, global wildfires contribute to LULUCF emissions for 0.7 Gt CO_2.The large difference between the net LULUCF estimates in this booklet and those from the IPCC reports (which report net anthropogenic land-use emissions of about 5 to 6 Gt CO_2/yr, IPCC 2022) can be to a large extent explained by different approaches in assessing the "anthropogenic" CO_2 removals, i.e. this booklet (consistently with most country GHG reports) consider anthropogenic part of the CO_2 removals that global models (as reflected in the IPCC reports) consider natural. Once the difference in defining the 'anthropogenic'

(25) LULUCF 2021 data are the same as the 2020 values due to lack of satellite-based information and international statistics.

sink between countries and models are understood, LULUCF estimates can be largely reconciled and global and regional level (Grassi et al. 2021, Grassi 2022b).

Furthermore, considering that the IPCC 2022 estimates a removal of about 6 Gt CO_2/yr for the "net land-atmosphere flux from all lands" (i.e., managed and unmanaged), and that about 70% of land is subject to some degree of management (IPCC 2019a), the net removal of about 3.6 Gt CO_2/yr estimated in this booklet from managed land overall appears plausible.

Figure 7. EU27 CO_2 emissions and removals from LULUCF sector (in Gt), 1990-2020



Source: JRC 2022

EU27: The LULUCF sector produced a net removal of CO_2 emissions of about 0.3 Gt CO_2 in 2020, approximately 40% less than 1990s levels. This is equivalent to approximately 11% of EU27 fossil anthropogenic CO_2 emissions. Living biomass in managed forests is by far the most important C sink, with an estimated net 0.30 Gt CO_2 in 2020, equivalent to over 11% of fossil CO_2 emitted in EU27 in the same period. The other components (non-biomass forest pools, deforestation, organic soils and other, based on country GHG reports) produced a net emission of 0.13 Gt CO_2 in 2020. Based on our estimates, wild fire emissions represent a minor component for EU27 in 2020, with a contribution of 0.004 Gt CO_2, although this figure obviously vary greatly according to the fire season severity (0.018 Gt CO_2 were emitted in 2017).

4 Conclusions

The Emissions Database for Global Atmospheric Research (EDGAR) is a comprehensive inventory of anthropogenic emission time series from 1970 until 2021 for fossil CO_2. It consists of the IEA-EDGAR CO_2 data set of CO_2 emissions from fossil fuel combustion (1990-2019 period), extended up to 2021 with a Fast-Track approach. These emissions are complemented with CO_2 emissions from processes from the EDGAR database. An IPCC-based bottom-up emission calculation methodology is applied to all countries, demonstrating that consistent inventories can be developed for all countries within the limitations of the quality of the available statistical data.

EDGAR complements the national inventories and reporting prepared by Parties to the Paris Agreement, in particular by producing a timely emissions estimate[26] that is independent, and based on consistent application information and methodological tools across countries. In particular, the time series of EDGAR can provide collective emissions trend information for all countries that will be needed for the UNFCCC's Global Stocktake in 2023. EDGAR provides an important input to the analysis of global fossil CO_2 emission trends with its 51-year time series.

This release of EDGAR includes estimates of CO_2 emissions from LULUCF, resulting in a global removal of approximately 3.9 Gt in 2020. In the EU27, LULUCF was a removal of about 0.3 Gt CO_2 in 2020, reducing significantly its magnitude compared to 1990.

IEA-EDGAR joint report[27] shows that global fossil CO_2 emissions from anthropogenic activities, have increased by nearly 2% annually on average since 1990, and they were around 66.6% higher in 2021 than in 1990. Global fossil CO_2 emissions remained more or less constant between 2014 and 2016, reaching a peak in 2019 just below 38 Gt. They fell by 5.3% in 2020 (mainly as a consequence of the COVID-19 pandemic and its associated impacts), and then they recovered in 2021, reaching nearly the same level as in 2019.

During 2021, major economies contributing 67.8% to the global emissions (China, USA, EU27, India, Russia, and Japan), showed increases in their CO_2 emissions compared to 2020. These increases reflect the recovery of these economies. However, only in China the economic recovery pace was higher than the increase in CO_2 emissions. In all other major economies, CO_2 emissions increased more than the GDP PPP, resulting in an increased CO_2 intensity.

Overall, the 2020 CO_2 emission decrease has been compensated by the rebound of the world economy in 2021 and showed its temporary nature. Even more worrying, several economies have shown in 2021 an interruption in the decreasing trend of their carbon intensity and the current crisis situation in several developed countries is also a possible hurdle on the pathway towards a low carbon society. In order to continuously monitoring progresses and drawbacks, EDGAR dataset will play a major role among the analysis tools available to the scientific community and the policy makers, thanks to its very detailed granularity in terms of sectors, fuels and geographical entities.

(26) In the official National Inventory Reports, the latest reporting year can be up to two years prior to the submission year.
(27) *https://edgar.jrc.ec.europa.eu/report_2022*

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List of abbreviations and definitions

BP - BP plc (oil and gas company; formerly British Petroleum Company plc)
Cap - capita (population)
BGS - British Geological Society
CCA - China Cement Association
CCRI - China Cement Research Institute
CO_2 - Carbon dioxide
DG CLIMA - Directorate-General for Climate Action, European Commission
EDGAR - Emissions Database for Global Atmospheric Research
EIA - Energy Information Administration (of the U.S.)
EU27 - European Union with 27 Member States
FL – Forest Land
FLrFL - Forest Land remaining Forest Land category
GCSA - Global Cement and Concrete Association
GDP - Gross Domestic Product
GGFR - Global Gas Flaring Reduction Partnership of the World Bank
GHG - Greenhouse Gas
Gt - Gigatonnes (1000 megatonnes = 10^9 metric tonnes)
IEA - International Energy Agency of the OECD (Paris)
IFA - International Fertiliser Association
IMF - International Monetary Fund
IPCC - Intergovernmental Panel on Climate Change
JRC - Joint Research Centre of the European Commission
k USD - 1000 US Dollar GDP
LULUCF - Land use, land-use change and forestry
Mt - Megatonnes (10^6 tonnes or 1 tera gramme) mass of a given (greenhouse gas) substance
NBSC - National Bureau of Statistics of China
NOAA U.S. - National Oceanic and Atmospheric Administration
n/a - Not Available
OECD - Organisation for Economic Co-operation and Development
PBL - Netherlands Environmental Assessment Agency
PPP - Purchasing Power Parity
t- tonne (1 t or 1 mega gramme) mass of a given (greenhouse gas) substance
UNFCCC - United Nations Framework Convention on Climate Change
UNPD - United Nations Population Division
USD - U.S. Dollar
USGS - United States Geological Survey
Worldsteel - Word Steel Association
yr – Year

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Annexes

Annex 1. Bottom-up methodology for the CO_2 emissions compilation

The basis for the fossil CO_2 emission time series presented in this report is the IEA-EDGAR CO_2 dataset which covers the period 1970-2019 (IEA, 2021b). In EDGAR, the 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 system for each sector.

Regarding fossil CO_2 emissions, all anthropogenic activities leading to climate relevant emissions are included (see Table 3), except biomass/biofuel combustion (short-cycle carbon) in the power, industry, buildings, transport, and agricultural sectors. Large-scale biomass burning and land use, land-use change and forestry (LULUCF) are now part of the EDGAR estimations for CO2 emissions. EDGAR makes use of the IPCC sectorial classification, and a consistent bottom-up emission calculation methodology is applied to all countries, so that emissions of different countries can be compared, considering their respective levels of detail, uncertainties or data limitations. In particular, for developing countries with less robust and systematic statistical data infrastructures and limited experience in reporting their fossil fuel emissions inventories, EDGAR can provide information and support them in complying with their inventory preparation.

Table 3. Main activities included in EDGAR emissions estimation

Fossil CO_2		**CO_2 LULUCF**	
POWER INDUSTRY:	power and heat generation plants (public and auto-producers)	**FOREST LAND:**	forest land remaining forest land and other lands converted to forest
OTHER INDUSTRIAL COMBUSTION:	combustion for industrial manufacturing and fuel production	**DEFORESTATION:**	deforestation including tropical fires
BUILDINGS:	small scale non-industrial stationary combustion	**ORGANIC SOIL:**	drainage of organic soils
TRANSPORT:	road, non-road, domestic and international aviation, inland waterways and international shipping	**OTHER:**	Non biomass forest pools, cropland, grassland, settlements, wetlands and other land
OTHER SECTORS:	industrial processes, agriculture soils (urea fertilization and lime) and waste	**FIRES:**	forest fires (boreal, temperate), peat fires, shrubland fires, non-tropical savannah fires

Source: JRC, 2022

IEA-EDGAR CO_2 (v1[28]) builds up on the IEA CO_2 emissions from fossil fuel combustion (IEA, 2021b) providing estimates from 1970 to 2019 by country and sector[29]. IEA-EDGAR CO_2 (v1) emissions are then extended with a Fast Track approach until 2021 using the BP statistics for the years 2020 and 2021 assuming the same sectoral breakdown as in the last year of the IEA energy balance statistics.

([28]) https://edgar.jrc.ec.europa.eu/report_2022

([29]) IEA-EDGAR CO_2 emissions from fossil fuel combustion are those reported by IEA from 1990 to 2019. Emissions from 1970 to 1989 are still based on IEA data but complemented with additional statistics gathered over the years and included in previous releases of the EDGAR database. Furthermore, it includes non-energy use emissions computed from the IEA energy balances (2021a) which are however not reported in the IEA CO_2 emissions (2021b). The 2019 emissions provided by IEA in the 2021 Edition (IEA, 2021b) may differ from the latest IEA estimates including CO_2 emissions up to 2020 and some provisional estimates for 2021 (IEA, 2022a, IEA, 2022b).

As a consequence of this approach, the emissions for the Fast Track years (2020-2021) reported in this booklet will be updated in subsequent editions of this booklet, using future releases of the IEA energy balance statistics up to most recent years.

CO_2 emissions up to 2021 for cement, lime, ammonia and ferroalloys production are based on USGS (2022) and BGS (2022) statistics, urea production and consumption are based on IFA (2022) statistics, associated gas used from flaring from GGFR/NOAA, steel production from world steel, and cement clinker production from UNFCCC (2022a). For the other sectors with lower contributions to global CO_2 emissions, the time series have been extended for the period 2020-2021 using proxy data and relative changes in activity data compared to 2019, reported in recent data sources.

For combustion sources: detailed IEA-EDGAR CO_2 (v1) emissions (IEA, 2021b) are used for the period 1970-2019. To extend CO_2 emission time series up to 2021, trends based on (BP, 2022) consumption data by fuel type (coal, oil and gas) are applied to the 2019 IEA-EDGAR fossil CO_2 emissions. In particular, (BP, 2022) oil regional consumption data trends from Jet/Kerosene fuel are applied to domestic aviation emissions to extend them up to 2021. To extend CO_2 emissions from international maritime and aviation transport, we apply the reported changes in CO_2 emissions for the years 2020 and 2021 accordingly with the International Shipping CO_2 Emissions Growth from Marine Benchmark (Marine Benchmark, 2022) and Industry Statistics from IATA Statistics (IATA, 2022).

For the fugitive emissions: CO_2 emissions from coke production for 2020 and 2021 follow the same relative change as reported for the crude steel production of world steel (2022). CO_2 flared at oil and gas extraction for 1994 onwards is based on the total amount of gas flared derived from satellite observation of the intensity of flaring lights per country (GGFR/NOAA, 2022).

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 for under the energy sector) emit also CO_2 from the coke/coal input as reducing agent and limestone used for iron and steel production. Here the crude steel production statistics reported by World Steel Association (worldsteel, 2021) are used as input to calculate CO_2 emissions. Ferro-alloys production data from USGS are used to update the activity data in EDGARv7.0 up to 2018 and for more recent years (2019-2021) further updates are performed by using the pig iron production trends and data from USGS and BGS. PIG iron data are retrieved from World Steel Association (worldsteel, 2021) up to 2020 and updated to 2021 using the PIG trend provided by USGS. Finally, data for China are retrieved from NBSC (2022).

For non-metallic minerals: CO_2 emissions from carbonates used in cement clinker production are based on reported or estimated cement clinker production. Cement production was calculated from cement production reported by the USGS, except for China in 2021 (NBSC, 2022), Russia (Global Cement, 2022), and India (IBEF, 2022). The clinker-to-cement ratio is based on the clinker production data until 2020 from UNFCCC (2022) for the Annex I countries, and for USA up to 2021 using USGS data; for China from World Cement (2022). For Brazil, Egypt, Philippines and Thailand, we used clinker production ratios from the GCSA (2022) up to the year 2019 and then applied a constant trend. The changes in the lime production from USGS (2021) are applied to extrapolate CO_2 emissions from all other carbonate uses (glass production etc.). Concerning the feedstock use for chemicals production, the ammonia production from USGS (2022) is used, except for urea consumption and production, where data are provided by the International Fertiliser Industry Association (IFA, 2022). It is assumed that small soil liming emissions follow the gross ammonia production trend.

For waste: CO_2 emissions from waste incineration without energy recovery have been updated using data from GHG locator (UNFCCC, 202b) for biogenic waste (including cremation[30]), clinical waste, sewage sludge, industrial solid waste, municipal solid waste and other (non-specified) waste. The non-Annex I Parties reporting on CO_2 emissions/removals under category 6C (waste) (UNFCCC, 2022c) together with the approach recommended in IPCC (2006c) are used to complement the data for municipal solid waste.

(30) Data sourced from https://www.cremation.org.uk

For the countries belonging to "Other Africa"[31], "Other Non-OECD Asia" [32]and "Other Non-OECD Americas"[33] in the IEA classification: the share of CO_2 emissions from all these countries in global total is very small, e.g. in 2019, this was about 0.24%. IEA (2021b) provides only aggregated emissions for these three groups of countries. To allocate the corresponding emissions to each single country we used splitting factors derived from the U.S. Energy Information Administration (2022) country specific data on fuel consumption of coal, oil and natural gas. Consequently, the uncertainties in CO_2 emission estimations for these countries are larger than the ones for individually reported countries, in particular for the sectorial subdivision. Additional reliable data and information are needed to further improve their CO_2 emissions allocation.

([31]) Includes Burkina Faso; Burundi; Cape Verde; Central African Republic; Chad; Comoros; Djibouti; the Kingdom of Eswatini; Gambia; Guinea; Guinea-Bissau; Lesotho; Liberia; Madagascar; Malawi; Mali; Mauritania; Namibia (until 1990); Réunion (until 2010); Rwanda; Sao Tome and Principe; Seychelles; Sierra Leone; Somalia; and Uganda..

([32]))Includes Afghanistan; Bhutan; Cambodia (until 1994); Cook Islands; East Timor; Fiji; French Polynesia; Kiribati; Lao People's Democratic Republic (until 1999); Macau, China; Maldives; Mongolia (until 1984); New Caledonia; Palau (from 1994); Papua New Guinea; Samoa; Solomon Islands; Tonga and Vanuatu.

([33]) Includes Anguilla, Antigua and Barbuda; Aruba; Bahamas; Barbados; Belize; Bermuda; Bonaire; British Virgin Islands; Cayman Islands; Dominica; Falkland Islands (Malvinas); French Guiana (until 2010); Grenada; Guadeloupe (until 2010); Martinique (until 2010); Montserrat; Puerto Rico (for natural gas); Saba (from 2012); Saint Eustatius (from 2012); Saint Kitts and Nevis; Saint Lucia; Saint Pierre and Miquelon; Saint Vincent and the Grenadines; Sint Maarten (from 2012); Suriname (until 1999); and the Turks and Caicos Islands.

Annex 2. Methodology for the estimation of emissions from Land Use, Land-Use Change and Forestry (LULUCF)

The EDGAR-LULUCF component is the second release of a dataset developed by the JRC. Compared to the previous release, it includes new estimates of emissions and the removals from living biomass in the whole Forest Land sector, therefore including the *Forest Land remaining Forest Land* category (i.e. managed forest existing from at least 20 years) and the areas converted to forest land in the previous 20 years, covered by the *Land converted to Forest Land* category. Wild fire emissions are included in current EDGAR-LULUCF estimates and are based on the Global Wildfire Information System (GWIS) data, as discussed in Annex 3. The net fluxes from the other land use categories, namely Deforestation (the *Forest Land converted to Other Land* category), Organic Soils, and the remaining categories and pools grouped under the "Other" term, are derived from a dataset based on the official country GHG reports submitted to UNFCCC (see Grassi et al. 2022a). The resulting dataset is largely complete on most land uses for developed countries, while the GHG reports from most developing countries are still rather incomplete (in this case, gap-filling was done to ensure a complete time series, see Grassi et al. 2022a).

The dataset for Forest Land living biomass is produced through a geographically explicit global scale implementation of the IPCC Tier 1 approach for Greenhouse Gas Inventories (GHGI), as outlined in the IPCC Guidelines (IPCC, 2006 and 2019 Refinement), that combines activity data (areas of land stable in the different land use categories, and conversions among them) and various default factors and country statistics to estimate separately the carbon removals (gains) and emissions (losses) (Rossi et al., in preparation). Tier 1 is the most basic and widely-applicable approach, while Tier 2 requires the use of locally-derived parameters, and Tier 3 involves more advanced modelling. Parties to the UNFCCC are required to use at least Tier 2 when estimating categories and carbon pools most significant for their GHG inventory.

The activity data for the gains consist in the areas of the different land use categories, which we assessed by means of one of the most widely used recent spatial land cover datasets, the "Land cover classification gridded maps from 1992 to present derived from satellite observations", part of the Copernicus Climate Change Service (C3S). This dataset guarantees backward compatibility with the ESA Climate Change Initiative (CCI) Land Cover Dataset (ESA 2017) previously released for the years 1992-2015.

The dataset currently furnishes annual global land cover maps for the period 1992-2020 at approximately 300m spatial resolution at the equator developed harmonizing data from different sensors, such as AVHRR from 1992 to 1999, SPOT-Vegetation from 1998 to 2012, MERIS (2003-2012), PROBA-V and Sentinel-3 OLCI (S3 OLCI) from 2013. Data are released with a two-year delay, meaning that the latest available global map refers at the moment to 2020.

The legend consists of 22 classes which follow the FAO Land Cover Classification System (LCCS). The Land Cover maps were converted to IPCC land use classes by means of a conversion table which considers, for each of the 22 LCCS classes, the shares within the pixel of the different IPCC land use categories (Forest Land-partitioned in broadleaf and needleleaf, Cropland, Grassland, Settlements, Wetlands, and Other Land), based on the definition of each LCCS classes. For each pixel of the map, these shares were then converted to actual land areas belonging to the various IPCC categories used within GHG inventories. An Intact Forest layer (Potapov et al., 2016) was used to distinguish managed from unmanaged forest, assuming intact forests to be a good proxy for unmanaged forests (see Grassi et al. 2021).

The activity data for the losses are the country harvest production statistics (industrial roundwood and fuelwood, partitioned in broadleaf and needleleaf) from the FAOSTAT database. When possible, harvest data were corrected for illegal and informal logging, not registered in official statistics, using estimates from different datasets (see Kleinschmit et al. 2016).

At the EU level, a calibration procedure was applied on the original satellite-derived land use areas to best harmonize the temporal behaviour of the ESA/Copernicus time series with the trajectory of the country GHG inventories, showing an increase in the EU forest cover.

In the Tier 1 approach, activity data are modelled into gains and losses through a series of default emission factors and parameters (forest growth rate, Biomass Conversion and Expansion Factors, wood density, carbon density, root-to-shoot ratio etc.) available for the whole World. The IPCC Guidelines contain tables with default parameters values compiled from existing literature, varying by geographical area (continents) and vegetation characteristics (broadleaf/needleleaf, naturally growing/planted forest, age class, etc.). In our geographically explicit modelling approach, the appropriate parameters were assigned to each pixel according to

vegetation/climate/management characteristics identified through ancillary spatial and statistical datasets such as the FAO-GEZ (Global Ecological Zones dataset, FAO 2013), the FAO Forest Resource Assessment (FRA), etc.

This allowed the partitioning of each pixel area according to vegetation characteristics essential to select the correct parameters in each context, such as the tree type (broadleaf or needleleaf), the type of forest (e.g., Tropical Rainforest, Temperate Continental Forest, etc., from FAO/GEZ), the vegetation characteristics (planted trees or natural grown forest, from FAO-FRA), and the forest age class (less or equal 20 years old, more than 20 years old).

The default parameters are obtained from the IPCC Guidelines (2006 and 2019 Refinement), the official reference for the production of national GHG Inventories. These parameters values are compiled from a wide range of literature and present a high degree of heterogeneity among the different continents (also for the same tree species or forest type), reflecting the difficulty of identifying specific parameters which are truly representative for the IPCC forest species/types or climate zone.

According to some analysis (e.g. Cook-Patton et al. 2020) in some cases these IPCC values are systematically under or overestimated. Given the high uncertainty in the IPCC factors, we selected them from the tables also using expert judgement and additional literature analysis. The selection of a more reliable set of default parameters is a field with much room for future improvement. Compared to last year first inclusion of LULUCF within EDGAR, this year we redraw our parameters tables reconsidering several values (e.g. for boreal forests) and selecting more mid-range values.

The results for Forest Land were evaluated in comparison with the available official country GHG reports, generally produced using more advanced Tiers, as it is the case of Annex I countries. When possible, we compared both the results in terms of emissions and removals, as well as the areas. While for most developed areas (e.g. EU, USA) the match is fairly good for at least part of the time series, the differences observed for some other countries (e.g. Canada, Russia, several African and south-Asian countries) deserve further analyses, either on the parameters' selection as well as on the assumptions made and methods used by the specific countries. In fact, within their inventories countries can make specific choices based on local characteristics and local expertise that cannot be extrapolated in a dataset like ours and applied at the global level. Also, several countries adopt stock-difference methods very different from our gain/loss approach, and in fact we notice the biggest discrepancies between our results and country data where stock difference approaches are implemented.

The Tier 1 estimates presented here are aimed to provide a globally-consistent overview for LULUCF using IPCC official default methodologies. These estimates can provide useful information on areas for which no or little official estimations are available (e.g. several African countries). It is however important to highlight that the EDGAR LULUCF estimates are expressly not aimed at challenging nor verifying the estimates produced by individual countries, generally made using locally available data and parameters at Tier 2, or advanced Tier 3 modelling approaches.

By definition, each country should use the best locally available data and expertise to produce its inventories, while we are on purpose adopting a global Tier 1 approach. On the contrary, we use the best data and parameters available at the global scale, inevitably less precise and reliable.

To date, the database provides georeferenced information on the following items:

1. Land Use Area subdivided by
    a. Tree type: Broadleaf, Needleleaf
    b. Age Class: <=20 years, >20 years
    c. System: Planted, Naturally growing
2. C GAINS (Removals from the atmosphere) subdivided as the Land use areas above
3. C LOSSES (Emissions in the atmosphere) subdivided by
    a. Plant type: Broadleaf, Needleleaf
    b. Harvest type: Fuelwood, Industrial roundwood.

Annex 3. Methodology for the estimation of emissions from large scale biomass burning

Estimates of atmospheric emissions due to biomass burning have conventionally been derived adopting 'bottom up' inventory-based methods (Seiler & Crutzen, 1980). The IPCC AFOLU guidelines thus estimate the emissions as:

$$L = A \times Mb \times Cf \times Gef \qquad \text{[Equation 1]}$$

where:

L [g] is the quantity of emitted gas or particulate

A [m^2] is the area affected by fire

Mb [g m^{-2}] is the fuel loading per unit area

Cf [g g^{-1}] is the combustion factor i.e. the proportion of biomass consumed as a result of fire

Gef [g g^{-1}] is the emission factor or emission ratio, i.e. the amount of gas released for each gaseous specie per unit of biomass load consumed by the fire.

As the methodology developed is based on the IPCC Tier 1 approach for Greenhouse Gas Inventories (GHGI), as outlined in the IPCC Guidelines (IPCC, 2006 and 2019 Refinement), the parameters of equation 1 are typically not available for each pixel, but reference values are used instead, for instance those given in tables 2.4, 2.5 and 2.6 of the IPCC guidelines. Those reference values are stratified by landcover class, and it is convenient to rewrite equation 1 as:

$$L_{lc} = A_{lc} \times Mb_{lc} \times Cf_{lc} \times Gef_{lc} \qquad \text{[Equation 2]}$$

where:

L_{lc} [g] is the quantity of emitted gas or particulate for landcover class *lc*

A_{lc} [m^2] is the total area burned in landcover class *lc*

Mb_{lc}, Cf_{lc} and Gef_{lc} are the fuel load, the combustion factor and the emission factor derived from the IPCC tables for landcover class *lc*.

The total emission over the whole area of interest is the summation of L_{lc} for all the landcover areas:

$$L = \sum L_{lc} \qquad \text{[Equation 3]}$$

The IPCC 2006 AFOLU guidelines contain tables for biomass consumed as a function of the landcover, but the vegetation types used are not immediately compatible with the legend of any of the current landcover products. To this end, a procedure was developed to combine data on area burned, landcover, JRC climatic characterization and soil classification map, as described in the following.

- **Area burned**

The area burned used is derived from the GlobFire Database developed under the umbrella of the Global Wildfire Information System (GWIS) (Artés et al., 2019). This burned area product is derived from the most recent Collection 6 Moderate Resolution Imaging Spectroradiometer (MODIS) burned area product (MCD64A1), which maps the extent of fire at 500m resolution and the approximate day of burning (Giglio et al.,2018).

- **Landcover**

The Annual International Geosphere-Biosphere Programme (IGBP) classification legend of the global MODIS landcover product MCD12A1 (Friedl & Sulla-Menashe, 2019) was used. The MCD12A1 global land product is part of the standard MODIS suite, and has been produced at annual intervals since the beginning of the mission. The current Collection 6 version has a spatial resolution of 500m, and it is distributed in the same sinusoidal tiled geometry as the MCD64A1 product, allowing for the computation of stratified total area burned A_{lc} in equation 2 without the need for resampling or reprojection. For each pixel, the MCD12A1 product provides a class label assigned following different legends to cover the needs of multiple user communities. The IPCC legend (LC_Type1) was used in the present application.

- **JRC climatic characterization and soil classification map**

The Climatic Zone and Soil Type raster maps were created by the Joint Research Center in support of the European Commission guidelines for the calculation of land carbon stocks for the purpose of Annex V to Directive 2009/28/EC. The Climatic Zone layer is defined based on the classification of IPCC (IPCC, 2006). Soil types are classified according to the World Reference Base (WRB). The raster data layers were resampled and reprojected to the MODIS sinusoidal projection, and tiled into the MODIS geometry, to ensure interoperability with the MODIS MCD64A1 and MCD12A1 products.

The result of the merged approach is a 500 m landcover map, which uses a set of vegetation classes compatible with the IPCC tables. The procedure is fully automatic, and is repeated for every year from 2000 to 2019, to ensure that the statistics are generated using the most appropriate landcover information for the year.

For the period between 1982 to 2000, where MODIS burned area data were not available, images from the Advanced Very High Resolution Radiometer Long Term Data Record burned area product (AVHRR-LTDR) were used. The final burned area product (designated as FireCCILT10) (Otón et al., 2021) estimated BA in a spatial resolution of 0.05◦ for the period between 1982 and 2017 (excluding 1994, due to input data gaps).

This product is the longest global burned area product currently available, extending almost 20 years back from the existing NASA (MODIS) and European Space Agency (ESA) burned area products. Despite FireCCILT10 and MCD64A1 are based on different sensors and methodologies, Otón et al. (2021) reported high correlation values (r2 >0.9) between burned area estimations from both with better agreement in tropical regions rather than boreal regions. Spatial trends were found to be similar to existing global burned area products, but temporal trends showed unstable annual variations, most likely linked to the changes in the AVHRR sensor and orbital decays of the NOAA satellites.

The methodology applied for this period was similar to the one developed for the MODIS period (2000-2019), including the resampling and reprojection to the MODIS sinusoidal projection, and tiled into the MODIS geometry, to ensure interoperability with the MCD12A1 products.

Annex 4. Construction of country fact-sheets

For each country, a fact sheet is provided with the time series of fossil CO_2 emissions from all anthropogenic activities except land use, land-use change, forestry and large scale biomass burning. The upper panel of the fact sheet includes the fossil CO_2 annual totals from 1990 until 2021 per sector, the fossil CO_2 per capita and per GDP PPP (constant 2017 international $, USD). An overview table with total emissions by country for the years 1990, 2005, 2020, and 2021 is also reported, together with per capita, per GDP PPP emissions, and population data. Along with the summary of the fossil CO_2 emission time series for each country, a graphical visualisation aids the interpretation of the emission changes over time at the bottom of each page.

The graphs compare fossil CO_2 emissions for 2021 with the emission levels of the previous year and of two key years: 1990 (base year for national greenhouse gases inventory) and 2005, when the Kyoto Protocol came into effect. Emissions stalling, rising or dampening for the year 2021 are expressed in terms of % change with respect to these two years, for sectors specified as follow:

Legend of the sectors:


Power Industry - Power and heat generation plants (public & autoproducers)


Other industrial combustion - Combustion for industrial manufacturing and fuel production


Buildings – Small scale non-industrial stationary combustion


Transport – Mobile combustion (road & rail & ship & aviation)


Other sectors – Industrial process emissions & agriculture & waste


All sectors – Sum of all sectors. The pie chart represents the fossil CO_2 sectorial share in 2021.


indicates a reduction in 2021 emissions by the amount expressed by the percentage value (in green)


indicates growth in 2021 emissions by the amount expressed by the percentage value (in red)


In the cases where 2021 emissions have reduced or have grown by less than 5% with respect to the reference year, or have stalled, a horizontal orange arrow is shown. Also in this case the amount is expressed by the percentage value (in orange)

An "n/a" is used to indicate either a sector missing throughout the time series (meaning that no data are reported for that sector) or that no data are available for both the reference year and for 2021. Finally, in the instances when emissions from a specific sector have been reported for the reference year, but not for 2021 a decreasing green arrow is shown without the associated percentage value (as for example [Power industry, Albania]; on the opposite, when emissions from a specific sector have been reported for the 2021 year, but not for the reference year, a rising red arrow is shown without the associated percentage value (as for example [Other industrial combustion, Malta]). When computing the emission trend for the sum of all sectors, no value is reported in the case of incomplete statistics for the year 1990 (as for example Greenland).

Country-specific fossil CO_2 emission time series can be downloaded at the following website: https://edgar.jrc.ec.europa.eu/report_2022.

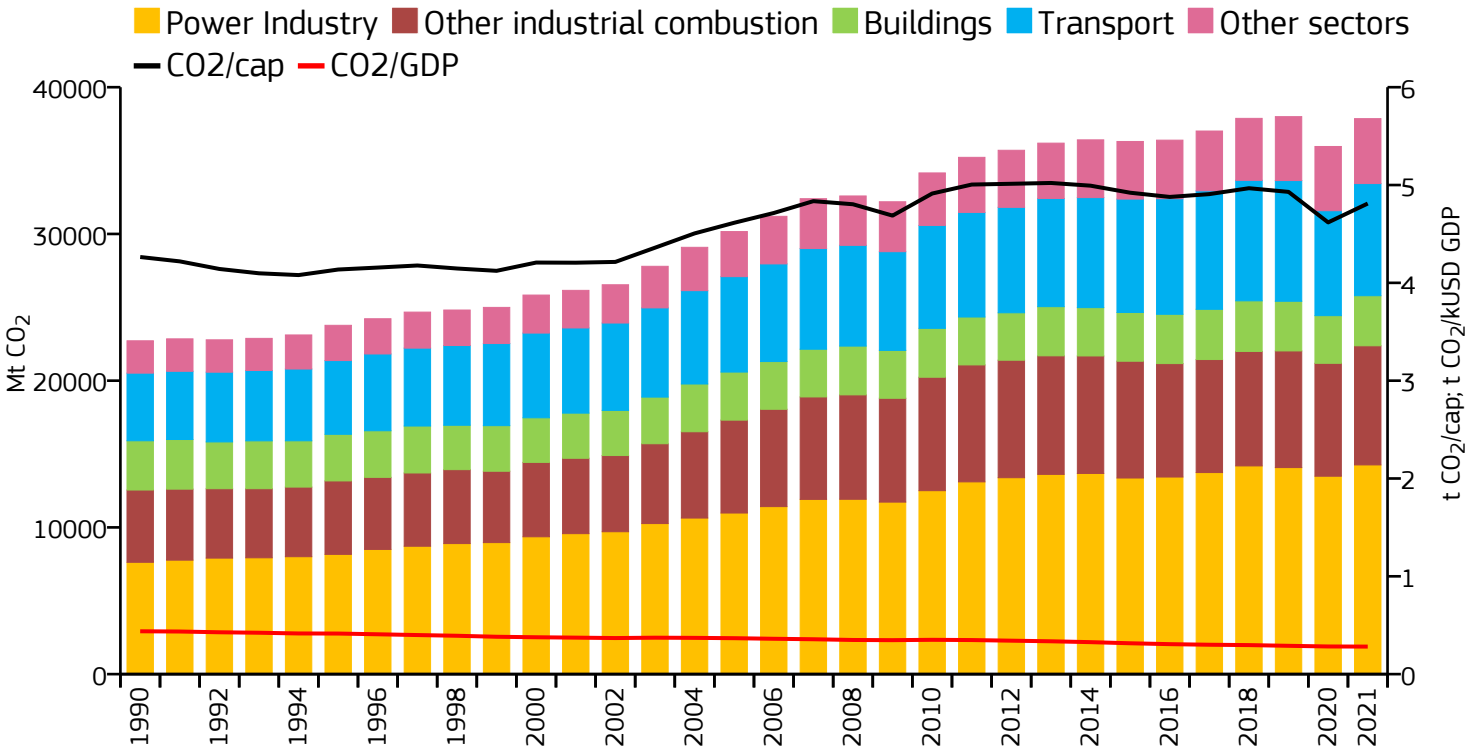
Annex 5. Fossil CO_2 emissions for the world, international transport and the EU27

Global totals for all countries, including international shipping and aviation, followed by the international transport sector (shipping and aviation).

Total EU27 emissions from Member States: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden.

WORLD

Fossil CO_2 emissions by sector

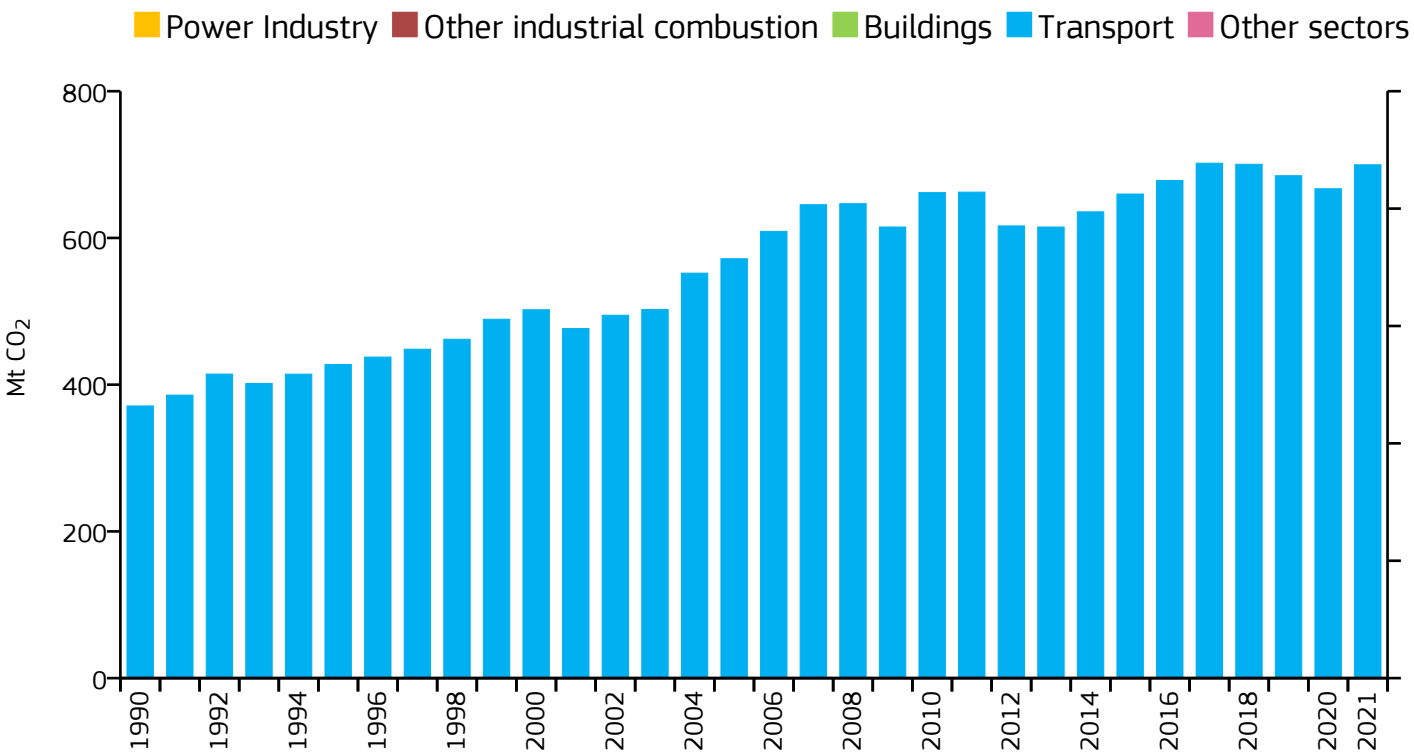


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	37857.576	4.811	0.282	7.869G
2020	35960.674	4.618	0.283	7.787G
2005	30161.575	4.614	0.367	6.537G
1990	22717.732	4.264	0.438	5.328G

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +87%	↗ +30%	↗ +6%
Other industrial combustion	↗ +65%	↗ +28%	↗ +6%
Buildings	→ +2%	→ +4%	→ +5%
Transport	↗ +66%	↗ +18%	↗ +7%
Other sectors	↗ +101%	↗ +44%	→ +1%
All sectors	↗ +67%	↗ +26%	→ +5%

International Shipping

Fossil CO_2 emissions by sector

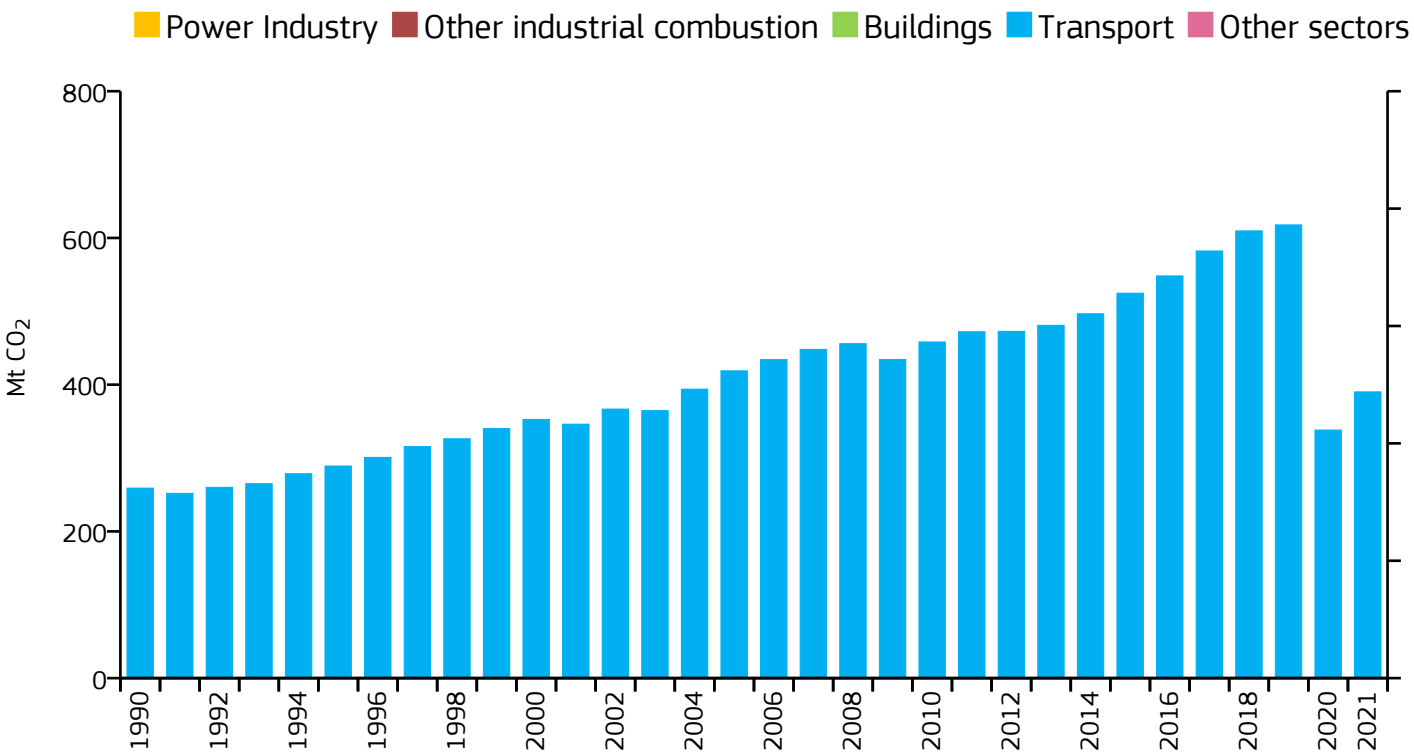


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	699.722	n/a	n/a	n/a
2020	667.037	n/a	n/a	n/a
2005	571.636	n/a	n/a	n/a
1990	370.994	n/a	n/a	n/a

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	n/a	n/a	n/a
Other industrial combustion	n/a	n/a	n/a
Buildings	n/a	n/a	n/a
Transport	↗ +89%	↗ +22%	→ +5%
Other sectors	n/a	n/a	n/a
All sectors	↗ +89%	↗ +22%	→ +5%

International Aviation

Fossil CO_2 emissions by sector

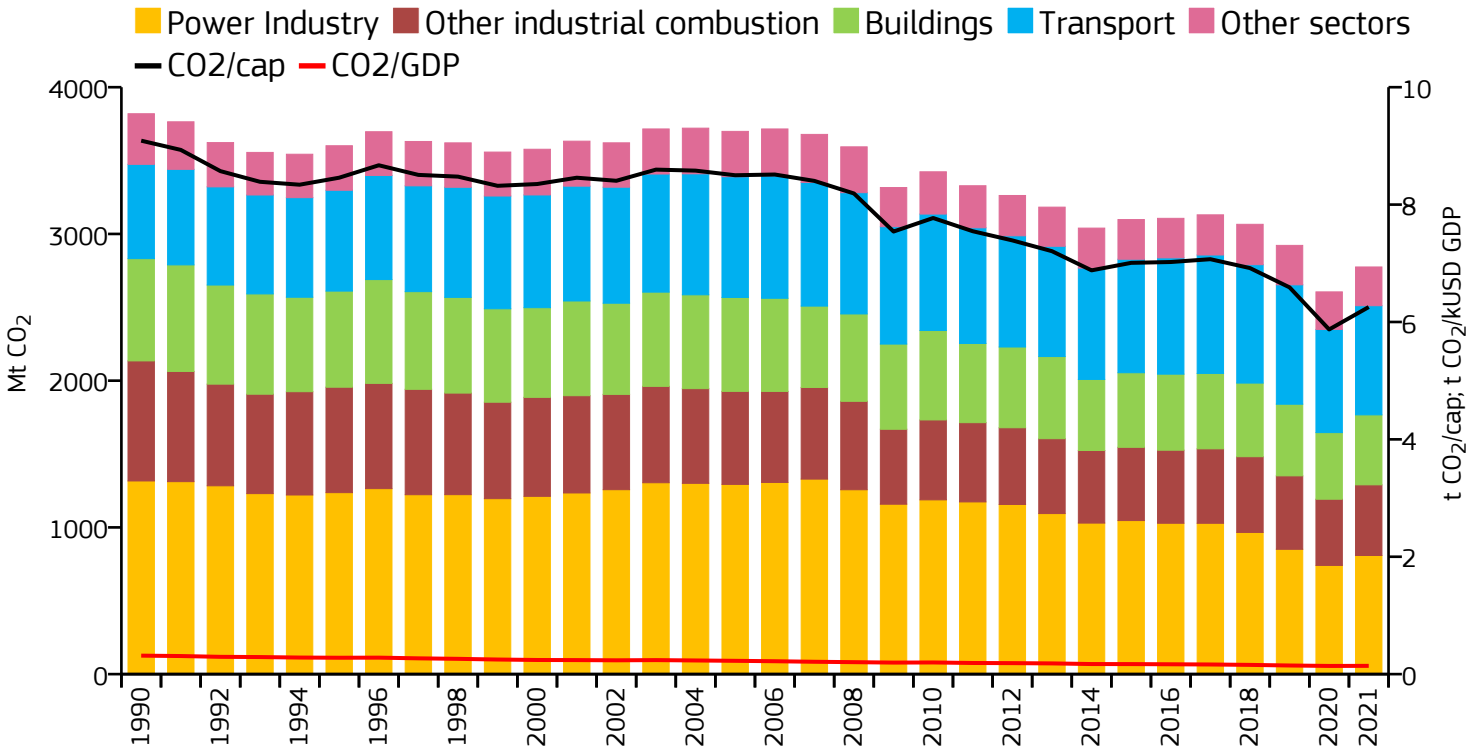


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	390.166	n/a	n/a	n/a
2020	338.144	n/a	n/a	n/a
2005	418.839	n/a	n/a	n/a
1990	258.994	n/a	n/a	n/a

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	n/a	n/a	n/a
Other industrial combustion	n/a	n/a	n/a
Buildings	n/a	n/a	n/a
Transport	↗ +51%	↘ -7%	↗ +15%
Other sectors	n/a	n/a	n/a
All sectors	↗ +51%	↘ -7%	↗ +15%

EU27

Fossil CO_2 emissions by sector



Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	2774.927	6.254	0.141	443.676M
2020	2605.119	5.873	0.140	443.611M
2005	3698.942	8.500	0.227	435.163M
1990	3819.235	9.089	0.315	420.198M

	2021 vs 1990		2021 vs 2005		2021 vs 2020	
Power Industry	↘	-39%	↘	-37%	↗	+9%
Other industrial combustion	↘	-41%	↘	-24%	↗	+7%
Buildings	↘	-32%	↘	-25%	→	+5%
Transport	↗	+16%	↘	-10%	↗	+6%
Other sectors	↘	-23%	↘	-15%	→	+3%
All sectors	↘	-27%	↘	-25%	↗	+7%

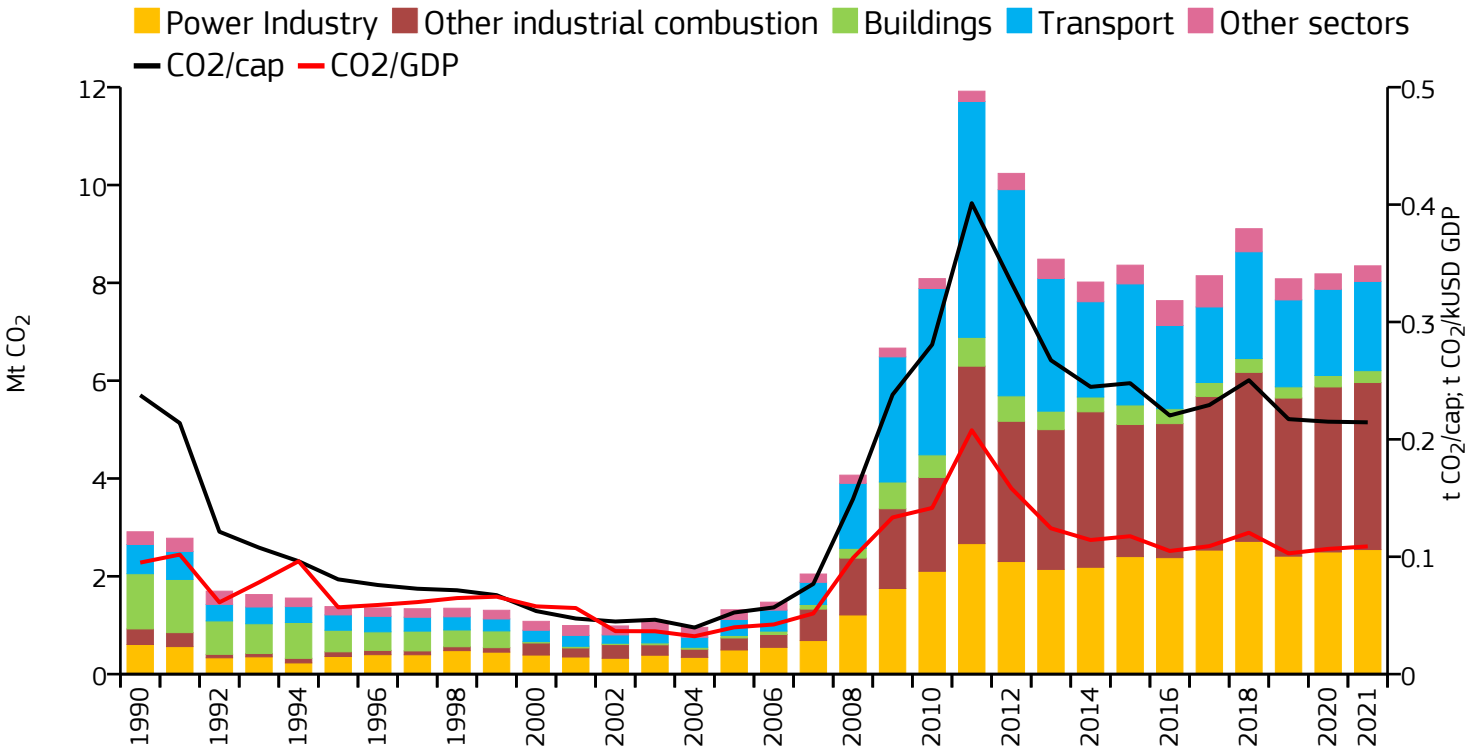
Annex 6: Fossil CO_2 emissions by country

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; Cabo Verde; Cambodia; Cameroon; Canada; Cayman Islands; Central African Republic; Chad; Chile; China; Colombia; Comoros; Congo; Cook Islands; Costa Rica; Côte d'Ivoire; Croatia; Cuba; Curaçao; Cyprus; Czechia; Democratic Republic of the Congo; Denmark; Djibouti; Dominica; Dominican Republic; Ecuador; Egypt; El Salvador; Equatorial Guinea; Eritrea; Estonia; Eswatini; Ethiopia; Falkland Islands; Faroes; Fiji; Finland; 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; North Macedonia; 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; 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

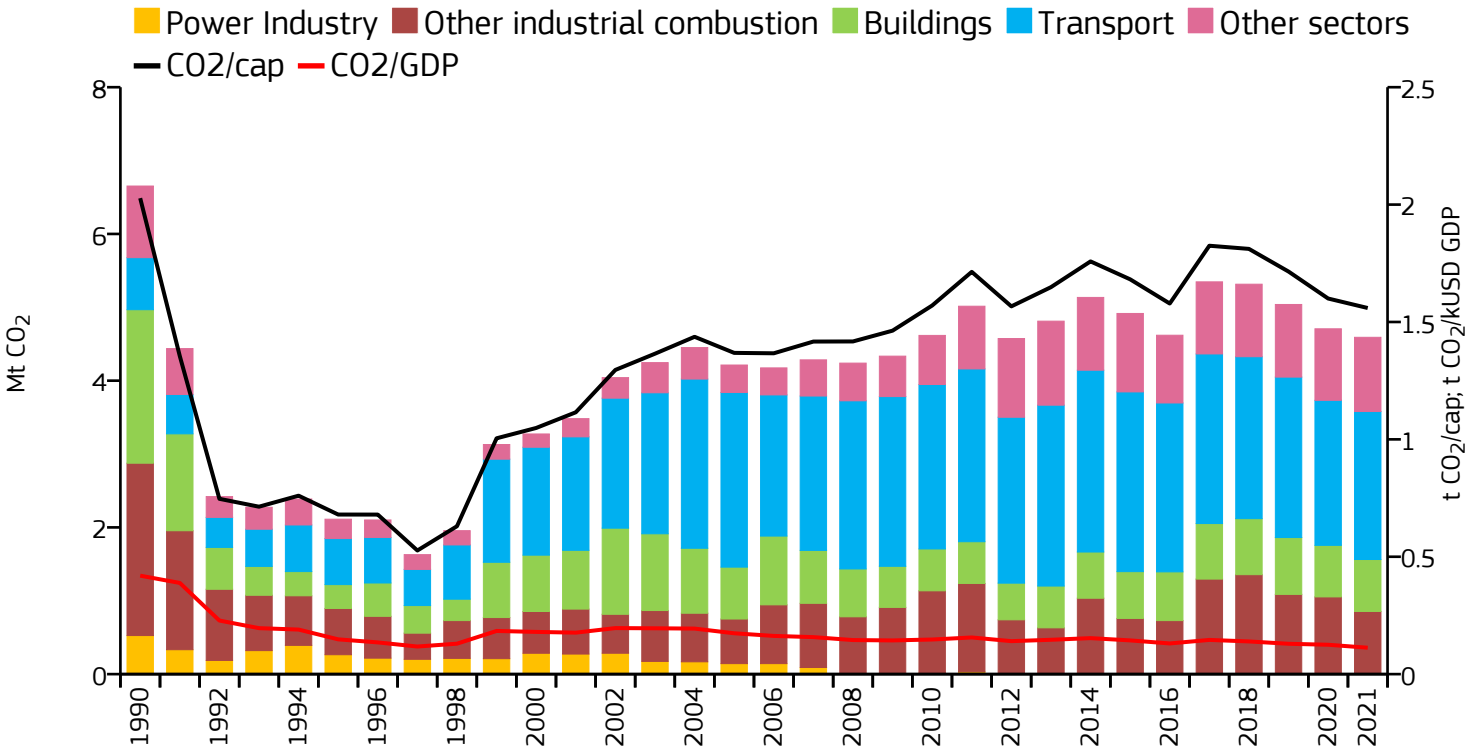


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	8.348	0.215	0.109	38.914M
2020	8.184	0.215	0.107	38.055M
2005	1.316	0.052	0.040	25.071M
1990	2.910	0.238	0.095	12.249M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+321%	+416%	+2%
Other industrial combustion	+972%	+1289%	+1%
Buildings	-78%	+371%	+4%
Transport	+206%	+459%	+3%
Other sectors	+23%	+61%	+1%
All sectors	+187%	+534%	+2%

Albania

Fossil CO_2 emissions by sector

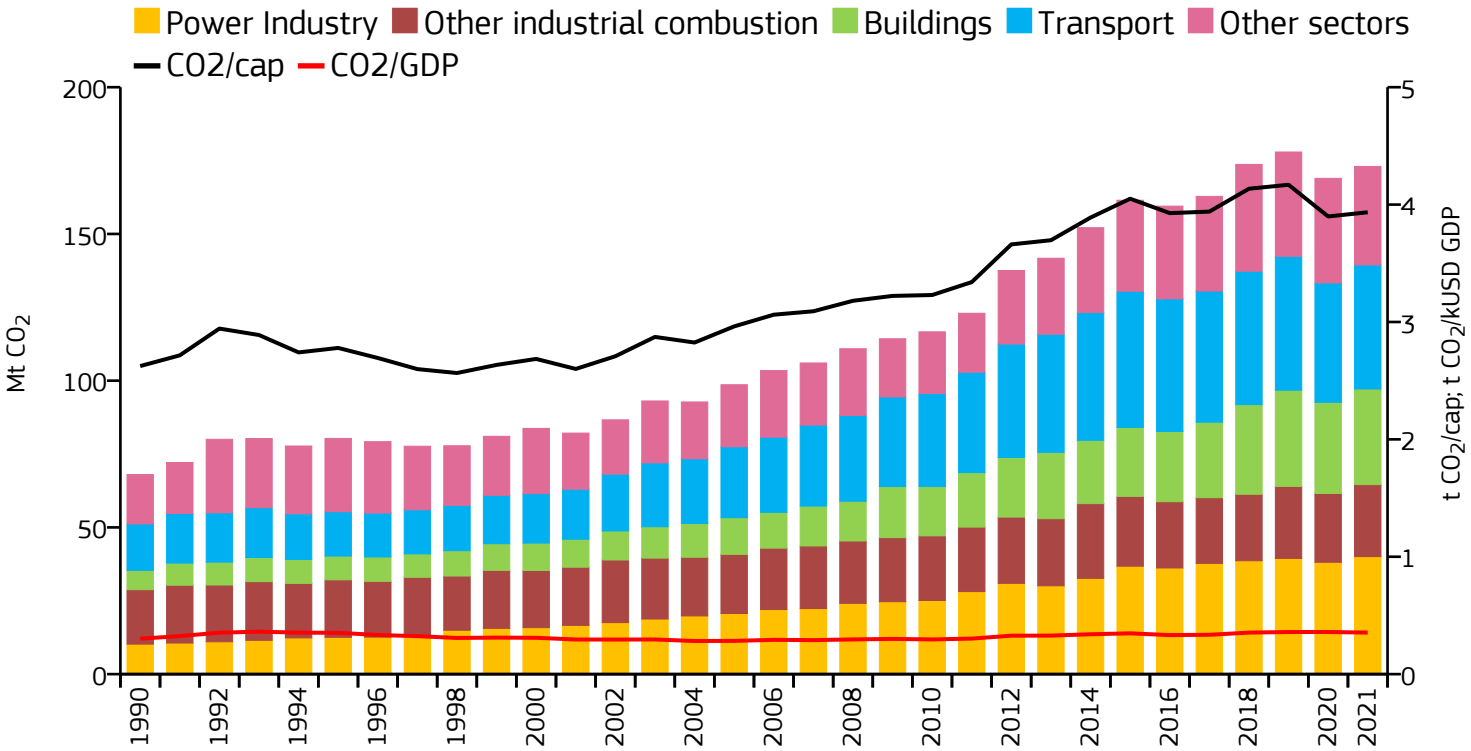


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	4.591	1.559	0.112	2.944M
2020	4.707	1.600	0.125	2.942M
2005	4.213	1.368	0.174	3.079M
1990	6.653	2.027	0.419	3.281M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↘	↘	n/a
Other industrial combustion	↘ -64%	↗ +40%	↘ -19%
Buildings	↘ -66%	→ 0%	→ +1%
Transport	↗ +184%	↘ -15%	→ +2%
Other sectors	→ +4%	↗ +171%	→ +4%
All sectors	↘ -31%	↗ +9%	→ -2%

Algeria

Fossil CO_2 emissions by sector

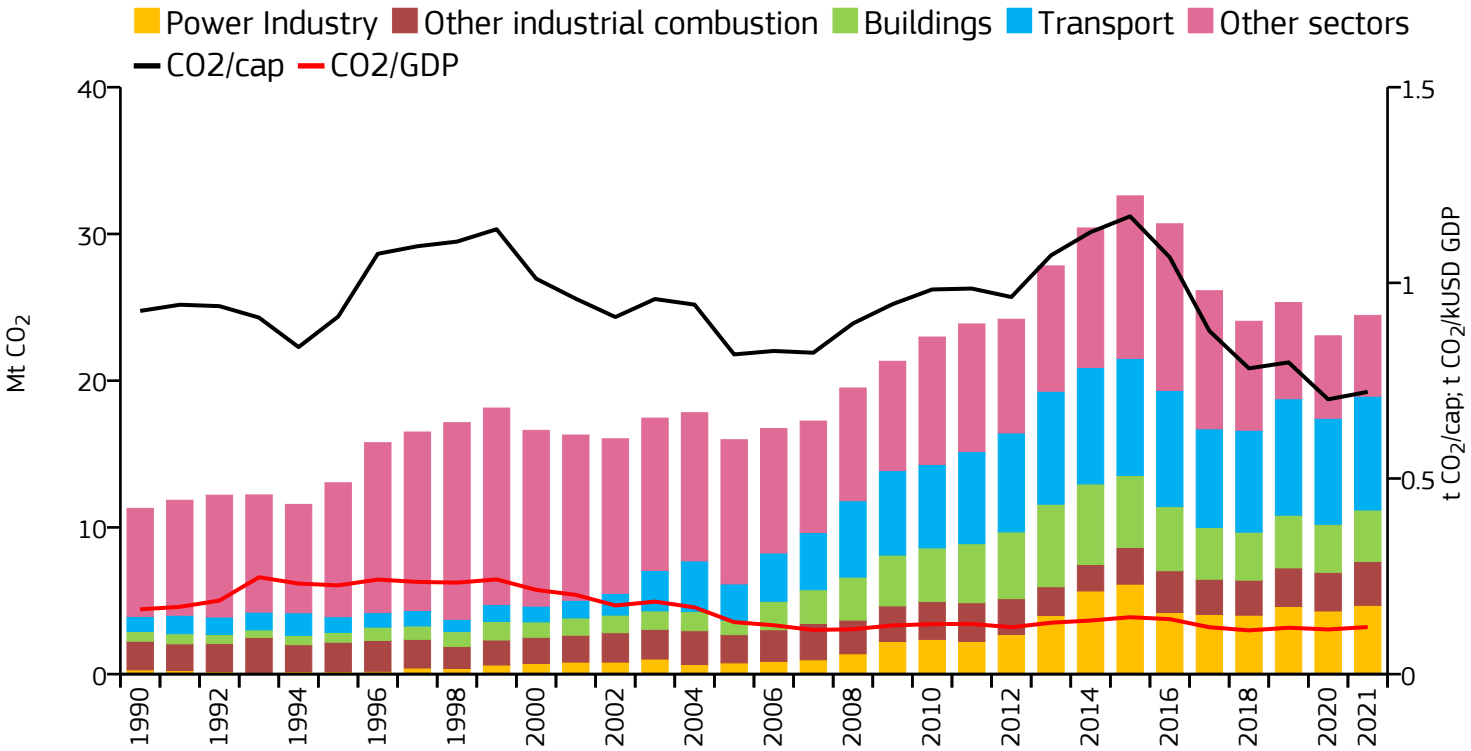


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	173.001	3.935	0.354	43.969M
2020	168.950	3.899	0.359	43.333M
2005	98.609	2.962	0.283	33.288M
1990	68.004	2.624	0.302	25.912M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+292%	+94%	+5%
Other industrial combustion	+32%	+22%	+5%
Buildings	+394%	+161%	+5%
Transport	+167%	+75%	+4%
Other sectors	+99%	+59%	-6%
All sectors	+154%	+75%	+2%

Angola

Fossil CO_2 emissions by sector

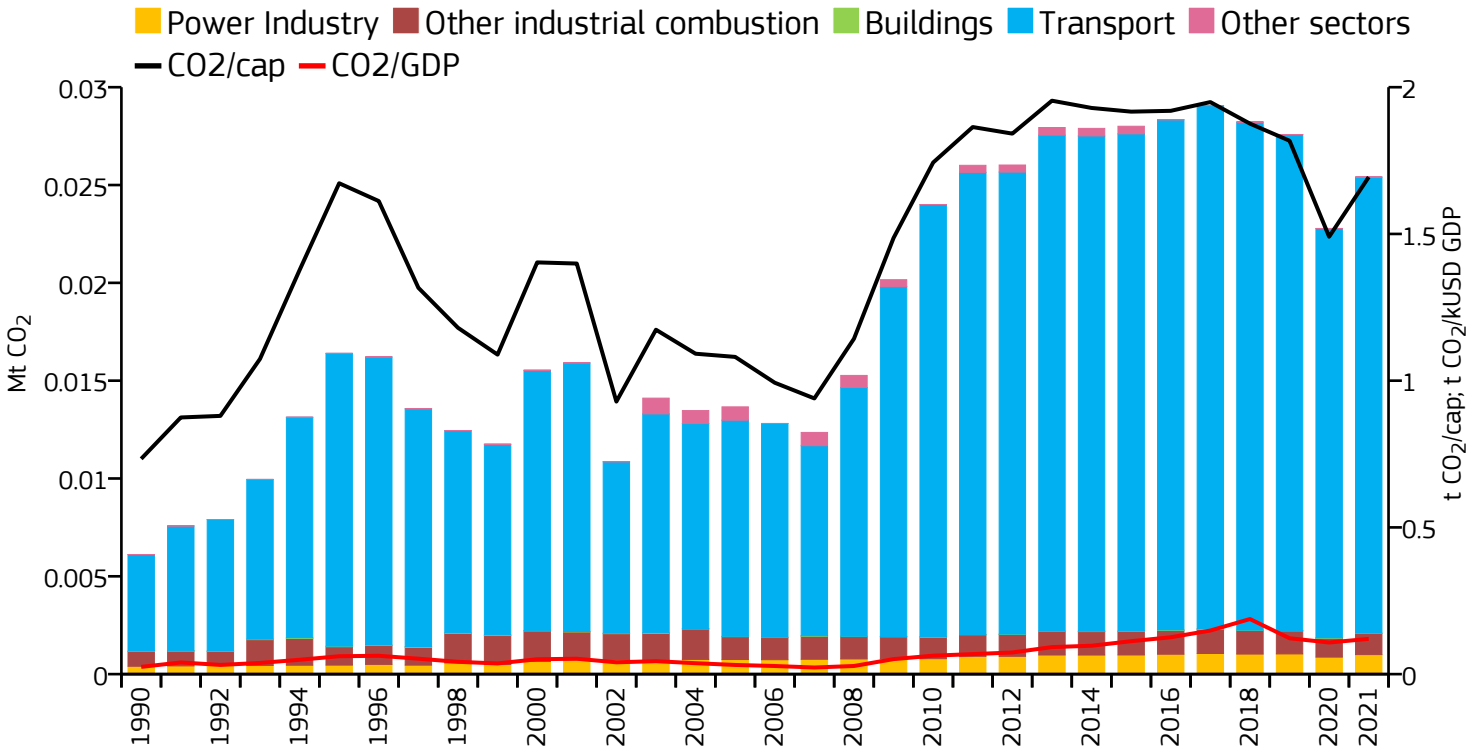


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	24.450	0.721	0.120	33.894M
2020	23.056	0.702	0.114	32.827M
2005	15.976	0.817	0.133	19.552M
1990	11.298	0.928	0.166	12.171M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +1508%	↗ +511%	↗ +9%
Other industrial combustion	↗ +53%	↗ +55%	↗ +13%
Buildings	↗ +430%	↗ +259%	↗ +7%
Transport	↗ +663%	↗ +213%	↗ +7%
Other sectors	↘ -25%	↘ -44%	→ -2%
All sectors	↗ +116%	↗ +53%	↗ +6%

Anguilla

Fossil CO_2 emissions by sector

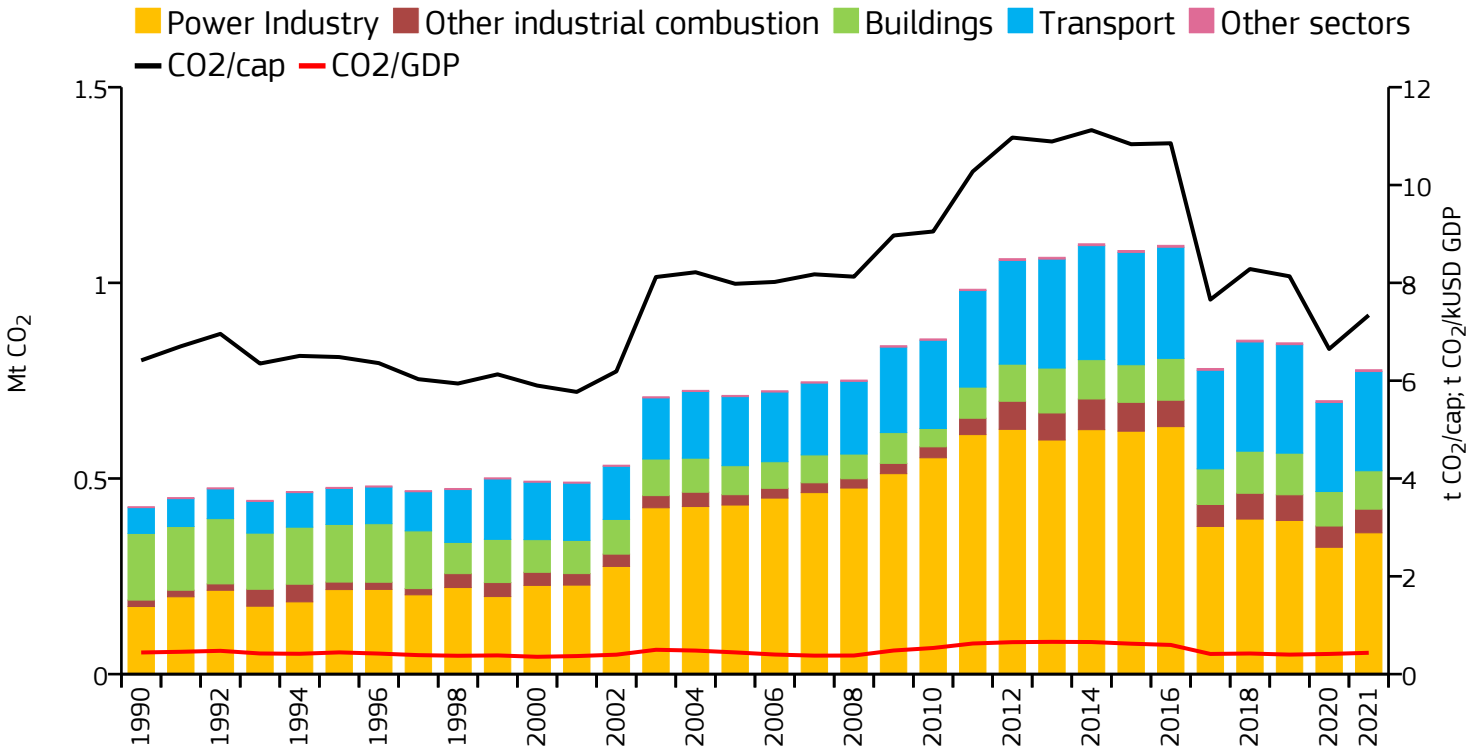


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.025	1.694	0.120	15.000k
2020	0.023	1.491	0.108	15.283k
2005	0.014	1.081	0.031	12.638k
1990	0.006	0.734	0.025	8.334k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +148%	↗ +34%	↗ +15%
Other industrial combustion	↗ +44%	↘ -7%	↗ +11%
Buildings	↘ -35%	↘ -25%	↗ +12%
Transport	↗ +372%	↗ +111%	↗ +11%
Other sectors	↗ +84%	↘ -100%	→ +1%
All sectors	↗ +316%	↗ +86%	↗ +12%

Antigua and Barbuda

Fossil CO_2 emissions by sector

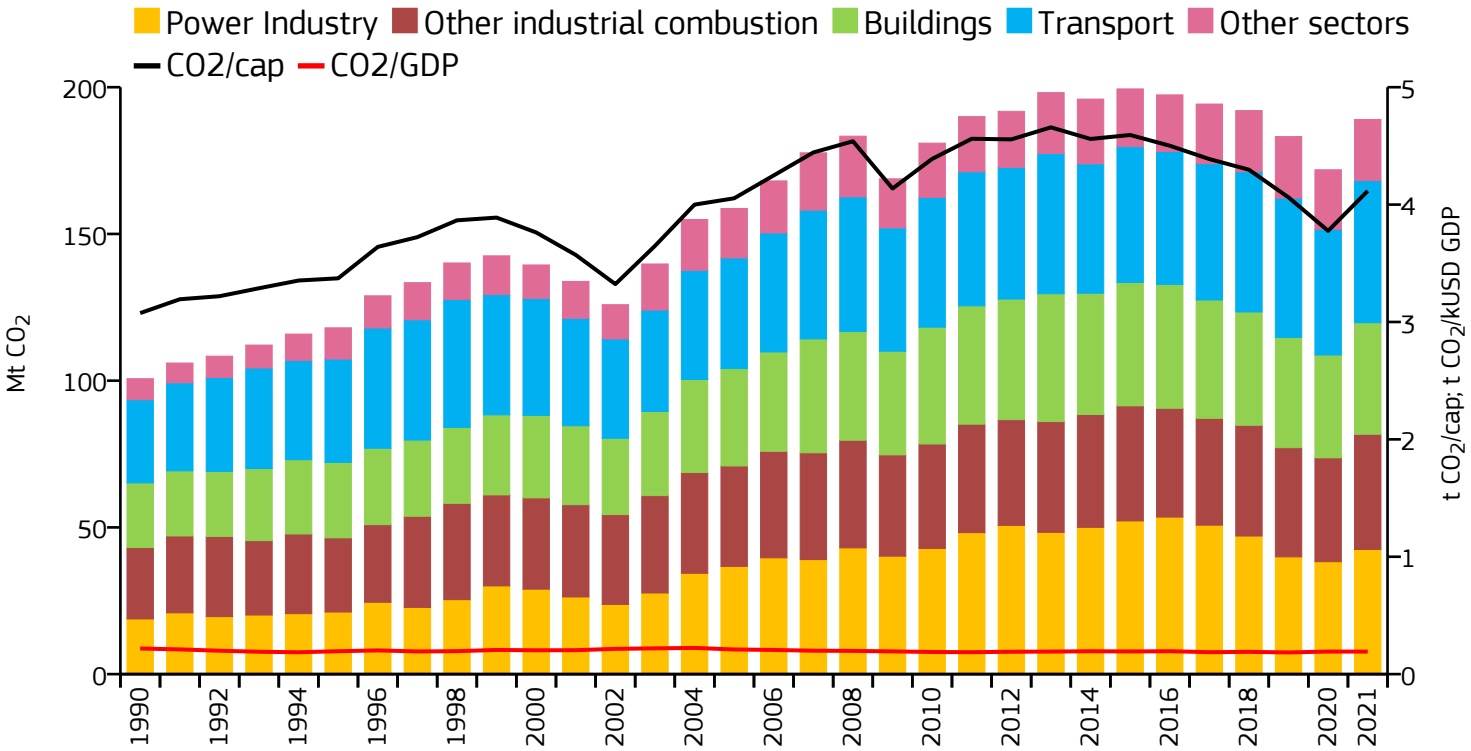


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.778	7.338	0.436	106.000k
2020	0.699	6.648	0.413	105.110k
2005	0.712	7.981	0.444	89.253k
1990	0.428	6.415	0.443	66.696k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+109%	-16%	+11%
Other industrial combustion	+268%	+129%	+11%
Buildings	-42%	+32%	+11%
Transport	+286%	+44%	+11%
Other sectors	+90%	+45%	0%
All sectors	+82%	+9%	+11%

Argentina

Fossil CO_2 emissions by sector

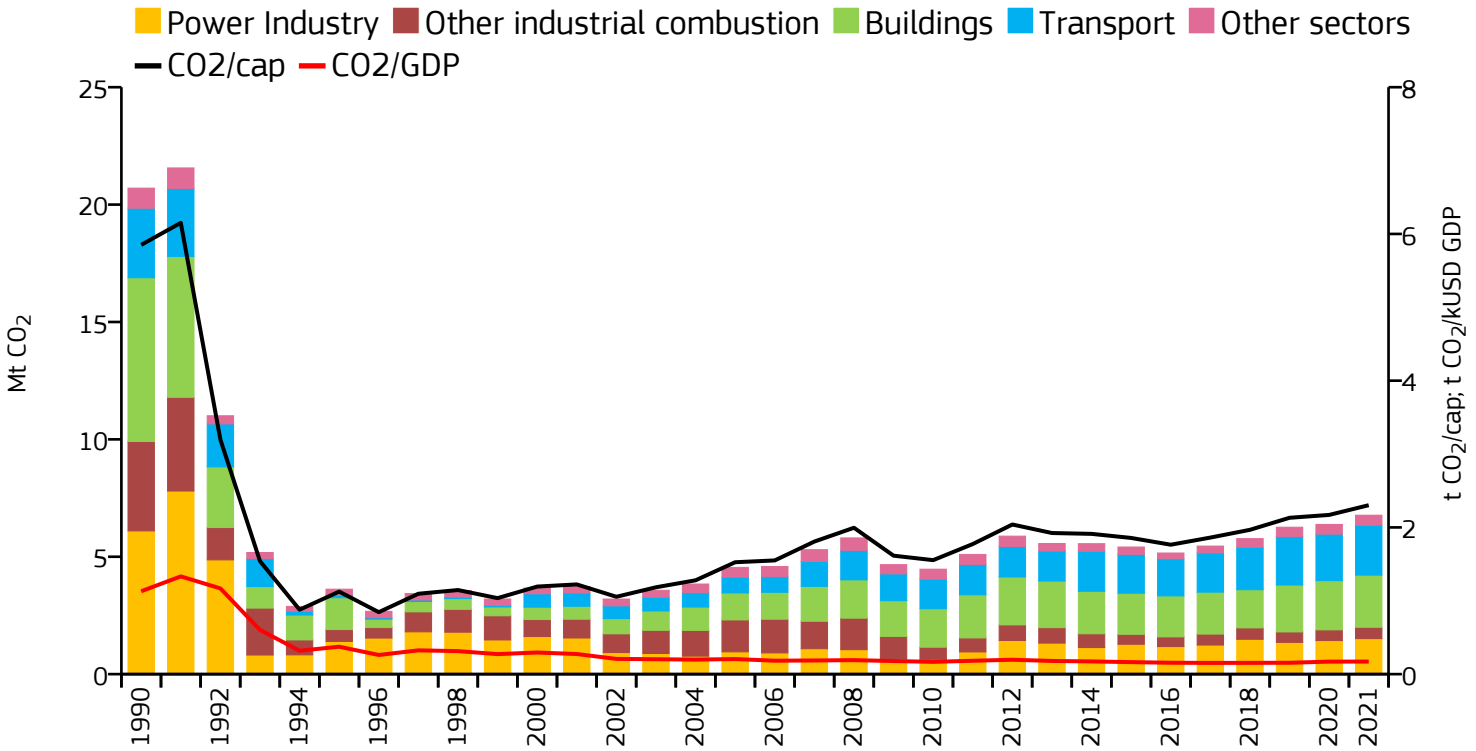


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	189.002	4.116	0.192	45.914M
2020	171.863	3.776	0.192	45.510M
2005	158.685	4.054	0.210	39.145M
1990	100.665	3.076	0.218	32.730M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +126%	↗ +16%	↗ +11%
Other industrial combustion	↗ +61%	↗ +15%	↗ +11%
Buildings	↗ +72%	↗ +14%	↗ +8%
Transport	↗ +71%	↗ +28%	↗ +13%
Other sectors	↗ +191%	↗ +24%	→ +3%
All sectors	↗ +88%	↗ +19%	↗ +10%

Armenia

Fossil CO_2 emissions by sector

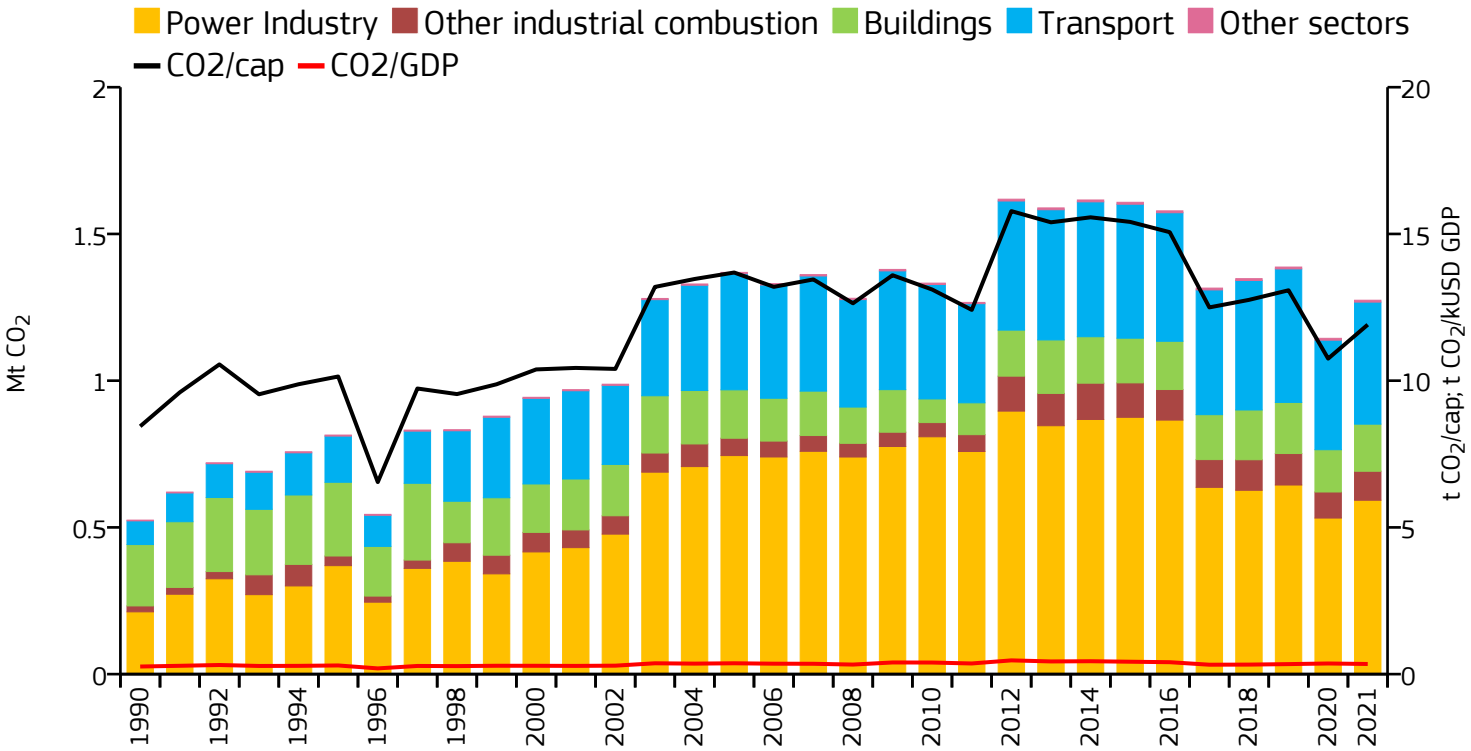


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	6.770	2.303	0.171	2.940M
2020	6.377	2.170	0.171	2.939M
2005	4.547	1.525	0.206	2.981M
1990	20.701	5.851	1.130	3.538M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-75%	+59%	+6%
Other industrial combustion	-87%	-64%	+6%
Buildings	-68%	+93%	+6%
Transport	-28%	+216%	+7%
Other sectors	-50%	+3%	+4%
All sectors	-67%	+49%	+6%

Aruba

Fossil CO_2 emissions by sector

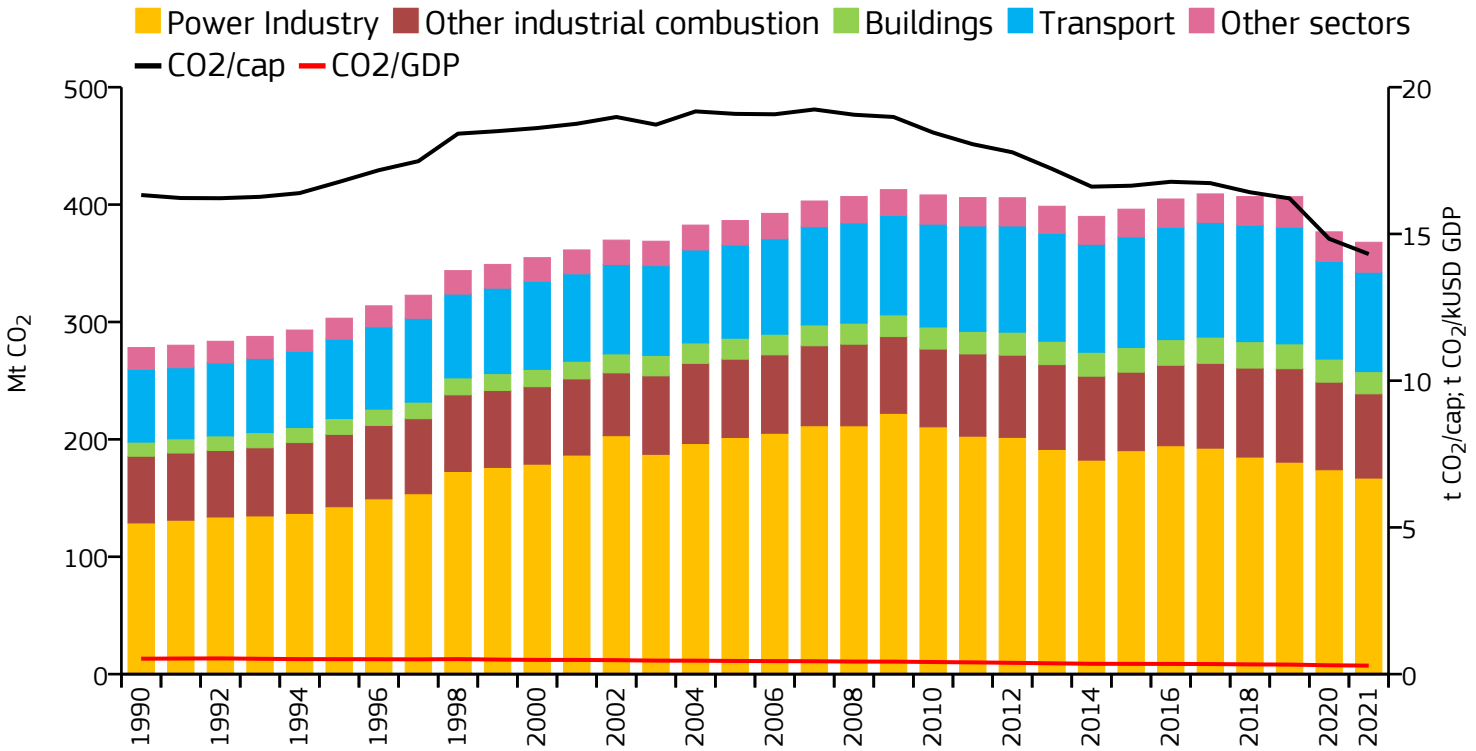


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	1.274	11.908	0.346	107.000k
2020	1.144	10.751	0.363	106.438k
2005	1.369	13.685	0.370	100.031k
1990	0.525	8.445	0.259	62.149k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+179%	-20%	+11%
Other industrial combustion	+390%	+67%	+11%
Buildings	-23%	-3%	+11%
Transport	+415%	+5%	+11%
Other sectors	+150%	+34%	0%
All sectors	+143%	-7%	+11%

Australia

Fossil CO_2 emissions by sector

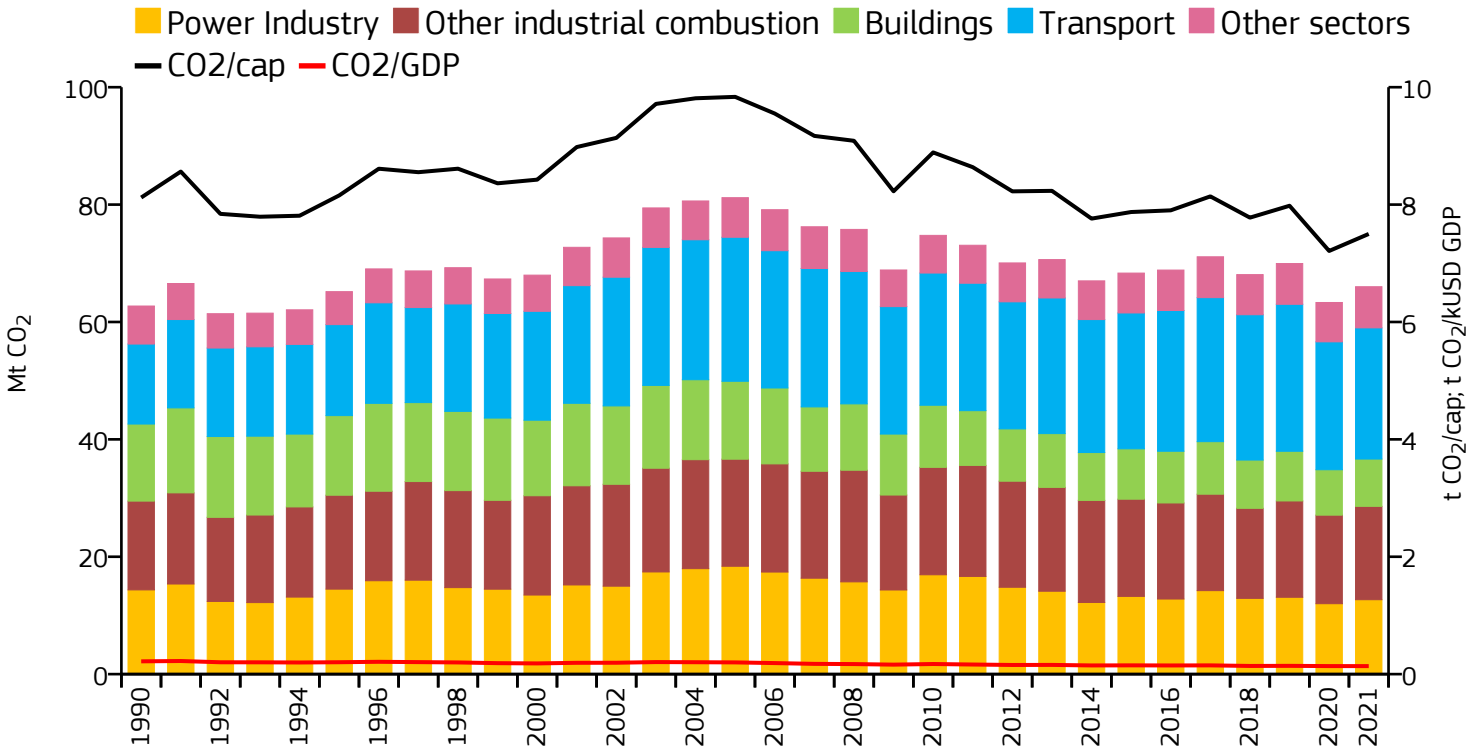


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	367.907	14.315	0.290	25.701M
2020	376.779	14.835	0.301	25.398M
2005	386.387	19.091	0.449	20.239M
1990	278.210	16.326	0.526	17.041M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+30%	-17%	-4%
Other industrial combustion	+26%	+8%	-4%
Buildings	+57%	+6%	-4%
Transport	+37%	+7%	+2%
Other sectors	+38%	+22%	+1%
All sectors	+32%	-5%	-2%

Austria

Fossil CO_2 emissions by sector

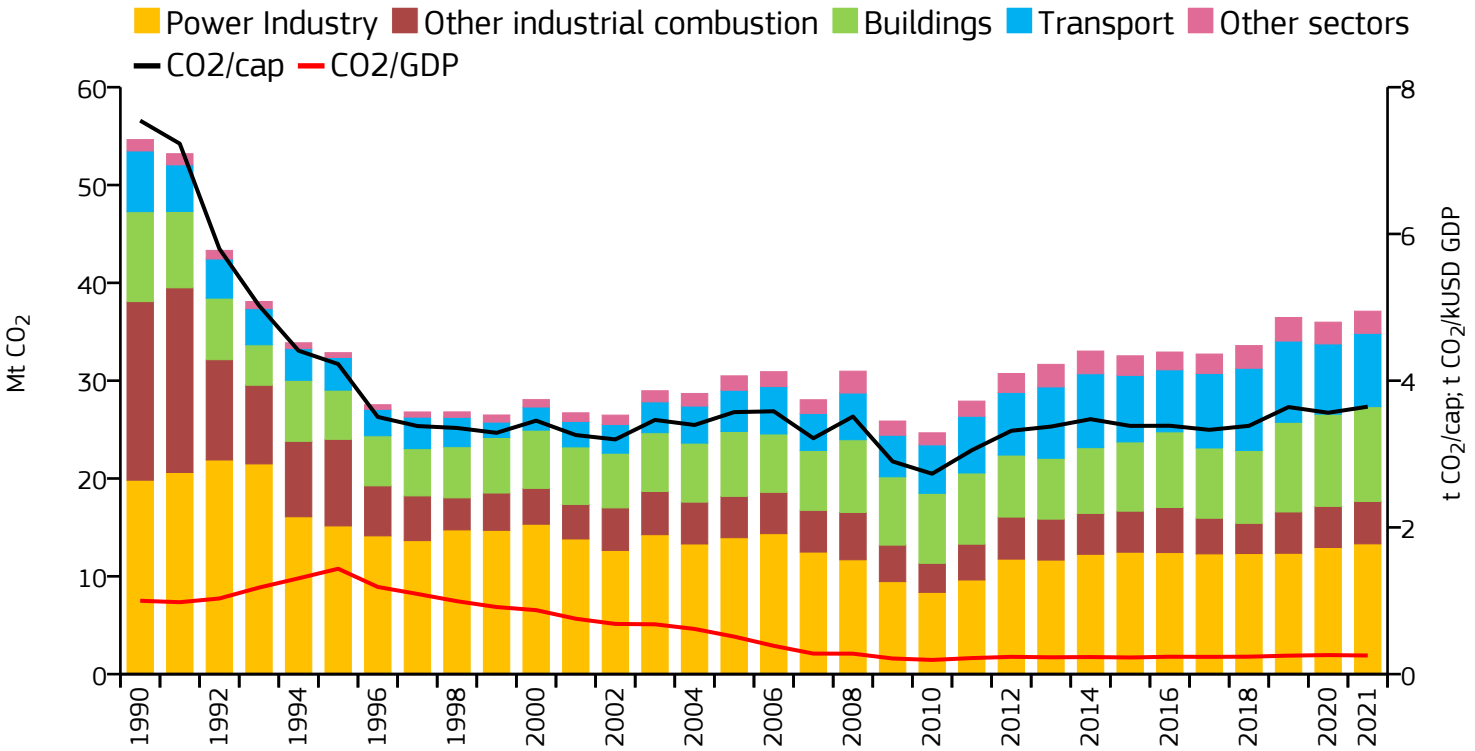


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	66.008	7.500	0.137	8.801M
2020	63.321	7.210	0.137	8.782M
2005	81.179	9.835	0.200	8.254M
1990	62.719	8.120	0.218	7.724M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-12%	-31%	+6%
Other industrial combustion	+5%	-13%	+5%
Buildings	-39%	-39%	+4%
Transport	+64%	-9%	+3%
Other sectors	+8%	+4%	+5%
All sectors	+5%	-19%	+4%

Azerbaijan

Fossil CO_2 emissions by sector

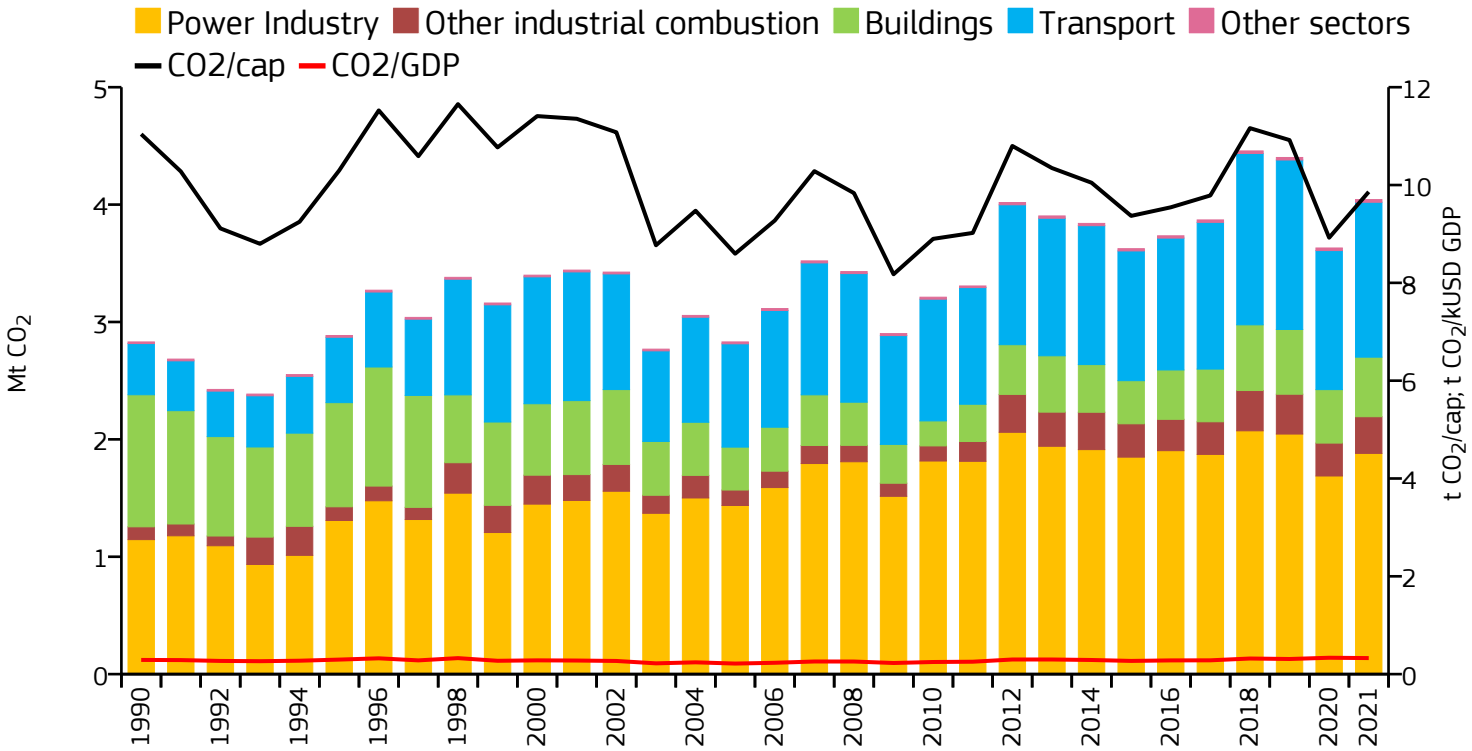


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	37.105	3.645	0.254	10.179M
2020	35.983	3.563	0.260	10.100M
2005	30.493	3.571	0.511	8.539M
1990	54.644	7.545	1.000	7.243M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-33%	-4%	+3%
Other industrial combustion	-76%	+2%	+3%
Buildings	+5%	+46%	+3%
Transport	+21%	+78%	+4%
Other sectors	+95%	+53%	+2%
All sectors	-32%	+22%	+3%

Bahamas

Fossil CO_2 emissions by sector

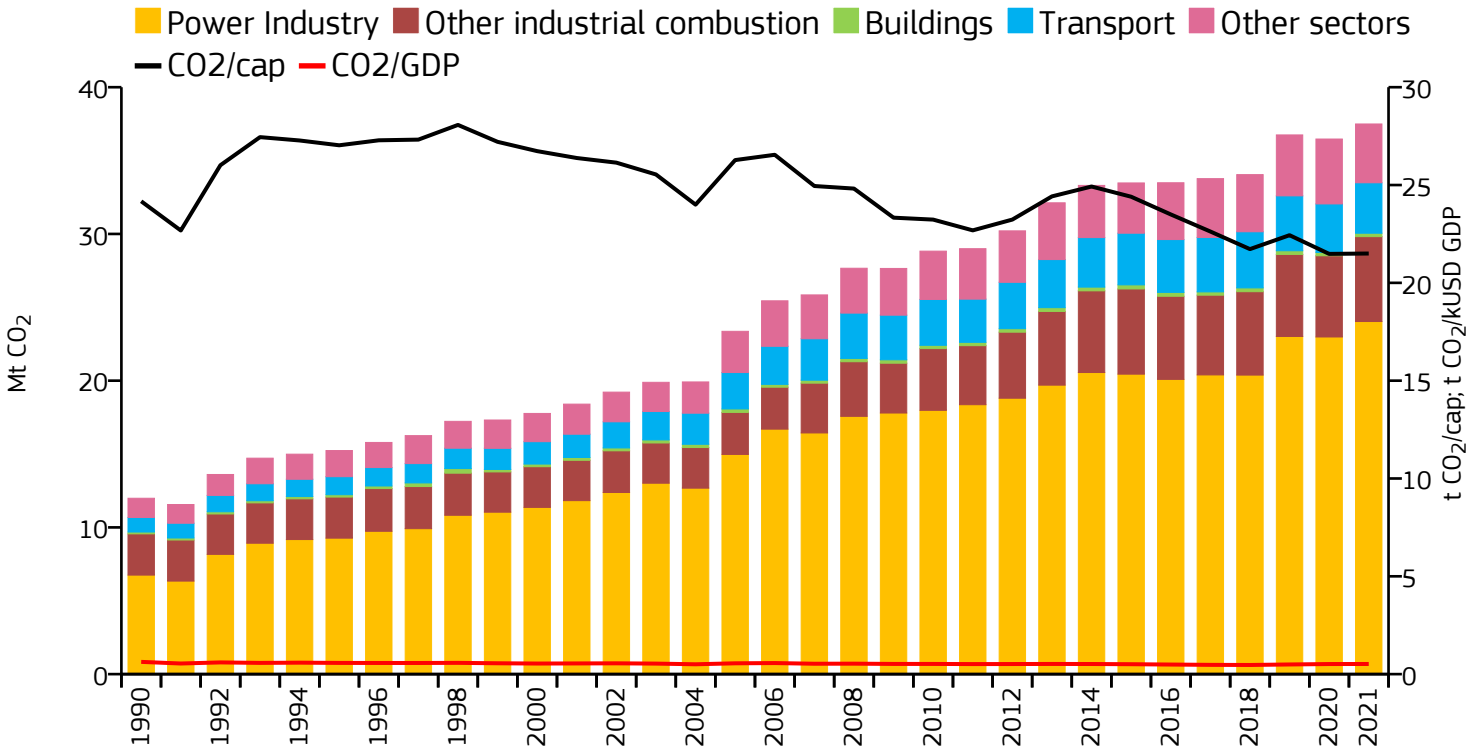


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	4.043	9.860	0.328	410.000k
2020	3.630	8.923	0.335	406.839k
2005	2.830	8.595	0.216	329.249k
1990	2.830	11.040	0.290	256.336k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+64%	+31%	+11%
Other industrial combustion	+187%	+137%	+11%
Buildings	-55%	+39%	+11%
Transport	+203%	+50%	+11%
Other sectors	+62%	+41%	+2%
All sectors	+43%	+43%	+11%

Bahrain

Fossil CO_2 emissions by sector

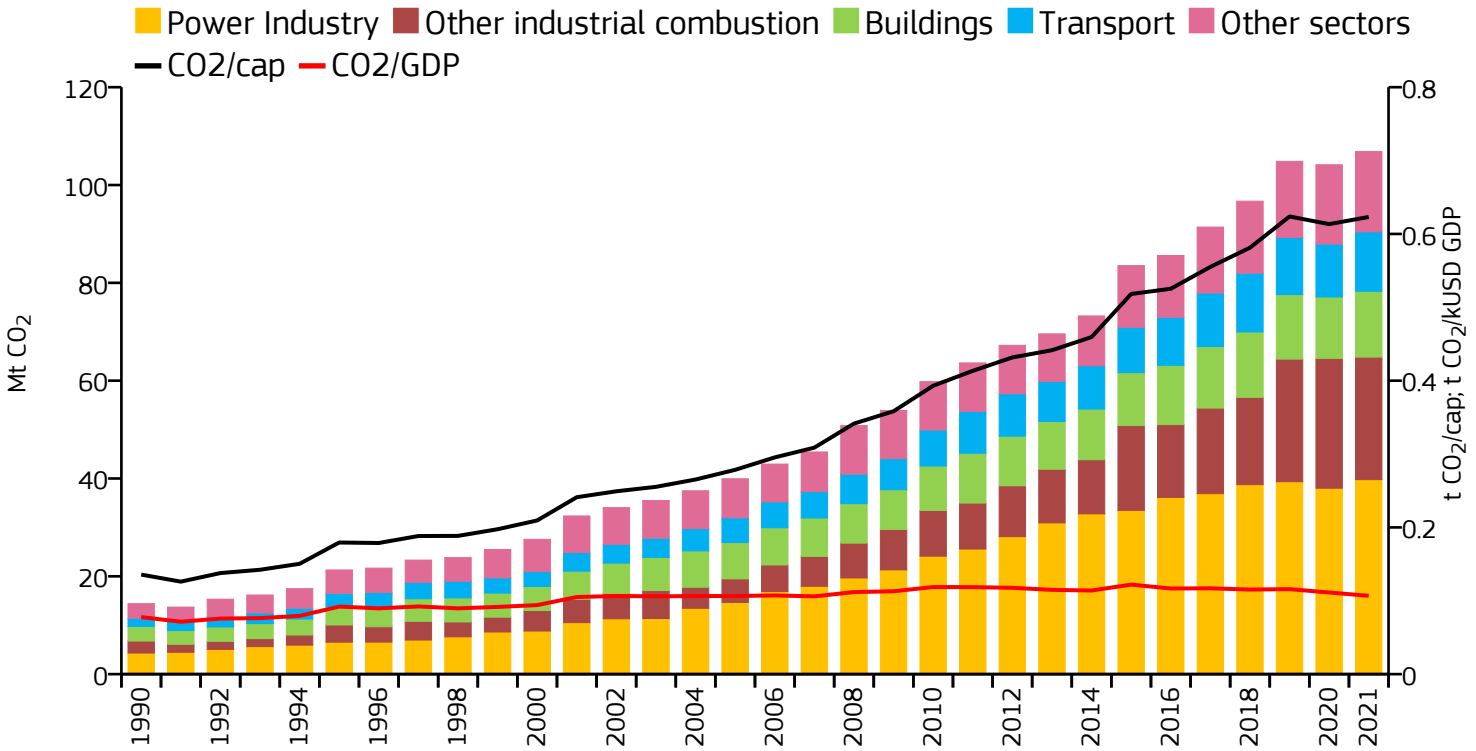


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	37.495	21.499	0.519	1.744M
2020	36.469	21.481	0.516	1.698M
2005	23.363	26.276	0.553	889.168k
1990	11.987	24.170	0.626	495.931k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+256%	+60%	+5%
Other industrial combustion	+106%	+102%	+5%
Buildings	+86%	-1%	+4%
Transport	+247%	+39%	+4%
Other sectors	+206%	+43%	-9%
All sectors	+213%	+60%	+3%

Bangladesh

Fossil CO_2 emissions by sector

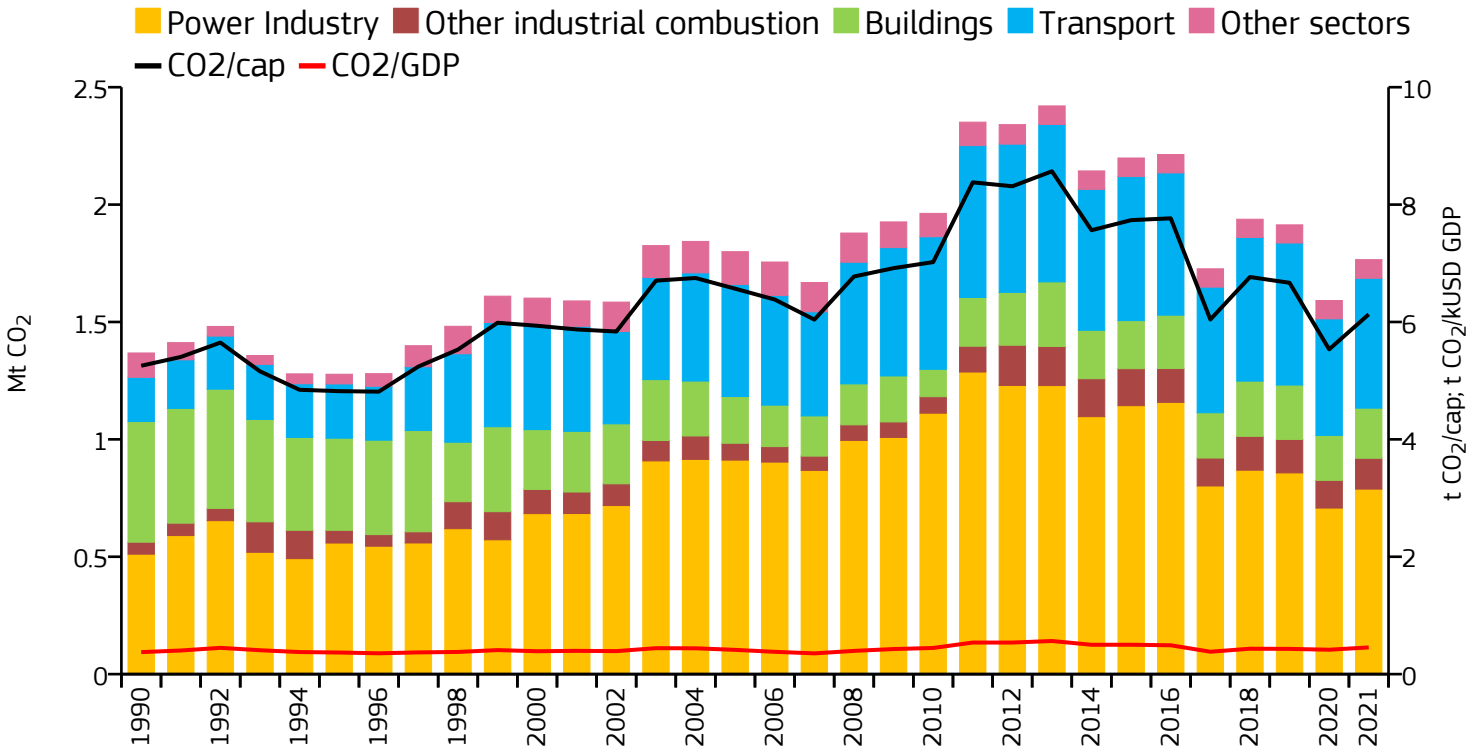


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	106.867	0.623	0.107	171.500M
2020	104.143	0.613	0.111	169.775M
2005	39.942	0.278	0.106	143.431M
1990	14.408	0.136	0.078	106.189M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+822%	+171%	+5%
Other industrial combustion	+924%	+421%	-6%
Buildings	+349%	+81%	+7%
Transport	+629%	+140%	+12%
Other sectors	+451%	+106%	+1%
All sectors	+642%	+168%	+3%

Barbados

Fossil CO_2 emissions by sector

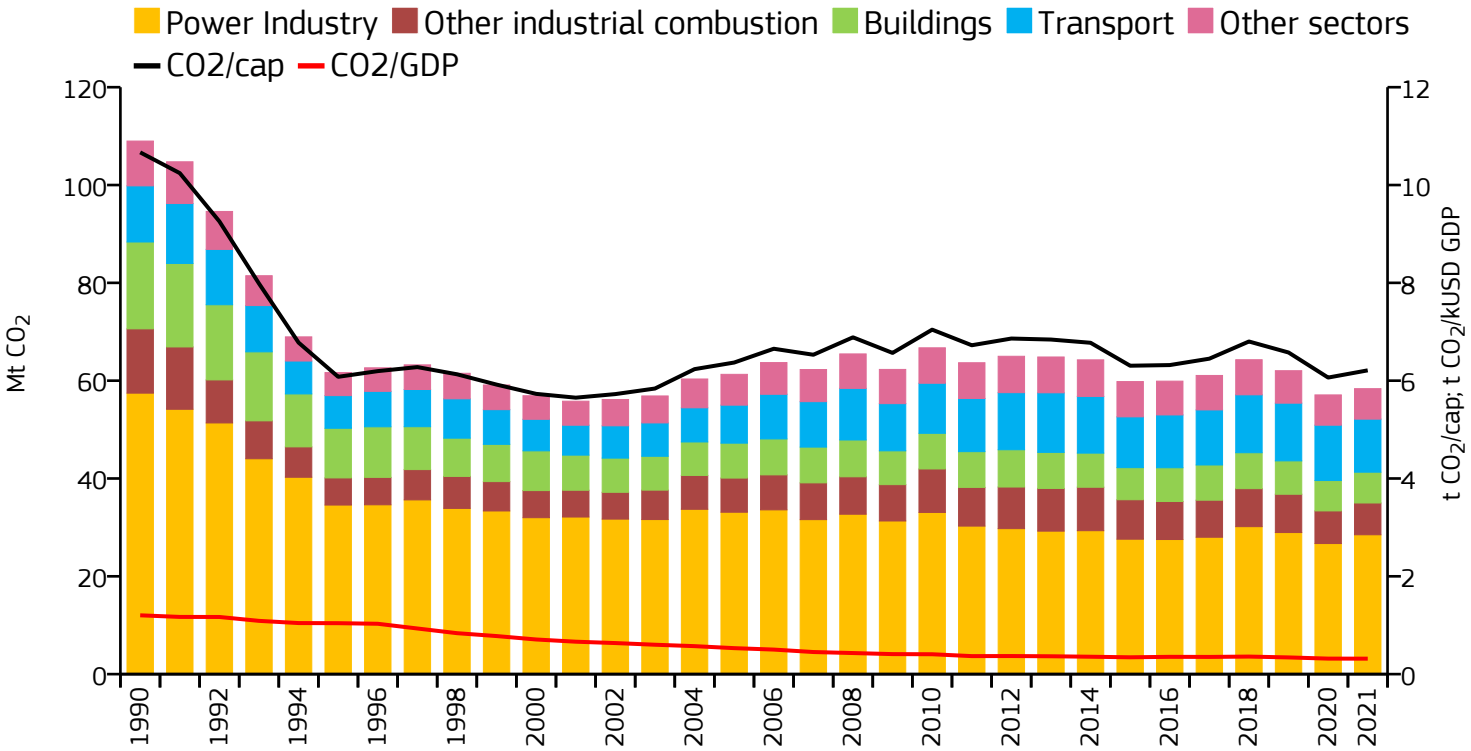


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	1.765	6.130	0.455	288.000k
2020	1.591	5.534	0.416	287.568k
2005	1.799	6.567	0.413	274.009k
1990	1.368	5.254	0.375	260.374k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+54%	-14%	+11%
Other industrial combustion	+157%	+83%	+11%
Buildings	-58%	+7%	+11%
Transport	+193%	+16%	+11%
Other sectors	-23%	-43%	+2%
All sectors	+29%	-2%	+11%

Belarus

Fossil CO_2 emissions by sector

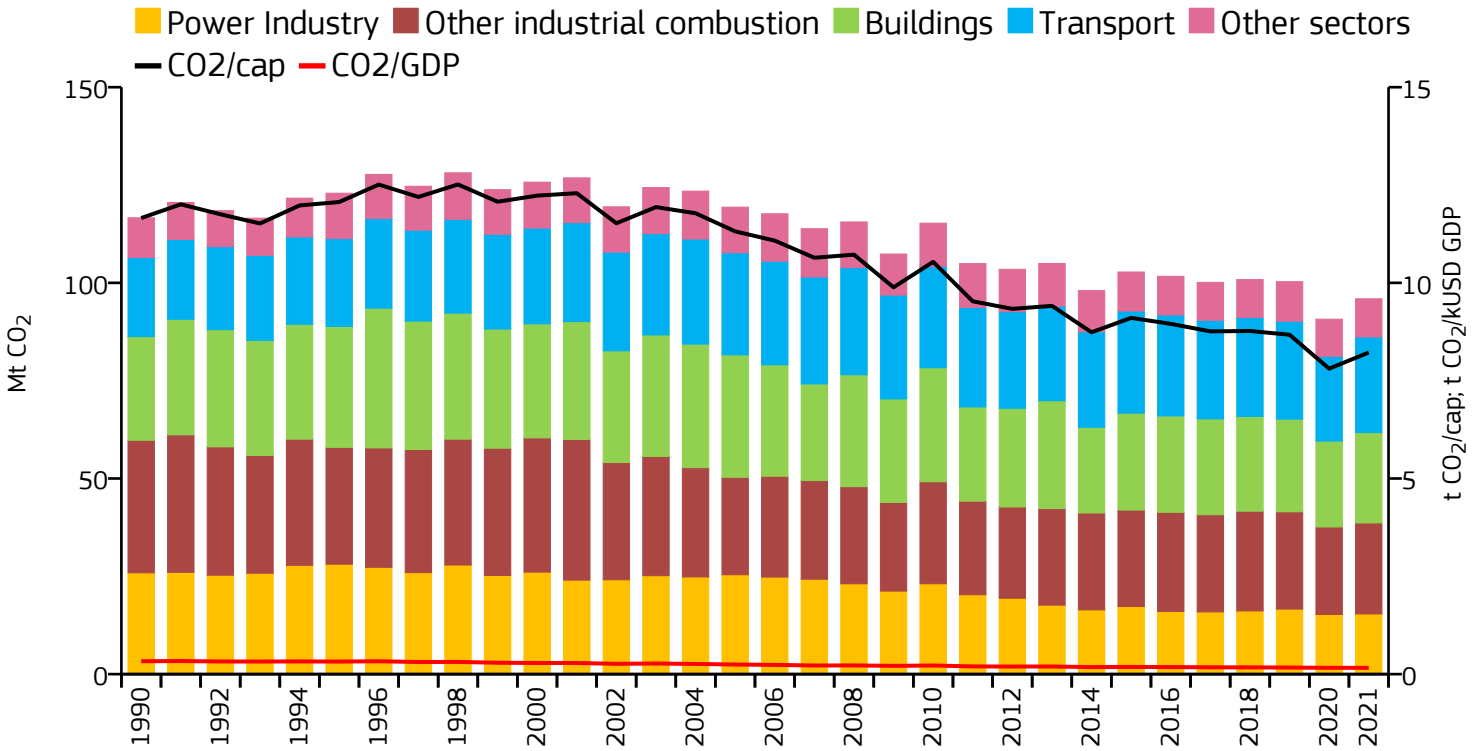


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	58.364	6.211	0.316	9.397M
2020	57.089	6.063	0.317	9.415M
2005	61.296	6.371	0.531	9.622M
1990	108.991	10.668	1.203	10.217M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-50%	-14%	+7%
Other industrial combustion	-51%	-7%	-3%
Buildings	-65%	-12%	+1%
Transport	-5%	+40%	-4%
Other sectors	-32%	-1%	+1%
All sectors	-46%	-5%	+2%

Belgium

Fossil CO_2 emissions by sector

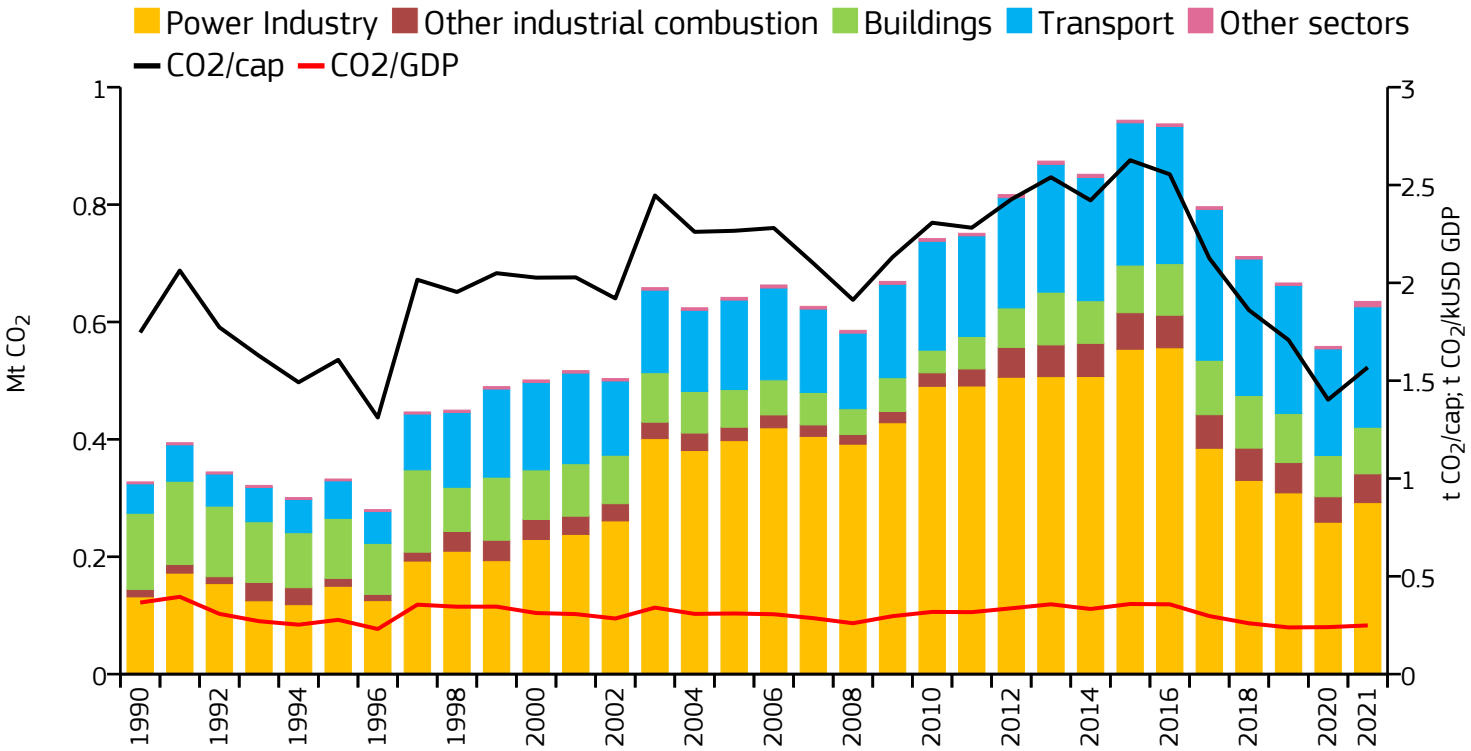


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	95.924	8.220	0.160	11.669M
2020	90.714	7.807	0.161	11.620M
2005	119.344	11.316	0.246	10.547M
1990	116.634	11.656	0.330	10.006M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-41%	-39%	+1%
Other industrial combustion	-31%	-7%	+4%
Buildings	-13%	-26%	+5%
Transport	+21%	-6%	+13%
Other sectors	-4%	-16%	+3%
All sectors	-18%	-20%	+6%

Belize

Fossil CO_2 emissions by sector

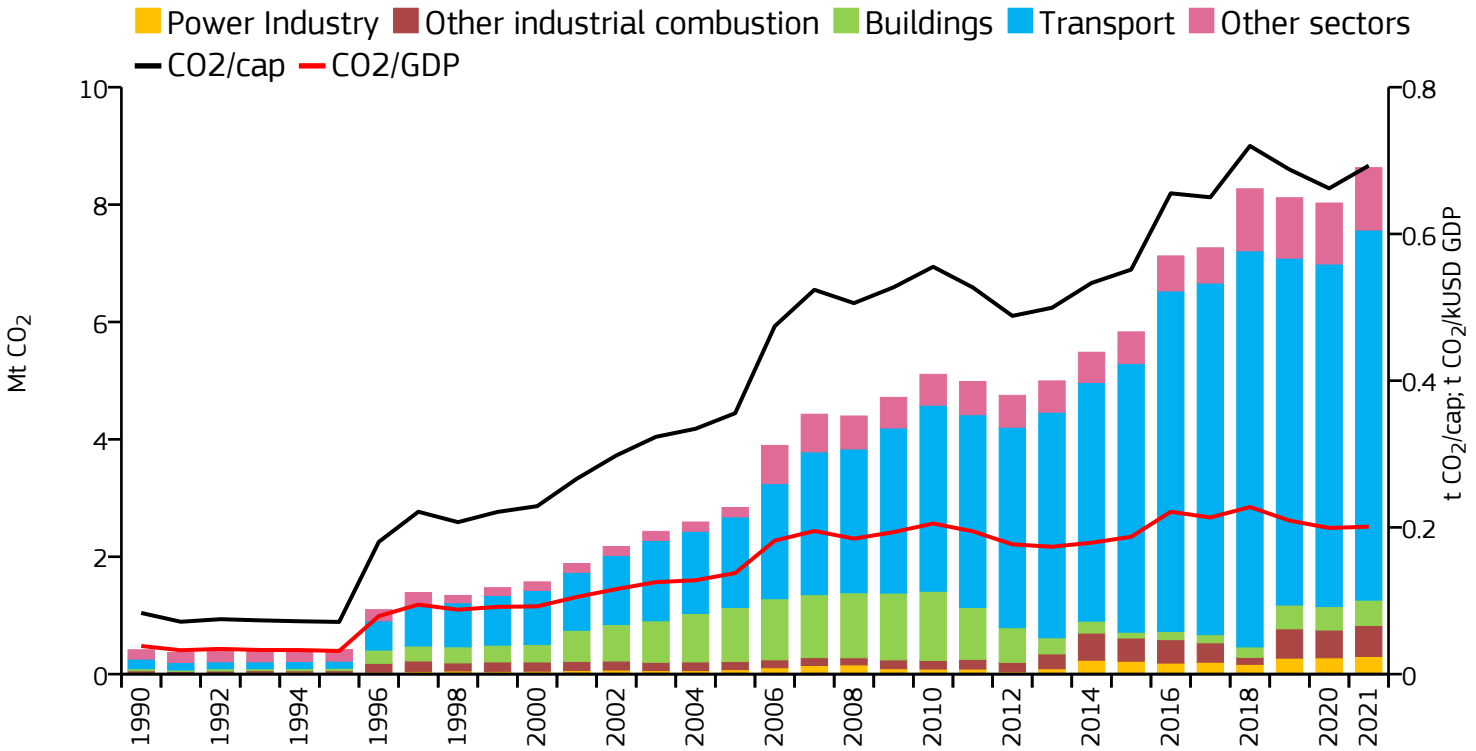


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.635	1.568	0.249	405.000k
2020	0.558	1.403	0.240	398.007k
2005	0.642	2.266	0.310	283.277k
1990	0.328	1.746	0.366	187.552k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +122%	↘ -27%	↗ +13%
Other industrial combustion	↗ +291%	↗ +115%	↗ +13%
Buildings	↘ -39%	↗ +24%	↗ +13%
Transport	↗ +309%	↗ +35%	↗ +13%
Other sectors	↗ +179%	↗ +99%	↗ +119%
All sectors	↗ +94%	→ -1%	↗ +14%

Benin

Fossil CO_2 emissions by sector

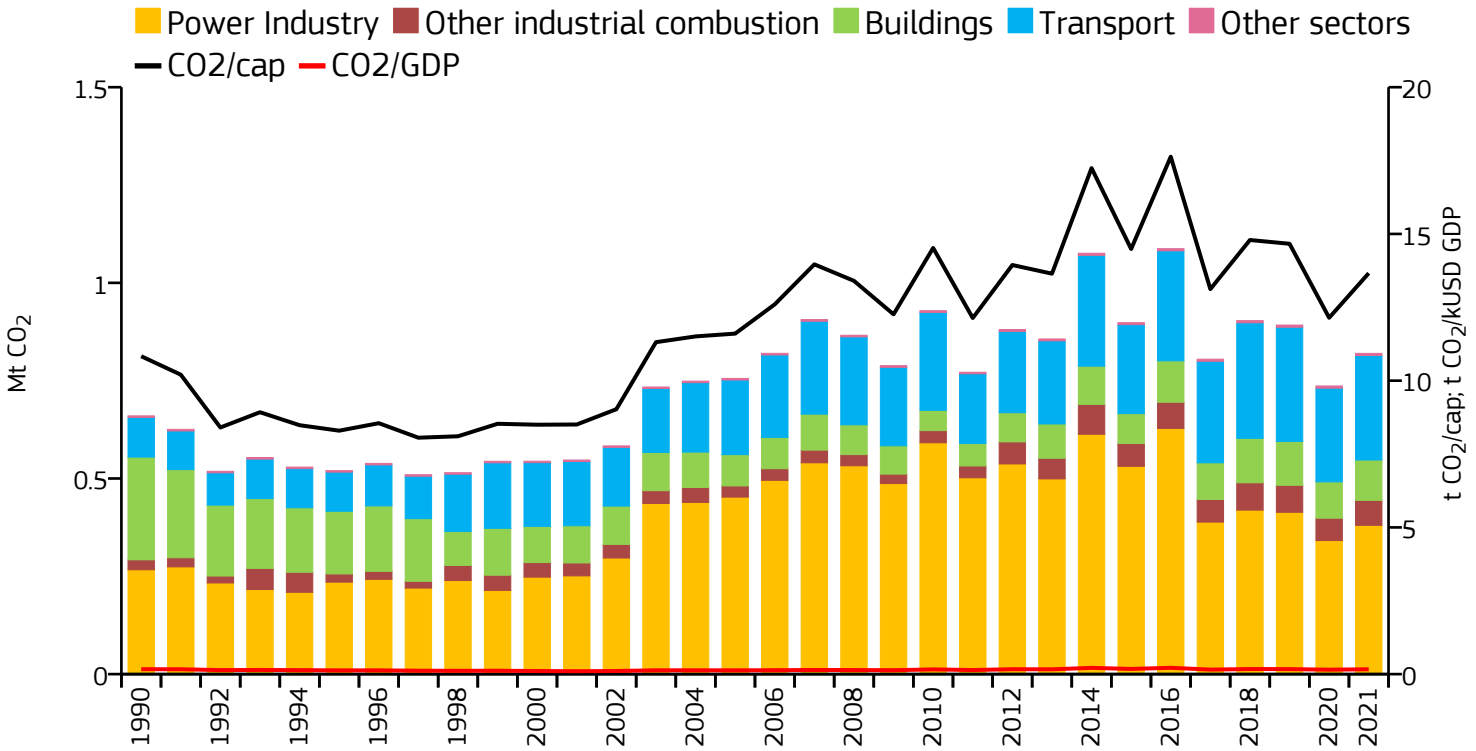


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	8.629	0.693	0.201	12.450M
2020	8.027	0.662	0.199	12.123M
2005	2.839	0.356	0.138	7.982M
1990	0.415	0.083	0.038	4.979M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +1081%	↗ +292%	↗ +8%
Other industrial combustion	↗ +1597%	↗ +285%	↗ +12%
Buildings	↗ +1148%	↘ -53%	↗ +8%
Transport	↗ +3717%	↗ +309%	↗ +8%
Other sectors	↗ +569%	↗ +561%	→ +2%
All sectors	↗ +1978%	↗ +204%	↗ +8%

Bermuda

Fossil CO_2 emissions by sector

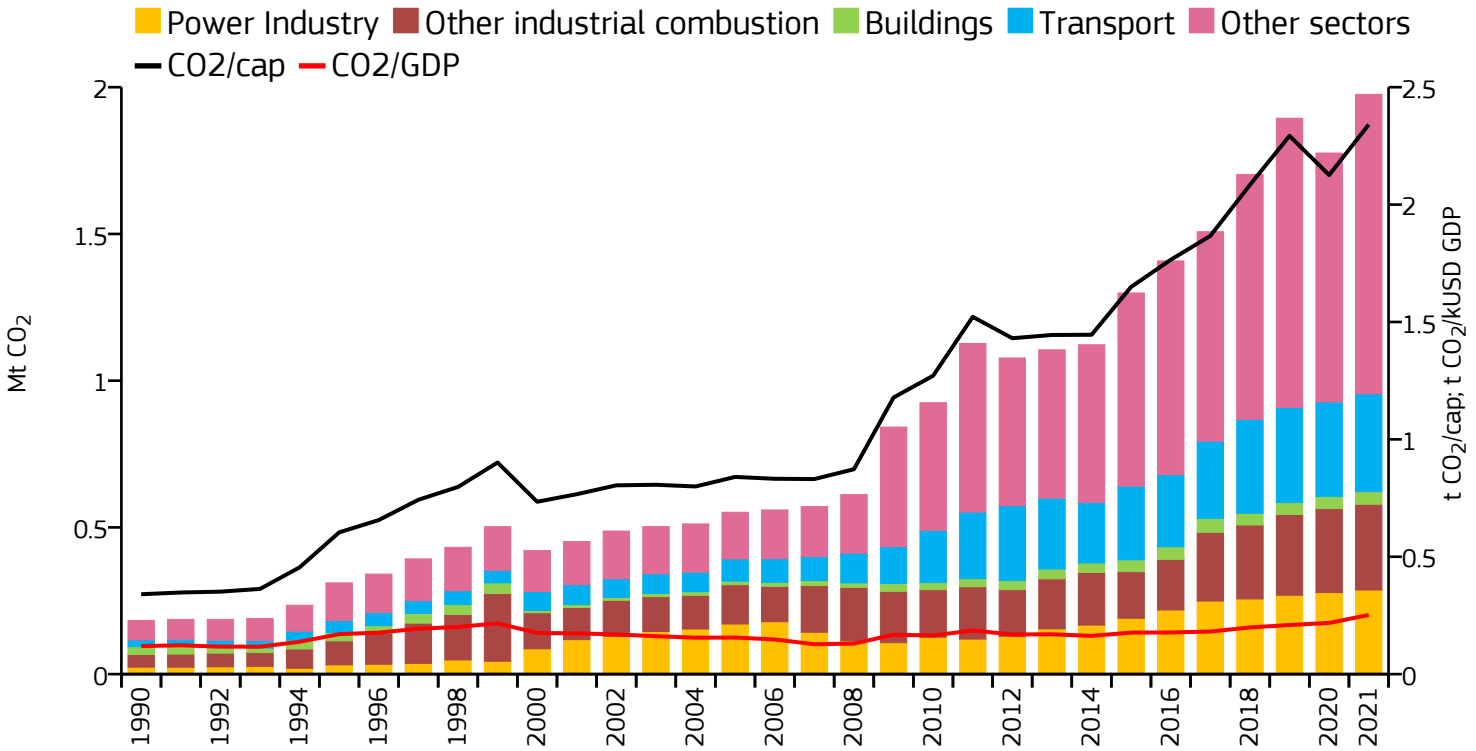


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.820	13.662	0.166	60.000k
2020	0.736	12.144	0.151	60.639k
2005	0.756	11.604	0.129	65.130k
1990	0.660	10.833	0.169	60.930k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +43%	↘ -16%	↗ +11%
Other industrial combustion	↗ +151%	↗ +123%	↗ +11%
Buildings	↘ -61%	↗ +29%	↗ +11%
Transport	↗ +163%	↗ +40%	↗ +11%
Other sectors	↗ +40%	↗ +34%	→ 0%
All sectors	↗ +24%	↗ +8%	↗ +11%

Bhutan

Fossil CO_2 emissions by sector

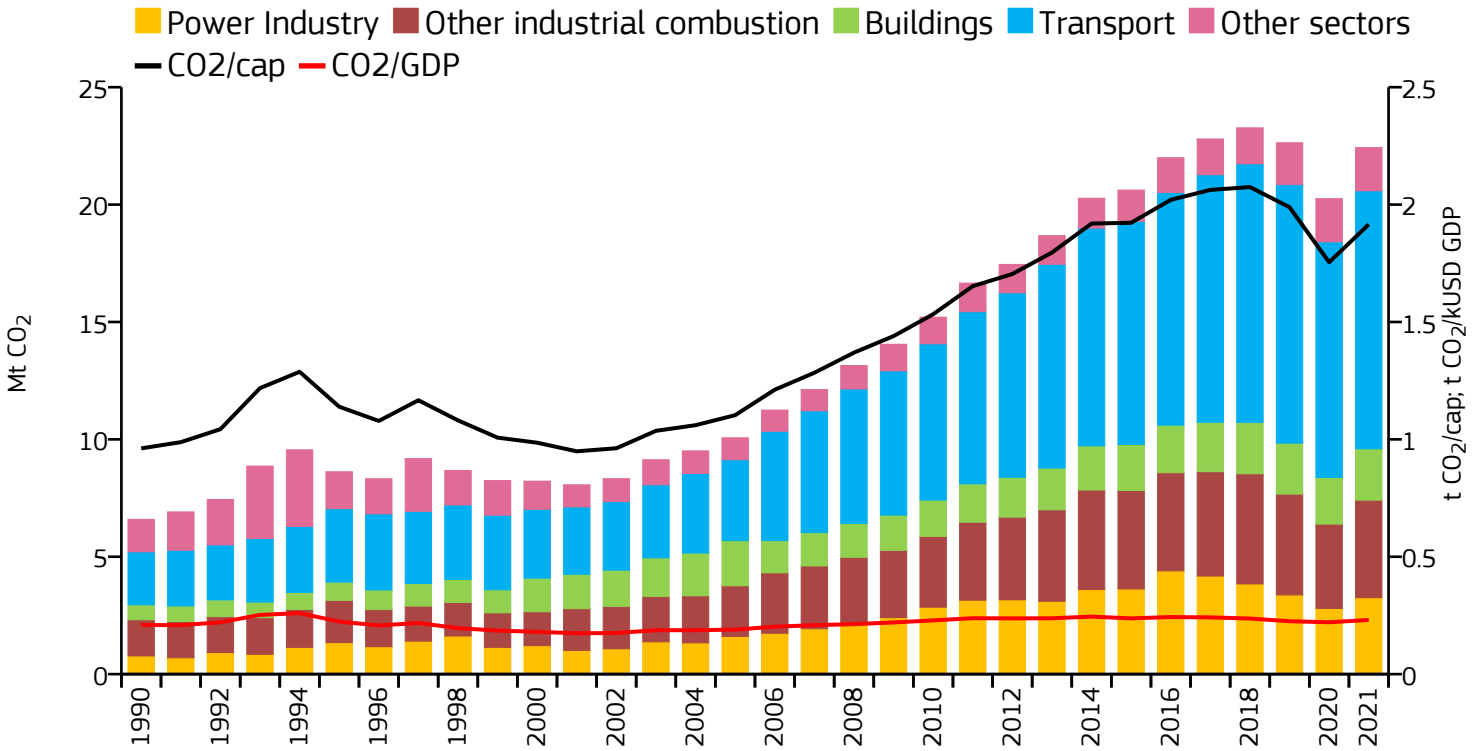


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	1.976	2.341	0.252	844.000k
2020	1.776	2.126	0.218	835.245k
2005	0.552	0.840	0.156	656.639k
1990	0.183	0.340	0.120	537.280k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+1099%	+68%	+3%
Other industrial combustion	+575%	+118%	+2%
Buildings	+65%	+261%	+4%
Transport	+1313%	+340%	+4%
Other sectors	+1448%	+542%	+20%
All sectors	+981%	+258%	+11%

Bolivia

Fossil CO_2 emissions by sector

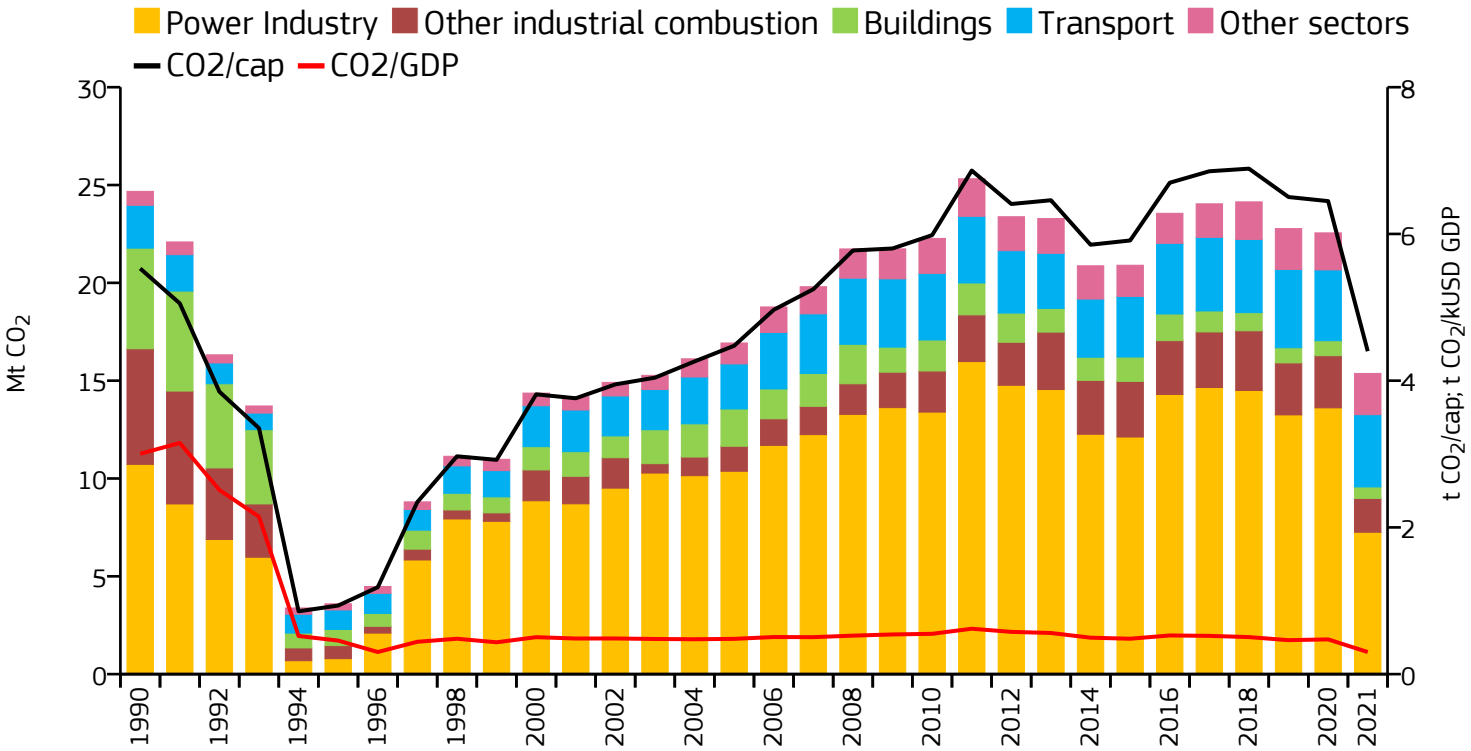


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	22.428	1.916	0.231	11.708M
2020	20.253	1.754	0.221	11.544M
2005	10.066	1.103	0.190	9.125M
1990	6.593	0.962	0.209	6.856M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+321%	+103%	+16%
Other industrial combustion	+170%	+93%	+16%
Buildings	+243%	+14%	+10%
Transport	+387%	+219%	+10%
Other sectors	+33%	+97%	0%
All sectors	+240%	+123%	+11%

Bosnia and Herzegovina

Fossil CO_2 emissions by sector

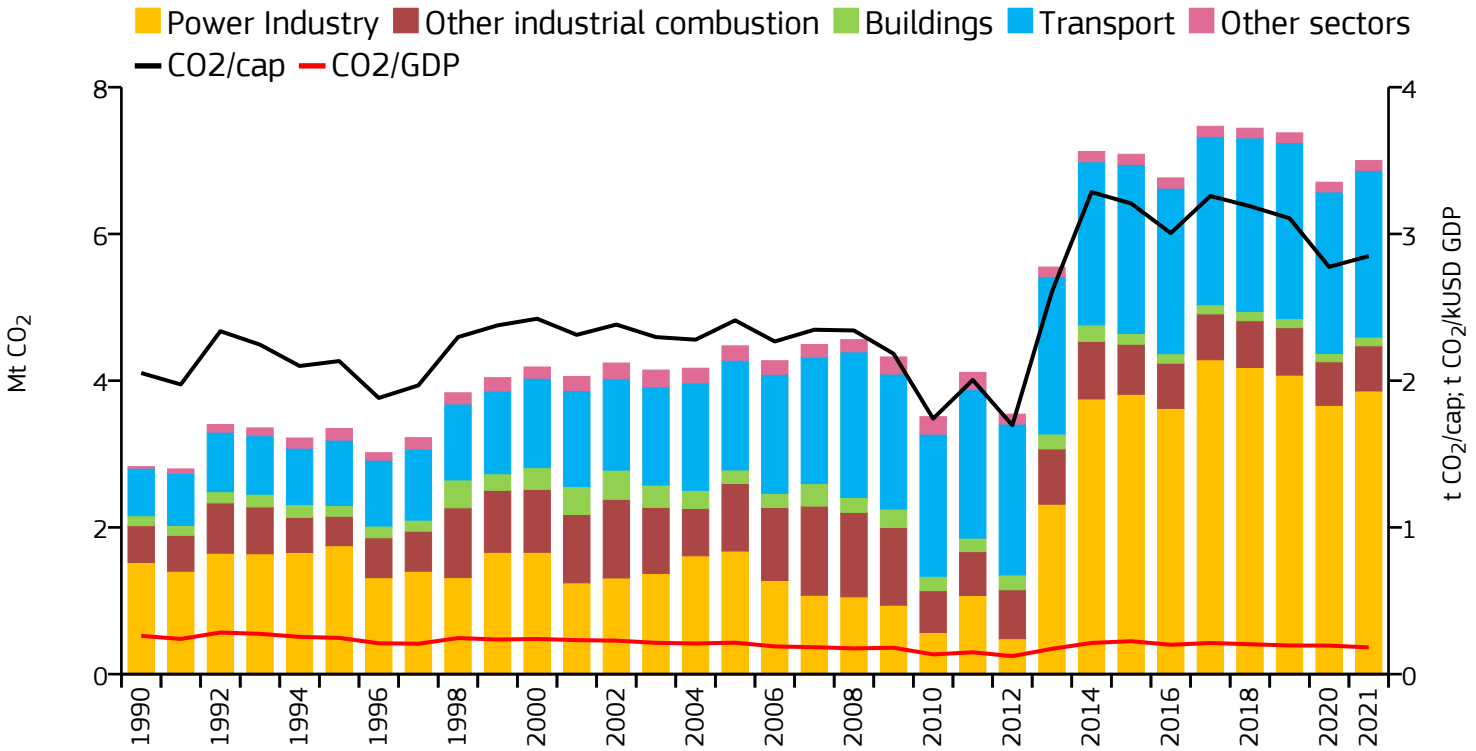


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	15.370	4.402	0.301	3.492M
2020	22.554	6.447	0.473	3.498M
2005	16.926	4.476	0.481	3.782M
1990	24.676	5.529	3.003	4.463M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-32%	-30%	-47%
Other industrial combustion	-71%	+35%	-35%
Buildings	-89%	-69%	-23%
Transport	+69%	+60%	+2%
Other sectors	+197%	+97%	+11%
All sectors	-38%	-9%	-32%

Botswana

Fossil CO_2 emissions by sector

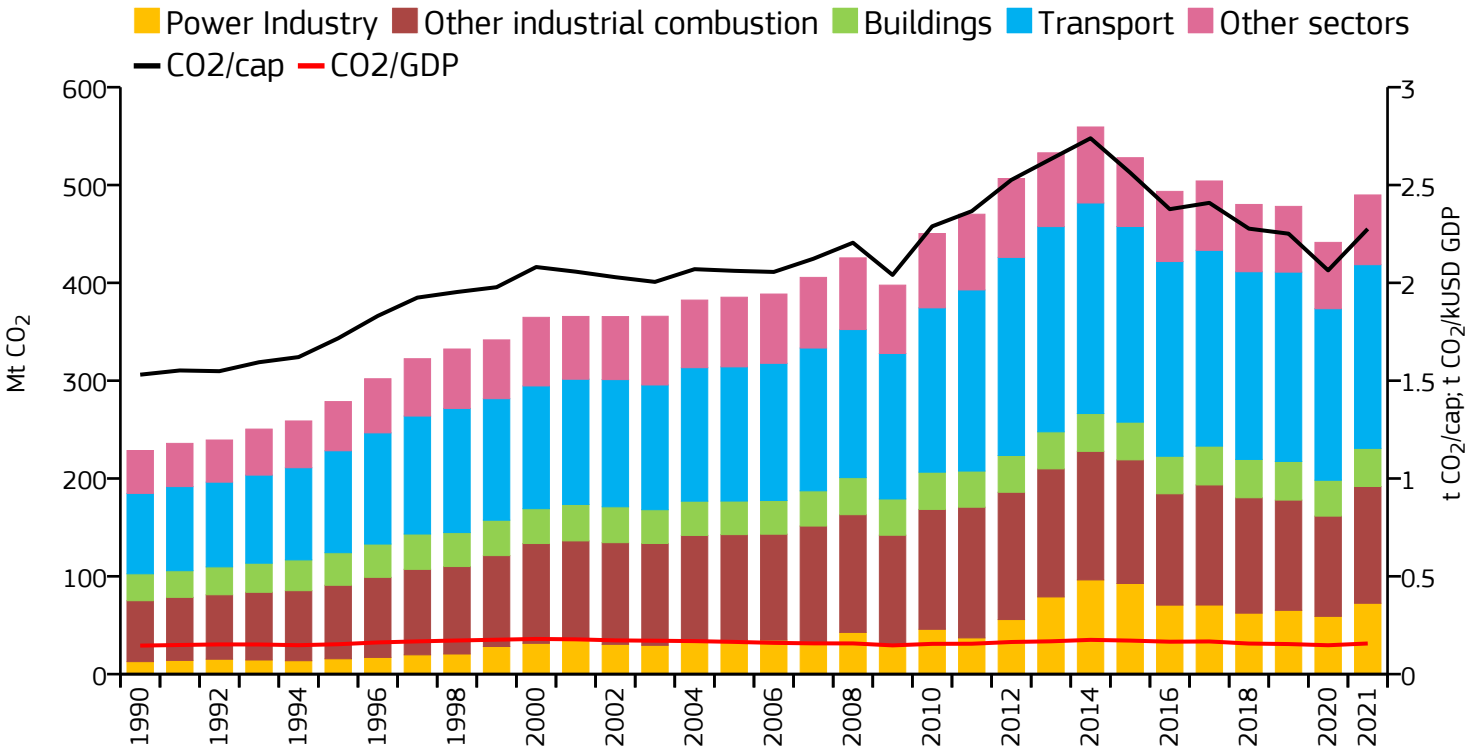


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	7.000	2.849	0.182	2.457M
2020	6.705	2.776	0.194	2.416M
2005	4.475	2.411	0.214	1.856M
1990	2.828	2.052	0.261	1.378M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+153%	+130%	+5%
Other industrial combustion	+23%	-33%	+4%
Buildings	-12%	-36%	+3%
Transport	+251%	+52%	+3%
Other sectors	+560%	-32%	+1%
All sectors	+148%	+56%	+4%

Brazil

Fossil CO_2 emissions by sector

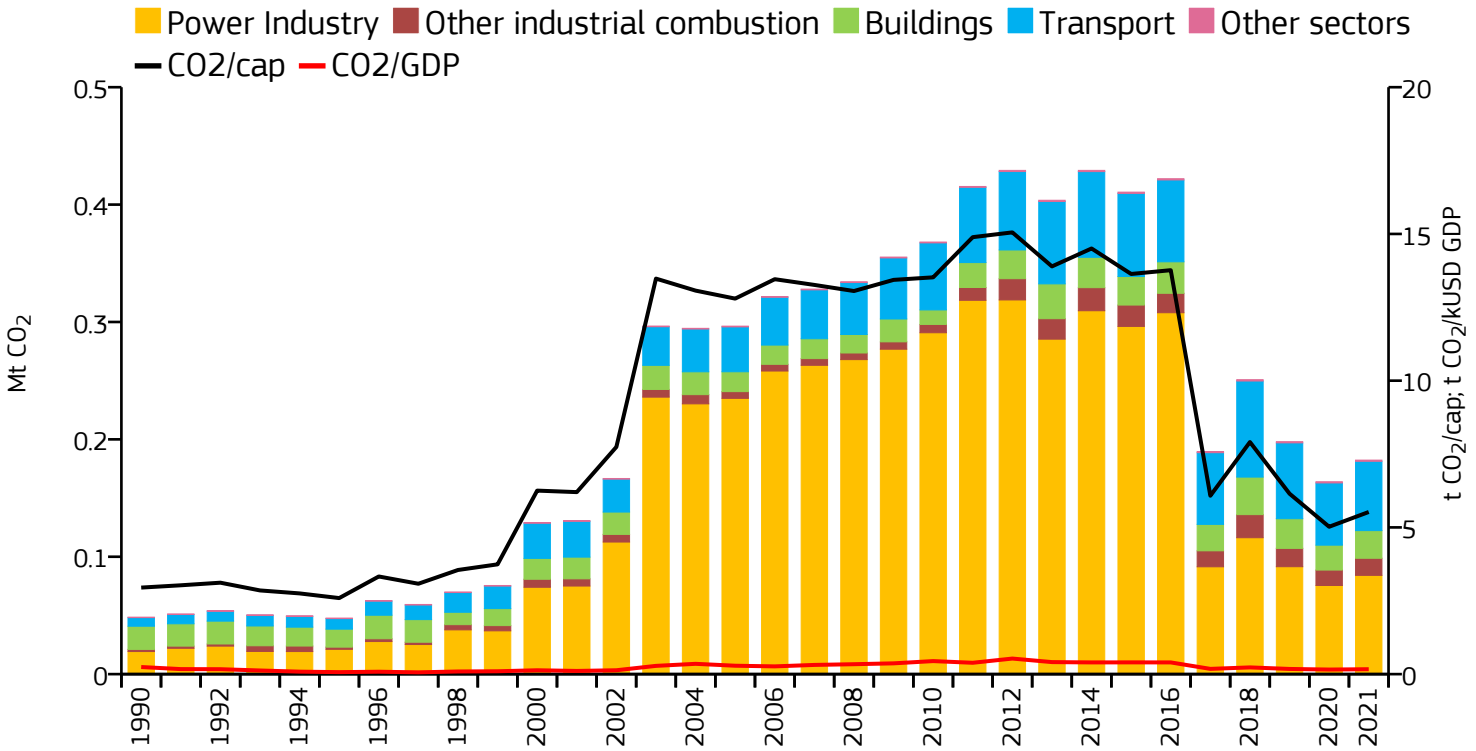


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	489.858	2.275	0.157	215.278M
2020	441.369	2.064	0.148	213.863M
2005	385.321	2.061	0.165	186.917M
1990	228.603	1.531	0.146	149.352M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+467%	+109%	+23%
Other industrial combustion	+92%	+11%	+16%
Buildings	+42%	+14%	+6%
Transport	+128%	+37%	+7%
Other sectors	+63%	0%	+5%
All sectors	+114%	+27%	+11%

British Virgin Islands

Fossil CO_2 emissions by sector

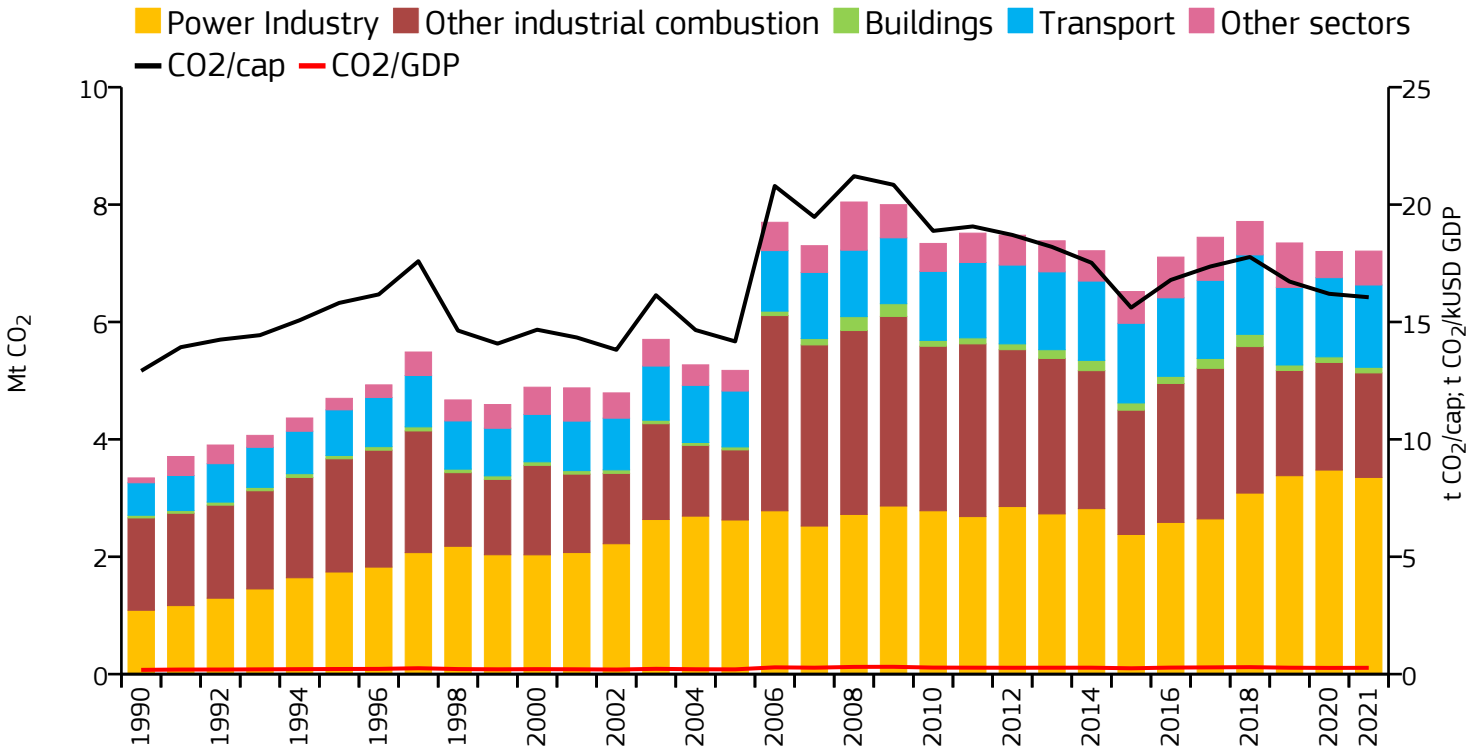


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.182	5.525	0.168	33.000k
2020	0.164	5.022	0.156	32.634k
2005	0.296	12.796	0.286	23.168k
1990	0.049	2.949	0.242	16.461k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +337%	↘ -64%	↗ +11%
Other industrial combustion	↗ +697%	↗ +155%	↗ +11%
Buildings	↗ +19%	↗ +39%	↗ +11%
Transport	↗ +707%	↗ +54%	↗ +11%
Other sectors	↗ +147%	↗ +56%	→ -1%
All sectors	↗ +276%	↘ -38%	↗ +11%

Brunei

Fossil CO_2 emissions by sector

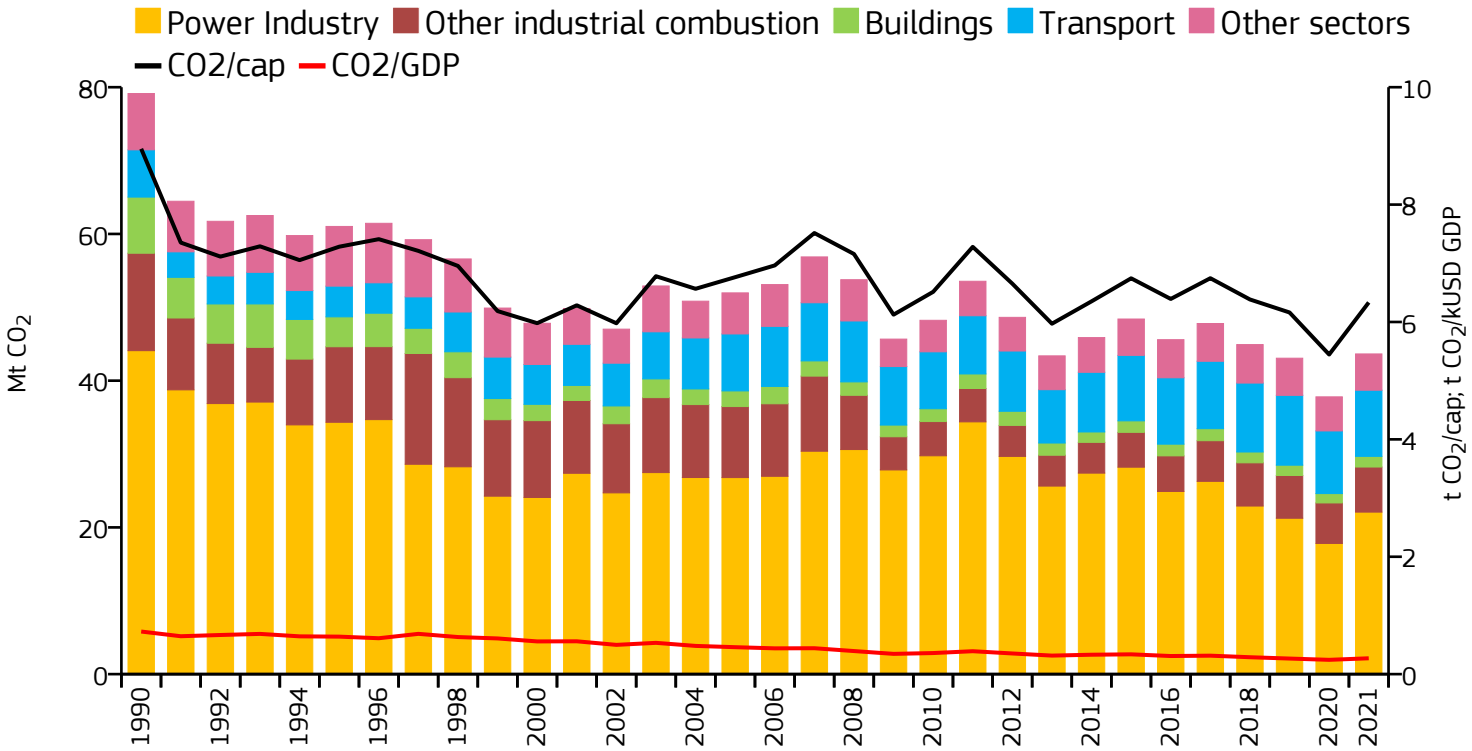


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	7.208	16.053	0.269	449.000k
2020	7.201	16.200	0.265	444.519k
2005	5.175	14.173	0.203	365.158k
1990	3.343	12.918	0.181	258.785k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+208%	+28%	-4%
Other industrial combustion	+13%	+49%	-3%
Buildings	+109%	+87%	0%
Transport	+153%	+47%	+4%
Other sectors	+599%	+64%	+29%
All sectors	+116%	+39%	0%

Bulgaria

Fossil CO_2 emissions by sector

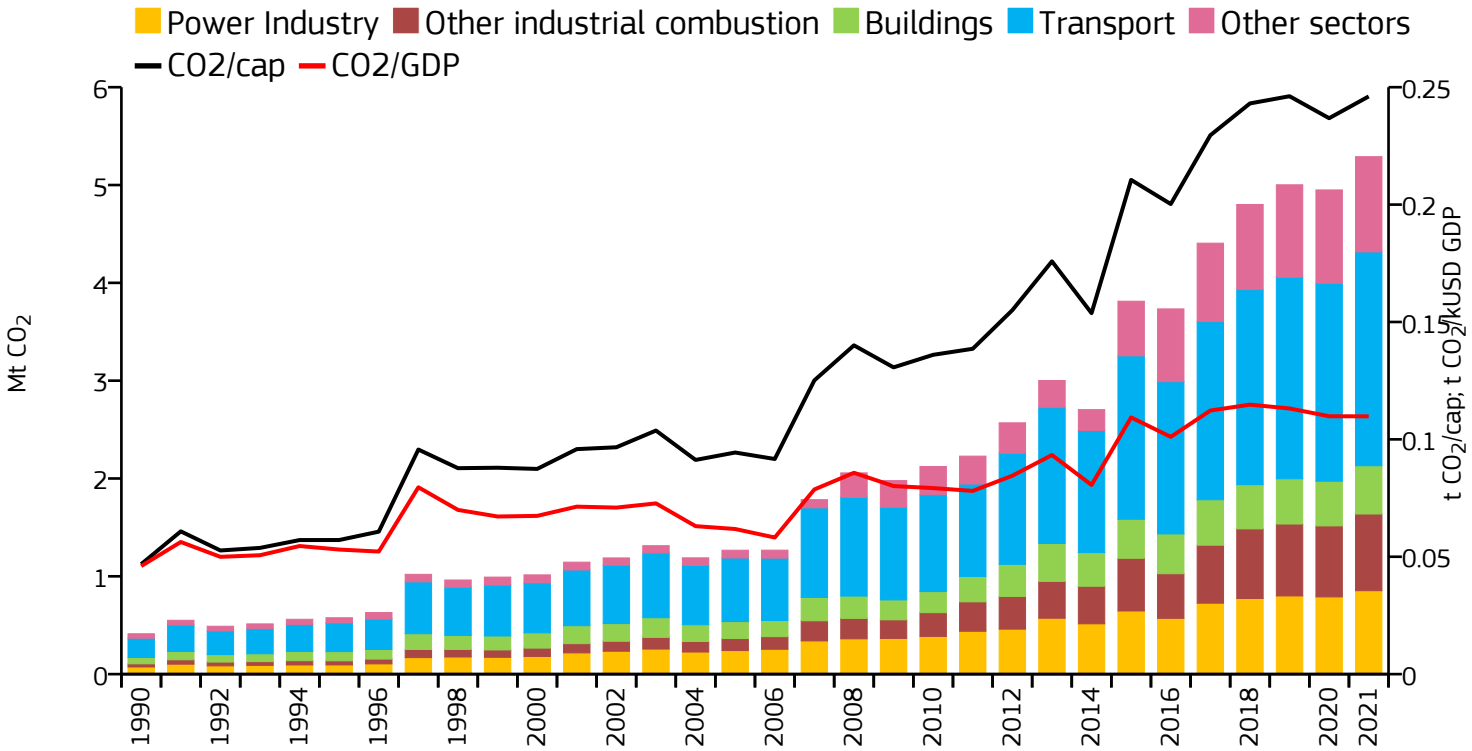


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	43.644	6.333	0.270	6.892M
2020	37.795	5.446	0.244	6.941M
2005	51.967	6.763	0.459	7.684M
1990	79.138	8.951	0.726	8.841M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-50%	-18%	+24%
Other industrial combustion	-54%	-37%	+11%
Buildings	-81%	-32%	+14%
Transport	+40%	+16%	+6%
Other sectors	-36%	-12%	+6%
All sectors	-45%	-16%	+15%

Burkina Faso

Fossil CO_2 emissions by sector

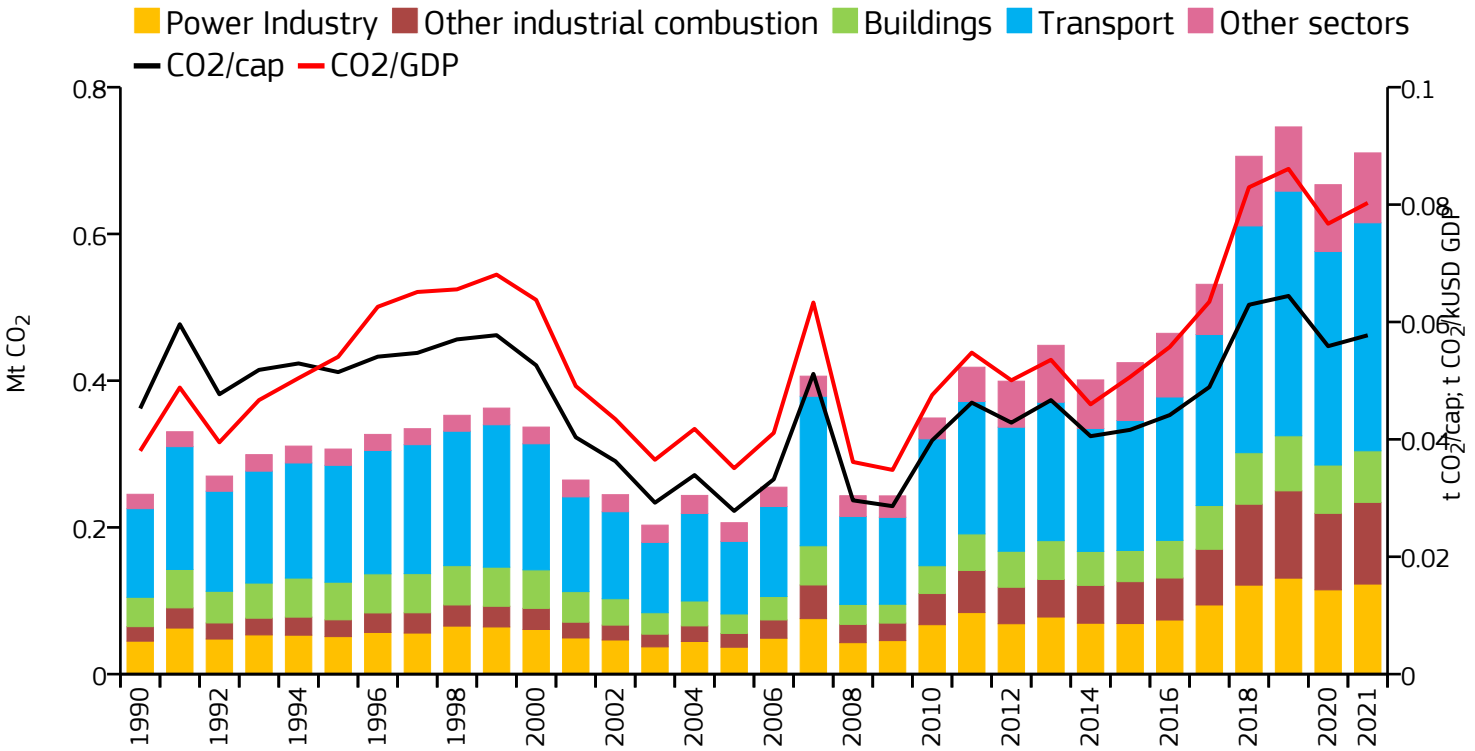


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	5.290	0.246	0.110	21.497M
2020	4.950	0.237	0.110	20.903M
2005	1.267	0.094	0.062	13.422M
1990	0.413	0.047	0.046	8.811M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +1066%	↗ +254%	↗ +8%
Other industrial combustion	↗ +2340%	↗ +539%	↗ +8%
Buildings	↗ +657%	↗ +184%	↗ +8%
Transport	↗ +1012%	↗ +236%	↗ +8%
Other sectors	↗ +2034%	↗ +1118%	→ +2%
All sectors	↗ +1182%	↗ +318%	↗ +7%

Burundi

Fossil CO_2 emissions by sector

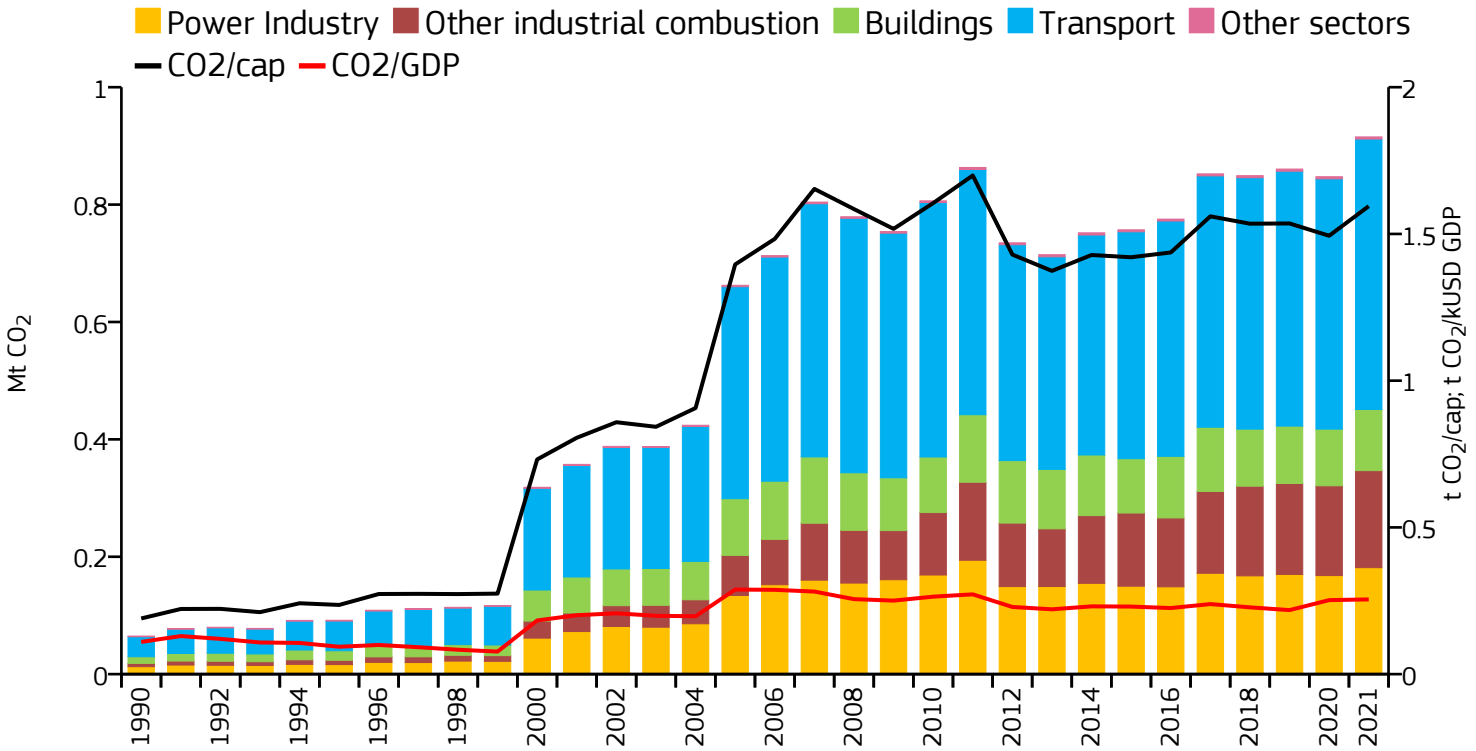


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.710	0.058	0.080	12.306M
2020	0.667	0.056	0.077	11.939M
2005	0.206	0.028	0.035	7.423M
1990	0.245	0.045	0.038	5.415M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +173%	↗ +235%	↗ +7%
Other industrial combustion	↗ +464%	↗ +493%	↗ +7%
Buildings	↗ +76%	↗ +165%	↗ +7%
Transport	↗ +157%	↗ +214%	↗ +7%
Other sectors	↗ +386%	↗ +274%	→ +5%
All sectors	↗ +190%	↗ +244%	↗ +6%

Cabo Verde

Fossil CO_2 emissions by sector

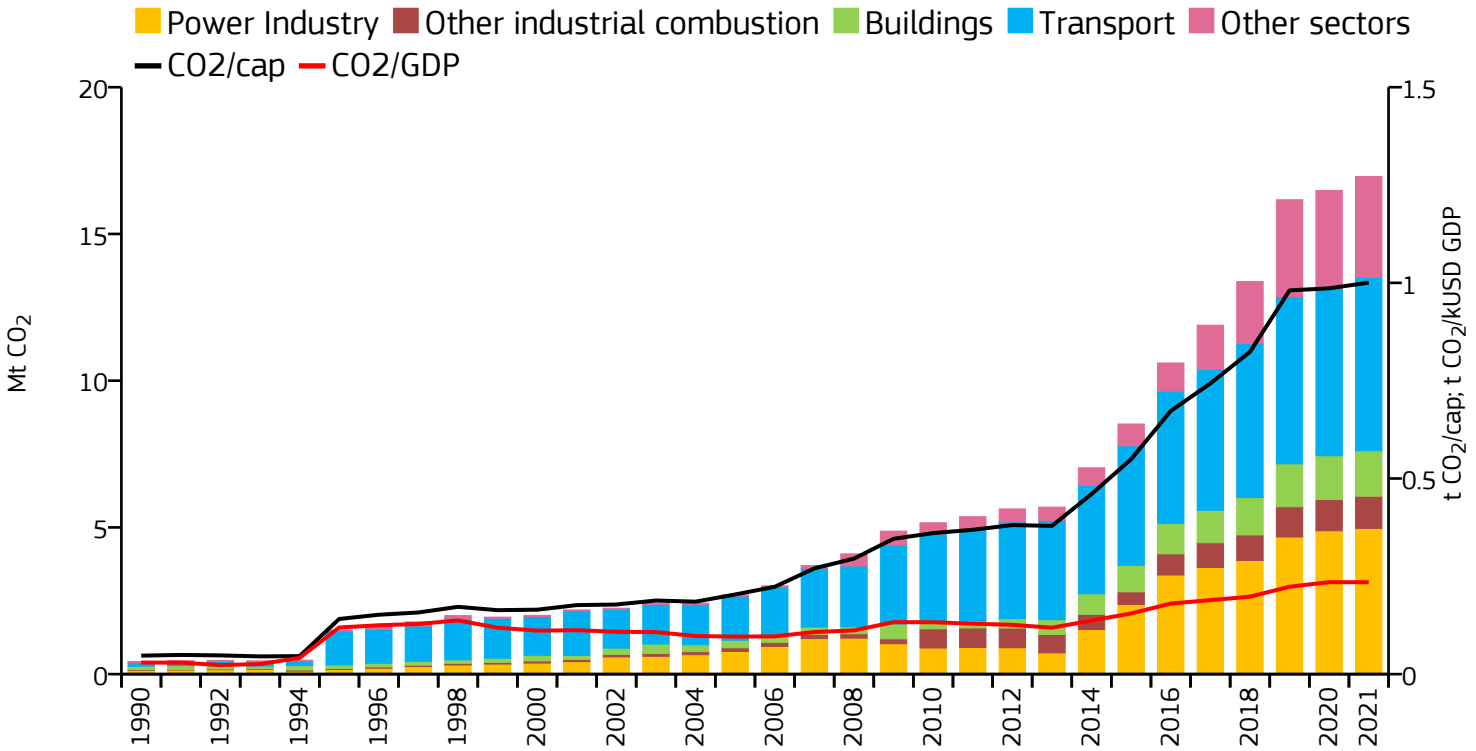


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.915	1.595	0.255	574.000k
2020	0.847	1.494	0.252	567.348k
2005	0.663	1.396	0.288	474.567k
1990	0.065	0.190	0.110	341.883k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +1329%	↗ +35%	↗ +8%
Other industrial combustion	↗ +2854%	↗ +142%	↗ +8%
Buildings	↗ +822%	↗ +8%	↗ +8%
Transport	↗ +1251%	↗ +28%	↗ +8%
Other sectors	↗ +213%	↗ +51%	→ 0%
All sectors	↗ +1311%	↗ +38%	↗ +8%

Cambodia

Fossil CO_2 emissions by sector

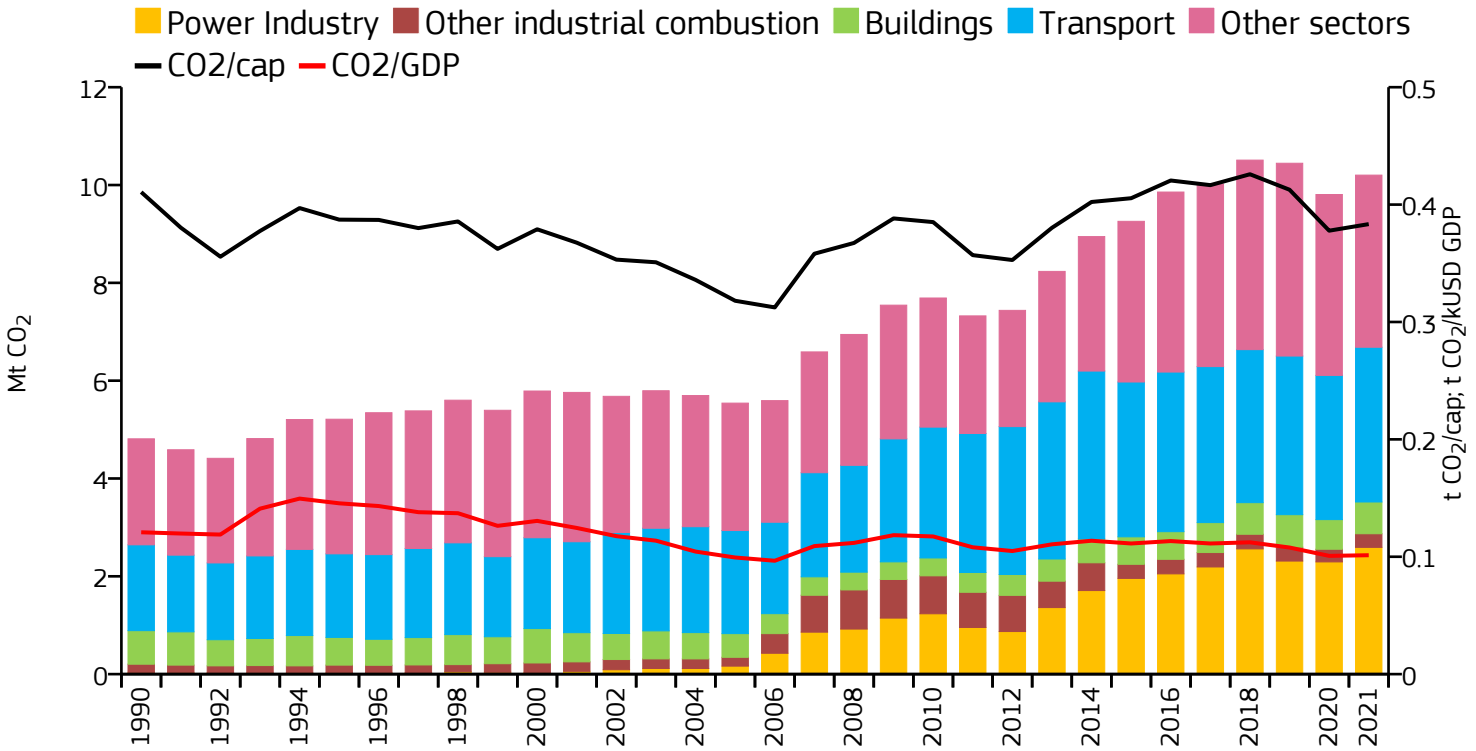


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	16.955	1.001	0.235	16.944M
2020	16.482	0.986	0.235	16.716M
2005	2.701	0.204	0.096	13.270M
1990	0.424	0.047	0.030	8.973M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+3610%	+543%	+2%
Other industrial combustion	+5547%	+770%	+3%
Buildings	+1240%	+506%	+4%
Transport	+4375%	+293%	+4%
Other sectors	+14774%	+7852%	+3%
All sectors	+3899%	+528%	+3%

Cameroon

Fossil CO_2 emissions by sector

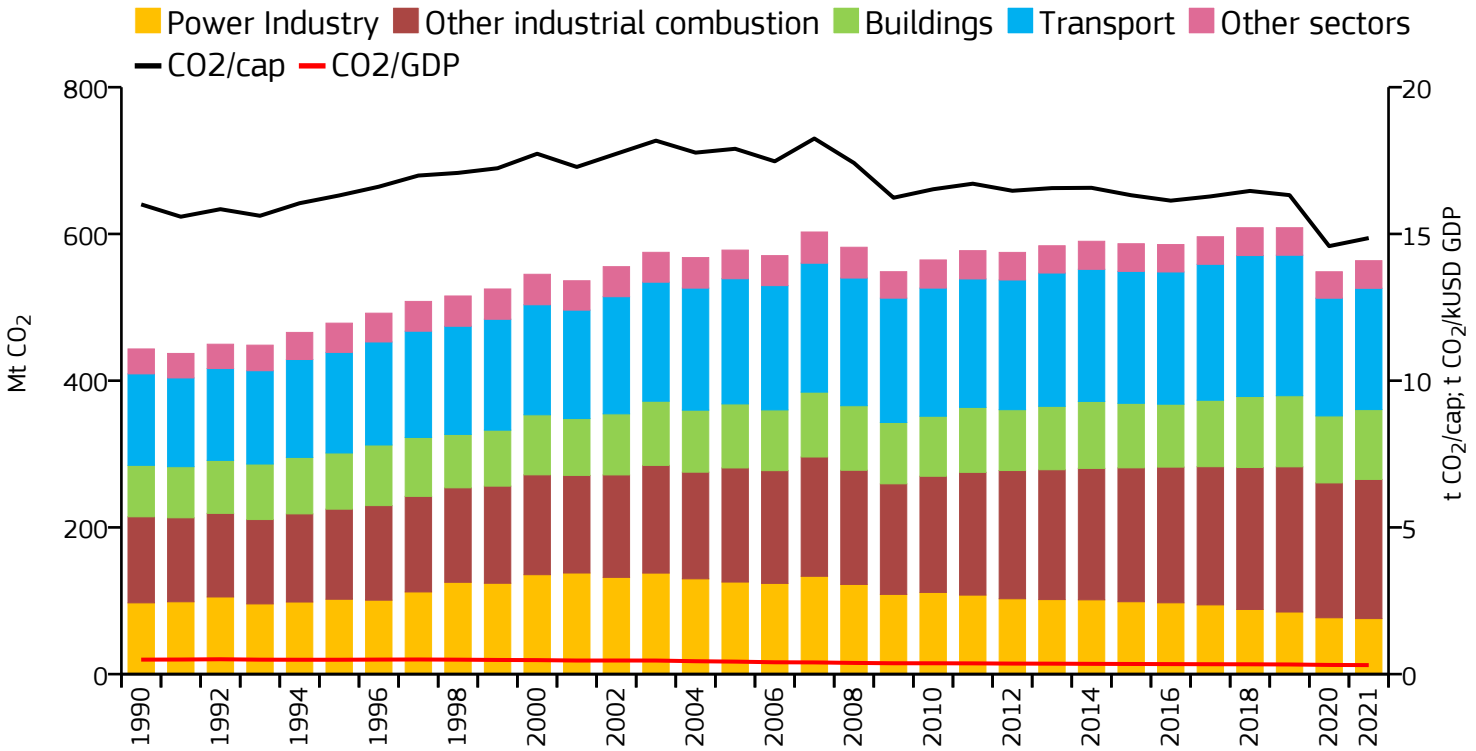


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	10.203	0.383	0.101	26.613M
2020	9.806	0.378	0.101	25.958M
2005	5.541	0.318	0.099	17.421M
1990	4.811	0.411	0.121	11.715M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +7244%	↗ +1483%	↗ +13%
Other industrial combustion	↗ +66%	↗ +54%	↗ +7%
Buildings	→ -5%	↗ +34%	↗ +7%
Transport	↗ +80%	↗ +50%	↗ +7%
Other sectors	↗ +62%	↗ +35%	→ -5%
All sectors	↗ +112%	↗ +84%	→ +4%

Canada

Fossil CO_2 emissions by sector

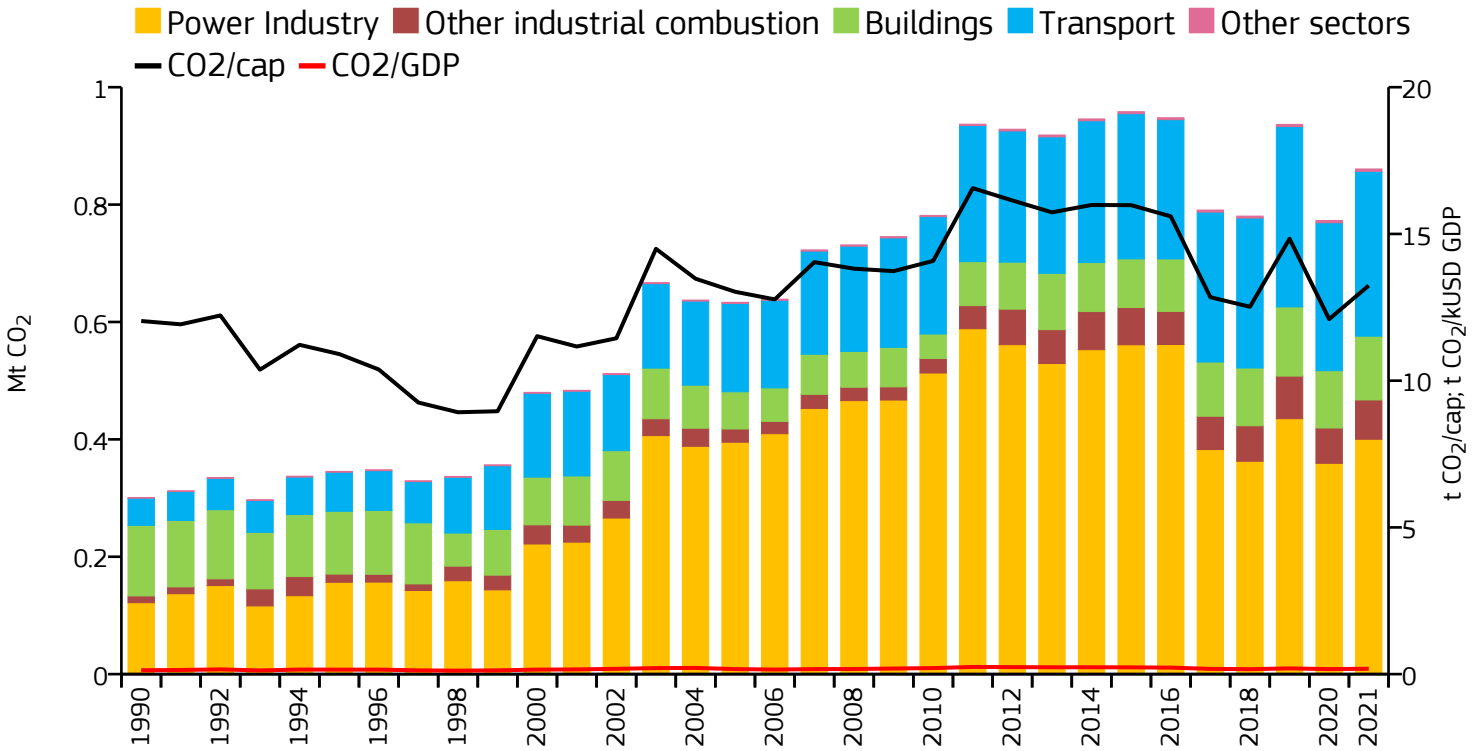


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	563.538	14.860	0.308	37.924M
2020	548.455	14.585	0.313	37.603M
2005	577.998	17.901	0.426	32.288M
1990	443.256	16.006	0.494	27.693M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-22%	-40%	-1%
Other industrial combustion	+62%	+22%	+3%
Buildings	+36%	+9%	+4%
Transport	+33%	-3%	+3%
Other sectors	+11%	-4%	+4%
All sectors	+27%	-3%	+3%

Cayman Islands

Fossil CO_2 emissions by sector

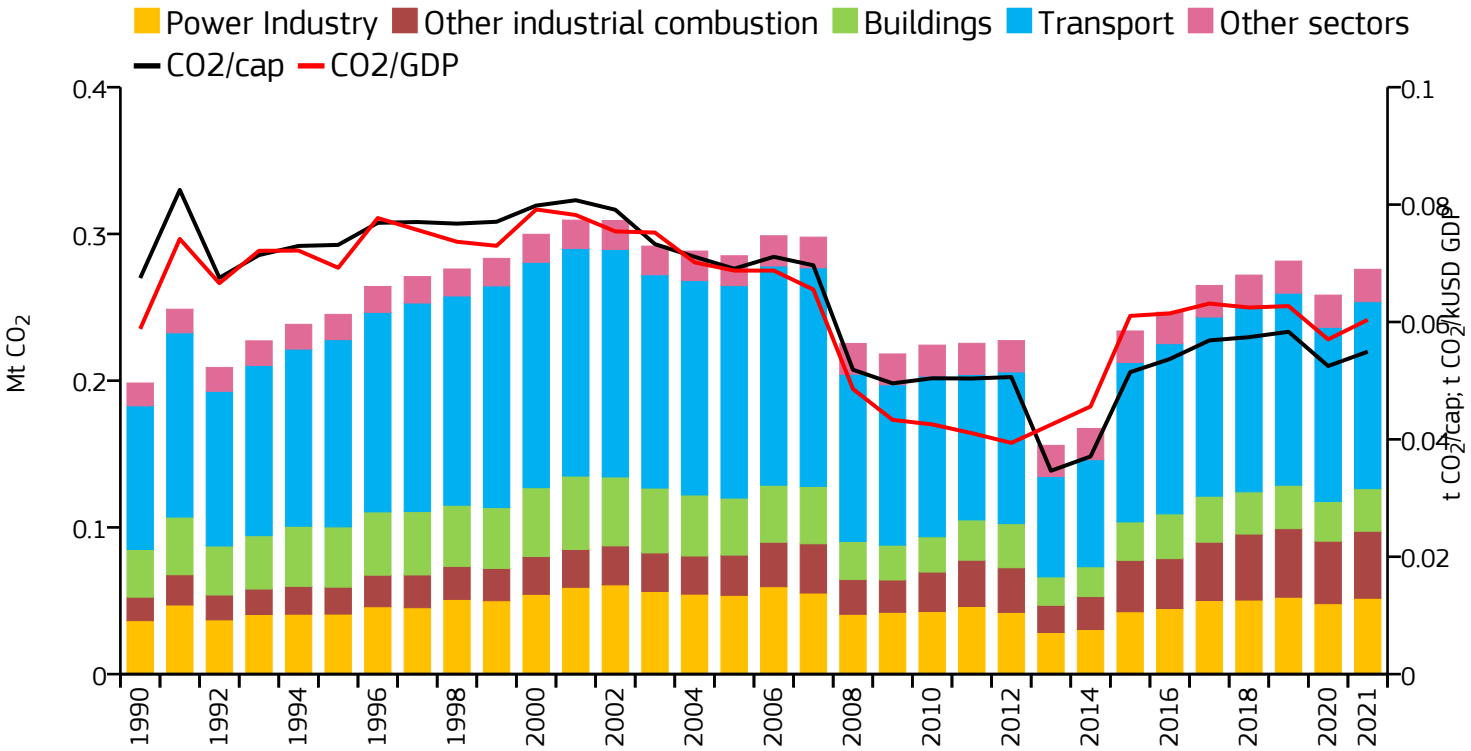


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.861	13.241	0.184	65.000k
2020	0.773	12.097	0.171	63.890k
2005	0.634	13.029	0.172	48.622k
1990	0.301	12.033	0.132	25.010k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+229%	+1%	+11%
Other industrial combustion	+479%	+197%	+11%
Buildings	-10%	+71%	+11%
Transport	+507%	+87%	+11%
Other sectors	+245%	+105%	+3%
All sectors	+186%	+36%	+11%

Central African Republic

Fossil CO_2 emissions by sector

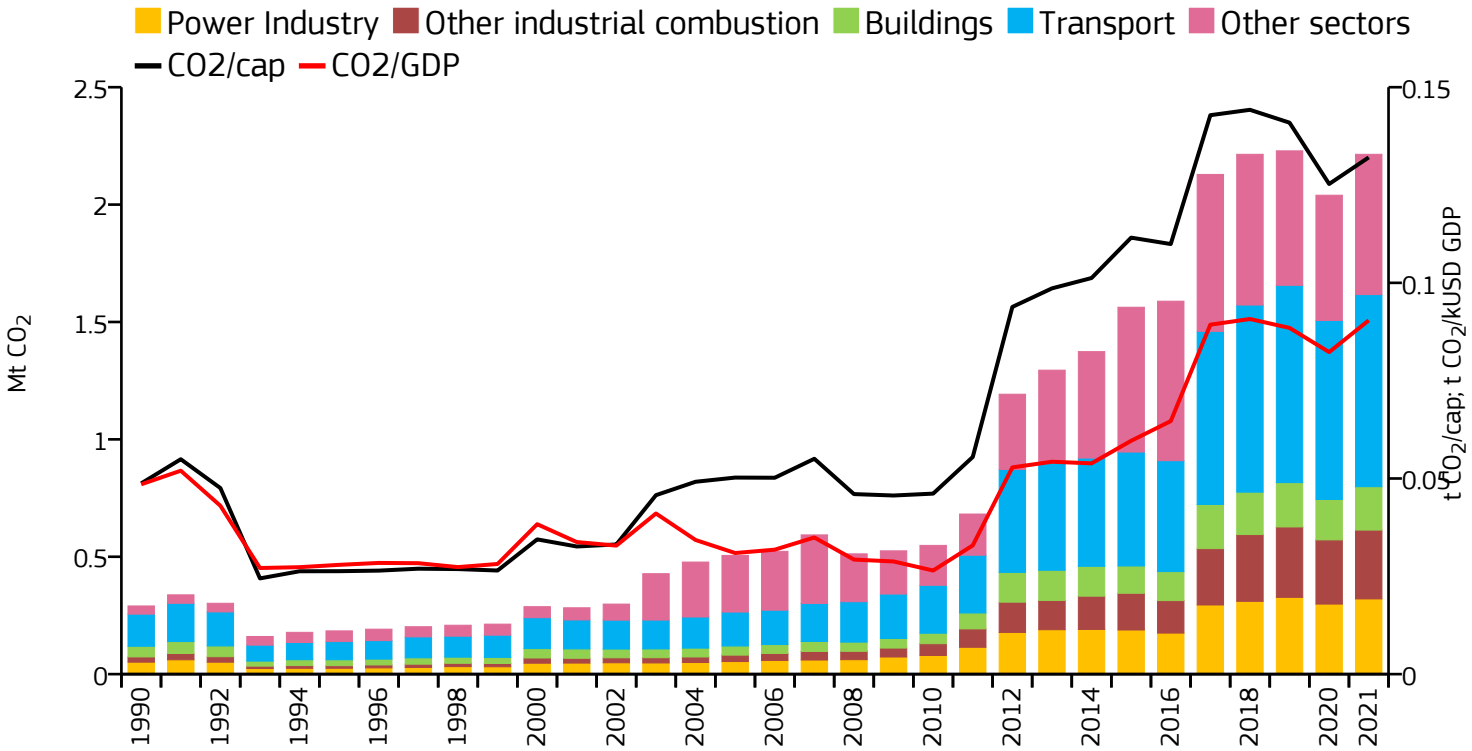


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.276	0.055	0.060	5.023M
2020	0.258	0.052	0.057	4.921M
2005	0.285	0.069	0.069	4.128M
1990	0.198	0.067	0.059	2.940M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+42%	-4%	+8%
Other industrial combustion	+185%	+67%	+7%
Buildings	-11%	-25%	+7%
Transport	+30%	-12%	+7%
Other sectors	+42%	+9%	+1%
All sectors	+39%	-3%	+7%

Chad

Fossil CO_2 emissions by sector

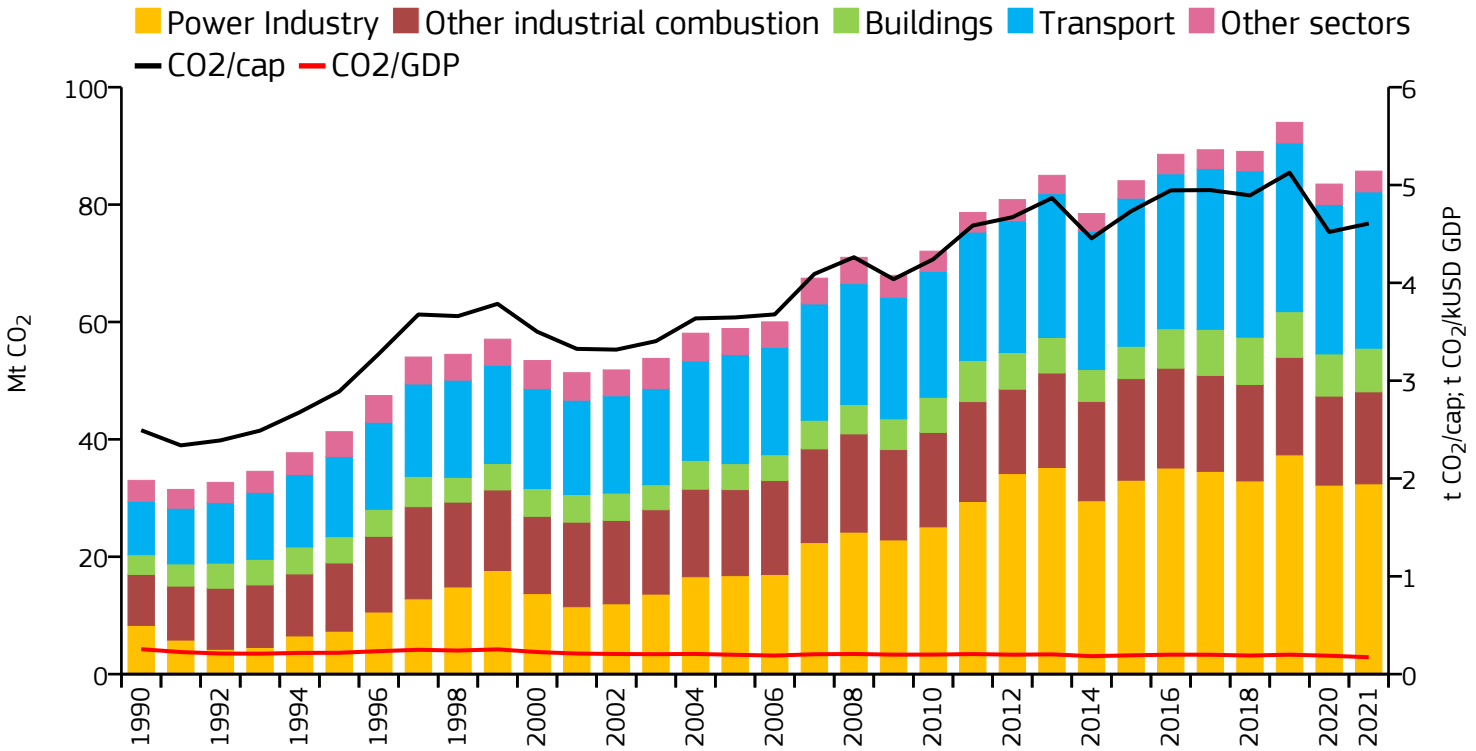


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	2.214	0.132	0.090	16.766M
2020	2.040	0.125	0.082	16.285M
2005	0.506	0.050	0.031	10.067M
1990	0.290	0.049	0.049	5.957M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+529%	+497%	+7%
Other industrial combustion	+1210%	+971%	+7%
Buildings	+307%	+376%	+7%
Transport	+498%	+466%	+7%
Other sectors	+1619%	+148%	+12%
All sectors	+663%	+338%	+9%

Chile

Fossil CO_2 emissions by sector

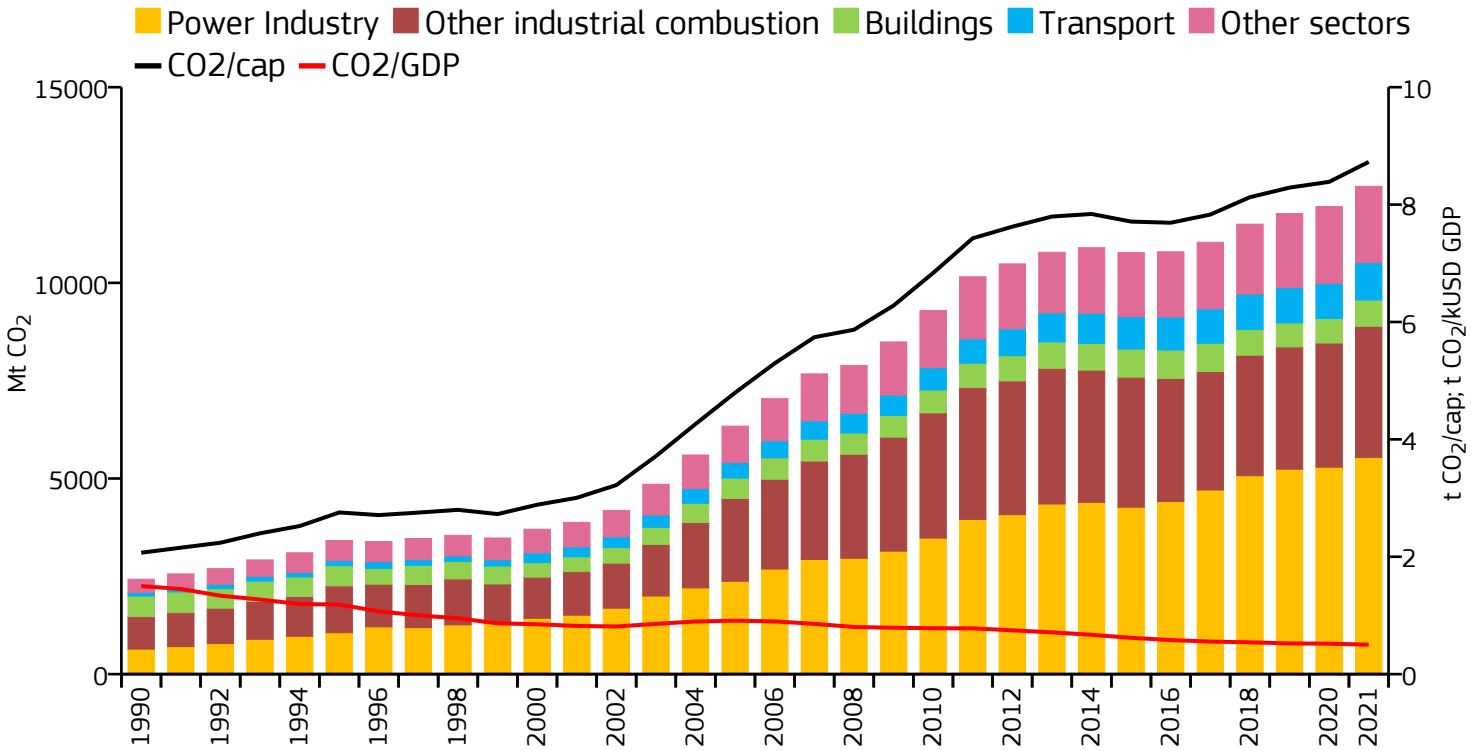


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	85.703	4.606	0.173	18.605M
2020	83.495	4.520	0.188	18.473M
2005	58.881	3.647	0.198	16.147M
1990	33.017	2.493	0.255	13.242M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +290%	↗ +93%	→ +1%
Other industrial combustion	↗ +80%	↗ +7%	→ +3%
Buildings	↗ +122%	↗ +68%	→ +4%
Transport	↗ +193%	↗ +43%	→ +5%
Other sectors	→ -1%	↘ -20%	→ +1%
All sectors	↗ +160%	↗ +46%	→ +3%

China

Fossil CO_2 emissions by sector

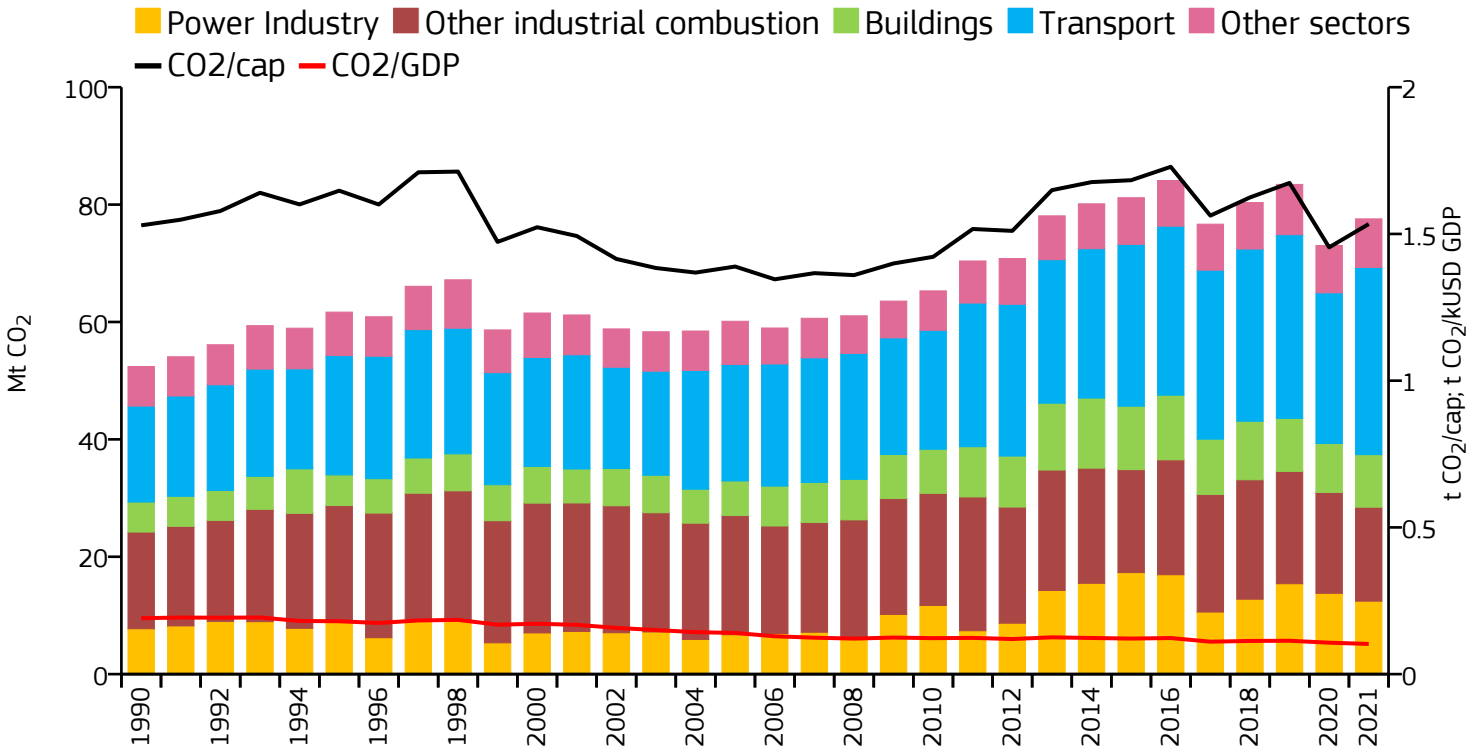


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	12466.316	8.727	0.501	1.428G
2020	11948.120	8.387	0.520	1.425G
2005	6338.438	4.796	0.911	1.322G
1990	2425.644	2.069	1.501	1.172G

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +767%	↗ +133%	→ +5%
Other industrial combustion	↗ +303%	↗ +58%	↗ +6%
Buildings	↗ +28%	↗ +29%	↗ +7%
Transport	↗ +915%	↗ +140%	↗ +6%
Other sectors	↗ +479%	↗ +109%	→ -1%
All sectors	↗ +414%	↗ +97%	→ +4%

Colombia

Fossil CO_2 emissions by sector

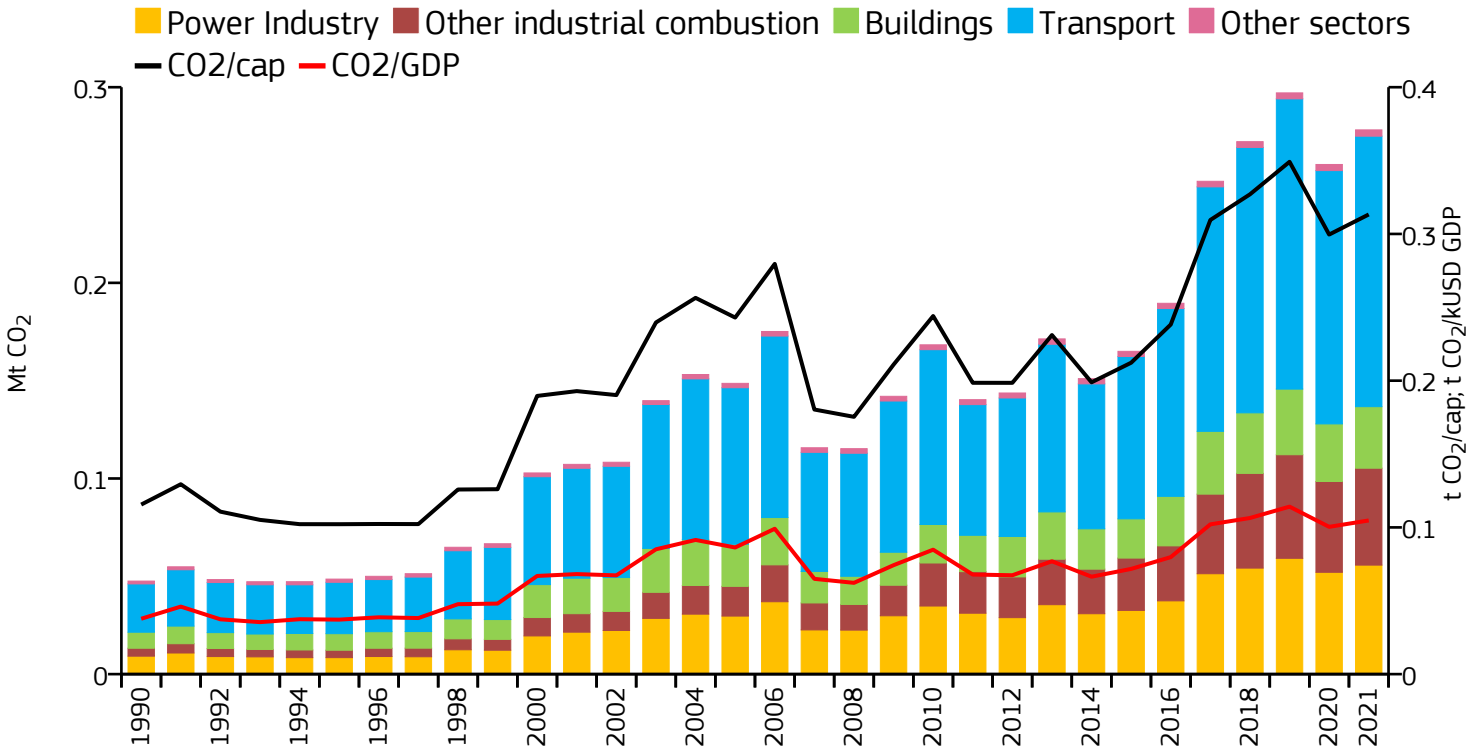


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	77.570	1.534	0.103	50.576M
2020	73.035	1.454	0.107	50.220M
2005	60.120	1.389	0.140	43.286M
1990	52.411	1.529	0.191	34.272M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+61%	+85%	-10%
Other industrial combustion	-3%	-21%	-7%
Buildings	+75%	+52%	+7%
Transport	+95%	+61%	+24%
Other sectors	+23%	+12%	+3%
All sectors	+48%	+29%	+6%

Comoros

Fossil CO_2 emissions by sector

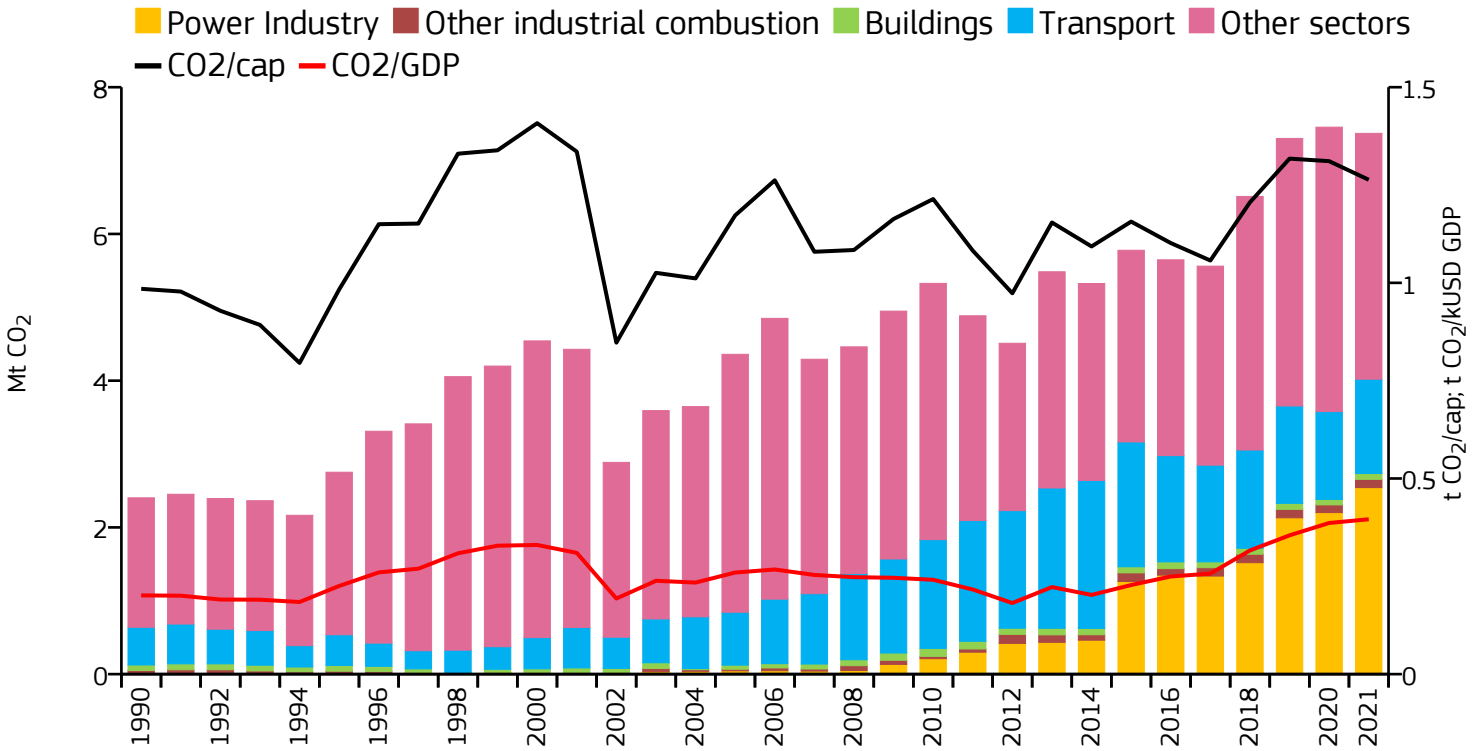


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.278	0.313	0.105	888.000k
2020	0.261	0.300	0.100	869.601k
2005	0.149	0.243	0.086	611.627k
1990	0.048	0.116	0.038	411.594k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+507%	+88%	+7%
Other industrial combustion	+1121%	+226%	+7%
Buildings	+284%	+46%	+7%
Transport	+460%	+73%	+7%
Other sectors	+121%	+43%	+3%
All sectors	+485%	+87%	+7%

Congo

Fossil CO_2 emissions by sector

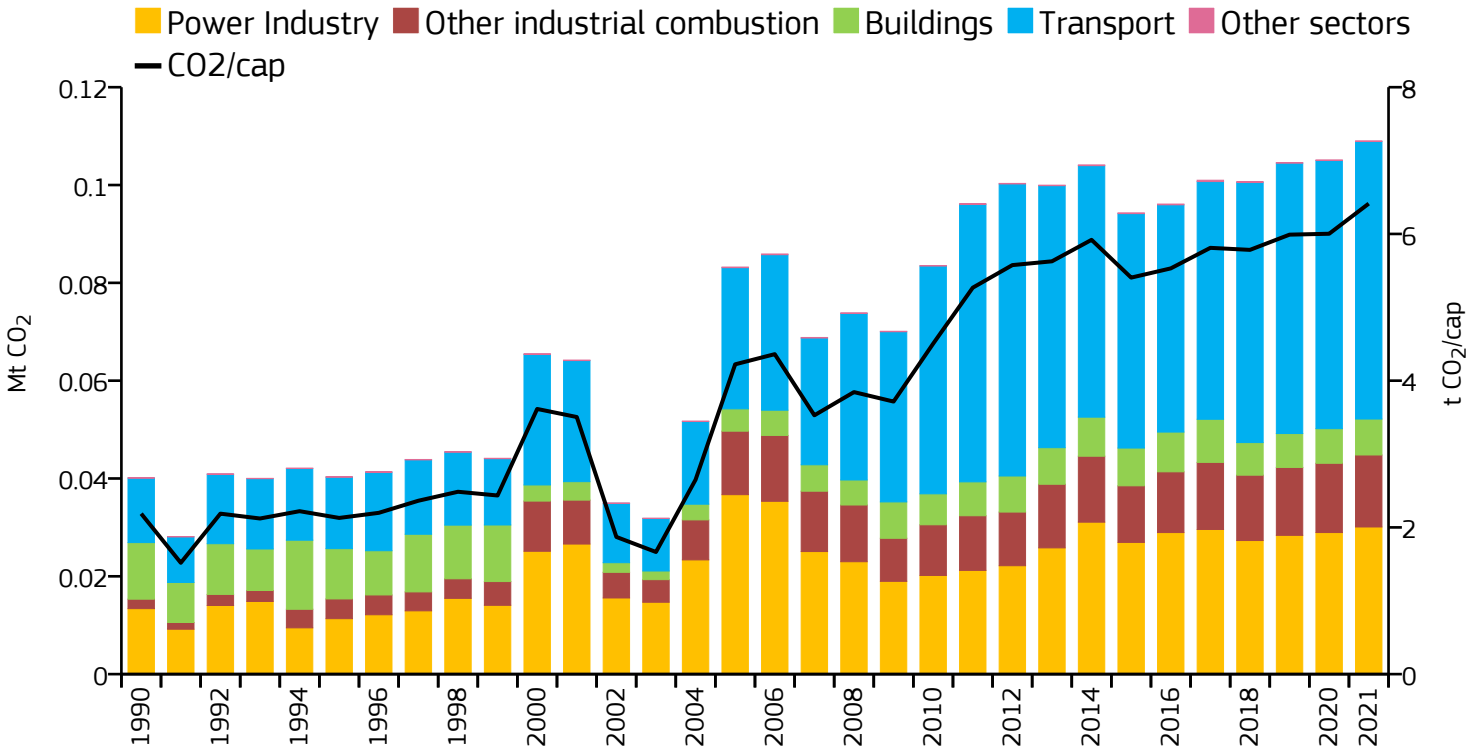


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	7.371	1.263	0.396	5.834M
2020	7.455	1.311	0.386	5.687M
2005	4.359	1.172	0.260	3.718M
1990	2.403	0.985	0.201	2.440M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +79140%	↗ +5552%	↗ +15%
Other industrial combustion	↗ +141%	↗ +417%	↗ +7%
Buildings	↗ +7%	↗ +43%	↗ +7%
Transport	↗ +150%	↗ +78%	↗ +7%
Other sectors	↗ +90%	→ -5%	↘ -14%
All sectors	↗ +207%	↗ +69%	→ -1%

Cook Islands

Fossil CO_2 emissions by sector

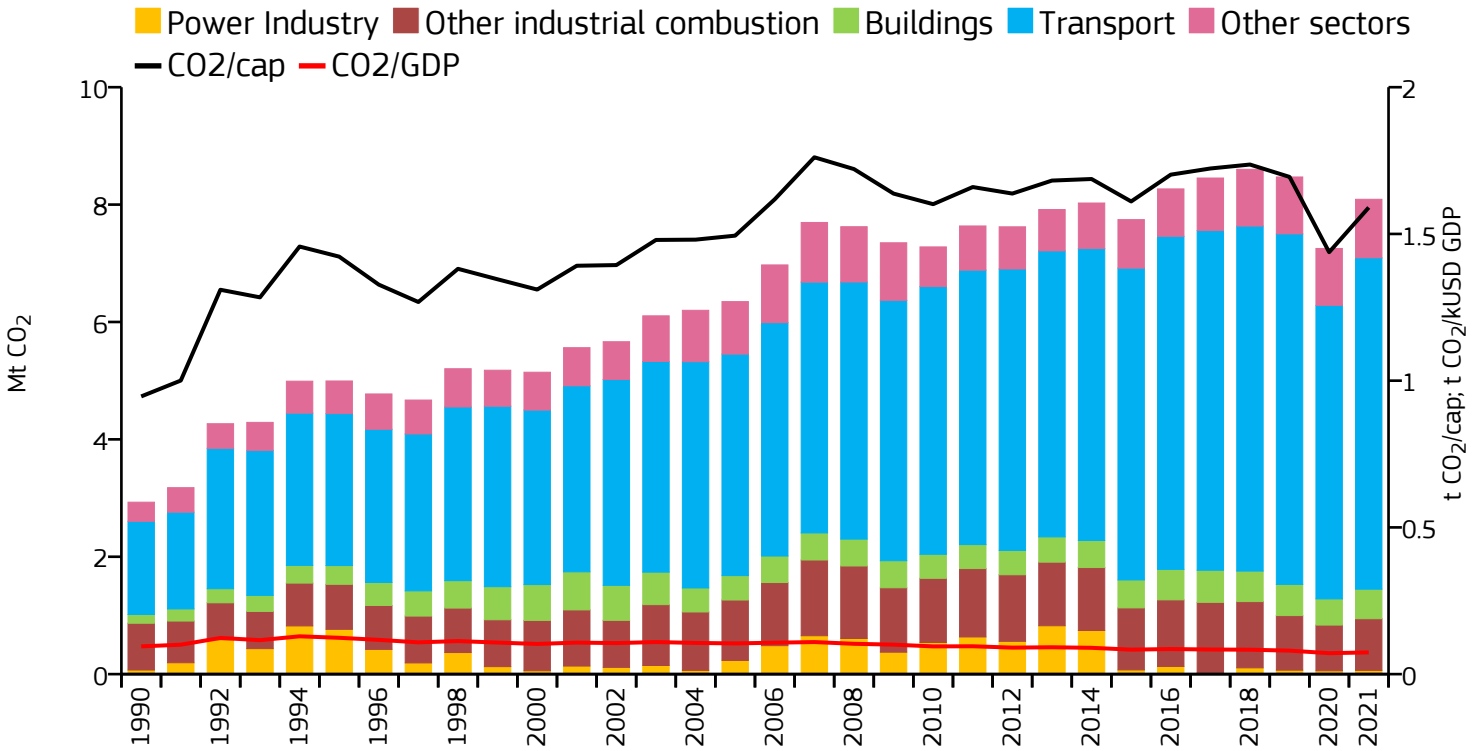


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.109	6.413	n/a	17.000k
2020	0.105	6.003	n/a	17.515k
2005	0.083	4.223	n/a	19.710k
1990	0.040	2.187	n/a	18.356k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+125%	-18%	+4%
Other industrial combustion	+659%	+13%	+4%
Buildings	-36%	+61%	+4%
Transport	+330%	+97%	+4%
Other sectors	+100%	-9%	-4%
All sectors	+172%	+31%	+4%

Costa Rica

Fossil CO_2 emissions by sector

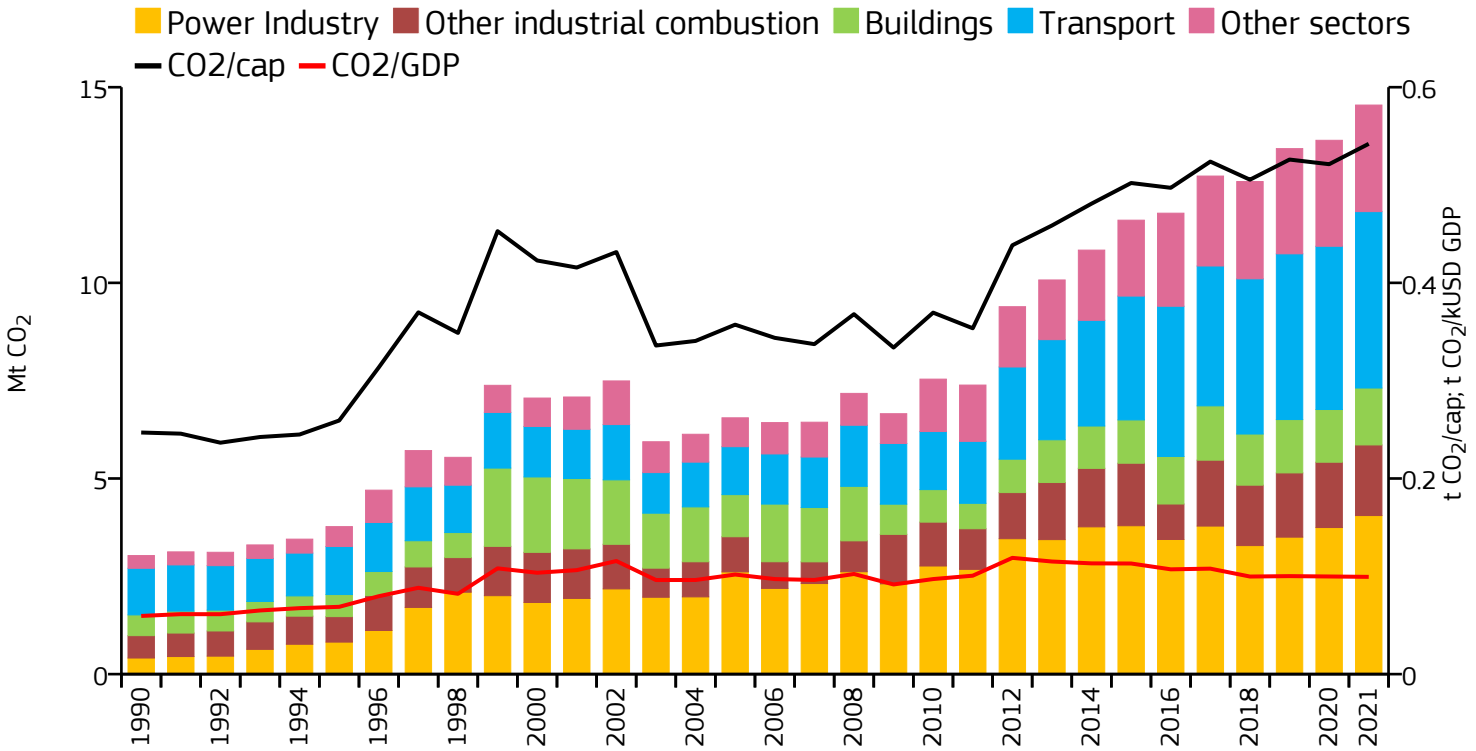


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	8.091	1.590	0.074	5.088M
2020	7.253	1.438	0.071	5.044M
2005	6.347	1.494	0.105	4.248M
1990	2.930	0.946	0.095	3.096M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-9%	-73%	+13%
Other industrial combustion	+10%	-15%	+13%
Buildings	+238%	+21%	+13%
Transport	+256%	+50%	+13%
Other sectors	+206%	+11%	+3%
All sectors	+176%	+27%	+12%

Côte d'Ivoire

Fossil CO_2 emissions by sector

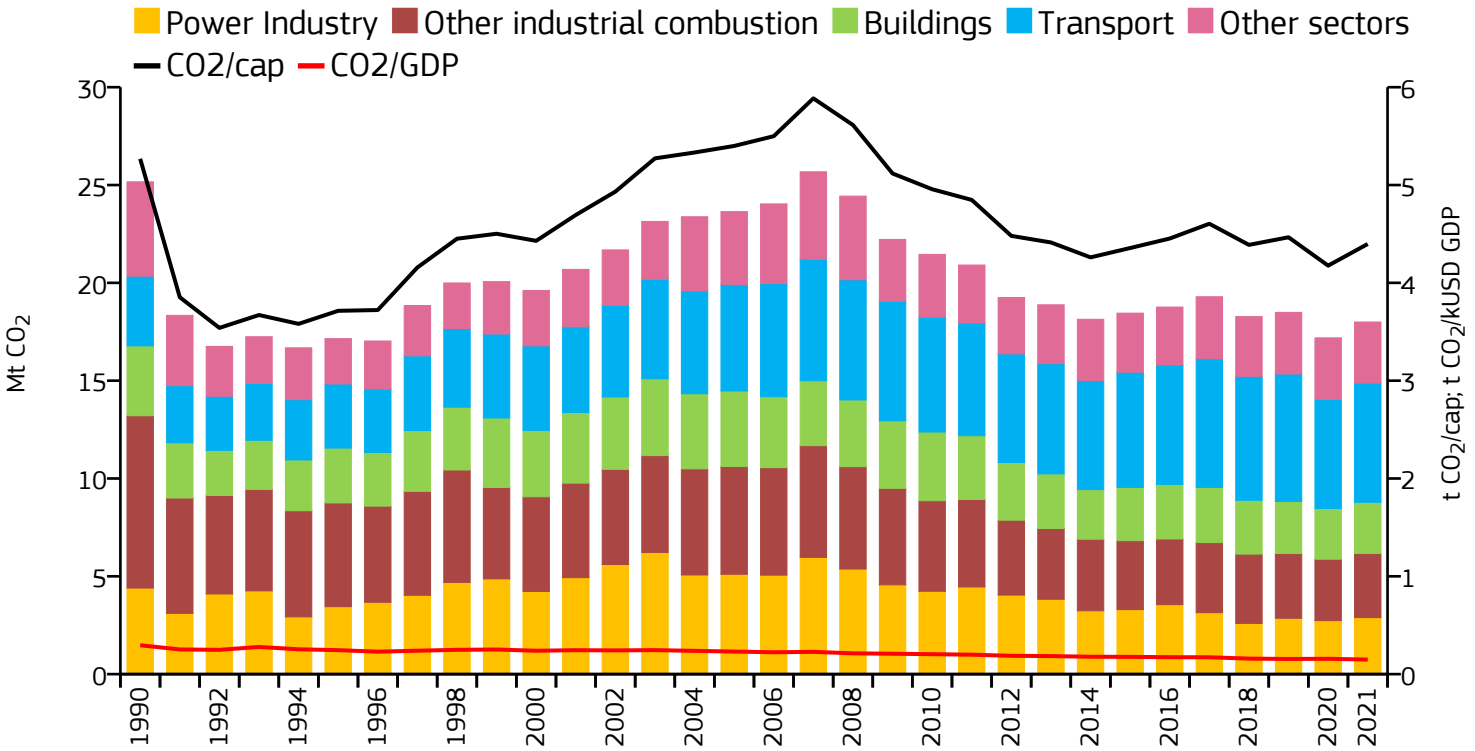


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	14.544	0.542	0.099	26.828M
2020	13.643	0.521	0.100	26.172M
2005	6.551	0.357	0.102	18.336M
1990	3.030	0.247	0.059	12.268M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+884%	+55%	+8%
Other industrial combustion	+216%	+101%	+8%
Buildings	+174%	+35%	+8%
Transport	+278%	+268%	+8%
Other sectors	+739%	+269%	+1%
All sectors	+380%	+122%	+7%

Croatia

Fossil CO_2 emissions by sector

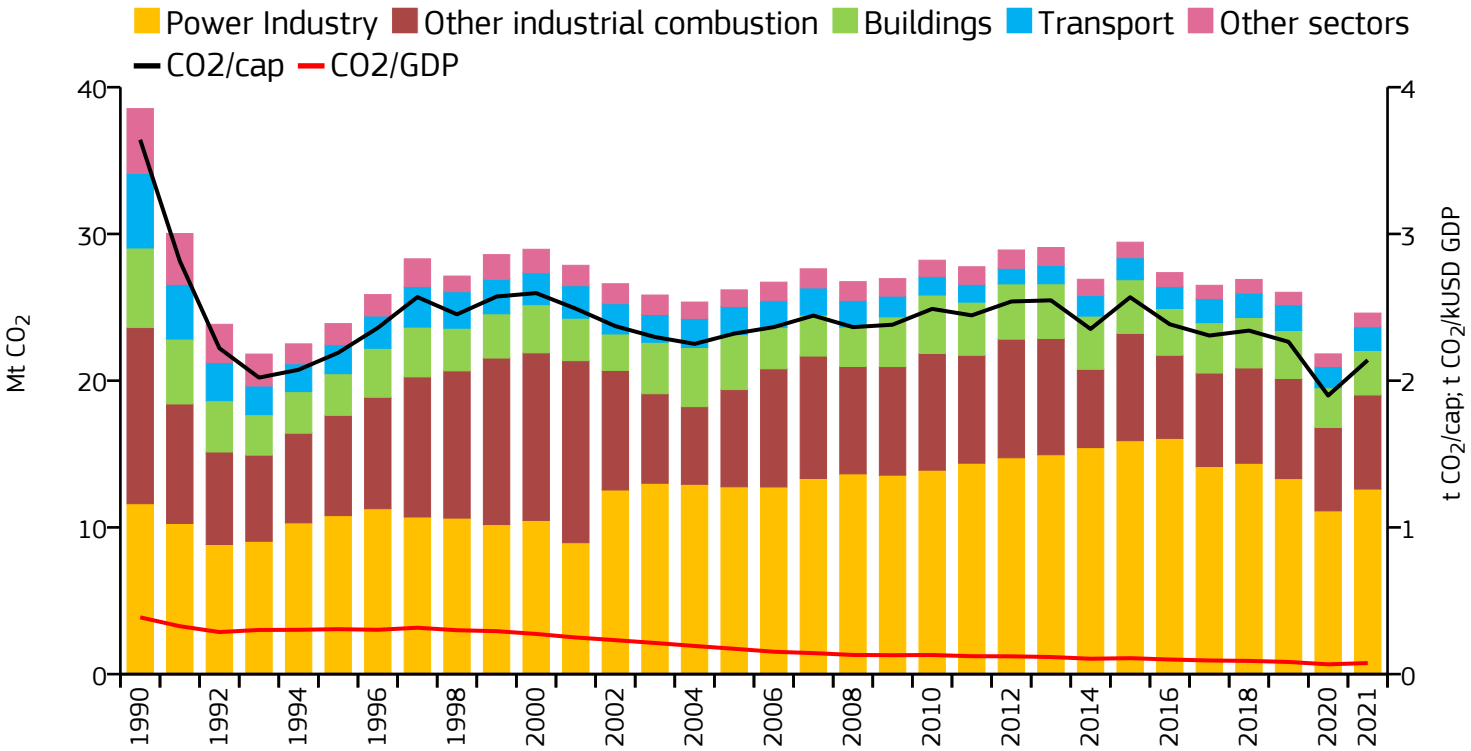


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	17.999	4.397	0.149	4.093M
2020	17.188	4.176	0.157	4.116M
2005	23.639	5.400	0.231	4.378M
1990	25.163	5.268	0.295	4.776M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-34%	-43%	+6%
Other industrial combustion	-63%	-40%	+4%
Buildings	-27%	-32%	+1%
Transport	+71%	+12%	+9%
Other sectors	-35%	-16%	-1%
All sectors	-28%	-24%	+5%

Cuba

Fossil CO_2 emissions by sector

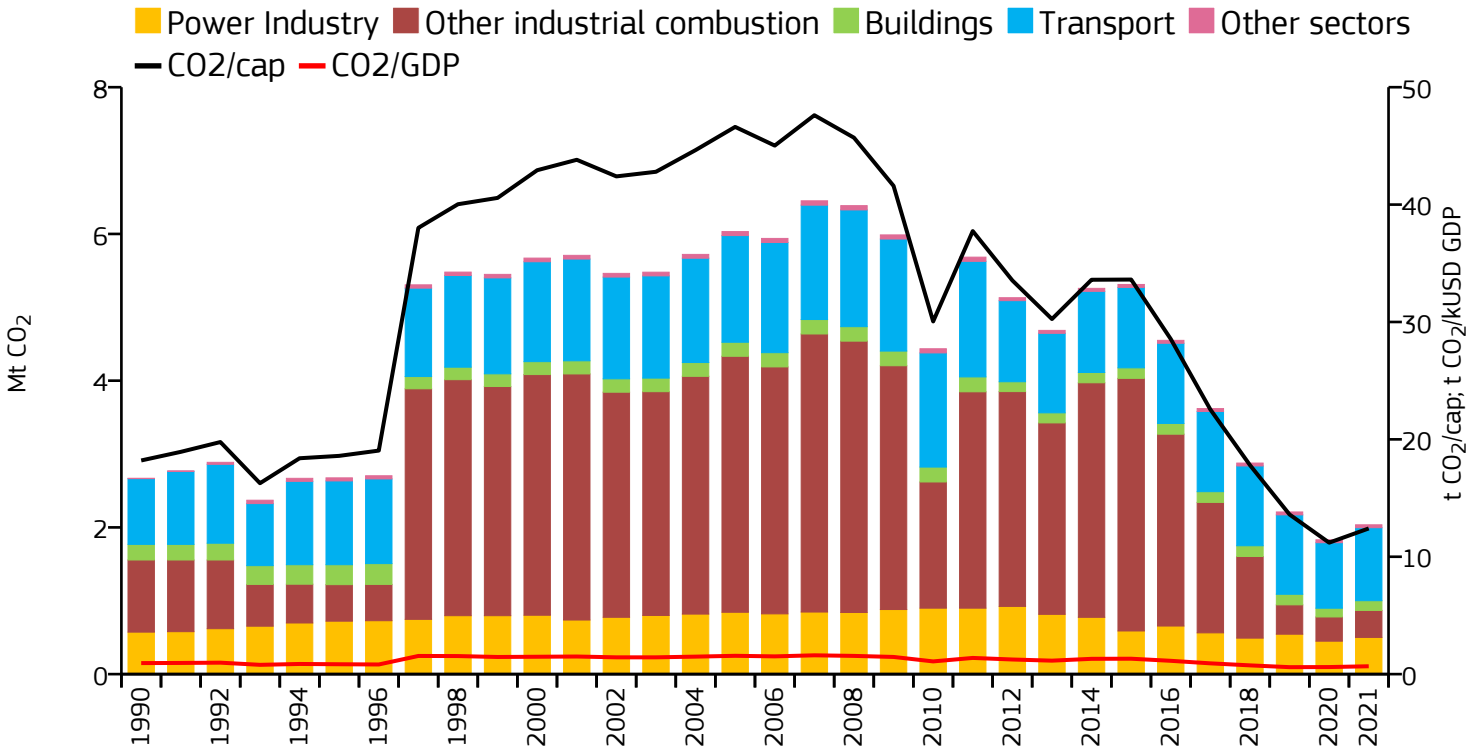


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	24.606	2.140	0.075	11.499M
2020	21.824	1.898	0.067	11.495M
2005	26.188	2.321	0.173	11.284M
1990	38.542	3.642	0.387	10.582M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+9%	-1%	+13%
Other industrial combustion	-47%	-3%	+13%
Buildings	-44%	-19%	+12%
Transport	-68%	-16%	+11%
Other sectors	-79%	-18%	+8%
All sectors	-36%	-6%	+13%

Curaçao

Fossil CO_2 emissions by sector

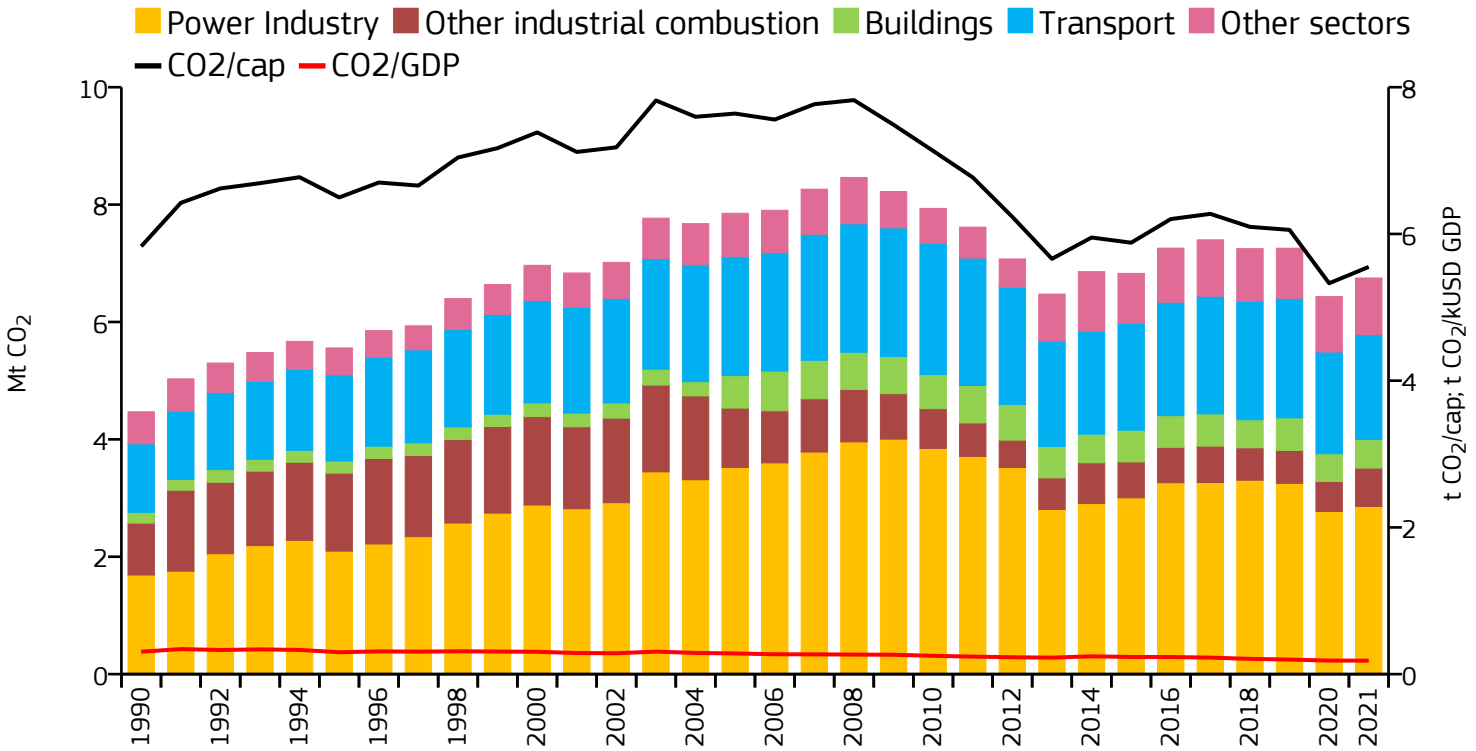


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	2.035	12.411	0.670	164.000k
2020	1.831	11.200	0.603	163.495k
2005	6.032	46.618	1.561	129.394k
1990	2.670	18.202	0.940	146.671k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-13%	-41%	+11%
Other industrial combustion	-63%	-89%	+11%
Buildings	-38%	-30%	+11%
Transport	+11%	-32%	+11%
Other sectors	+690%	-28%	0%
All sectors	-24%	-66%	+11%

Cyprus

Fossil CO_2 emissions by sector

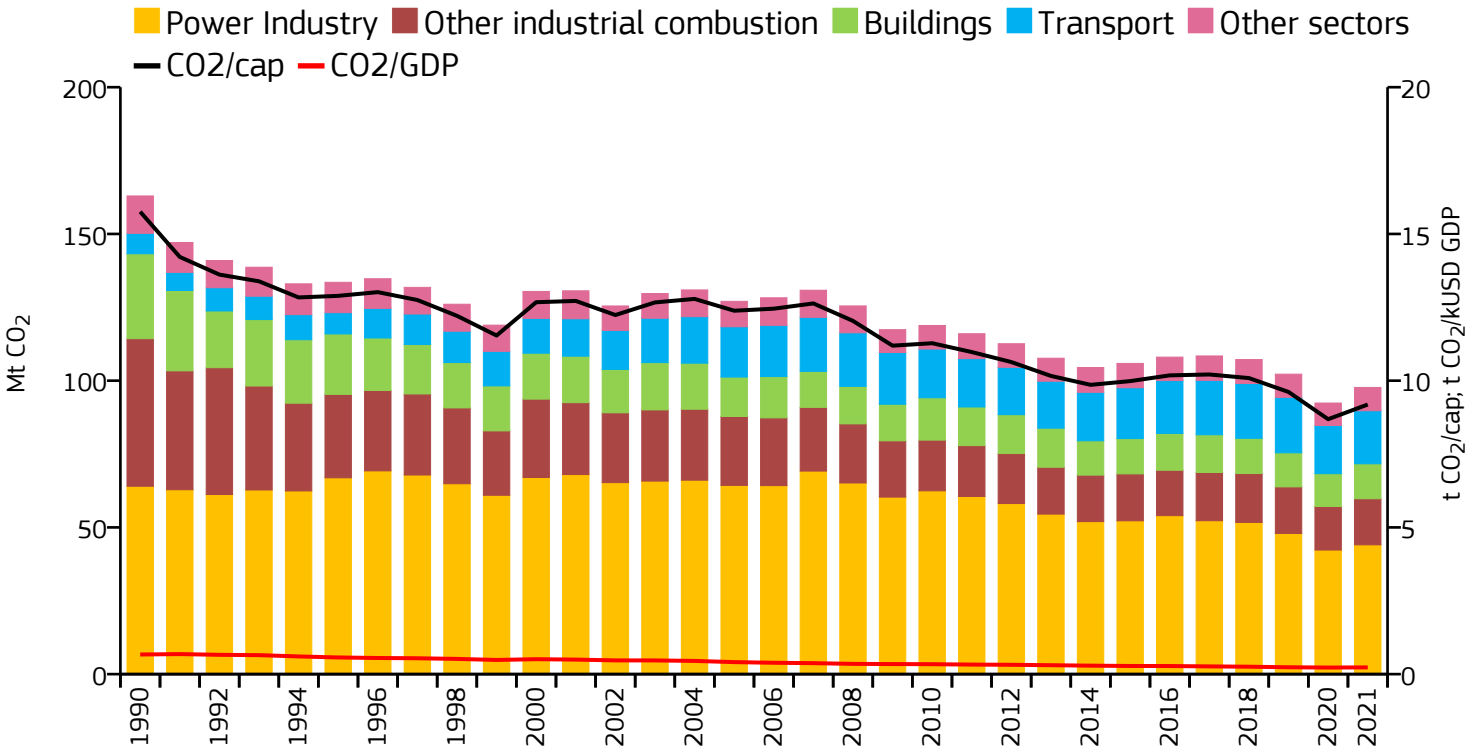


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	6.750	5.551	0.184	1.216M
2020	6.432	5.328	0.185	1.207M
2005	7.852	7.641	0.282	1.028M
1990	4.470	5.830	0.305	766.614k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+69%	-19%	+3%
Other industrial combustion	-26%	-35%	+28%
Buildings	+165%	-12%	+3%
Transport	+53%	-12%	+3%
Other sectors	+76%	+30%	+2%
All sectors	+51%	-14%	+5%

Czechia

Fossil CO_2 emissions by sector

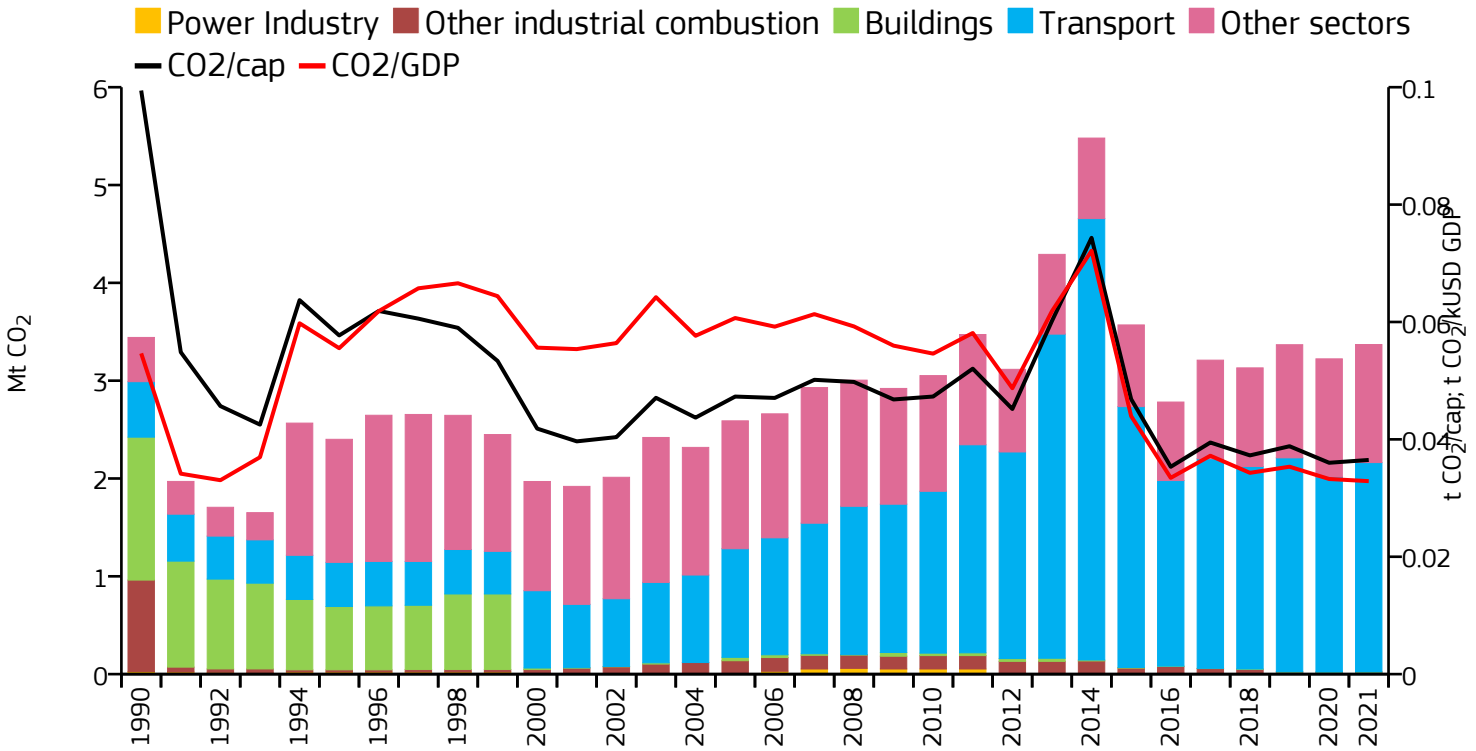


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	97.691	9.187	0.229	10.634M
2020	92.378	8.687	0.224	10.633M
2005	127.035	12.384	0.409	10.258M
1990	162.944	15.757	0.669	10.341M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-31%	-31%	+4%
Other industrial combustion	-69%	-33%	+6%
Buildings	-59%	-11%	+7%
Transport	+160%	+5%	+10%
Other sectors	-38%	-8%	+4%
All sectors	-40%	-23%	+6%

Democratic Republic of the Congo

Fossil CO_2 emissions by sector

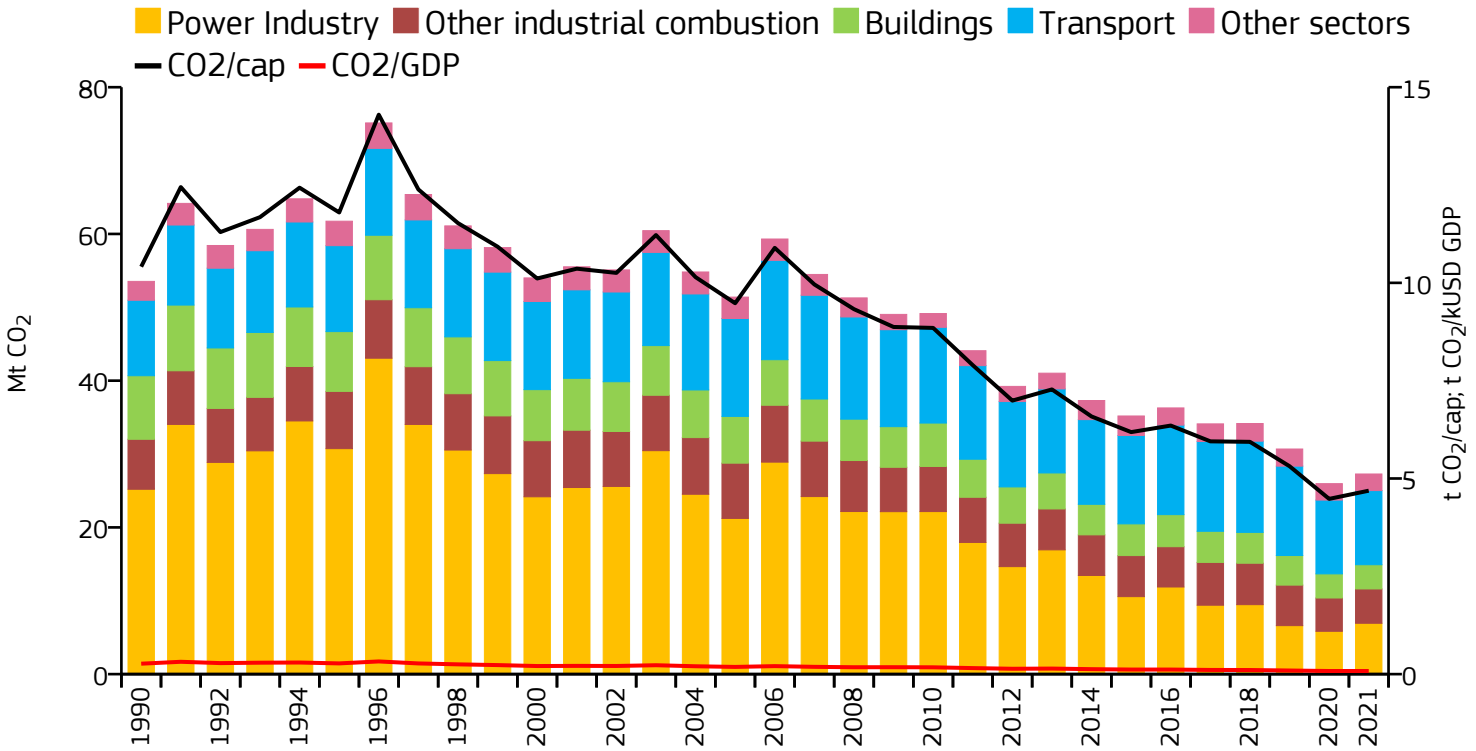


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	3.369	0.036	0.033	92.336M
2020	3.223	0.036	0.033	89.505M
2005	2.589	0.047	0.061	54.752M
1990	3.442	0.099	0.055	34.615M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↘ -82%	↘ -27%	↗ +7%
Other industrial combustion	↘ -98%	↘ -87%	↗ +7%
Buildings	↘ -100%	↘ -100%	↗ +7%
Transport	↗ +277%	↗ +93%	↗ +7%
Other sectors	↗ +167%	↘ -8%	→ 0%
All sectors	→ -2%	↗ +30%	→ +5%

Denmark

Fossil CO_2 emissions by sector

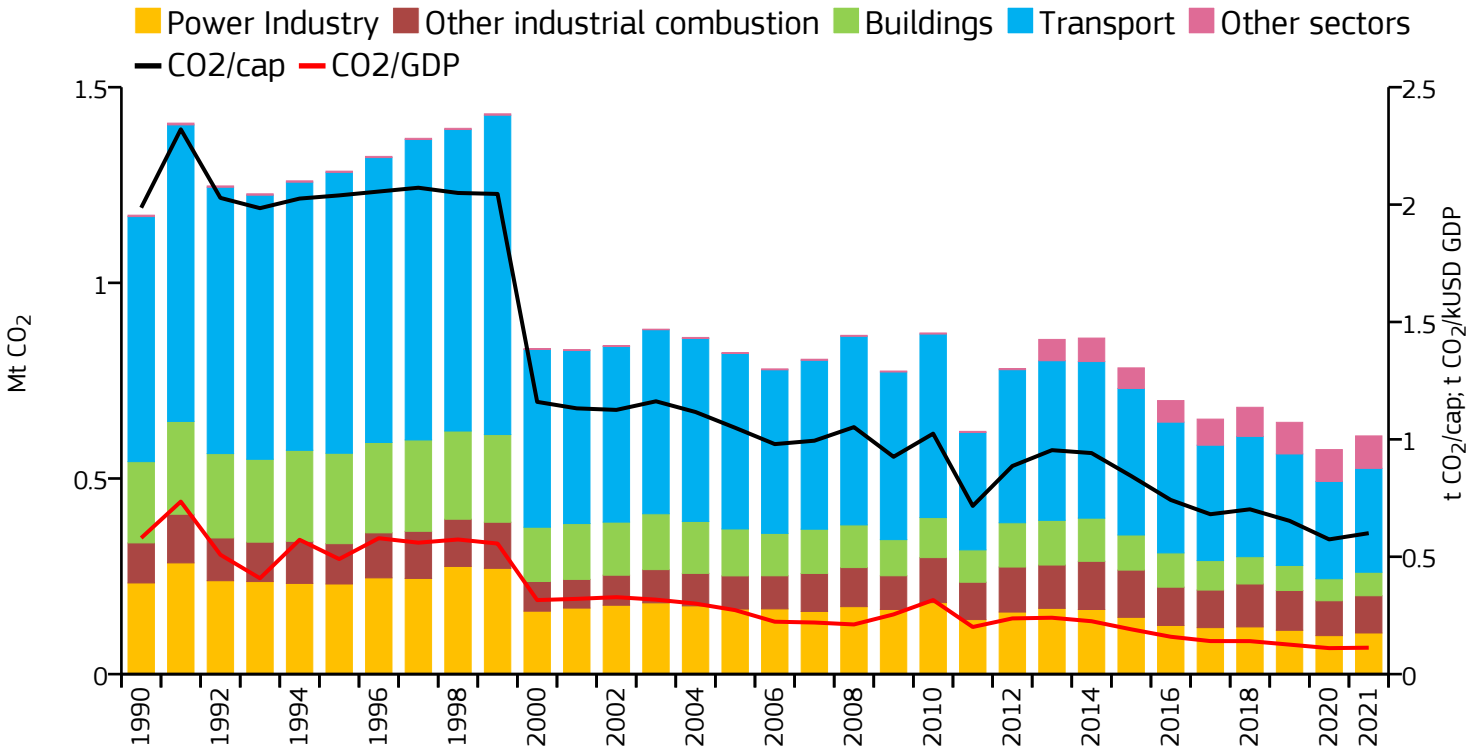


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	27.280	4.688	0.080	5.819M
2020	25.963	4.479	0.080	5.797M
2005	51.392	9.479	0.184	5.422M
1990	53.534	10.413	0.267	5.141M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↘ -72%	↘ -67%	↗ +19%
Other industrial combustion	↘ -31%	↘ -38%	→ +3%
Buildings	↘ -62%	↘ -48%	→ 0%
Transport	→ -2%	↘ -24%	→ 0%
Other sectors	↘ -12%	↘ -23%	→ +1%
All sectors	↘ -49%	↘ -47%	→ +5%

Djibouti

Fossil CO_2 emissions by sector

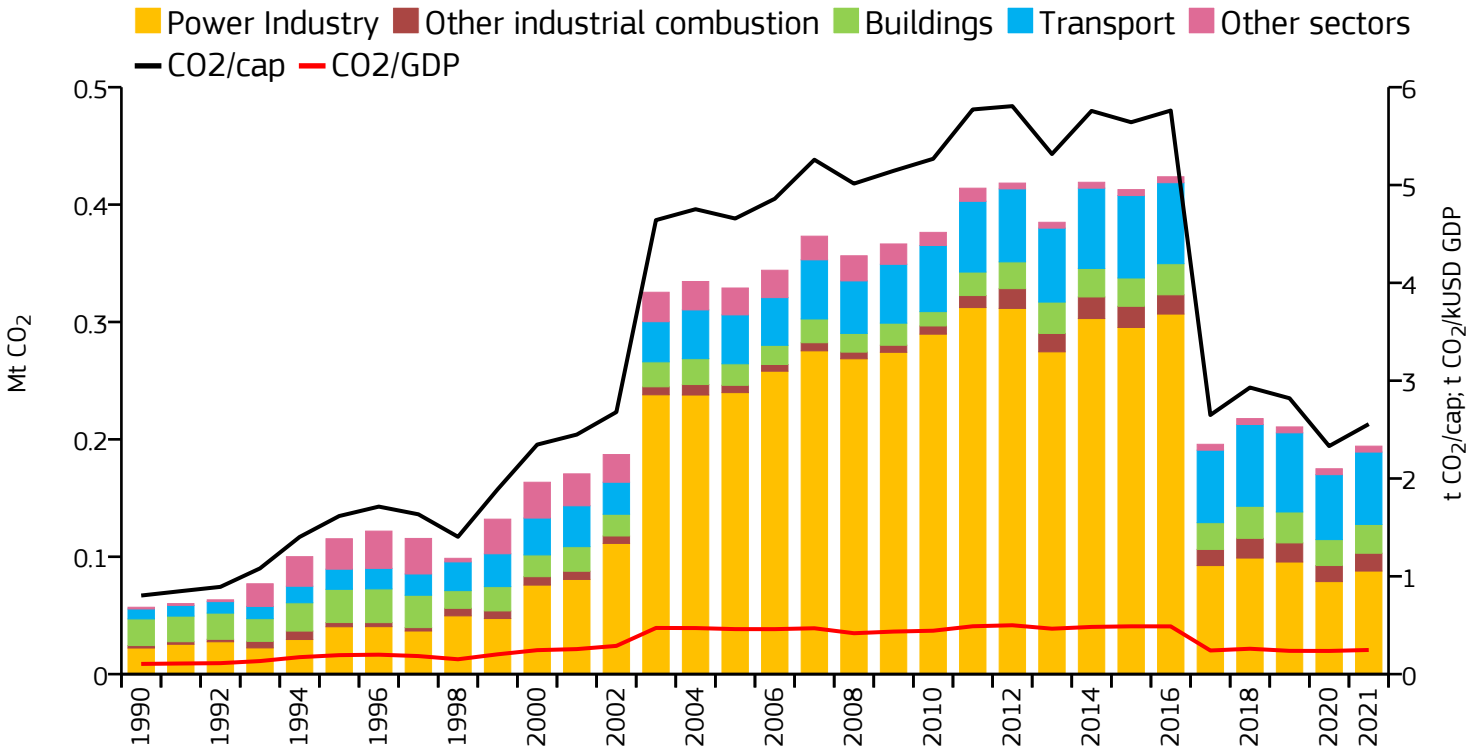


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.609	0.600	0.113	1.014M
2020	0.574	0.574	0.111	999.899k
2005	0.822	1.049	0.273	783.254k
1990	1.173	1.987	0.580	590.398k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-55%	-37%	+7%
Other industrial combustion	-7%	+12%	+7%
Buildings	-71%	-50%	+7%
Transport	-58%	-41%	+7%
Other sectors	+2189%	+3327%	+2%
All sectors	-48%	-26%	+6%

Dominica

Fossil CO_2 emissions by sector

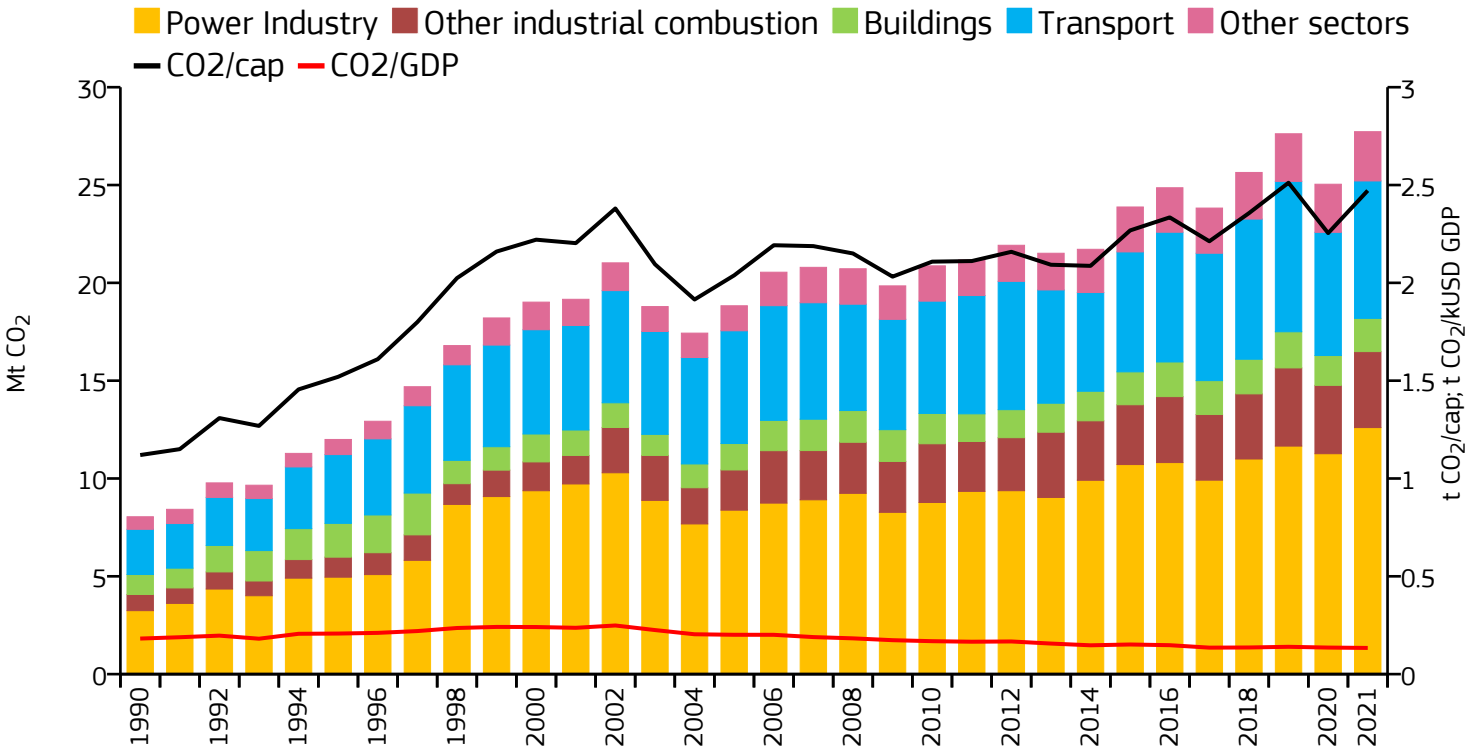


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.194	2.556	0.247	76.000k
2020	0.175	2.331	0.237	75.052k
2005	0.329	4.658	0.460	70.627k
1990	0.057	0.803	0.104	70.926k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +295%	↘ -63%	↗ +11%
Other industrial combustion	↗ +618%	↗ +144%	↗ +11%
Buildings	↗ +8%	↗ +34%	↗ +11%
Transport	↗ +628%	↗ +48%	↗ +11%
Other sectors	↗ +240%	↘ -78%	→ 0%
All sectors	↗ +241%	↘ -41%	↗ +11%

Dominican Republic

Fossil CO_2 emissions by sector

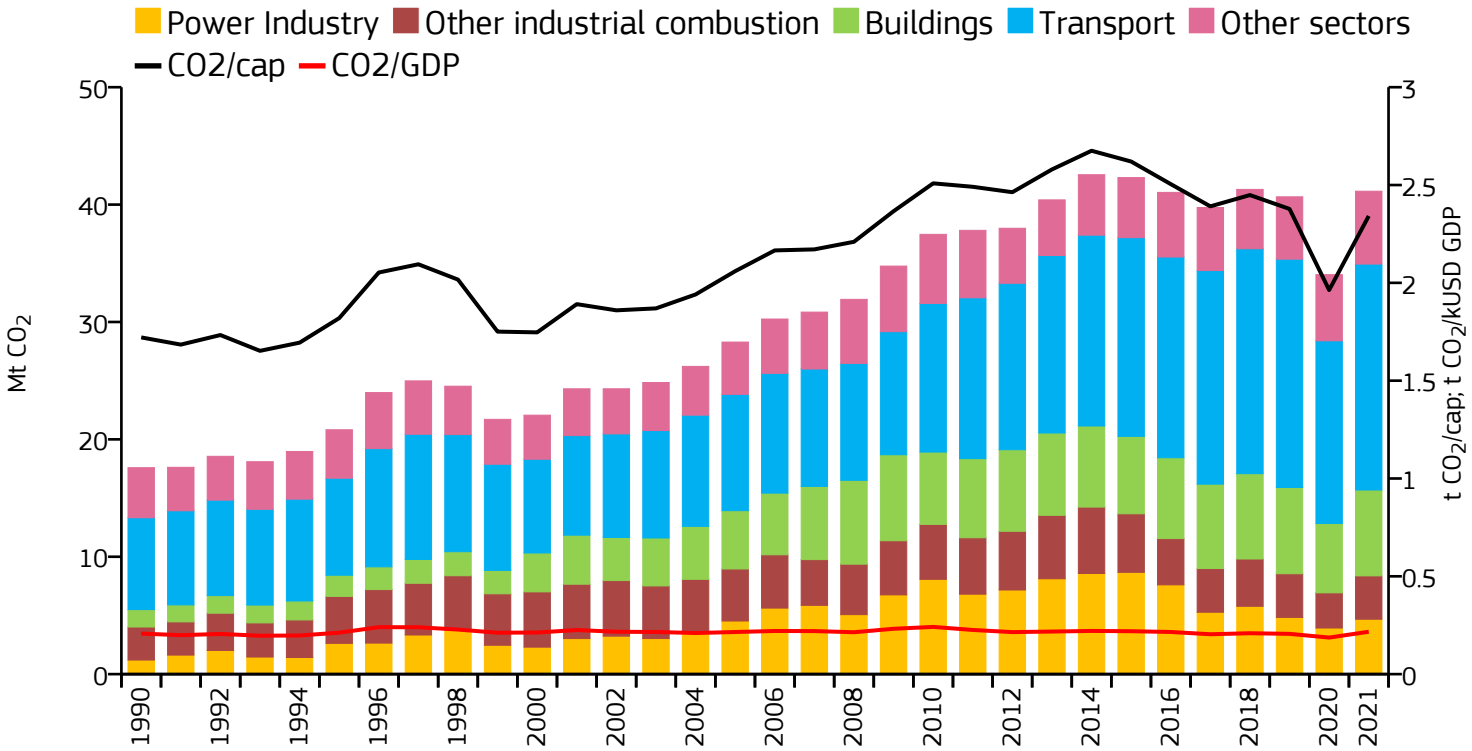


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	27.727	2.472	0.134	11.218M
2020	25.041	2.254	0.136	11.108M
2005	18.828	2.038	0.201	9.238M
1990	8.044	1.120	0.182	7.184M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+288%	+50%	+12%
Other industrial combustion	+370%	+89%	+11%
Buildings	+66%	+26%	+11%
Transport	+204%	+22%	+12%
Other sectors	+293%	+97%	+2%
All sectors	+245%	+47%	+11%

Ecuador

Fossil CO_2 emissions by sector

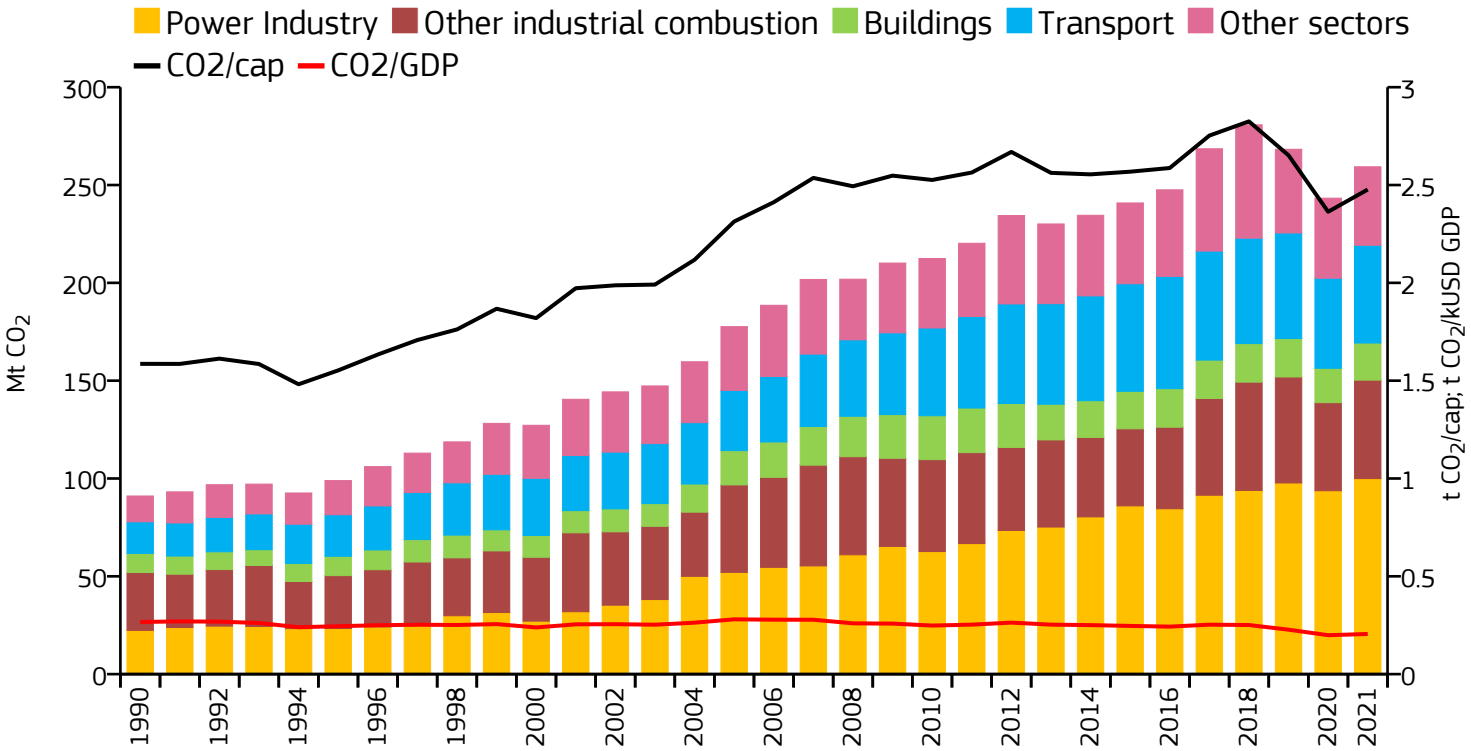


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	41.141	2.342	0.217	17.568M
2020	34.033	1.963	0.187	17.336M
2005	28.288	2.060	0.215	13.735M
1990	17.587	1.721	0.207	10.218M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+289%	+3%	+19%
Other industrial combustion	+31%	-17%	+23%
Buildings	+394%	+47%	+24%
Transport	+146%	+94%	+24%
Other sectors	+46%	+39%	+10%
All sectors	+134%	+45%	+21%

Egypt

Fossil CO_2 emissions by sector

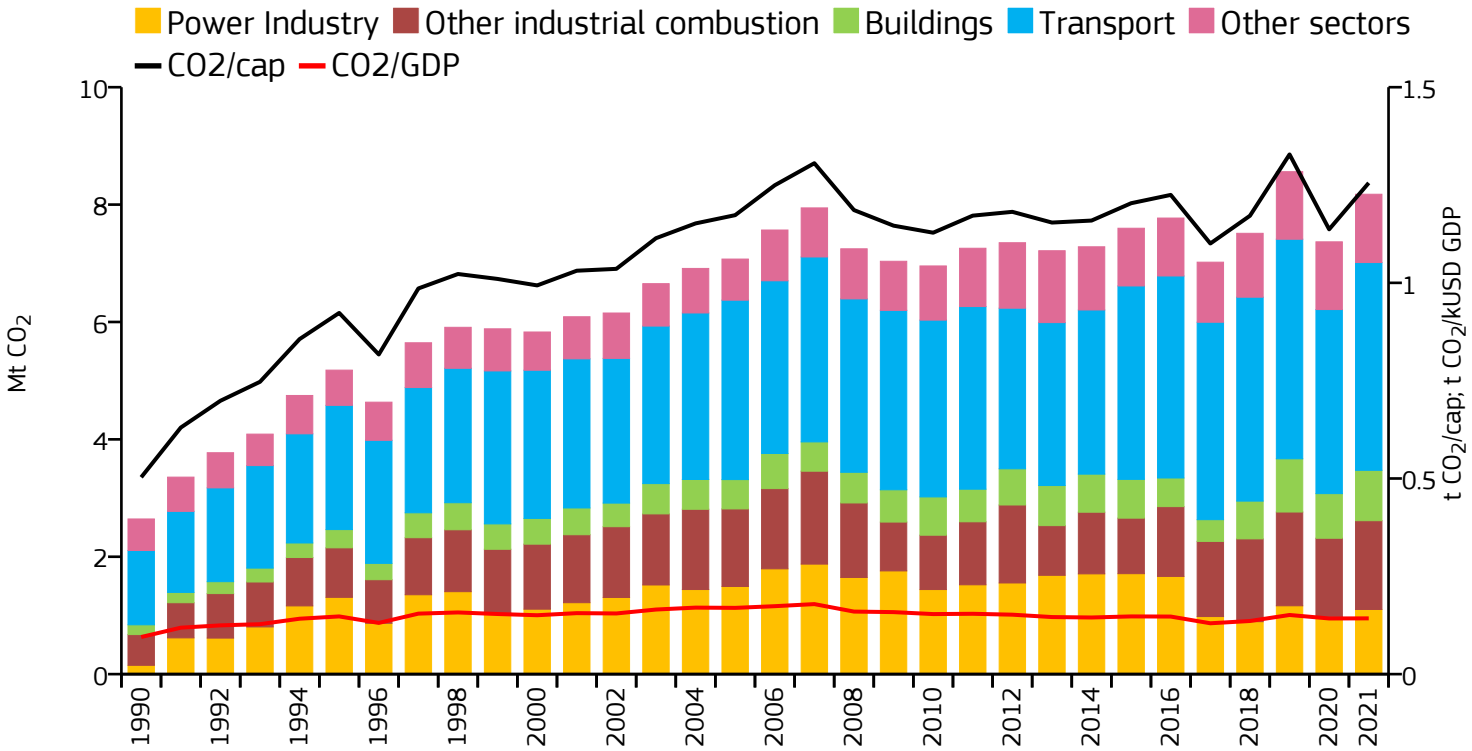


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	259.321	2.477	0.205	104.692M
2020	243.289	2.363	0.199	102.941M
2005	177.620	2.313	0.280	76.778M
1990	91.053	1.586	0.266	57.412M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+347%	+92%	+7%
Other industrial combustion	+70%	+13%	+12%
Buildings	+94%	+8%	+8%
Transport	+210%	+62%	+9%
Other sectors	+204%	+23%	-2%
All sectors	+185%	+46%	+7%

El Salvador

Fossil CO_2 emissions by sector

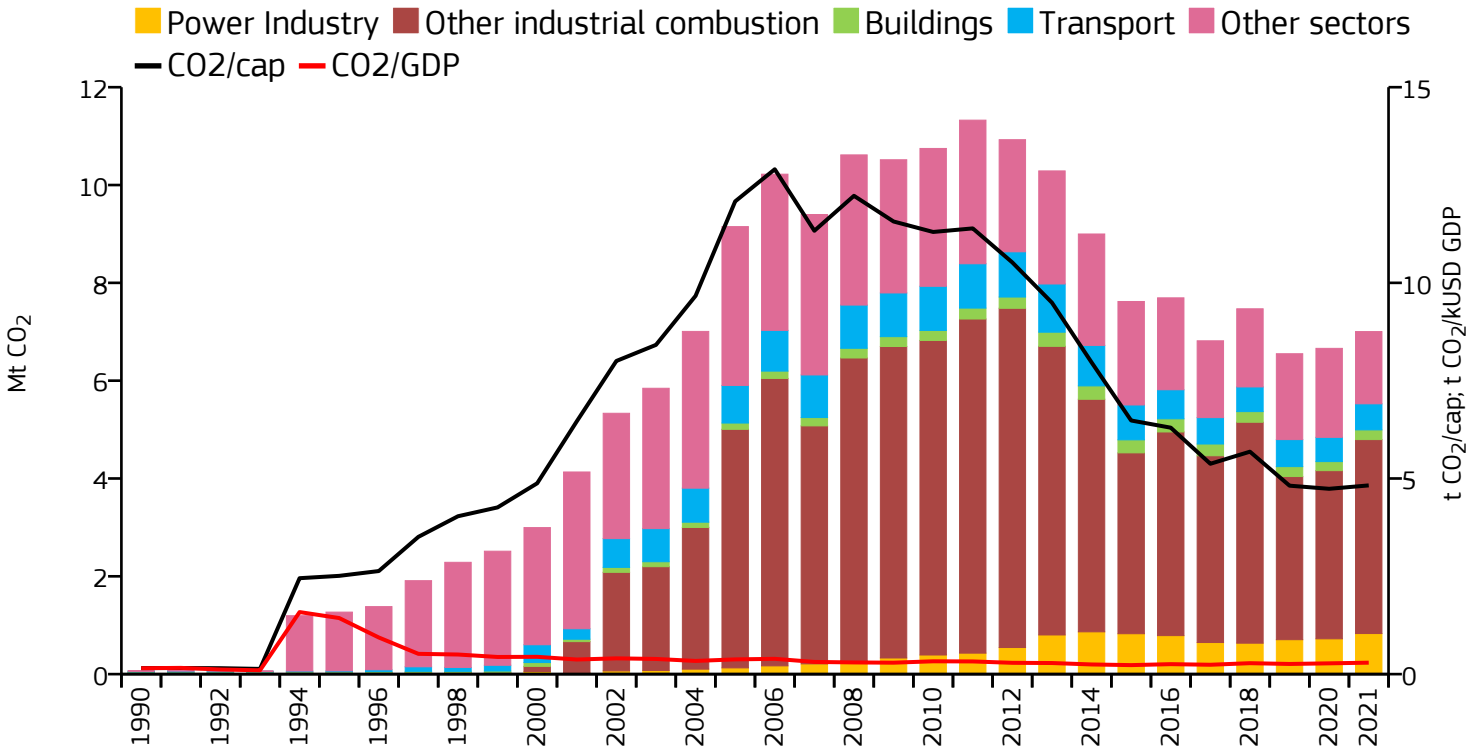


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	8.176	1.255	0.143	6.513M
2020	7.366	1.137	0.142	6.479M
2005	7.072	1.173	0.169	6.029M
1990	2.644	0.503	0.095	5.255M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +634%	↘ -26%	↗ +13%
Other industrial combustion	↗ +189%	↗ +14%	↗ +13%
Buildings	↗ +415%	↗ +72%	↗ +13%
Transport	↗ +180%	↗ +16%	↗ +13%
Other sectors	↗ +117%	↗ +66%	→ +1%
All sectors	↗ +209%	↗ +16%	↗ +11%

Equatorial Guinea

Fossil CO_2 emissions by sector

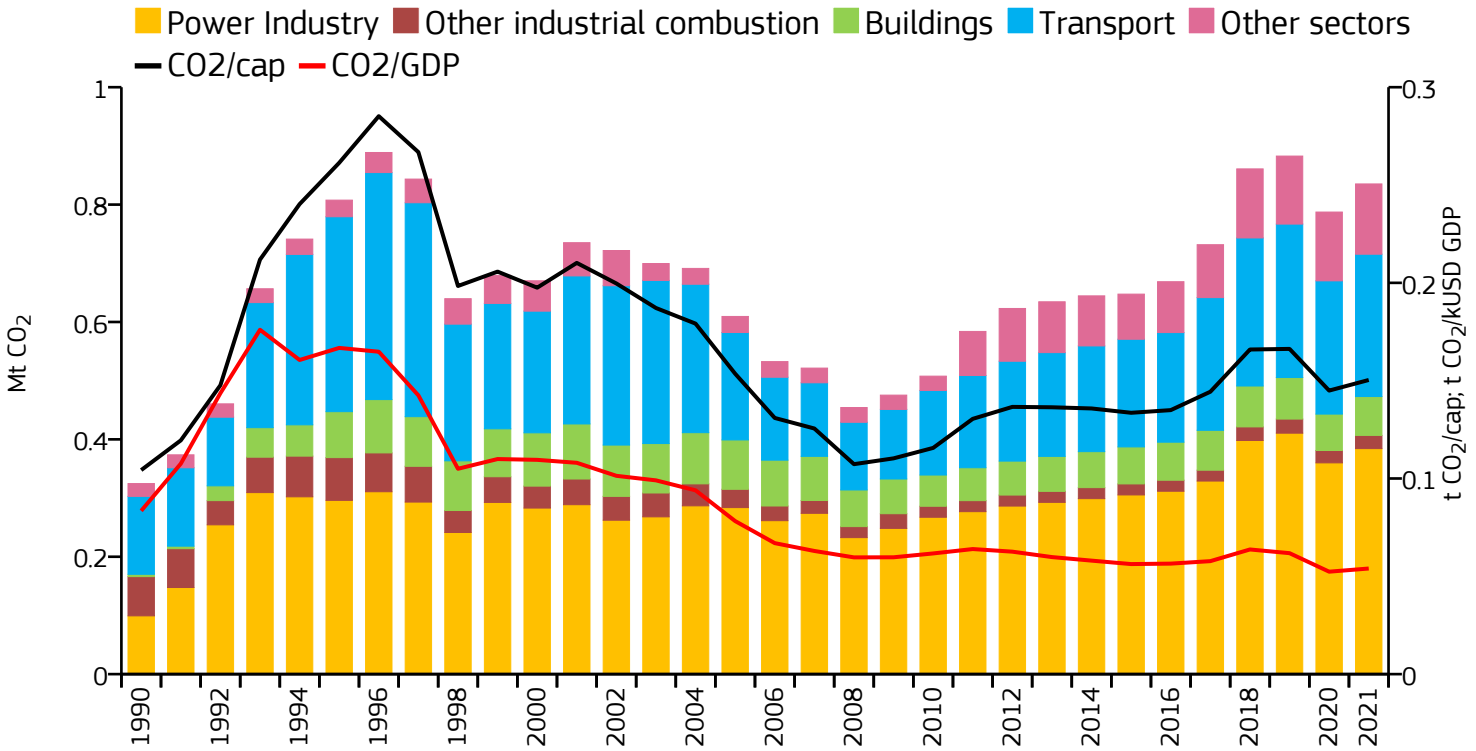


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	7.004	4.823	0.293	1.452M
2020	6.661	4.736	0.276	1.406M
2005	9.150	12.082	0.377	757.317k
1990	0.066	0.154	0.151	426.846k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +4210%	↗ +550%	↗ +15%
Other industrial combustion	↗ +61699%	↘ -19%	↗ +15%
Buildings	↗ +951%	↗ +55%	↗ +7%
Transport	↗ +2730%	↘ -31%	↗ +7%
Other sectors	↗ +62503%	↘ -55%	↘ -19%
All sectors	↗ +10551%	↘ -23%	→ +5%

Eritrea

Fossil CO_2 emissions by sector

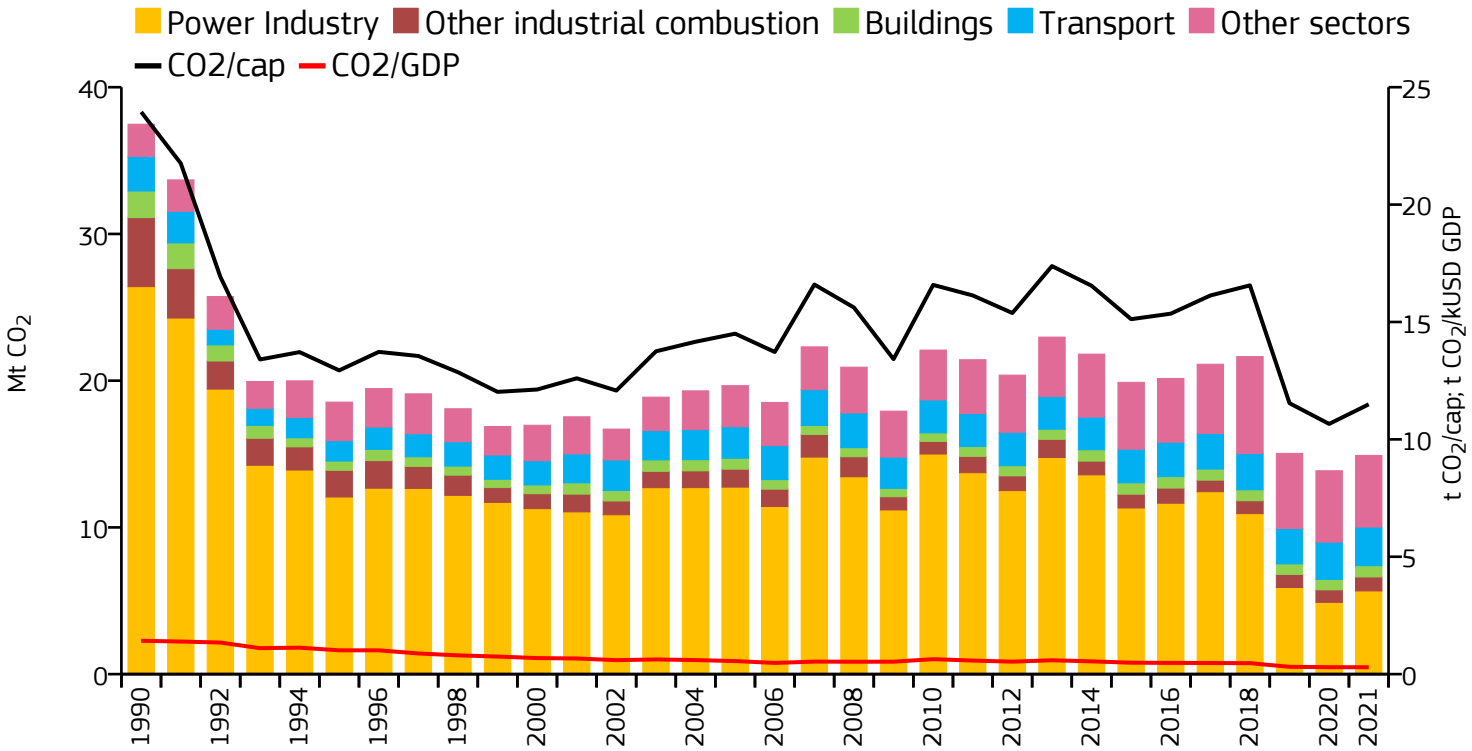


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.835	0.150	0.054	5.555M
2020	0.787	0.145	0.052	5.432M
2005	0.609	0.154	0.078	3.969M
1990	0.325	0.104	0.083	3.113M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +287%	↗ +35%	↗ +7%
Other industrial combustion	↘ -66%	↘ -28%	↗ +7%
Buildings	↗ +1565%	↘ -21%	↗ +7%
Transport	↗ +83%	↗ +32%	↗ +7%
Other sectors	↗ +449%	↗ +338%	→ +2%
All sectors	↗ +157%	↗ +37%	↗ +6%

Estonia

Fossil CO_2 emissions by sector

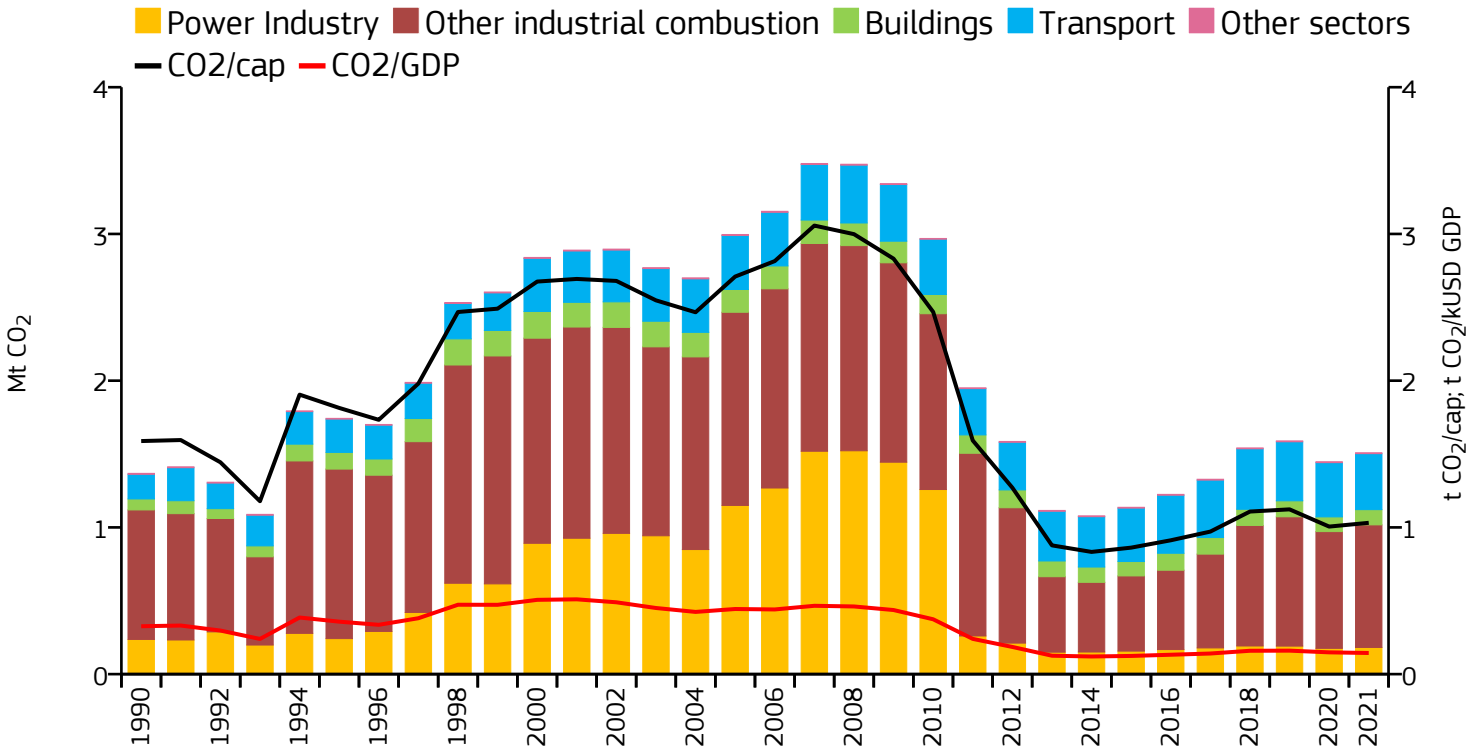


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	14.906	11.492	0.293	1.297M
2020	13.861	10.658	0.296	1.301M
2005	19.659	14.502	0.556	1.356M
1990	37.479	23.945	1.421	1.565M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-79%	-56%	+16%
Other industrial combustion	-80%	-22%	+12%
Buildings	-58%	+4%	+8%
Transport	+12%	+23%	+4%
Other sectors	+122%	+74%	0%
All sectors	-60%	-24%	+8%

Eswatini

Fossil CO_2 emissions by sector

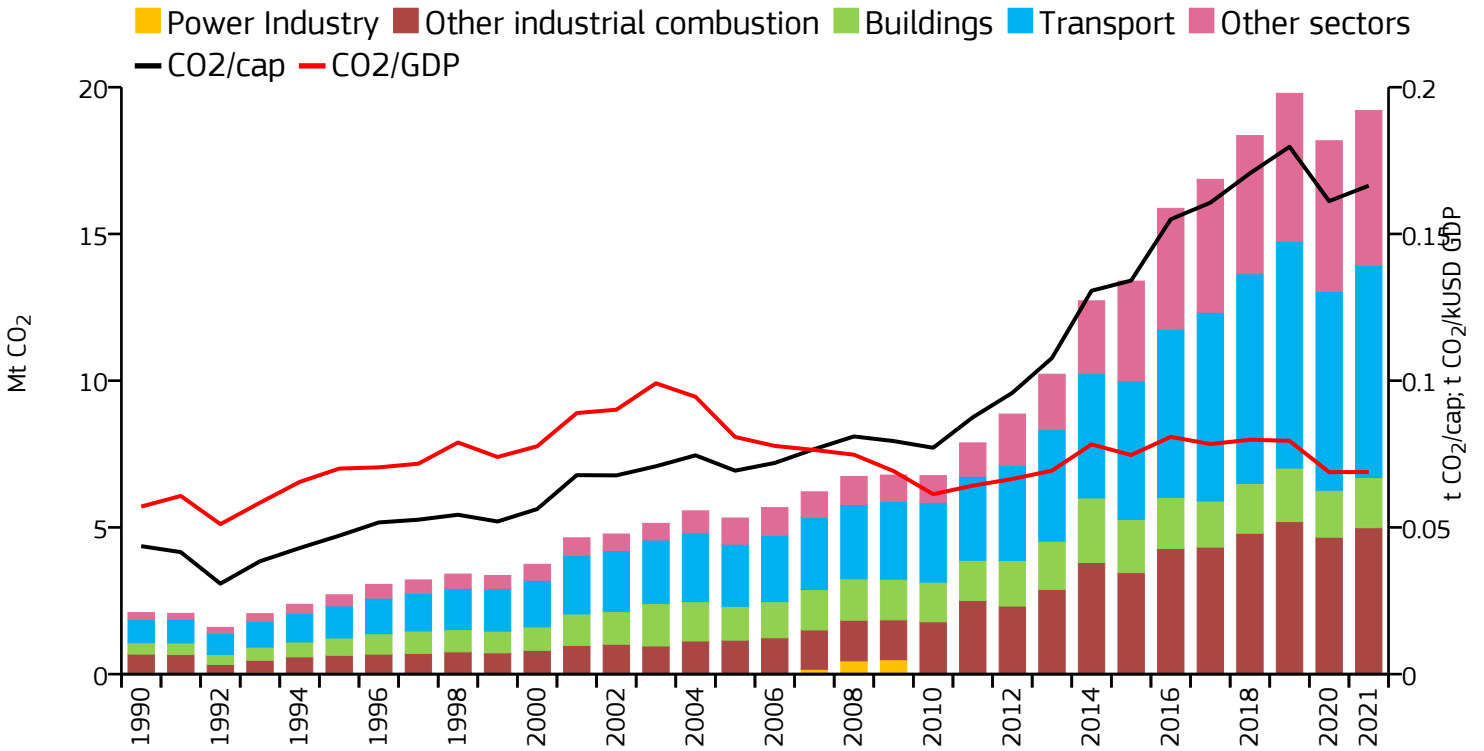


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	1.509	1.031	0.144	1.463M
2020	1.447	1.006	0.148	1.439M
2005	2.996	2.709	0.444	1.106M
1990	1.368	1.588	0.326	861.373k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-23%	-84%	+3%
Other industrial combustion	-5%	-37%	+5%
Buildings	+38%	-33%	+4%
Transport	+127%	+4%	+3%
Other sectors	-6%	-9%	+1%
All sectors	+10%	-50%	+4%

Ethiopia

Fossil CO_2 emissions by sector

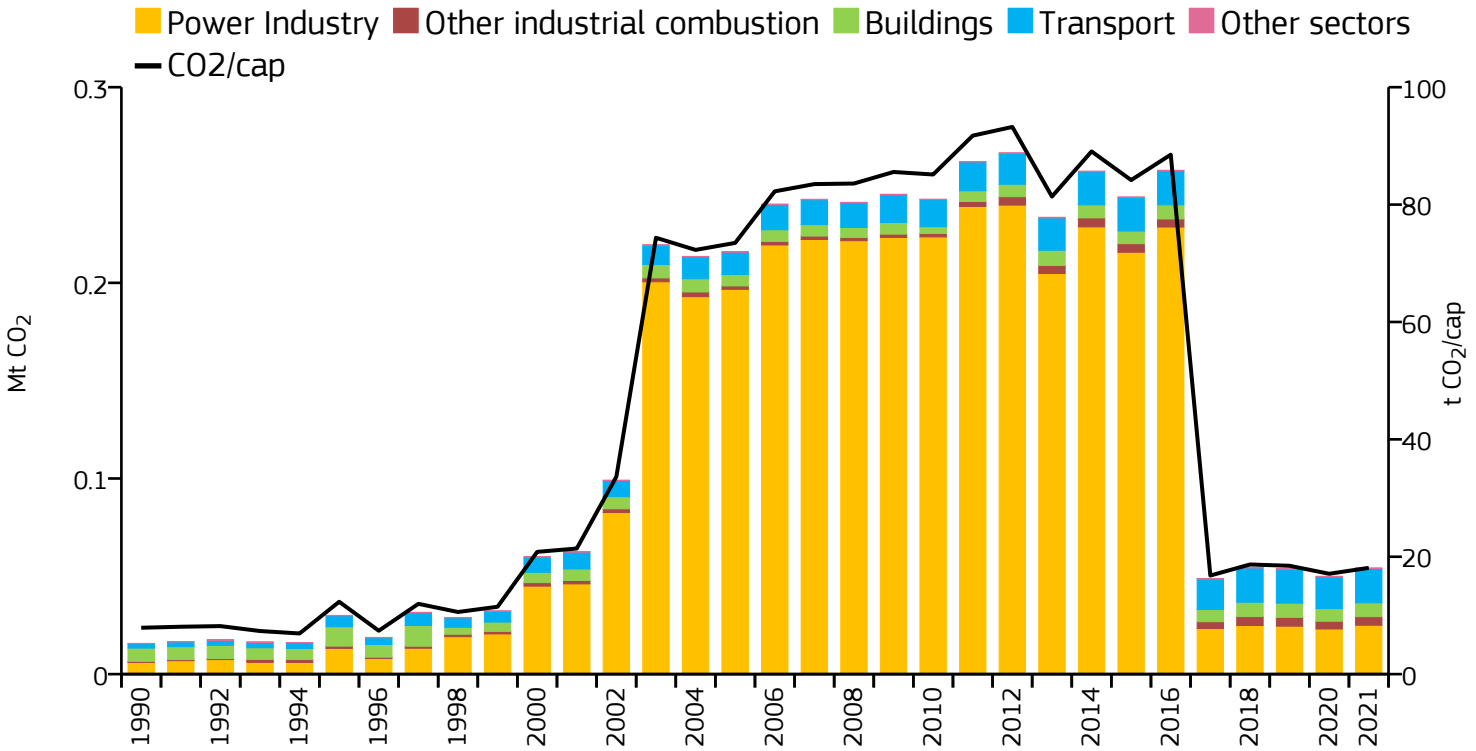


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	19.209	0.166	0.069	115.404M
2020	18.175	0.161	0.069	112.759M
2005	5.319	0.069	0.081	76.727M
1990	2.097	0.044	0.057	48.087M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-94%	-60%	+7%
Other industrial combustion	+707%	+334%	+7%
Buildings	+338%	+48%	+7%
Transport	+809%	+241%	+7%
Other sectors	+2208%	+492%	+3%
All sectors	+816%	+261%	+6%

Falkland Islands

Fossil CO_2 emissions by sector

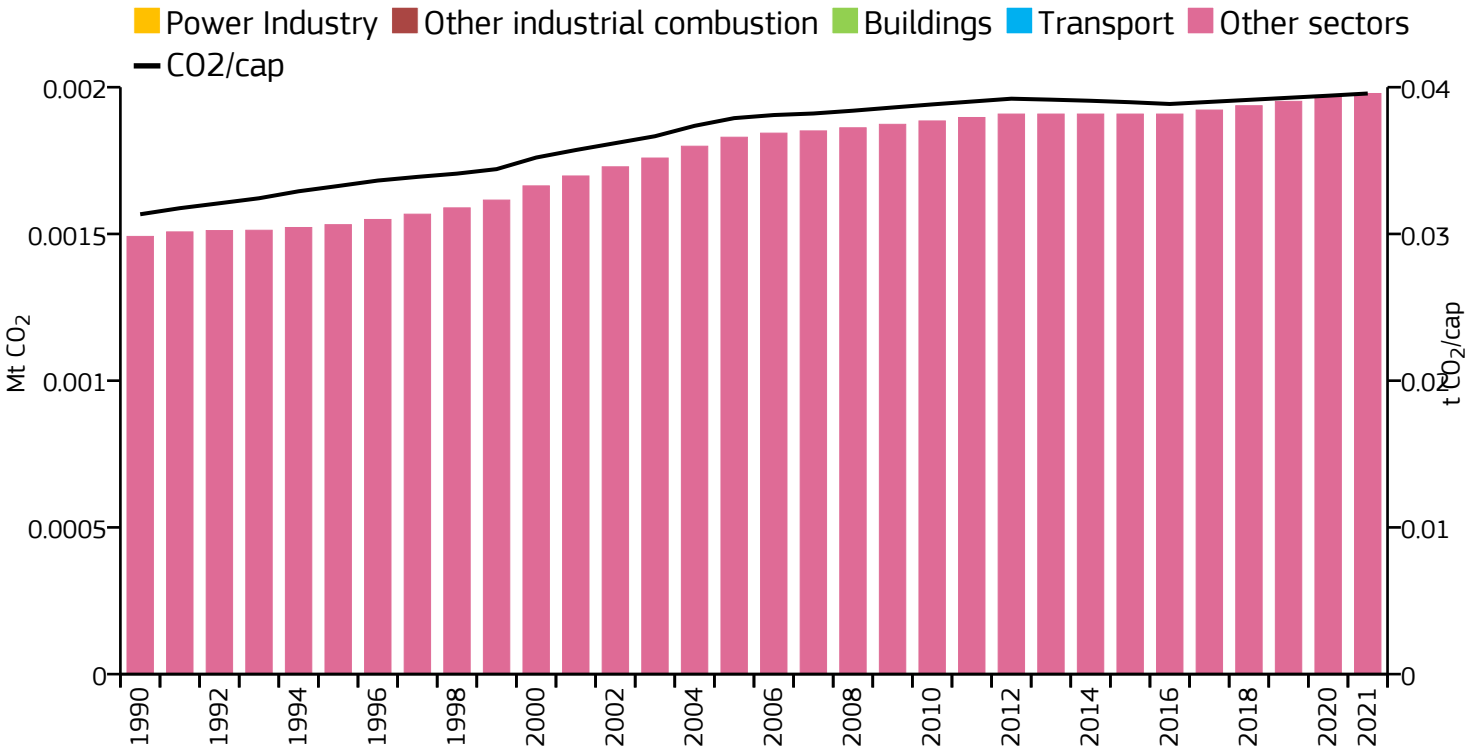


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.054	18.105	n/a	3.000k
2020	0.050	17.100	n/a	2.925k
2005	0.216	73.470	n/a	2.939k
1990	0.016	7.902	n/a	1.989k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+317%	-87%	+8%
Other industrial combustion	+669%	+156%	+10%
Buildings	+5%	+21%	+10%
Transport	+669%	+53%	+8%
Other sectors	+165%	+53%	+1%
All sectors	+246%	-75%	+9%

Faroes

Fossil CO_2 emissions by sector

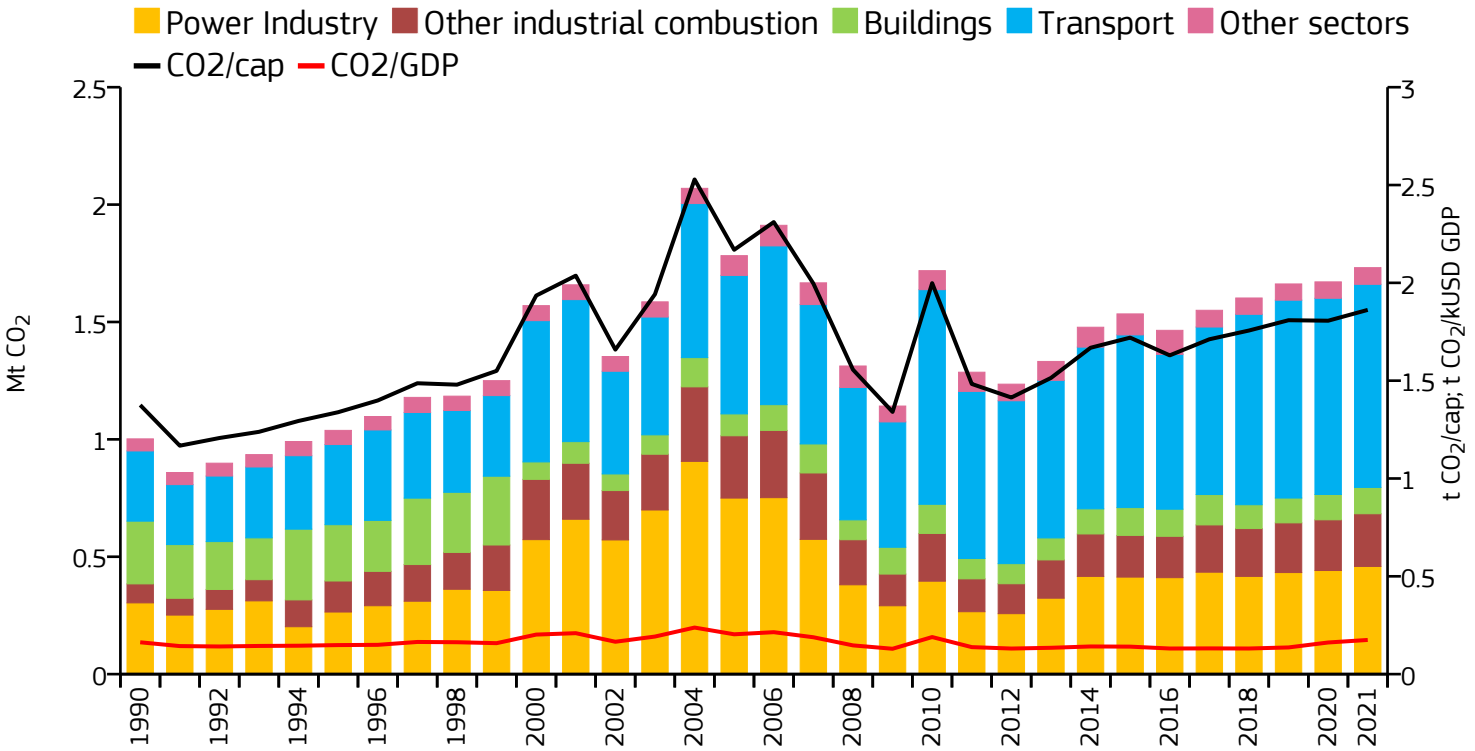


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.002	0.040	n/a	50.000k
2020	0.002	0.039	n/a	49.896k
2005	0.002	0.038	n/a	48.285k
1990	0.001	0.031	n/a	47.594k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	n/a	n/a	n/a
Other industrial combustion	n/a	n/a	n/a
Buildings	n/a	n/a	n/a
Transport	n/a	n/a	n/a
Other sectors	↗ +33%	↗ +8%	→ +1%
All sectors	↗ +33%	↗ +8%	→ +1%

Fiji

Fossil CO_2 emissions by sector

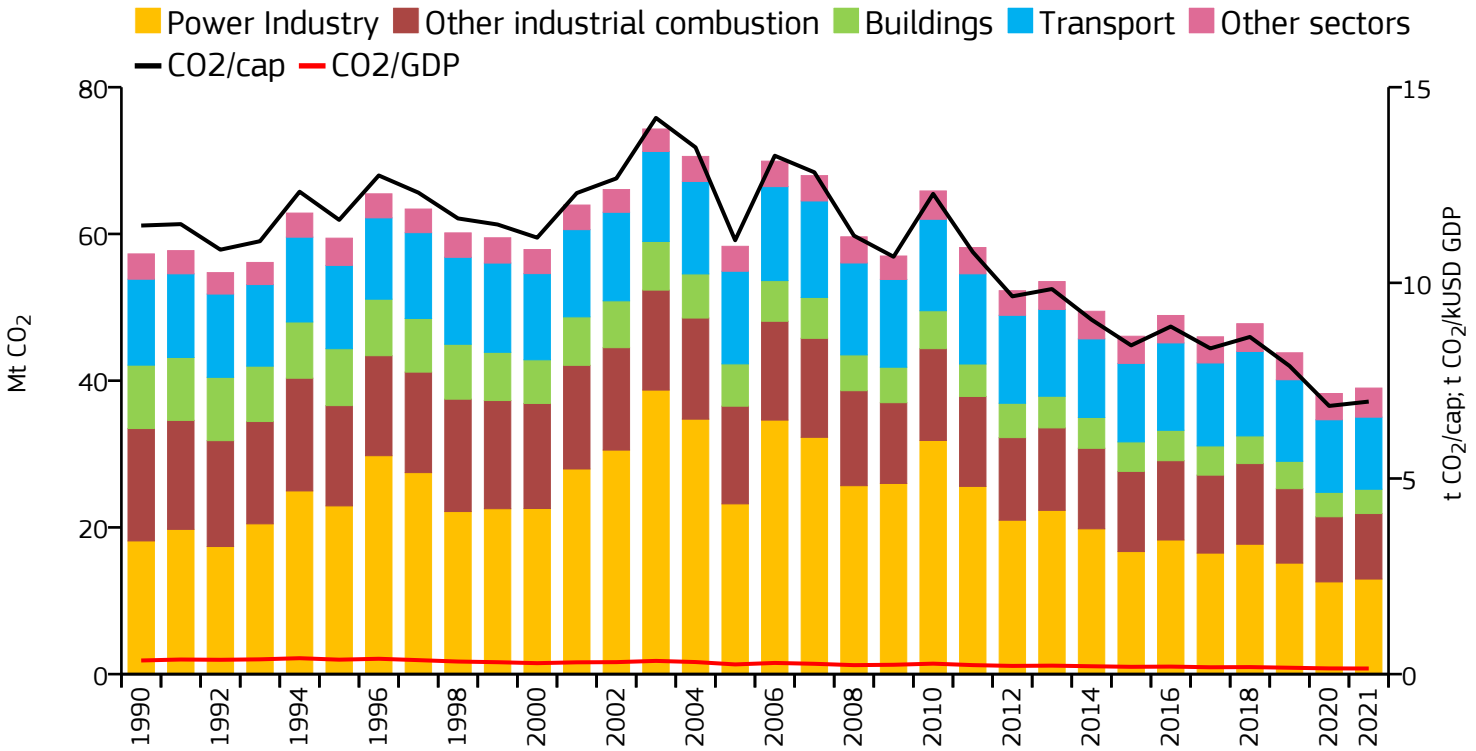


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	1.731	1.862	0.175	930.000k
2020	1.671	1.806	0.162	924.915k
2005	1.783	2.169	0.204	821.817k
1990	1.002	1.375	0.163	728.628k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +51%	↘ -39%	→ +4%
Other industrial combustion	↗ +177%	↘ -15%	→ +4%
Buildings	↘ -58%	↗ +20%	→ +4%
Transport	↗ +189%	↗ +47%	→ +4%
Other sectors	↗ +38%	↘ -16%	→ +2%
All sectors	↗ +73%	→ -3%	→ +4%

Finland

Fossil CO_2 emissions by sector

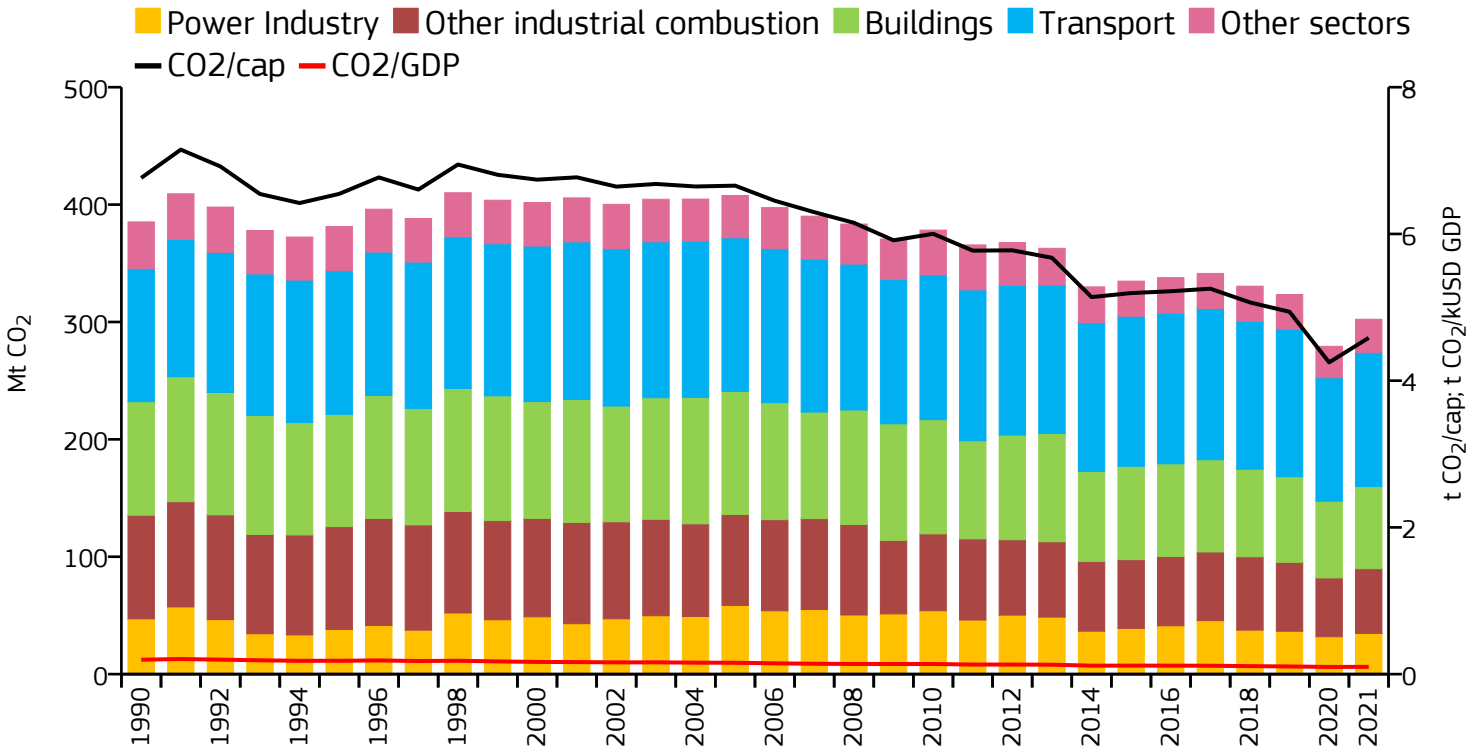


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	38.992	6.965	0.144	5.598M
2020	38.248	6.854	0.146	5.580M
2005	58.315	11.089	0.248	5.259M
1990	57.279	11.464	0.349	4.996M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-29%	-44%	+3%
Other industrial combustion	-42%	-33%	+1%
Buildings	-62%	-43%	-1%
Transport	-16%	-22%	-1%
Other sectors	+15%	+17%	+11%
All sectors	-32%	-33%	+2%

France and Monaco

Fossil CO_2 emissions by sector

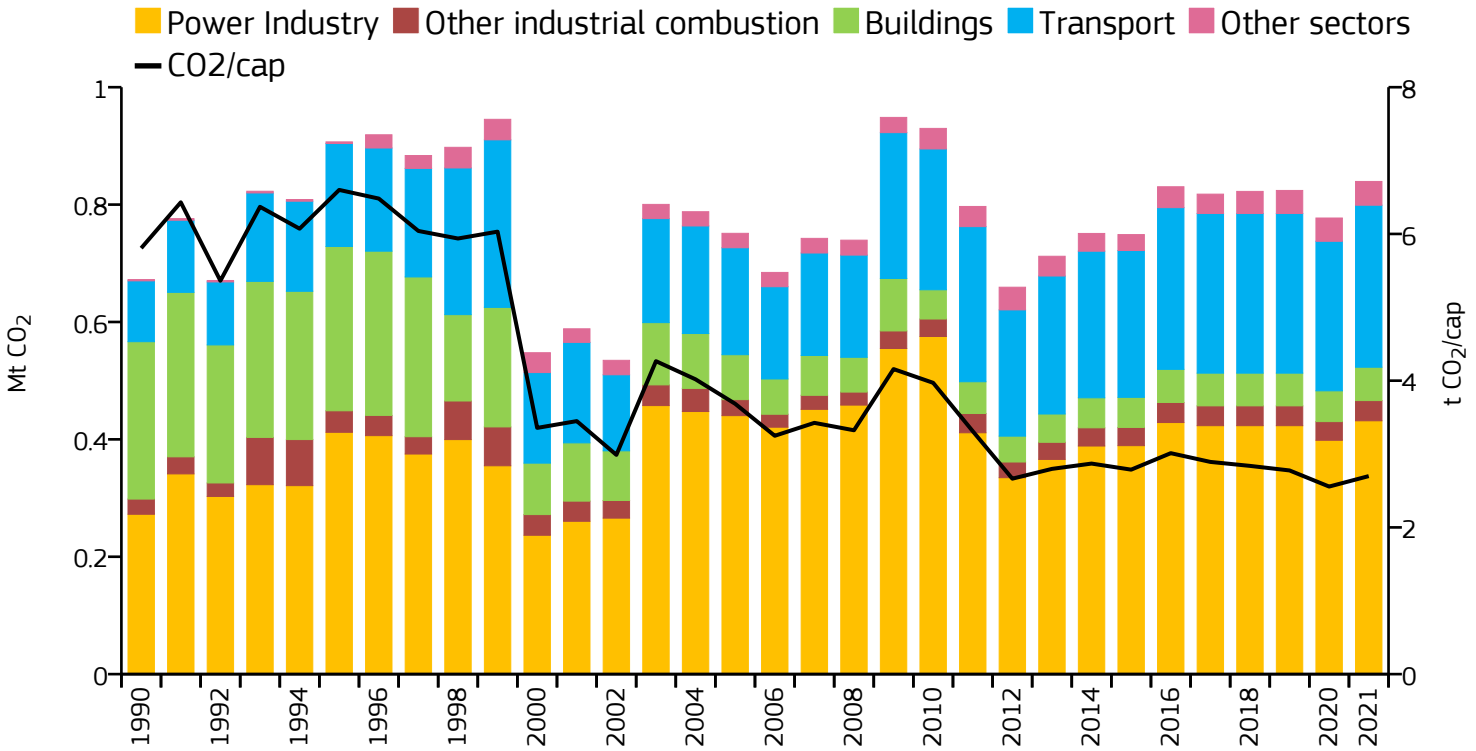


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	302.327	4.584	0.099	65.955M
2020	279.260	4.249	0.098	65.721M
2005	407.699	6.658	0.155	61.234M
1990	385.249	6.763	0.196	56.961M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-26%	-41%	+9%
Other industrial combustion	-38%	-29%	+10%
Buildings	-28%	-33%	+7%
Transport	+1%	-13%	+9%
Other sectors	-29%	-22%	+6%
All sectors	-22%	-26%	+8%

French Guiana

Fossil CO_2 emissions by sector

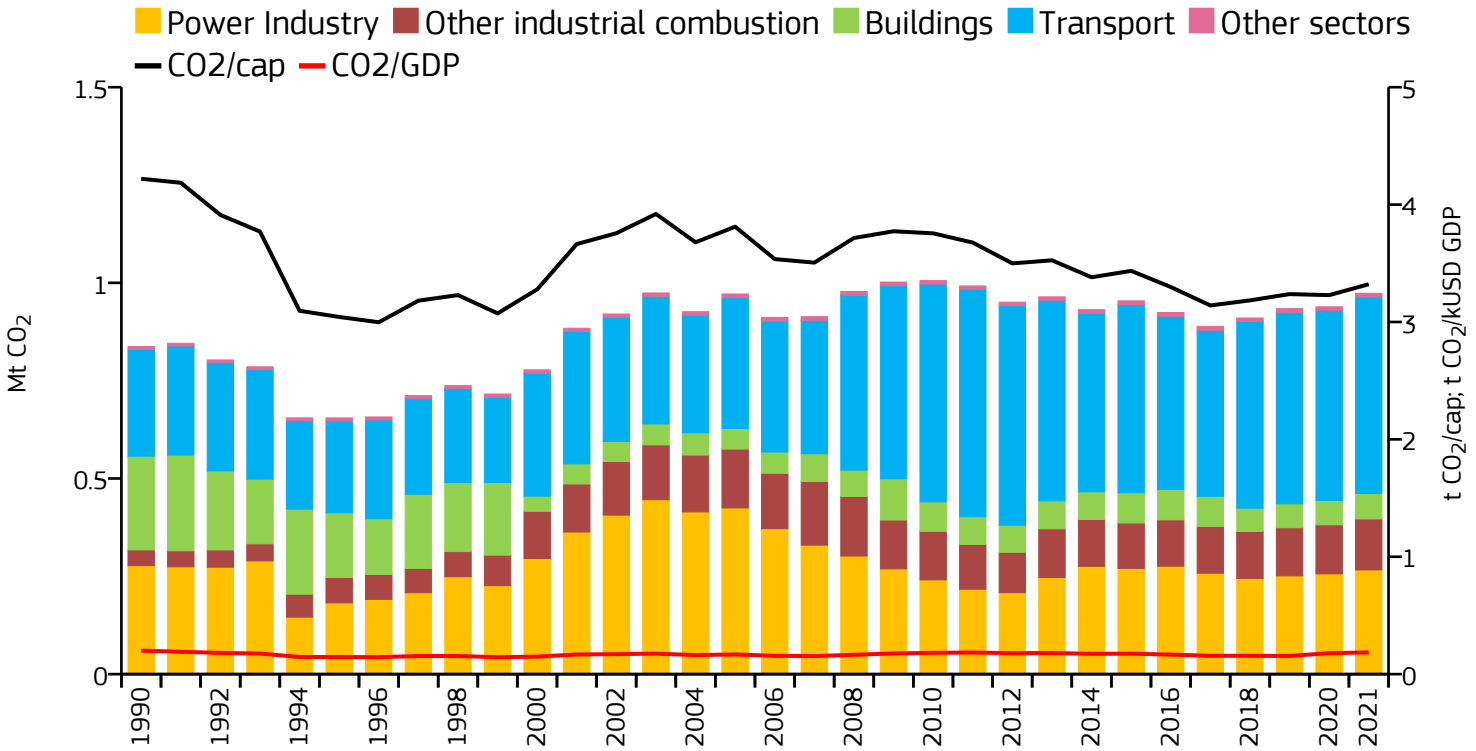


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.839	2.699	n/a	311.000k
2020	0.777	2.557	n/a	303.982k
2005	0.751	3.685	n/a	203.826k
1990	0.672	5.806	n/a	115.784k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +58%	→ -2%	↗ +8%
Other industrial combustion	↗ +33%	↗ +26%	↗ +8%
Buildings	↘ -79%	↘ -26%	↗ +8%
Transport	↗ +166%	↗ +52%	↗ +8%
Other sectors	↗ +1728%	↗ +64%	→ +2%
All sectors	↗ +25%	↗ +12%	↗ +8%

French Polynesia

Fossil CO_2 emissions by sector

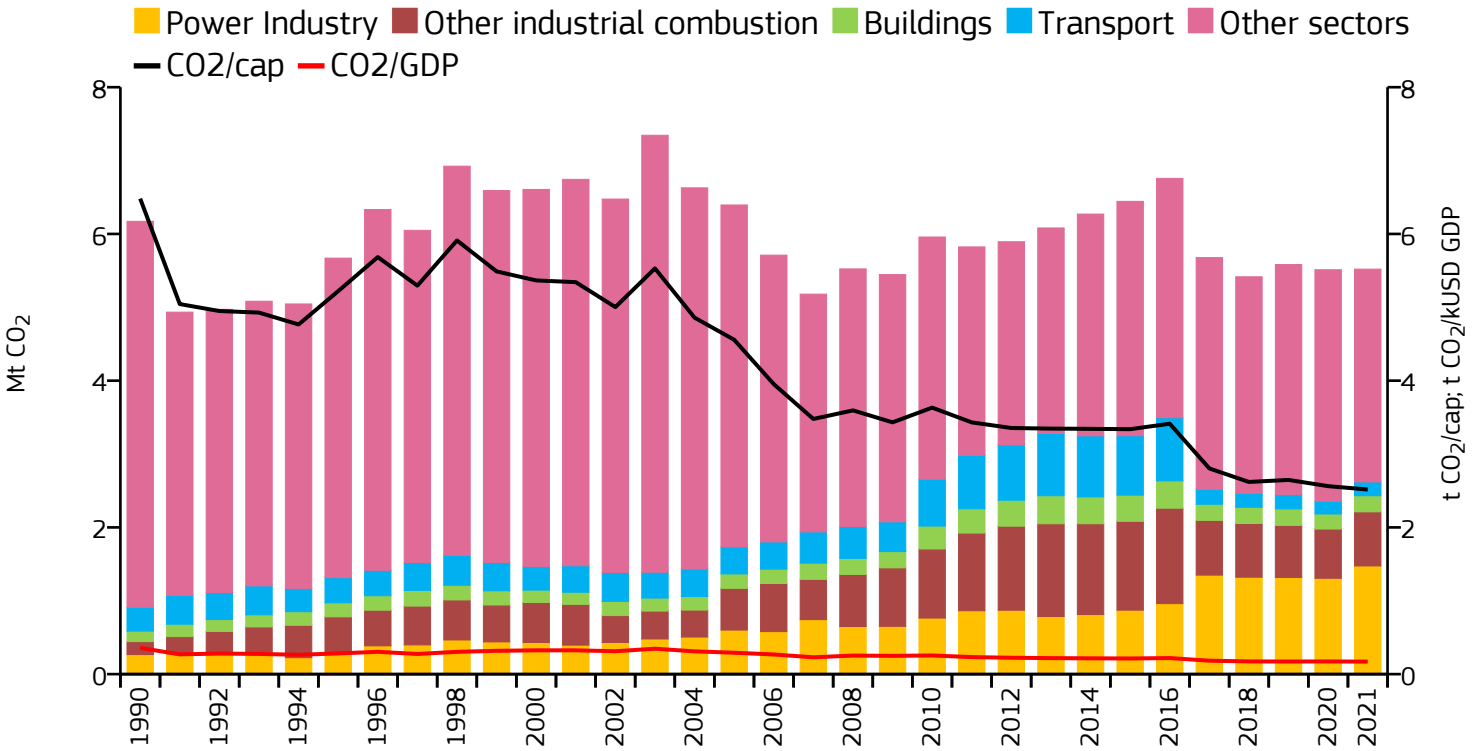


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.973	3.322	0.185	293.000k
2020	0.939	3.229	0.179	290.744k
2005	0.972	3.812	0.168	254.886k
1990	0.837	4.220	0.200	198.375k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-4%	-37%	+4%
Other industrial combustion	+224%	-13%	+4%
Buildings	-73%	+23%	+4%
Transport	+84%	+50%	+4%
Other sectors	+34%	-1%	0%
All sectors	+16%	0%	+4%

Gabon

Fossil CO_2 emissions by sector

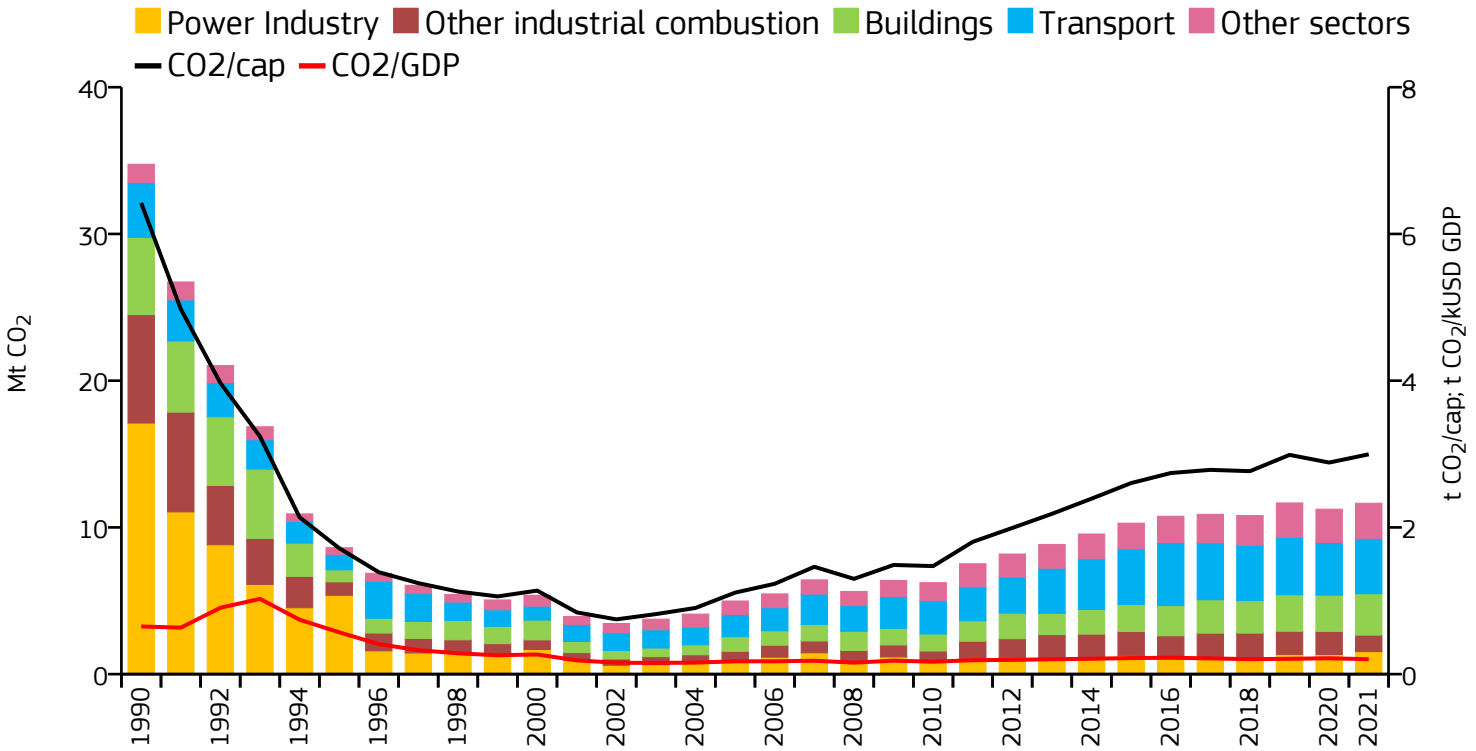


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	5.520	2.516	0.171	2.194M
2020	5.512	2.562	0.173	2.151M
2005	6.395	4.558	0.292	1.403M
1990	6.172	6.481	0.358	952.212k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+454%	+146%	+13%
Other industrial combustion	+317%	+30%	+10%
Buildings	+53%	+12%	+7%
Transport	-42%	-49%	+7%
Other sectors	-45%	-38%	-8%
All sectors	-11%	-14%	0%

Georgia

Fossil CO_2 emissions by sector

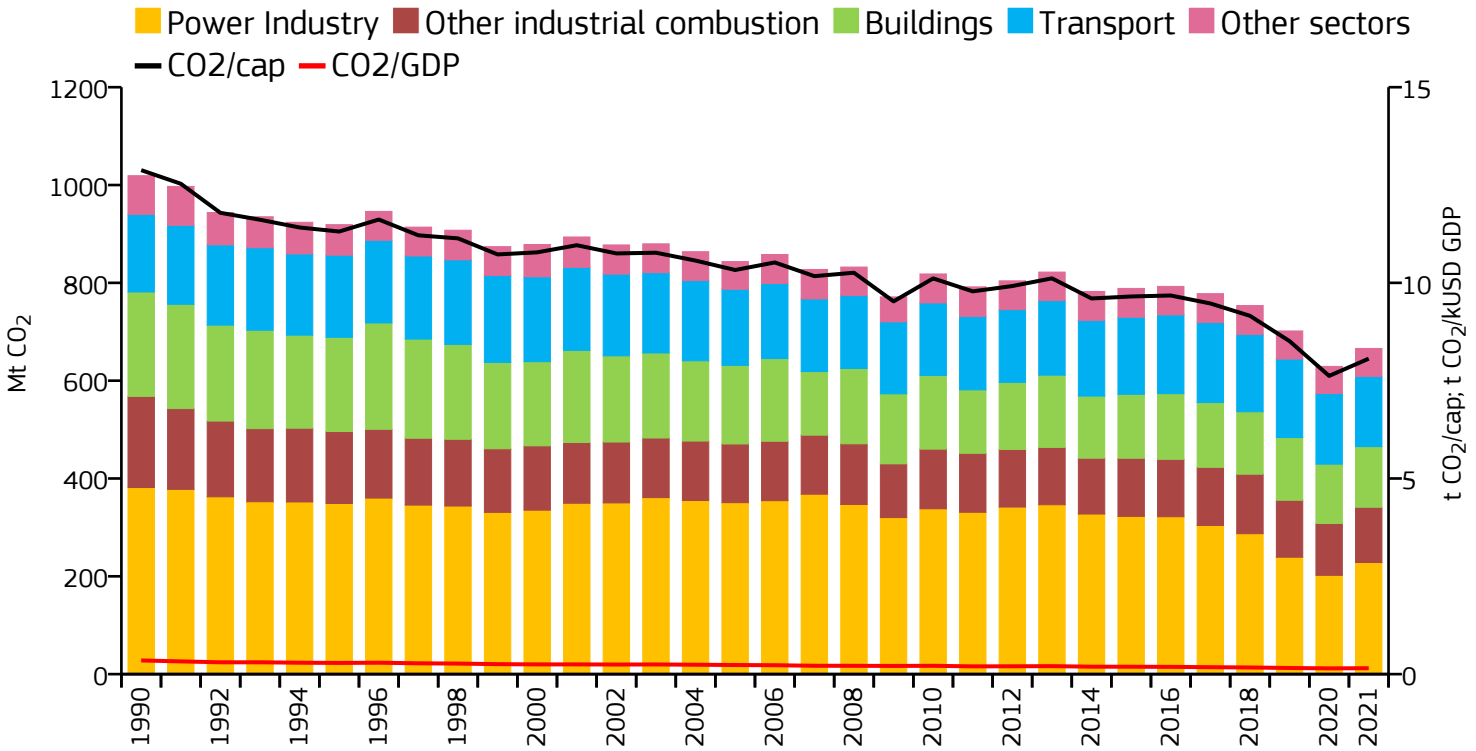


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	11.649	2.996	0.203	3.888M
2020	11.243	2.884	0.216	3.899M
2005	4.985	1.111	0.175	4.487M
1990	34.748	6.423	0.650	5.410M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-91%	+74%	+15%
Other industrial combustion	-85%	+68%	-28%
Buildings	-46%	+183%	+14%
Transport	+1%	+147%	+4%
Other sectors	+92%	+164%	+7%
All sectors	-66%	+134%	+4%

Germany

Fossil CO_2 emissions by sector

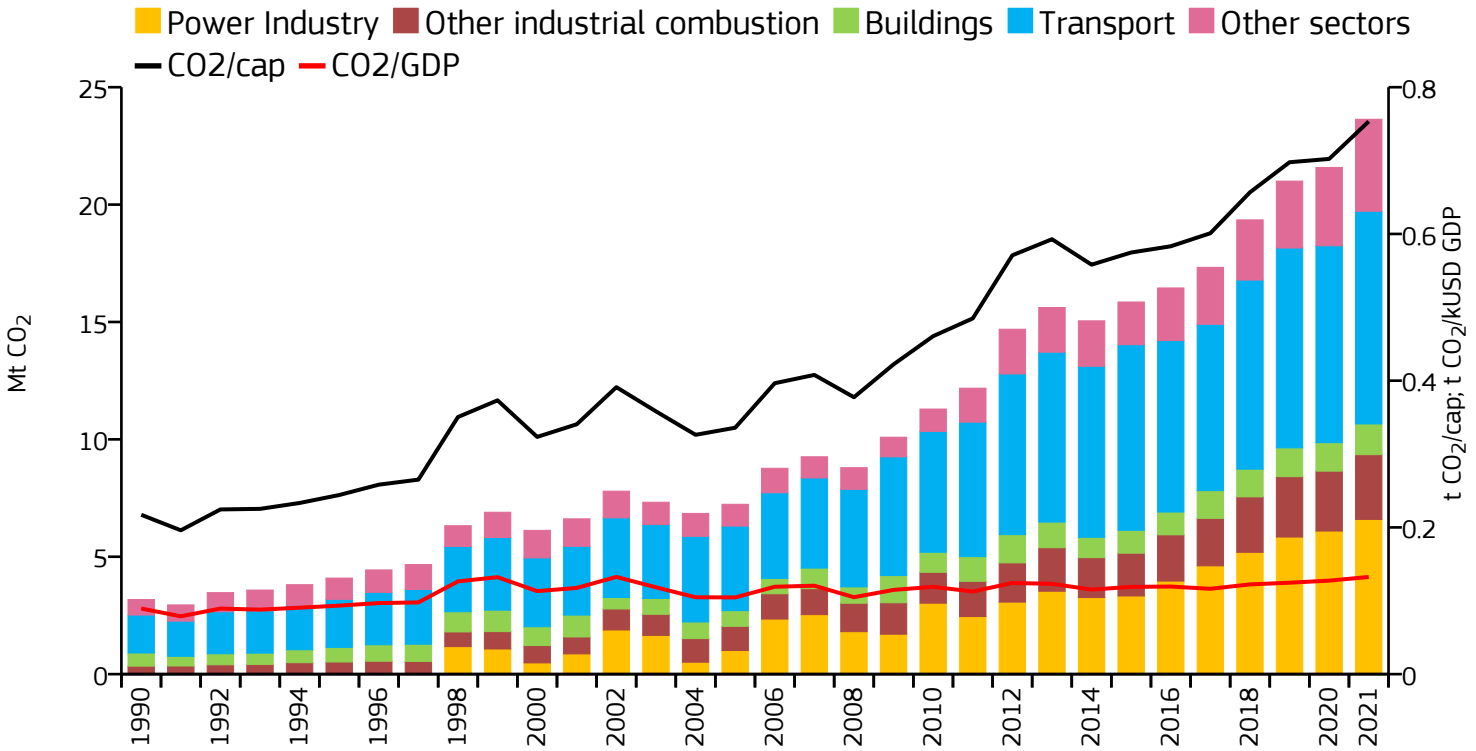


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	665.884	8.063	0.151	82.590M
2020	629.099	7.622	0.147	82.540M
2005	843.522	10.328	0.233	81.671M
1990	1019.078	12.880	0.350	79.118M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-40%	-35%	+13%
Other industrial combustion	-39%	-6%	+7%
Buildings	-42%	-23%	+2%
Transport	-10%	-8%	-1%
Other sectors	-28%	+1%	+3%
All sectors	-35%	-21%	+6%

Ghana

Fossil CO_2 emissions by sector

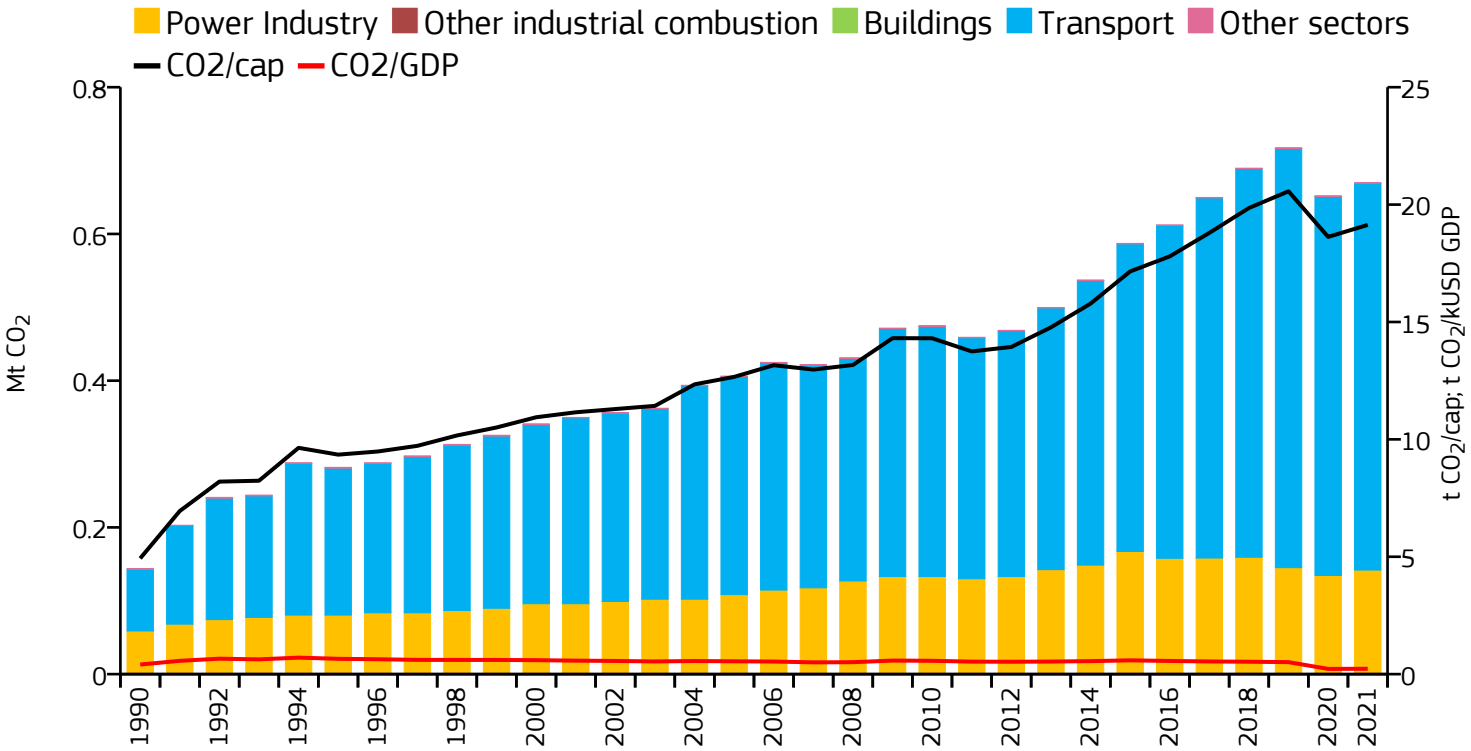


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	23.636	0.753	0.132	31.374M
2020	21.583	0.702	0.127	30.734M
2005	7.235	0.336	0.105	21.542M
1990	3.177	0.217	0.089	14.628M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry		+555%	+8%
Other industrial combustion	+708%	+168%	+8%
Buildings	+134%	+96%	+8%
Transport	+461%	+151%	+8%
Other sectors	+493%	+322%	+17%
All sectors	+644%	+227%	+10%

Gibraltar

Fossil CO_2 emissions by sector

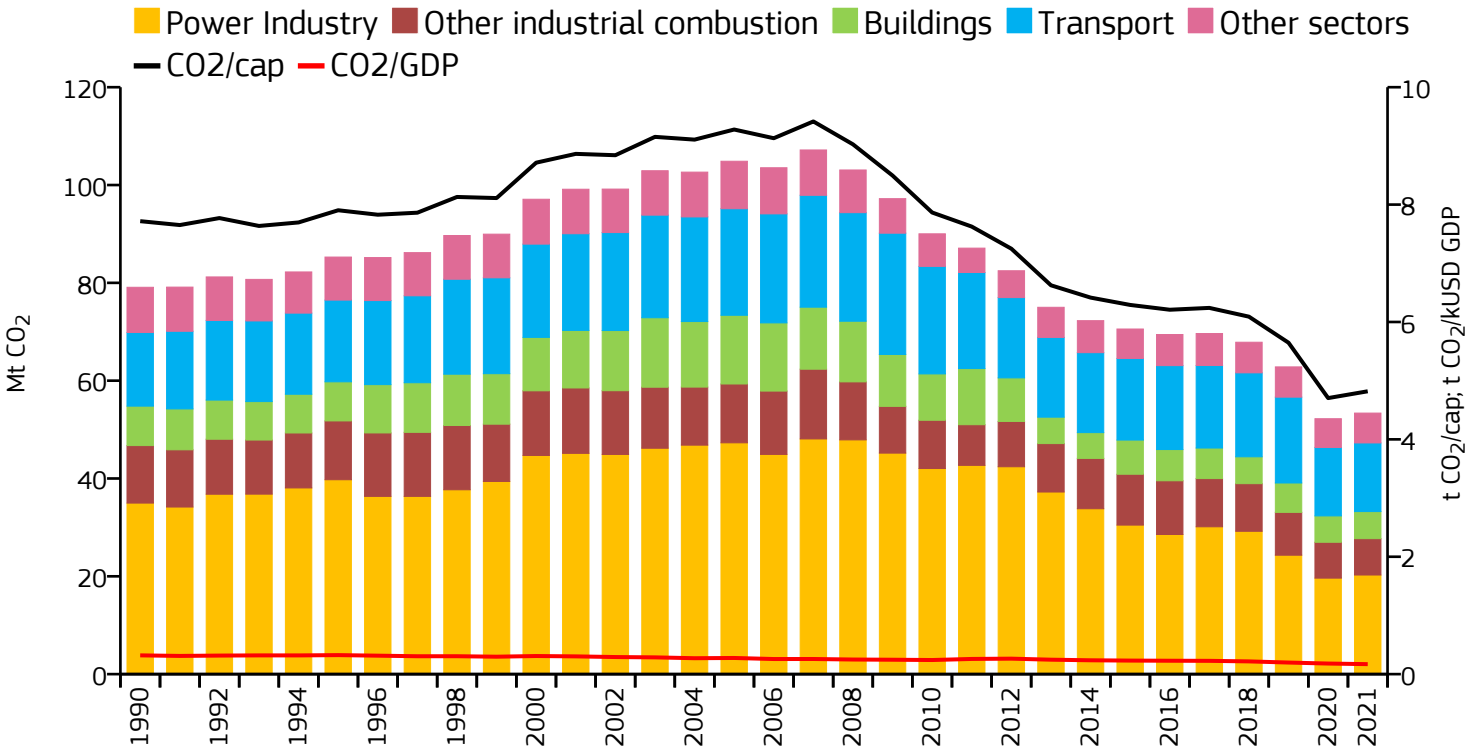


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.670	19.134	0.228	35.000k
2020	0.652	18.624	0.222	35.000k
2005	0.406	12.661	0.546	32.085k
1990	0.144	4.930	0.408	29.164k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +141%	↗ +31%	→ +5%
Other industrial combustion	n/a	n/a	n/a
Buildings	n/a	n/a	n/a
Transport	↗ +528%	↗ +77%	→ +2%
Other sectors	↘ -39%	↗ +9%	→ 0%
All sectors	↗ +366%	↗ +65%	→ +3%

Greece

Fossil CO_2 emissions by sector

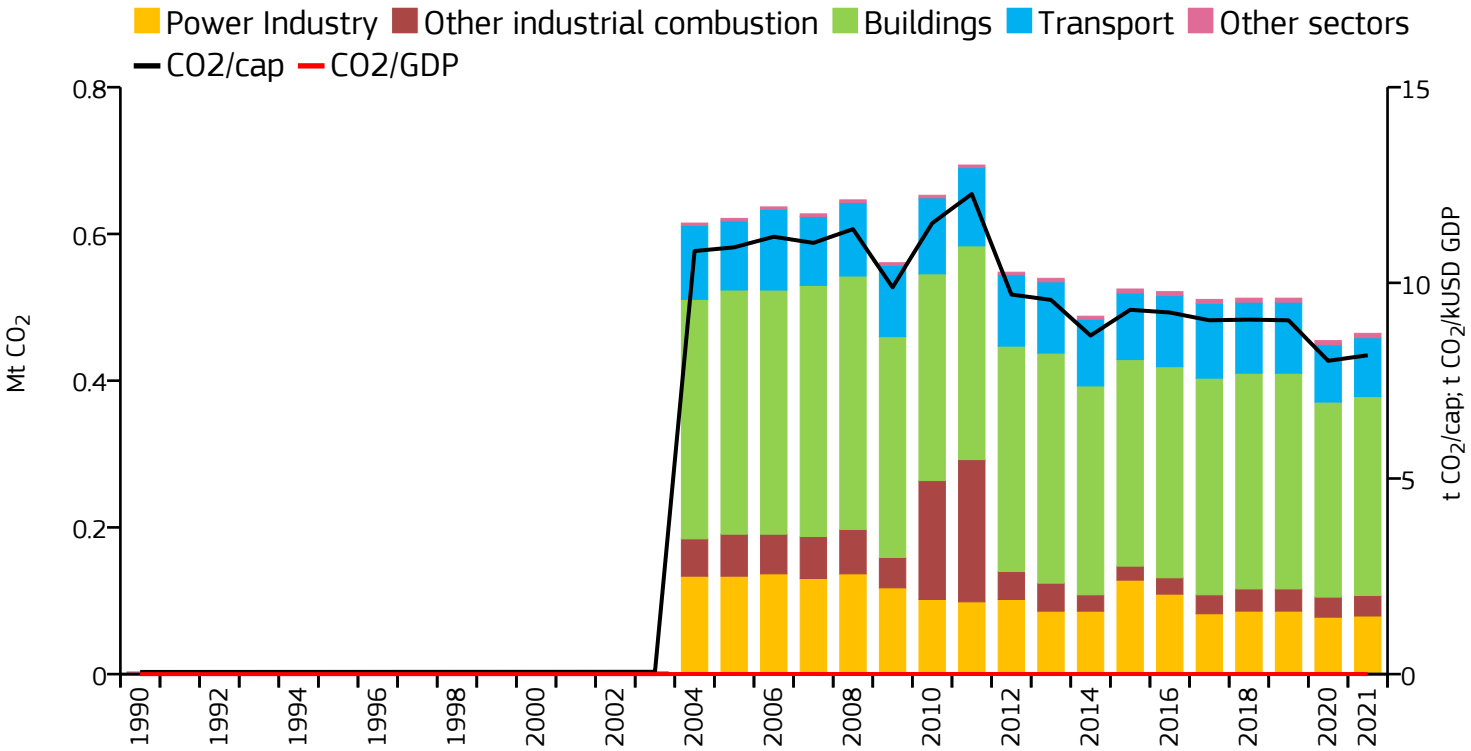


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	53.372	4.819	0.170	11.075M
2020	52.220	4.703	0.180	11.103M
2005	104.865	9.279	0.275	11.301M
1990	79.094	7.718	0.320	10.248M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-42%	-57%	+3%
Other industrial combustion	-37%	-38%	+1%
Buildings	-31%	-61%	+3%
Transport	-7%	-36%	0%
Other sectors	-34%	-37%	+4%
All sectors	-33%	-49%	+2%

Greenland

Fossil CO_2 emissions by sector

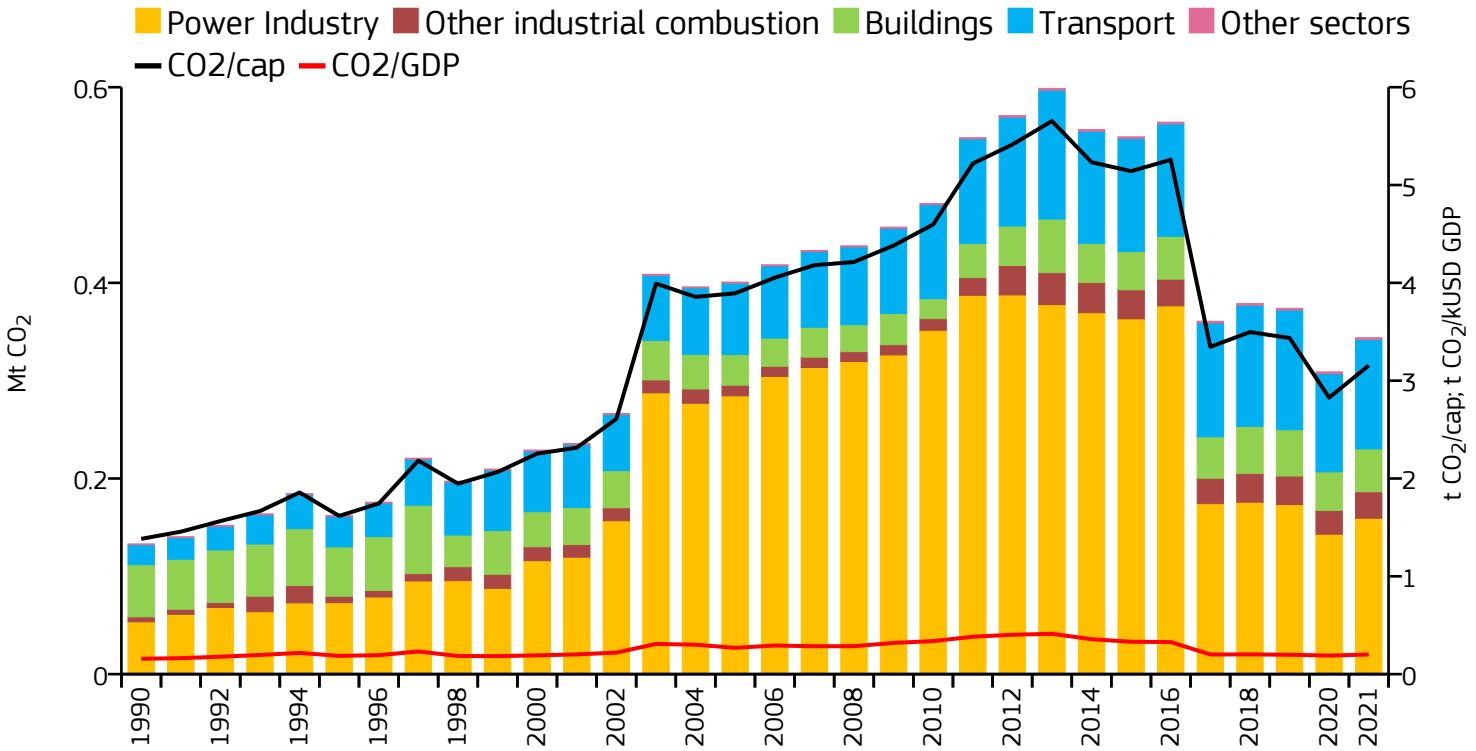


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.465	8.149	0.002	57.000k
2020	0.455	8.007	0.002	56.772k
2005	0.621	10.908	0.003	56.951k
1990	0.003	0.055	0.000	55.604k

	2021 vs 1990		2021 vs 2005		2021 vs 2020	
Power Industry	↗		↘	-41%	→	+2%
Other industrial combustion	↗		↘	-51%	→	+2%
Buildings	↗		↘	-19%	→	+2%
Transport	↗		↘	-15%	→	+3%
Other sectors	↗	+96%	↗	+74%	→	+5%
All sectors	↗		↘	-25%	→	+2%

Grenada

Fossil CO_2 emissions by sector

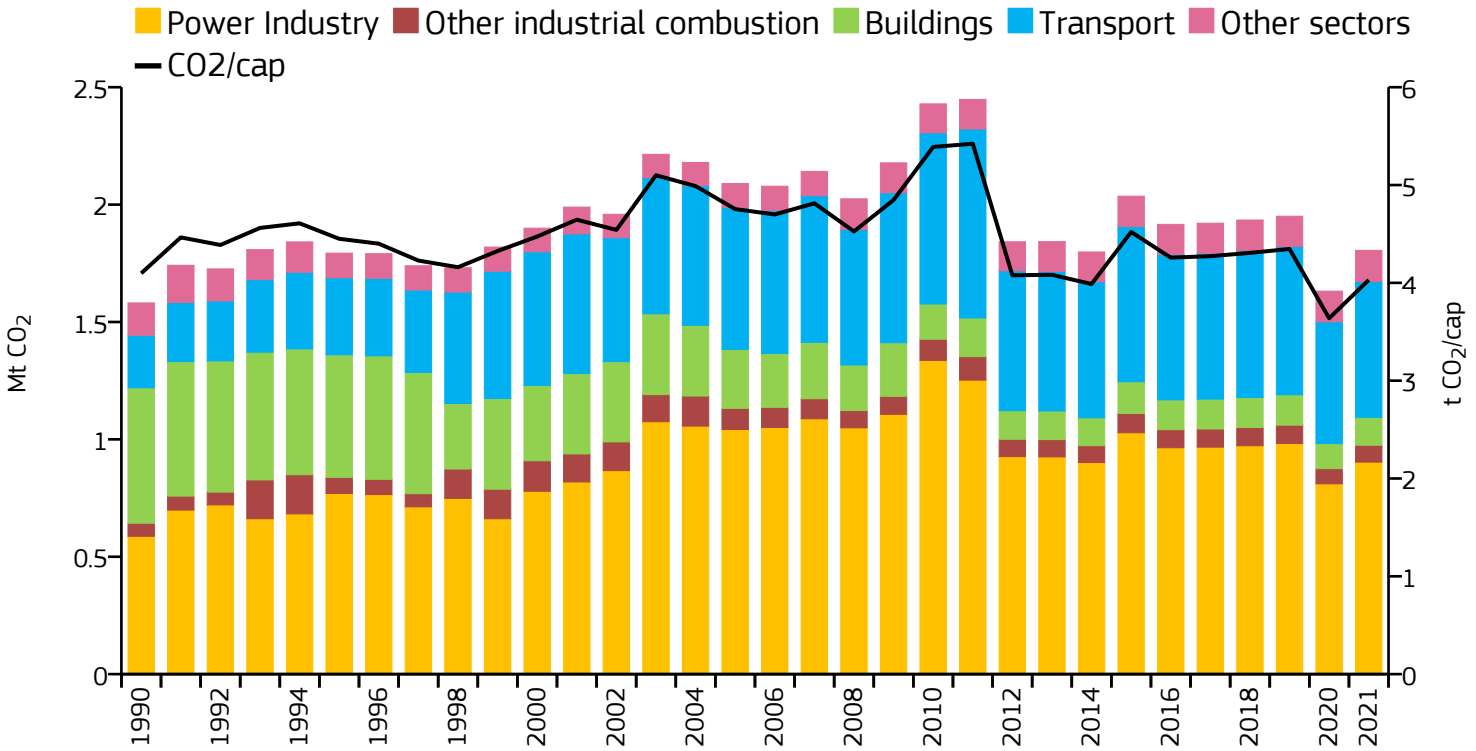


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.344	3.155	0.200	109.000k
2020	0.309	2.826	0.190	109.308k
2005	0.401	3.893	0.269	102.949k
1990	0.133	1.383	0.157	96.283k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +198%	↘ -44%	↗ +11%
Other industrial combustion	↗ +432%	↗ +148%	↗ +11%
Buildings	↘ -18%	↗ +40%	↗ +11%
Transport	↗ +450%	↗ +53%	↗ +11%
Other sectors	↗ +96%	↗ +57%	→ +1%
All sectors	↗ +158%	↘ -14%	↗ +11%

Guadeloupe

Fossil CO_2 emissions by sector

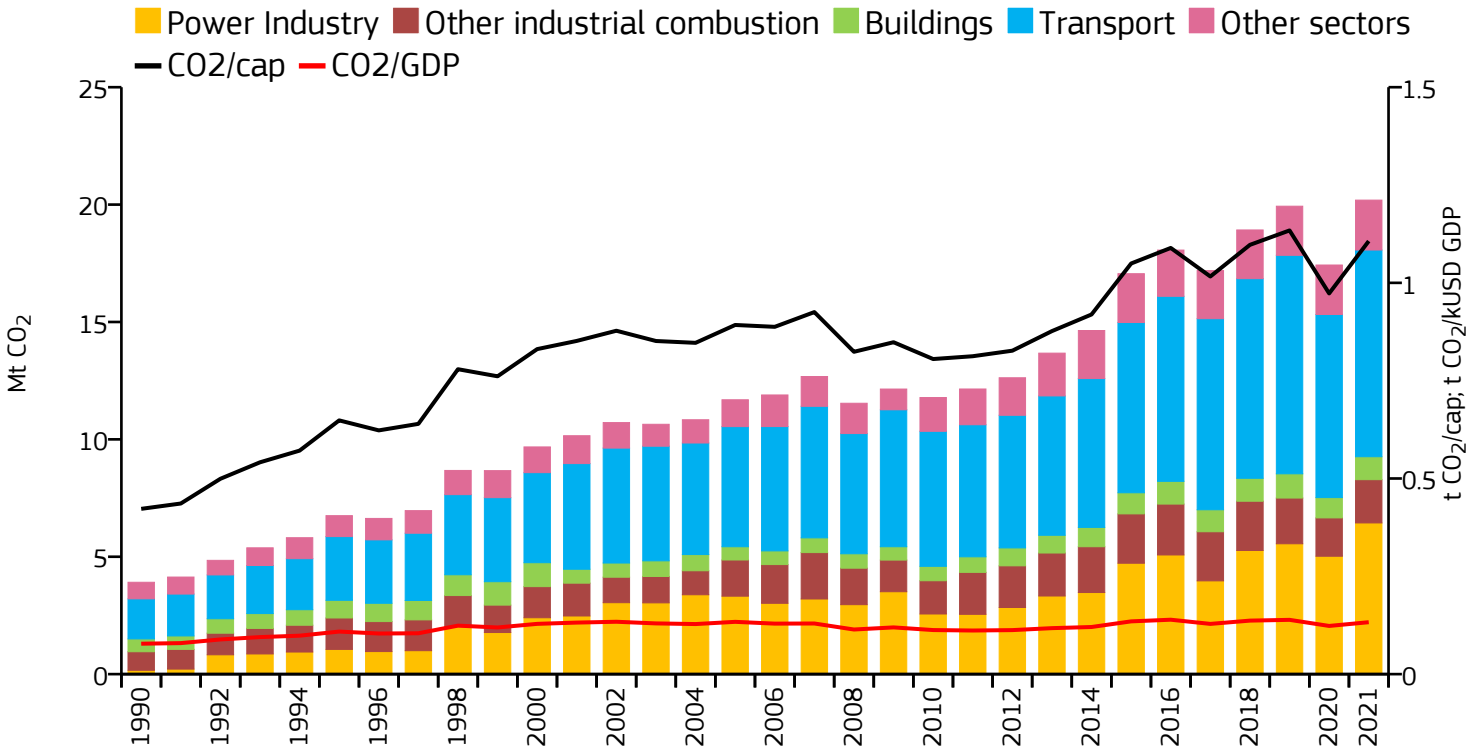


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	1.805	4.029	n/a	448.000k
2020	1.631	3.638	n/a	448.427k
2005	2.090	4.754	n/a	439.552k
1990	1.581	4.098	n/a	385.878k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +54%	↘ -13%	↗ +11%
Other industrial combustion	↗ +29%	↘ -20%	↗ +11%
Buildings	↘ -79%	↘ -53%	↗ +11%
Transport	↗ +159%	→ -4%	↗ +11%
Other sectors	→ -4%	↗ +30%	→ +2%
All sectors	↗ +14%	↘ -14%	↗ +11%

Guatemala

Fossil CO_2 emissions by sector

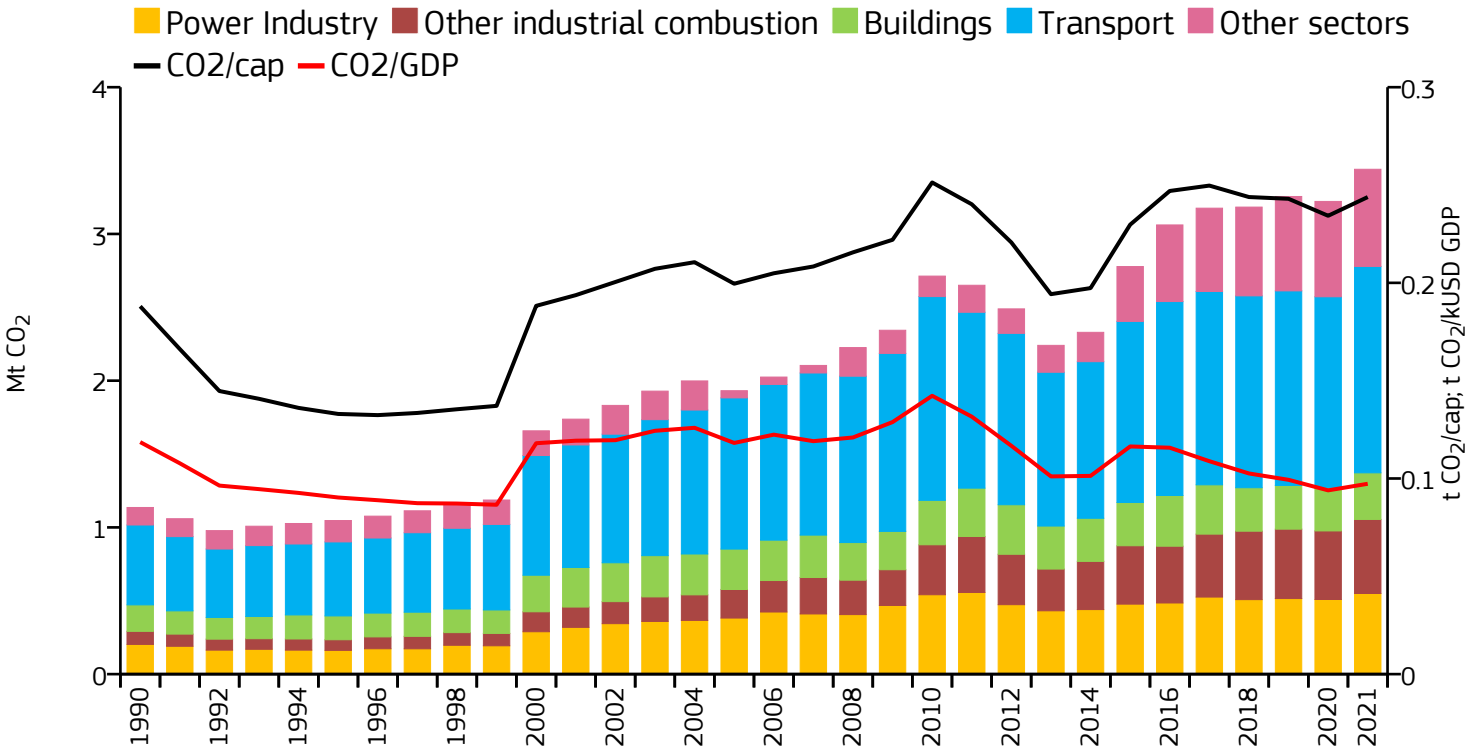


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	20.191	1.107	0.133	18.244M
2020	17.427	0.973	0.123	17.911M
2005	11.686	0.892	0.134	13.096M
1990	3.913	0.422	0.078	9.264M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +3824%	↗ +94%	↗ +28%
Other industrial combustion	↗ +133%	↗ +20%	↗ +13%
Buildings	↗ +79%	↗ +73%	↗ +13%
Transport	↗ +416%	↗ +72%	↗ +13%
Other sectors	↗ +201%	↗ +86%	→ +1%
All sectors	↗ +416%	↗ +73%	↗ +16%

Guinea

Fossil CO_2 emissions by sector

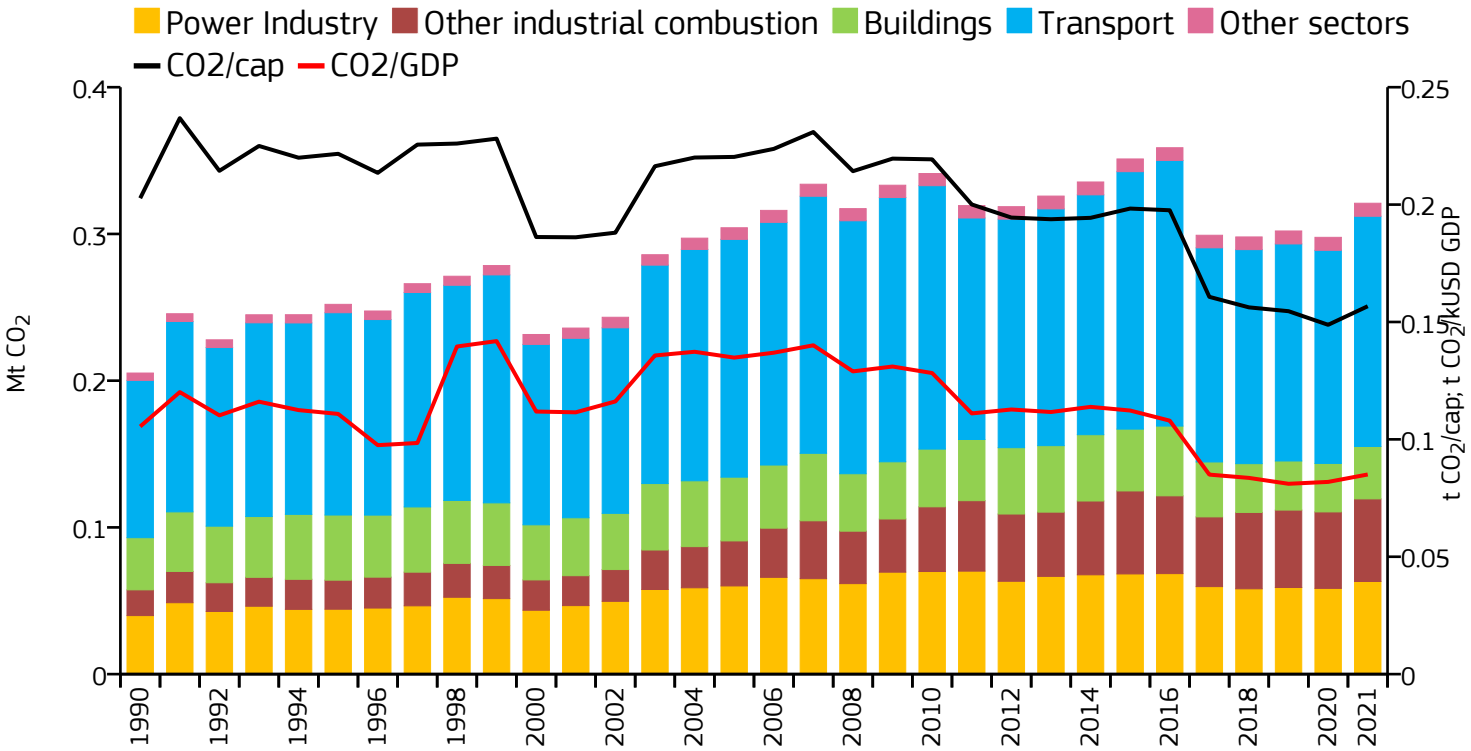


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	3.441	0.244	0.097	14.110M
2020	3.222	0.234	0.094	13.751M
2005	1.932	0.200	0.118	9.680M
1990	1.136	0.188	0.119	6.041M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +171%	↗ +44%	↗ +8%
Other industrial combustion	↗ +467%	↗ +159%	↗ +8%
Buildings	↗ +76%	↗ +15%	↗ +8%
Transport	↗ +158%	↗ +37%	↗ +8%
Other sectors	↗ +454%	↗ +1251%	→ +2%
All sectors	↗ +203%	↗ +78%	↗ +7%

Guinea-Bissau

Fossil CO_2 emissions by sector

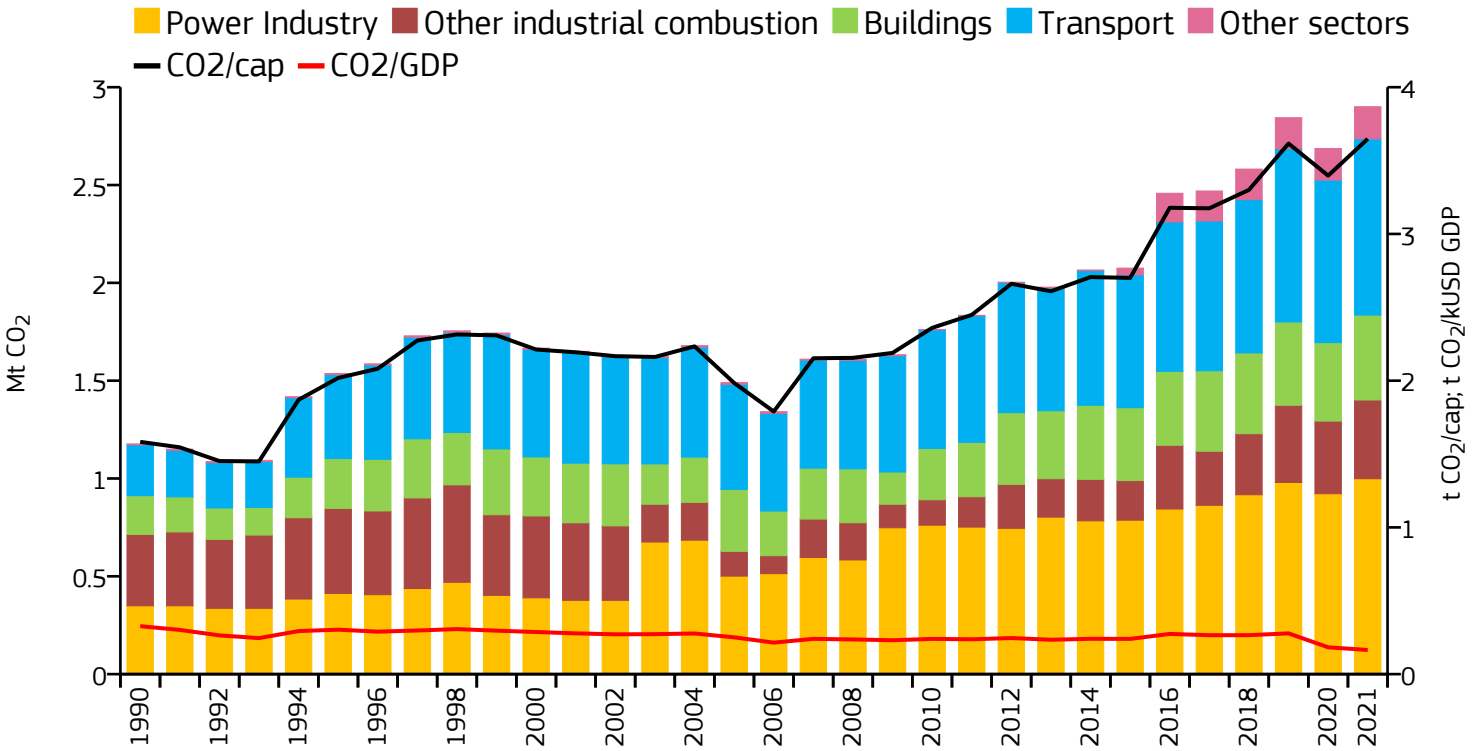


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.321	0.157	0.085	2.048M
2020	0.298	0.149	0.082	2.001M
2005	0.304	0.220	0.135	1.381M
1990	0.205	0.203	0.105	1.012M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+58%	+5%	+8%
Other industrial combustion	+221%	+83%	+8%
Buildings	0%	-18%	+8%
Transport	+46%	-3%	+8%
Other sectors	+77%	+12%	0%
All sectors	+56%	+5%	+8%

Guyana

Fossil CO_2 emissions by sector

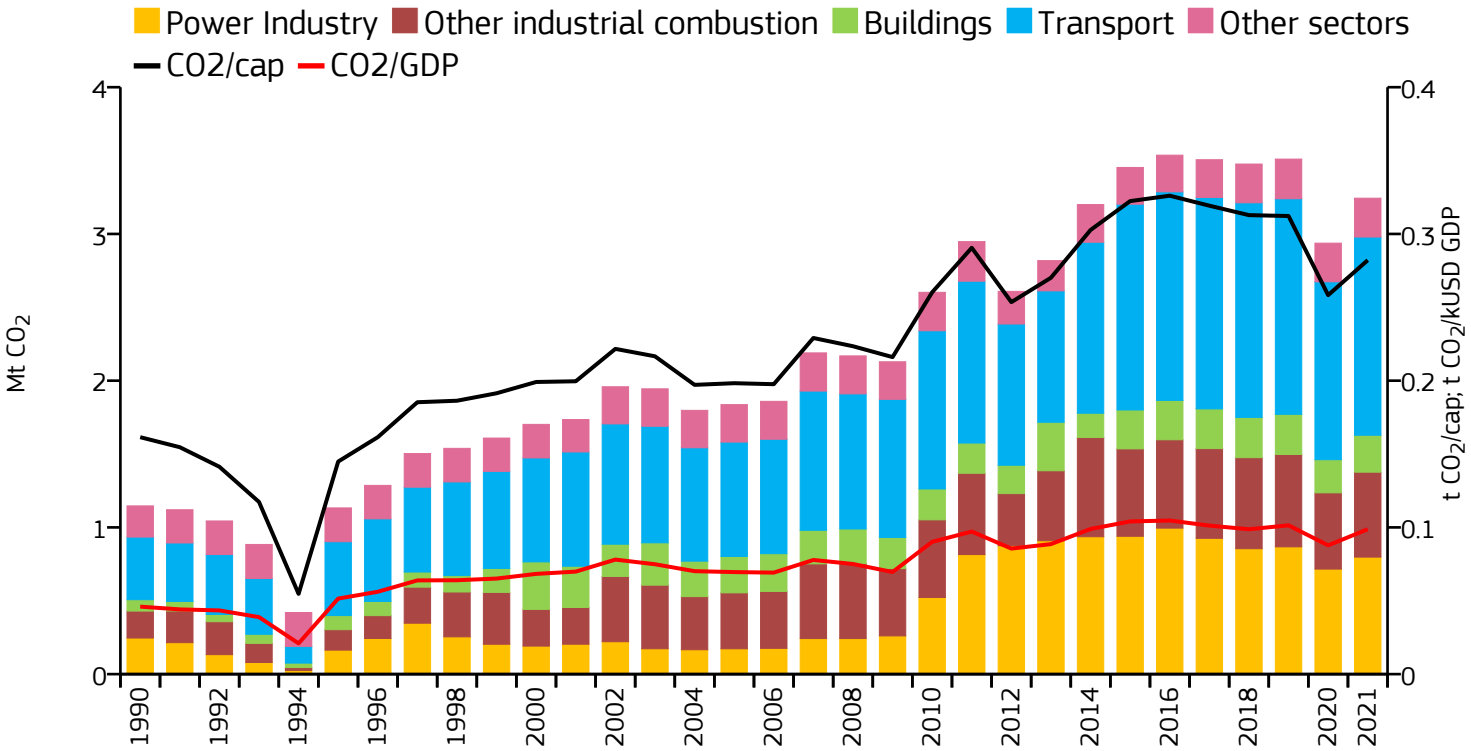


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	2.900	3.648	0.165	795.000k
2020	2.687	3.397	0.183	790.782k
2005	1.490	1.984	0.251	750.946k
1990	1.177	1.583	0.327	743.309k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +186%	↗ +99%	↗ +8%
Other industrial combustion	↗ +10%	↗ +218%	↗ +8%
Buildings	↗ +119%	↗ +37%	↗ +8%
Transport	↗ +247%	↗ +68%	↗ +8%
Other sectors	↗ +3357%	↗ +1851%	→ +2%
All sectors	↗ +146%	↗ +95%	↗ +8%

Haiti

Fossil CO_2 emissions by sector

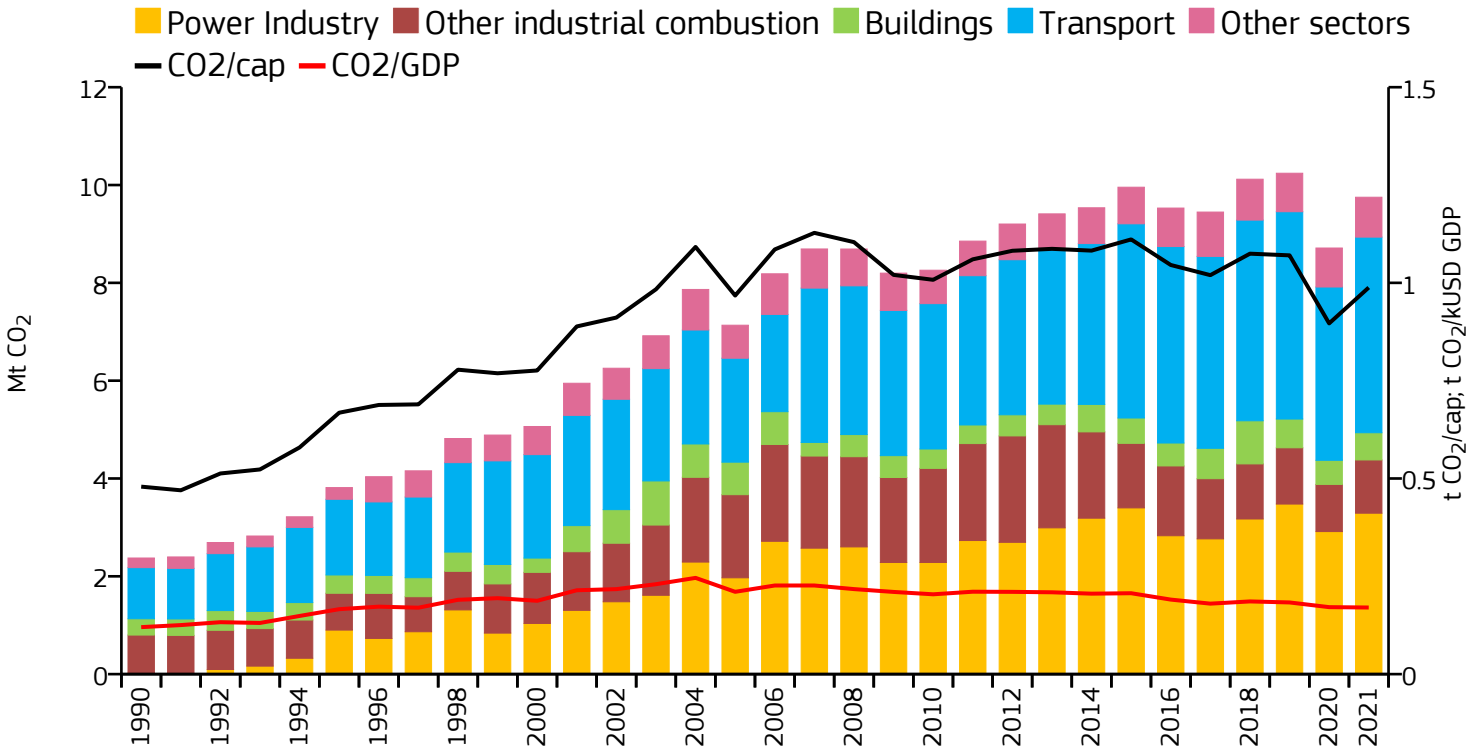


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	3.244	0.282	0.099	11.498M
2020	2.937	0.258	0.088	11.371M
2005	1.837	0.198	0.070	9.263M
1990	1.147	0.161	0.046	7.100M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +224%	↗ +362%	↗ +11%
Other industrial combustion	↗ +215%	↗ +52%	↗ +11%
Buildings	↗ +225%	→ +1%	↗ +11%
Transport	↗ +216%	↗ +73%	↗ +11%
Other sectors	↗ +25%	→ +4%	→ +1%
All sectors	↗ +183%	↗ +77%	↗ +10%

Honduras

Fossil CO_2 emissions by sector

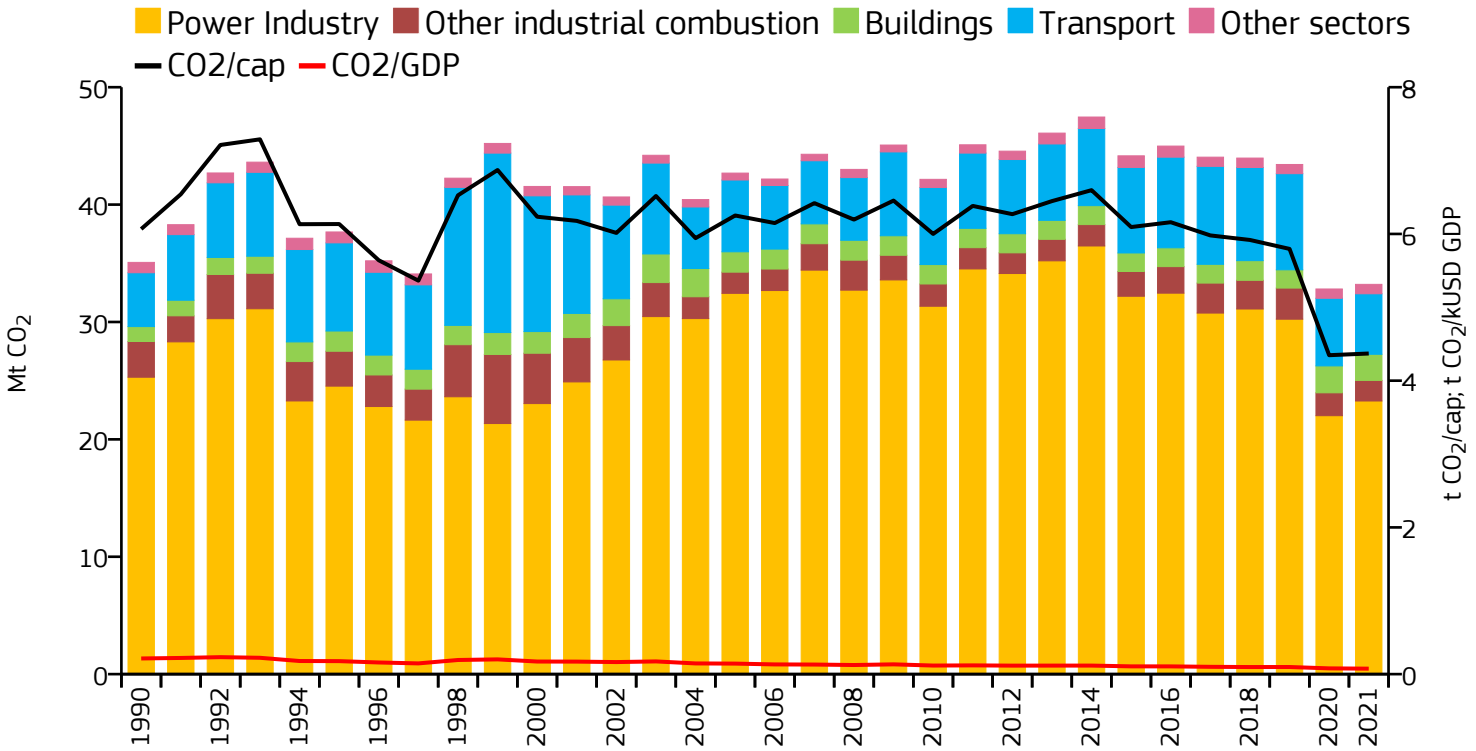


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	9.751	0.988	0.170	9.869M
2020	8.712	0.896	0.171	9.719M
2005	7.134	0.968	0.210	7.373M
1990	2.374	0.479	0.120	4.955M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +14550%	↗ +67%	↗ +13%
Other industrial combustion	↗ +40%	↘ -36%	↗ +13%
Buildings	↗ +67%	↘ -16%	↗ +13%
Transport	↗ +283%	↗ +88%	↗ +13%
Other sectors	↗ +314%	↗ +21%	→ +2%
All sectors	↗ +311%	↗ +37%	↗ +12%

Hong Kong

Fossil CO_2 emissions by sector

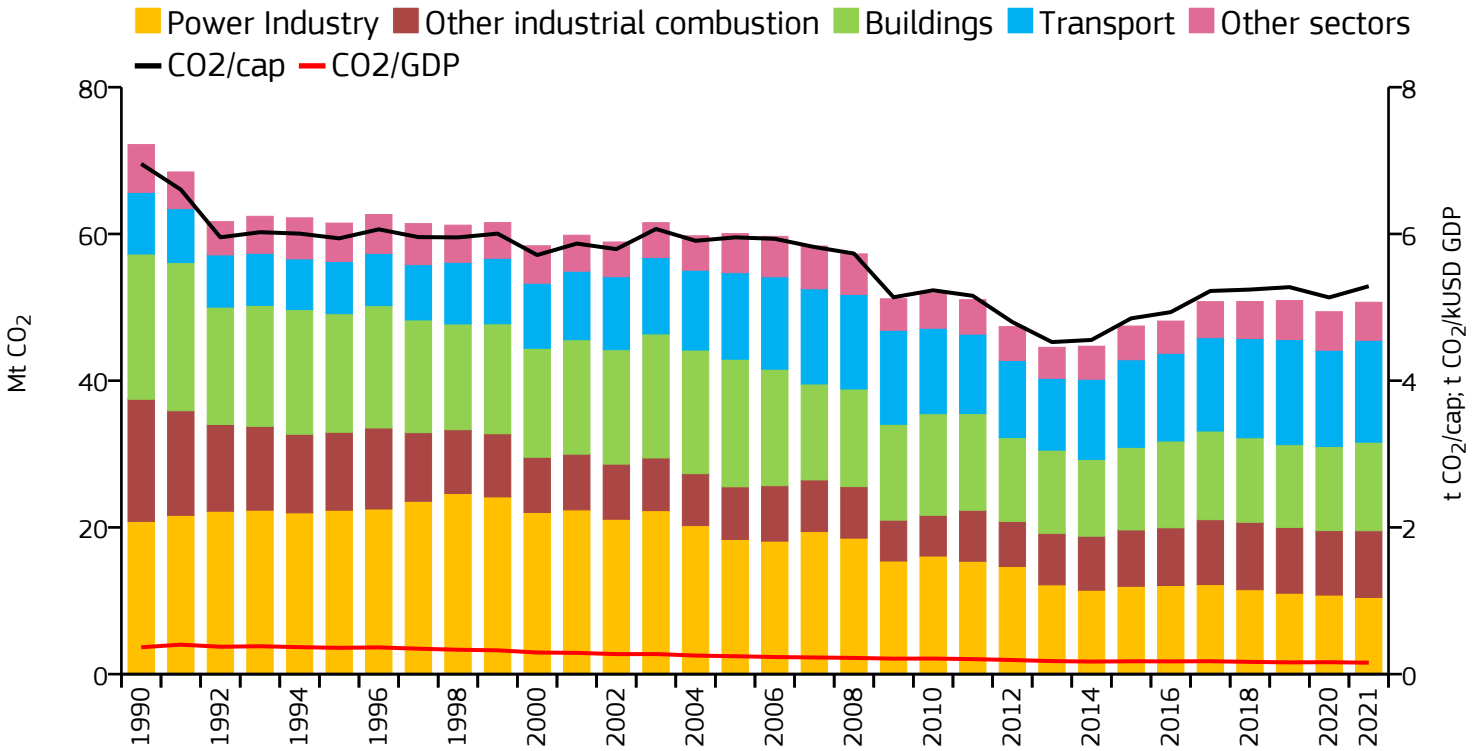


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	33.205	4.370	0.075	7.598M
2020	32.811	4.347	0.078	7.548M
2005	42.684	6.251	0.143	6.828M
1990	35.076	6.067	0.214	5.781M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-8%	-28%	+6%
Other industrial combustion	-42%	-3%	-10%
Buildings	+75%	+29%	-3%
Transport	+12%	-16%	-11%
Other sectors	-9%	+36%	+2%
All sectors	-5%	-22%	+1%

Hungary

Fossil CO_2 emissions by sector

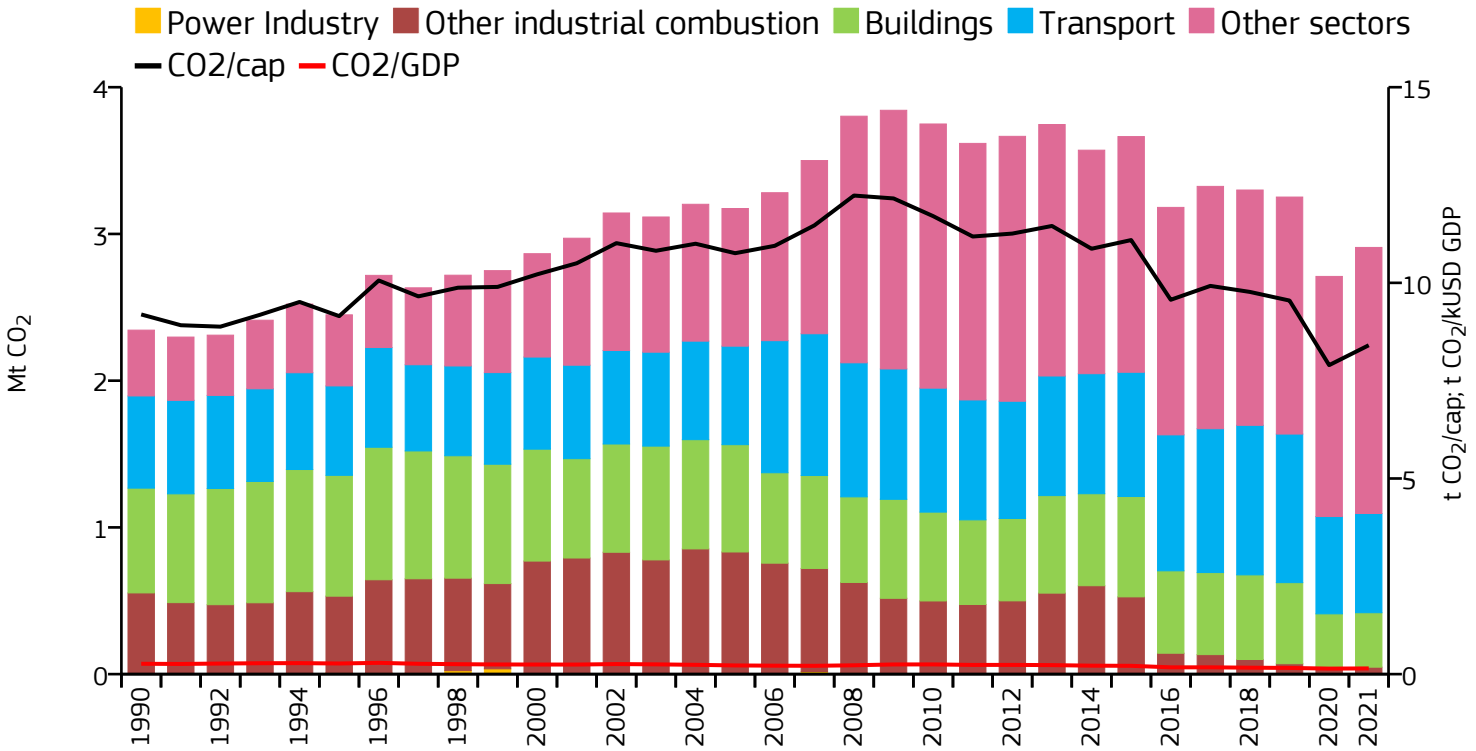


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	50.691	5.288	0.156	9.587M
2020	49.398	5.134	0.163	9.621M
2005	60.044	5.953	0.244	10.086M
1990	72.178	6.955	0.366	10.378M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-50%	-43%	-3%
Other industrial combustion	-45%	+27%	+3%
Buildings	-39%	-31%	+5%
Transport	+65%	+18%	+6%
Other sectors	-20%	-2%	-1%
All sectors	-30%	-16%	+3%

Iceland

Fossil CO_2 emissions by sector

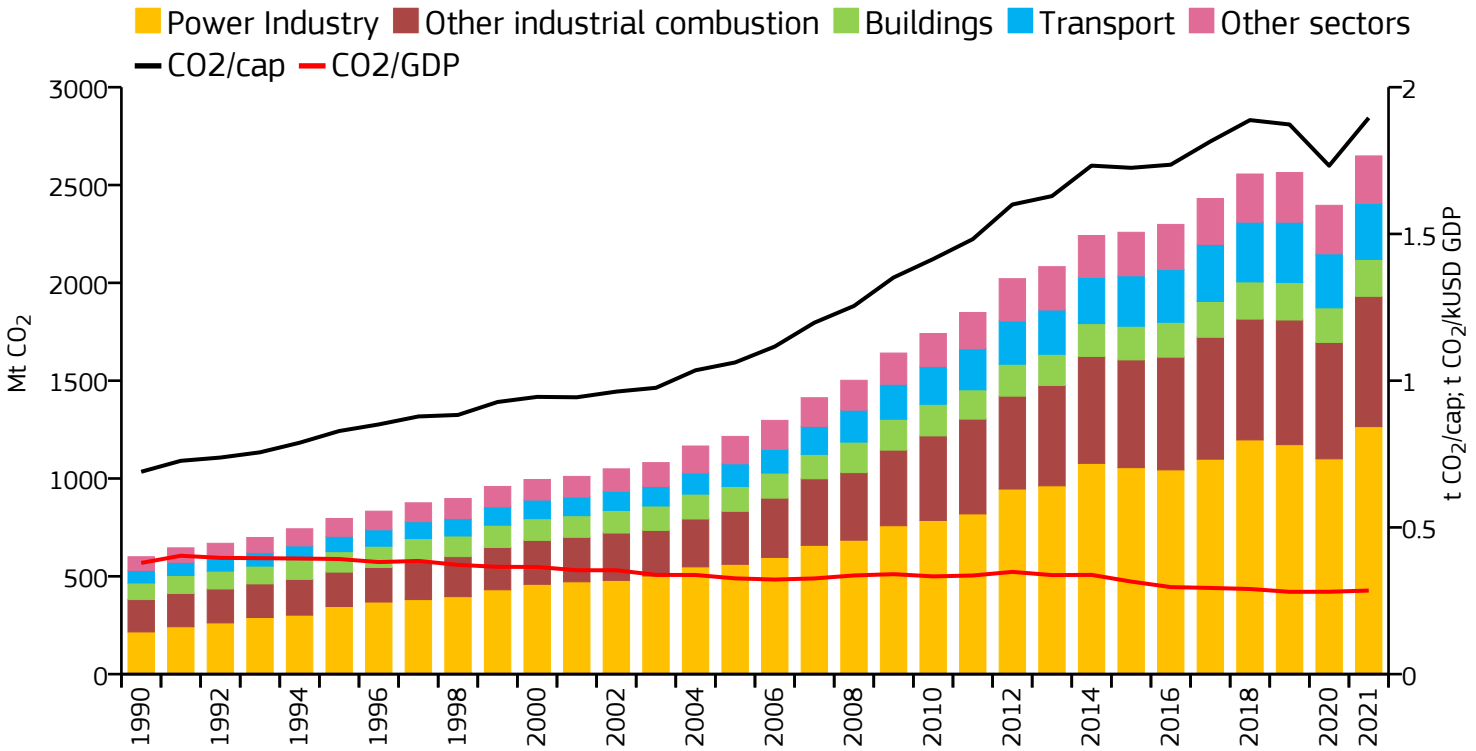


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	2.908	8.405	0.146	346.000k
2020	2.710	7.897	0.141	343.228k
2005	3.173	10.758	0.222	294.979k
1990	2.345	9.193	0.265	255.043k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-17%	-59%	+2%
Other industrial combustion	-92%	-95%	+2%
Buildings	-48%	-49%	+2%
Transport	+8%	+1%	+2%
Other sectors	+304%	+93%	+11%
All sectors	+24%	-8%	+7%

India

Fossil CO_2 emissions by sector

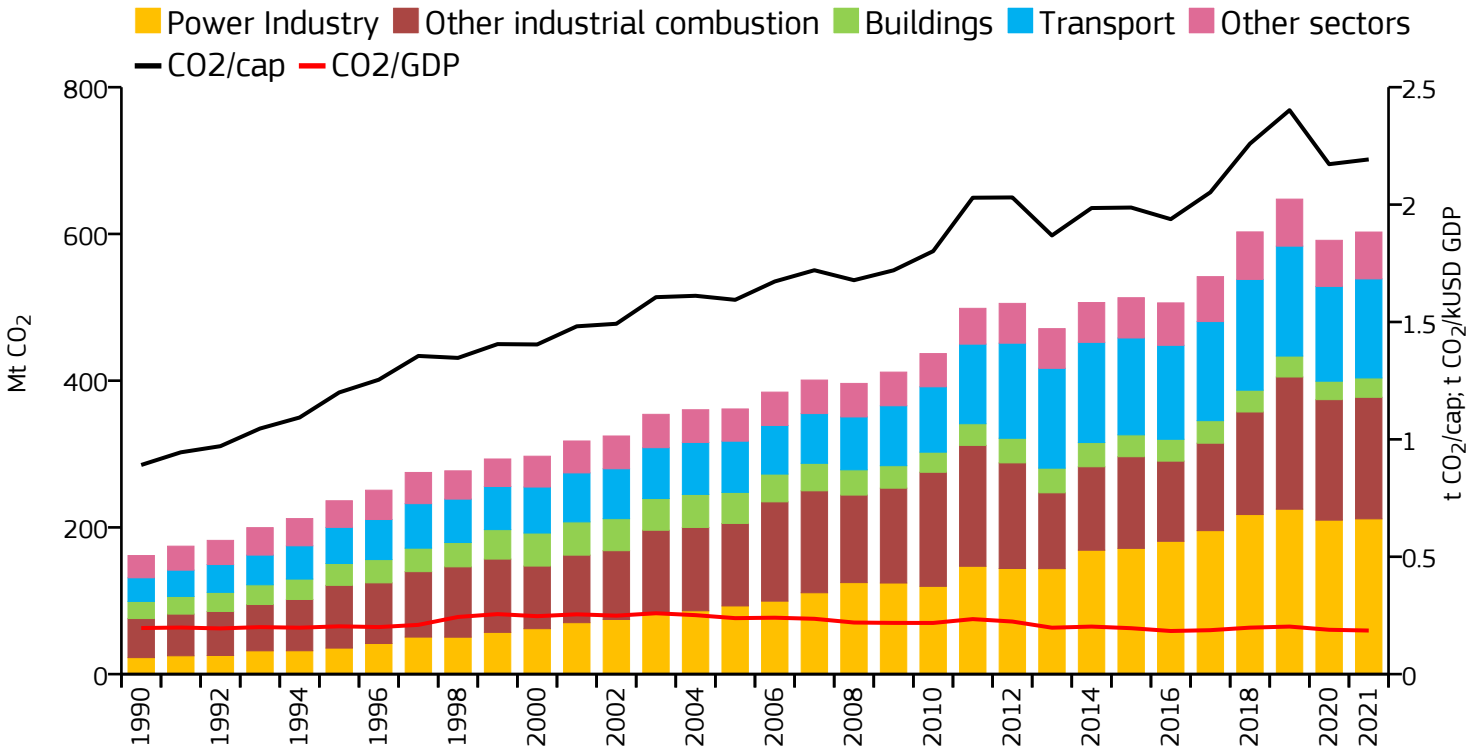


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	2648.779	1.895	0.285	1.397G
2020	2396.337	1.732	0.281	1.383G
2005	1215.209	1.062	0.326	1.144G
1990	600.025	0.690	0.379	870.133M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +486%	↗ +125%	↗ +15%
Other industrial combustion	↗ +303%	↗ +146%	↗ +12%
Buildings	↗ +123%	↗ +48%	↗ +7%
Transport	↗ +345%	↗ +148%	→ +4%
Other sectors	↗ +247%	↗ +73%	→ -2%
All sectors	↗ +341%	↗ +118%	↗ +11%

Indonesia

Fossil CO_2 emissions by sector

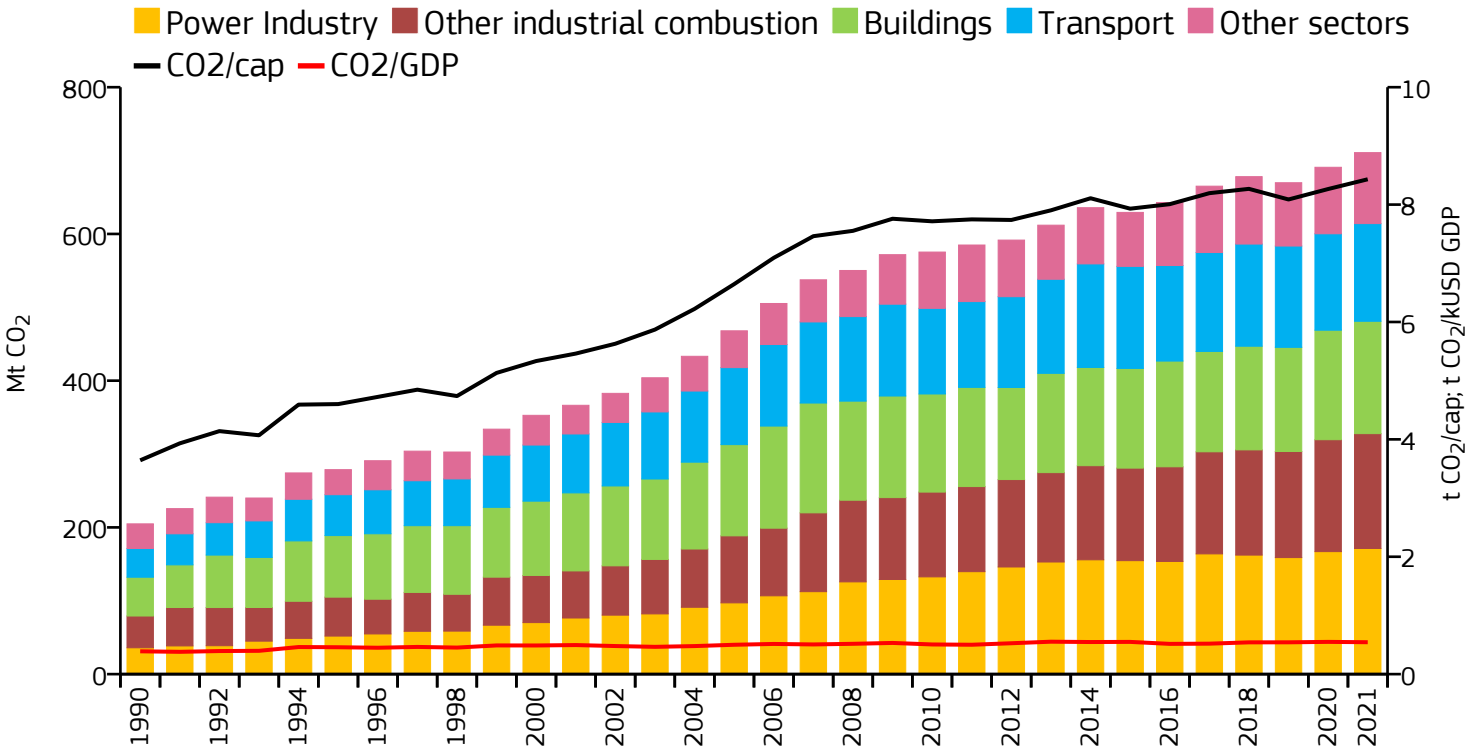


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	602.594	2.192	0.186	274.854M
2020	591.319	2.172	0.189	272.223M
2005	361.452	1.594	0.238	226.713M
1990	161.640	0.891	0.196	181.437M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+841%	+128%	+1%
Other industrial combustion	+211%	+47%	+1%
Buildings	+13%	-38%	+5%
Transport	+319%	+93%	+4%
Other sectors	+110%	+45%	+2%
All sectors	+273%	+67%	+2%

Iran

Fossil CO_2 emissions by sector

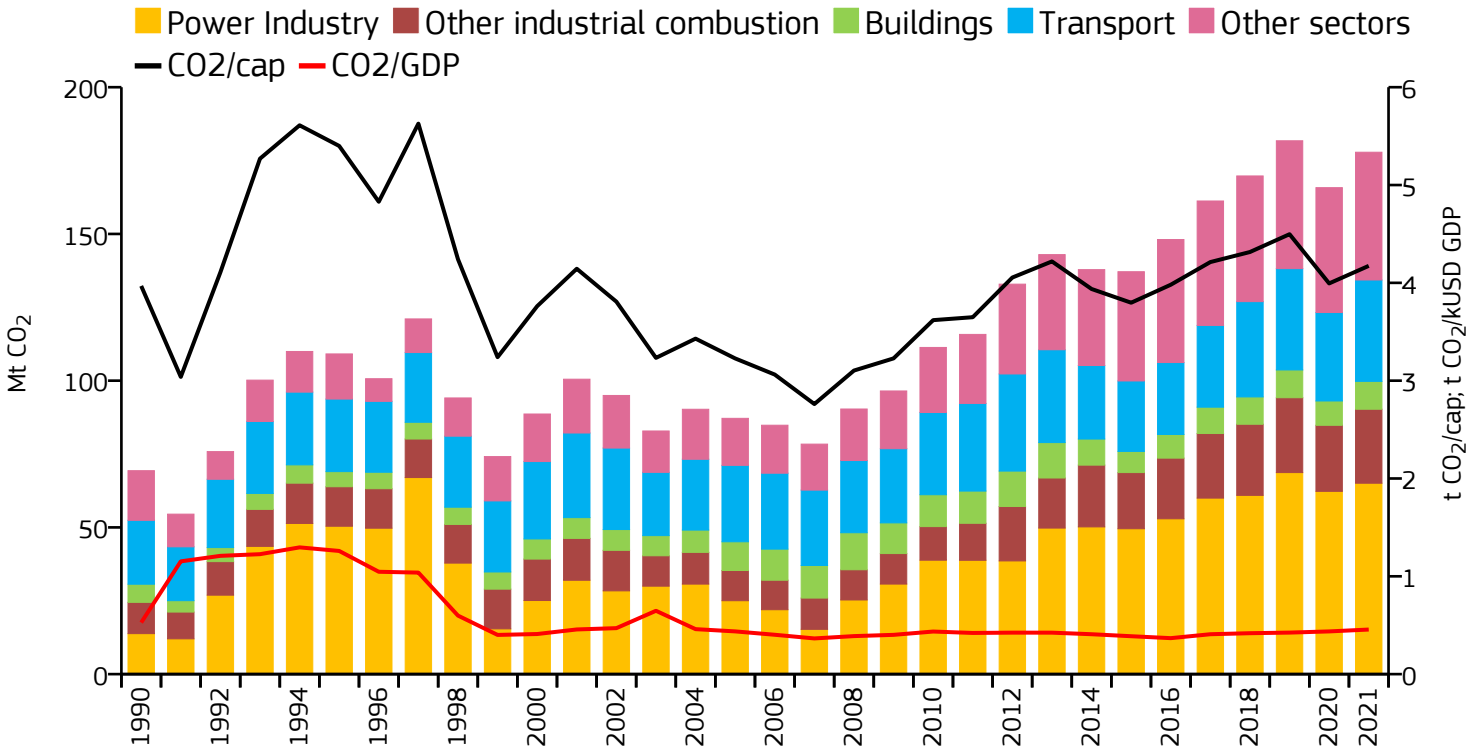


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	710.831	8.431	0.544	84.308M
2020	690.864	8.265	0.549	83.587M
2005	467.951	6.645	0.500	70.422M
1990	204.820	3.643	0.389	56.226M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+377%	+76%	+3%
Other industrial combustion	+262%	+71%	+3%
Buildings	+190%	+23%	+3%
Transport	+240%	+27%	+1%
Other sectors	+188%	+93%	+7%
All sectors	+247%	+52%	+3%

Iraq

Fossil CO_2 emissions by sector

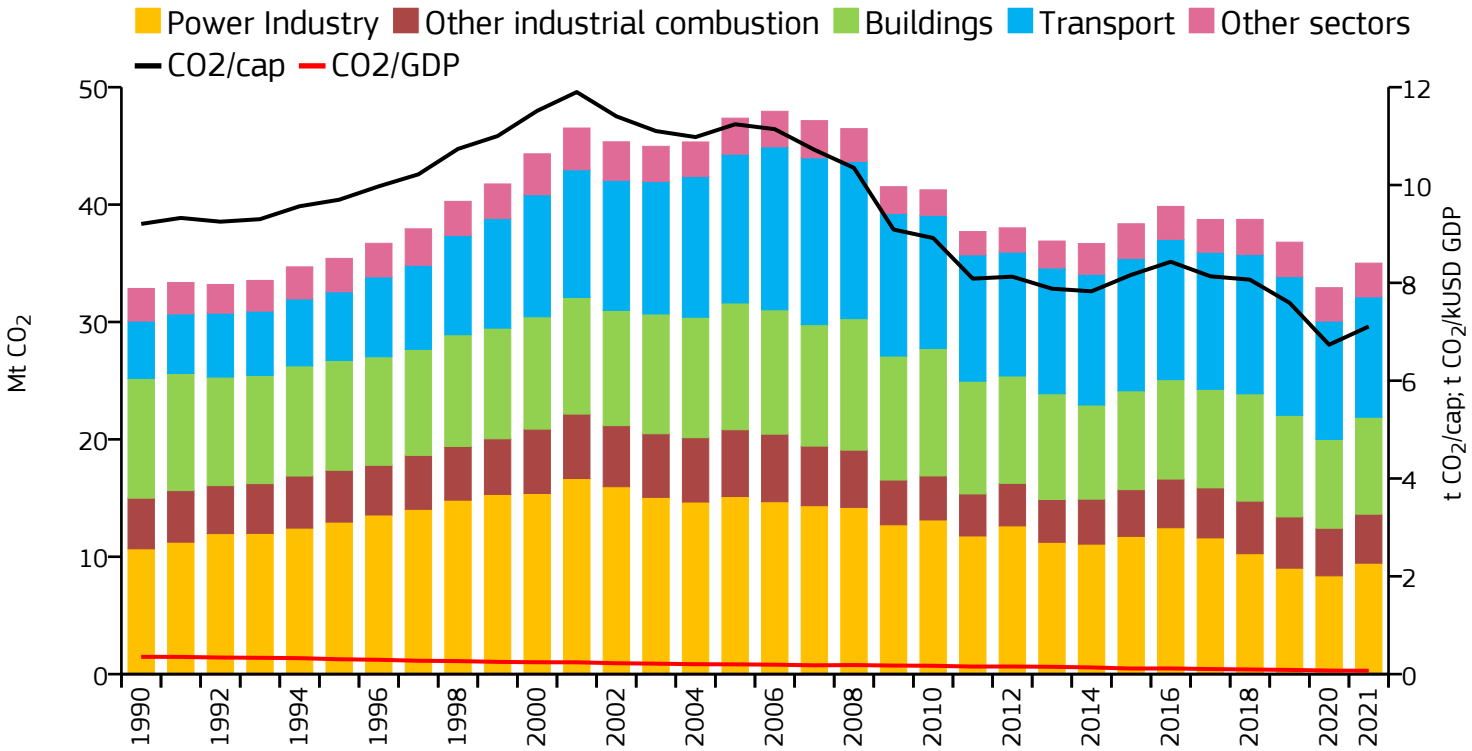


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	177.849	4.174	0.456	42.612M
2020	165.769	3.994	0.437	41.503M
2005	87.165	3.227	0.437	27.008M
1990	69.326	3.968	0.527	17.469M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+371%	+160%	+4%
Other industrial combustion	+136%	+145%	+12%
Buildings	+54%	-3%	+15%
Transport	+59%	+33%	+15%
Other sectors	+157%	+172%	+2%
All sectors	+157%	+104%	+7%

Ireland

Fossil CO_2 emissions by sector

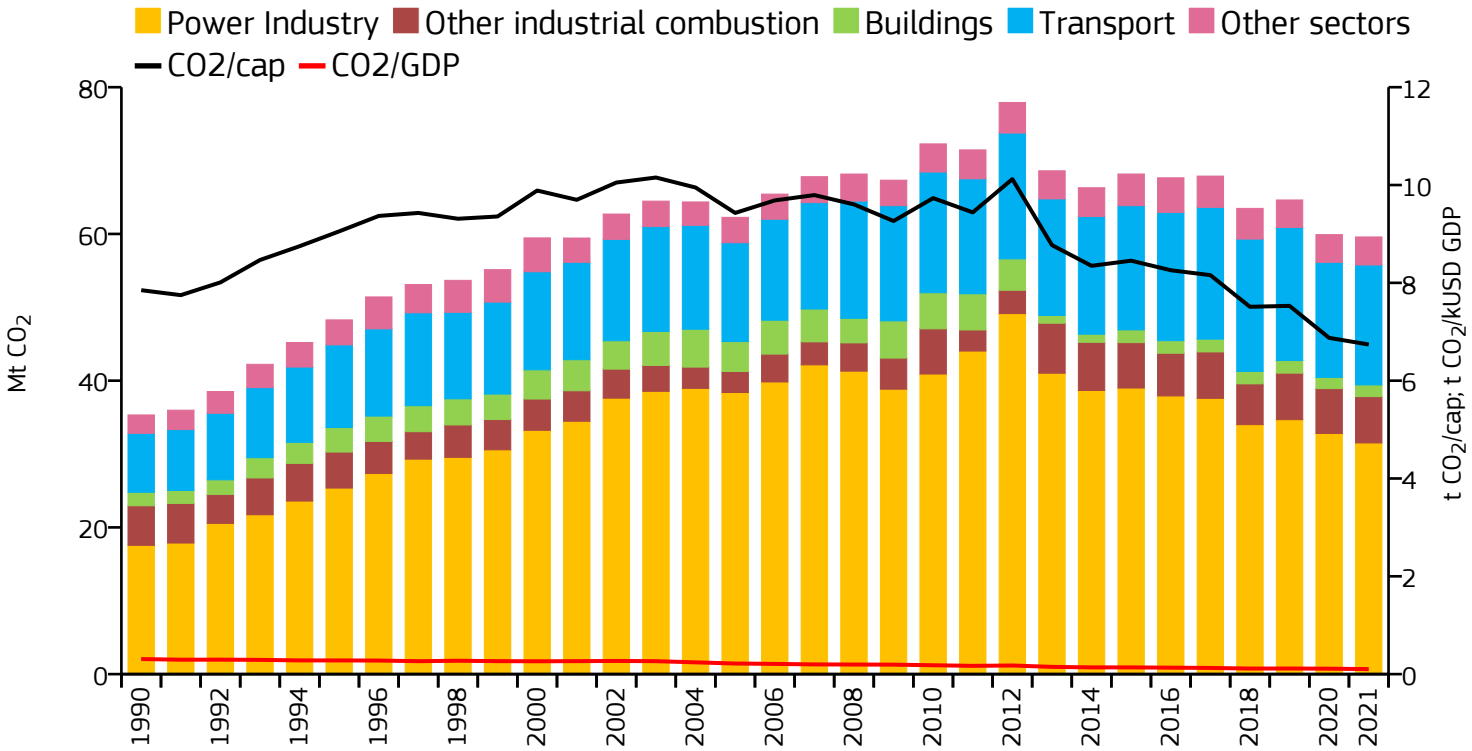


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	35.013	7.108	0.068	4.926M
2020	32.922	6.735	0.073	4.888M
2005	47.365	11.243	0.200	4.213M
1990	32.856	9.205	0.354	3.569M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-11%	-38%	+13%
Other industrial combustion	-3%	-27%	+3%
Buildings	-19%	-24%	+9%
Transport	+110%	-19%	+2%
Other sectors	+4%	-6%	+1%
All sectors	+7%	-26%	+6%

Israel and Palestine, State of

Fossil CO_2 emissions by sector

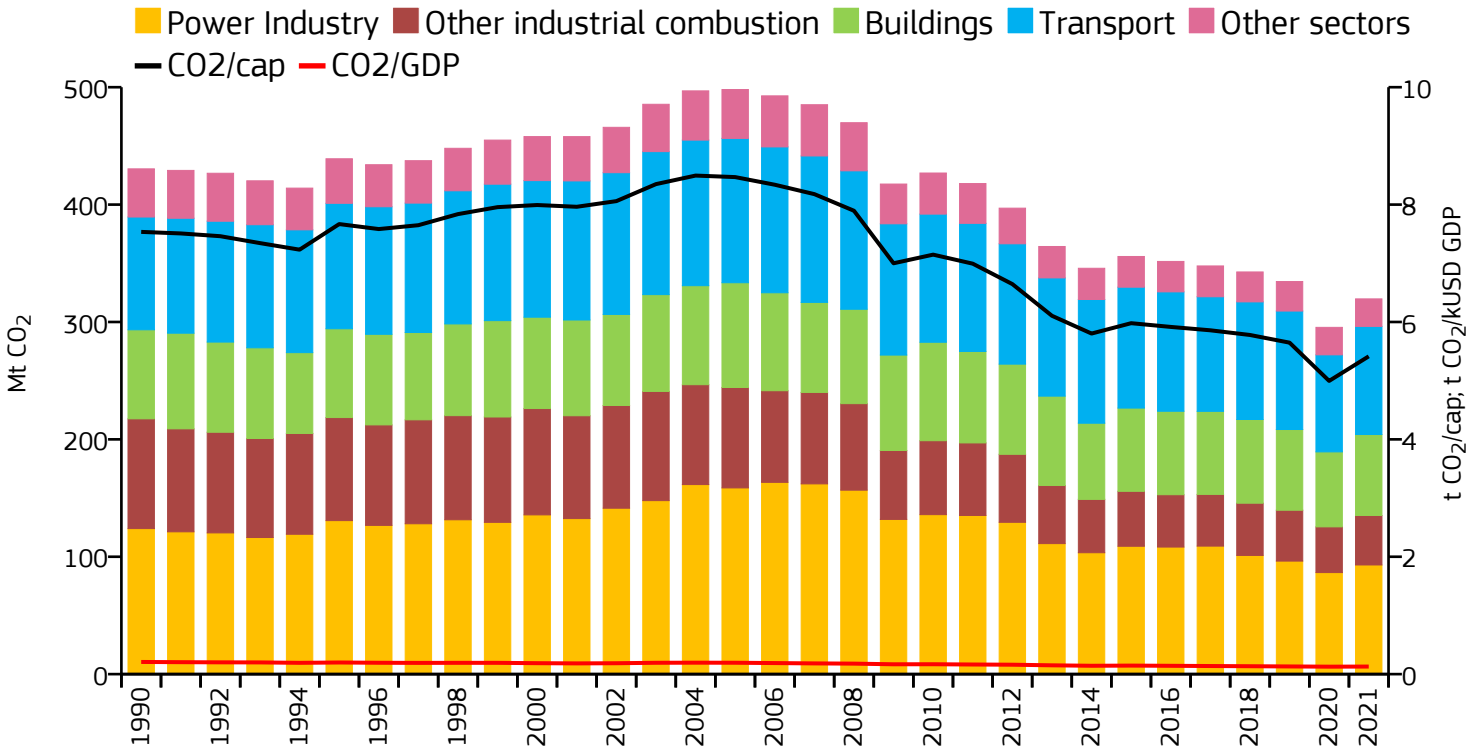


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	59.590	6.739	0.103	8.842M
2020	59.906	6.875	0.111	8.714M
2005	62.261	9.429	0.217	6.603M
1990	35.328	7.850	0.309	4.500M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+80%	-18%	-4%
Other industrial combustion	+17%	+120%	+3%
Buildings	-13%	-61%	+4%
Transport	+103%	+21%	+4%
Other sectors	+52%	+10%	+1%
All sectors	+69%	-4%	-1%

Italy, San Marino and the Holy See

Fossil CO_2 emissions by sector

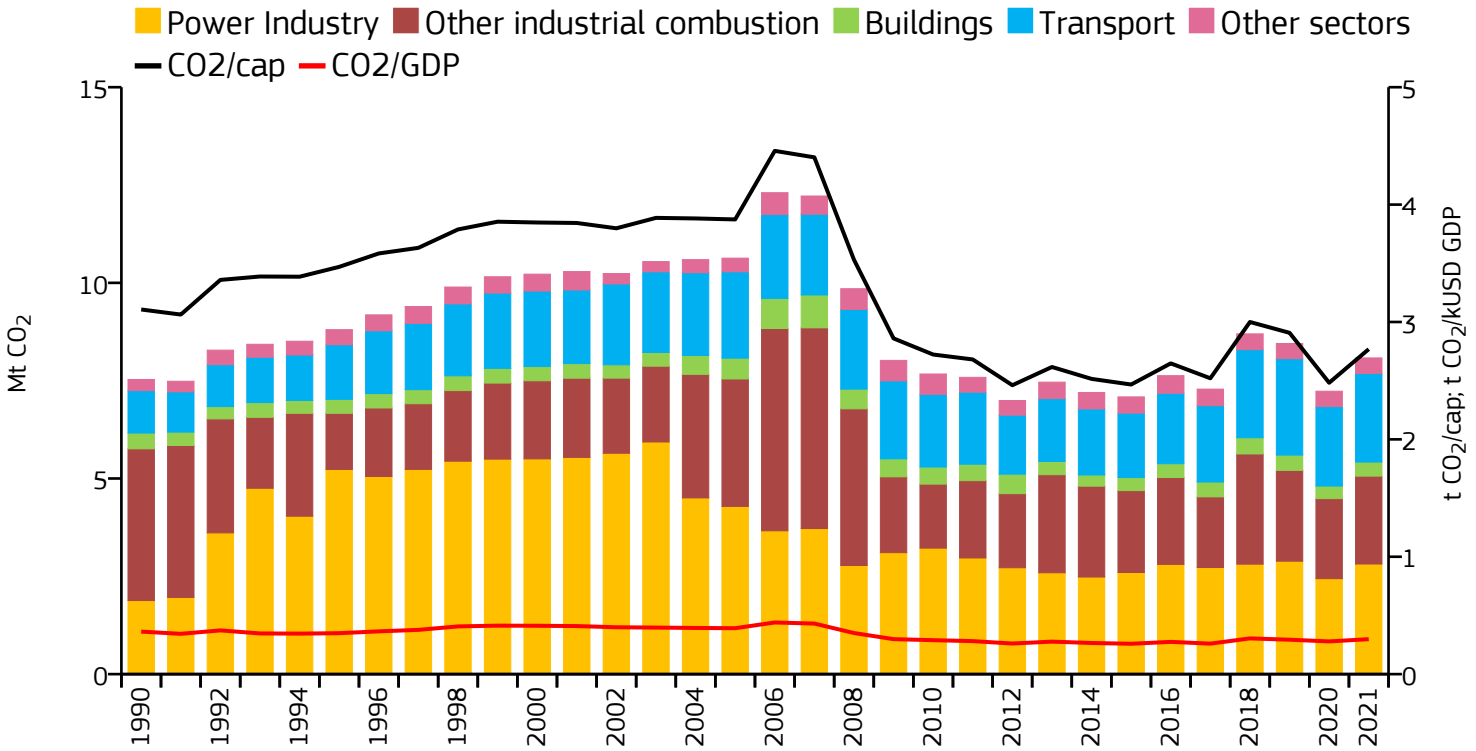


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	319.669	5.415	0.129	59.038M
2020	295.419	4.996	0.127	59.132M
2005	498.023	8.469	0.194	58.809M
1990	430.447	7.535	0.207	57.127M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↘ -25%	↘ -41%	↗ +7%
Other industrial combustion	↘ -55%	↘ -51%	↗ +8%
Buildings	↘ -9%	↘ -23%	↗ +8%
Transport	→ -4%	↘ -25%	↗ +11%
Other sectors	↘ -43%	↘ -44%	→ 0%
All sectors	↘ -26%	↘ -36%	↗ +8%

Jamaica

Fossil CO_2 emissions by sector

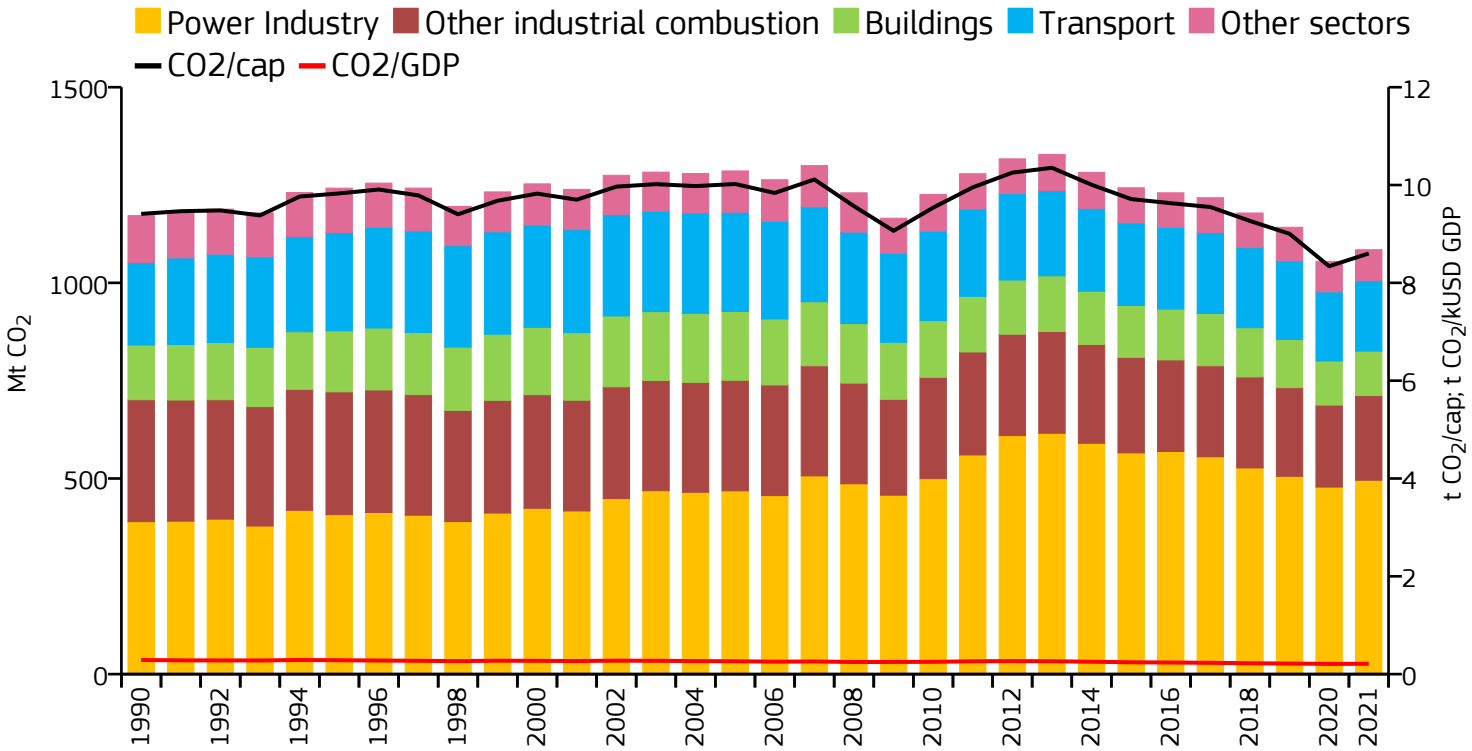


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	8.081	2.768	0.298	2.919M
2020	7.231	2.482	0.279	2.913M
2005	10.632	3.874	0.391	2.745M
1990	7.531	3.106	0.362	2.424M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+50%	-34%	+15%
Other industrial combustion	-42%	-31%	+10%
Buildings	-11%	-33%	+11%
Transport	+109%	+3%	+11%
Other sectors	+40%	+14%	+1%
All sectors	+7%	-24%	+12%

Japan

Fossil CO_2 emissions by sector

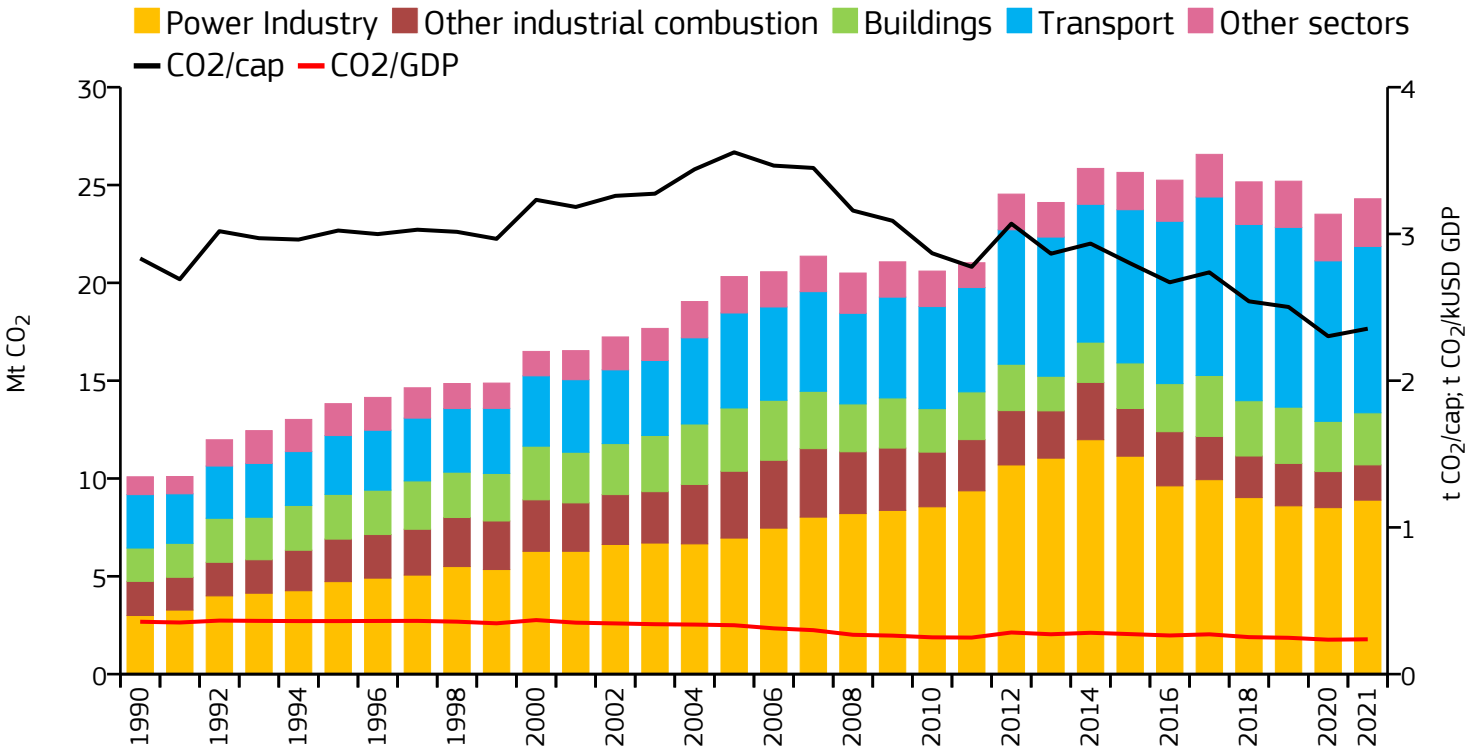


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	1084.691	8.601	0.212	126.109M
2020	1054.904	8.339	0.209	126.496M
2005	1286.036	10.021	0.263	128.336M
1990	1171.755	9.410	0.289	124.516M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+27%	+6%	+4%
Other industrial combustion	-31%	-23%	+3%
Buildings	-19%	-35%	+1%
Transport	-15%	-29%	+2%
Other sectors	-34%	-25%	+2%
All sectors	-7%	-16%	+3%

Jordan

Fossil CO_2 emissions by sector

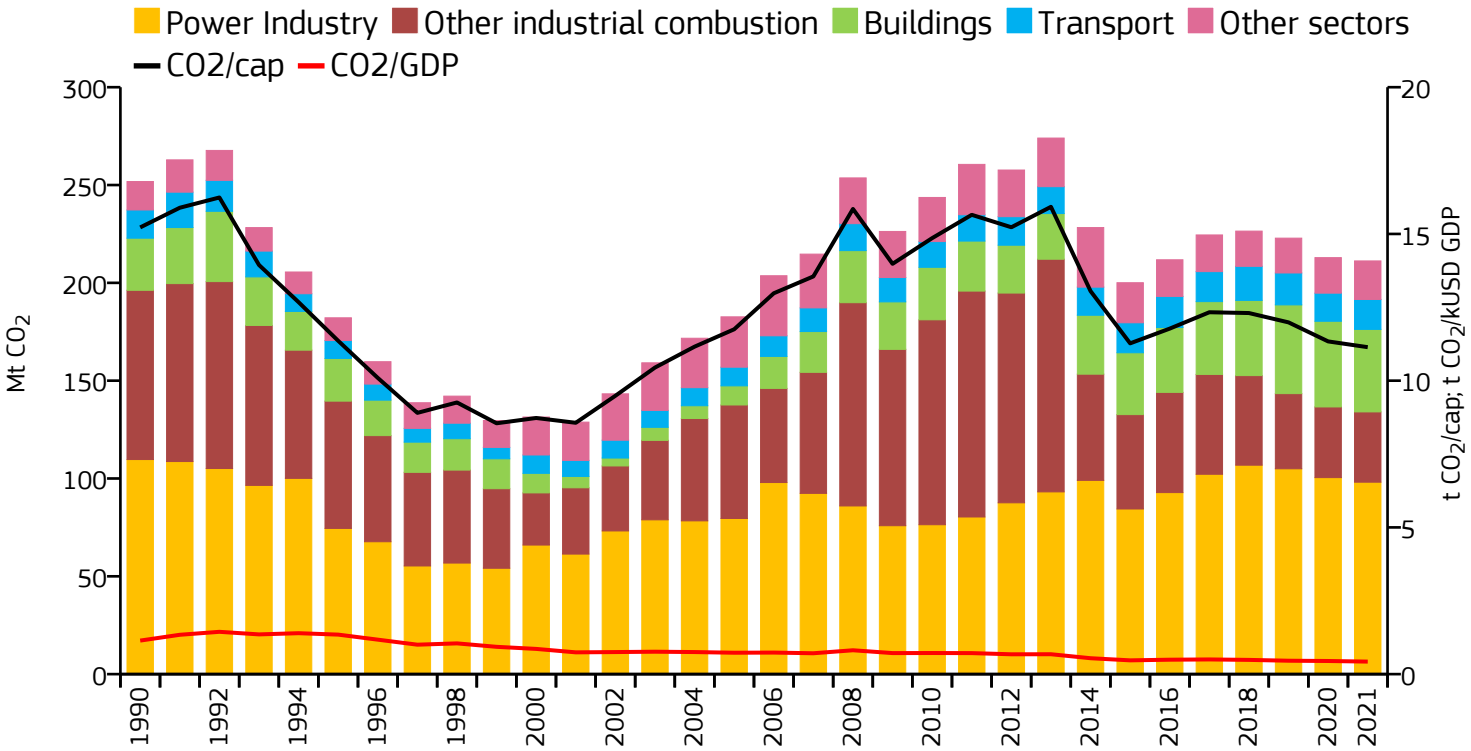


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	24.297	2.354	0.237	10.320M
2020	23.510	2.303	0.235	10.209M
2005	20.321	3.556	0.333	5.714M
1990	10.087	2.833	0.357	3.561M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+197%	+28%	+5%
Other industrial combustion	+3%	-47%	-2%
Buildings	+56%	-18%	+4%
Transport	+212%	+75%	+4%
Other sectors	+167%	+31%	+2%
All sectors	+141%	+20%	+3%

Kazakhstan

Fossil CO_2 emissions by sector

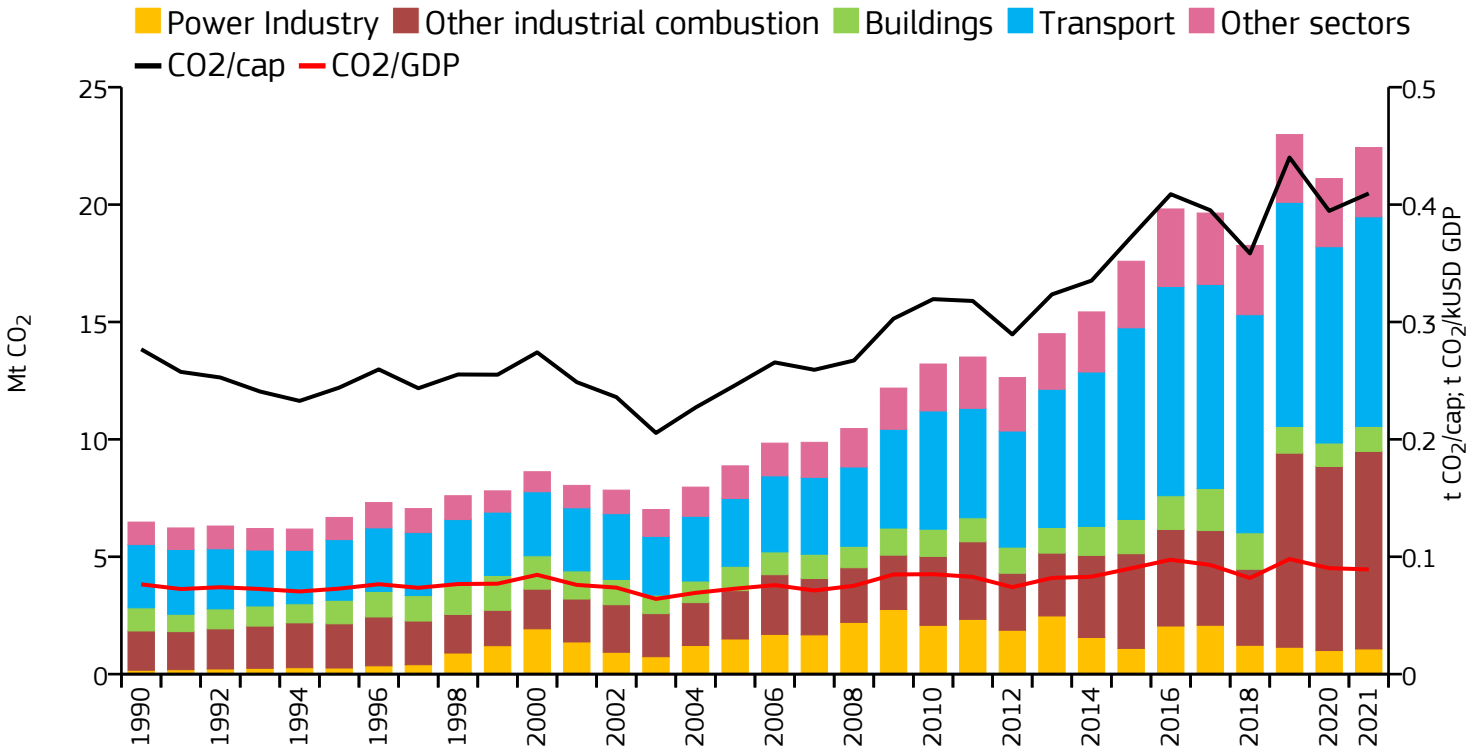


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	211.207	11.141	0.427	18.957M
2020	212.888	11.338	0.448	18.777M
2005	182.627	11.751	0.729	15.541M
1990	251.785	15.223	1.143	16.540M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-11%	+23%	-2%
Other industrial combustion	-58%	-38%	-1%
Buildings	+58%	+331%	-4%
Transport	+6%	+60%	+6%
Other sectors	+36%	-23%	+9%
All sectors	-16%	+16%	-1%

Kenya

Fossil CO_2 emissions by sector

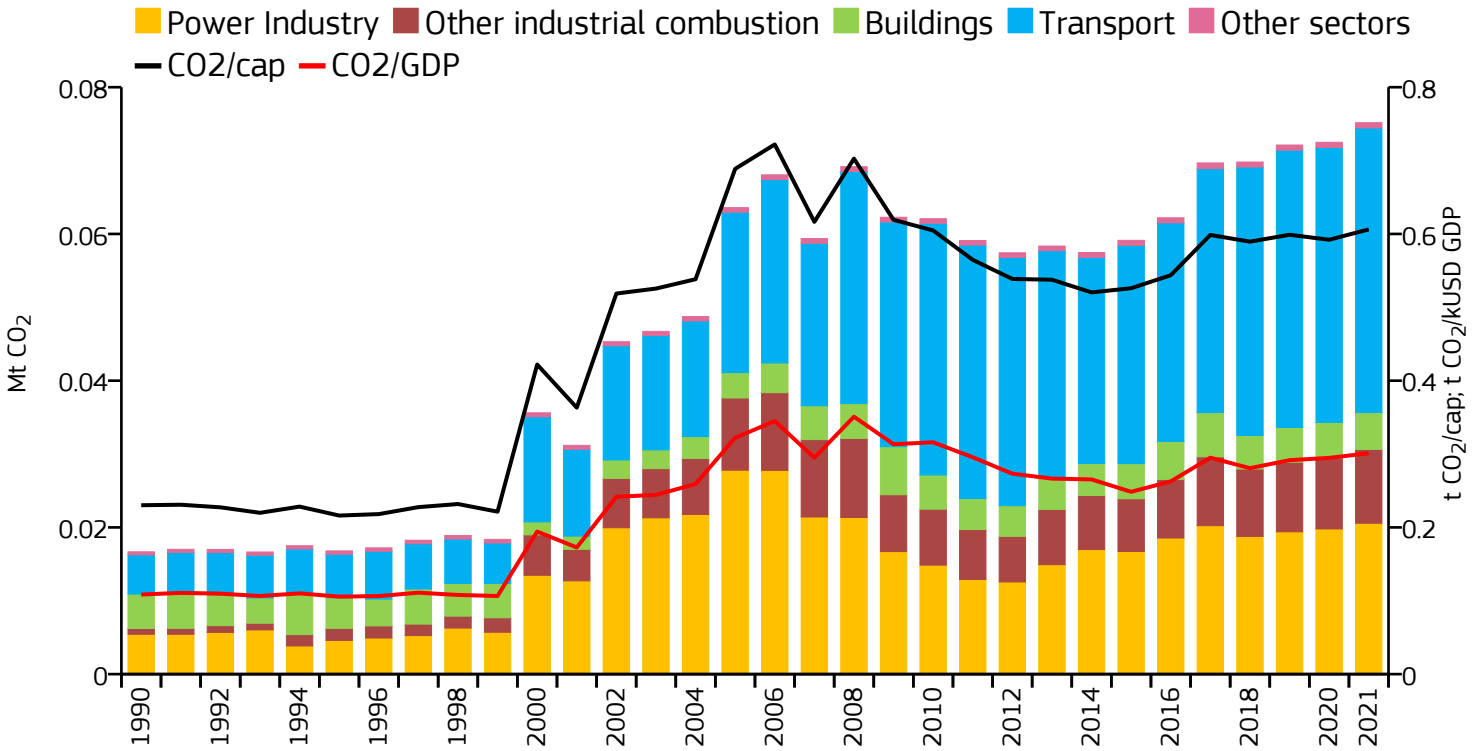


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	22.430	0.409	0.089	54.781M
2020	21.109	0.395	0.090	53.492M
2005	8.872	0.246	0.073	36.048M
1990	6.476	0.277	0.076	23.402M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+545%	-28%	+7%
Other industrial combustion	+403%	+309%	+7%
Buildings	+8%	+3%	+7%
Transport	+231%	+209%	+7%
Other sectors	+208%	+113%	+2%
All sectors	+246%	+153%	+6%

Kiribati

Fossil CO_2 emissions by sector

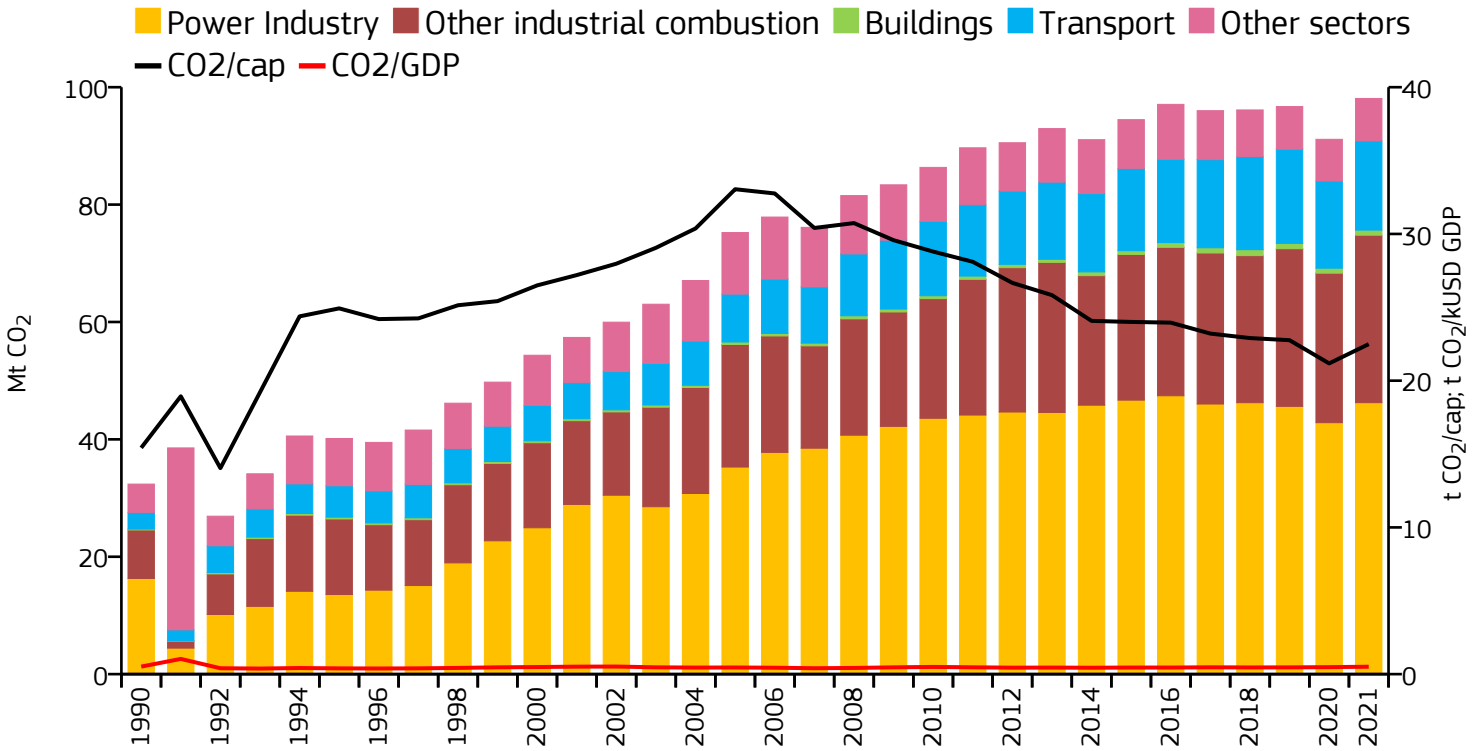


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.075	0.606	0.301	124.000k
2020	0.072	0.592	0.295	122.439k
2005	0.064	0.689	0.322	92.325k
1990	0.017	0.230	0.109	72.412k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+279%	-26%	+4%
Other industrial combustion	+1179%	+2%	+4%
Buildings	+7%	+45%	+4%
Transport	+625%	+77%	+4%
Other sectors	+75%	+14%	+1%
All sectors	+351%	+18%	+4%

Kuwait

Fossil CO_2 emissions by sector

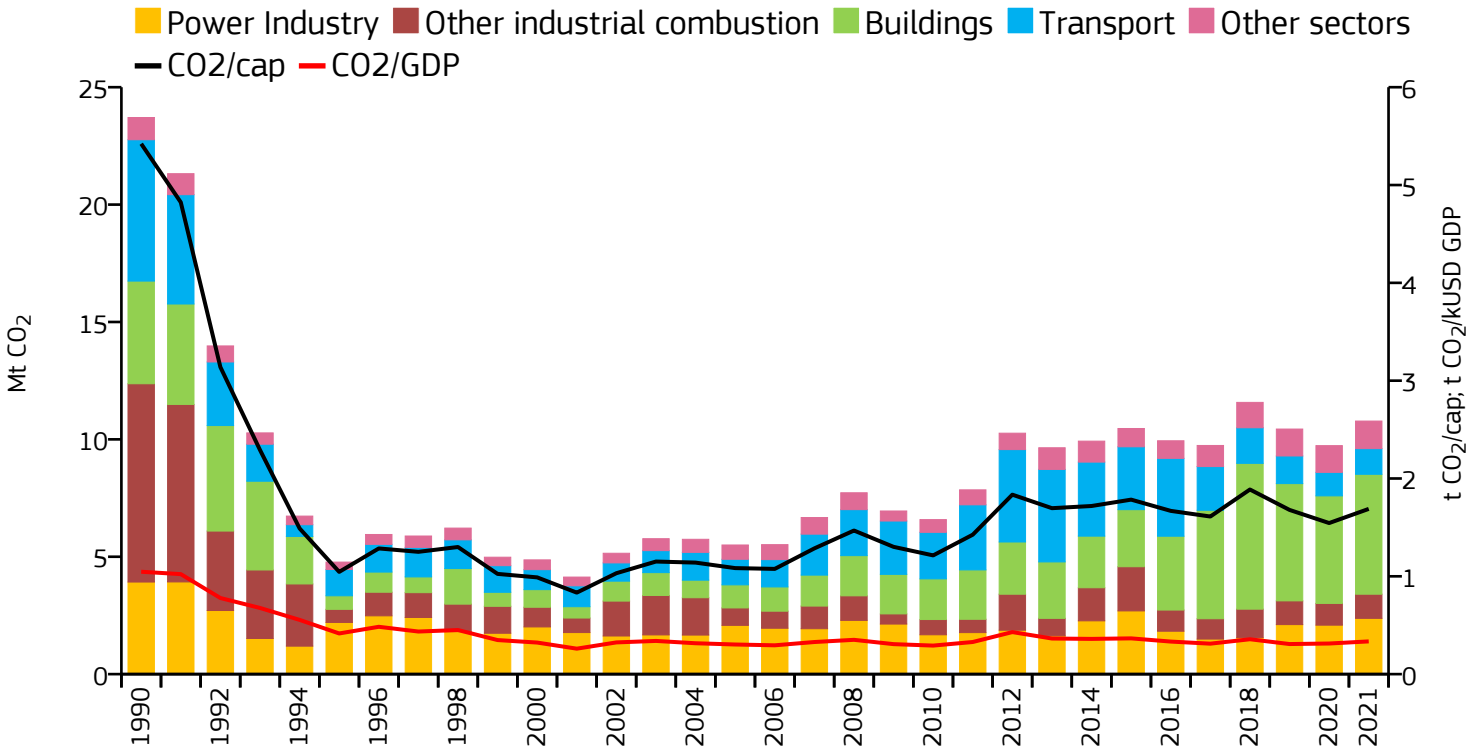


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	98.083	22.491	0.506	4.361M
2020	91.122	21.177	0.476	4.303M
2005	75.237	33.048	0.453	2.277M
1990	32.382	15.423	0.514	2.100M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+184%	+31%	+8%
Other industrial combustion	+246%	+37%	+12%
Buildings	+428%	+100%	+2%
Transport	+435%	+86%	+2%
Other sectors	+50%	-31%	+2%
All sectors	+203%	+30%	+8%

Kyrgyzstan

Fossil CO_2 emissions by sector

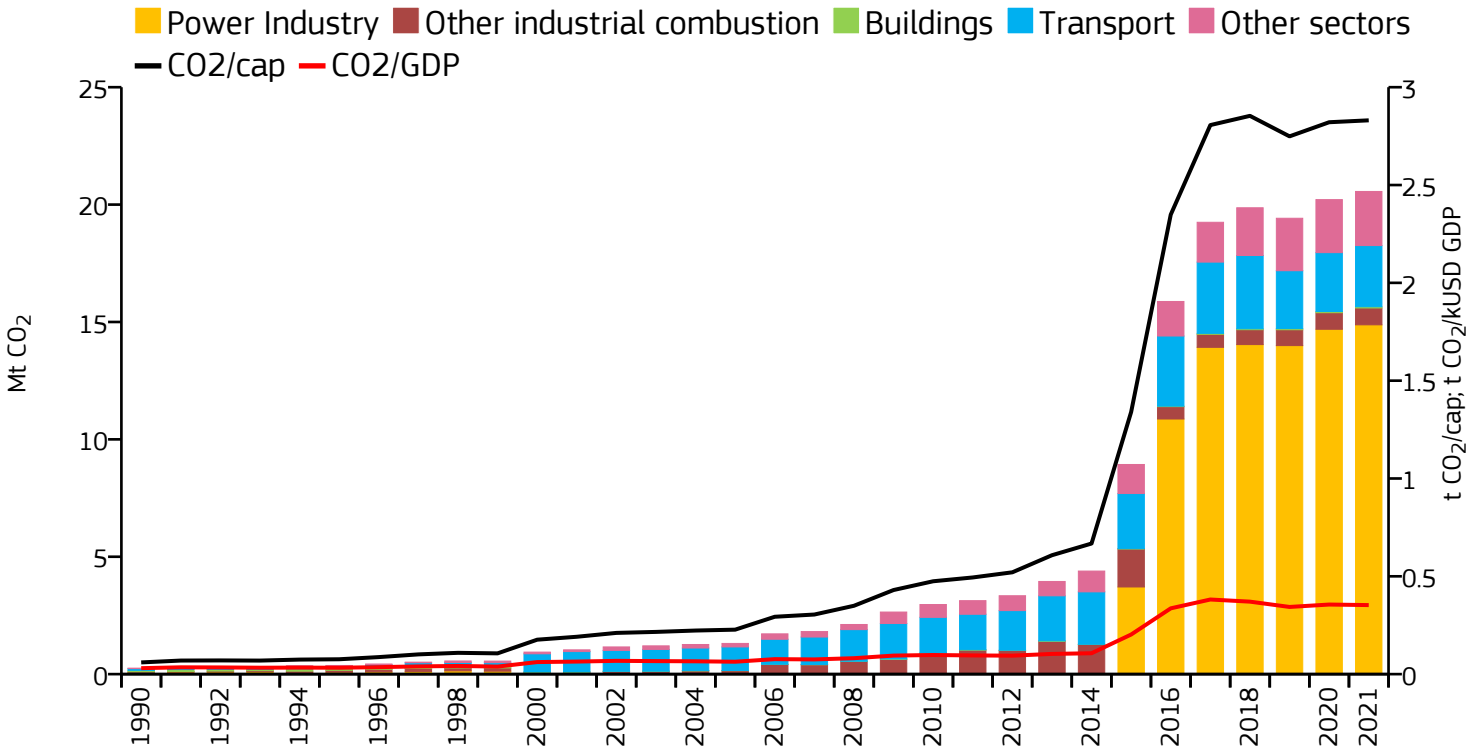


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	10.780	1.689	0.335	6.382M
2020	9.733	1.544	0.313	6.302M
2005	5.501	1.084	0.303	5.075M
1990	23.709	5.422	1.047	4.373M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-39%	+14%	+14%
Other industrial combustion	-88%	+39%	+11%
Buildings	+17%	+419%	+11%
Transport	-82%	0%	+9%
Other sectors	+24%	+93%	+3%
All sectors	-55%	+96%	+11%

Laos

Fossil CO_2 emissions by sector

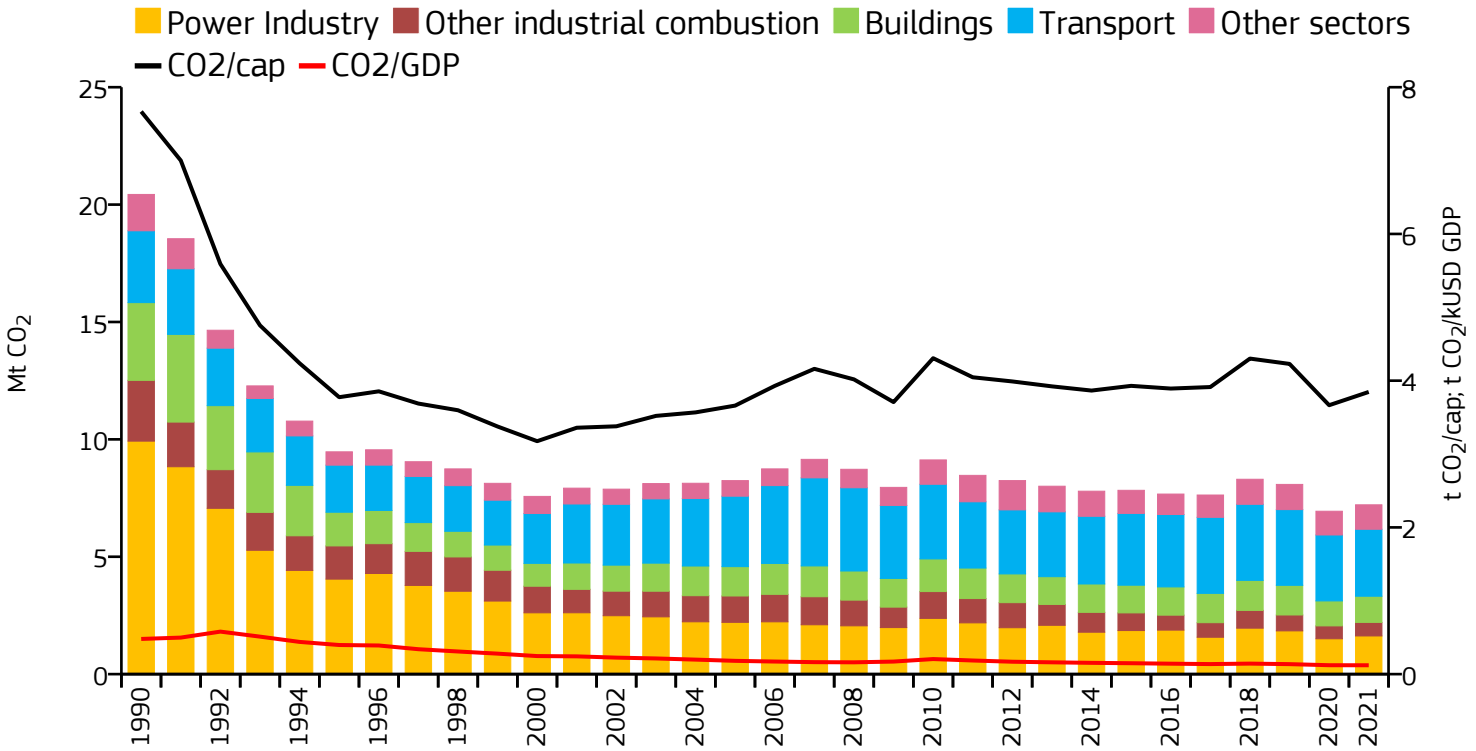


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	20.560	2.831	0.353	7.263M
2020	20.212	2.821	0.356	7.165M
2005	1.308	0.227	0.063	5.754M
1990	0.255	0.060	0.030	4.258M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +19511%	↗	→ +1%
Other industrial combustion	↗ +3750%	↗ +383%	→ +2%
Buildings	↘ -20%	↗ +752%	→ +4%
Transport	↗ +3385%	↗ +160%	→ +4%
Other sectors	↗ +12011%	↗ +1447%	→ +2%
All sectors	↗ +7966%	↗ +1472%	→ +2%

Latvia

Fossil CO_2 emissions by sector

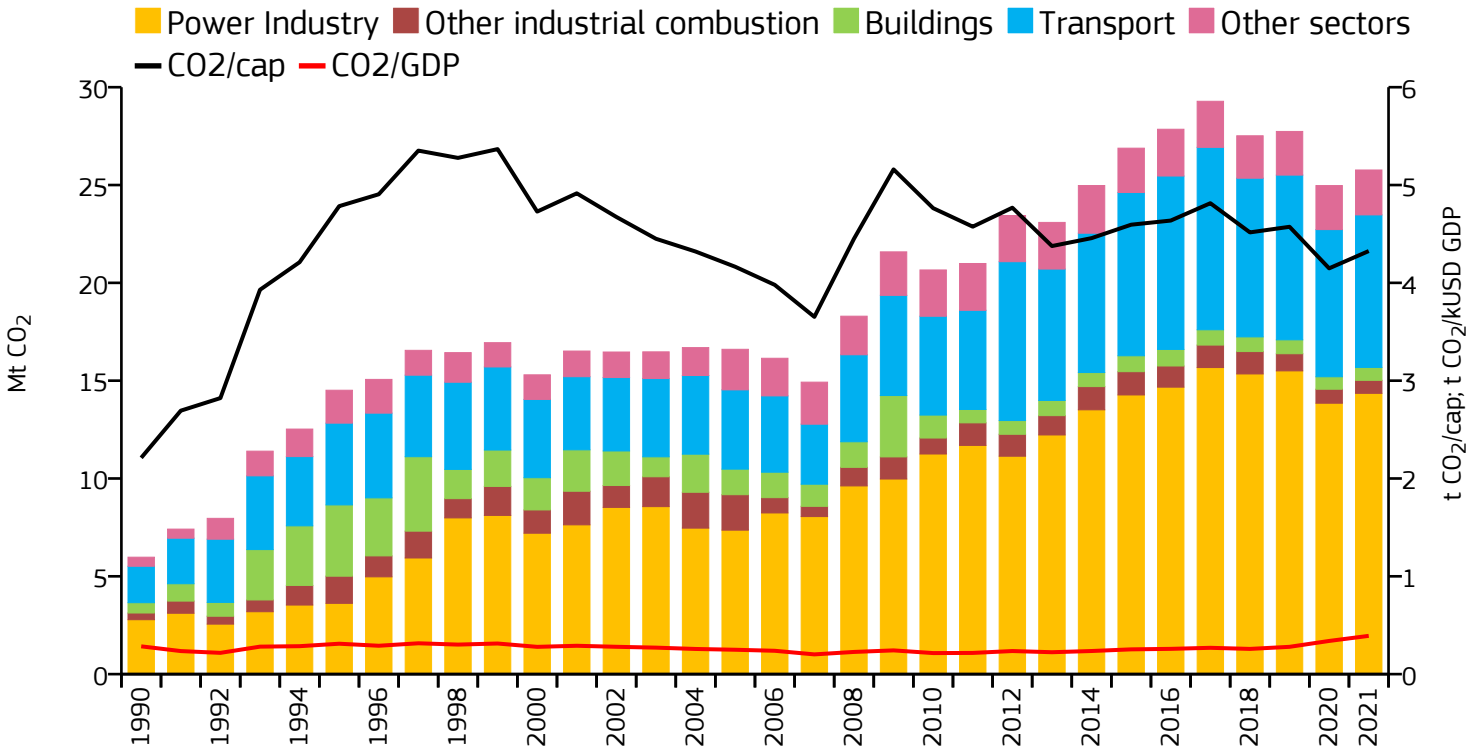


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	7.212	3.846	0.121	1.875M
2020	6.939	3.666	0.121	1.893M
2005	8.243	3.660	0.181	2.252M
1990	20.432	7.669	0.480	2.664M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-84%	-26%	+8%
Other industrial combustion	-78%	-49%	+5%
Buildings	-66%	-11%	+5%
Transport	-7%	-5%	+2%
Other sectors	-33%	+57%	+3%
All sectors	-65%	-13%	+4%

Lebanon

Fossil CO_2 emissions by sector

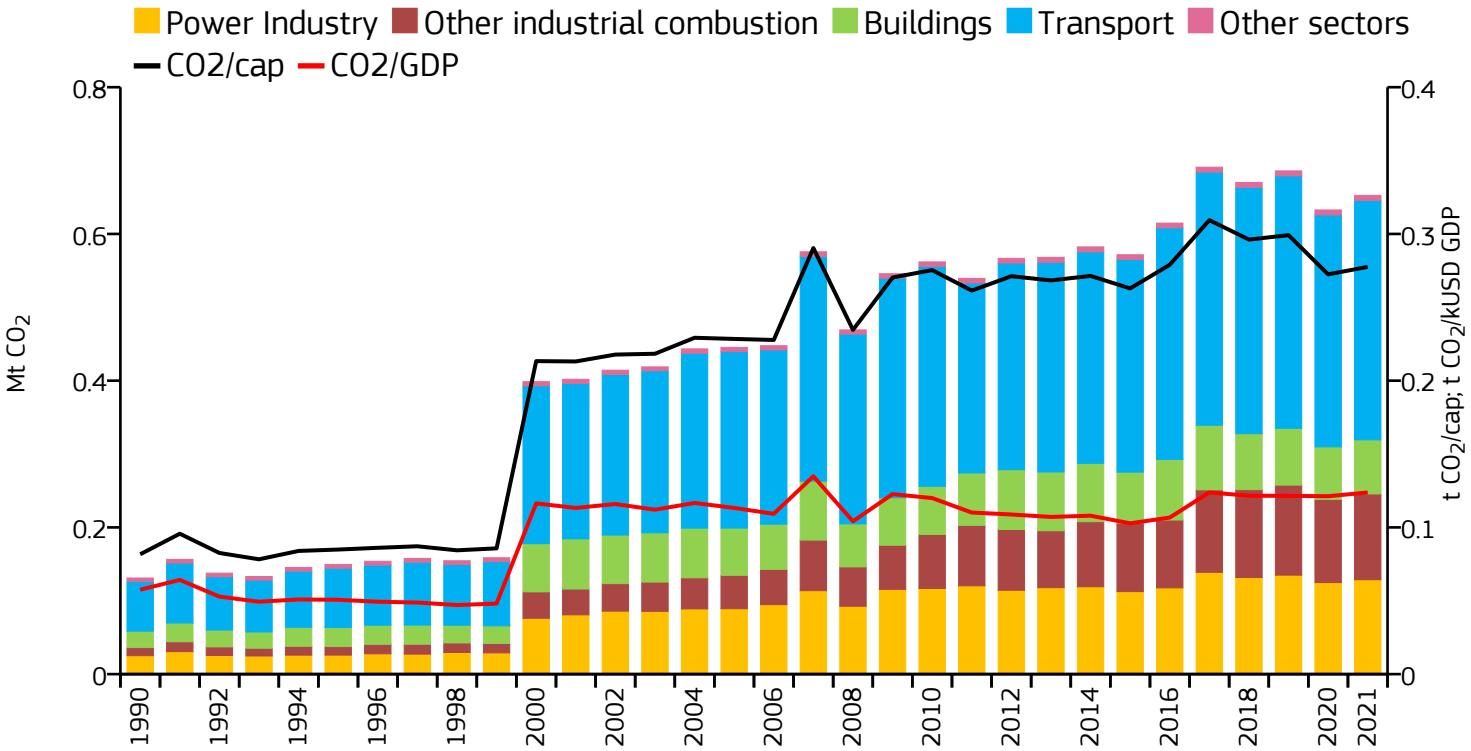


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	25.769	4.325	0.391	5.958M
2020	24.972	4.148	0.339	6.020M
2005	16.604	4.165	0.249	3.987M
1990	5.978	2.211	0.284	2.703M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+416%	+95%	+4%
Other industrial combustion	+94%	-63%	-7%
Buildings	+25%	-50%	+4%
Transport	+319%	+92%	+4%
Other sectors	+396%	+11%	+2%
All sectors	+331%	+55%	+3%

Lesotho

Fossil CO_2 emissions by sector

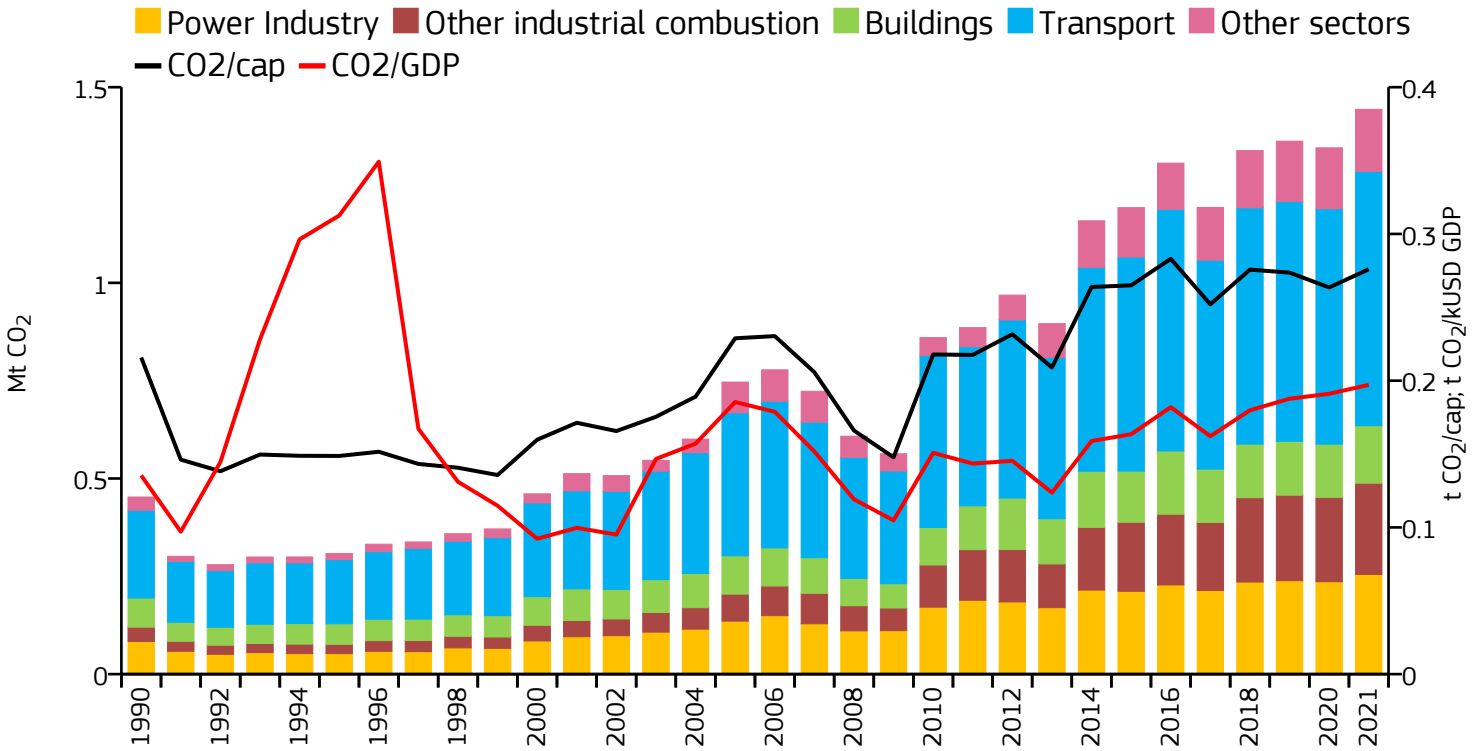


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.653	0.278	0.124	2.351M
2020	0.633	0.272	0.121	2.322M
2005	0.445	0.228	0.113	1.950M
1990	0.131	0.082	0.058	1.604M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+412%	+44%	+3%
Other industrial combustion	+958%	+157%	+3%
Buildings	+230%	+15%	+3%
Transport	+383%	+36%	+3%
Other sectors	+40%	+17%	0%
All sectors	+398%	+47%	+3%

Liberia

Fossil CO_2 emissions by sector

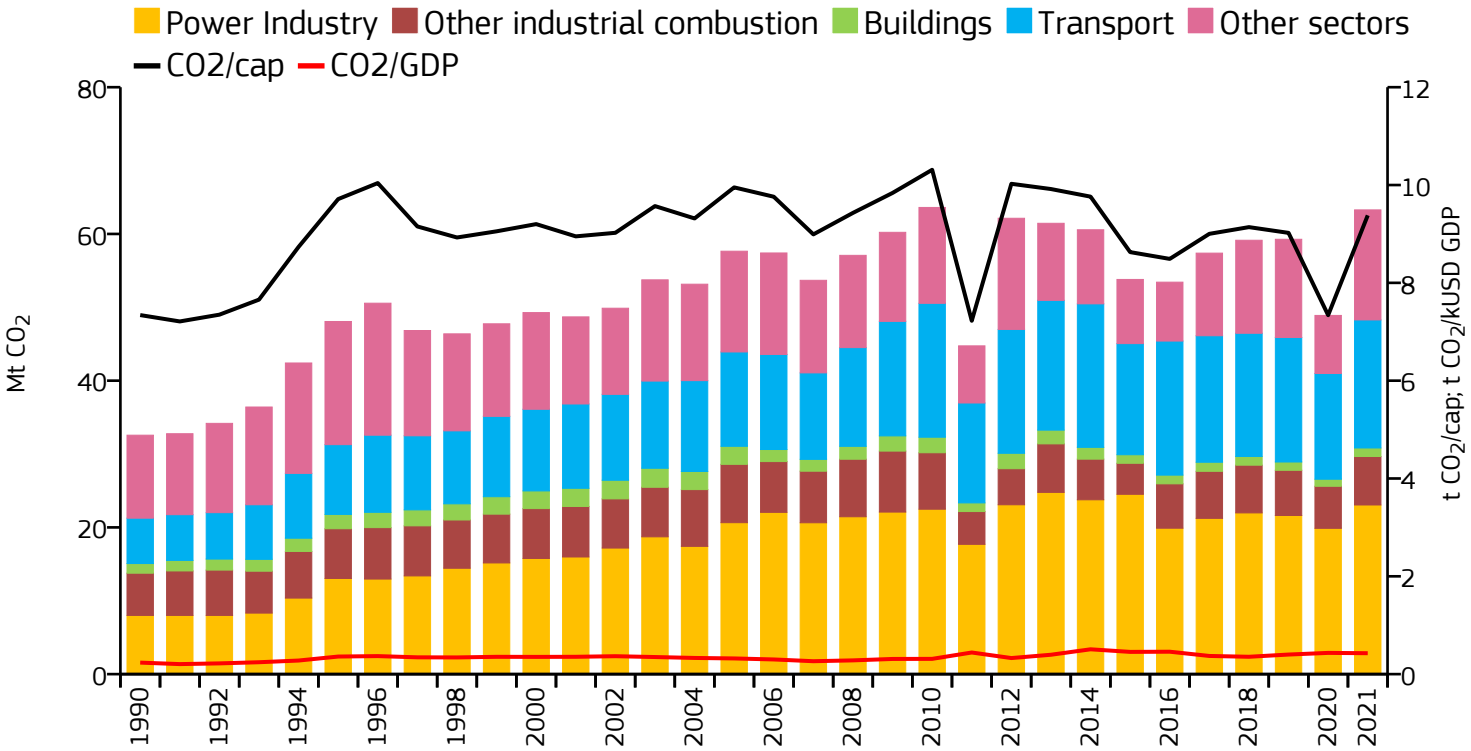


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	1.443	0.276	0.197	5.232M
2020	1.345	0.264	0.191	5.104M
2005	0.746	0.229	0.185	3.261M
1990	0.453	0.216	0.135	2.097M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+205%	+88%	+8%
Other industrial combustion	+536%	+238%	+8%
Buildings	+98%	+50%	+8%
Transport	+190%	+78%	+8%
Other sectors	+369%	+102%	+2%
All sectors	+219%	+93%	+7%

Libya

Fossil CO_2 emissions by sector

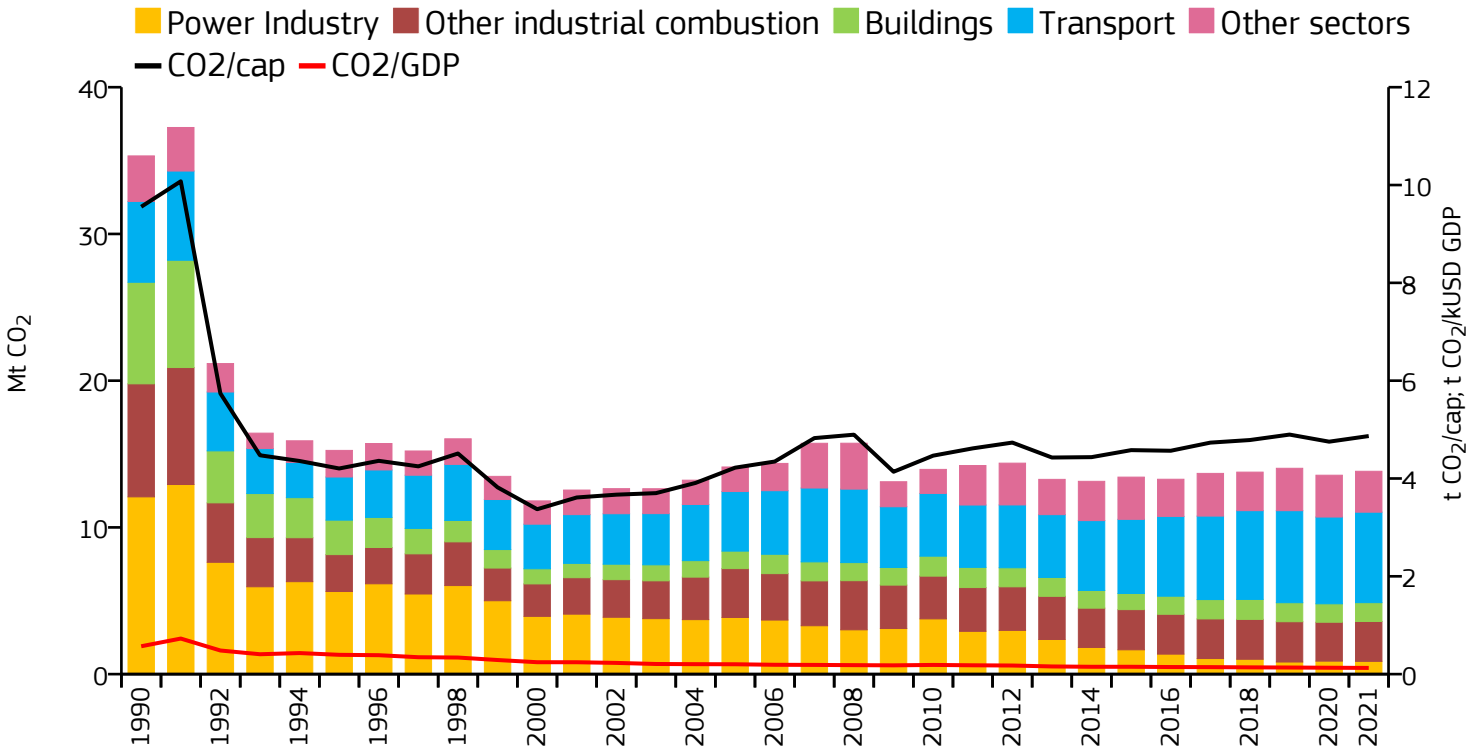


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	63.278	9.380	0.428	6.746M
2020	48.893	7.339	0.434	6.662M
2005	57.648	9.952	0.321	5.793M
1990	32.570	7.341	0.236	4.437M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+188%	+12%	+16%
Other industrial combustion	+15%	-17%	+15%
Buildings	-11%	-53%	+21%
Transport	+182%	+36%	+21%
Other sectors	+33%	+9%	+90%
All sectors	+94%	+10%	+29%

Lithuania

Fossil CO_2 emissions by sector

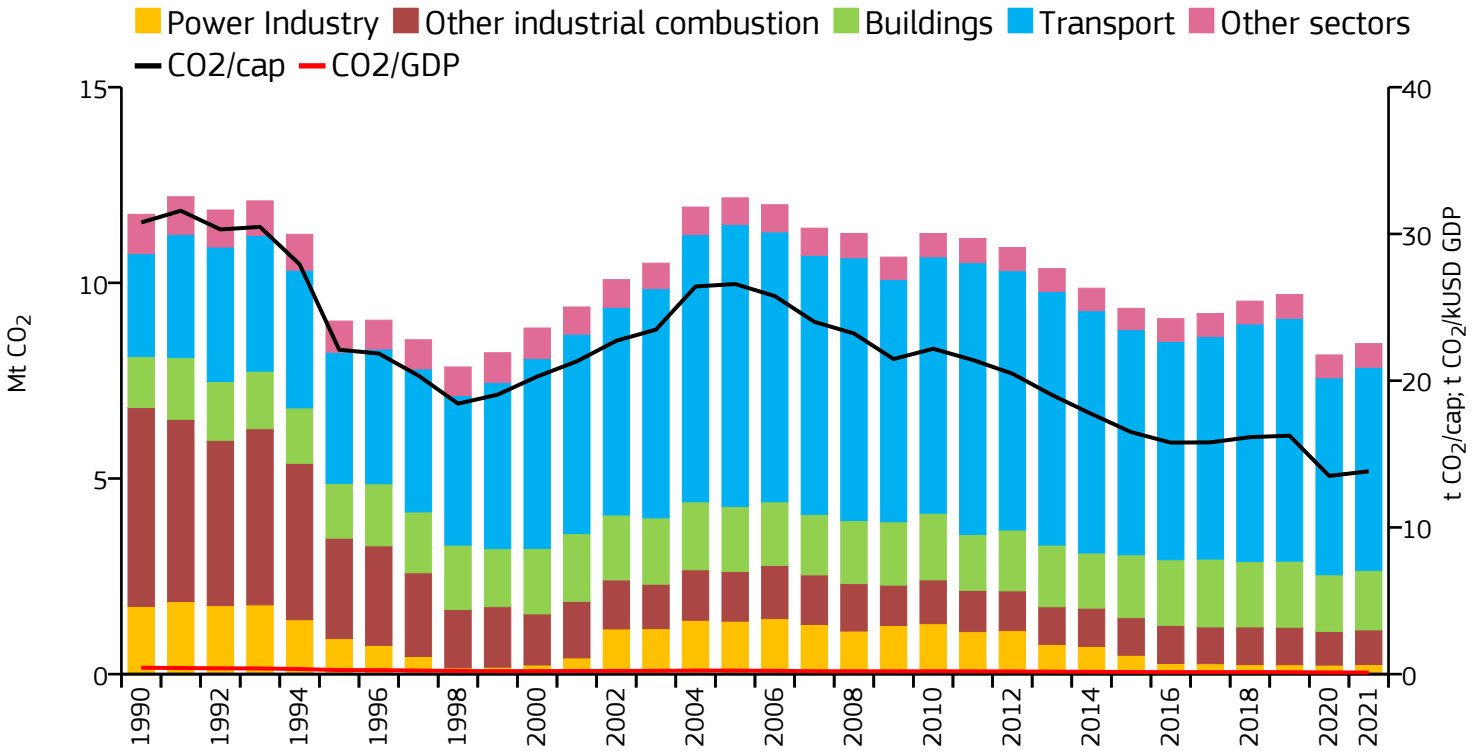


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	13.825	4.868	0.127	2.840M
2020	13.557	4.753	0.131	2.852M
2005	14.117	4.221	0.202	3.344M
1990	35.318	9.556	0.570	3.696M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-93%	-77%	-2%
Other industrial combustion	-65%	-18%	+3%
Buildings	-81%	+8%	+2%
Transport	+12%	+52%	+4%
Other sectors	-10%	+66%	-2%
All sectors	-61%	-2%	+2%

Luxembourg

Fossil CO_2 emissions by sector

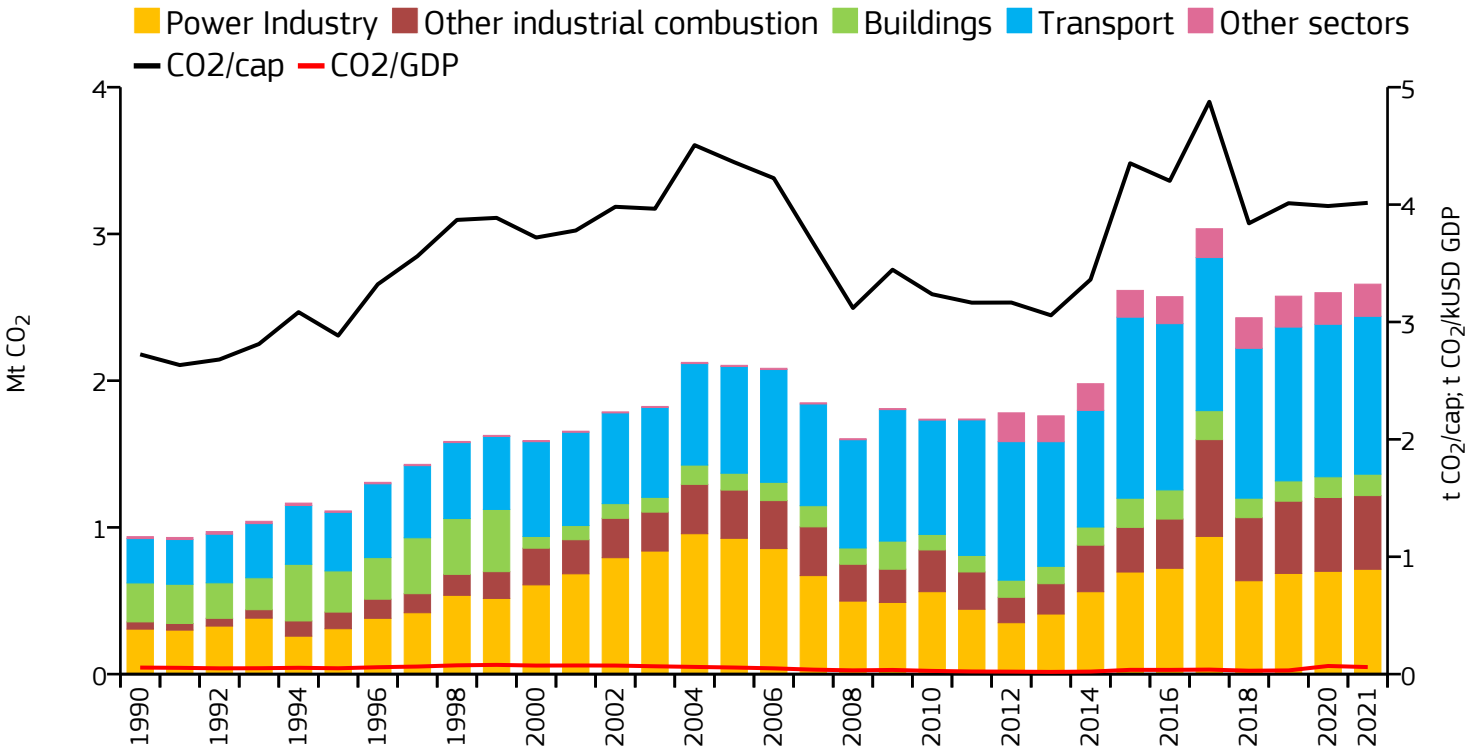


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	8.446	13.824	0.111	611.000k
2020	8.158	13.508	0.115	603.944k
2005	12.172	26.586	0.241	457.842k
1990	11.752	30.781	0.434	381.791k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-86%	-82%	+6%
Other industrial combustion	-83%	-30%	+3%
Buildings	+16%	-8%	+5%
Transport	+98%	-28%	+3%
Other sectors	-40%	-11%	+3%
All sectors	-28%	-31%	+4%

Macao

Fossil CO_2 emissions by sector

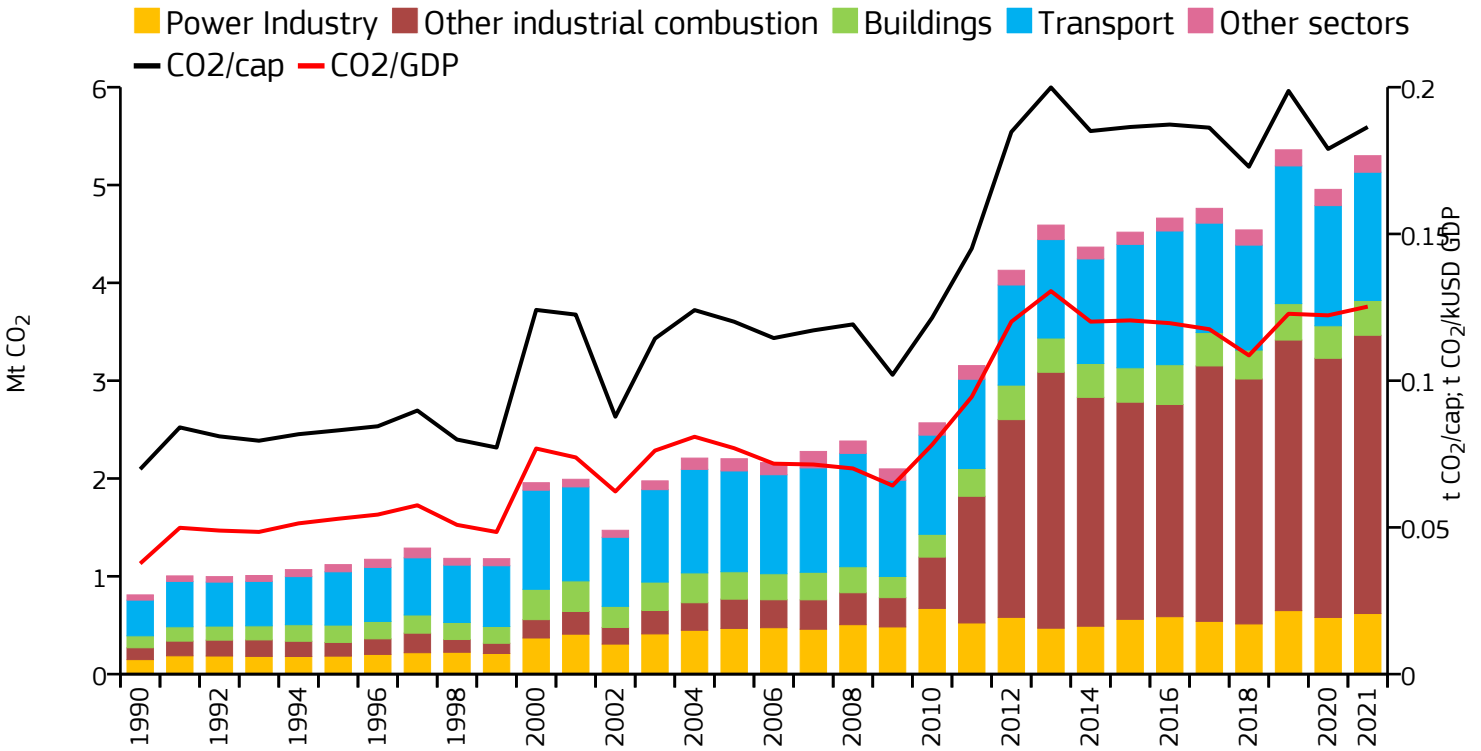


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	2.658	4.015	0.060	662.000k
2020	2.599	3.988	0.069	651.875k
2005	2.105	4.361	0.056	482.559k
1990	0.937	2.724	0.056	343.935k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+133%	-23%	+2%
Other industrial combustion	+919%	+53%	0%
Buildings	-45%	+27%	+3%
Transport	+256%	+48%	+3%
Other sectors	+1563%	+2611%	+2%
All sectors	+184%	+26%	+2%

Madagascar

Fossil CO_2 emissions by sector

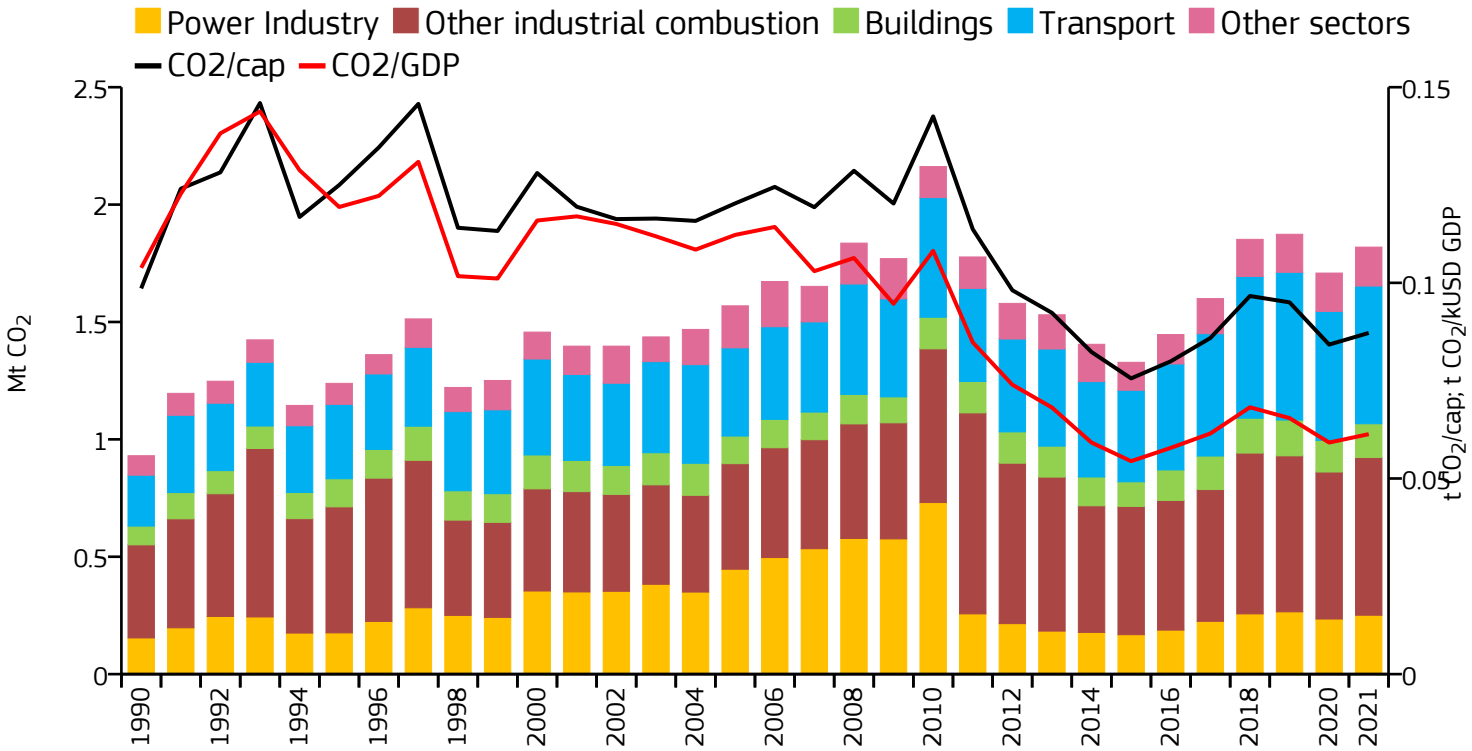


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	5.300	0.186	0.125	28.426M
2020	4.956	0.179	0.122	27.691M
2005	2.202	0.120	0.077	18.337M
1990	0.810	0.070	0.038	11.599M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +318%	↗ +33%	↗ +7%
Other industrial combustion	↗ +2251%	↗ +850%	↗ +7%
Buildings	↗ +190%	↗ +27%	↗ +7%
Transport	↗ +259%	↗ +27%	↗ +7%
Other sectors	↗ +217%	↗ +35%	→ +2%
All sectors	↗ +554%	↗ +141%	↗ +7%

Malawi

Fossil CO_2 emissions by sector

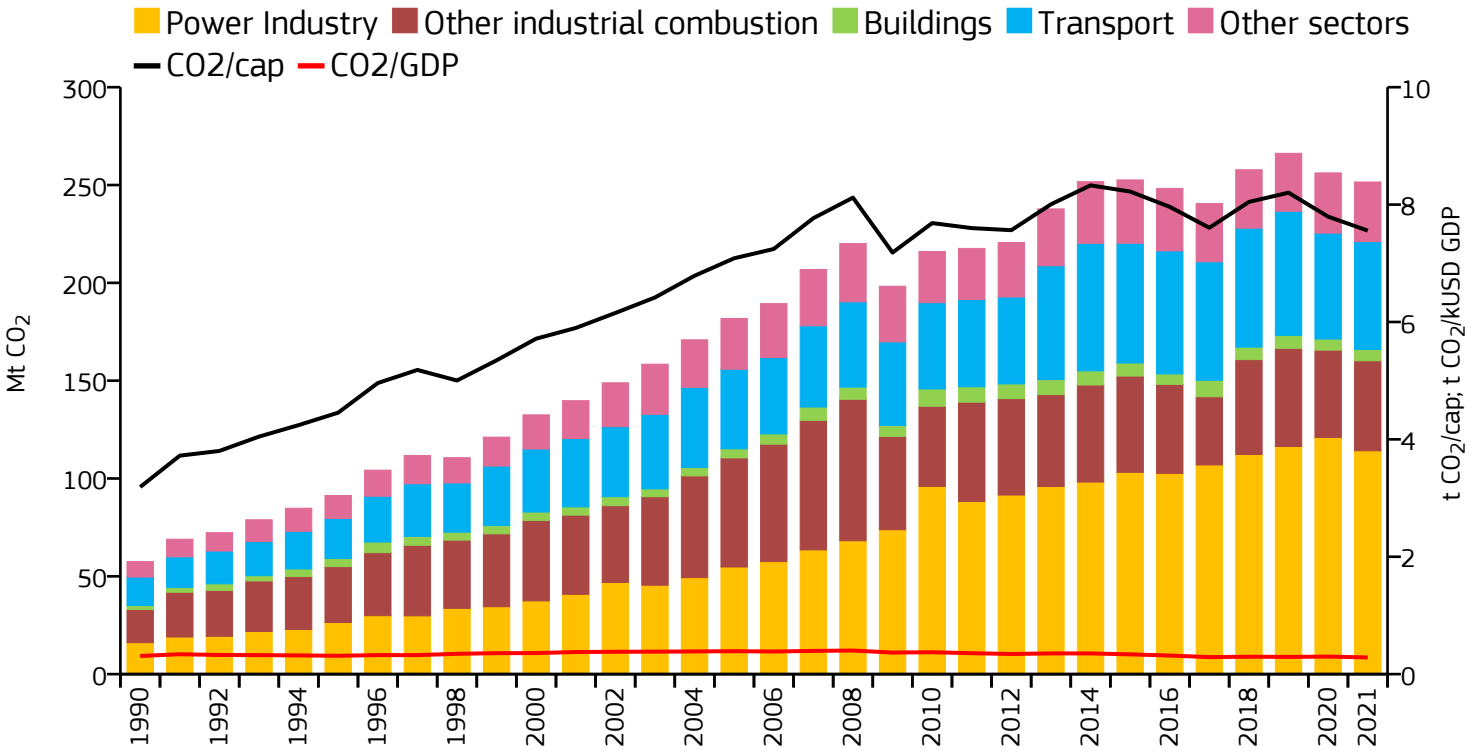


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	1.819	0.087	0.061	20.859M
2020	1.708	0.084	0.059	20.284M
2005	1.569	0.120	0.112	13.040M
1990	0.930	0.099	0.104	9.438M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+63%	-44%	+7%
Other industrial combustion	+69%	+49%	+7%
Buildings	+80%	+22%	+7%
Transport	+171%	+56%	+7%
Other sectors	+100%	-7%	+1%
All sectors	+96%	+16%	+6%

Malaysia

Fossil CO_2 emissions by sector

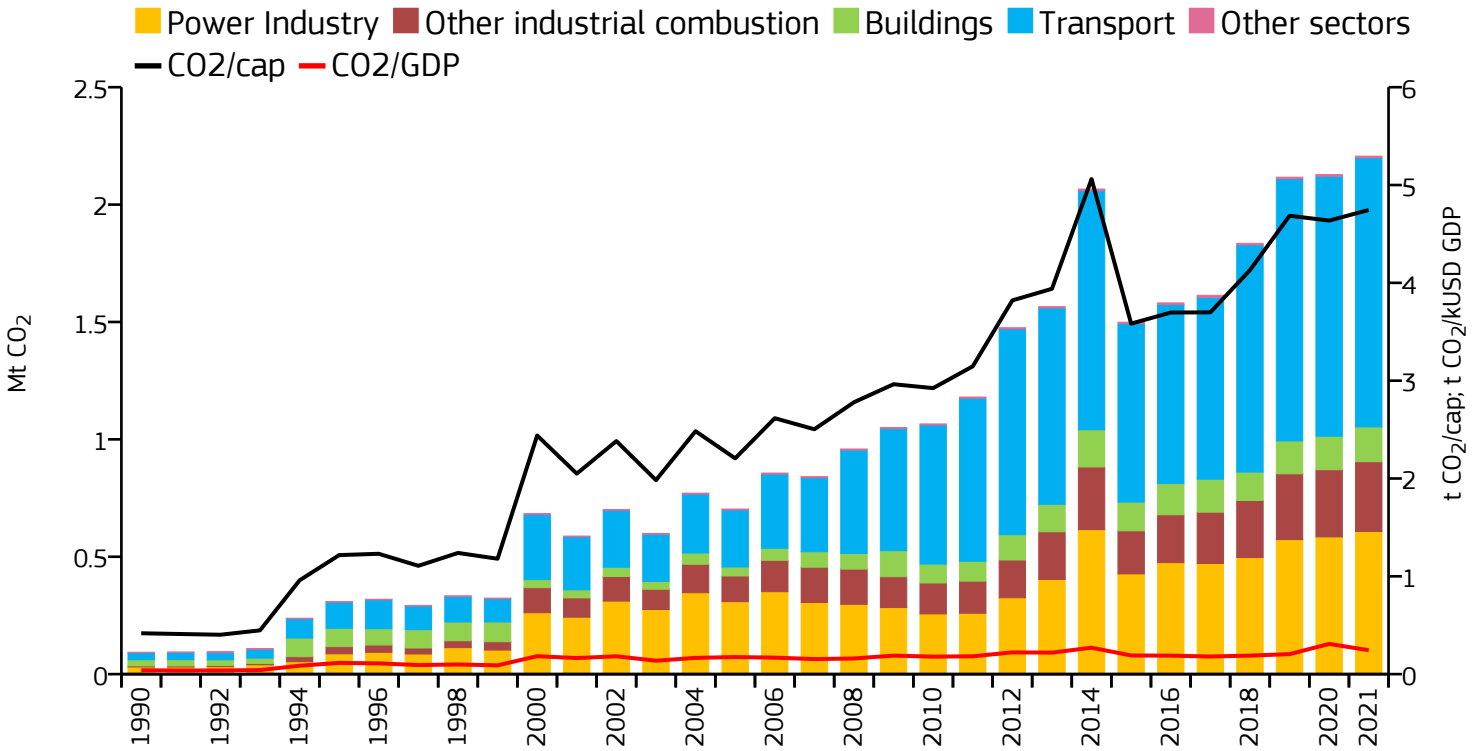


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	251.555	7.557	0.285	33.289M
2020	256.191	7.794	0.299	32.869M
2005	181.809	7.085	0.391	25.659M
1990	57.512	3.188	0.310	18.038M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+610%	+108%	-6%
Other industrial combustion	+172%	-17%	+3%
Buildings	+182%	+25%	+2%
Transport	+279%	+35%	+2%
Other sectors	+286%	+17%	-1%
All sectors	+337%	+38%	-2%

Maldives

Fossil CO_2 emissions by sector

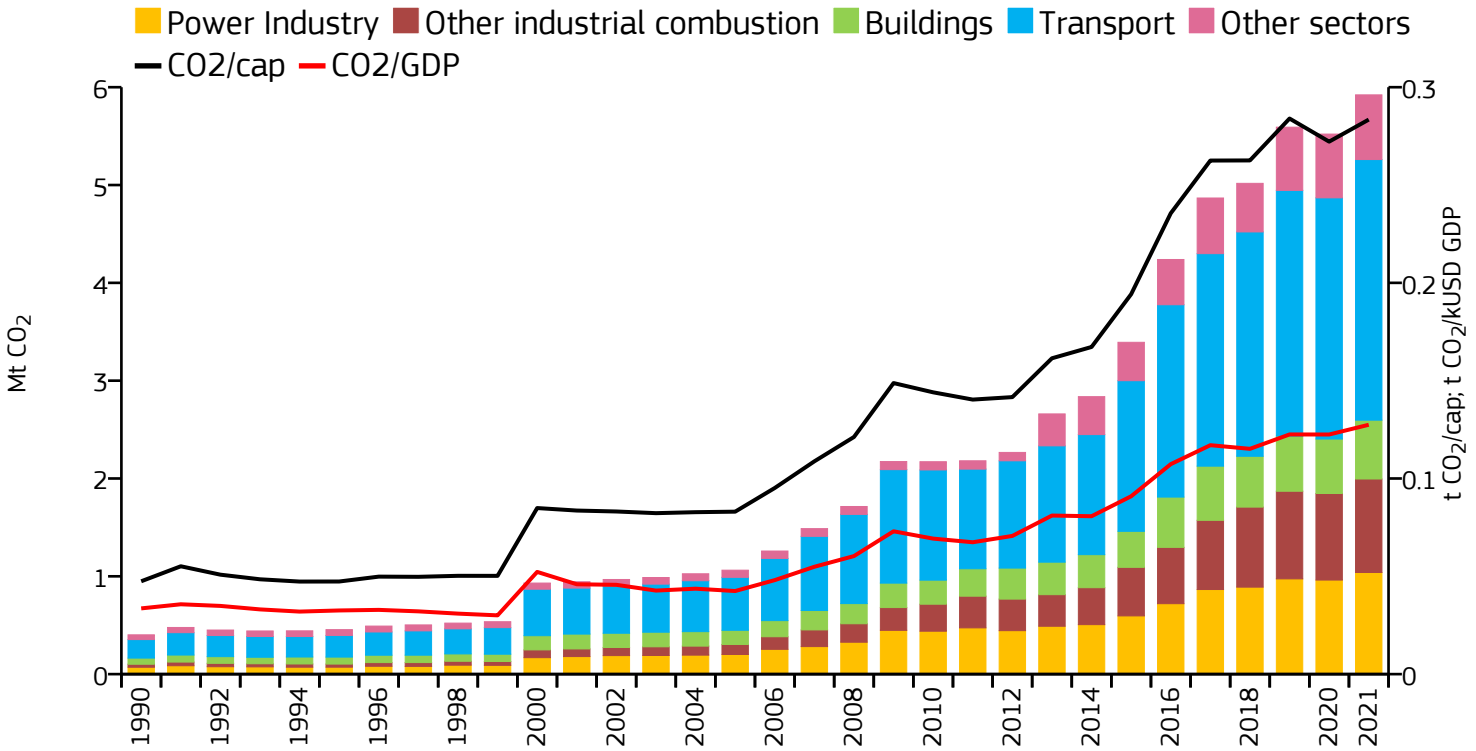


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	2.206	4.745	0.245	465.000k
2020	2.128	4.636	0.309	458.909k
2005	0.703	2.206	0.175	318.836k
1990	0.093	0.418	0.039	223.215k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+1888%	+97%	+4%
Other industrial combustion	+6616%	+172%	+4%
Buildings	+462%	+287%	+4%
Transport	+3705%	+372%	+4%
Other sectors	+314%	+86%	0%
All sectors	+2266%	+214%	+4%

Mali

Fossil CO_2 emissions by sector

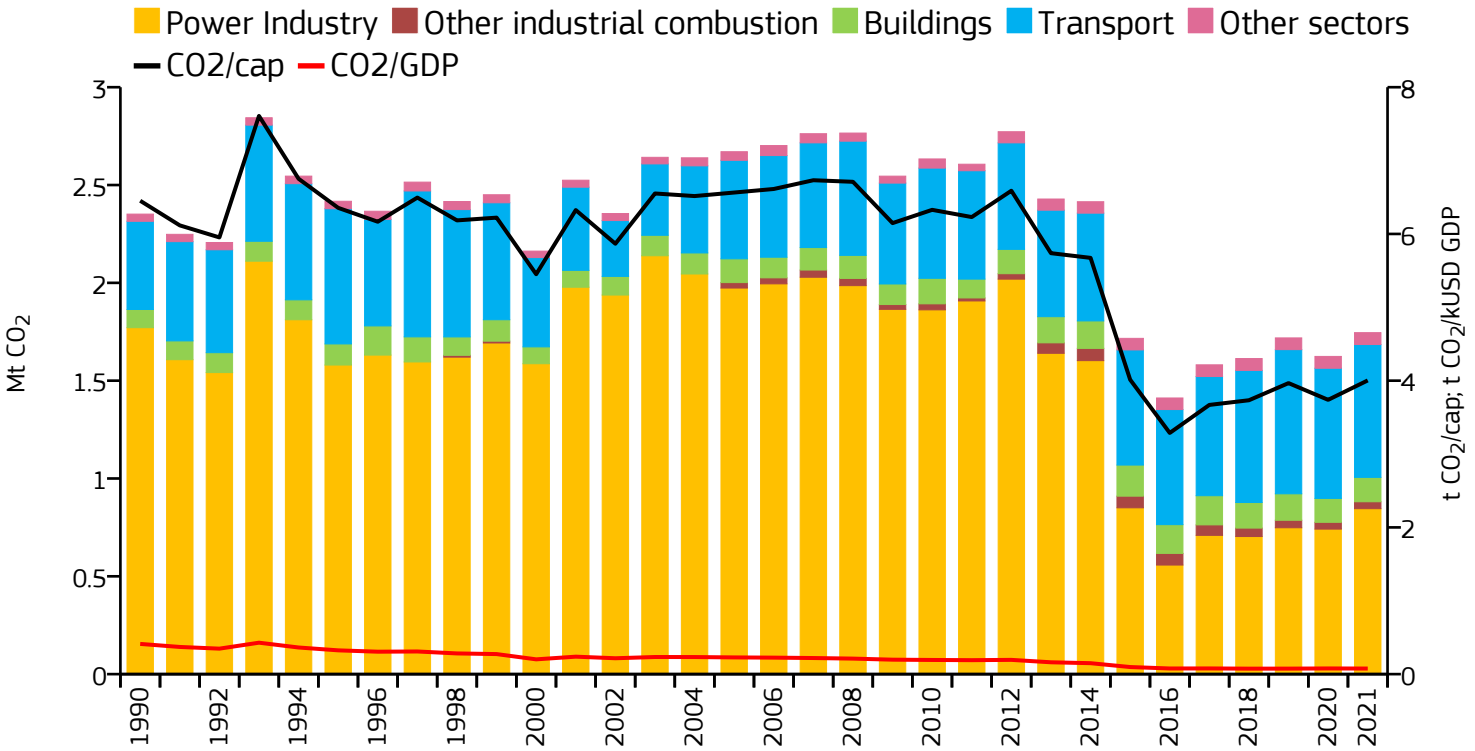


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	5.922	0.283	0.127	20.892M
2020	5.521	0.272	0.122	20.284M
2005	1.063	0.083	0.042	12.799M
1990	0.402	0.047	0.034	8.465M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +1377%	↗ +417%	↗ +8%
Other industrial combustion	↗ +2992%	↗ +834%	↗ +8%
Buildings	↗ +859%	↗ +315%	↗ +8%
Transport	↗ +1309%	↗ +392%	↗ +8%
Other sectors	↗ +1259%	↗ +805%	→ +1%
All sectors	↗ +1374%	↗ +457%	↗ +7%

Malta

Fossil CO_2 emissions by sector

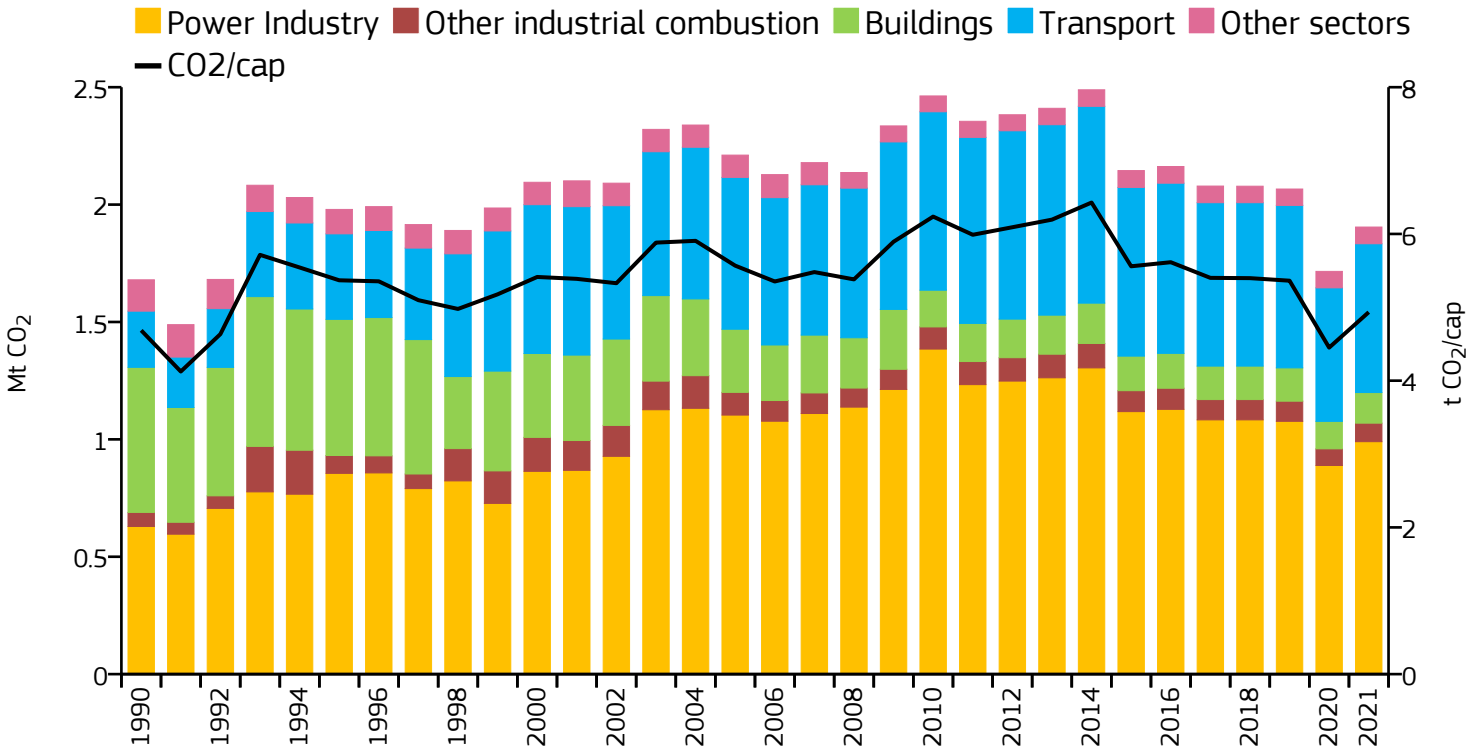


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	1.745	4.003	0.076	436.000k
2020	1.624	3.739	0.077	434.363k
2005	2.670	6.564	0.228	406.787k
1990	2.351	6.452	0.412	364.431k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-52%	-57%	+14%
Other industrial combustion		+28%	+2%
Buildings	+34%	+3%	+2%
Transport	+51%	+35%	+2%
Other sectors	+65%	+39%	+1%
All sectors	-26%	-35%	+7%

Martinique

Fossil CO_2 emissions by sector

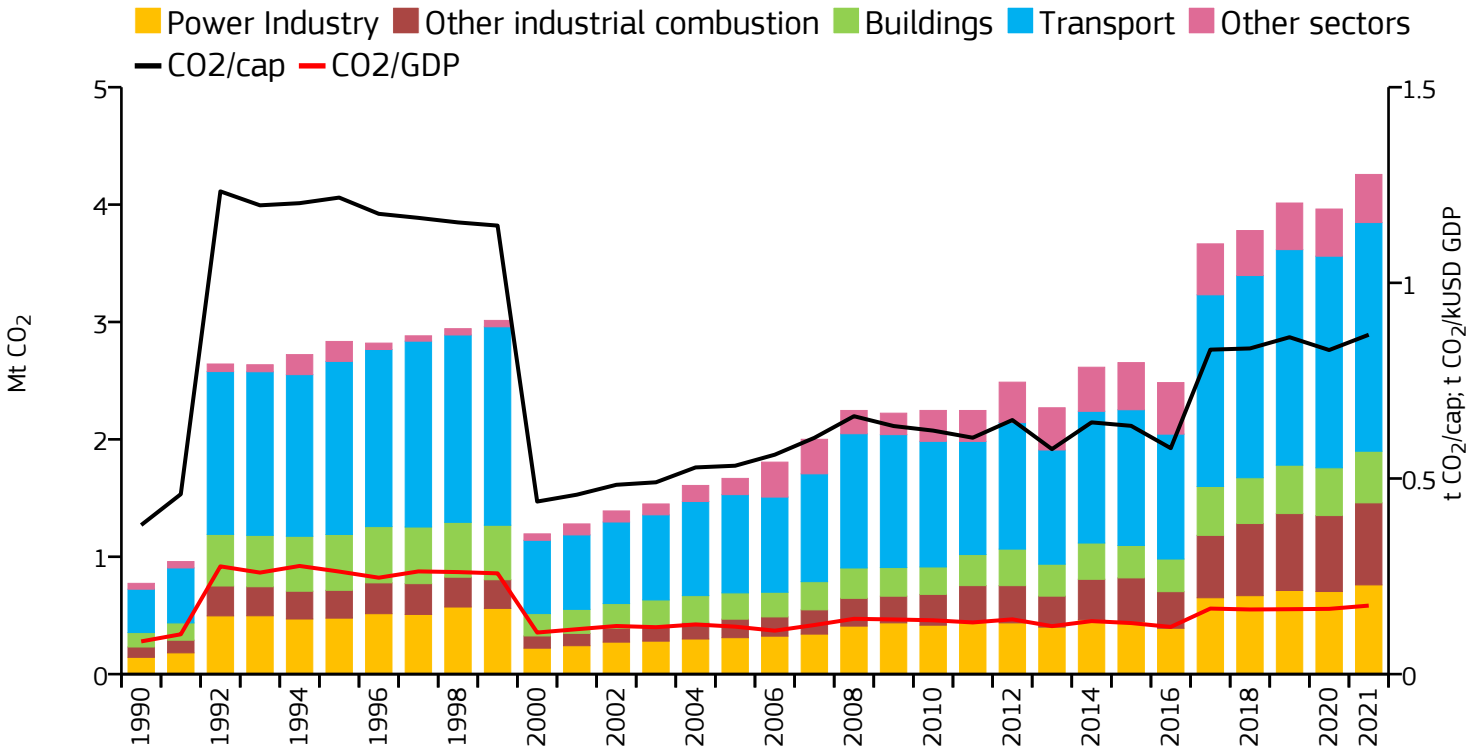


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	1.904	4.934	n/a	386.000k
2020	1.716	4.451	n/a	385.457k
2005	2.211	5.568	n/a	397.047k
1990	1.680	4.686	n/a	358.449k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +57%	↘ -10%	↗ +11%
Other industrial combustion	↗ +32%	↘ -18%	↗ +11%
Buildings	↘ -79%	↘ -52%	↗ +11%
Transport	↗ +165%	→ -2%	↗ +11%
Other sectors	↘ -47%	↘ -25%	→ +1%
All sectors	↗ +13%	↘ -14%	↗ +11%

Mauritania

Fossil CO_2 emissions by sector

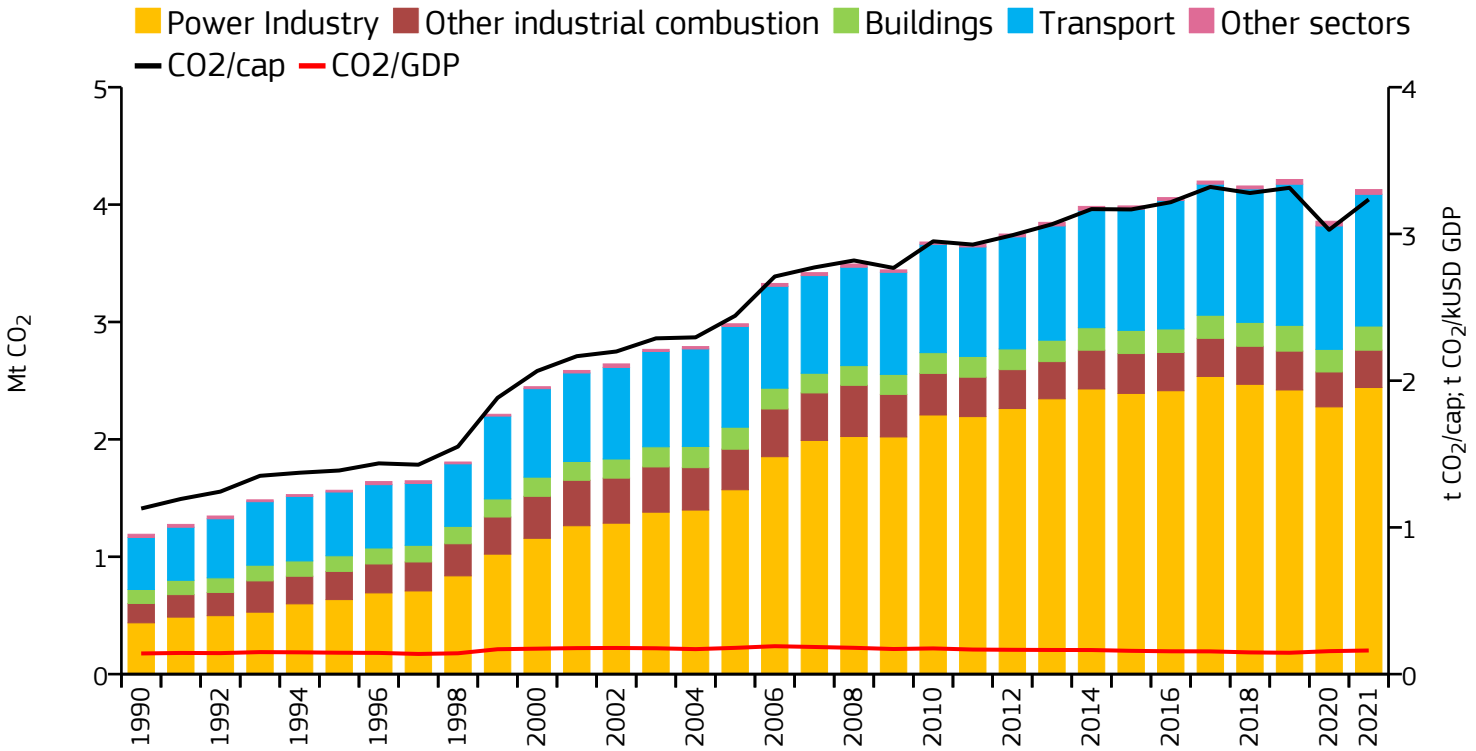


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	4.257	0.867	0.175	4.908M
2020	3.962	0.828	0.167	4.784M
2005	1.667	0.533	0.121	3.131M
1990	0.773	0.381	0.084	2.030M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+431%	+145%	+8%
Other industrial combustion	+695%	+342%	+8%
Buildings	+257%	+97%	+8%
Transport	+427%	+133%	+8%
Other sectors	+723%	+196%	+2%
All sectors	+450%	+155%	+7%

Mauritius

Fossil CO_2 emissions by sector

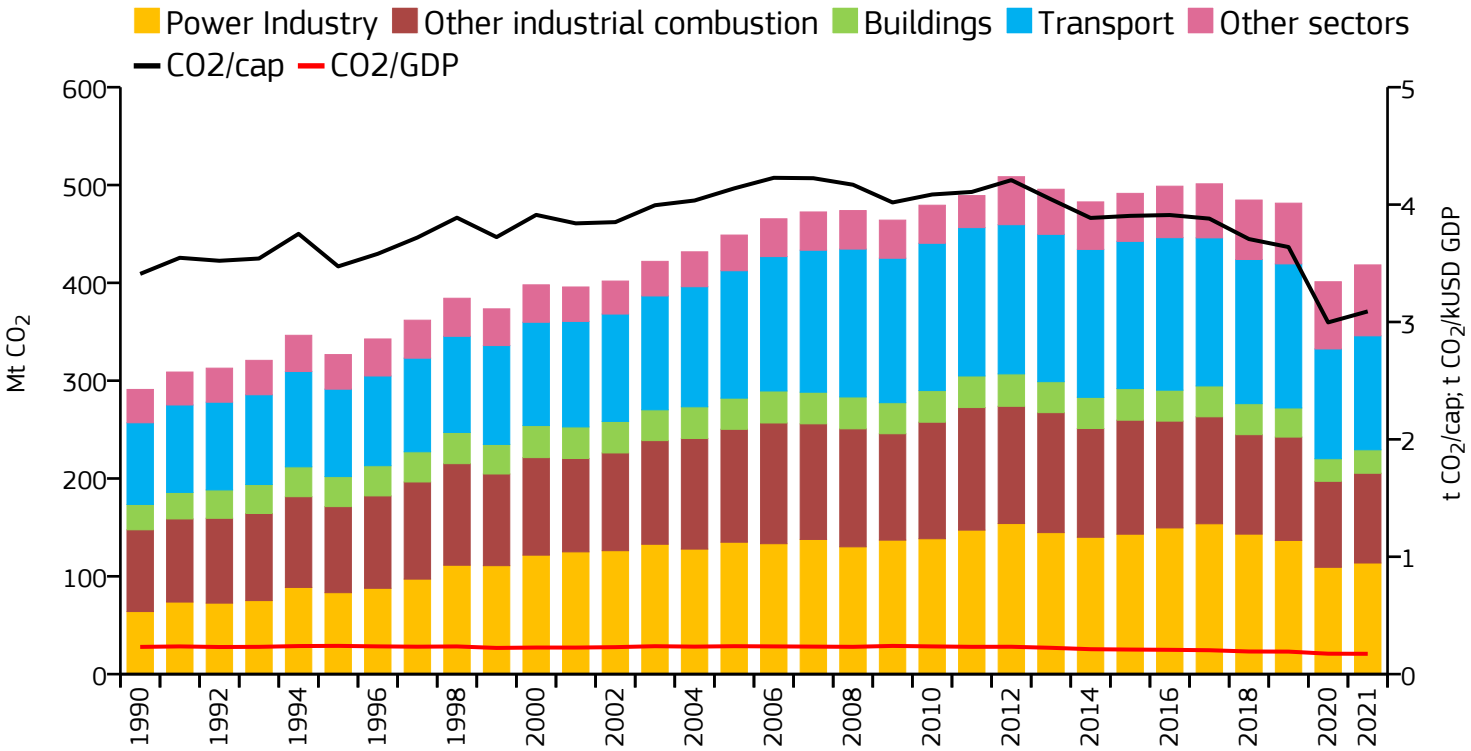


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	4.128	3.235	0.161	1.276M
2020	3.858	3.028	0.157	1.274M
2005	2.985	2.442	0.179	1.222M
1990	1.192	1.129	0.141	1.056M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+459%	+55%	+7%
Other industrial combustion	+93%	-8%	+7%
Buildings	+73%	+10%	+7%
Transport	+153%	+31%	+7%
Other sectors	+47%	+77%	0%
All sectors	+246%	+38%	+7%

Mexico

Fossil CO_2 emissions by sector

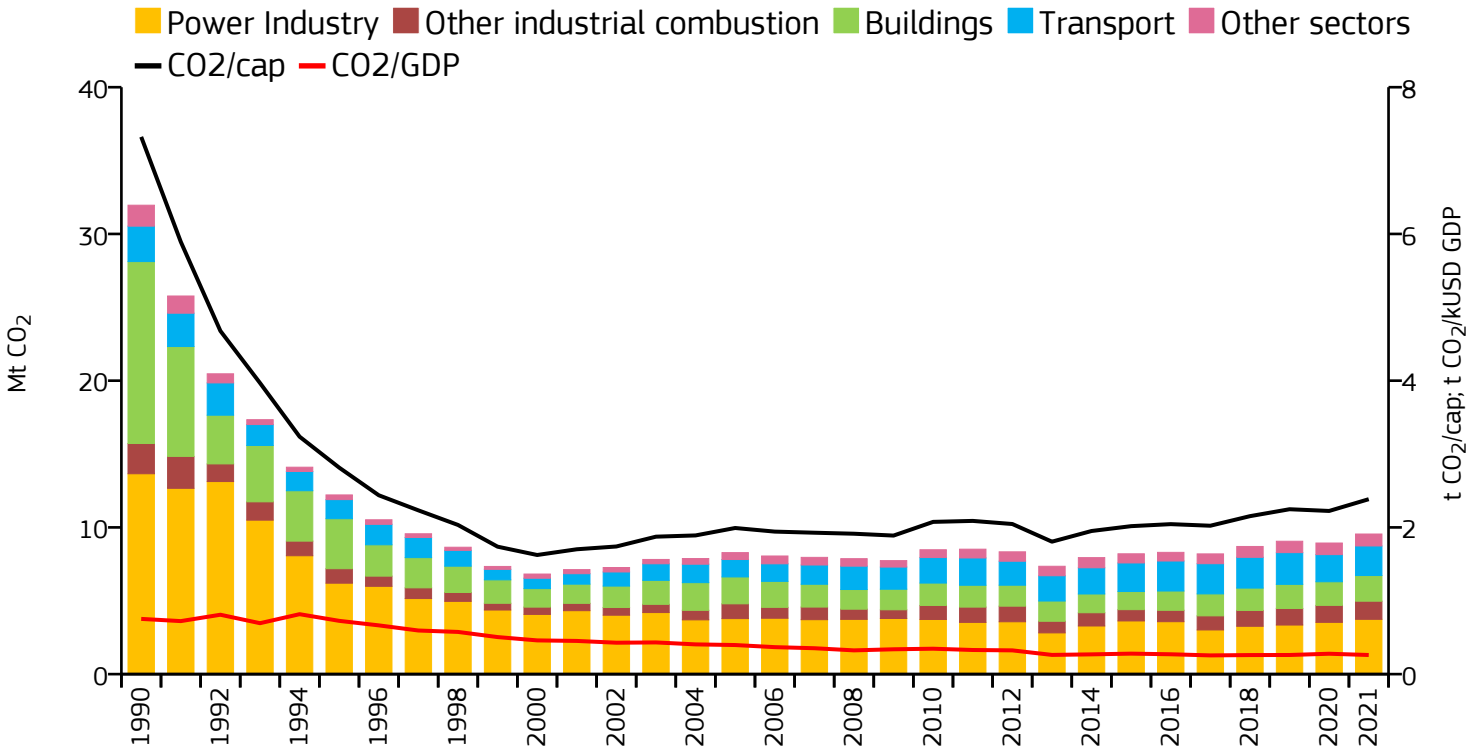


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	418.348	3.090	0.173	135.384M
2020	401.126	2.996	0.174	133.870M
2005	448.861	4.138	0.238	108.472M
1990	291.037	3.410	0.232	85.358M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+78%	-16%	+4%
Other industrial combustion	+10%	-21%	+4%
Buildings	-8%	-25%	+4%
Transport	+40%	-11%	+4%
Other sectors	+113%	+99%	+6%
All sectors	+44%	-7%	+4%

Moldova

Fossil CO_2 emissions by sector

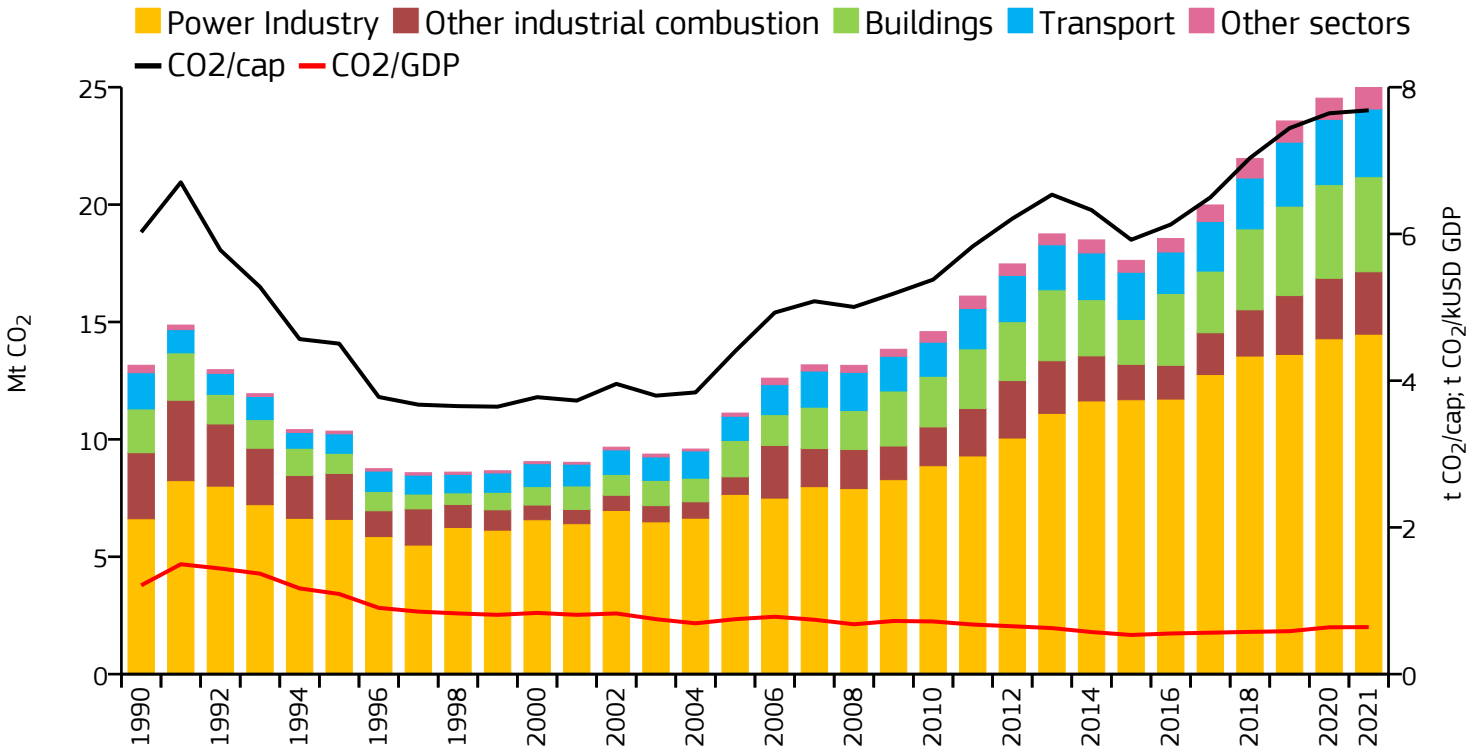


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	9.550	2.384	0.261	4.005M
2020	8.936	2.224	0.278	4.018M
2005	8.281	1.992	0.397	4.158M
1990	31.959	7.323	0.753	4.364M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-73%	-1%	+6%
Other industrial combustion	-40%	+23%	+7%
Buildings	-86%	-5%	+9%
Transport	-17%	+70%	+9%
Other sectors	-43%	+73%	+3%
All sectors	-70%	+15%	+7%

Mongolia

Fossil CO_2 emissions by sector

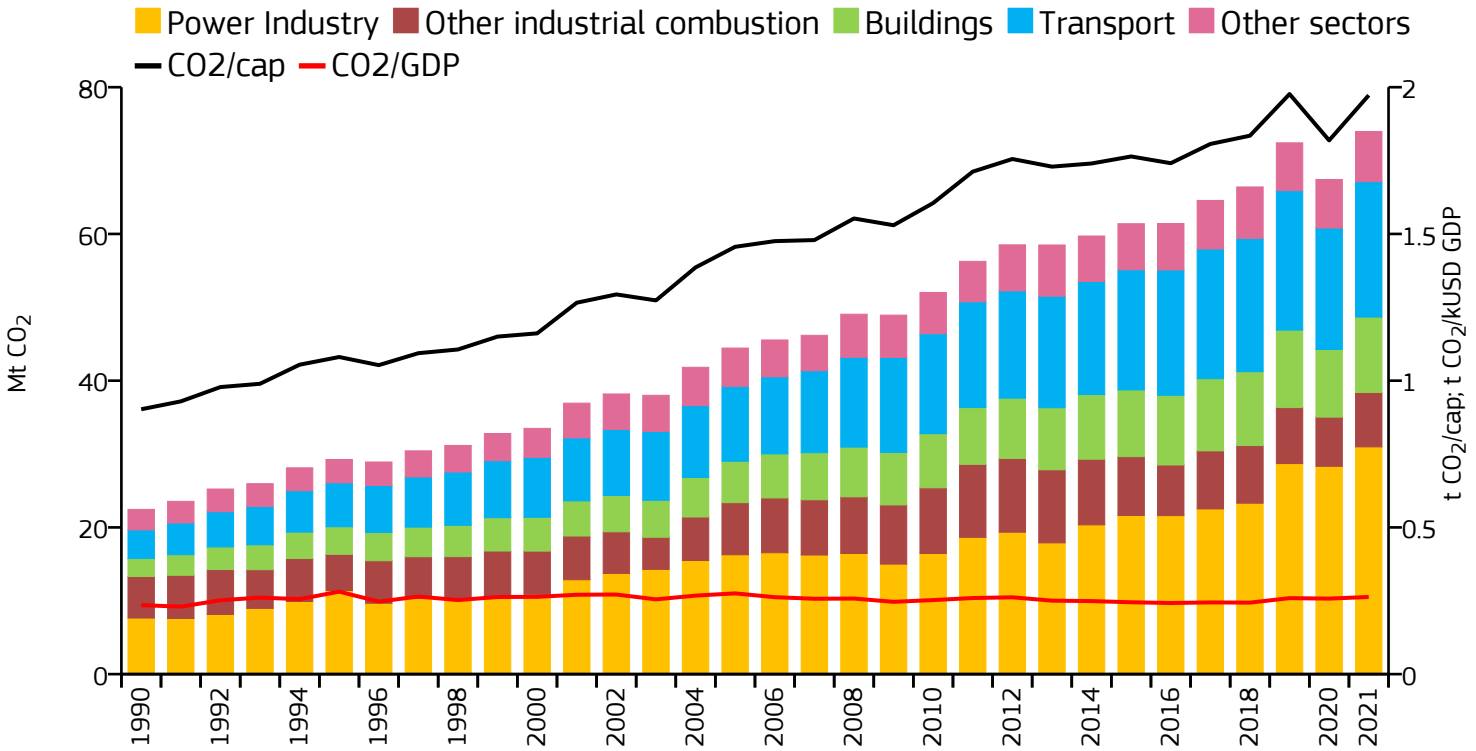


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	24.985	7.685	0.641	3.251M
2020	24.534	7.644	0.638	3.209M
2005	11.119	4.401	0.749	2.526M
1990	13.157	6.024	1.210	2.184M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+119%	+89%	+1%
Other industrial combustion	-6%	+257%	+3%
Buildings	+117%	+161%	+1%
Transport	+87%	+179%	+4%
Other sectors	+187%	+580%	+1%
All sectors	+90%	+125%	+2%

Morocco

Fossil CO_2 emissions by sector

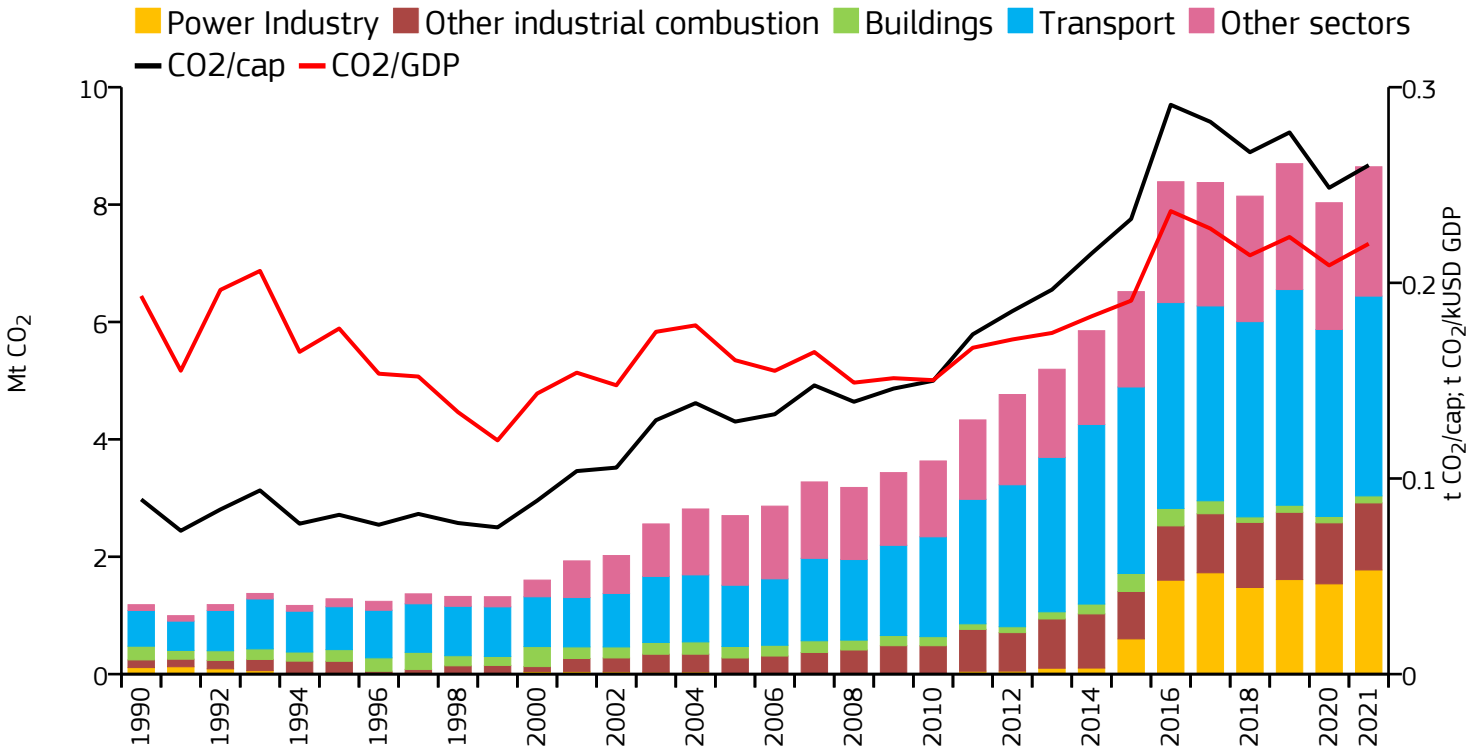


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	73.968	1.973	0.263	37.498M
2020	67.426	1.819	0.257	37.071M
2005	44.443	1.456	0.275	30.521M
1990	22.454	0.903	0.235	24.879M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+305%	+90%	+9%
Other industrial combustion	+31%	+4%	+11%
Buildings	+319%	+82%	+12%
Transport	+374%	+81%	+12%
Other sectors	+145%	+31%	+3%
All sectors	+229%	+66%	+10%

Mozambique

Fossil CO_2 emissions by sector

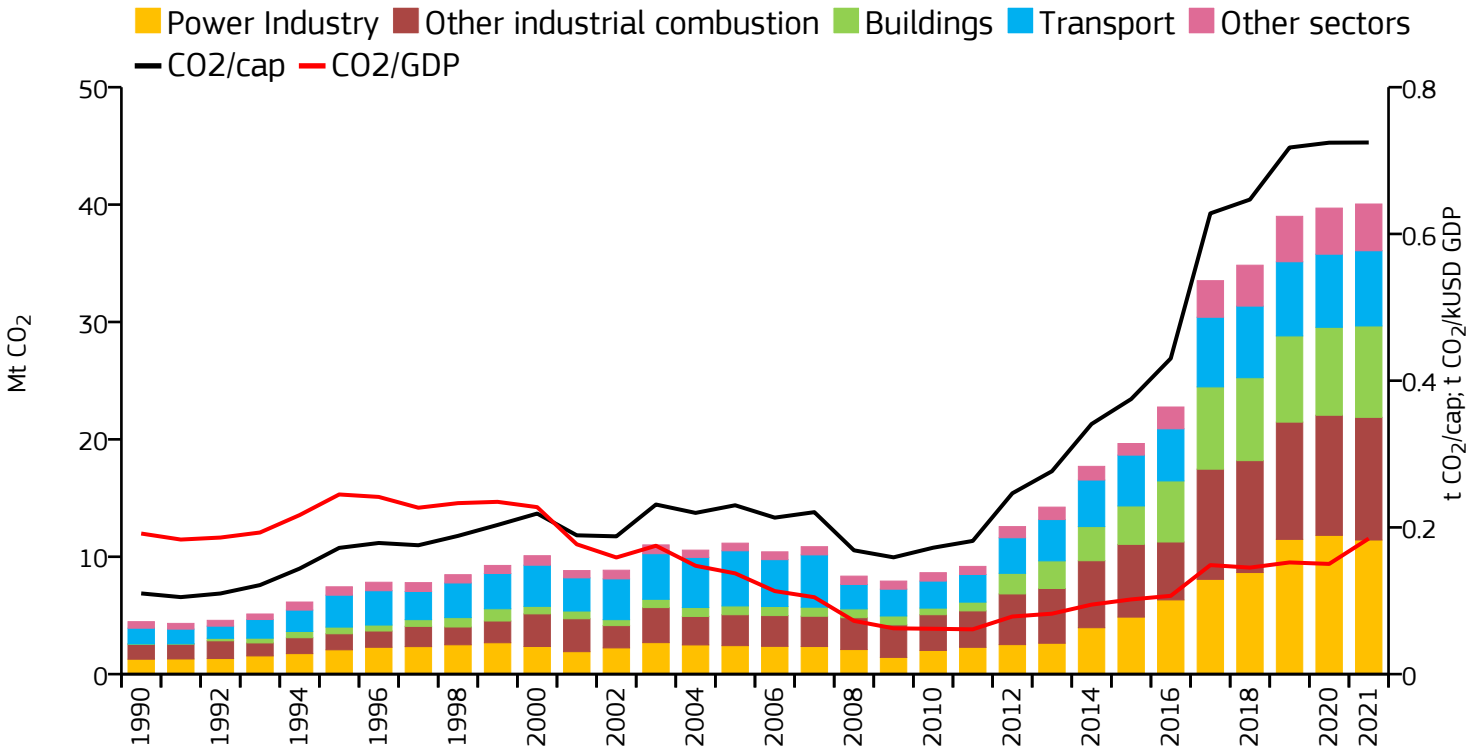


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	8.644	0.260	0.220	33.230M
2020	8.032	0.249	0.209	32.309M
2005	2.701	0.129	0.160	20.923M
1990	1.183	0.089	0.193	13.248M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +1495%	↗ +9797%	↗ +15%
Other industrial combustion	↗ +774%	↗ +345%	↗ +10%
Buildings	↘ -49%	↘ -39%	↗ +10%
Transport	↗ +459%	↗ +226%	↗ +7%
Other sectors	↗ +2142%	↗ +86%	→ +2%
All sectors	↗ +631%	↗ +220%	↗ +8%

Myanmar/Burma

Fossil CO_2 emissions by sector

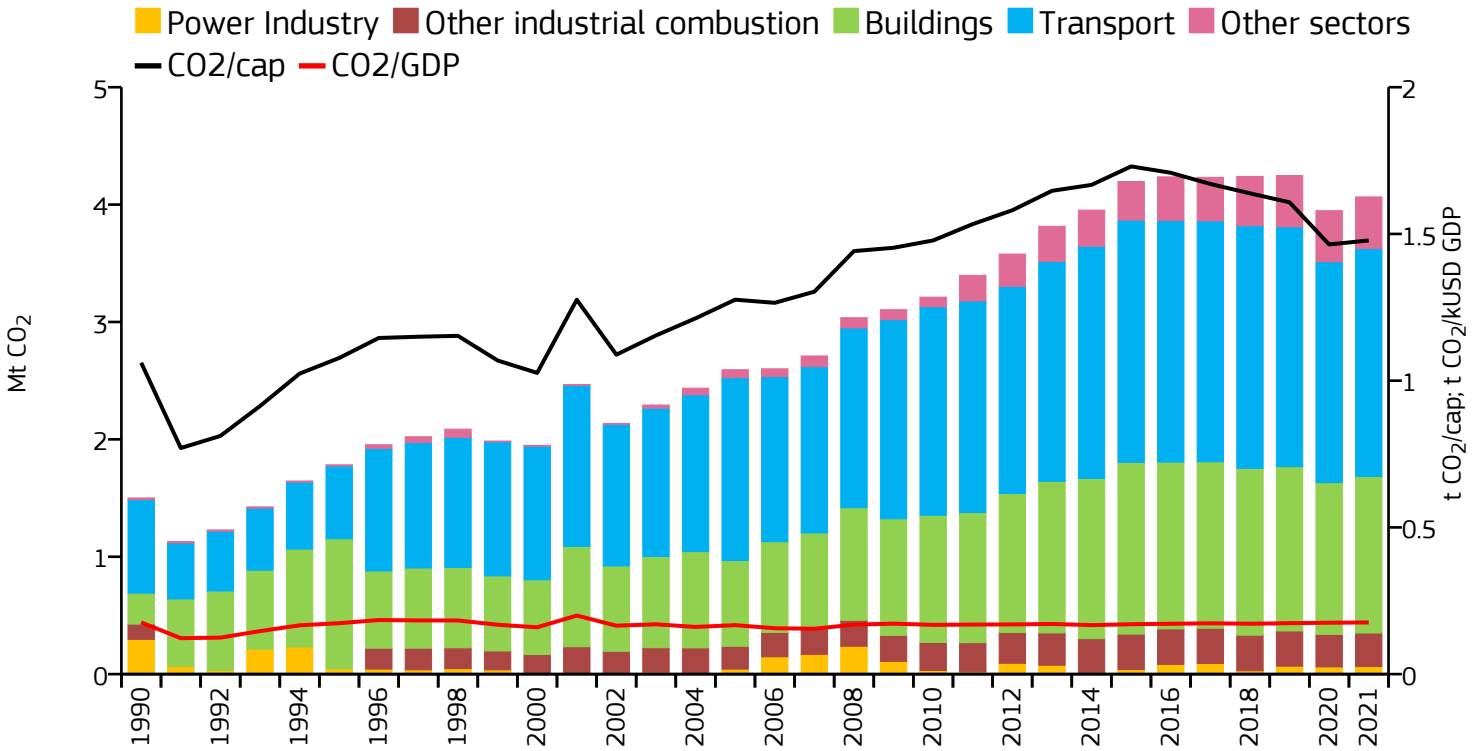


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	40.051	0.725	0.185	55.269M
2020	39.702	0.724	0.150	54.808M
2005	11.159	0.230	0.137	48.483M
1990	4.469	0.110	0.192	40.626M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+799%	+371%	-3%
Other industrial combustion	+712%	+297%	+2%
Buildings	+64179%	+938%	+4%
Transport	+377%	+36%	+3%
Other sectors	+617%	+511%	+1%
All sectors	+796%	+259%	+1%

Namibia

Fossil CO_2 emissions by sector

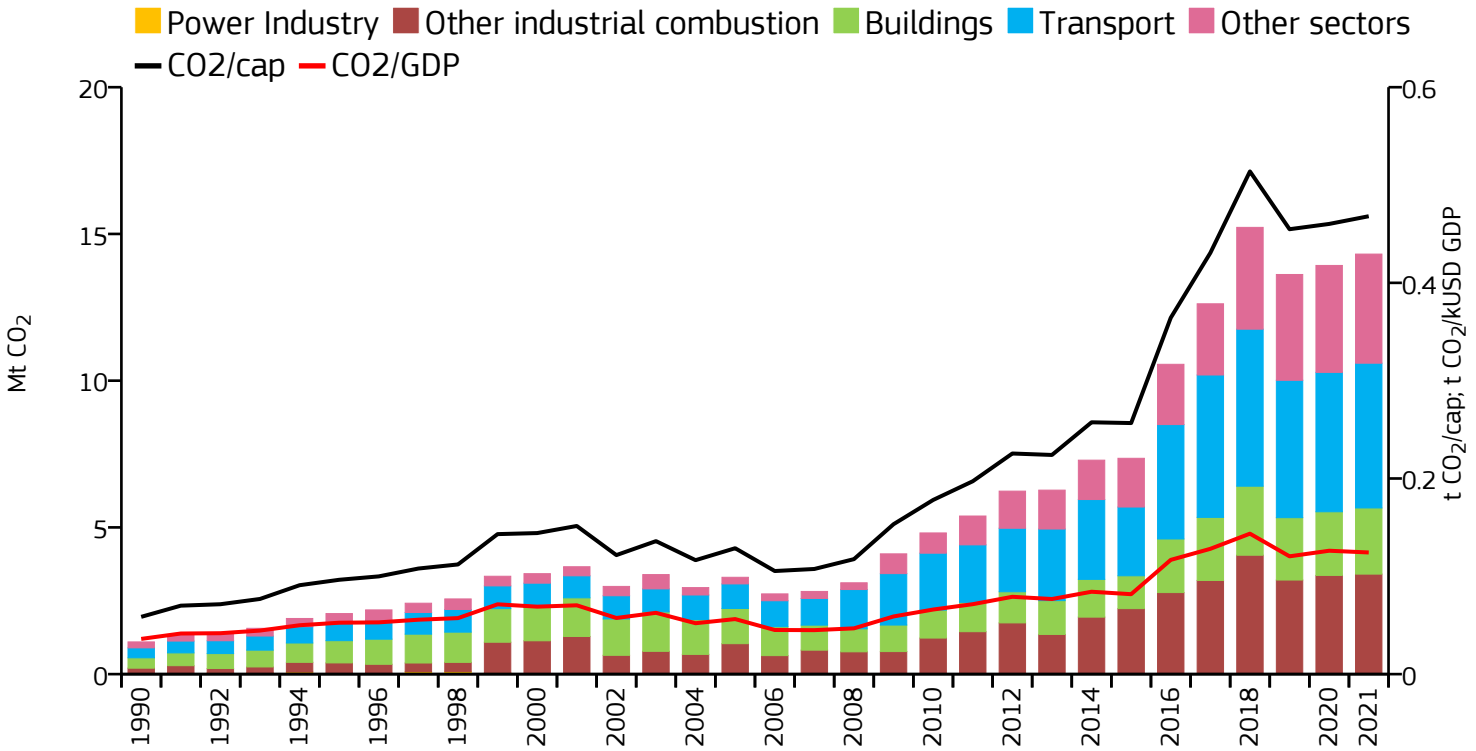


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	4.065	1.478	0.176	2.751M
2020	3.948	1.464	0.175	2.697M
2005	2.593	1.276	0.167	2.032M
1990	1.501	1.061	0.176	1.415M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-78%	+50%	+5%
Other industrial combustion	+120%	+47%	+3%
Buildings	+405%	+83%	+3%
Transport	+144%	+25%	+3%
Other sectors	+2872%	+551%	+1%
All sectors	+171%	+57%	+3%

Nepal

Fossil CO_2 emissions by sector

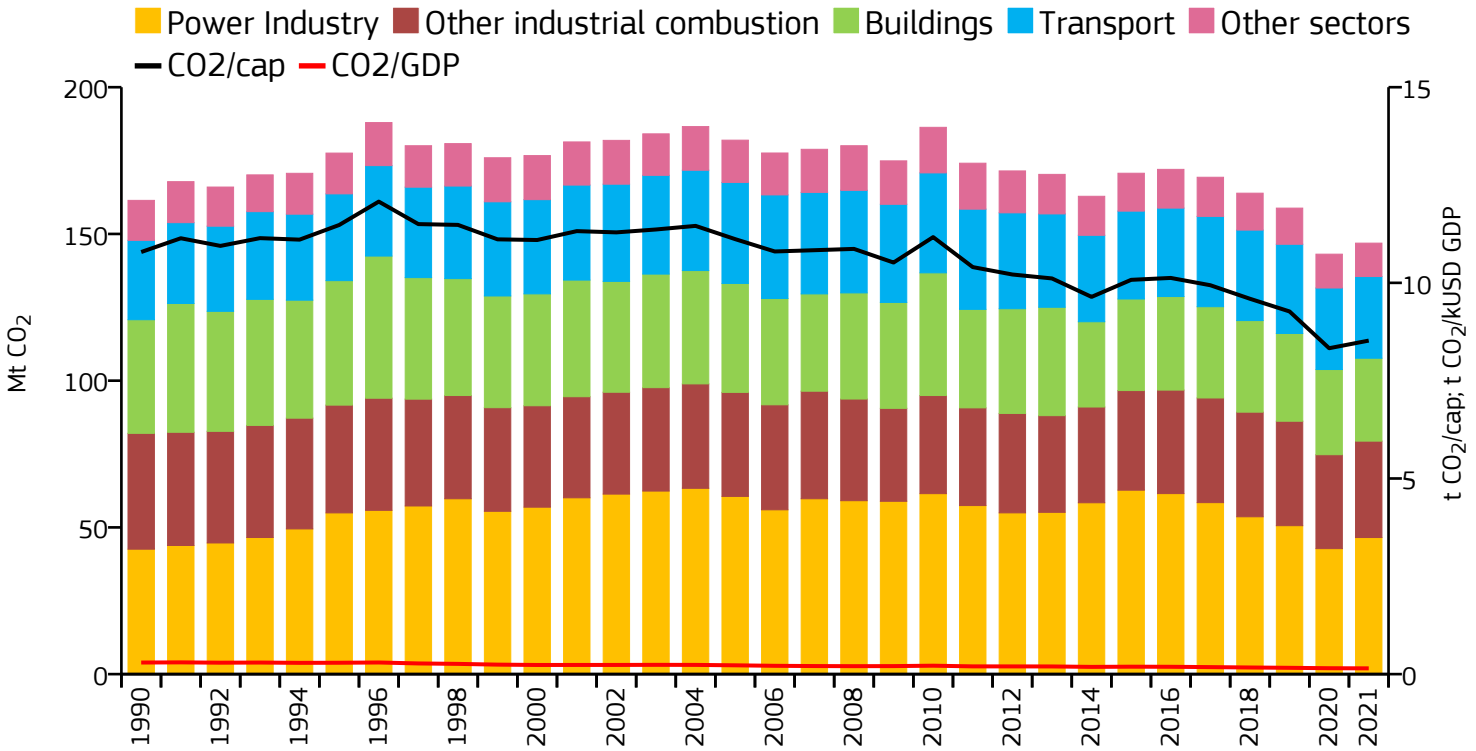


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	14.314	0.468	0.124	30.578M
2020	13.927	0.460	0.126	30.260M
2005	3.300	0.129	0.056	25.640M
1990	1.098	0.059	0.036	18.749M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry		-100%	+4%
Other industrial combustion	+1572%	+233%	+1%
Buildings	+539%	+88%	+4%
Transport	+1357%	+490%	+4%
Other sectors	+1733%	+1545%	+2%
All sectors	+1204%	+334%	+3%

Netherlands

Fossil CO_2 emissions by sector

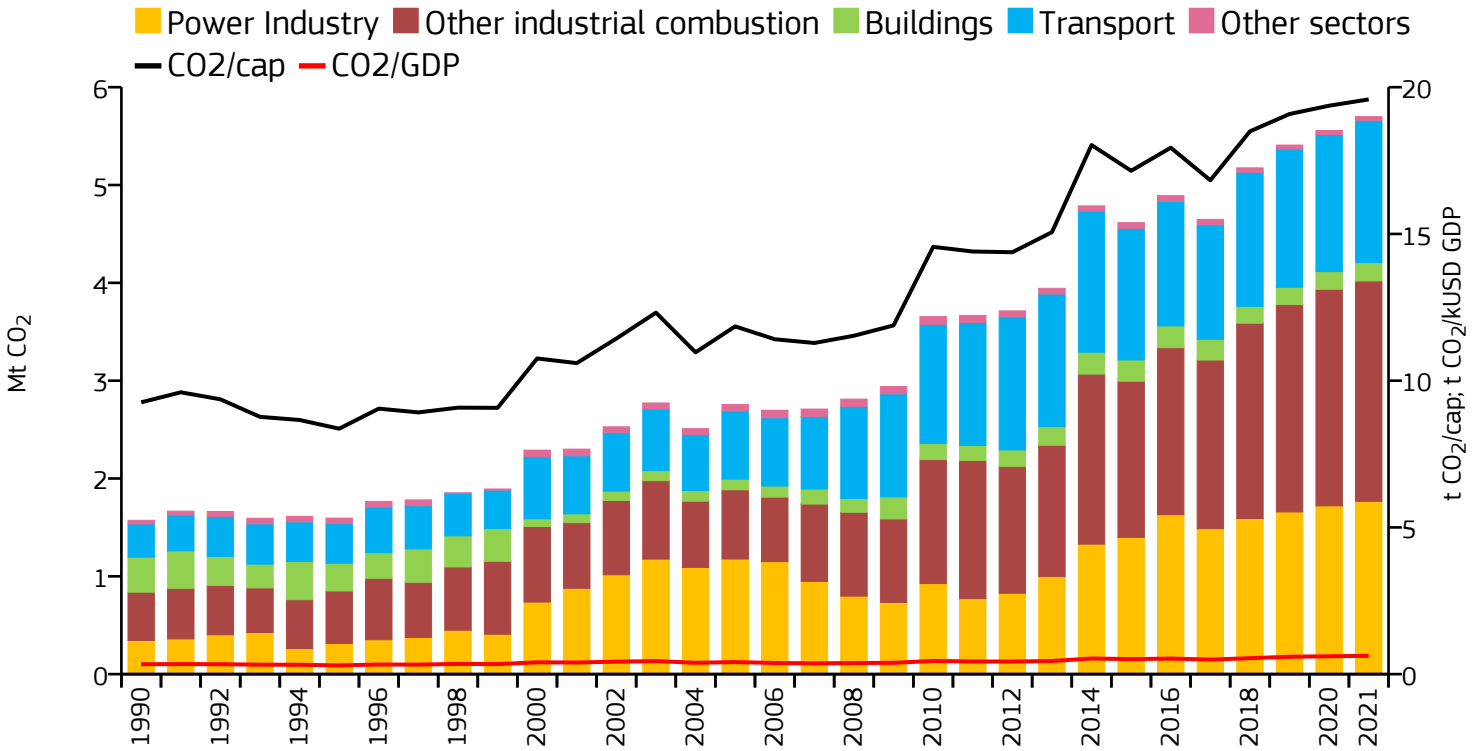


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	146.868	8.524	0.148	17.230M
2020	143.110	8.329	0.151	17.181M
2005	181.958	11.117	0.225	16.367M
1990	161.441	10.788	0.296	14.965M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+9%	-23%	+9%
Other industrial combustion	-17%	-7%	+3%
Buildings	-27%	-24%	-3%
Transport	+3%	-19%	0%
Other sectors	-16%	-21%	-1%
All sectors	-9%	-19%	+3%

New Caledonia

Fossil CO_2 emissions by sector

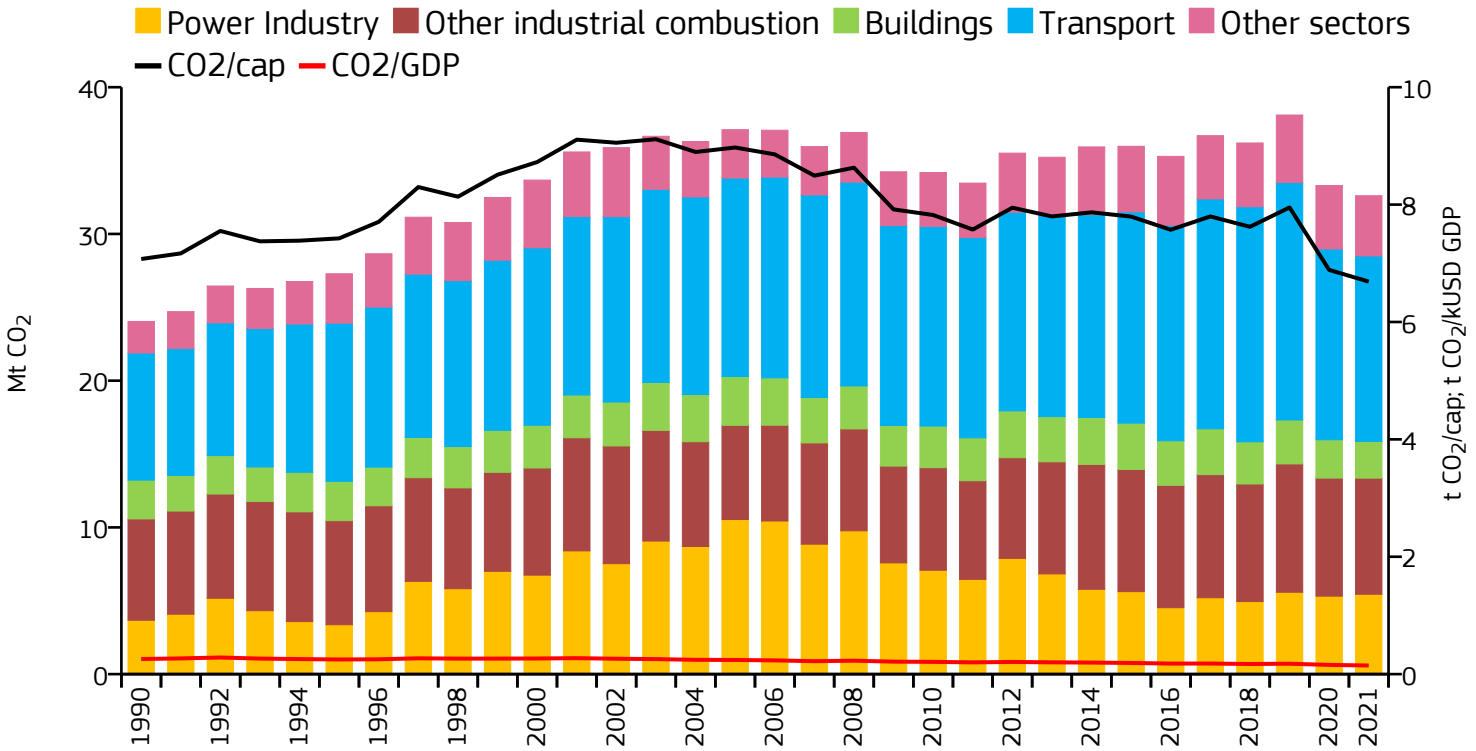


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	5.699	19.585	0.624	291.000k
2020	5.558	19.370	0.609	286.913k
2005	2.757	11.849	0.411	232.686k
1990	1.573	9.263	0.338	169.787k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +413%	↗ +50%	→ +3%
Other industrial combustion	↗ +356%	↗ +219%	→ +2%
Buildings	↘ -48%	↗ +71%	→ +4%
Transport	↗ +328%	↗ +109%	→ +4%
Other sectors	↗ +10%	↘ -39%	→ +1%
All sectors	↗ +262%	↗ +107%	→ +3%

New Zealand

Fossil CO_2 emissions by sector

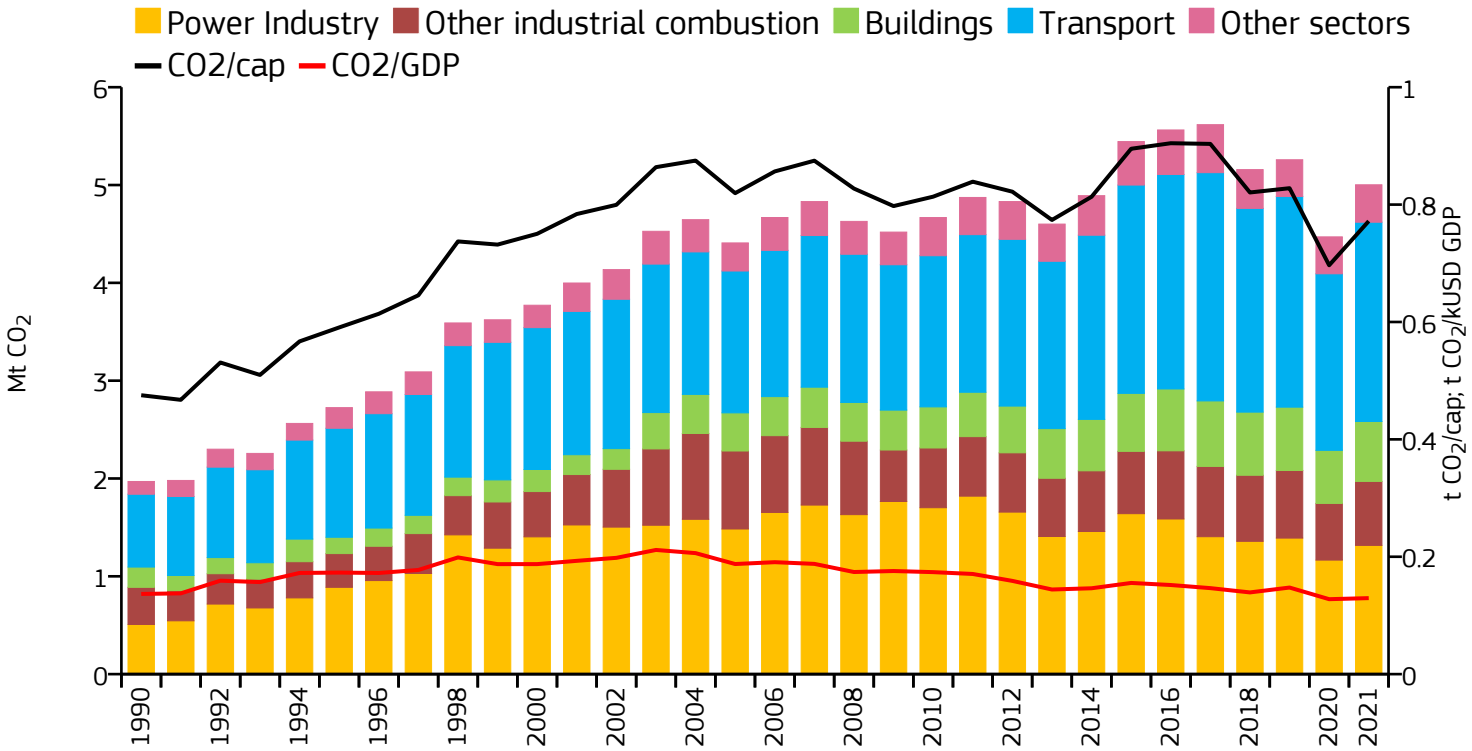


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	32.603	6.688	0.147	4.875M
2020	33.296	6.887	0.157	4.834M
2005	37.105	8.973	0.241	4.135M
1990	24.035	7.073	0.257	3.398M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+48%	-48%	+2%
Other industrial combustion	+15%	+23%	-2%
Buildings	-5%	-25%	-4%
Transport	+46%	-7%	-3%
Other sectors	+91%	+25%	-5%
All sectors	+36%	-12%	-2%

Nicaragua

Fossil CO_2 emissions by sector

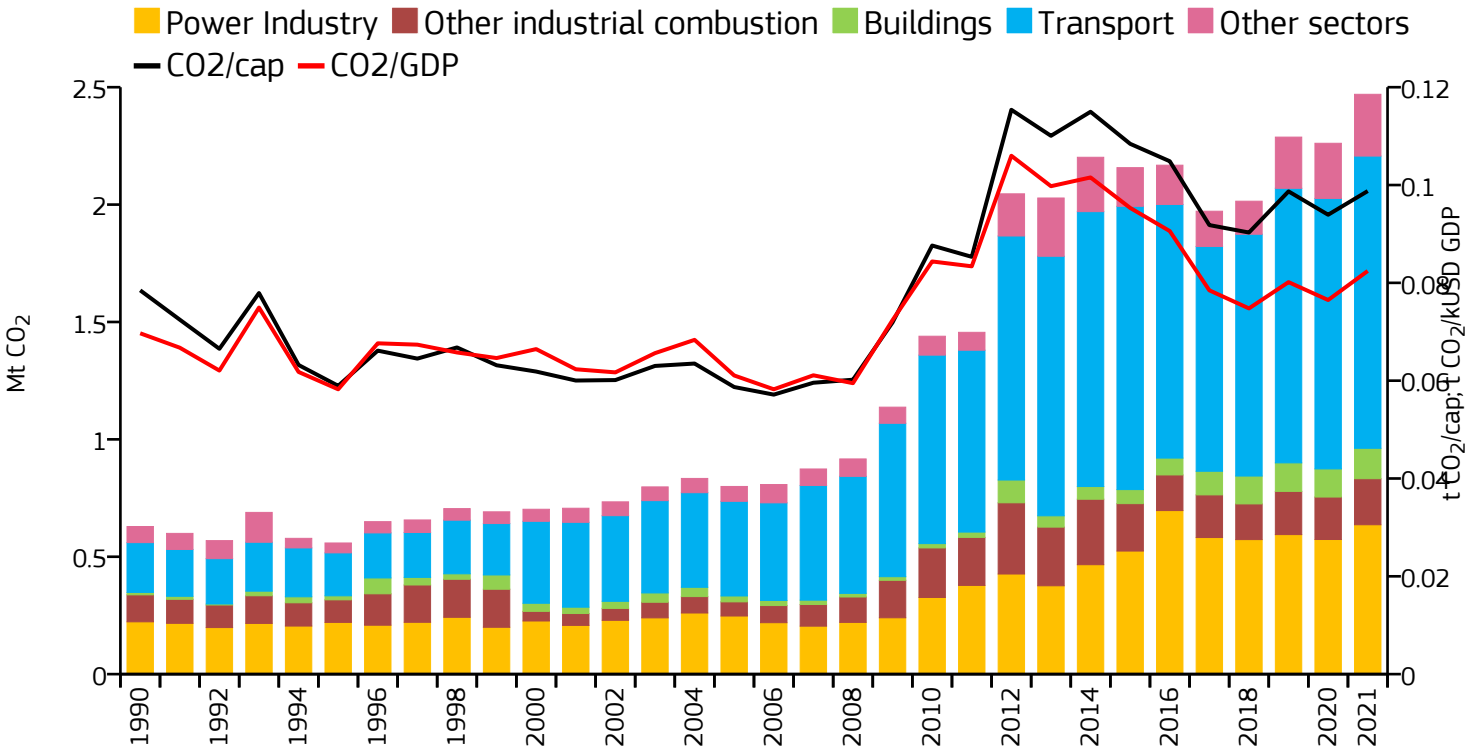


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	5.002	0.772	0.130	6.481M
2020	4.470	0.697	0.128	6.417M
2005	4.408	0.819	0.188	5.379M
1990	1.969	0.475	0.137	4.145M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+159%	-11%	+13%
Other industrial combustion	+72%	-18%	+13%
Buildings	+196%	+57%	+13%
Transport	+174%	+41%	+13%
Other sectors	+193%	+33%	+1%
All sectors	+154%	+13%	+12%

Niger

Fossil CO_2 emissions by sector

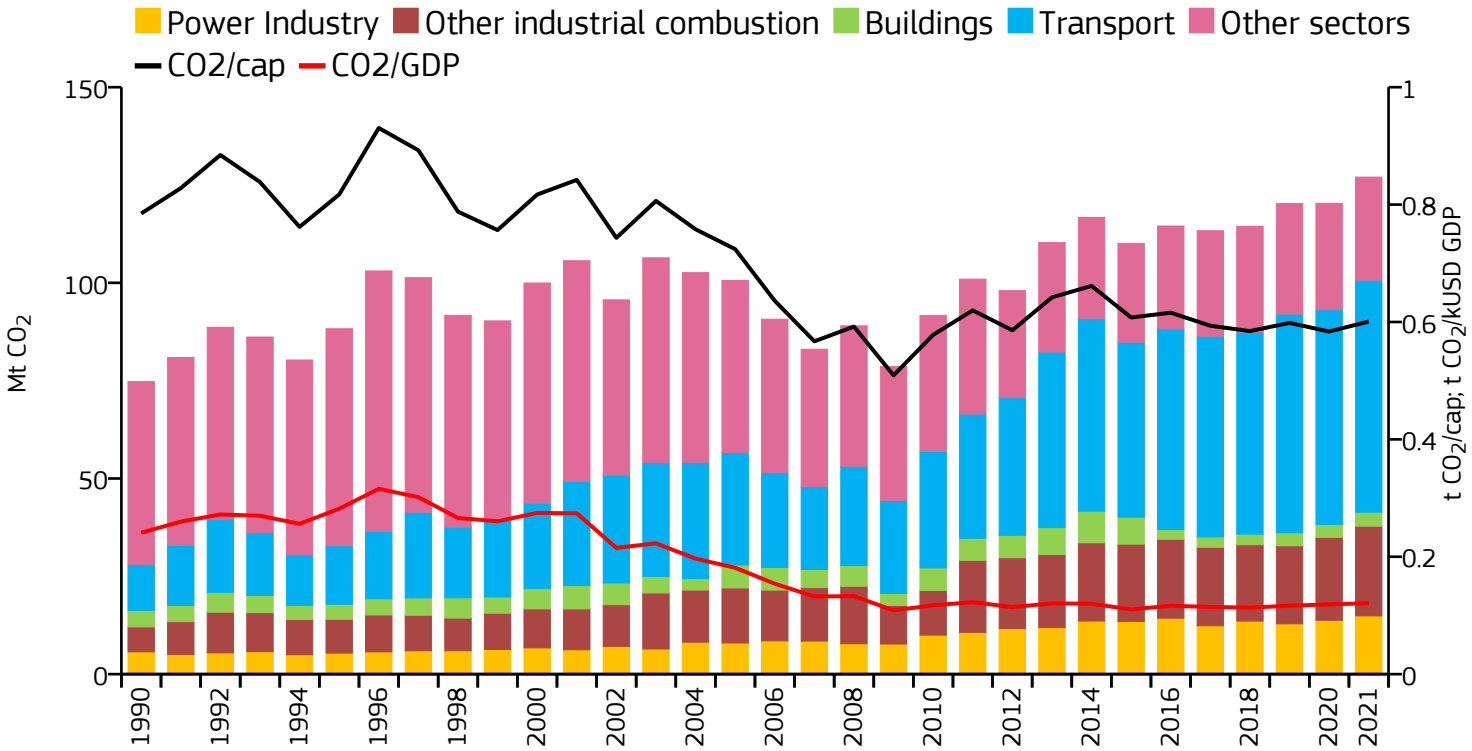


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	2.470	0.099	0.082	25.006M
2020	2.261	0.094	0.076	24.075M
2005	0.799	0.059	0.061	13.618M
1990	0.629	0.078	0.070	8.013M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+186%	+157%	+11%
Other industrial combustion	+71%	+225%	+8%
Buildings	+1151%	+418%	+8%
Transport	+487%	+209%	+8%
Other sectors	+283%	+316%	+12%
All sectors	+293%	+209%	+9%

Nigeria

Fossil CO_2 emissions by sector

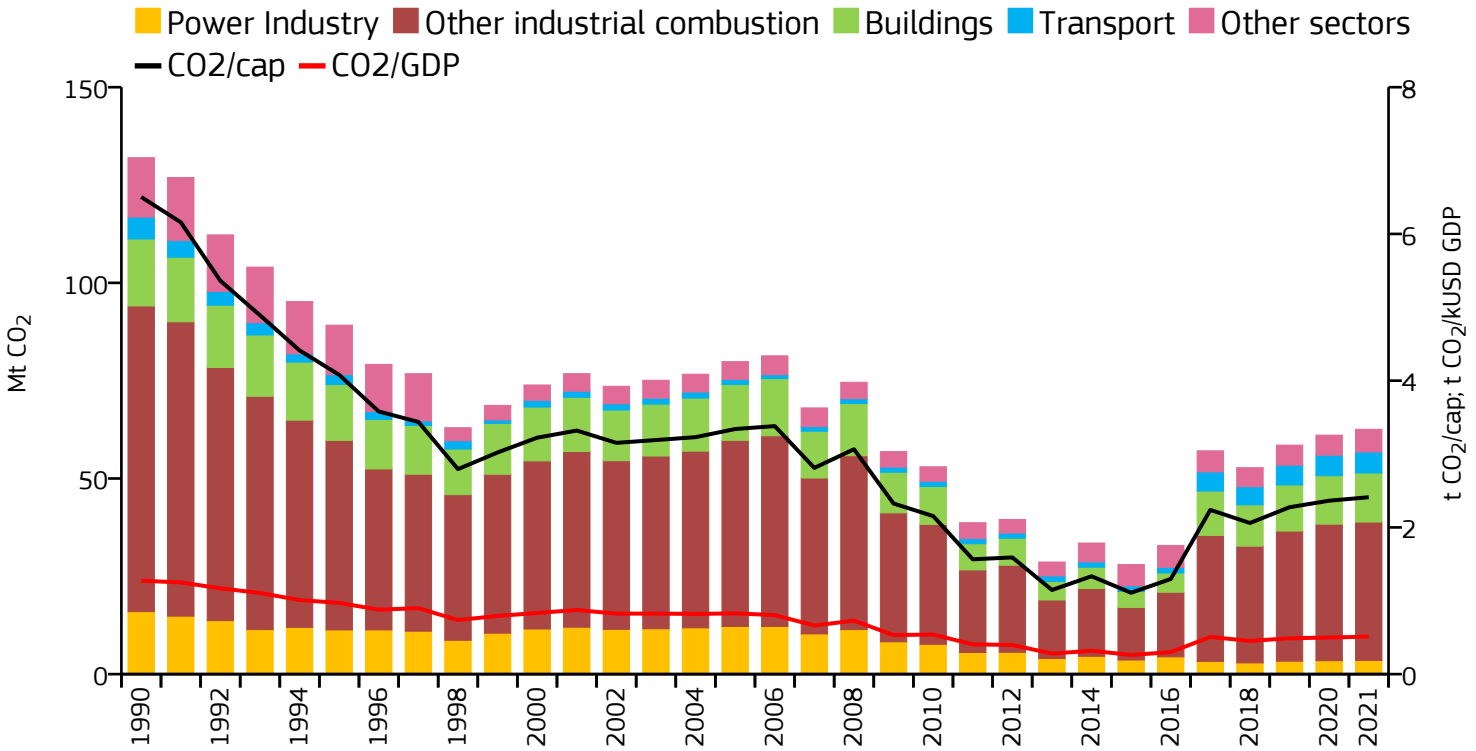


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	127.029	0.601	0.121	211.447M
2020	120.338	0.584	0.119	206.153M
2005	100.601	0.724	0.181	138.939M
1990	74.768	0.785	0.241	95.270M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +161%	↗ +87%	↗ +8%
Other industrial combustion	↗ +259%	↗ +63%	↗ +8%
Buildings	↘ -15%	↘ -39%	↗ +8%
Transport	↗ +404%	↗ +107%	↗ +8%
Other sectors	↘ -44%	↘ -40%	→ -3%
All sectors	↗ +70%	↗ +26%	↗ +6%

North Korea

Fossil CO_2 emissions by sector

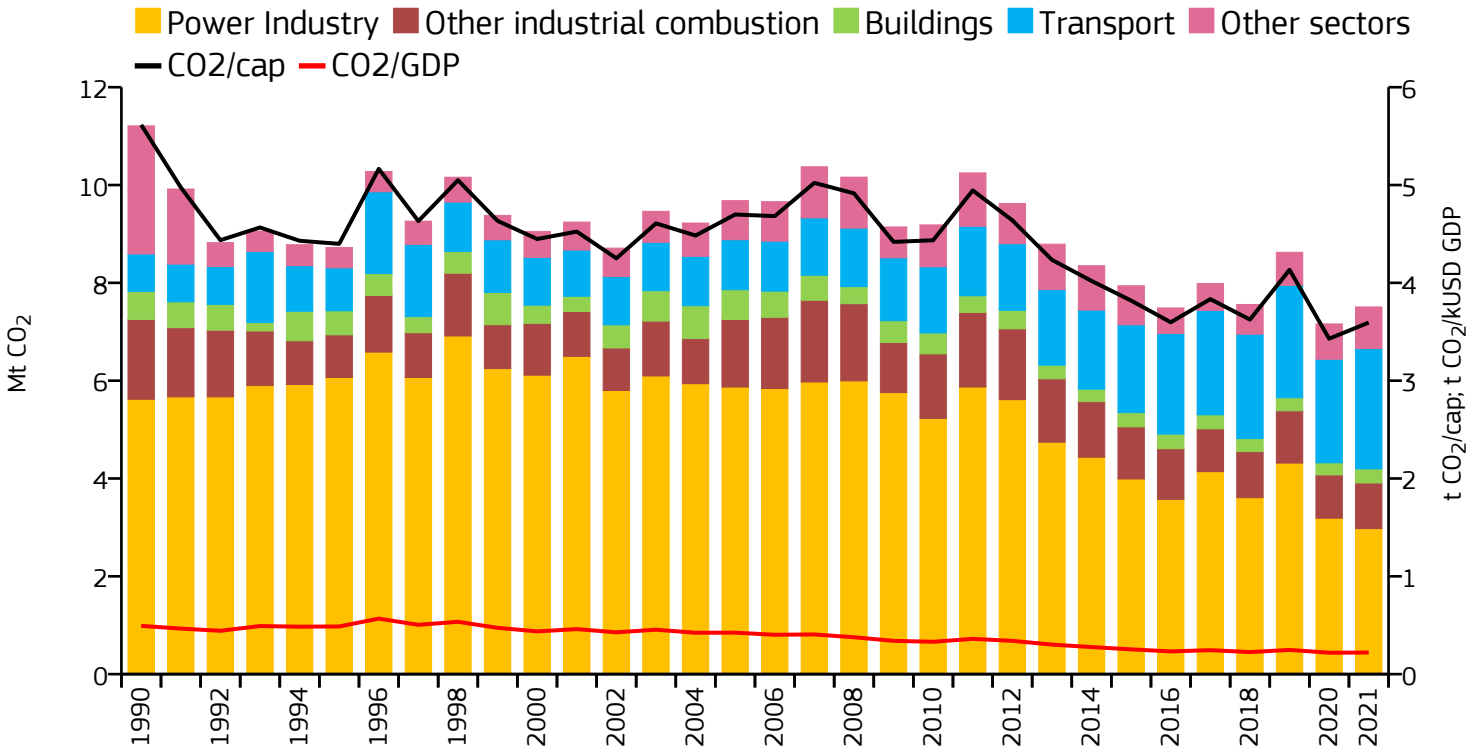


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	62.574	2.411	0.511	25.951M
2020	61.084	2.364	0.499	25.841M
2005	79.861	3.341	0.829	23.904M
1990	131.979	6.504	1.273	20.293M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-78%	-71%	+2%
Other industrial combustion	-55%	-26%	+1%
Buildings	-27%	-12%	+1%
Transport	-4%	+312%	+2%
Other sectors	-62%	+28%	+13%
All sectors	-53%	-22%	+2%

North Macedonia

Fossil CO_2 emissions by sector

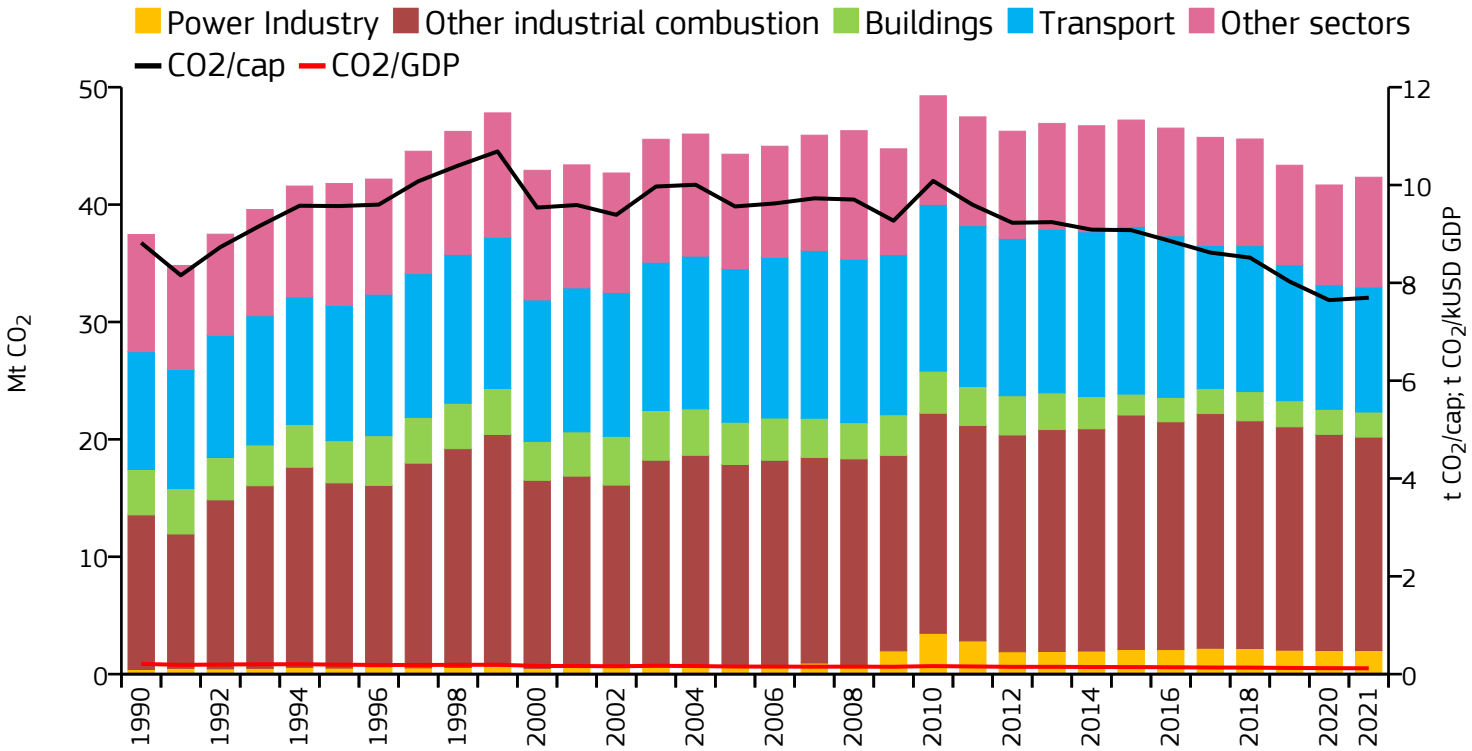


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	7.508	3.594	0.221	2.089M
2020	7.160	3.429	0.219	2.088M
2005	9.681	4.699	0.424	2.060M
1990	11.210	5.615	0.494	1.996M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-47%	-49%	-7%
Other industrial combustion	-43%	-32%	+5%
Buildings	-50%	-53%	+16%
Transport	+221%	+141%	+16%
Other sectors	-67%	+7%	+18%
All sectors	-33%	-22%	+5%

Norway

Fossil CO_2 emissions by sector

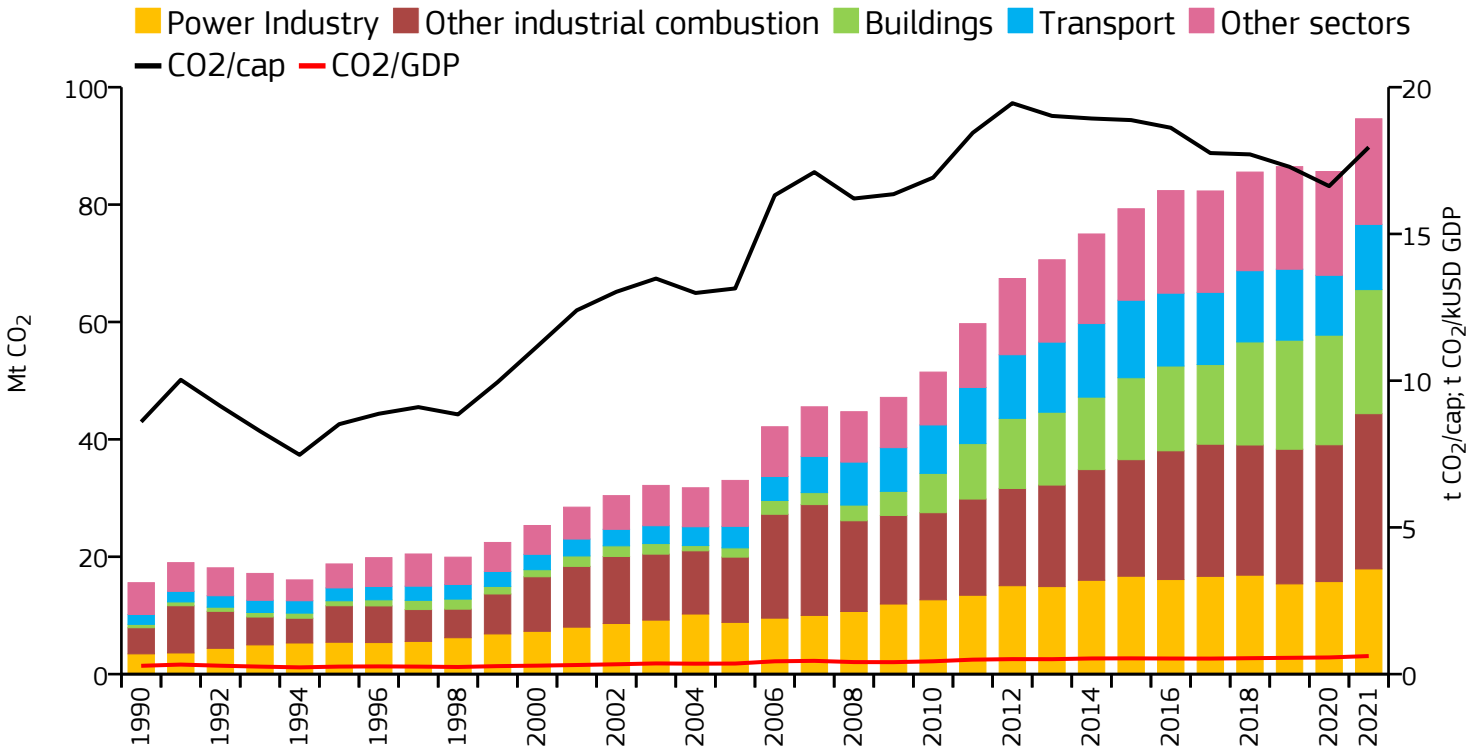


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	42.329	7.696	0.119	5.500M
2020	41.670	7.646	0.122	5.450M
2005	44.293	9.562	0.155	4.632M
1990	37.453	8.818	0.210	4.247M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+410%	+189%	0%
Other industrial combustion	+38%	+6%	-1%
Buildings	-45%	-41%	0%
Transport	+6%	-19%	0%
Other sectors	-6%	-4%	+10%
All sectors	+13%	-4%	+2%

Oman

Fossil CO_2 emissions by sector

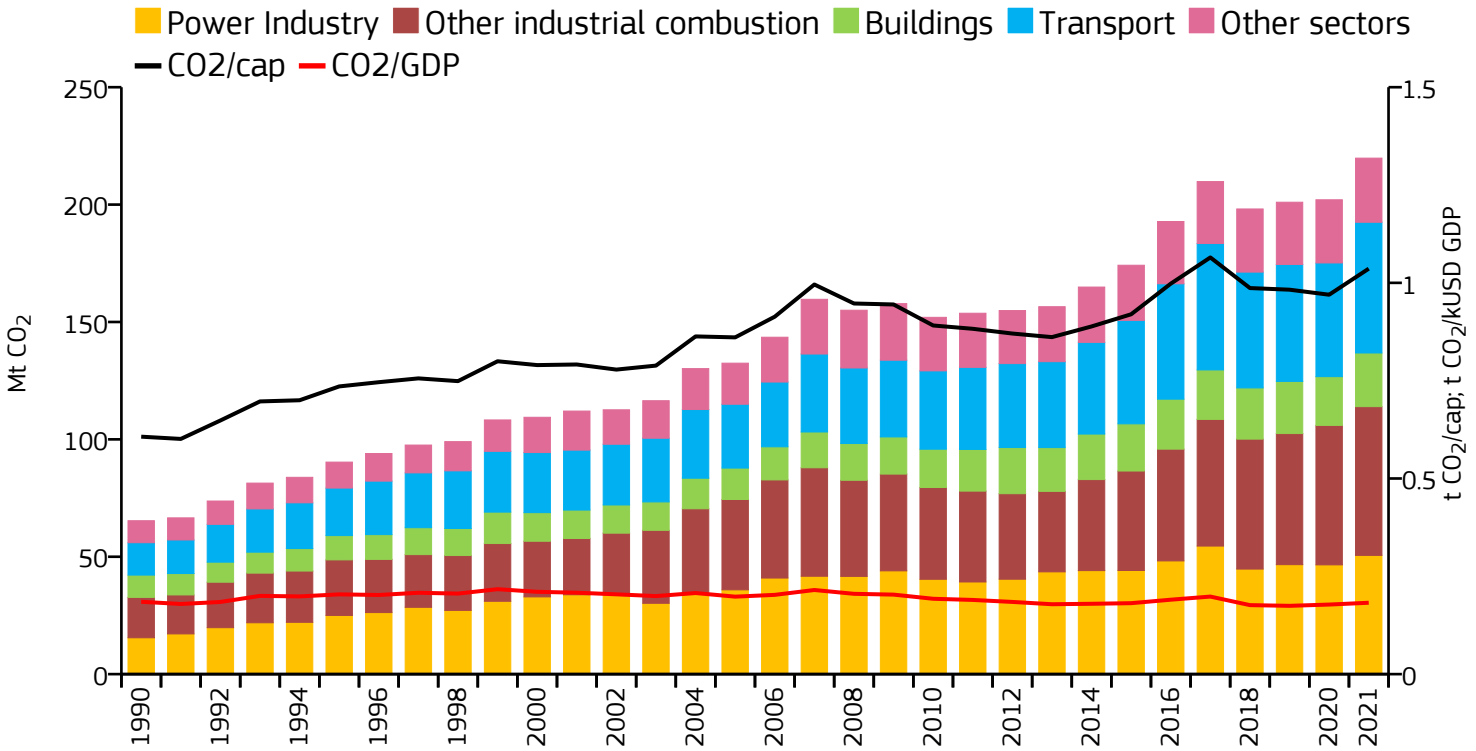


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	94.620	17.954	0.616	5.270M
2020	85.635	16.629	0.568	5.150M
2005	33.004	13.142	0.361	2.511M
1990	15.580	8.597	0.283	1.812M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +419%	↗ +103%	↗ +14%
Other industrial combustion	↗ +494%	↗ +138%	↗ +13%
Buildings	↗ +3571%	↗ +1244%	↗ +13%
Transport	↗ +560%	↗ +203%	↗ +9%
Other sectors	↗ +232%	↗ +130%	→ +2%
All sectors	↗ +507%	↗ +187%	↗ +10%

Pakistan

Fossil CO_2 emissions by sector

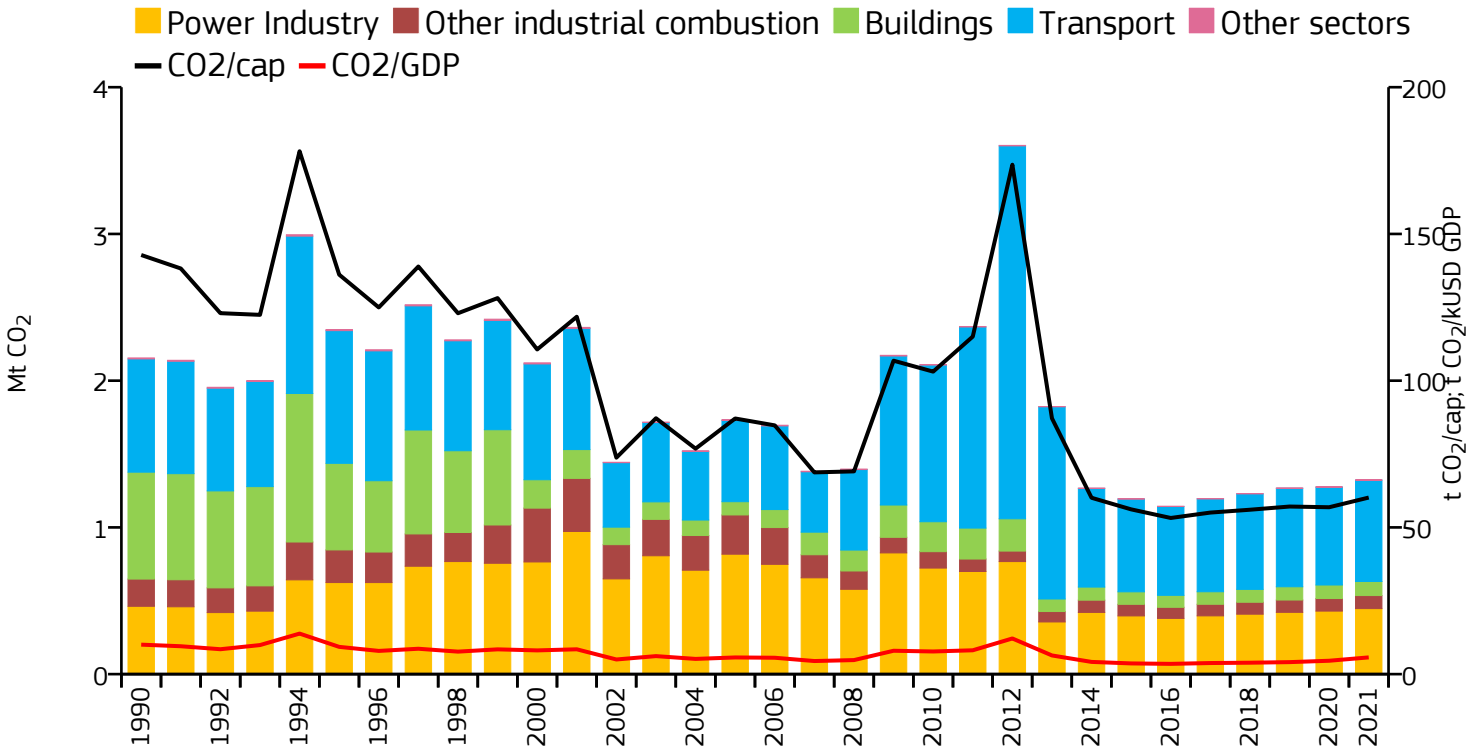


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	219.792	1.036	0.182	212.107M
2020	202.047	0.970	0.178	208.362M
2005	132.460	0.861	0.198	153.910M
1990	65.347	0.607	0.185	107.679M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+227%	+41%	+9%
Other industrial combustion	+268%	+65%	+7%
Buildings	+141%	+71%	+10%
Transport	+304%	+105%	+15%
Other sectors	+191%	+56%	+2%
All sectors	+236%	+66%	+9%

Palau

Fossil CO_2 emissions by sector

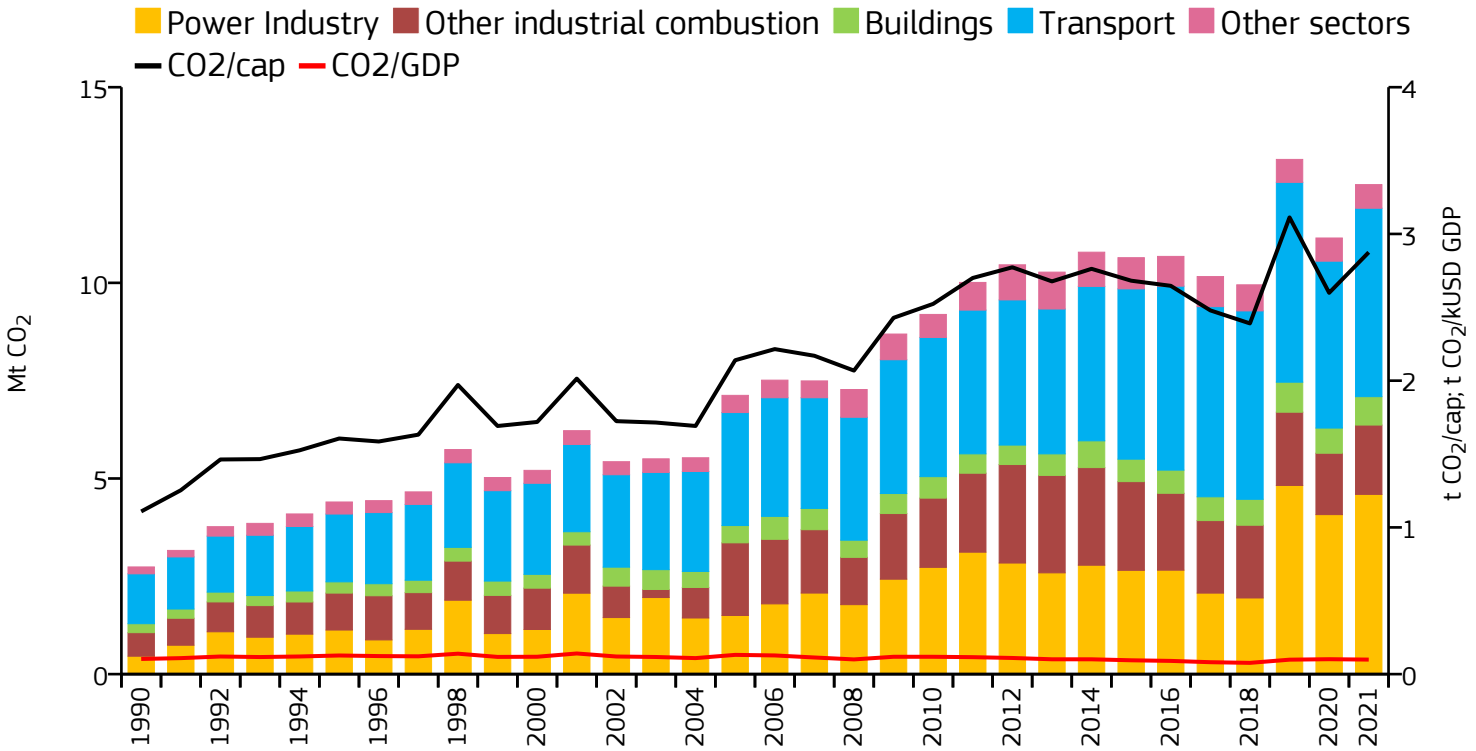


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	1.324	60.168	5.705	22.000k
2020	1.276	56.868	4.559	22.442k
2005	1.734	87.114	5.685	19.906k
1990	2.155	142.826	10.045	15.088k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	→ -3%	↘ -45%	→ +4%
Other industrial combustion	↘ -52%	↘ -67%	→ +4%
Buildings	↘ -87%	↗ +6%	→ +4%
Transport	↘ -10%	↗ +25%	→ +4%
Other sectors	↘ -80%	↘ -71%	→ -3%
All sectors	↘ -39%	↘ -24%	→ +4%

Panama

Fossil CO_2 emissions by sector

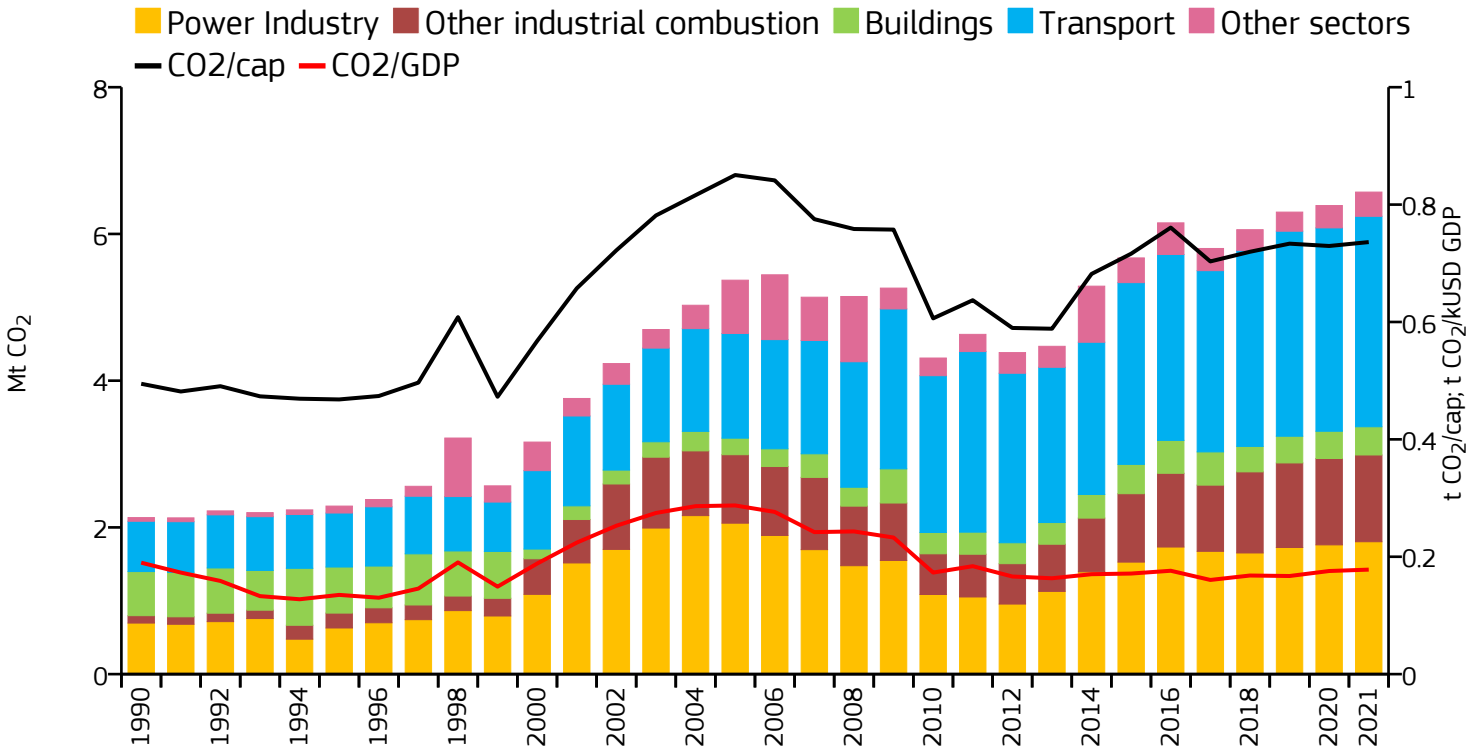


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	12.511	2.875	0.099	4.352M
2020	11.146	2.599	0.102	4.289M
2005	7.125	2.139	0.131	3.330M
1990	2.739	1.109	0.103	2.471M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +903%	↗ +207%	↗ +13%
Other industrial combustion	↗ +195%	→ -5%	↗ +13%
Buildings	↗ +216%	↗ +64%	↗ +13%
Transport	↗ +278%	↗ +67%	↗ +13%
Other sectors	↗ +243%	↗ +37%	→ +2%
All sectors	↗ +357%	↗ +76%	↗ +12%

Papua New Guinea

Fossil CO_2 emissions by sector

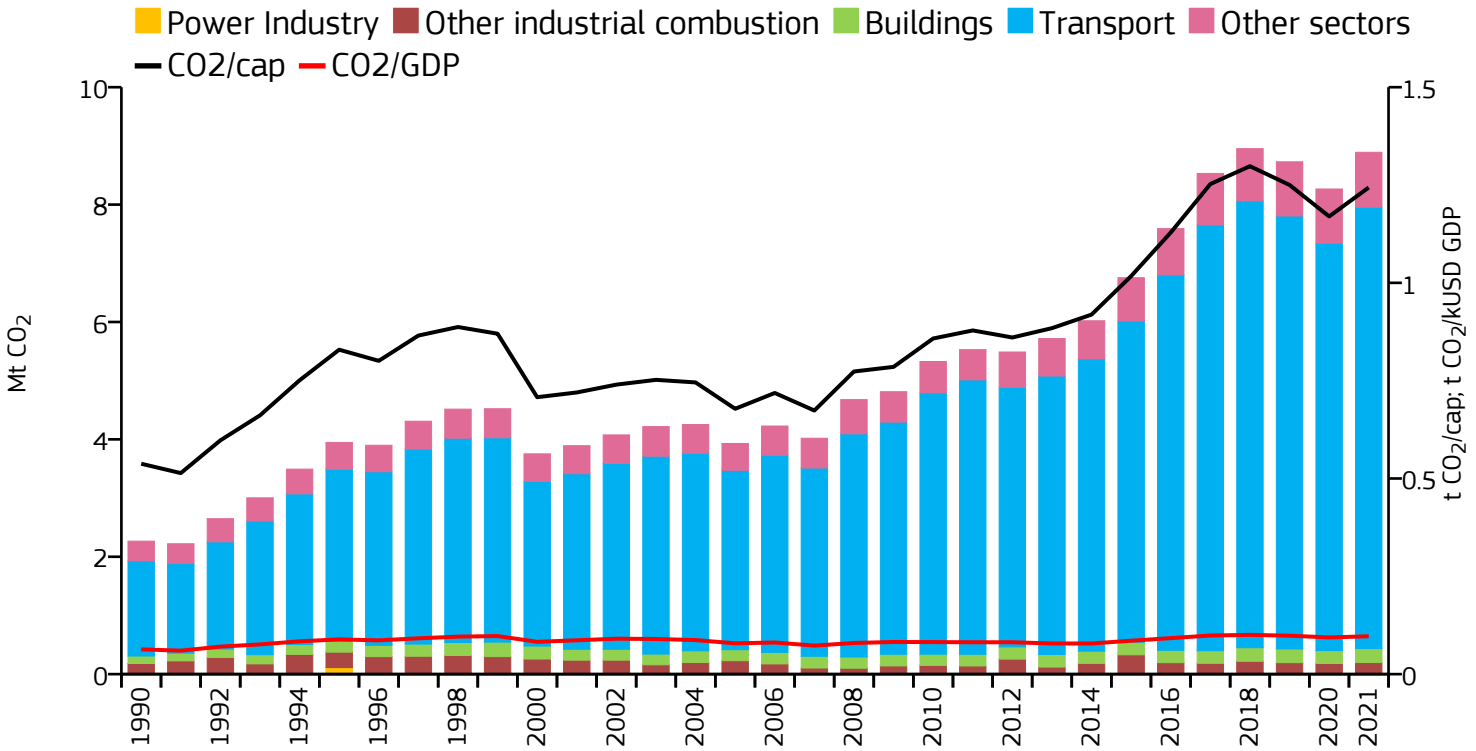


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	6.571	0.736	0.178	8.926M
2020	6.387	0.729	0.176	8.756M
2005	5.370	0.850	0.287	6.315M
1990	2.134	0.495	0.190	4.313M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +159%	↘ -12%	→ +2%
Other industrial combustion	↗ +1073%	↗ +27%	→ 0%
Buildings	↘ -36%	↗ +71%	→ +4%
Transport	↗ +318%	↗ +101%	→ +3%
Other sectors	↗ +563%	↘ -55%	↗ +8%
All sectors	↗ +208%	↗ +22%	→ +3%

Paraguay

Fossil CO_2 emissions by sector

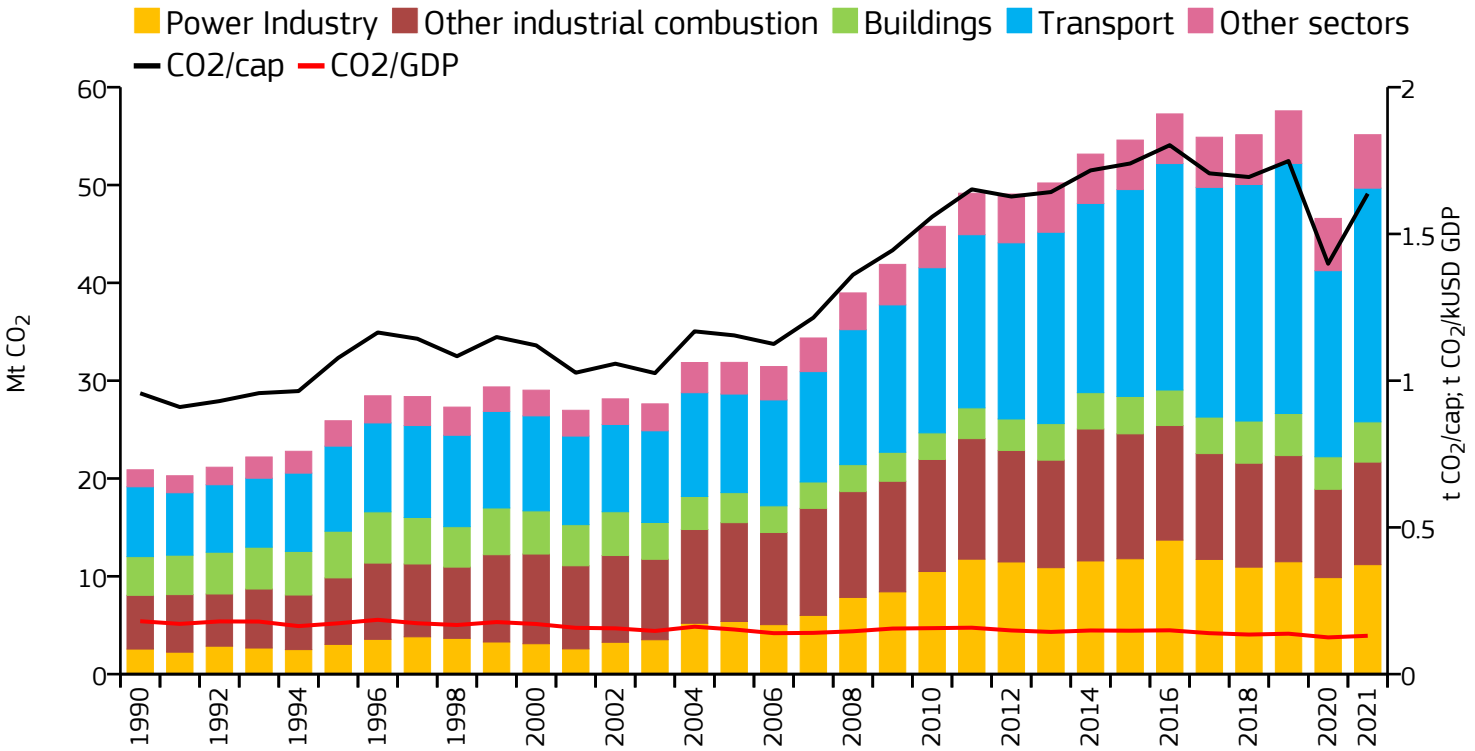


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	8.891	1.244	0.097	7.149M
2020	8.266	1.170	0.094	7.066M
2005	3.930	0.678	0.079	5.795M
1990	2.266	0.538	0.063	4.214M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-72%		+8%
Other industrial combustion	+12%	-15%	+9%
Buildings	+87%	+27%	+8%
Transport	+364%	+146%	+8%
Other sectors	+179%	+105%	+1%
All sectors	+292%	+126%	+8%

Peru

Fossil CO_2 emissions by sector

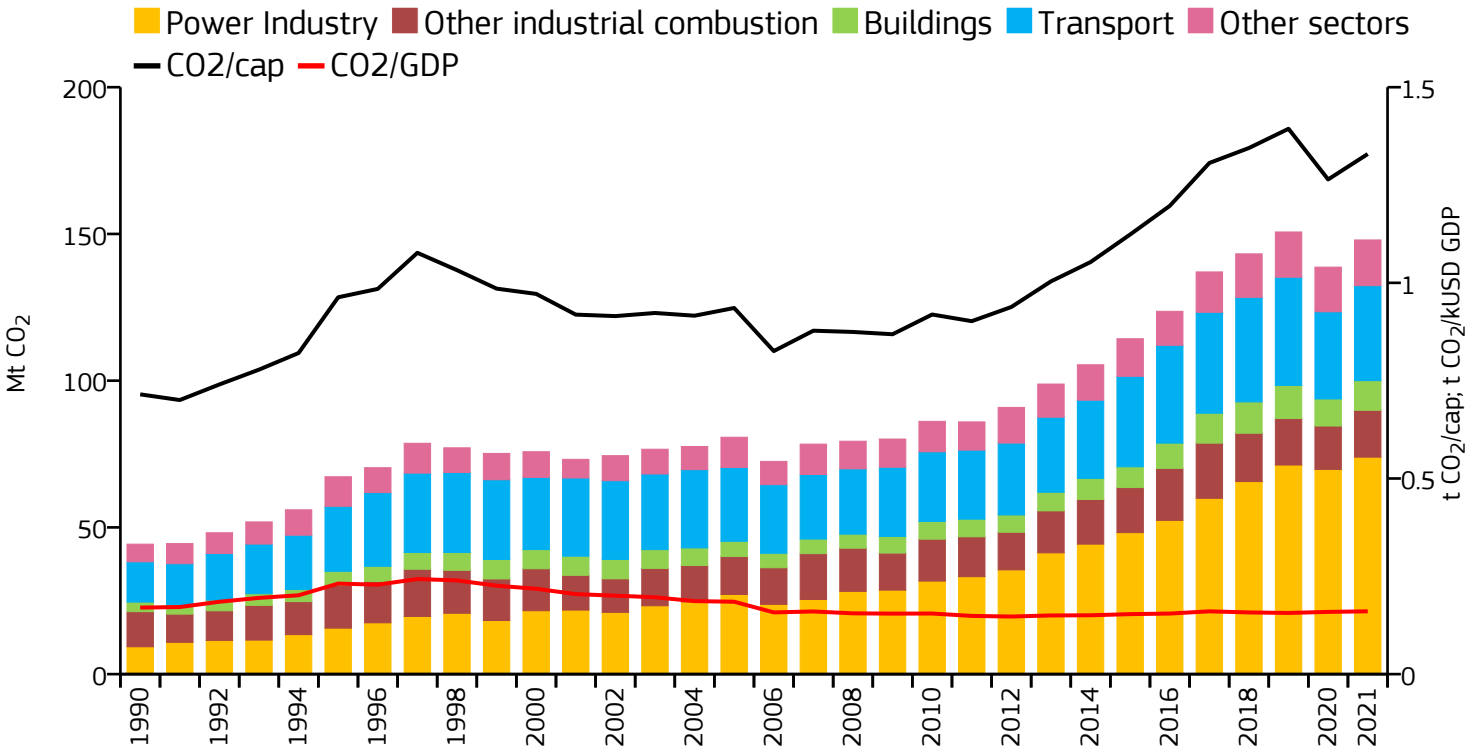


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	55.144	1.637	0.131	33.686M
2020	46.587	1.399	0.125	33.312M
2005	31.871	1.154	0.152	27.610M
1990	20.889	0.957	0.180	21.827M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +337%	↗ +108%	↗ +13%
Other industrial combustion	↗ +91%	→ +4%	↗ +16%
Buildings	→ +4%	↗ +34%	↗ +24%
Transport	↗ +235%	↗ +137%	↗ +26%
Other sectors	↗ +214%	↗ +69%	→ +2%
All sectors	↗ +164%	↗ +73%	↗ +18%

Philippines

Fossil CO_2 emissions by sector

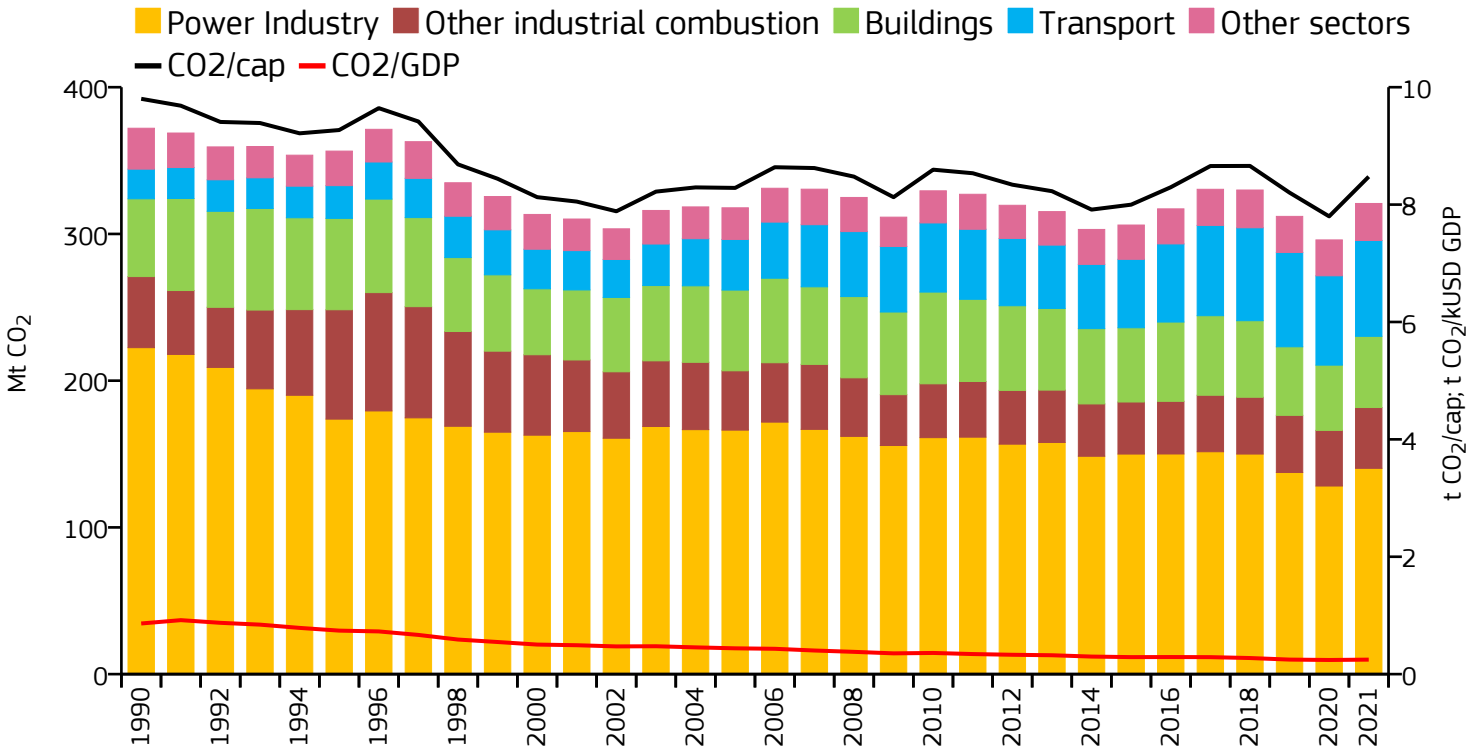


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	147.956	1.329	0.161	111.303M
2020	138.696	1.264	0.159	109.703M
2005	80.730	0.936	0.185	86.274M
1990	44.293	0.715	0.170	61.947M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+694%	+172%	+6%
Other industrial combustion	+33%	+23%	+8%
Buildings	+210%	+95%	+10%
Transport	+136%	+29%	+9%
Other sectors	+159%	+51%	+2%
All sectors	+234%	+83%	+7%

Poland

Fossil CO_2 emissions by sector

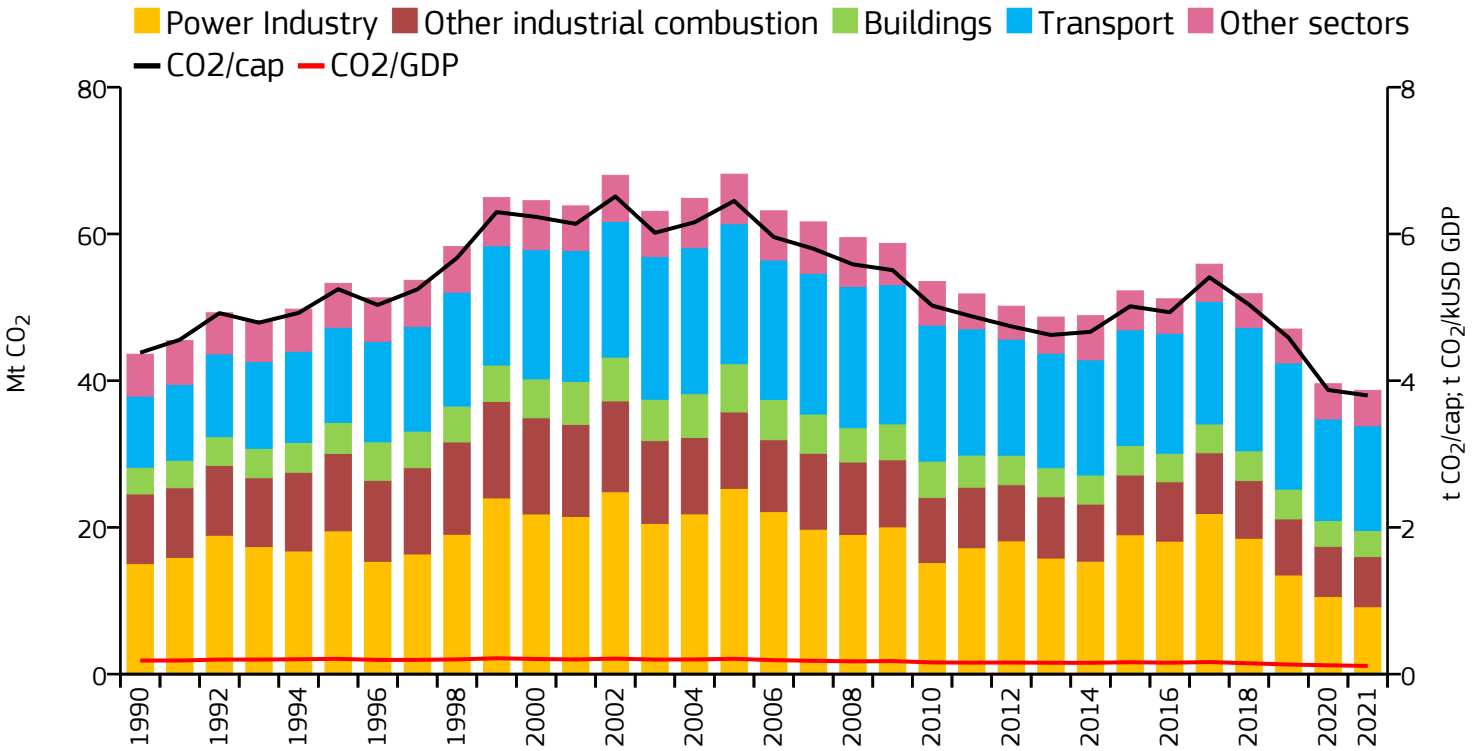


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	320.768	8.476	0.247	37.846M
2020	295.931	7.800	0.241	37.942M
2005	317.813	8.284	0.440	38.363M
1990	372.044	9.802	0.863	37.955M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-37%	-16%	+9%
Other industrial combustion	-15%	+2%	+9%
Buildings	-8%	-12%	+9%
Transport	+223%	+89%	+7%
Other sectors	-9%	+17%	+3%
All sectors	-14%	+1%	+8%

Portugal

Fossil CO_2 emissions by sector

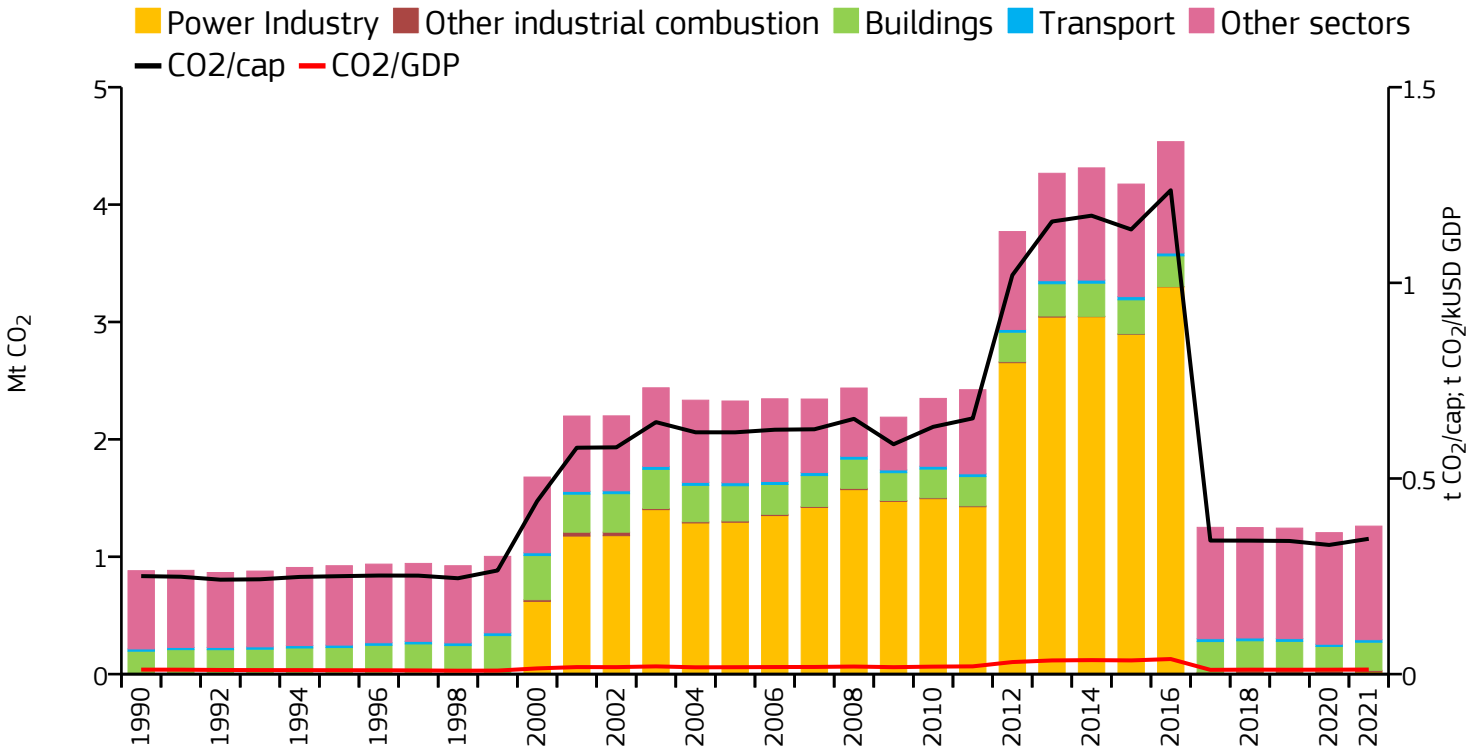


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	38.677	3.798	0.112	10.183M
2020	39.579	3.873	0.120	10.218M
2005	68.146	6.450	0.209	10.566M
1990	43.612	4.382	0.185	9.953M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-39%	-64%	-13%
Other industrial combustion	-28%	-34%	0%
Buildings	-3%	-46%	+1%
Transport	+47%	-25%	+3%
Other sectors	-16%	-29%	+1%
All sectors	-11%	-43%	-2%

Puerto Rico

Fossil CO_2 emissions by sector

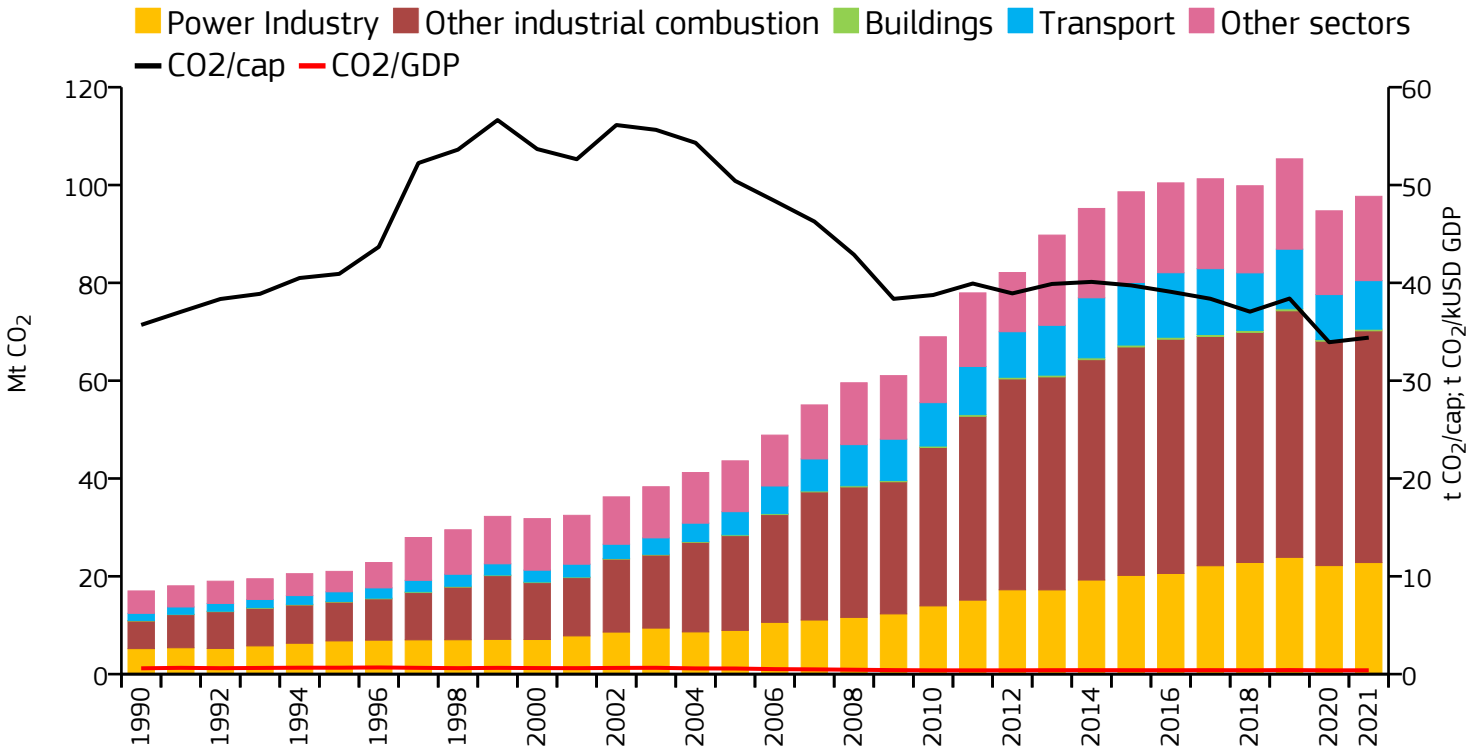


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	1.261	0.346	0.012	3.646M
2020	1.205	0.330	0.011	3.651M
2005	2.327	0.618	0.018	3.765M
1990	0.881	0.251	0.012	3.518M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry		-99%	+30%
Other industrial combustion		+28%	+30%
Buildings	+22%	-20%	+14%
Transport	+11%	-17%	+11%
Other sectors	+45%	+39%	+2%
All sectors	+43%	-46%	+5%

Qatar

Fossil CO_2 emissions by sector

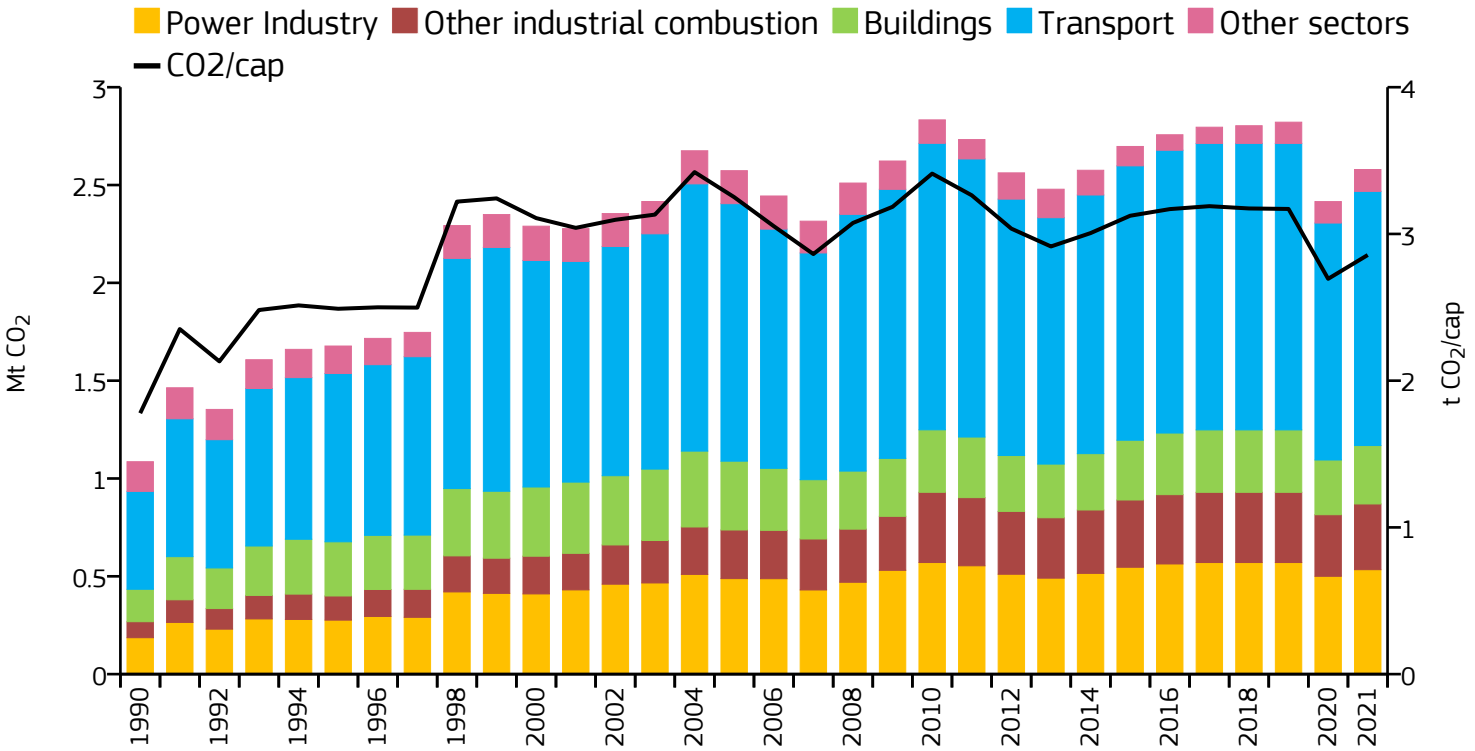


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	97.694	34.399	0.392	2.840M
2020	94.728	33.931	0.386	2.792M
2005	43.610	50.424	0.574	864.863k
1990	17.010	35.701	0.596	476.445k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+337%	+155%	+3%
Other industrial combustion	+739%	+145%	+3%
Buildings	+258%	+106%	+8%
Transport	+573%	+110%	+8%
Other sectors	+277%	+66%	+1%
All sectors	+474%	+124%	+3%

Réunion

Fossil CO_2 emissions by sector

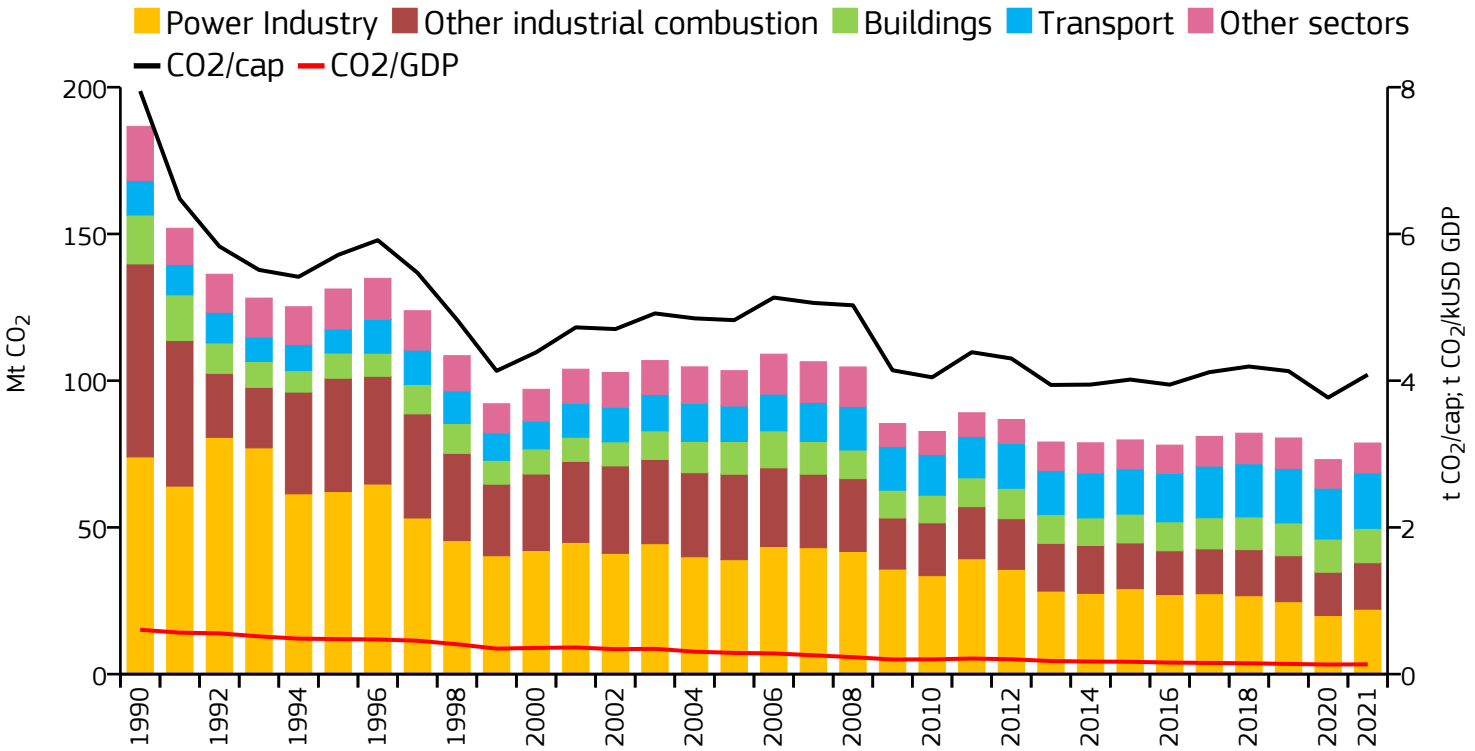


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	2.579	2.856	n/a	903.000k
2020	2.415	2.694	n/a	896.536k
2005	2.573	3.251	n/a	791.598k
1990	1.086	1.778	n/a	610.582k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +187%	↗ +9%	↗ +7%
Other industrial combustion	↗ +311%	↗ +35%	↗ +7%
Buildings	↗ +80%	↘ -15%	↗ +7%
Transport	↗ +160%	→ -1%	↗ +7%
Other sectors	↘ -26%	↘ -34%	→ +2%
All sectors	↗ +138%	→ 0%	↗ +7%

Romania

Fossil CO_2 emissions by sector

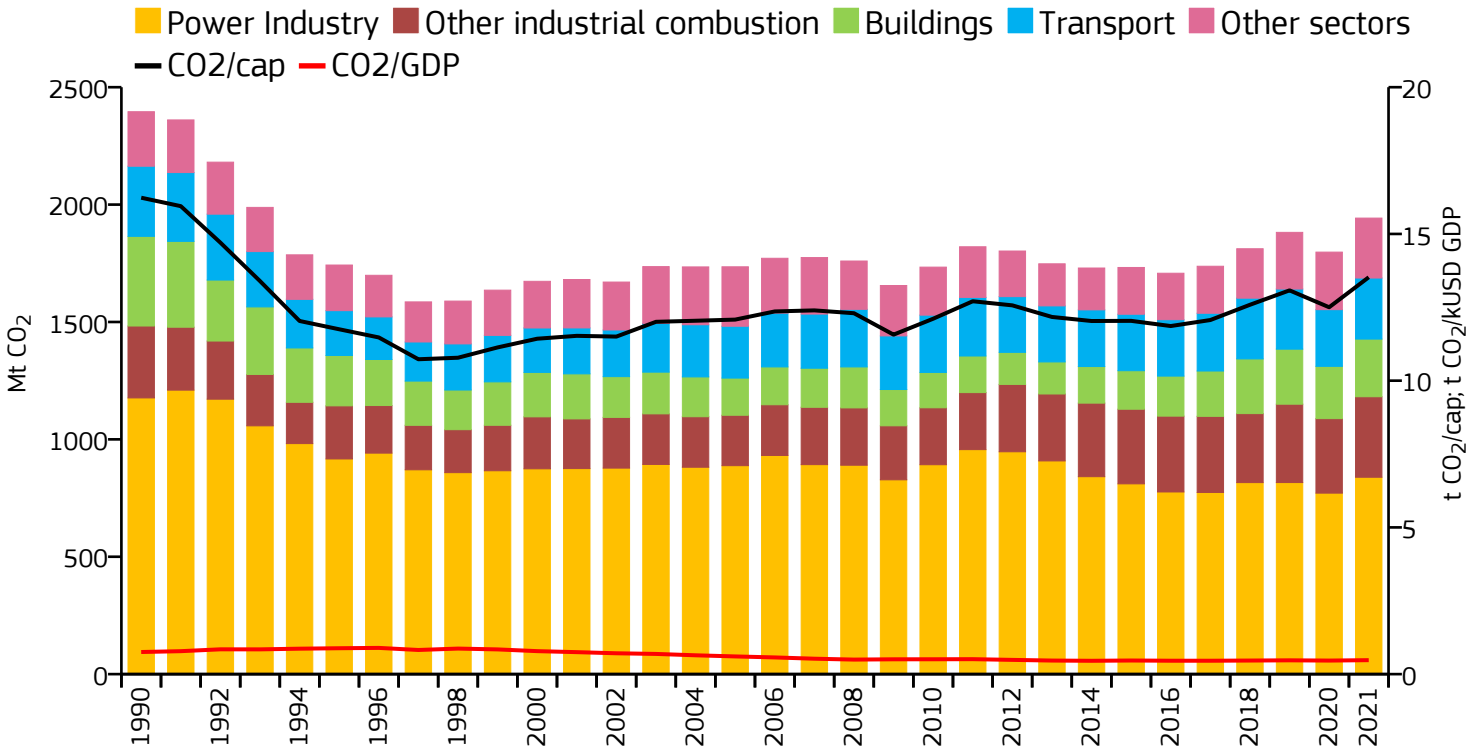


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	78.747	4.081	0.134	19.295M
2020	73.081	3.769	0.131	19.388M
2005	103.406	4.825	0.289	21.431M
1990	186.670	7.947	0.605	23.489M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-70%	-43%	+11%
Other industrial combustion	-76%	-46%	+7%
Buildings	-30%	+5%	+4%
Transport	+61%	+56%	+9%
Other sectors	-45%	-15%	+5%
All sectors	-58%	-24%	+8%

Russia

Fossil CO_2 emissions by sector

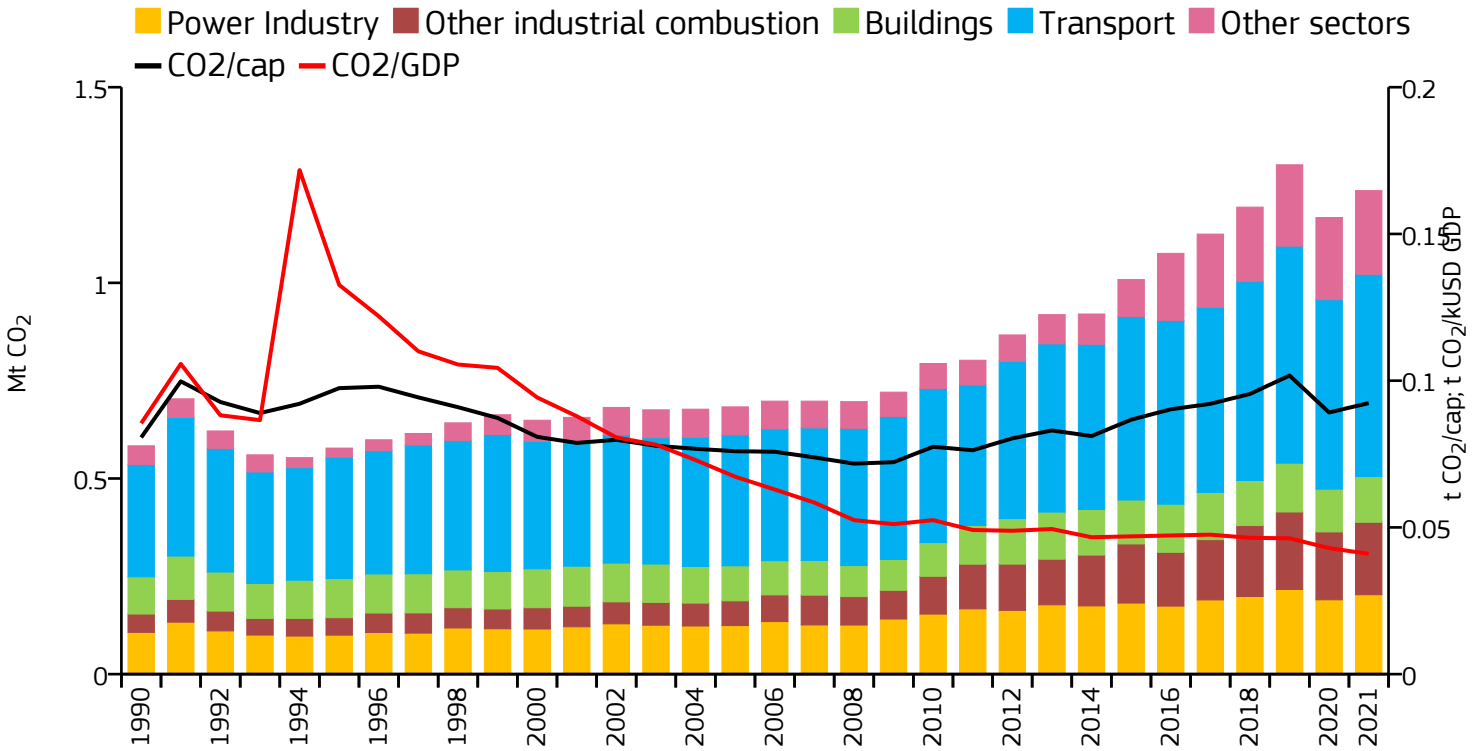


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	1942.535	13.524	0.476	143.636M
2020	1797.595	12.502	0.462	143.787M
2005	1735.027	12.081	0.603	143.618M
1990	2395.644	16.235	0.754	147.564M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-29%	-6%	+9%
Other industrial combustion	+12%	+60%	+8%
Buildings	-36%	+55%	+10%
Transport	-13%	+18%	+8%
Other sectors	+10%	+1%	+4%
All sectors	-19%	+12%	+8%

Rwanda

Fossil CO_2 emissions by sector

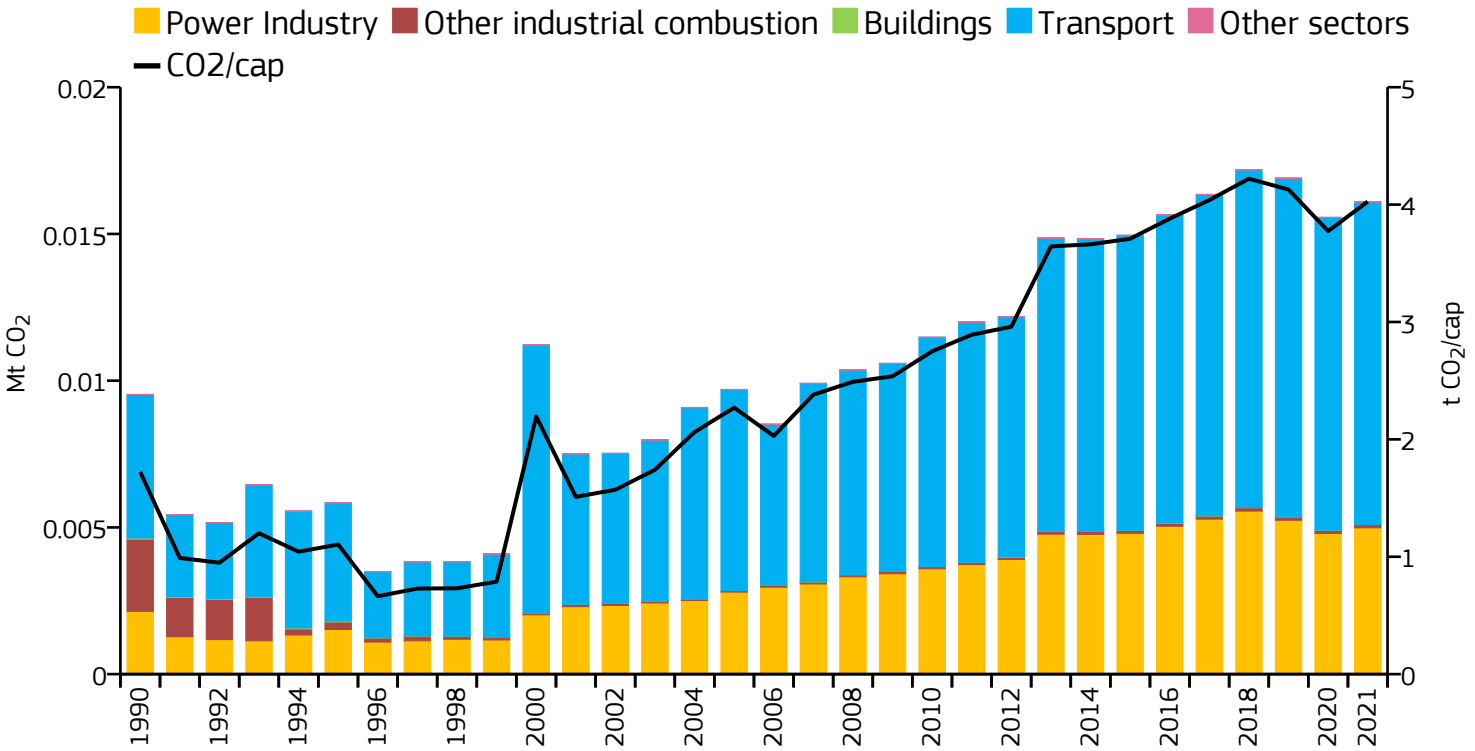


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	1.236	0.092	0.041	13.379M
2020	1.167	0.089	0.043	13.087M
2005	0.683	0.076	0.067	8.992M
1990	0.584	0.081	0.085	7.236M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+90%	+64%	+7%
Other industrial combustion	+295%	+193%	+7%
Buildings	+23%	+30%	+7%
Transport	+80%	+55%	+7%
Other sectors	+345%	+199%	+2%
All sectors	+112%	+81%	+6%

Saint Helena, Ascension and Tristan

Fossil CO_2 emissions by sector

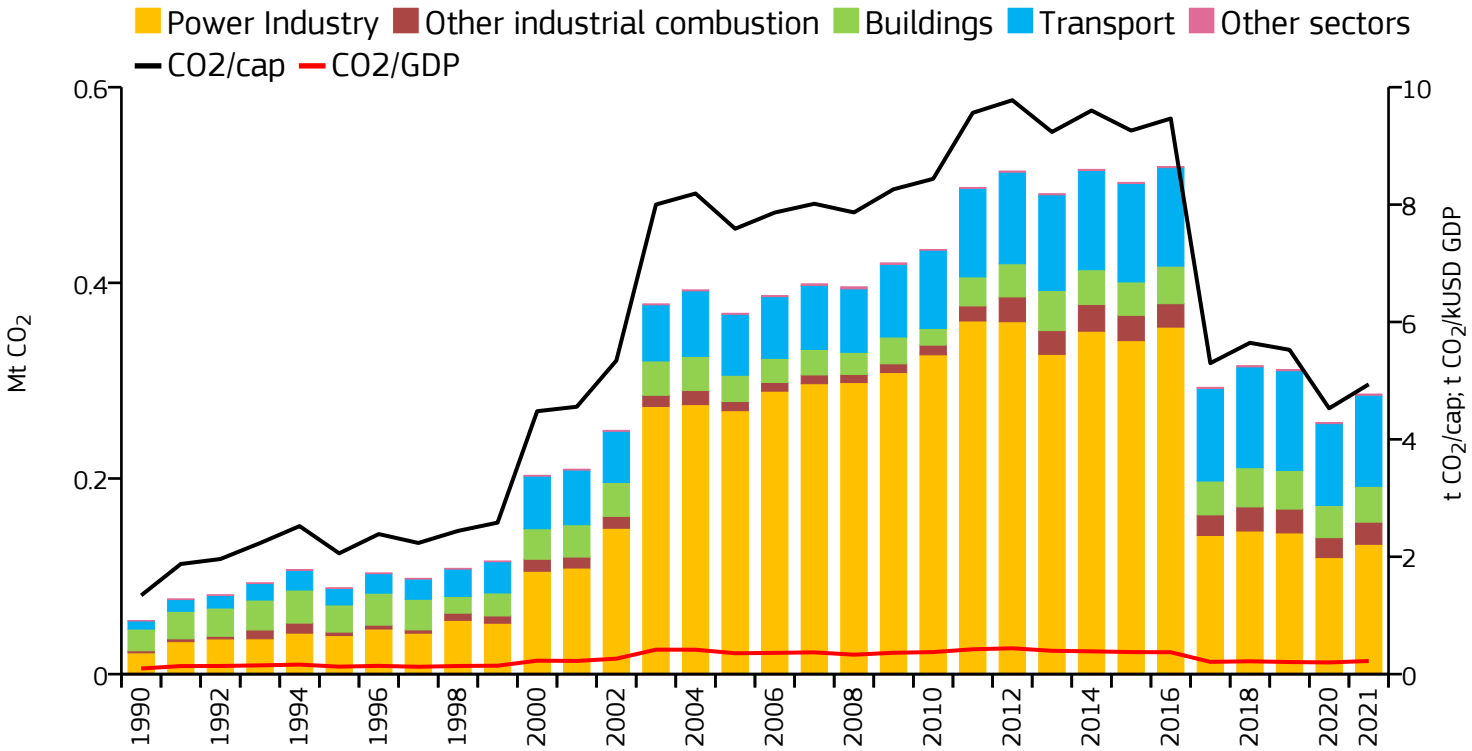


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.016	4.025	n/a	4.000k
2020	0.016	3.774	n/a	4.126k
2005	0.010	2.270	n/a	4.275k
1990	0.010	1.722	n/a	5.535k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+133%	+78%	+4%
Other industrial combustion	-95%	+114%	+3%
Buildings	-92%	+15%	+3%
Transport	+125%	+61%	+3%
Other sectors	+1416%	+22%	+3%
All sectors	+69%	+66%	+3%

Saint Kitts and Nevis

Fossil CO_2 emissions by sector

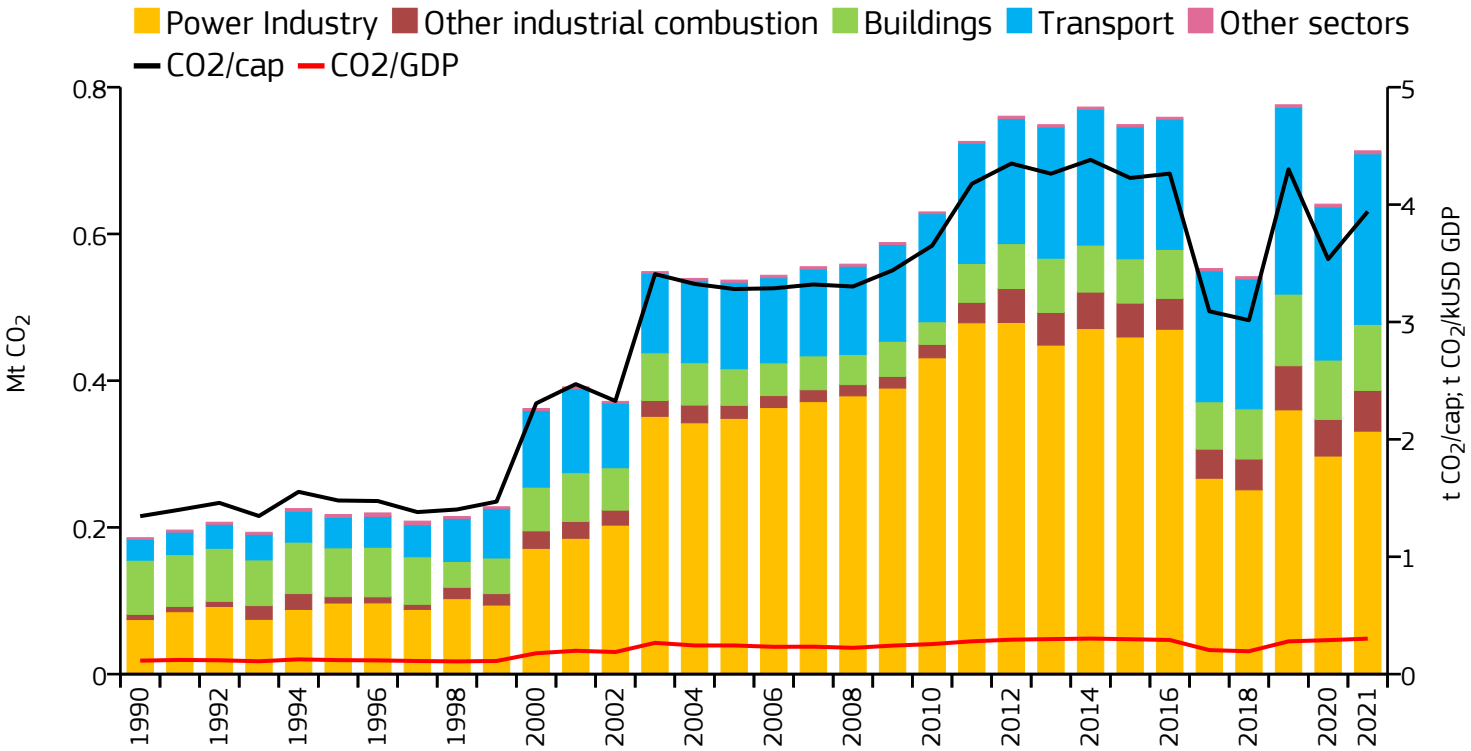


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.286	4.937	0.224	58.000k
2020	0.257	4.528	0.199	56.813k
2005	0.369	7.588	0.356	48.611k
1990	0.055	1.341	0.096	40.834k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +510%	↘ -51%	↗ +11%
Other industrial combustion	↗ +993%	↗ +143%	↗ +11%
Buildings	↗ +65%	↗ +36%	↗ +11%
Transport	↗ +1024%	↗ +49%	↗ +11%
Other sectors	↗ +196%	↗ +18%	→ 0%
All sectors	↗ +423%	↘ -22%	↗ +11%

Saint Lucia

Fossil CO_2 emissions by sector

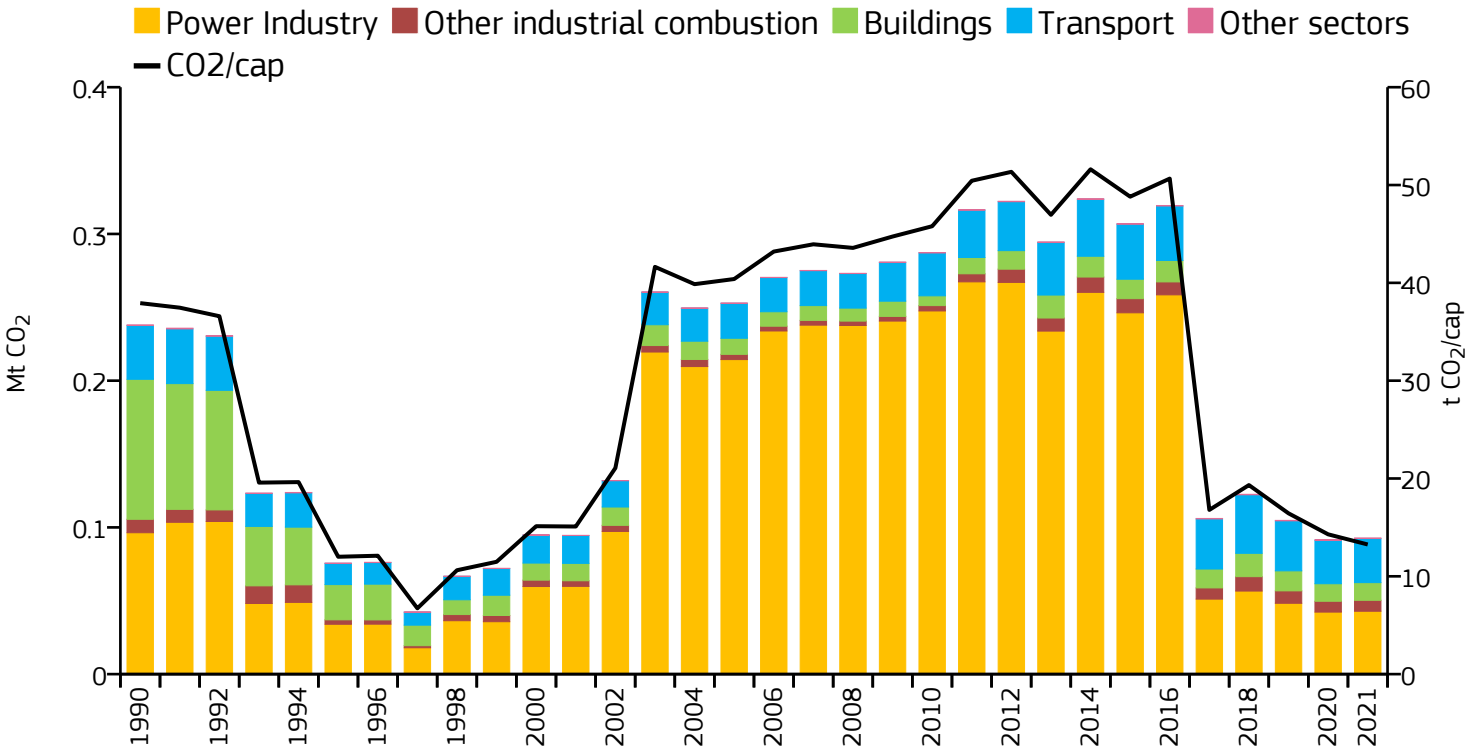


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.713	3.941	0.302	181.000k
2020	0.641	3.535	0.290	181.203k
2005	0.537	3.281	0.244	163.714k
1990	0.186	1.345	0.115	138.185k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +345%	→ -5%	↗ +11%
Other industrial combustion	↗ +685%	↗ +215%	↗ +11%
Buildings	↗ +22%	↗ +80%	↗ +11%
Transport	↗ +721%	↗ +97%	↗ +11%
Other sectors	↗ +72%	↗ +38%	→ +3%
All sectors	↗ +284%	↗ +33%	↗ +11%

Saint Pierre and Miquelon

Fossil CO_2 emissions by sector

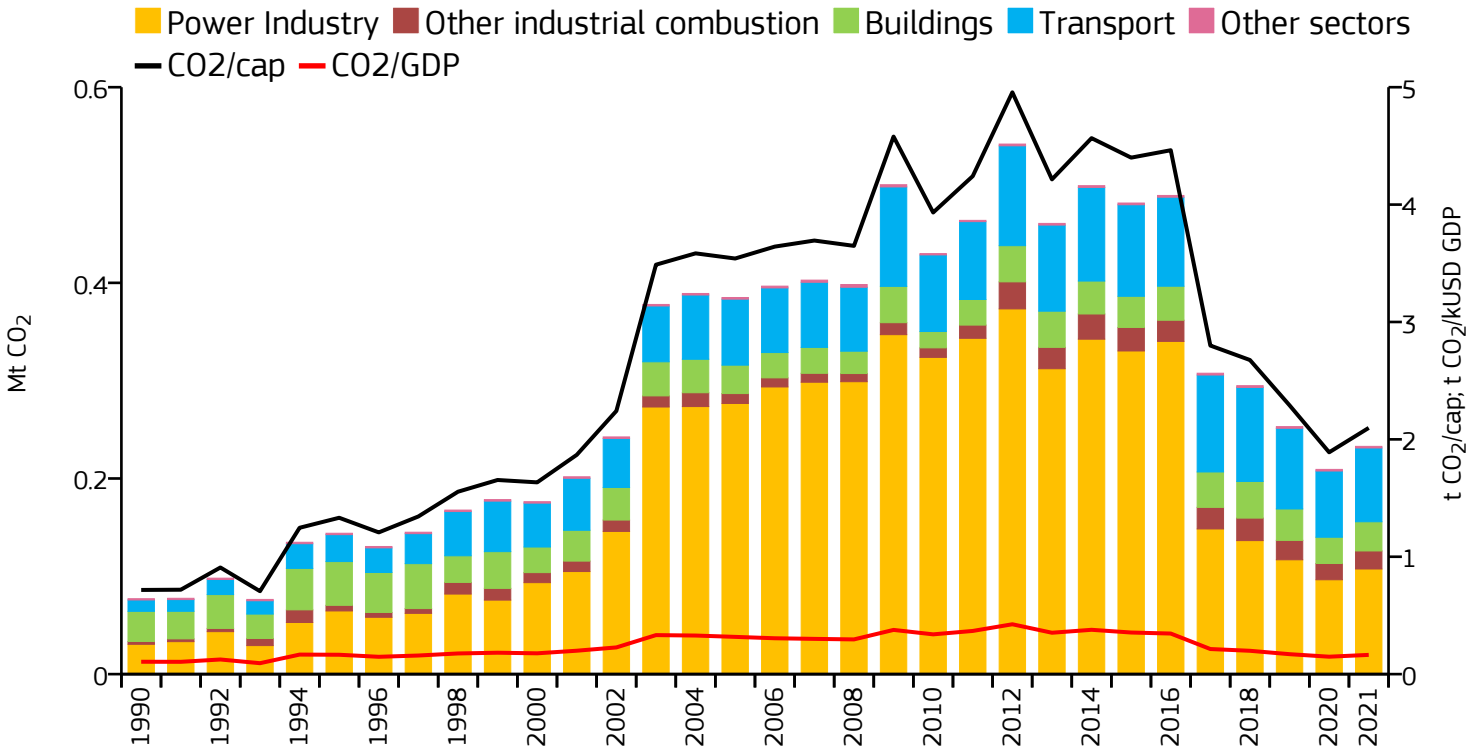


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.093	13.253	n/a	7.000k
2020	0.092	14.291	n/a	6.407k
2005	0.253	40.391	n/a	6.261k
1990	0.238	37.926	n/a	6.276k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-56%	-80%	+1%
Other industrial combustion	-19%	+109%	+1%
Buildings	-87%	+10%	+1%
Transport	-18%	+26%	+2%
Other sectors	-29%	+80%	-3%
All sectors	-61%	-63%	+1%

Saint Vincent and the Grenadines

Fossil CO_2 emissions by sector

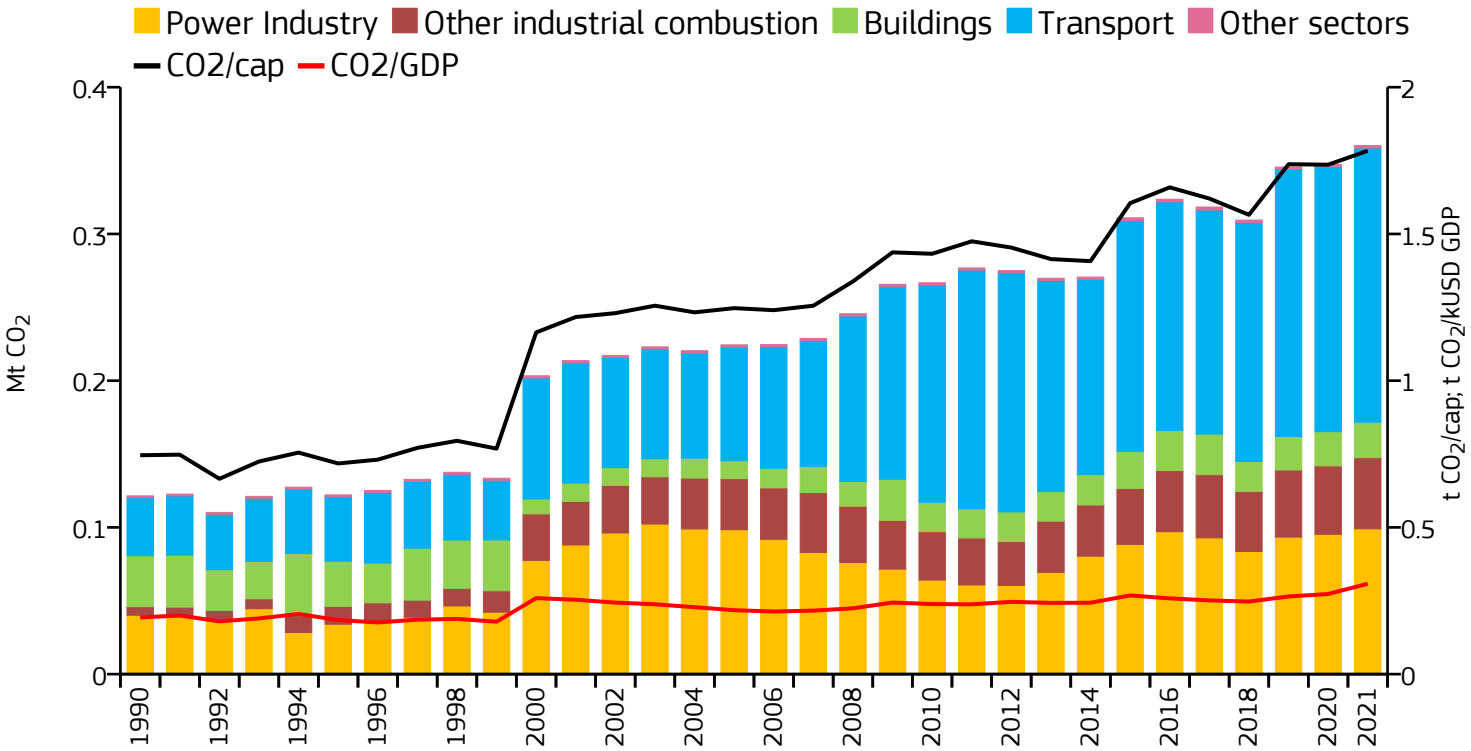


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.233	2.098	0.164	111.000k
2020	0.209	1.890	0.148	110.757k
2005	0.385	3.541	0.317	108.744k
1990	0.077	0.717	0.105	107.505k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +252%	↘ -61%	↗ +11%
Other industrial combustion	↗ +536%	↗ +83%	↗ +11%
Buildings	→ -3%	→ +3%	↗ +11%
Transport	↗ +550%	↗ +12%	↗ +11%
Other sectors	↗ +26%	→ -2%	→ -1%
All sectors	↗ +202%	↘ -40%	↗ +11%

Samoa

Fossil CO_2 emissions by sector

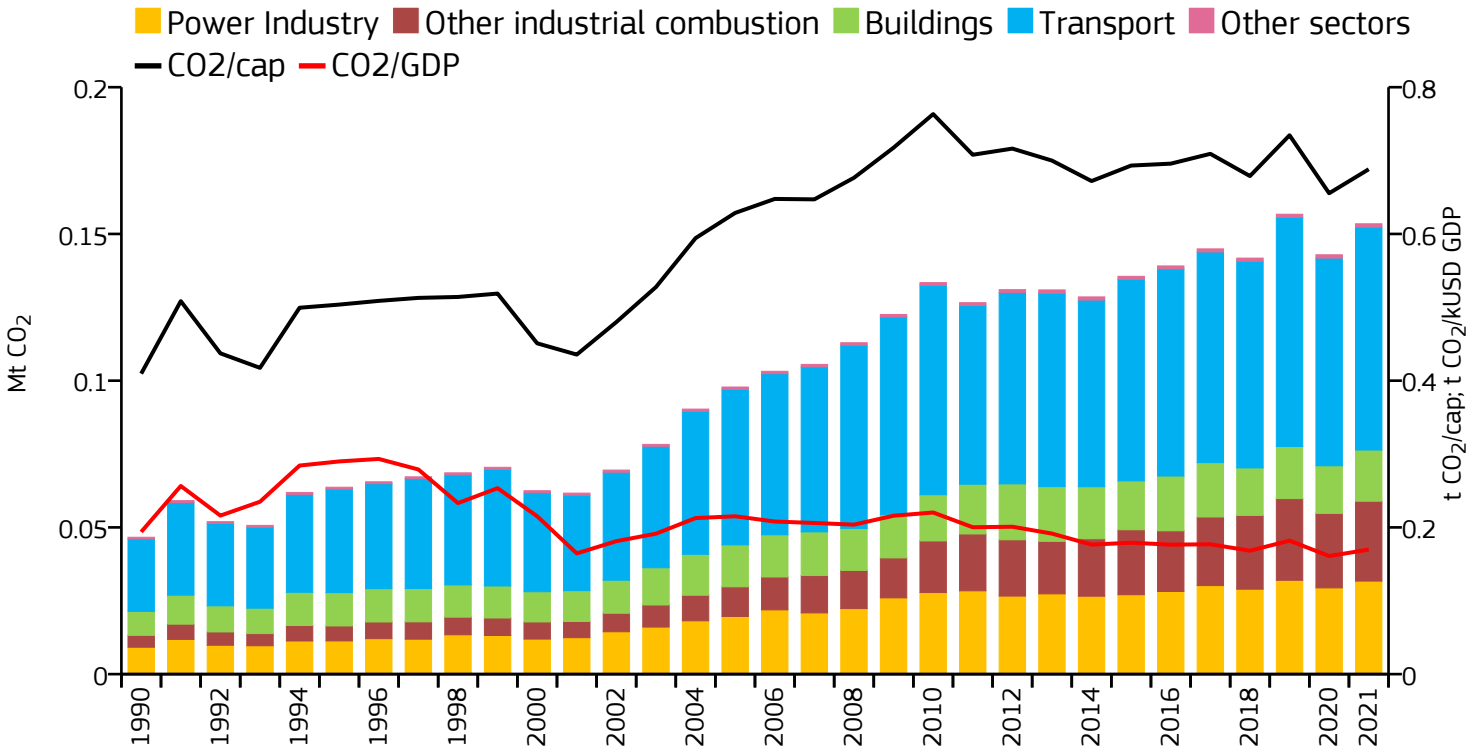


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.360	1.783	0.308	202.000k
2020	0.347	1.736	0.273	200.117k
2005	0.224	1.247	0.218	179.929k
1990	0.121	0.746	0.193	162.866k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+147%	+1%	+4%
Other industrial combustion	+733%	+39%	+4%
Buildings	-30%	+98%	+4%
Transport	+372%	+141%	+4%
Other sectors	+38%	+10%	+1%
All sectors	+197%	+61%	+4%

São Tomé and Príncipe

Fossil CO_2 emissions by sector

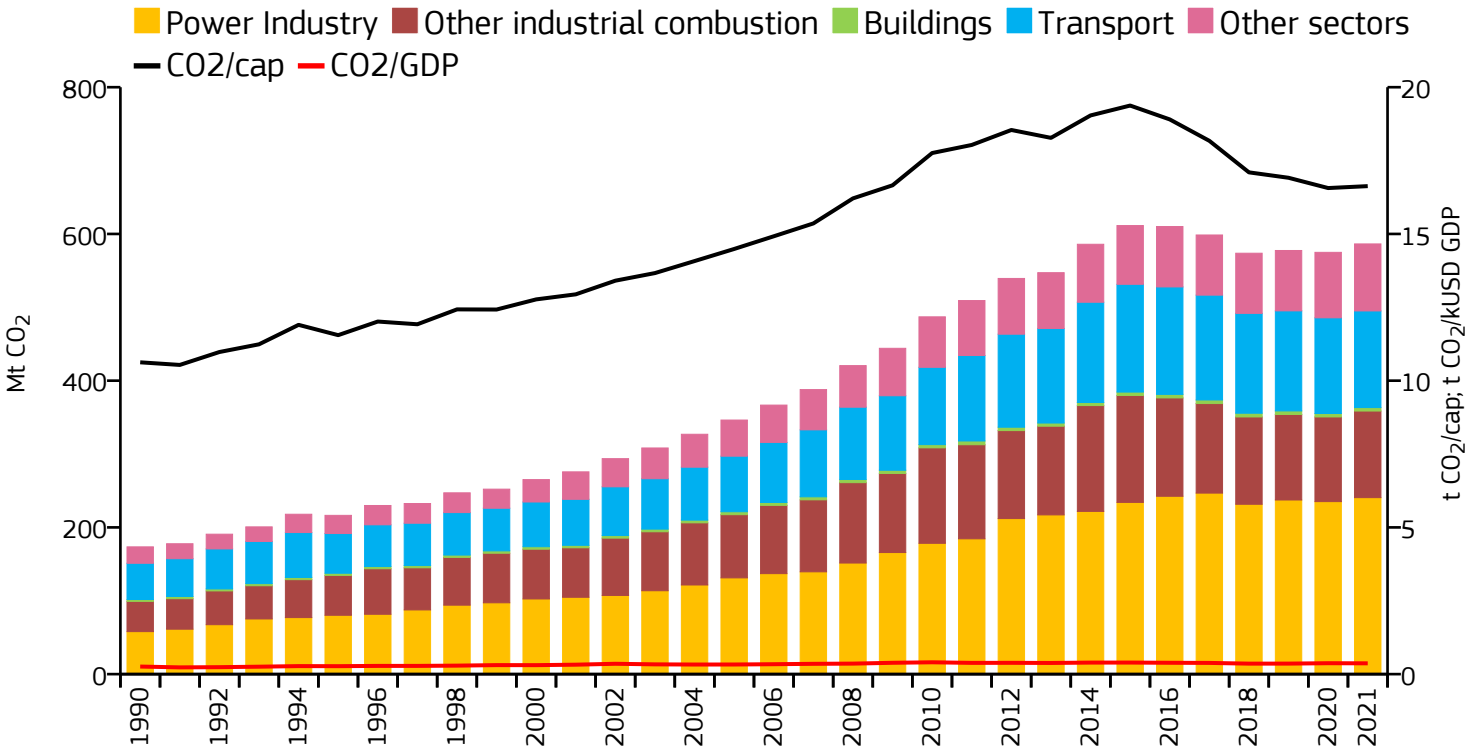


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.153	0.688	0.170	223.000k
2020	0.143	0.655	0.161	218.011k
2005	0.098	0.629	0.215	155.630k
1990	0.047	0.410	0.194	113.893k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+246%	+61%	+8%
Other industrial combustion	+572%	+170%	+7%
Buildings	+113%	+22%	+7%
Transport	+208%	+43%	+7%
Other sectors	+91%	+43%	+1%
All sectors	+229%	+57%	+7%

Saudi Arabia

Fossil CO_2 emissions by sector

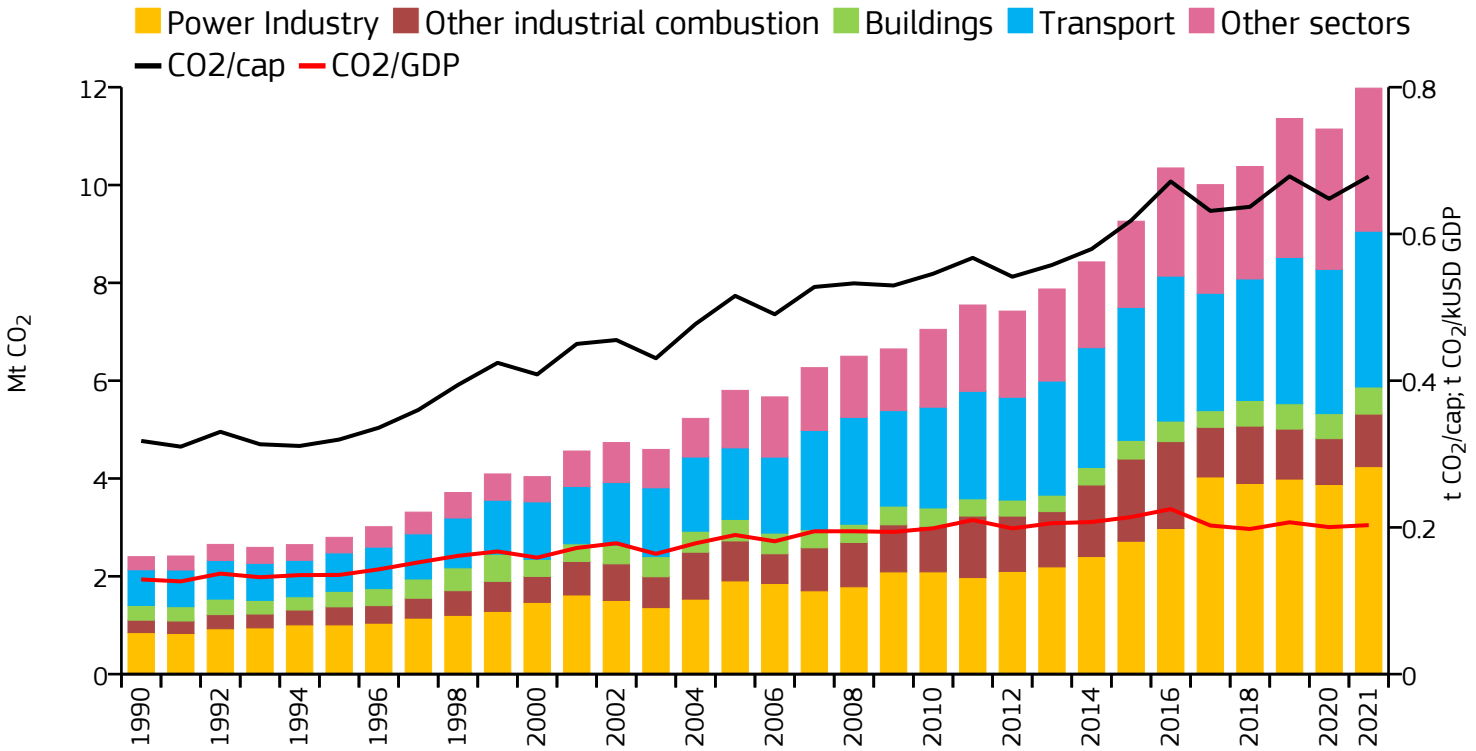


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	586.398	16.629	0.368	35.263M
2020	574.916	16.564	0.372	34.710M
2005	346.338	14.488	0.328	23.906M
1990	173.479	10.625	0.258	16.327M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+315%	+83%	+2%
Other industrial combustion	+186%	+37%	+2%
Buildings	+86%	+17%	+1%
Transport	+167%	+74%	+1%
Other sectors	+308%	+86%	+2%
All sectors	+238%	+69%	+2%

Senegal

Fossil CO_2 emissions by sector

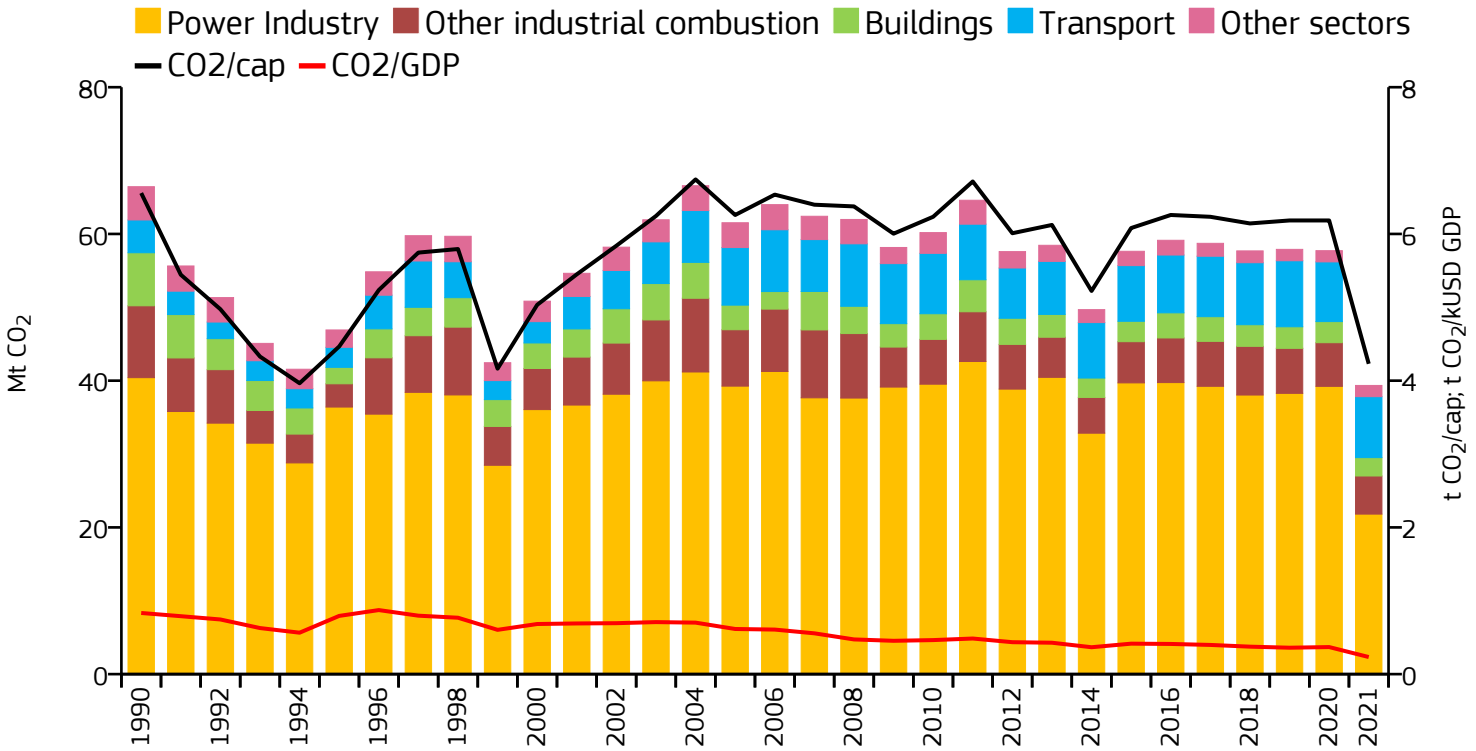


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	11.981	0.678	0.203	17.663M
2020	11.145	0.648	0.200	17.200M
2005	5.802	0.516	0.190	11.251M
1990	2.402	0.318	0.129	7.556M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +400%	↗ +123%	↗ +9%
Other industrial combustion	↗ +322%	↗ +31%	↗ +15%
Buildings	↗ +85%	↗ +26%	↗ +8%
Transport	↗ +337%	↗ +118%	↗ +8%
Other sectors	↗ +990%	↗ +149%	→ +2%
All sectors	↗ +399%	↗ +107%	↗ +8%

Serbia and Montenegro

Fossil CO_2 emissions by sector

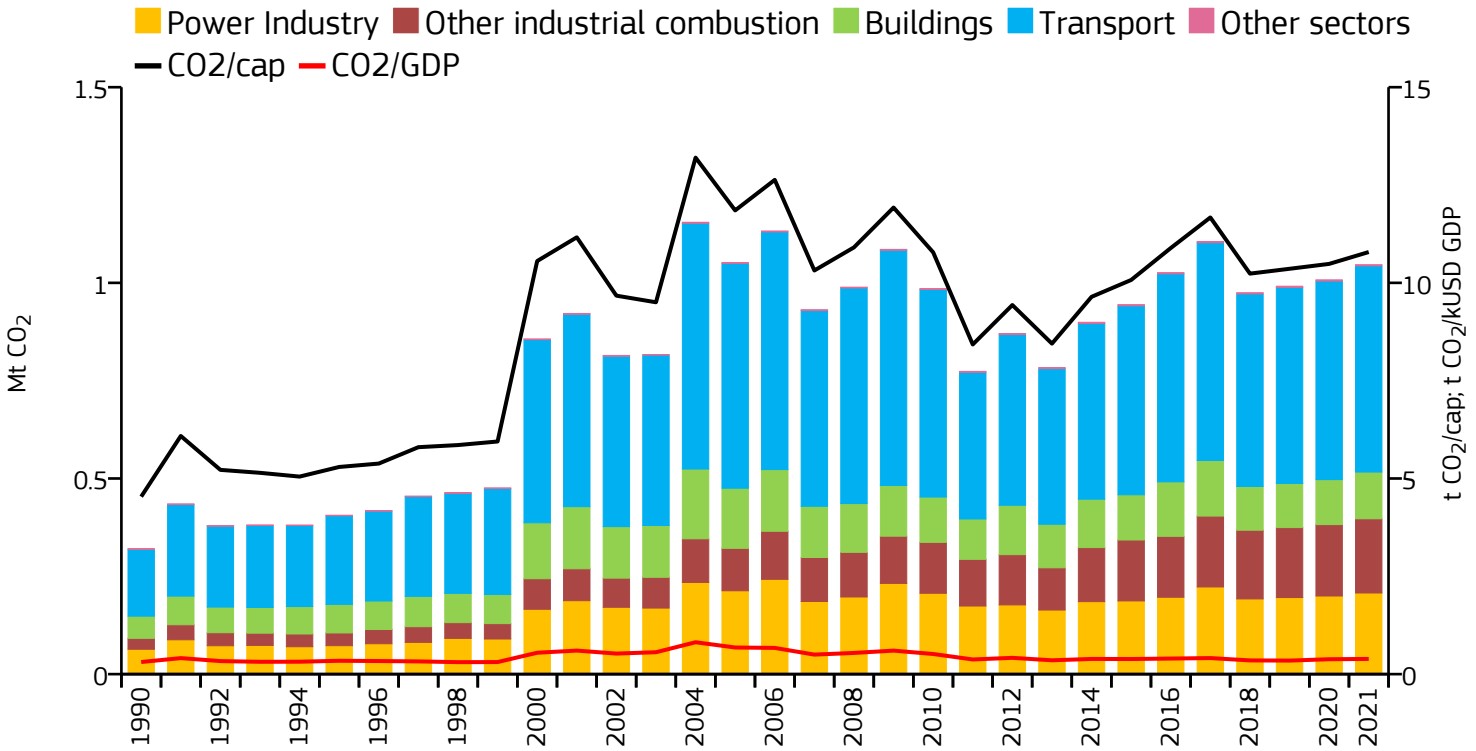


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	39.350	4.230	0.233	9.303M
2020	57.719	6.184	0.369	9.334M
2005	61.526	6.258	0.615	9.831M
1990	66.440	6.557	0.833	10.132M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-46%	-44%	-44%
Other industrial combustion	-47%	-32%	-13%
Buildings	-65%	-25%	-13%
Transport	+86%	+6%	+2%
Other sectors	-66%	-55%	0%
All sectors	-41%	-36%	-32%

Seychelles

Fossil CO_2 emissions by sector

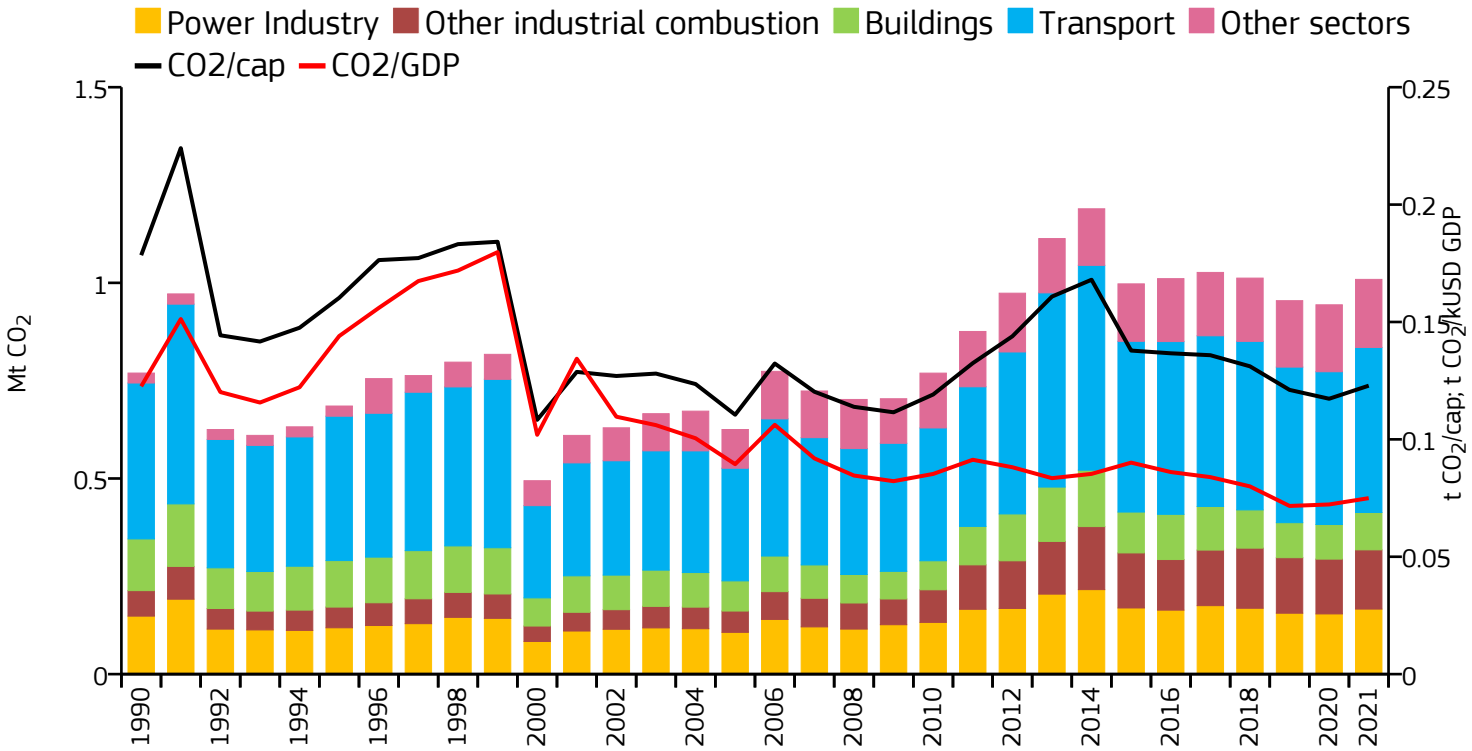


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	1.046	10.788	0.388	97.000k
2020	1.008	10.484	0.381	96.112k
2005	1.052	11.852	0.681	88.744k
1990	0.320	4.536	0.310	70.624k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+226%	-3%	+4%
Other industrial combustion	+578%	+75%	+4%
Buildings	+111%	-22%	+4%
Transport	+208%	-8%	+4%
Other sectors	+121%	+34%	-1%
All sectors	+227%	-1%	+4%

Sierra Leone

Fossil CO_2 emissions by sector

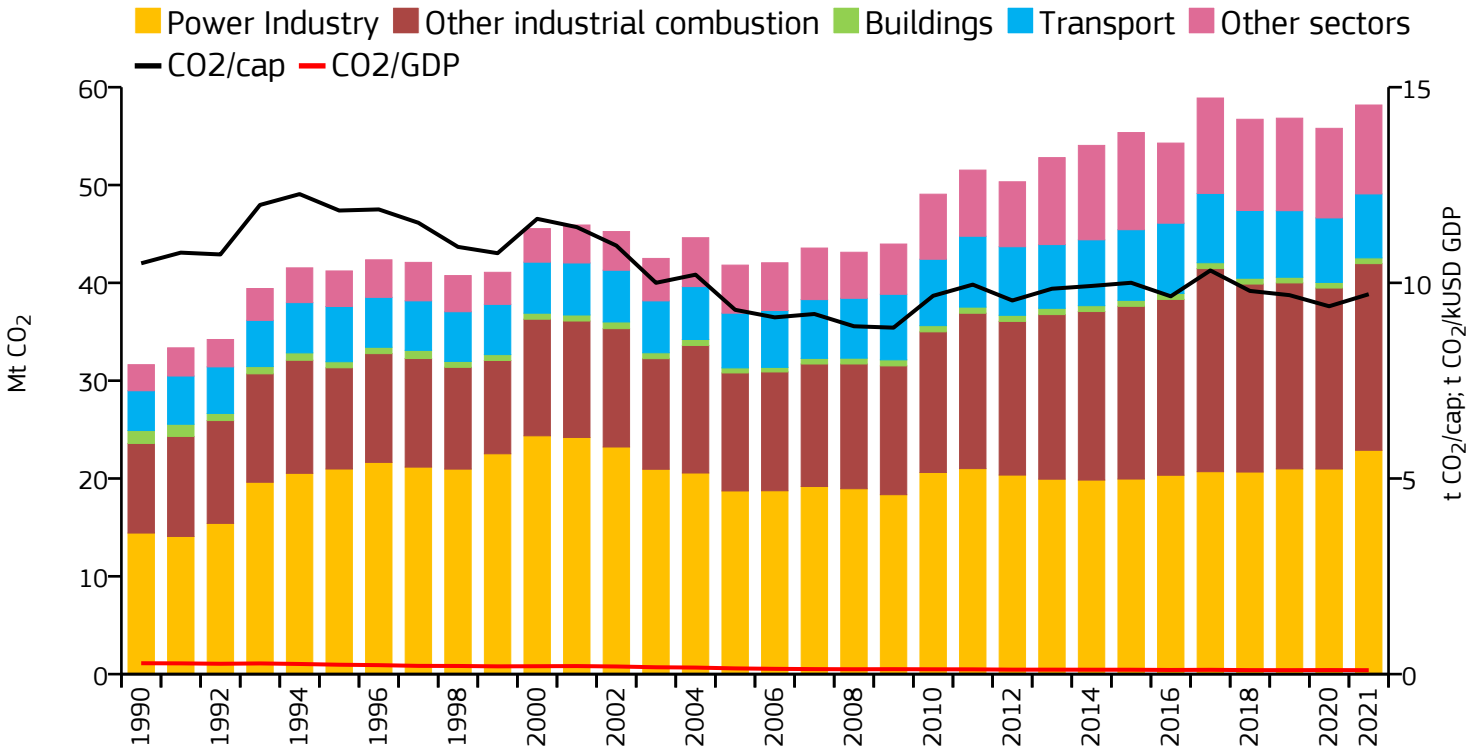


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	1.009	0.123	0.075	8.211M
2020	0.944	0.117	0.072	8.047M
2005	0.625	0.110	0.089	5.658M
1990	0.769	0.178	0.123	4.312M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+12%	+56%	+8%
Other industrial combustion	+132%	+178%	+8%
Buildings	-28%	+24%	+8%
Transport	+6%	+46%	+8%
Other sectors	+583%	+76%	+2%
All sectors	+31%	+61%	+7%

Singapore

Fossil CO_2 emissions by sector

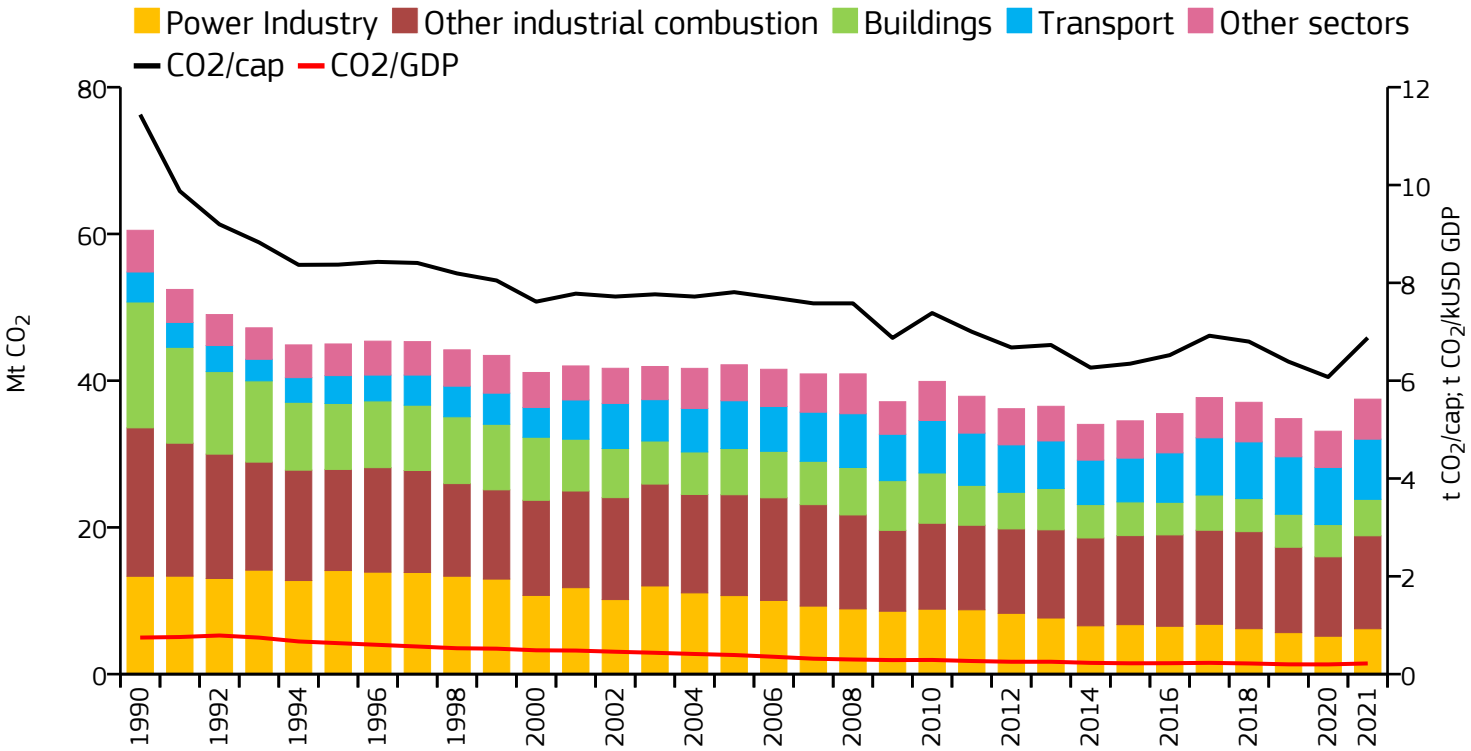


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	58.181	9.710	0.101	5.992M
2020	55.798	9.401	0.104	5.935M
2005	41.814	9.310	0.146	4.491M
1990	31.635	10.500	0.278	3.013M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+59%	+22%	+9%
Other industrial combustion	+108%	+58%	+3%
Buildings	-55%	+14%	+3%
Transport	+61%	+17%	-1%
Other sectors	+241%	+85%	-1%
All sectors	+84%	+39%	+4%

Slovakia

Fossil CO_2 emissions by sector

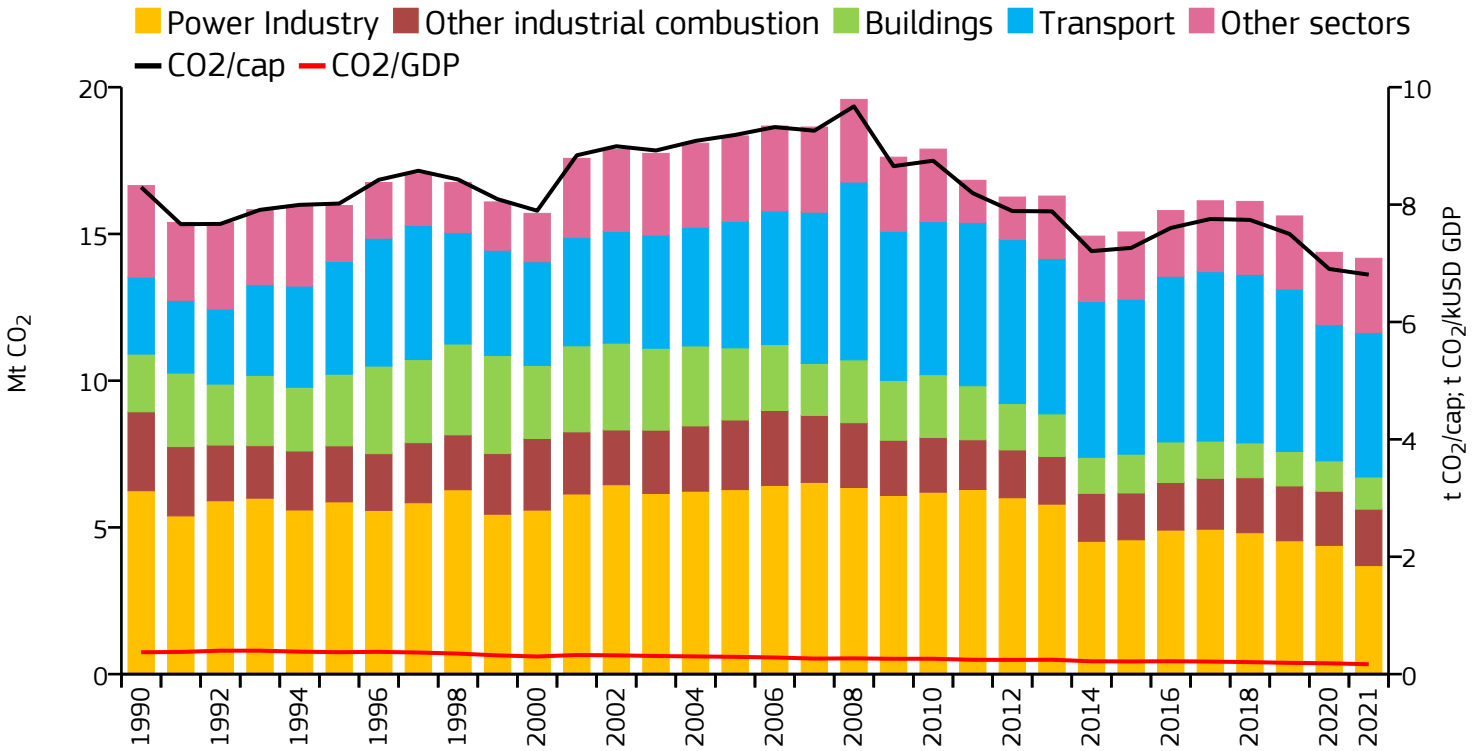


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	37.482	6.876	0.218	5.451M
2020	33.113	6.074	0.199	5.451M
2005	42.164	7.810	0.391	5.399M
1990	60.499	11.440	0.748	5.288M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-54%	-42%	+20%
Other industrial combustion	-37%	-8%	+17%
Buildings	-71%	-21%	+13%
Transport	+101%	+26%	+5%
Other sectors	-4%	+11%	+10%
All sectors	-38%	-11%	+13%

Slovenia

Fossil CO_2 emissions by sector

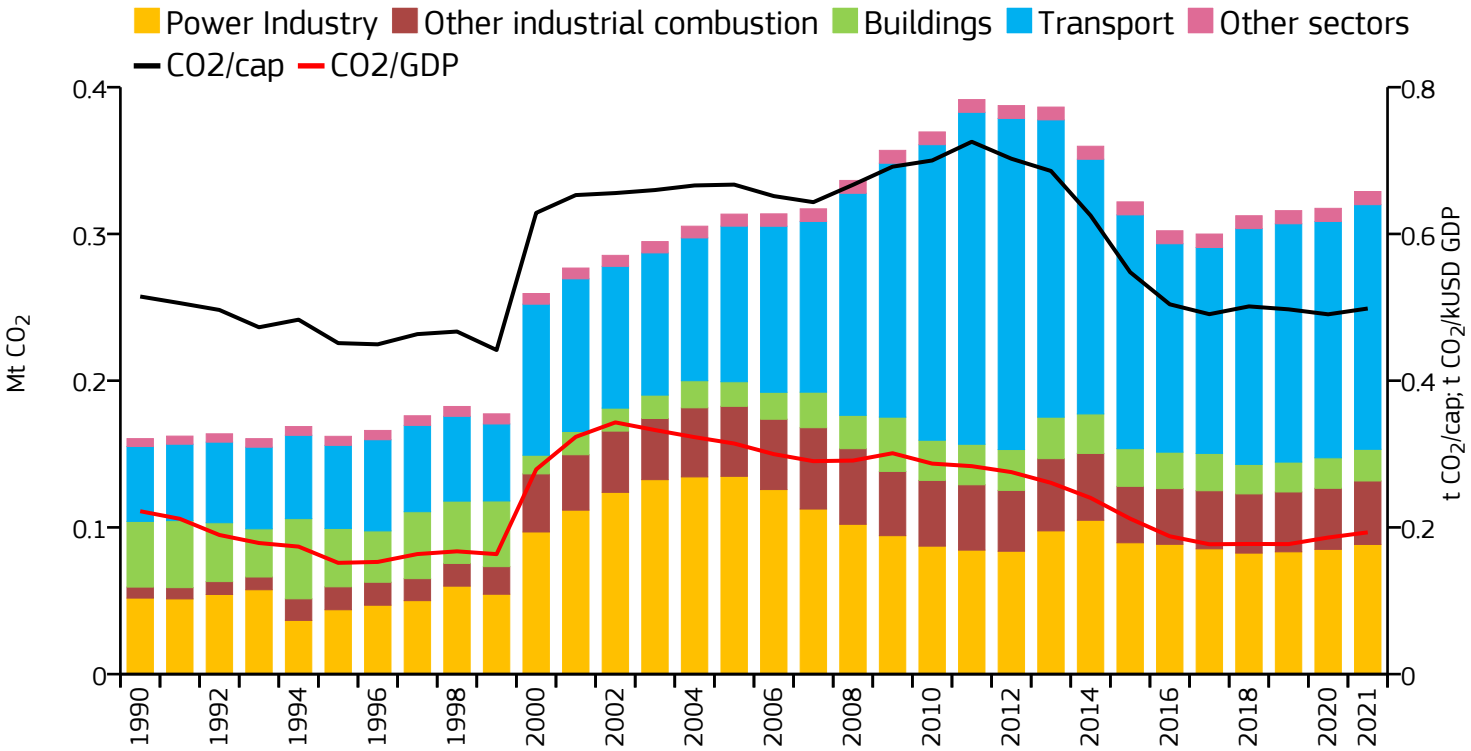


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	14.171	6.806	0.168	2.082M
2020	14.373	6.903	0.185	2.082M
2005	18.340	9.187	0.295	1.996M
1990	16.647	8.297	0.372	2.006M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↘ -41%	↘ -41%	↘ -16%
Other industrial combustion	↘ -28%	↘ -19%	→ +4%
Buildings	↘ -44%	↘ -55%	↗ +6%
Transport	↗ +87%	↗ +14%	↗ +6%
Other sectors	↘ -19%	↘ -13%	→ +3%
All sectors	↘ -15%	↘ -23%	→ -1%

Solomon Islands

Fossil CO_2 emissions by sector

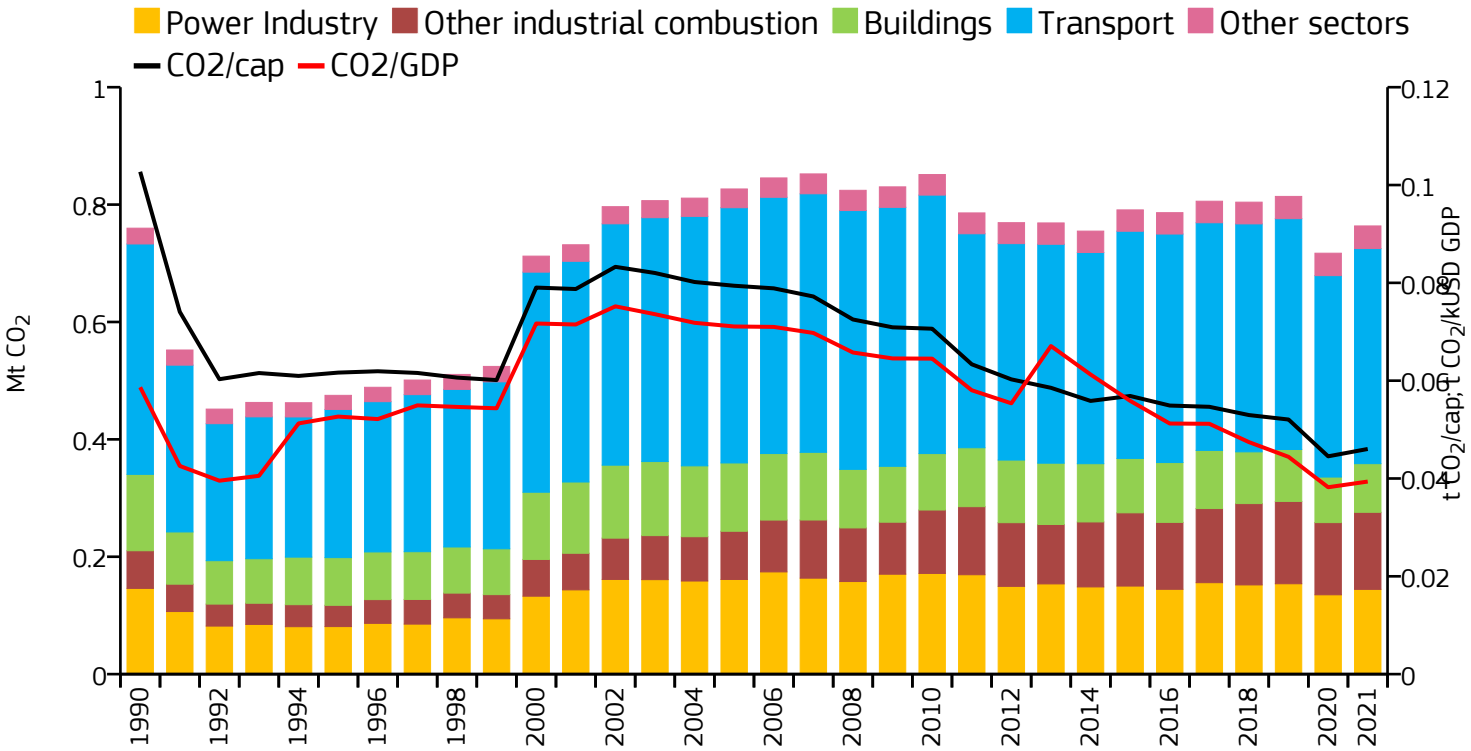


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.329	0.498	0.193	660.000k
2020	0.317	0.490	0.186	647.297k
2005	0.314	0.667	0.314	469.885k
1990	0.161	0.515	0.222	311.840k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +71%	↘ -34%	→ +4%
Other industrial combustion	↗ +476%	↘ -9%	→ +4%
Buildings	↘ -52%	↗ +29%	→ +4%
Transport	↗ +226%	↗ +57%	→ +4%
Other sectors	↗ +68%	↗ +9%	→ 0%
All sectors	↗ +105%	→ +5%	→ +4%

Somalia

Fossil CO_2 emissions by sector

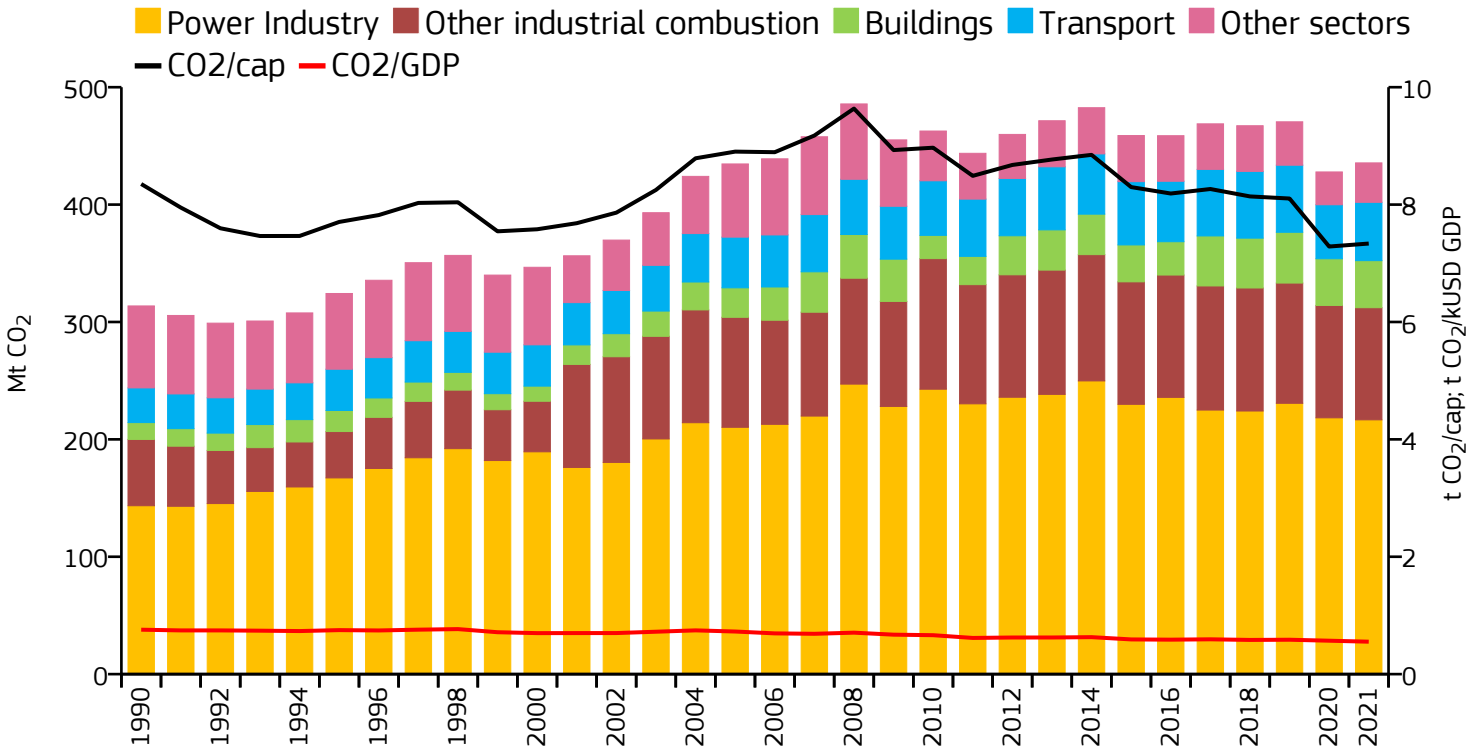


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.764	0.046	0.039	16.589M
2020	0.717	0.045	0.038	16.105M
2005	0.827	0.079	0.071	10.410M
1990	0.760	0.103	0.059	7.397M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	→ -1%	↘ -10%	↗ +7%
Other industrial combustion	↗ +105%	↗ +60%	↗ +7%
Buildings	↘ -36%	↘ -29%	↗ +7%
Transport	↘ -7%	↘ -16%	↗ +7%
Other sectors	↗ +43%	↗ +21%	→ +1%
All sectors	→ 0%	↘ -8%	↗ +6%

South Africa

Fossil CO_2 emissions by sector

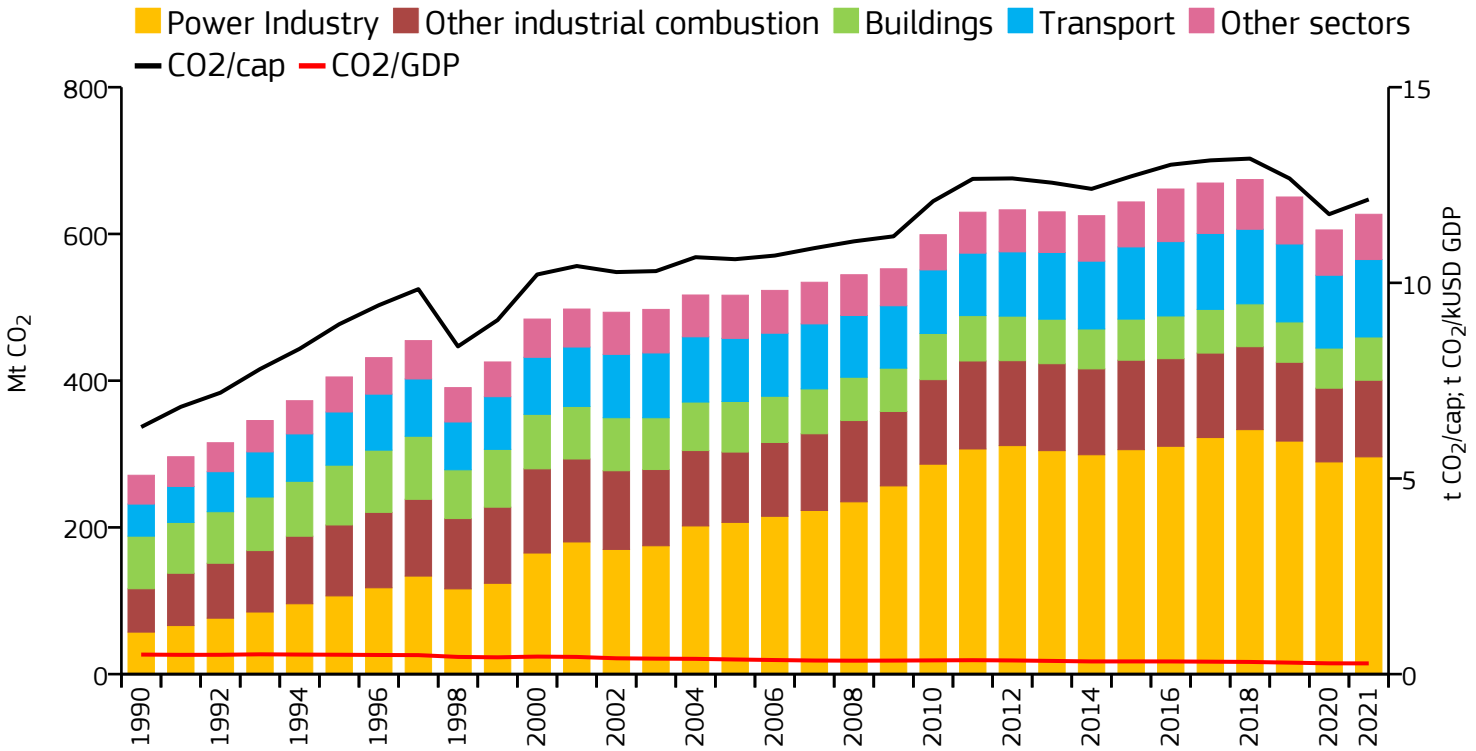


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	435.523	7.336	0.553	59.366M
2020	427.816	7.286	0.570	58.721M
2005	434.630	8.903	0.726	48.821M
1990	313.667	8.351	0.757	37.560M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+51%	+3%	-1%
Other industrial combustion	+69%	+2%	0%
Buildings	+180%	+60%	+1%
Transport	+68%	+15%	+8%
Other sectors	-52%	-46%	+20%
All sectors	+39%	0%	+2%

South Korea

Fossil CO_2 emissions by sector

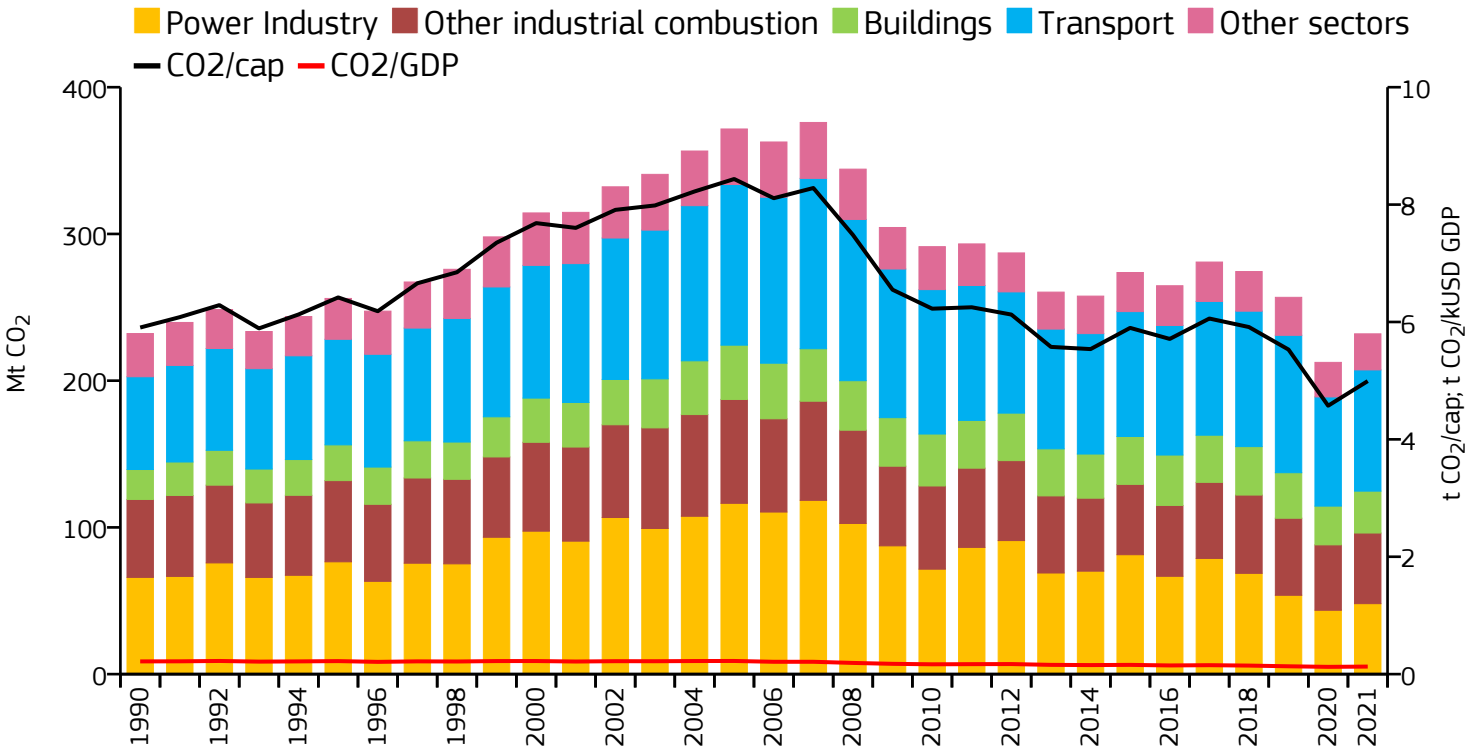


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	626.800	12.132	0.275	51.667M
2020	605.449	11.755	0.276	51.507M
2005	516.525	10.604	0.374	48.709M
1990	271.081	6.316	0.500	42.923M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+417%	+43%	+2%
Other industrial combustion	+77%	+9%	+4%
Buildings	-18%	-14%	+8%
Transport	+141%	+23%	+6%
Other sectors	+57%	+5%	0%
All sectors	+131%	+21%	+4%

Spain and Andorra

Fossil CO_2 emissions by sector

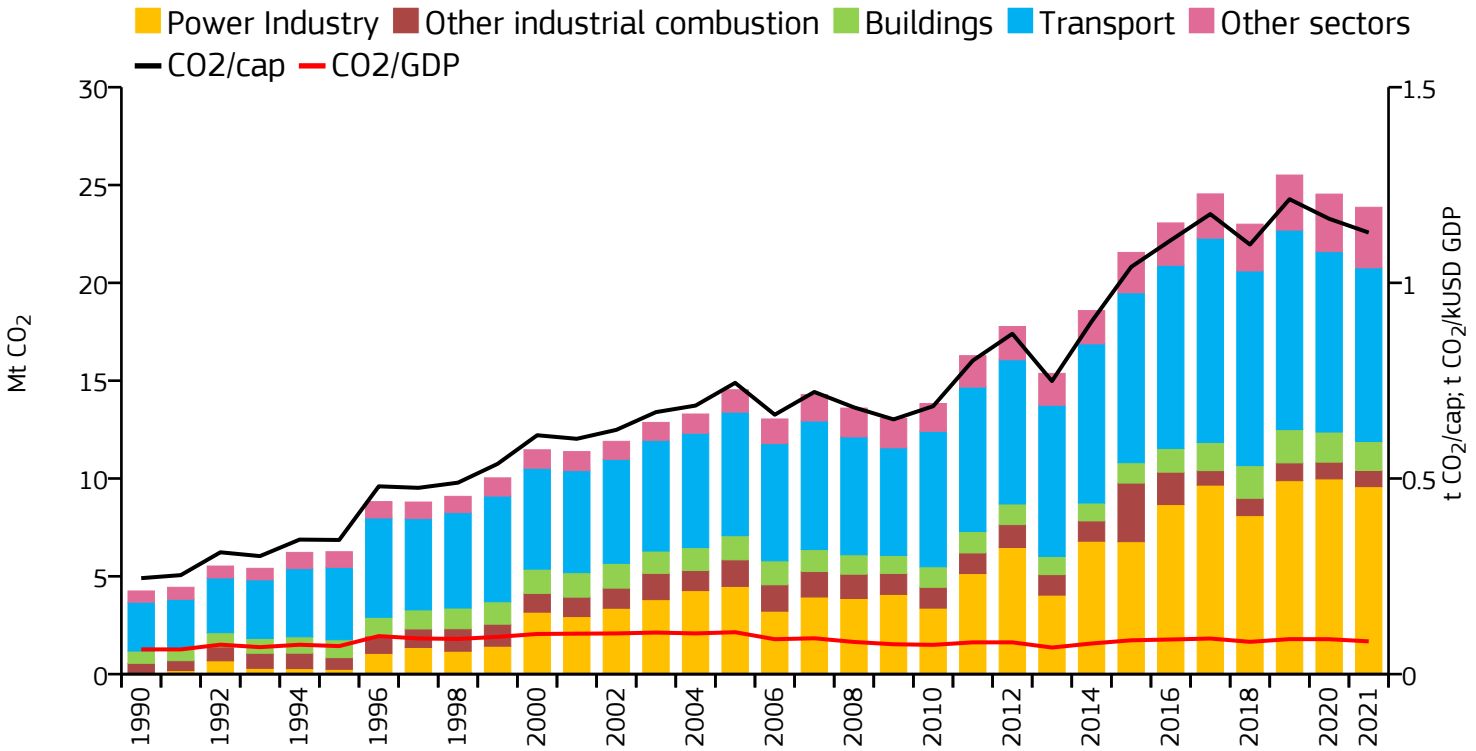


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	231.914	4.993	0.129	46.449M
2020	212.467	4.573	0.124	46.459M
2005	371.537	8.436	0.224	44.043M
1990	232.117	5.905	0.217	39.306M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-27%	-59%	+10%
Other industrial combustion	-9%	-32%	+8%
Buildings	+40%	-23%	+8%
Transport	+31%	-25%	+11%
Other sectors	-17%	-35%	+4%
All sectors	0%	-38%	+9%

Sri Lanka

Fossil CO_2 emissions by sector

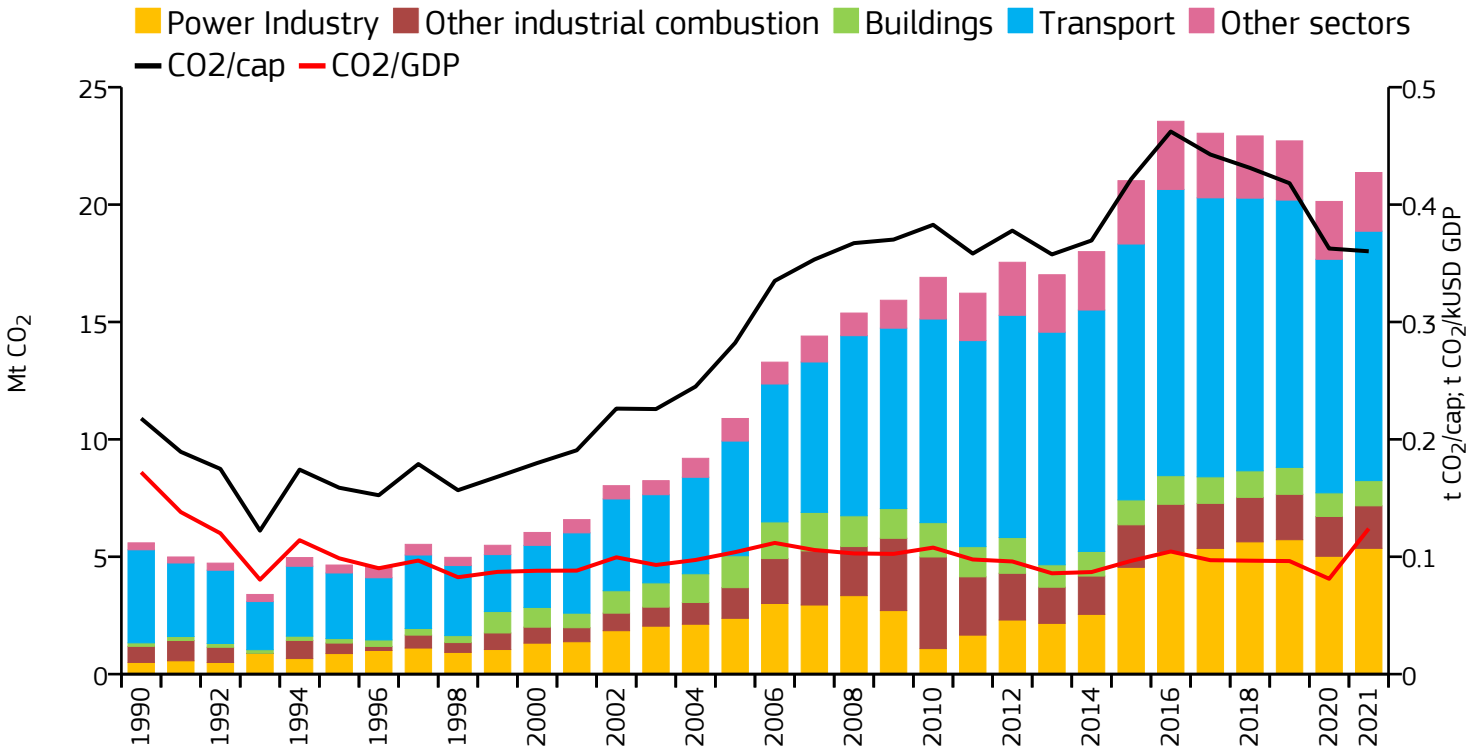


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	23.863	1.128	0.084	21.146M
2020	24.537	1.164	0.089	21.084M
2005	14.535	0.744	0.107	19.525M
1990	4.250	0.245	0.063	17.330M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +153913%	↗ +114%	→ -4%
Other industrial combustion	↗ +51%	↘ -39%	→ -4%
Buildings	↗ +136%	↗ +20%	→ -4%
Transport	↗ +256%	↗ +41%	→ -4%
Other sectors	↗ +439%	↗ +171%	→ +5%
All sectors	↗ +461%	↗ +64%	→ -3%

Sudan and South Sudan

Fossil CO_2 emissions by sector

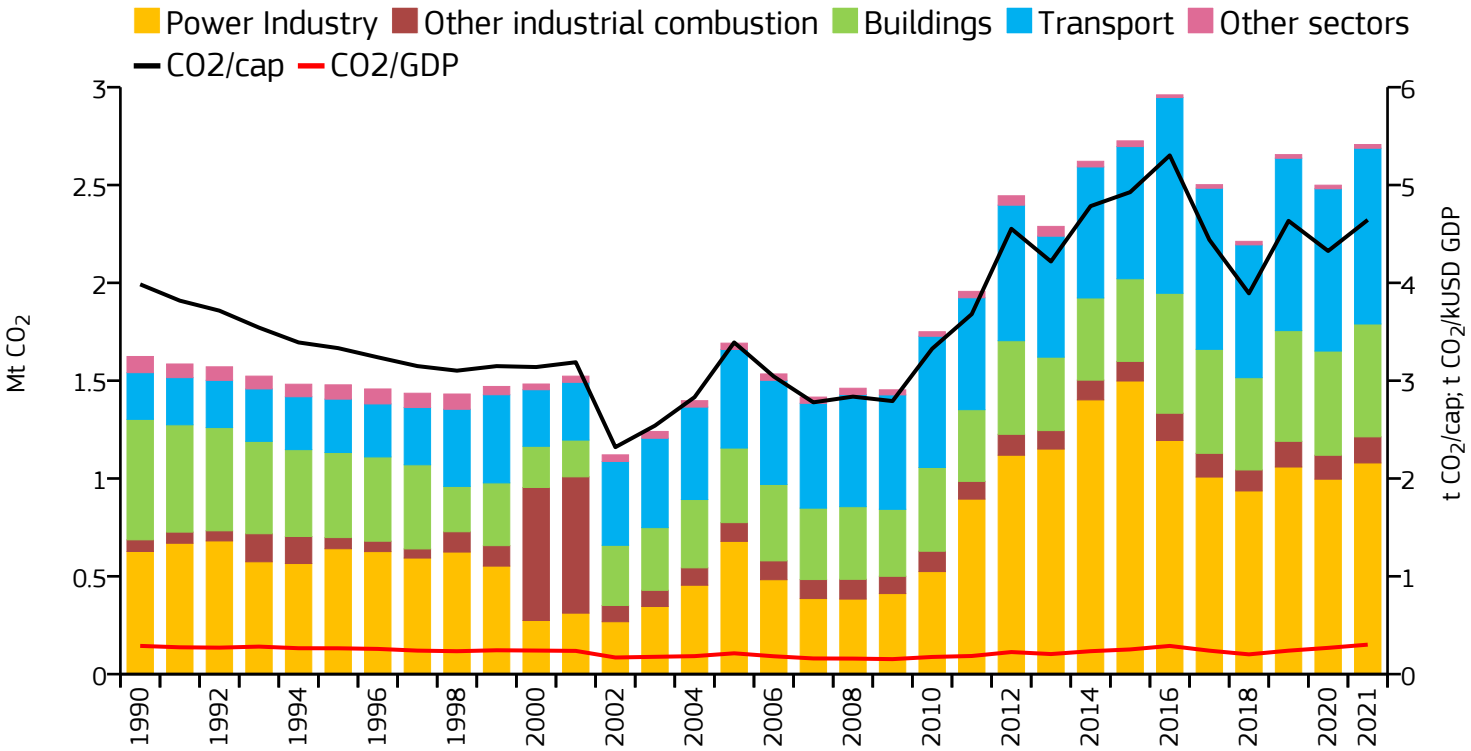


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	21.366	0.360	0.124	59.313M
2020	20.134	0.363	0.081	55.531M
2005	10.889	0.282	0.104	38.584M
1990	5.592	0.218	0.172	25.677M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +977%	↗ +125%	↗ +7%
Other industrial combustion	↗ +164%	↗ +39%	↗ +7%
Buildings	↗ +622%	↘ -21%	↗ +7%
Transport	↗ +168%	↗ +117%	↗ +7%
Other sectors	↗ +743%	↗ +160%	→ +1%
All sectors	↗ +282%	↗ +96%	↗ +6%

Suriname

Fossil CO_2 emissions by sector

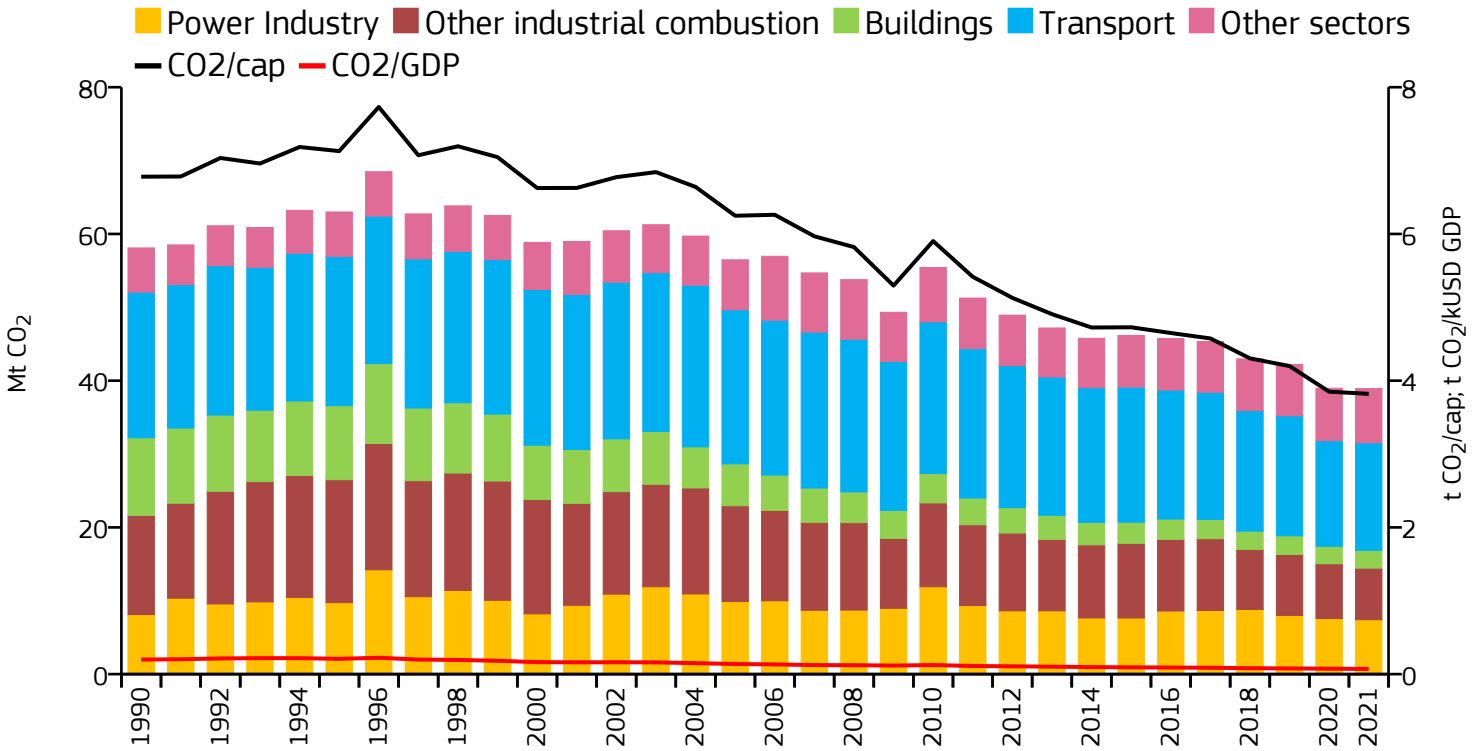


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	2.707	4.643	0.301	583.000k
2020	2.499	4.326	0.269	577.752k
2005	1.692	3.391	0.213	498.946k
1990	1.624	3.985	0.289	407.472k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+72%	+59%	+8%
Other industrial combustion	+124%	+39%	+9%
Buildings	-6%	+51%	+8%
Transport	+277%	+78%	+8%
Other sectors	-77%	-42%	+1%
All sectors	+67%	+60%	+8%

Sweden

Fossil CO_2 emissions by sector

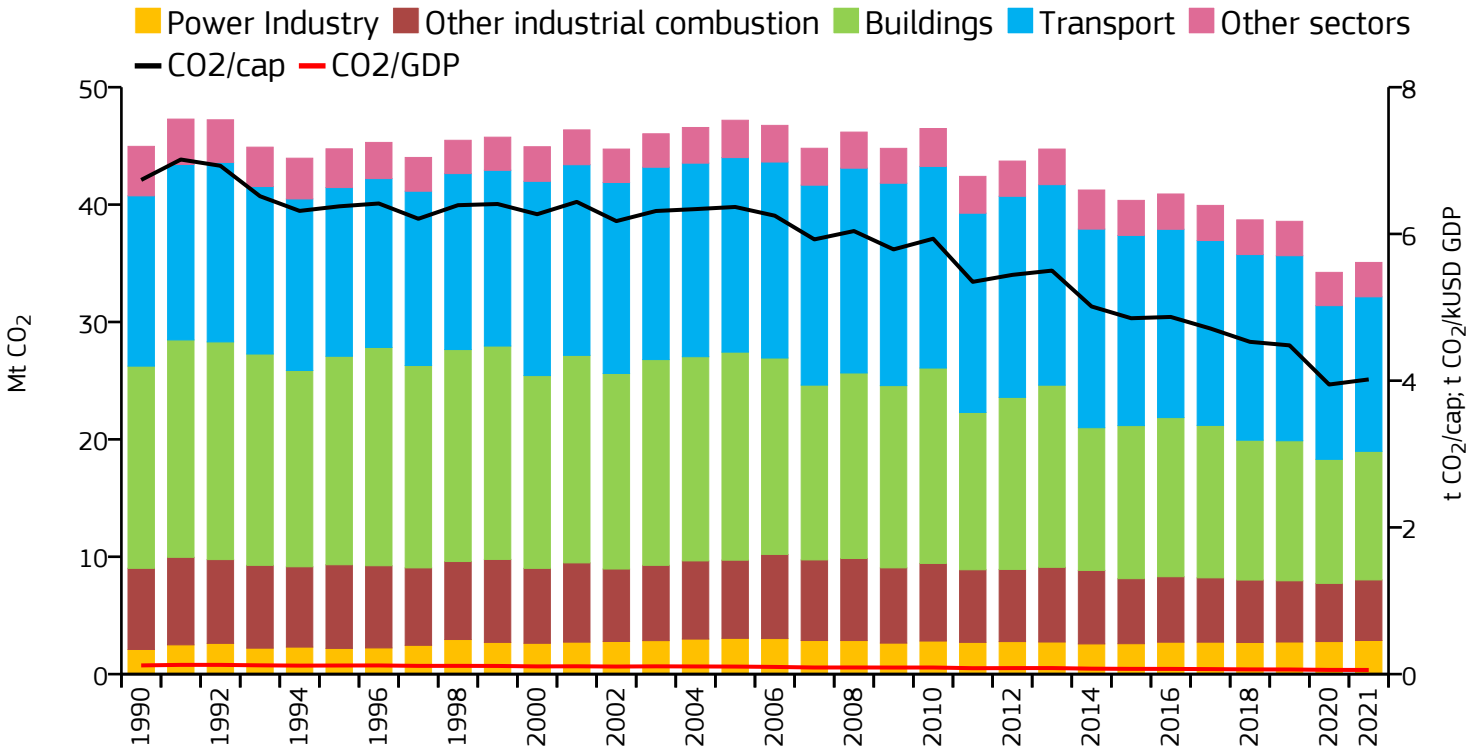


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	38.922	3.820	0.070	10.188M
2020	38.968	3.850	0.074	10.122M
2005	56.474	6.248	0.138	9.039M
1990	58.091	6.780	0.199	8.567M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-9%	-25%	-2%
Other industrial combustion	-48%	-46%	-6%
Buildings	-77%	-58%	+2%
Transport	-26%	-30%	+2%
Other sectors	+23%	+8%	+3%
All sectors	-33%	-31%	0%

Switzerland and Liechtenstein

Fossil CO_2 emissions by sector

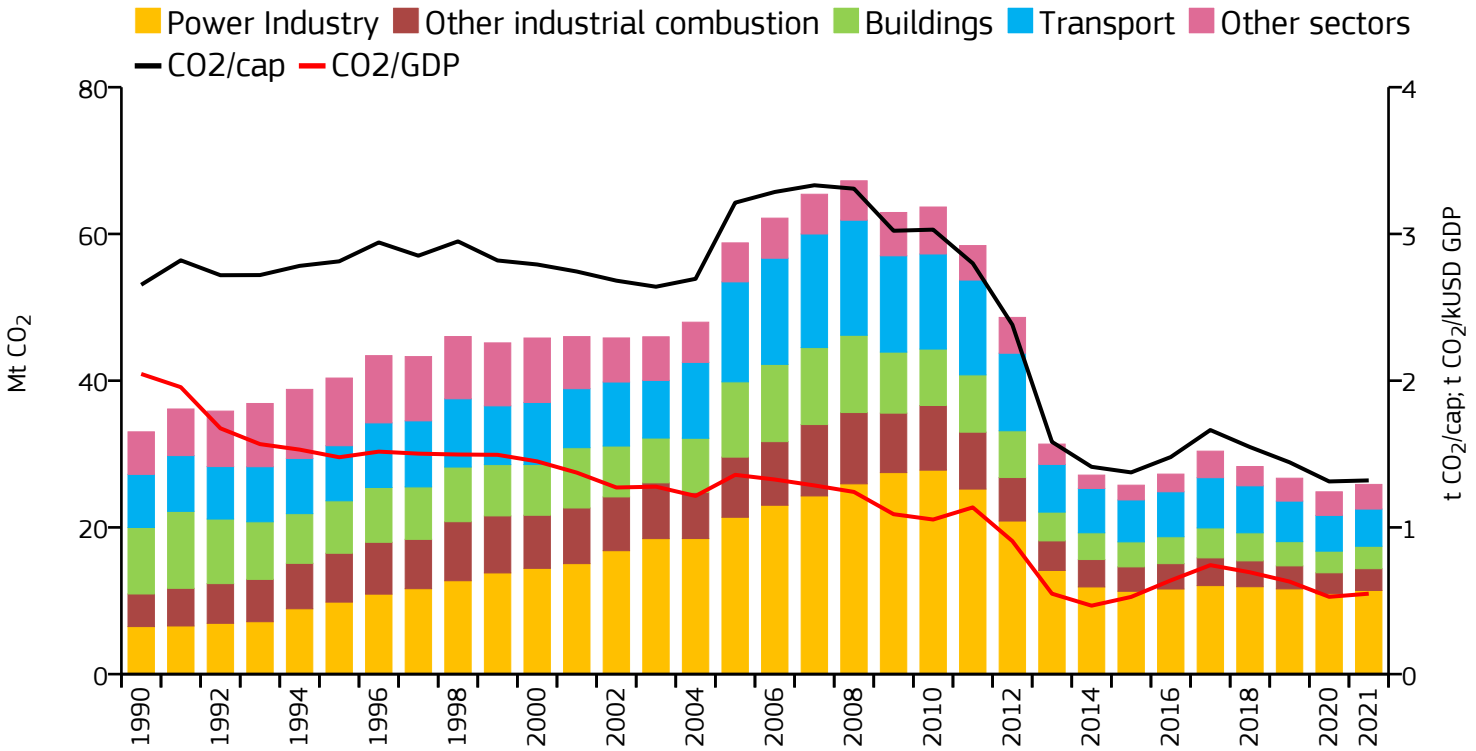


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	35.073	4.017	0.057	8.731M
2020	34.227	3.947	0.058	8.671M
2005	47.187	6.368	0.103	7.410M
1990	44.962	6.736	0.119	6.675M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+36%	-6%	+3%
Other industrial combustion	-25%	-23%	+4%
Buildings	-36%	-38%	+4%
Transport	-9%	-21%	+1%
Other sectors	-31%	-8%	+3%
All sectors	-22%	-26%	+2%

Syria

Fossil CO_2 emissions by sector

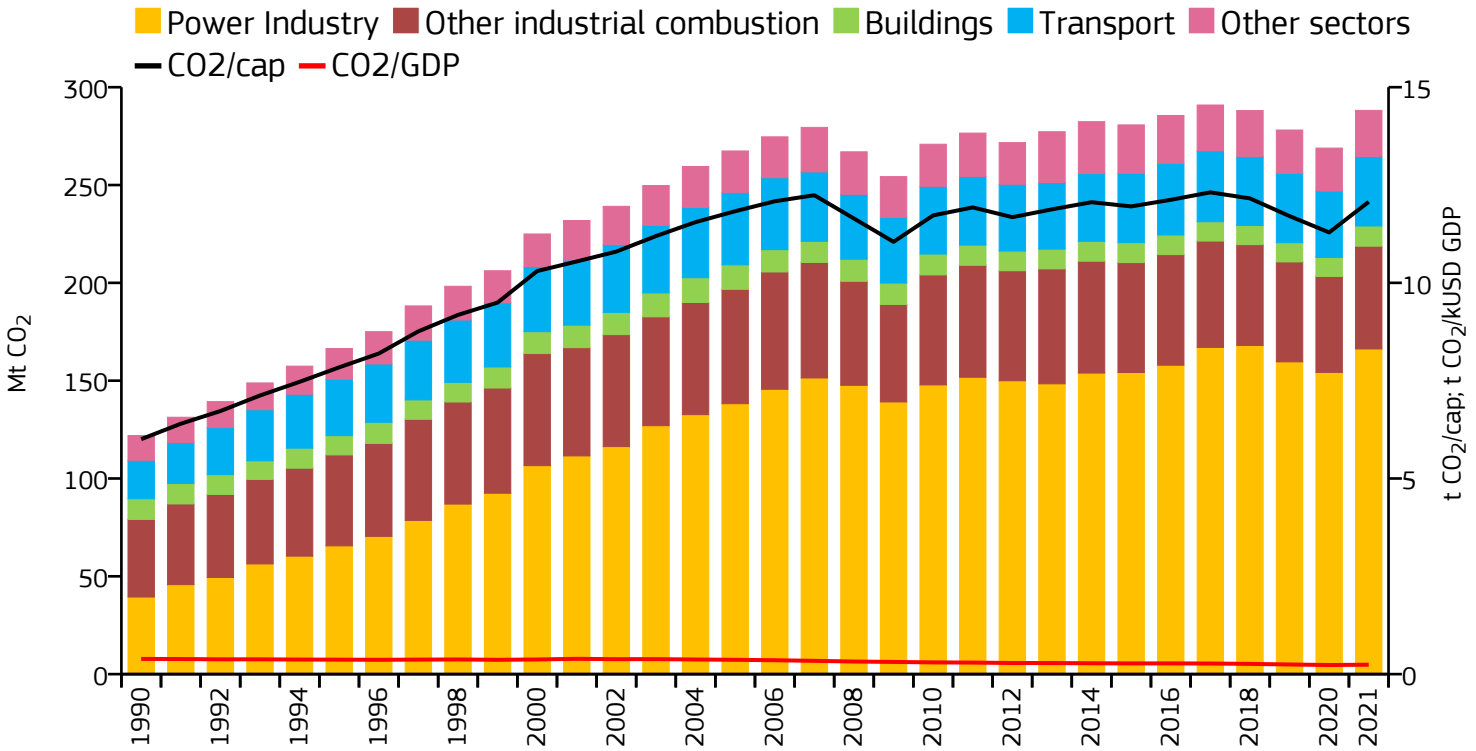


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	25.861	1.320	0.548	19.587M
2020	24.851	1.313	0.527	18.924M
2005	58.783	3.213	1.358	18.295M
1990	33.026	2.653	2.046	12.446M

	2021 vs 1990		2021 vs 2005		2021 vs 2020	
Power Industry	↗	+76%	↘	-47%	→	+4%
Other industrial combustion	↘	-33%	↘	-64%	→	+4%
Buildings	↘	-66%	↘	-70%	→	+4%
Transport	↘	-30%	↘	-63%	→	+4%
Other sectors	↘	-42%	↘	-37%	→	+5%
All sectors	↘	-22%	↘	-56%	→	+4%

Taiwan

Fossil CO_2 emissions by sector

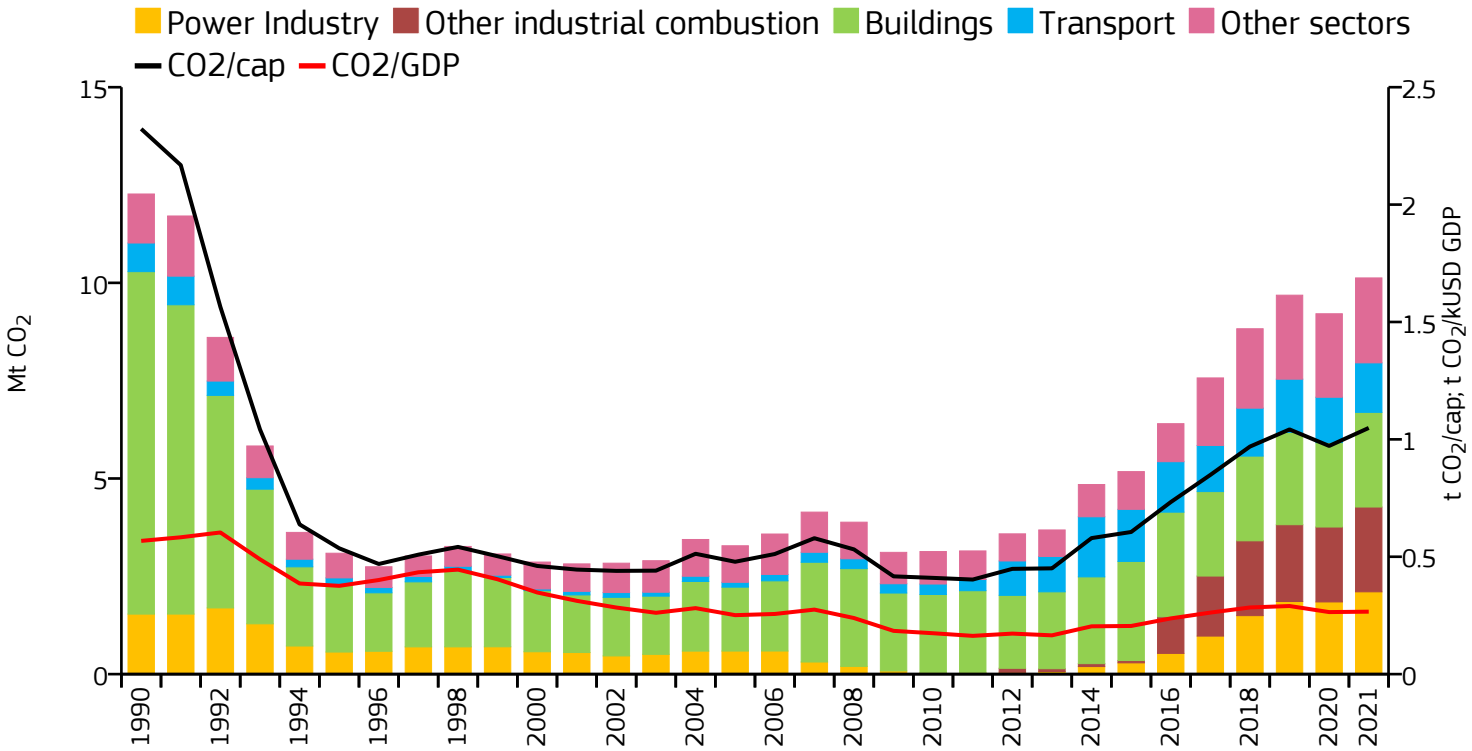


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	288.157	12.070	0.241	23.873M
2020	268.884	11.289	0.232	23.818M
2005	267.408	11.831	0.366	22.603M
1990	121.965	6.005	0.389	20.312M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+322%	+20%	+8%
Other industrial combustion	+32%	-10%	+7%
Buildings	-2%	-18%	+6%
Transport	+81%	-4%	+5%
Other sectors	+86%	+10%	+7%
All sectors	+136%	+8%	+7%

Tajikistan

Fossil CO_2 emissions by sector

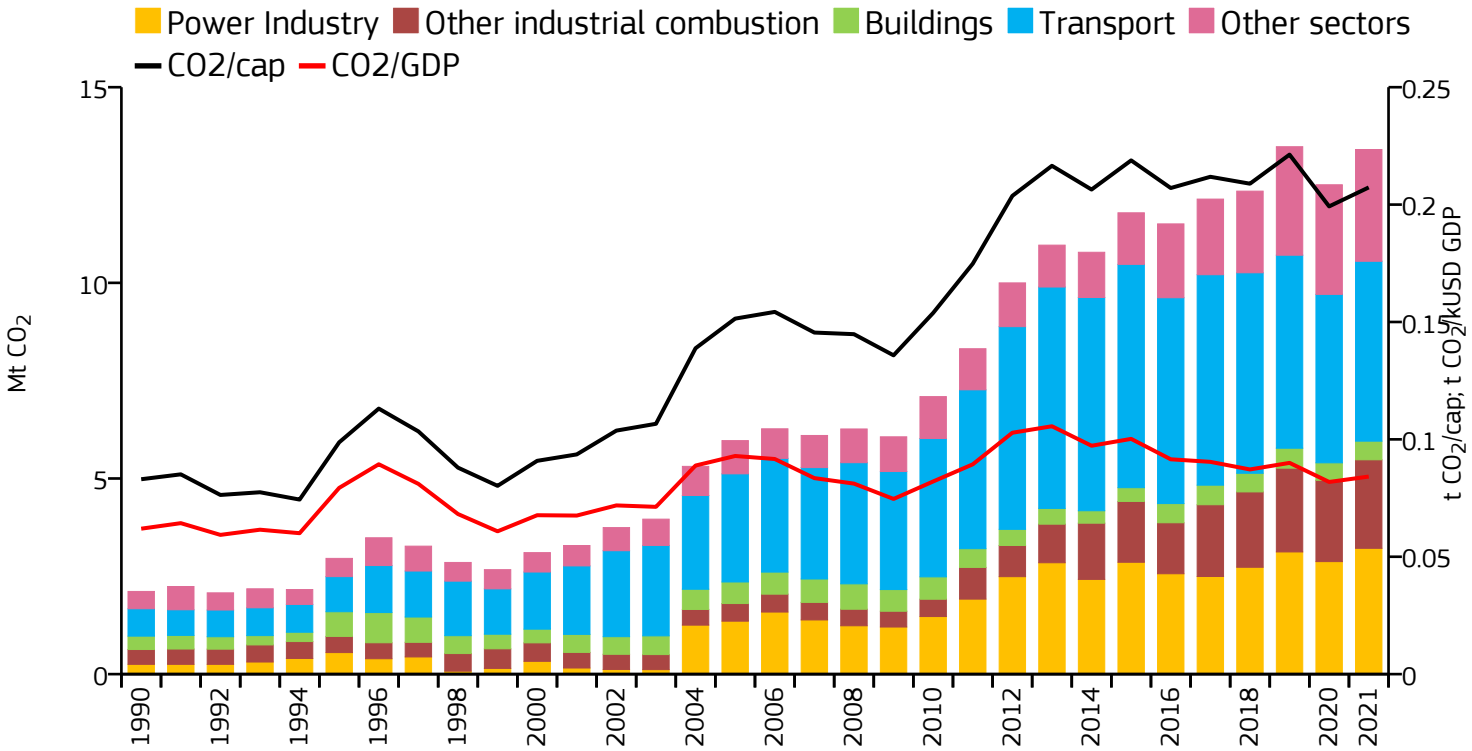


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	10.126	1.049	0.266	9.656M
2020	9.210	0.972	0.264	9.475M
2005	3.281	0.479	0.251	6.854M
1990	12.271	2.322	0.568	5.284M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +37%	↗ +257%	↗ +14%
Other industrial combustion	↗	↗	↗ +13%
Buildings	↘ -72%	↗ +48%	↗ +12%
Transport	↗ +73%	↗ +917%	↗ +9%
Other sectors	↗ +73%	↗ +133%	→ +2%
All sectors	↘ -17%	↗ +209%	↗ +10%

Tanzania

Fossil CO_2 emissions by sector

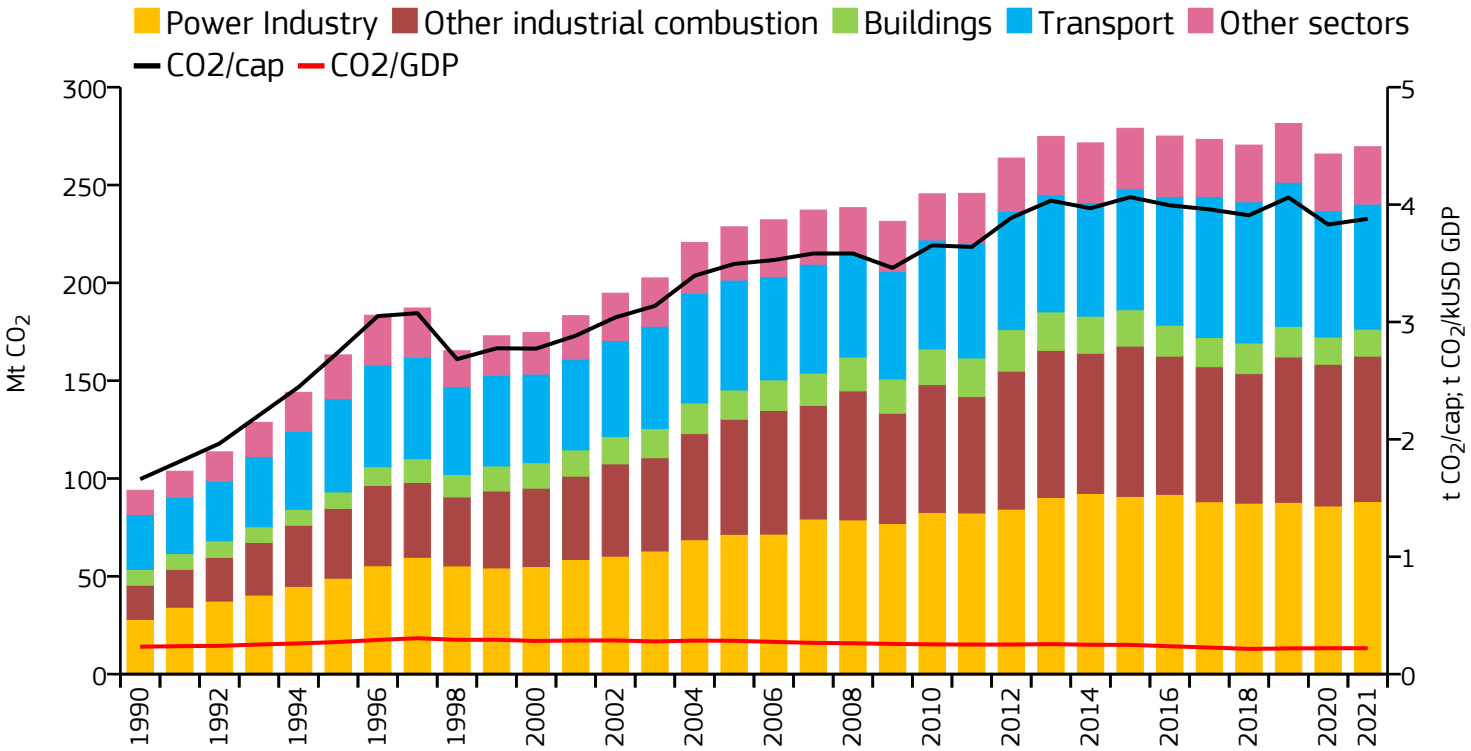


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	13.408	0.207	0.084	64.674M
2020	12.507	0.199	0.082	62.775M
2005	5.968	0.151	0.093	39.410M
1990	2.114	0.083	0.062	25.460M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +1185%	↗ +138%	↗ +12%
Other industrial combustion	↗ +497%	↗ +402%	↗ +9%
Buildings	↗ +39%	↘ -14%	↗ +7%
Transport	↗ +557%	↗ +66%	↗ +7%
Other sectors	↗ +545%	↗ +236%	→ +2%
All sectors	↗ +534%	↗ +125%	↗ +7%

Thailand

Fossil CO_2 emissions by sector

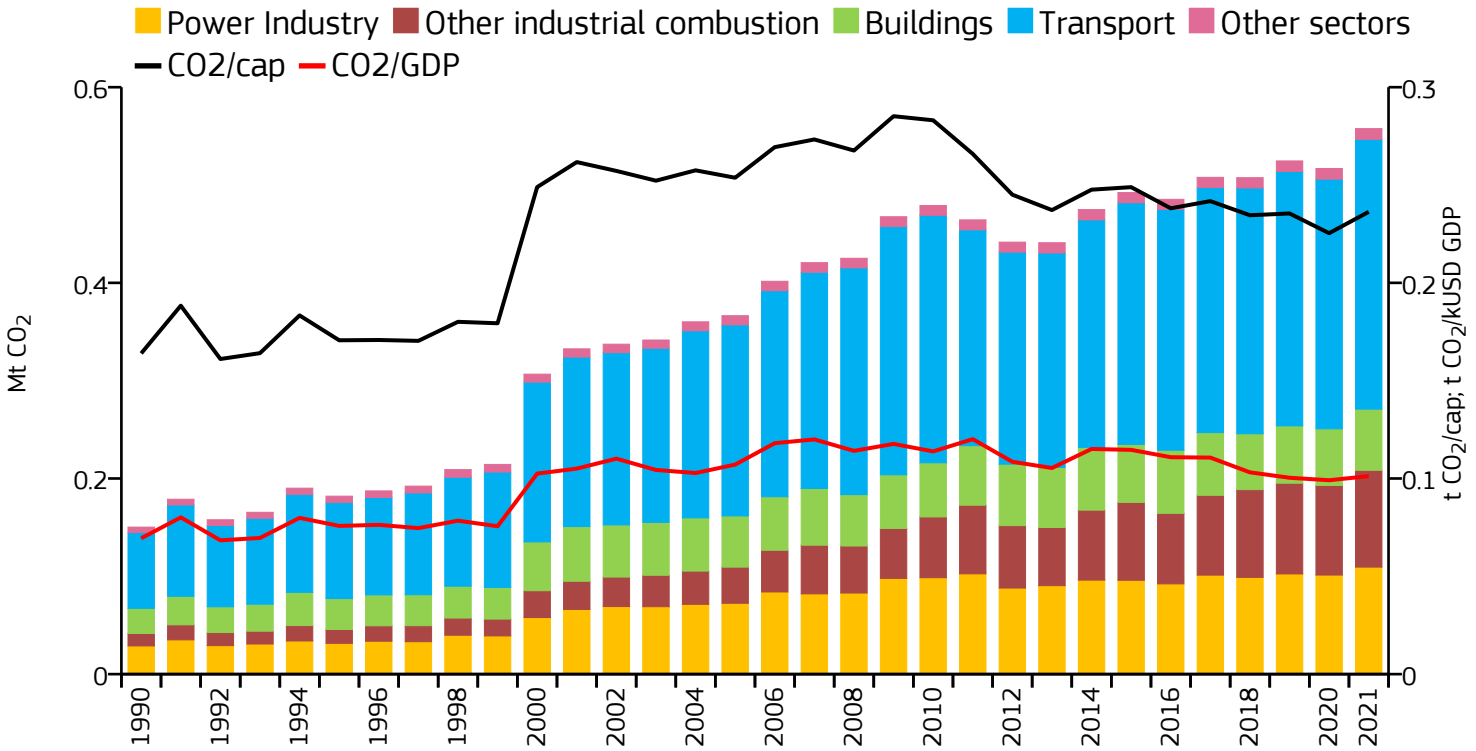


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	269.567	3.879	0.220	69.498M
2020	265.850	3.830	0.221	69.411M
2005	228.632	3.495	0.284	65.425M
1990	93.997	1.661	0.234	56.583M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+215%	+23%	+3%
Other industrial combustion	+325%	+26%	+3%
Buildings	+71%	-8%	-1%
Transport	+128%	+14%	-1%
Other sectors	+135%	+8%	+1%
All sectors	+187%	+18%	+1%

The Gambia

Fossil CO_2 emissions by sector

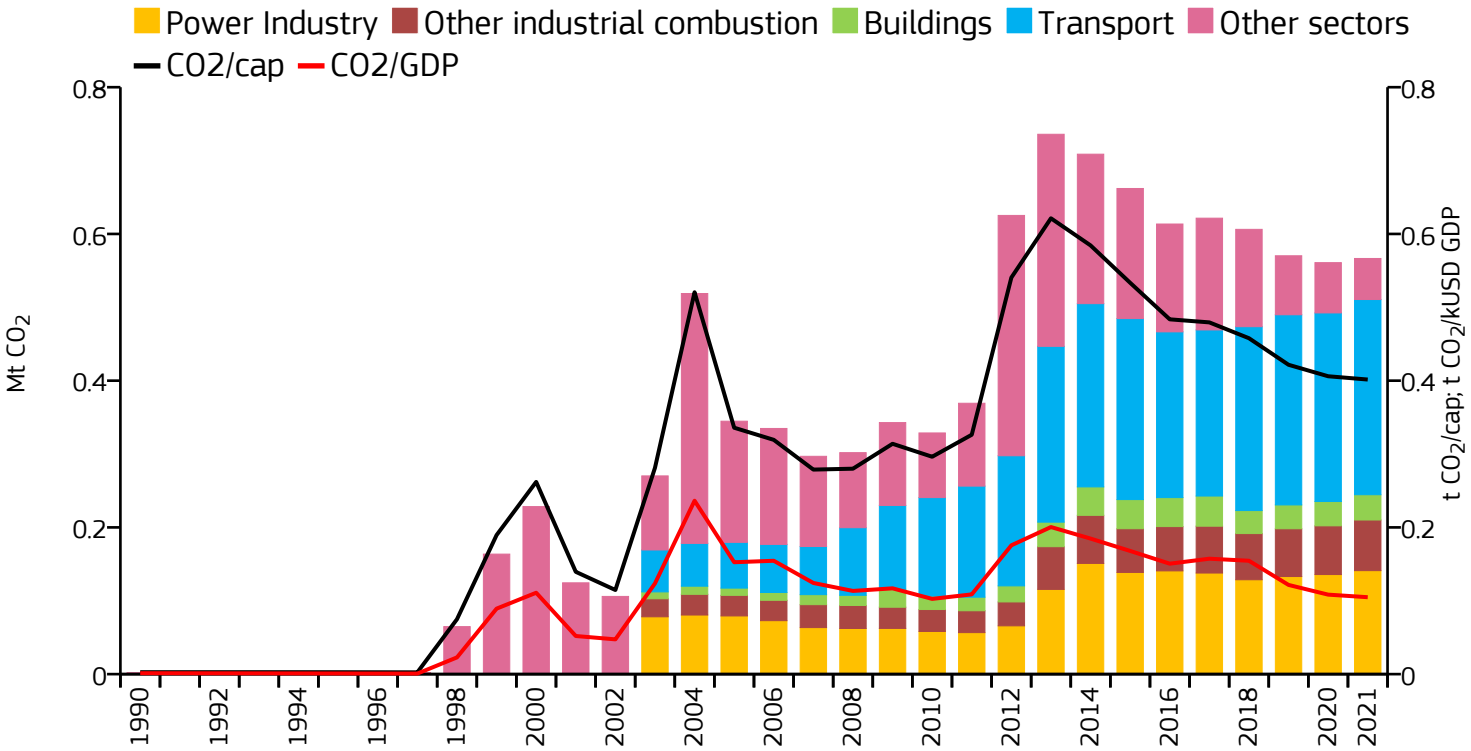


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.558	0.236	0.101	2.360M
2020	0.517	0.225	0.099	2.293M
2005	0.366	0.254	0.107	1.444M
1990	0.150	0.164	0.069	916.808k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+279%	+51%	+8%
Other industrial combustion	+680%	+168%	+8%
Buildings	+143%	+20%	+8%
Transport	+256%	+41%	+8%
Other sectors	+96%	+16%	0%
All sectors	+271%	+52%	+8%

Timor-Leste

Fossil CO_2 emissions by sector

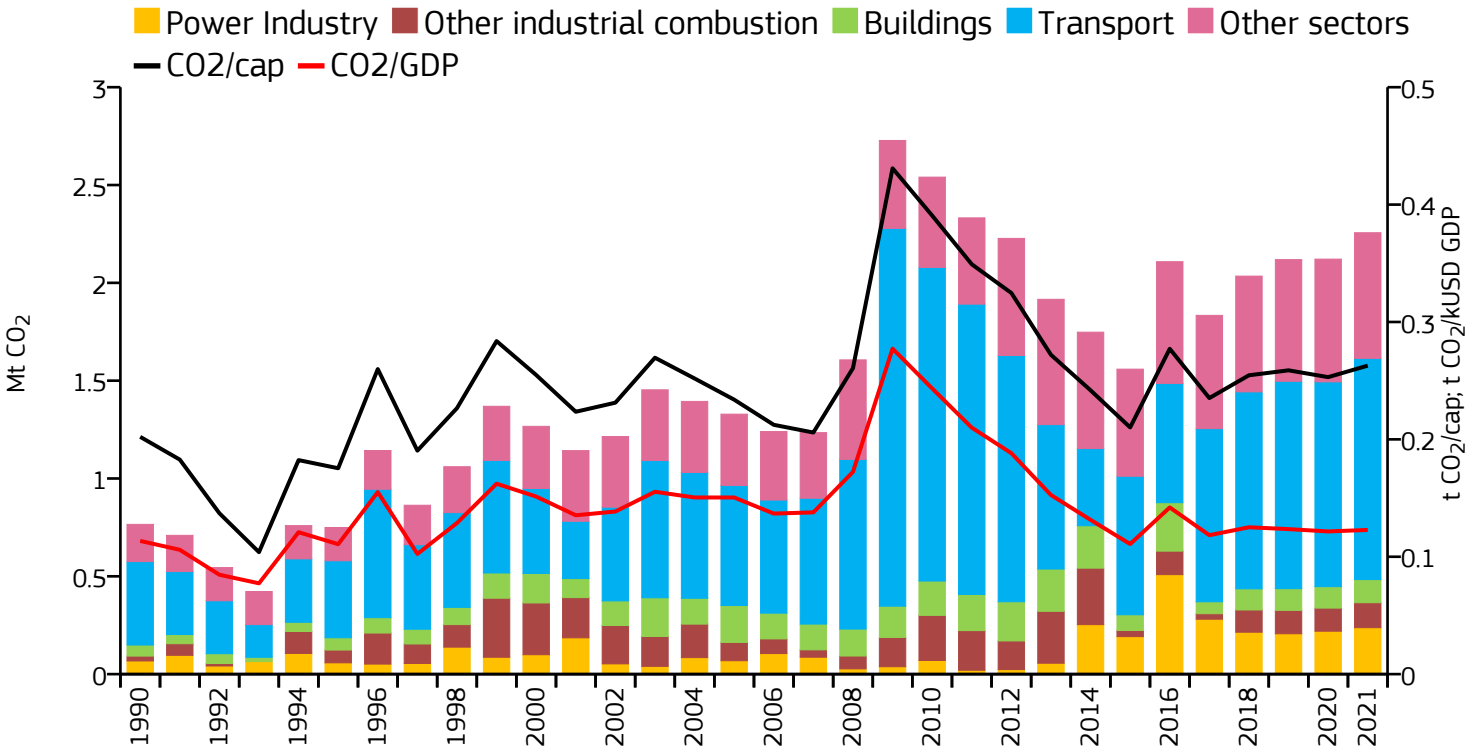


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.567	0.402	0.105	1.411M
2020	0.561	0.406	0.108	1.381M
2005	0.345	0.336	0.153	1.026M
1990	0.002	0.003	0.001	751.933k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗	↗ +78%	→ +4%
Other industrial combustion	↗	↗ +146%	→ +4%
Buildings	↗	↗ +250%	→ +4%
Transport	↗	↗ +326%	→ +4%
Other sectors	↗ +2718%	↘ -66%	↘ -18%
All sectors	↗ +28429%	↗ +64%	→ +1%

Togo

Fossil CO_2 emissions by sector

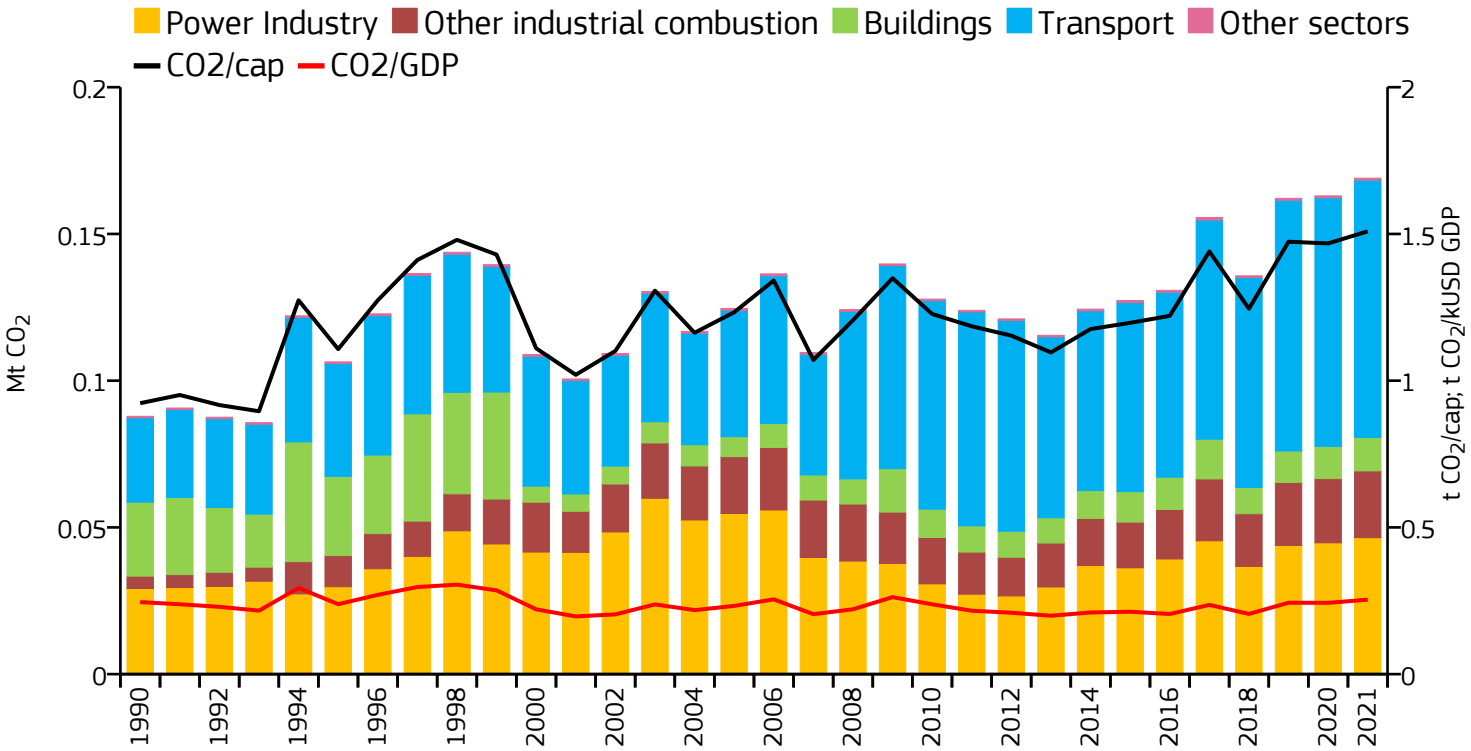


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	2.256	0.263	0.123	8.585M
2020	2.121	0.253	0.122	8.384M
2005	1.329	0.234	0.150	5.683M
1990	0.766	0.202	0.113	3.787M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+252%	+247%	+8%
Other industrial combustion	+412%	+36%	+8%
Buildings	+109%	-37%	+8%
Transport	+165%	+84%	+8%
Other sectors	+237%	+76%	+2%
All sectors	+195%	+70%	+6%

Tonga

Fossil CO_2 emissions by sector

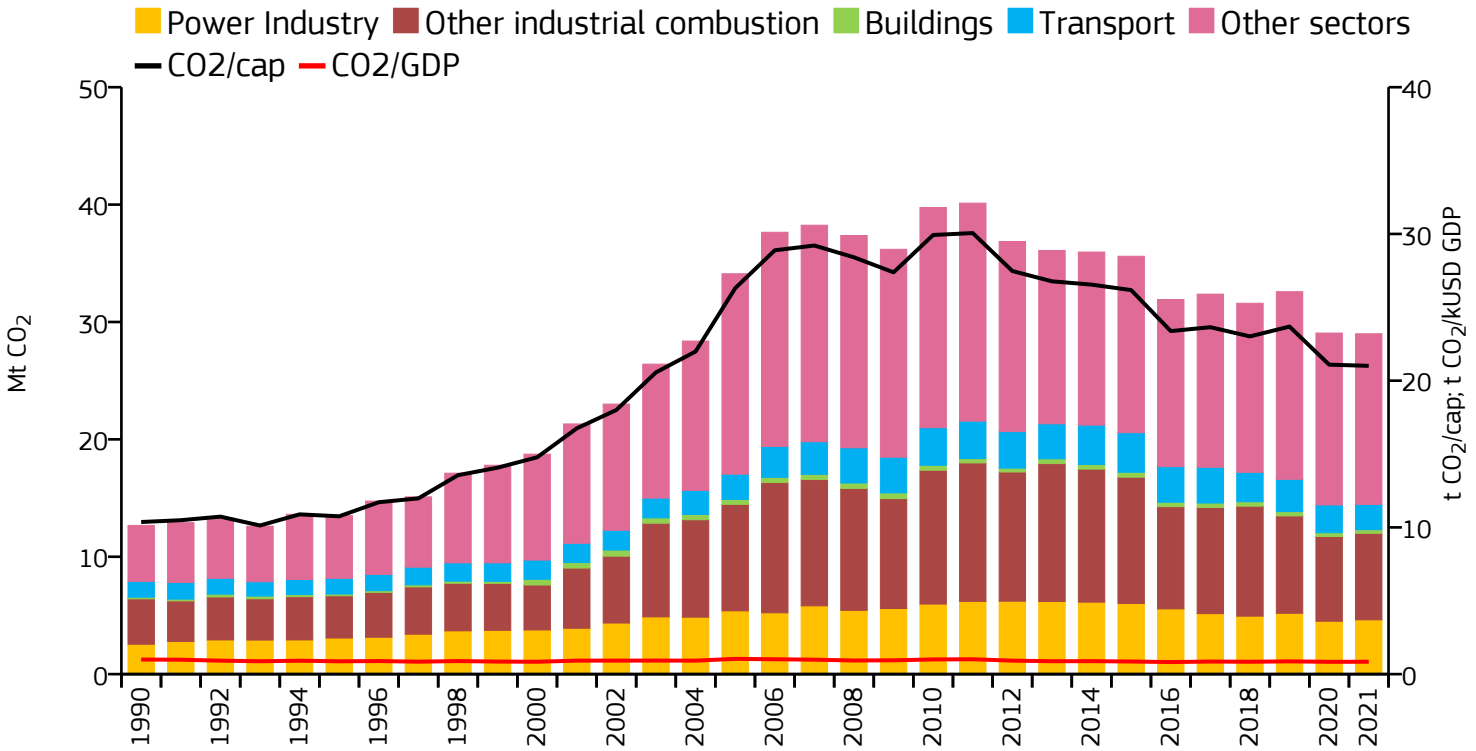


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.169	1.509	0.254	112.000k
2020	0.163	1.468	0.243	111.037k
2005	0.125	1.233	0.232	101.041k
1990	0.088	0.923	0.245	95.153k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+59%	-15%	+4%
Other industrial combustion	+439%	+17%	+4%
Buildings	-55%	+67%	+4%
Transport	+205%	+104%	+4%
Other sectors	+30%	+9%	+1%
All sectors	+92%	+36%	+4%

Trinidad and Tobago

Fossil CO_2 emissions by sector

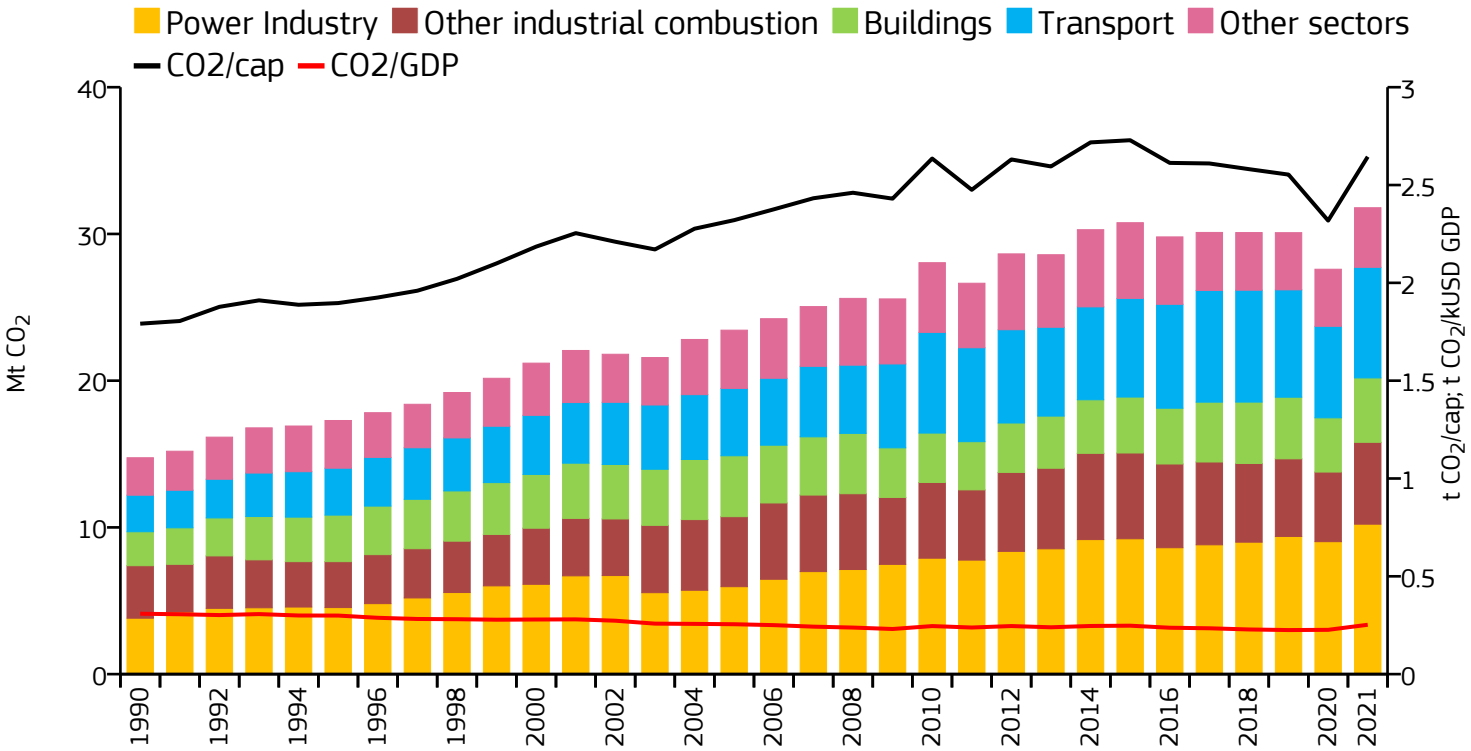


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	28.995	21.011	0.845	1.380M
2020	29.057	21.091	0.838	1.378M
2005	34.107	26.299	1.040	1.297M
1990	12.668	10.367	0.994	1.222M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+82%	-14%	+3%
Other industrial combustion	+91%	-19%	+2%
Buildings	+120%	-26%	-5%
Transport	+60%	0%	-9%
Other sectors	+205%	-15%	-1%
All sectors	+129%	-15%	0%

Tunisia

Fossil CO_2 emissions by sector

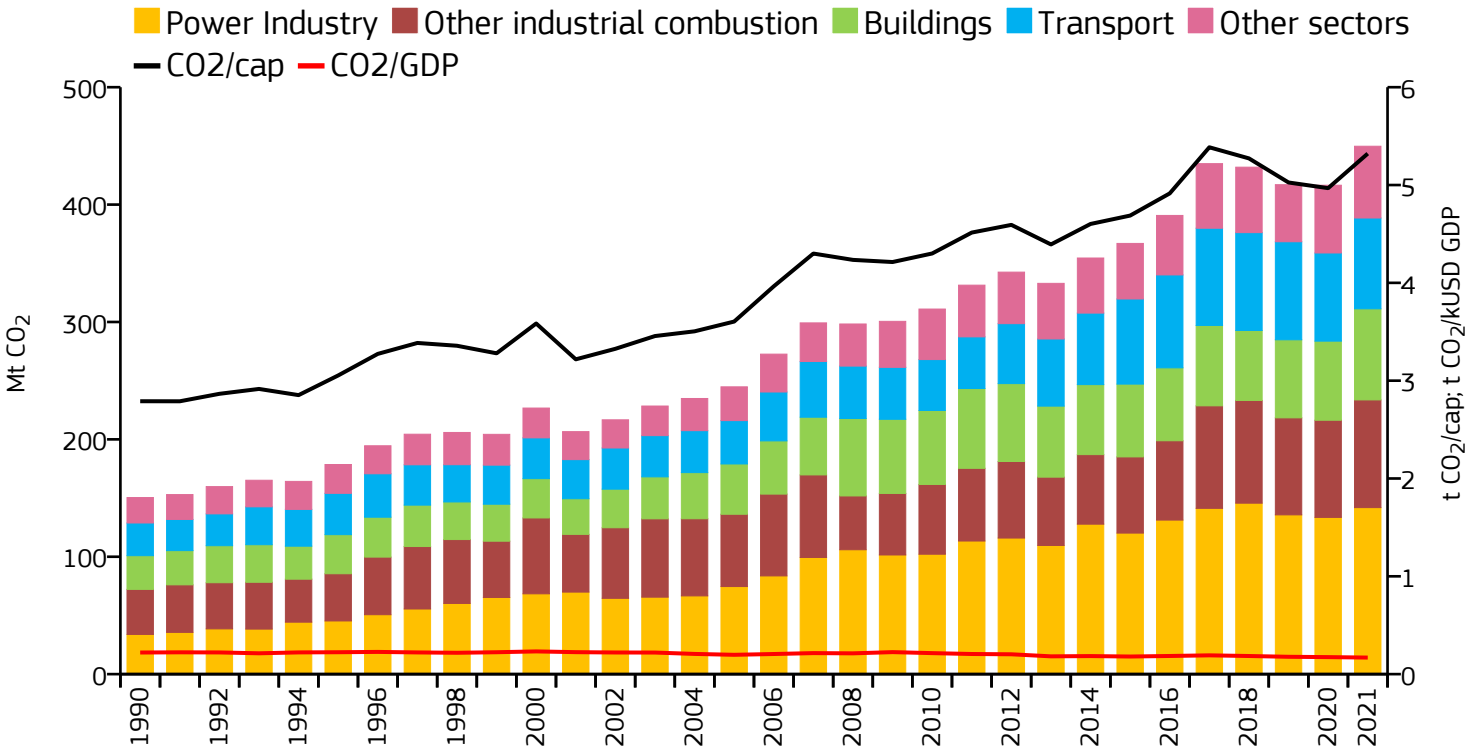


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	31.786	2.645	0.252	12.019M
2020	27.595	2.318	0.226	11.903M
2005	23.443	2.320	0.255	10.102M
1990	14.747	1.791	0.309	8.233M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+168%	+71%	+13%
Other industrial combustion	+56%	+17%	+18%
Buildings	+90%	+6%	+19%
Transport	+203%	+64%	+21%
Other sectors	+59%	+2%	+4%
All sectors	+116%	+36%	+15%

Turkey

Fossil CO_2 emissions by sector

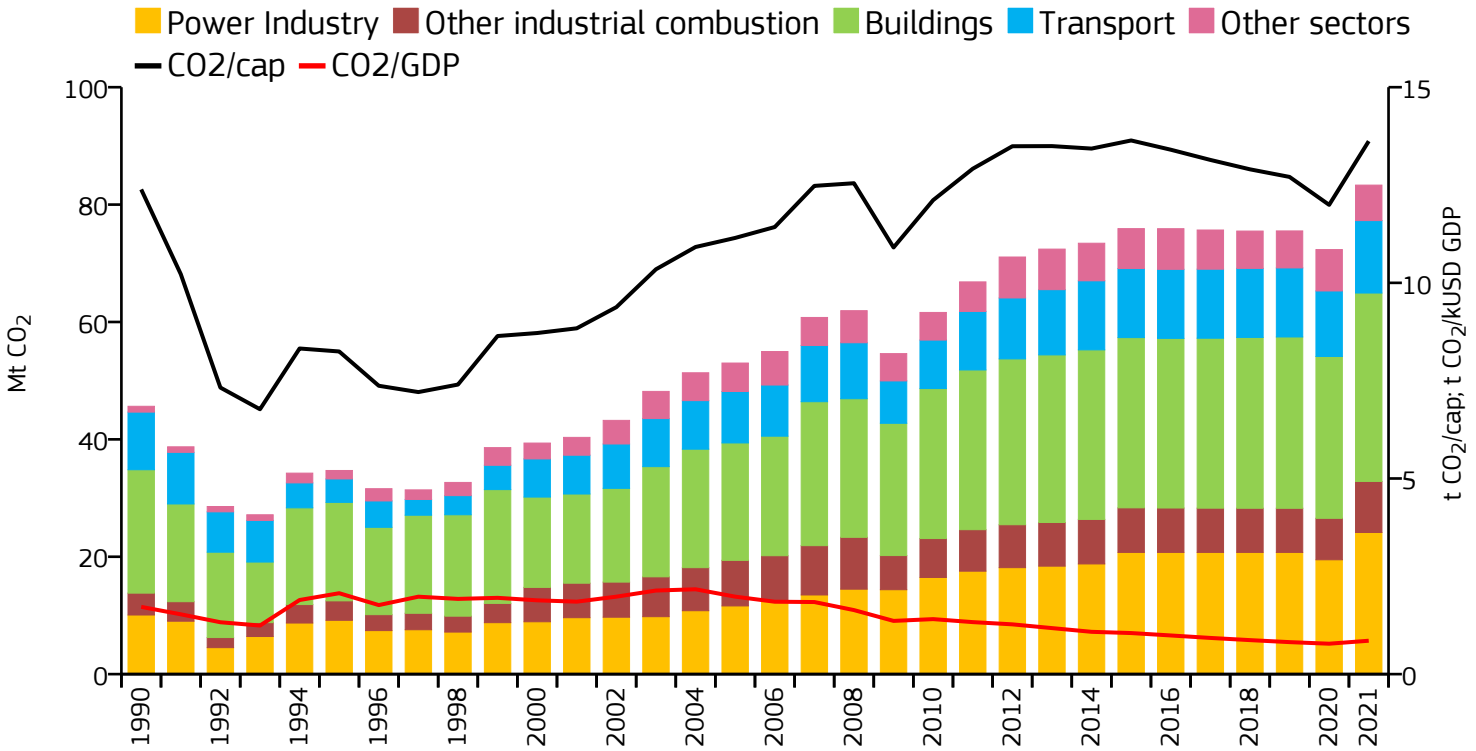


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	449.725	5.321	0.169	84.514M
2020	416.514	4.968	0.174	83.836M
2005	244.745	3.604	0.197	67.903M
1990	150.428	2.790	0.221	53.922M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+319%	+90%	+6%
Other industrial combustion	+139%	+49%	+11%
Buildings	+170%	+81%	+15%
Transport	+178%	+109%	+3%
Other sectors	+182%	+113%	+6%
All sectors	+199%	+84%	+8%

Turkmenistan

Fossil CO_2 emissions by sector

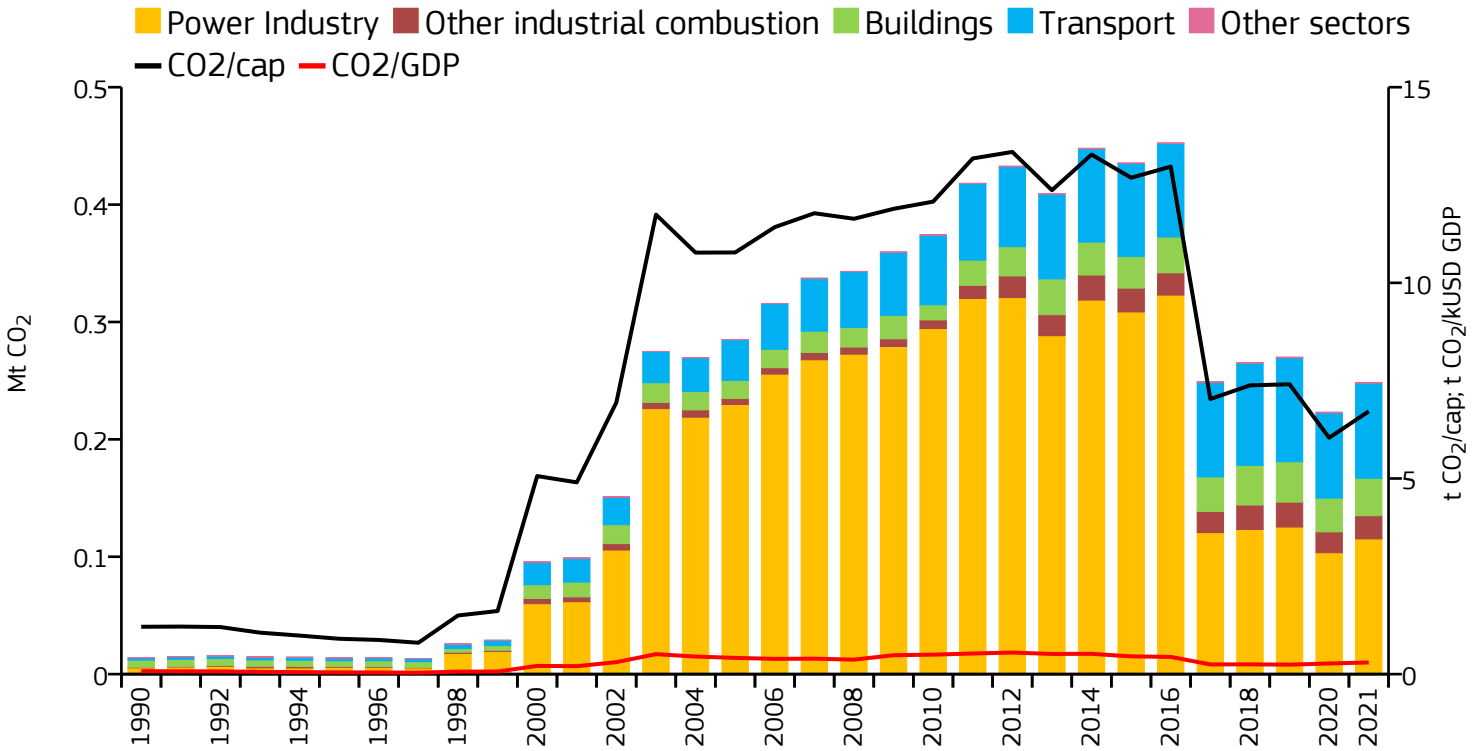


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	83.322	13.621	0.854	6.117M
2020	72.335	11.994	0.777	6.031M
2005	53.005	11.148	1.980	4.755M
1990	45.636	12.388	1.719	3.684M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+140%	+108%	+24%
Other industrial combustion	+133%	+12%	+23%
Buildings	+53%	+60%	+16%
Transport	+26%	+41%	+11%
Other sectors	+511%	+25%	-14%
All sectors	+83%	+57%	+15%

Turks and Caicos Islands

Fossil CO_2 emissions by sector

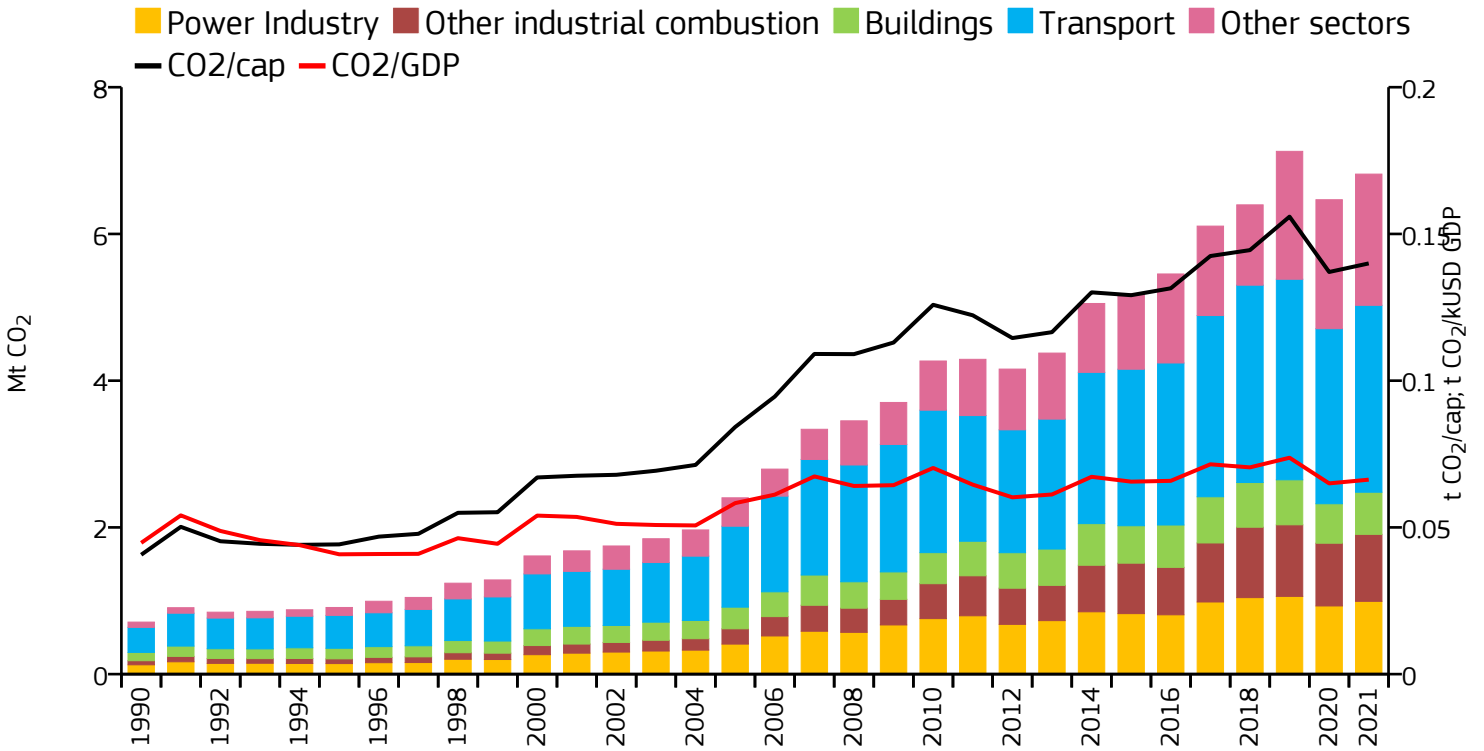


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.248	6.716	0.298	37.000k
2020	0.223	6.041	0.273	36.953k
2005	0.285	10.777	0.415	26.448k
1990	0.014	1.211	0.075	11.552k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +2063%	↘ -50%	↗ +11%
Other industrial combustion	↗ +3793%	↗ +281%	↗ +11%
Buildings	↗ +423%	↗ +107%	↗ +11%
Transport	↗ +3889%	↗ +134%	↗ +11%
Other sectors	↗	↗ +294%	→ +2%
All sectors	↗	↘ -13%	↗ +11%

Uganda

Fossil CO_2 emissions by sector

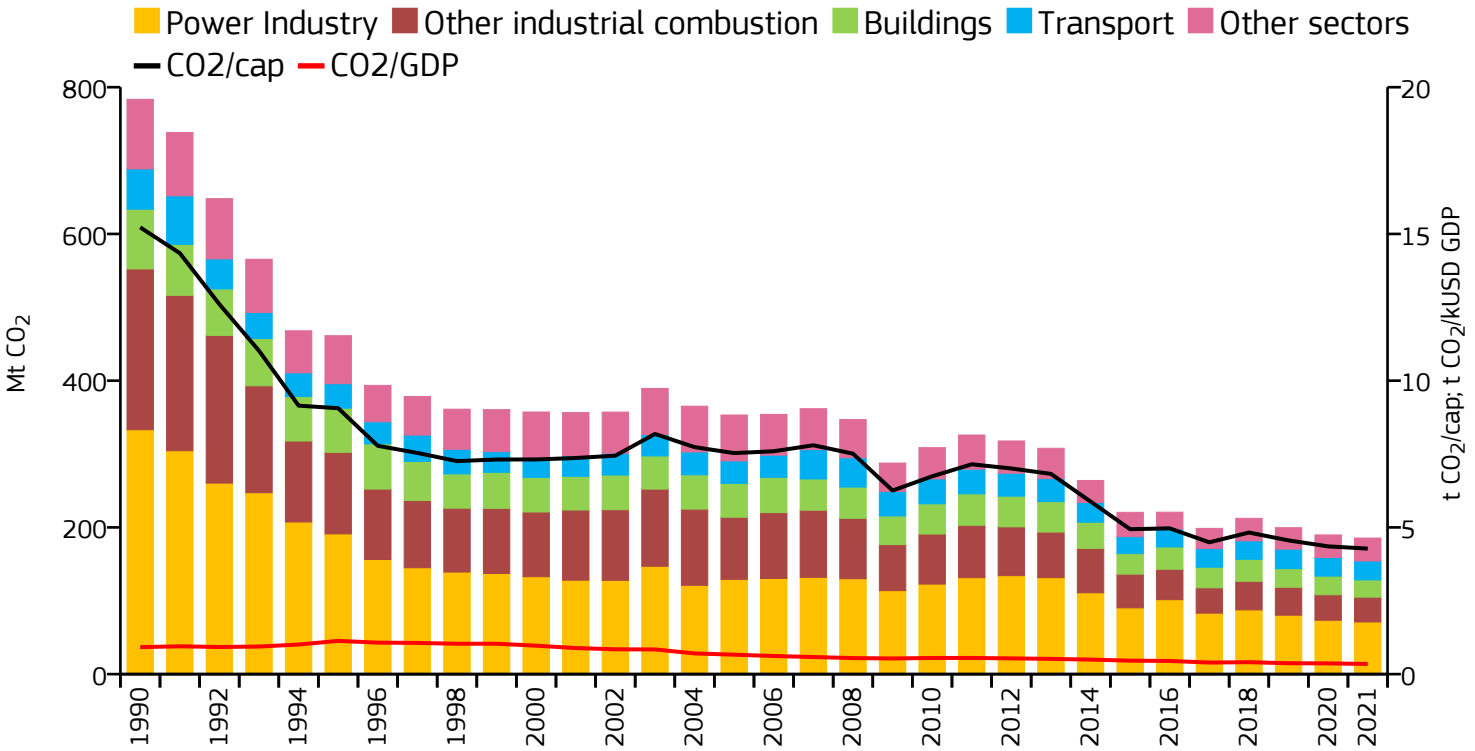


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	6.816	0.140	0.066	48.698M
2020	6.466	0.137	0.065	47.188M
2005	2.403	0.084	0.058	28.544M
1990	0.709	0.041	0.045	17.439M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+681%	+142%	+7%
Other industrial combustion	+1536%	+338%	+7%
Buildings	+407%	+95%	+7%
Transport	+646%	+131%	+7%
Other sectors	+2385%	+362%	+2%
All sectors	+861%	+184%	+5%

Ukraine

Fossil CO_2 emissions by sector

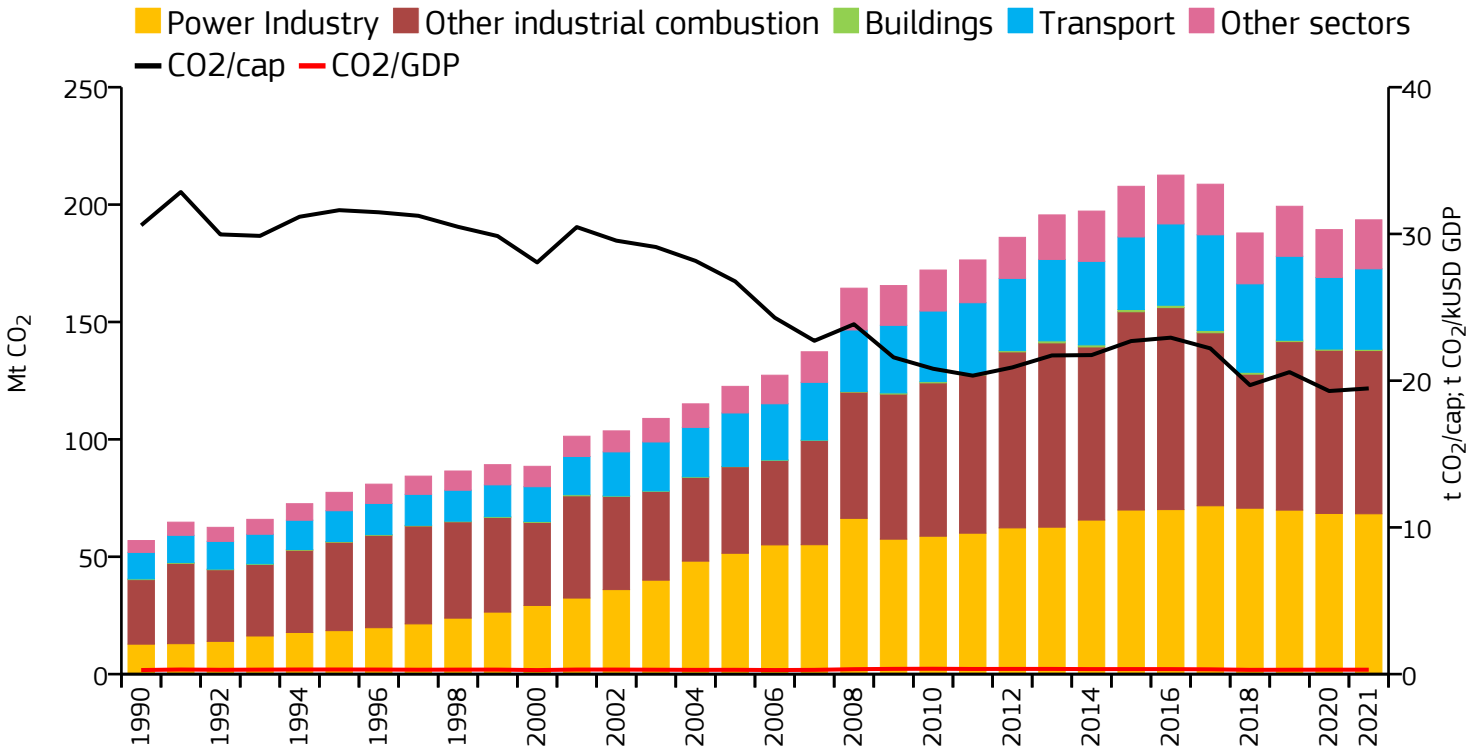


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	185.455	4.277	0.346	43.361M
2020	189.718	4.353	0.366	43.579M
2005	353.198	7.532	0.662	46.892M
1990	783.501	15.224	0.919	51.464M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↘ -79%	↘ -45%	→ -3%
Other industrial combustion	↘ -85%	↘ -60%	→ -3%
Buildings	↘ -71%	↘ -49%	↘ -7%
Transport	↘ -53%	↘ -16%	→ +2%
Other sectors	↘ -67%	↘ -50%	→ +1%
All sectors	↘ -76%	↘ -47%	→ -2%

United Arab Emirates

Fossil CO_2 emissions by sector

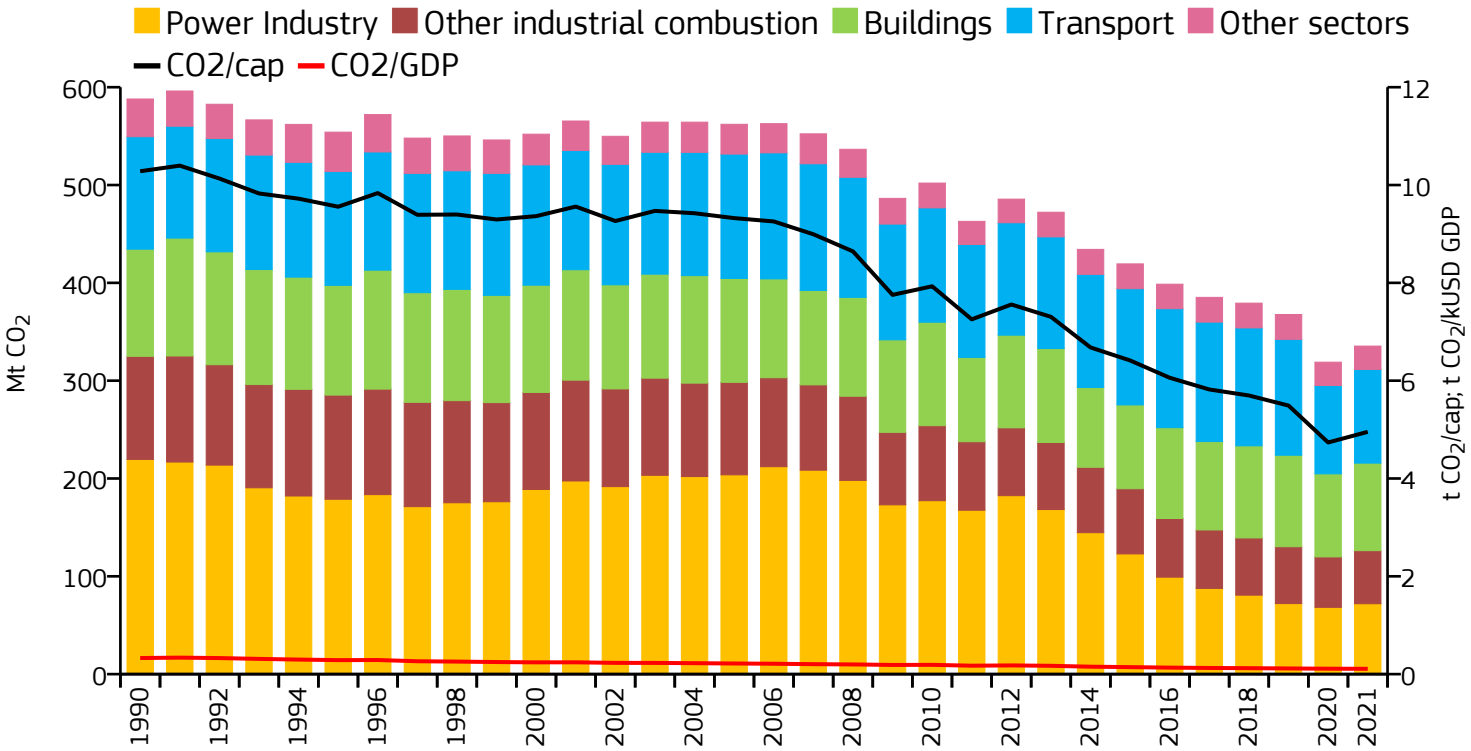


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	193.507	19.473	0.302	9.937M
2020	189.338	19.294	0.302	9.813M
2005	122.577	26.766	0.294	4.580M
1990	56.901	30.589	0.279	1.860M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+435%	+33%	0%
Other industrial combustion	+153%	+89%	0%
Buildings	+81%	+319%	+12%
Transport	+203%	+51%	+12%
Other sectors	+313%	+84%	+2%
All sectors	+240%	+58%	+2%

United Kingdom

Fossil CO_2 emissions by sector

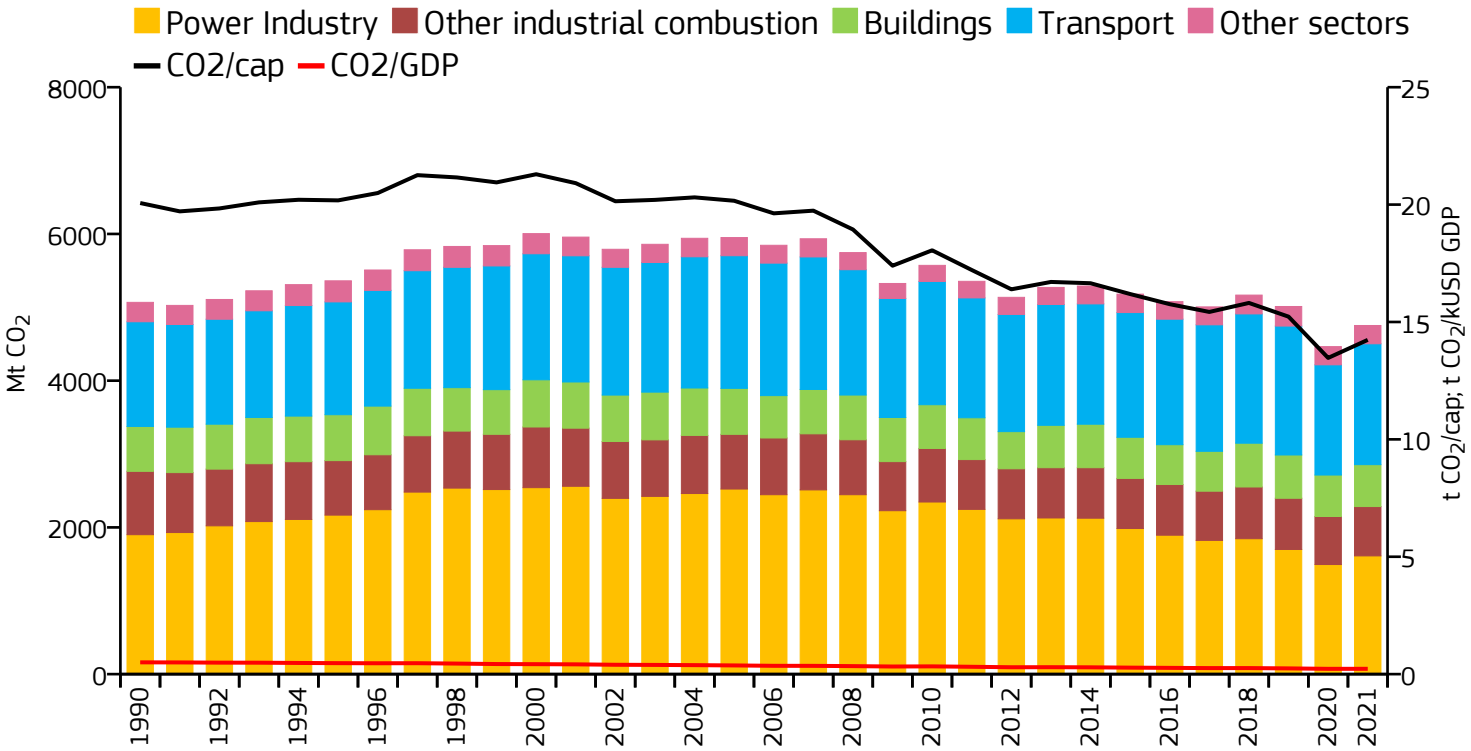


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	335.363	4.954	0.109	67.699M
2020	318.923	4.736	0.111	67.334M
2005	562.091	9.324	0.217	60.287M
1990	587.953	10.282	0.329	57.183M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-67%	-65%	+5%
Other industrial combustion	-49%	-43%	+5%
Buildings	-18%	-16%	+5%
Transport	-17%	-25%	+6%
Other sectors	-38%	-22%	0%
All sectors	-43%	-40%	+5%

United States

Fossil CO_2 emissions by sector

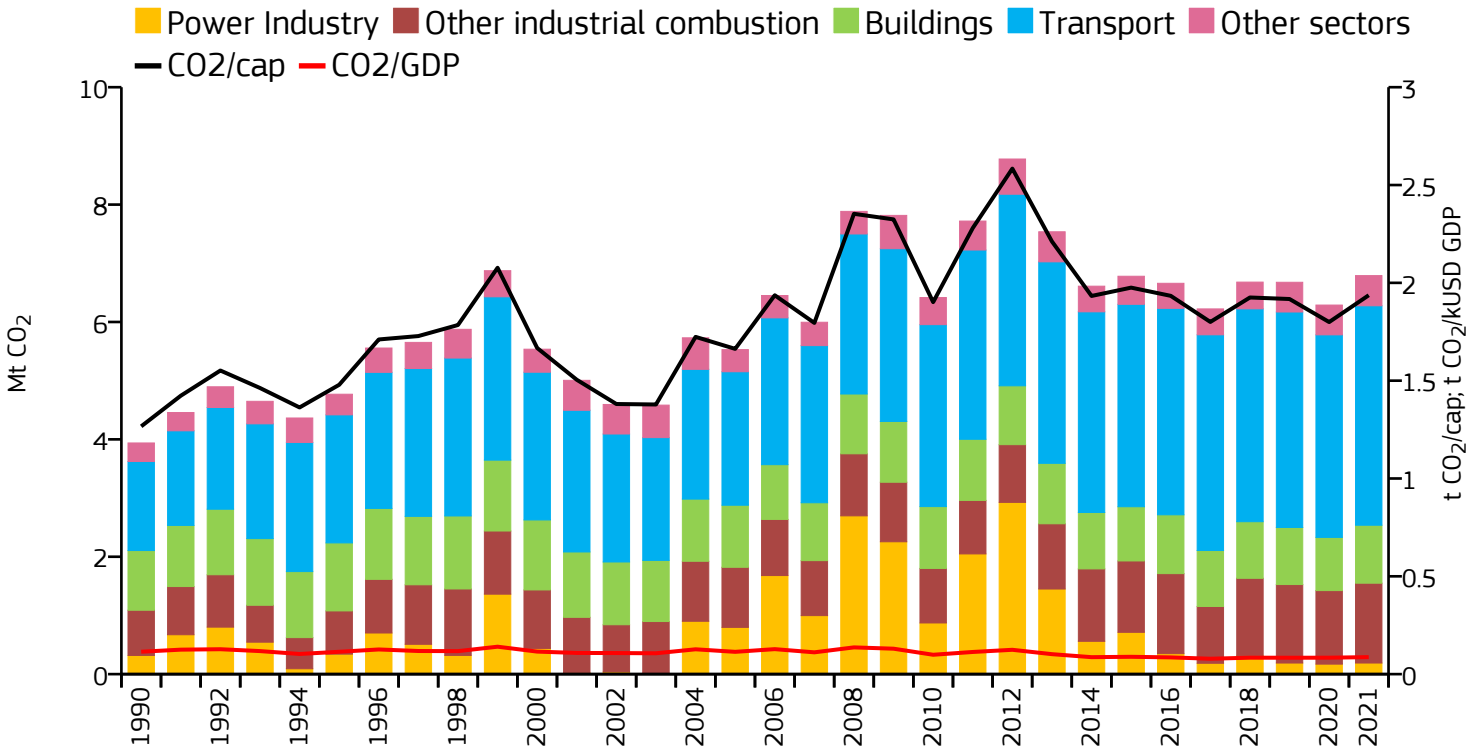


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	4752.079	14.237	0.227	333.783M
2020	4464.106	13.469	0.225	331.432M
2005	5950.655	20.163	0.371	295.130M
1990	5067.480	20.067	0.502	252.530M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-15%	-36%	+8%
Other industrial combustion	-22%	-10%	+3%
Buildings	-7%	-9%	+1%
Transport	+15%	-9%	+10%
Other sectors	-6%	+1%	0%
All sectors	-6%	-20%	+6%

Uruguay

Fossil CO_2 emissions by sector

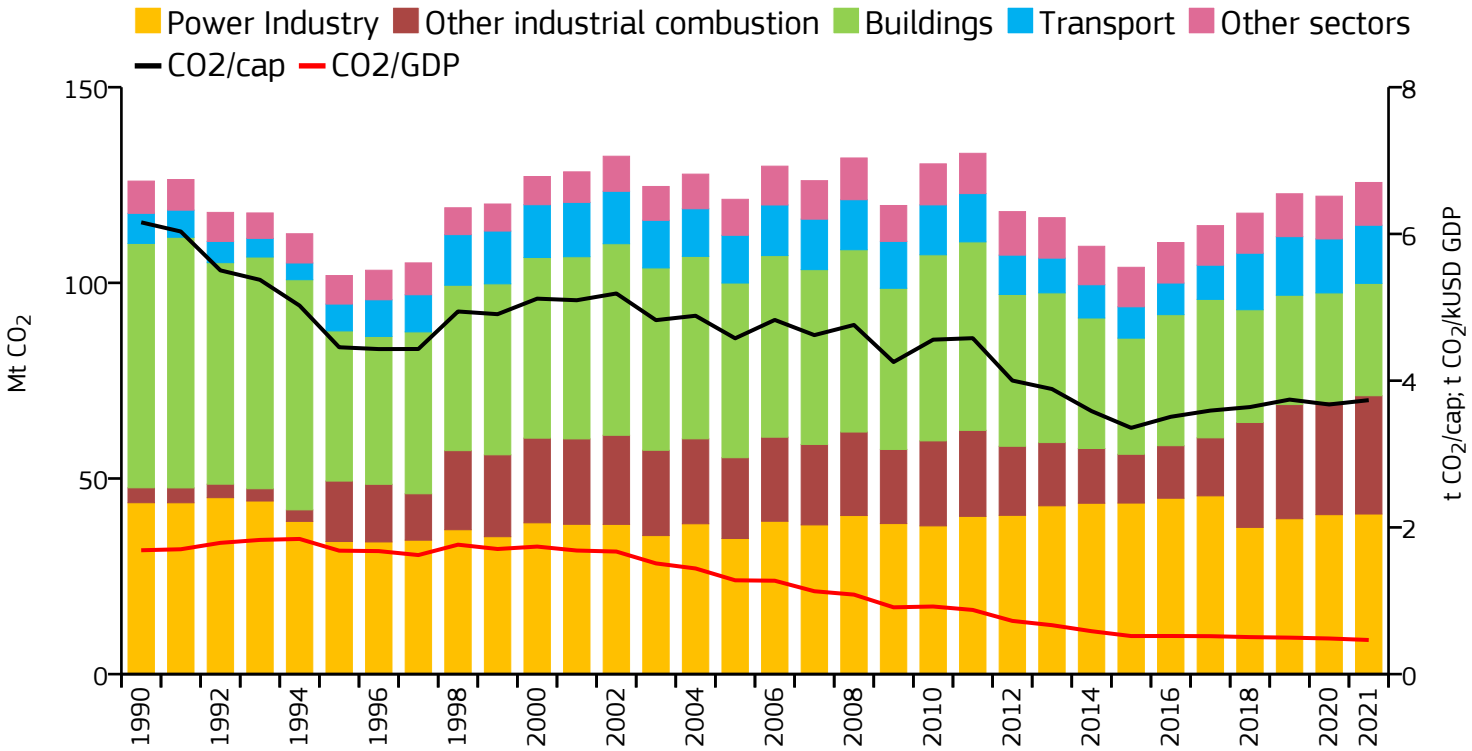


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	6.790	1.937	0.087	3.506M
2020	6.288	1.800	0.084	3.494M
2005	5.529	1.663	0.114	3.326M
1990	3.939	1.266	0.114	3.110M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-41%	-76%	+11%
Other industrial combustion	+77%	+33%	+9%
Buildings	-3%	-7%	+9%
Transport	+146%	+64%	+8%
Other sectors	+63%	+36%	+1%
All sectors	+72%	+23%	+8%

Uzbekistan

Fossil CO_2 emissions by sector

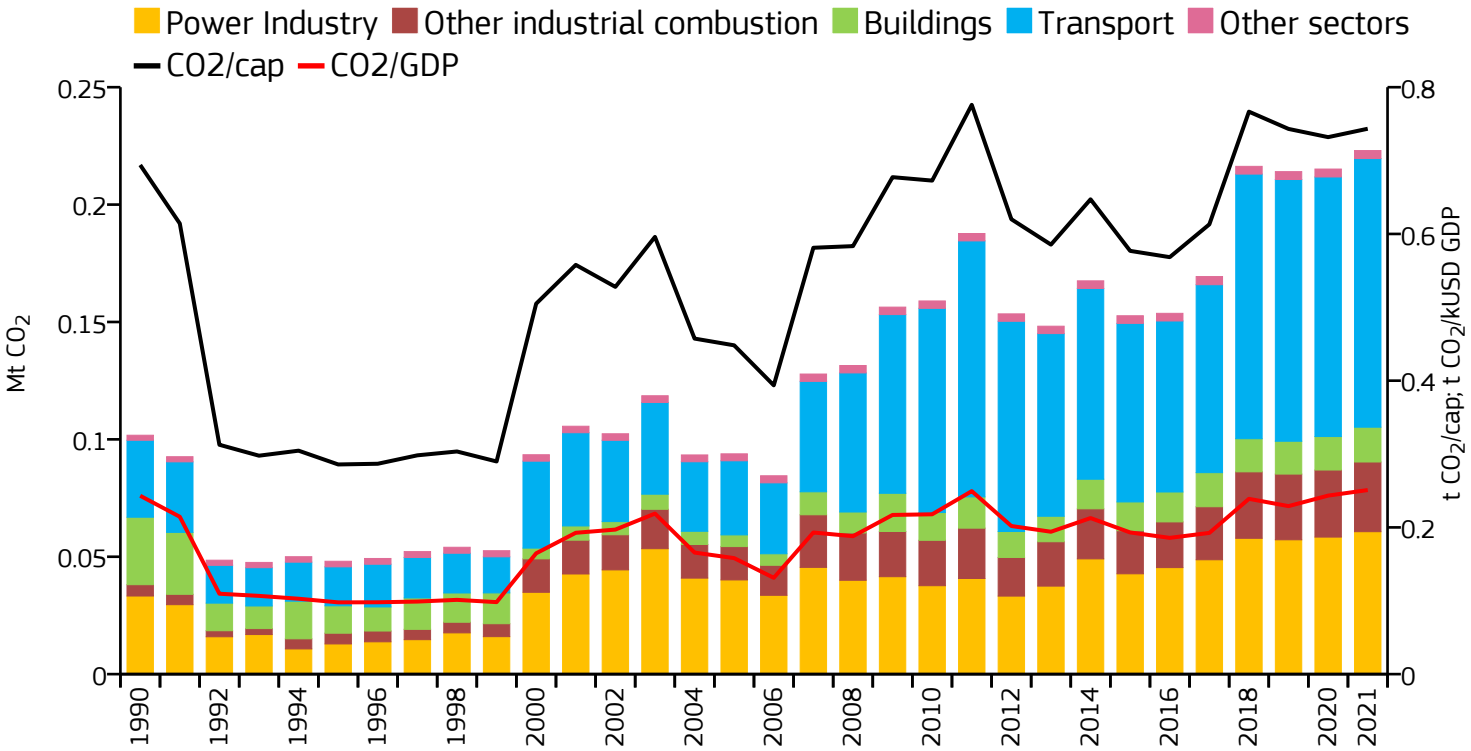


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	125.654	3.734	0.465	33.649M
2020	122.154	3.675	0.486	33.236M
2005	121.353	4.577	1.279	26.512M
1990	126.010	6.158	1.688	20.462M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-7%	+18%	0%
Other industrial combustion	+693%	+46%	+5%
Buildings	-54%	-36%	+3%
Transport	+93%	+22%	+8%
Other sectors	+33%	+19%	0%
All sectors	0%	+4%	+3%

Vanuatu

Fossil CO_2 emissions by sector

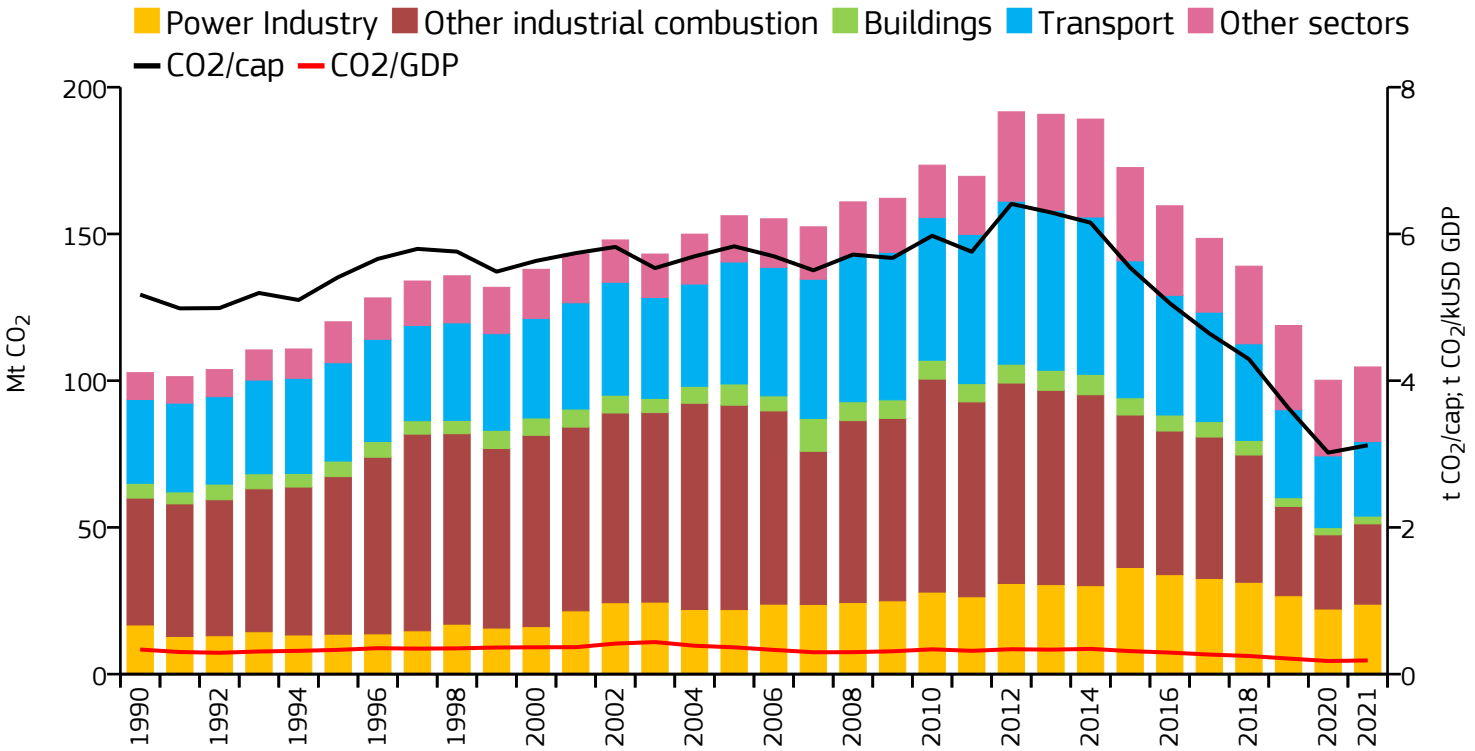


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.223	0.743	0.251	300.000k
2020	0.215	0.732	0.243	293.934k
2005	0.094	0.448	0.158	209.370k
1990	0.102	0.694	0.243	146.634k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +82%	↗ +51%	→ +4%
Other industrial combustion	↗ +516%	↗ +109%	→ +4%
Buildings	↘ -48%	↗ +197%	→ +4%
Transport	↗ +249%	↗ +263%	→ +4%
Other sectors	↗ +59%	↗ +15%	→ +1%
All sectors	↗ +119%	↗ +138%	→ +4%

Venezuela

Fossil CO_2 emissions by sector

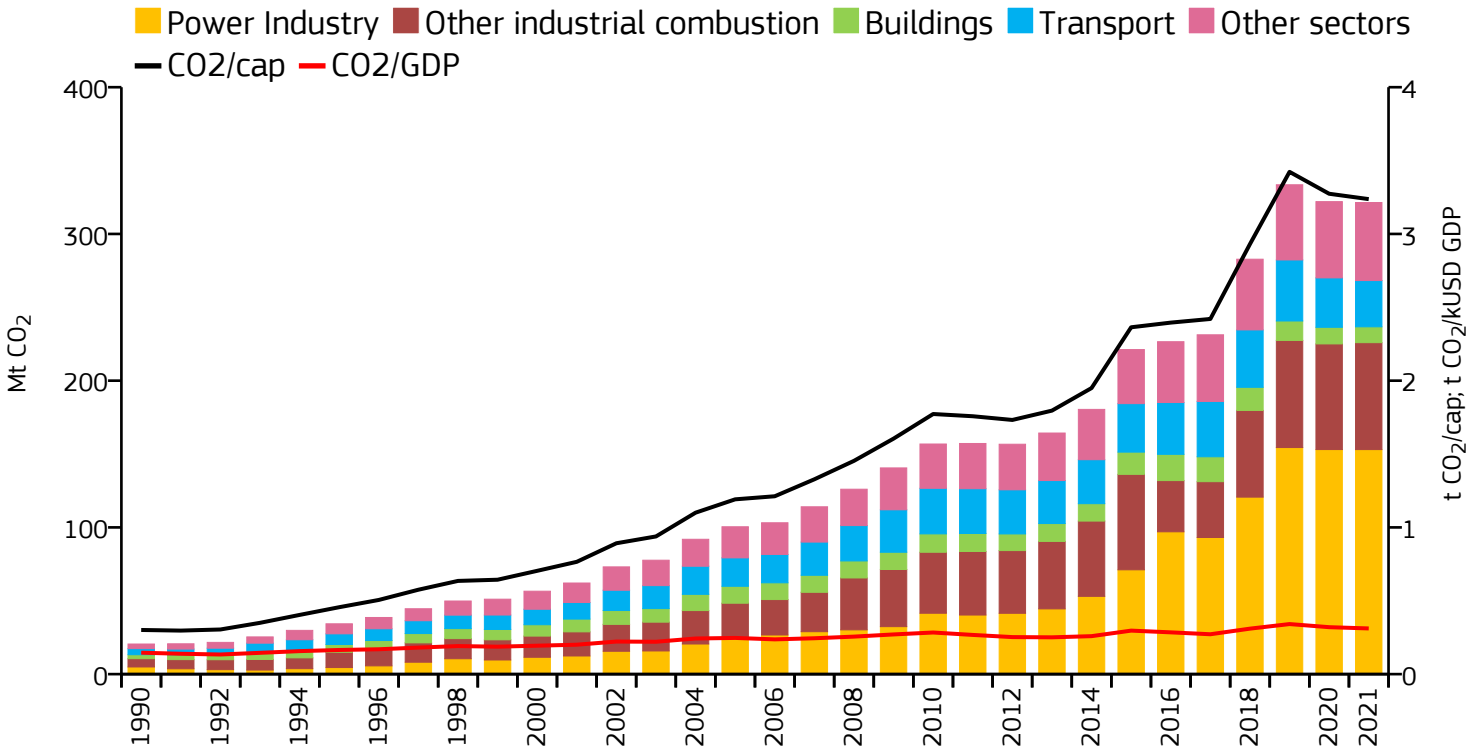


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	104.672	3.119	0.187	33.559M
2020	100.157	3.019	0.179	33.172M
2005	156.192	5.832	0.365	26.784M
1990	102.737	5.173	0.335	19.862M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+42%	+8%	+8%
Other industrial combustion	-37%	-61%	+8%
Buildings	-47%	-63%	+7%
Transport	-11%	-39%	+4%
Other sectors	+178%	+61%	-1%
All sectors	+2%	-33%	+5%

Vietnam

Fossil CO_2 emissions by sector

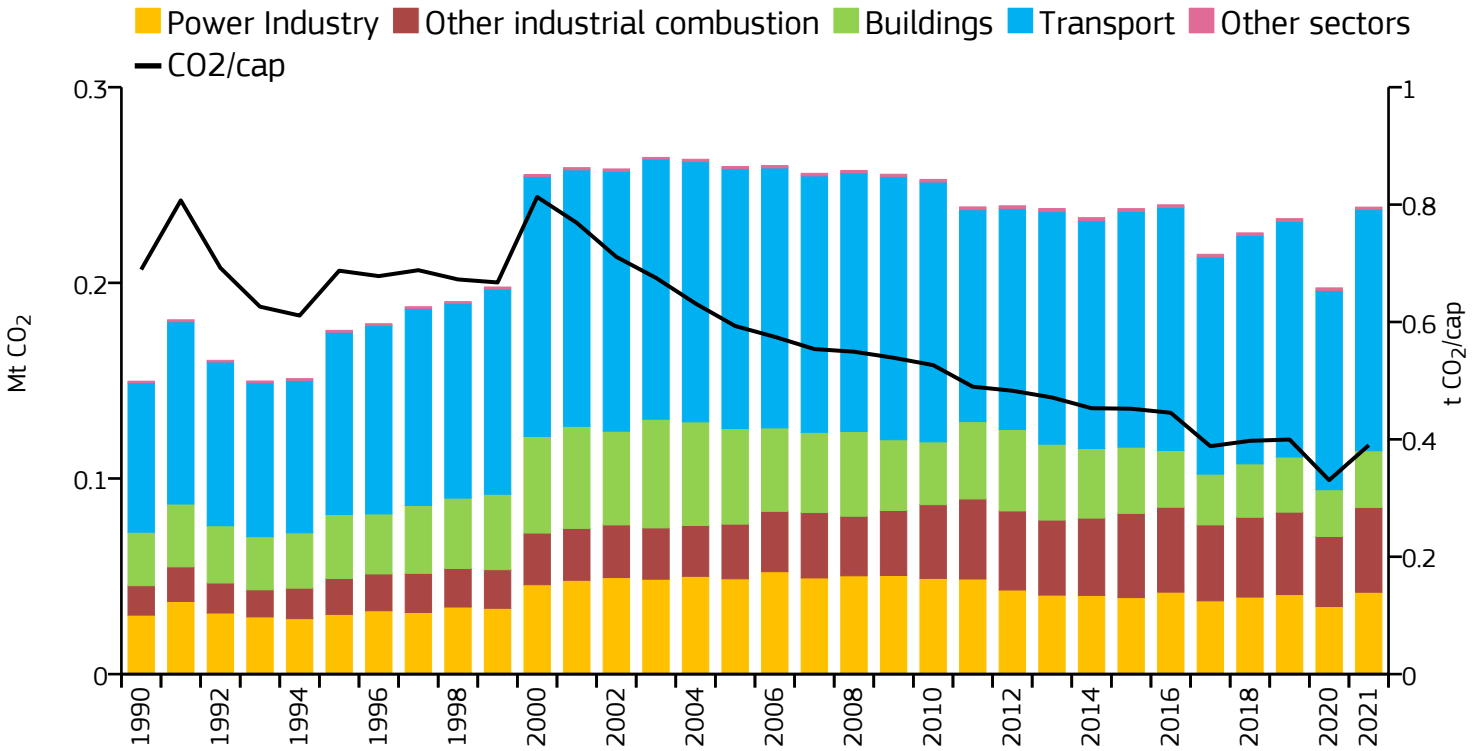


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	321.413	3.237	0.311	99.284M
2020	322.018	3.274	0.320	98.360M
2005	100.432	1.191	0.247	84.309M
1990	20.525	0.301	0.146	68.210M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	↗ +3036%	↗ +530%	→ 0%
Other industrial combustion	↗ +1187%	↗ +203%	→ +1%
Buildings	↗ +303%	↘ -6%	→ -5%
Transport	↗ +657%	↗ +63%	↘ -6%
Other sectors	↗ +1595%	↗ +151%	→ +2%
All sectors	↗ +1466%	↗ +220%	→ 0%

Western Sahara

Fossil CO_2 emissions by sector

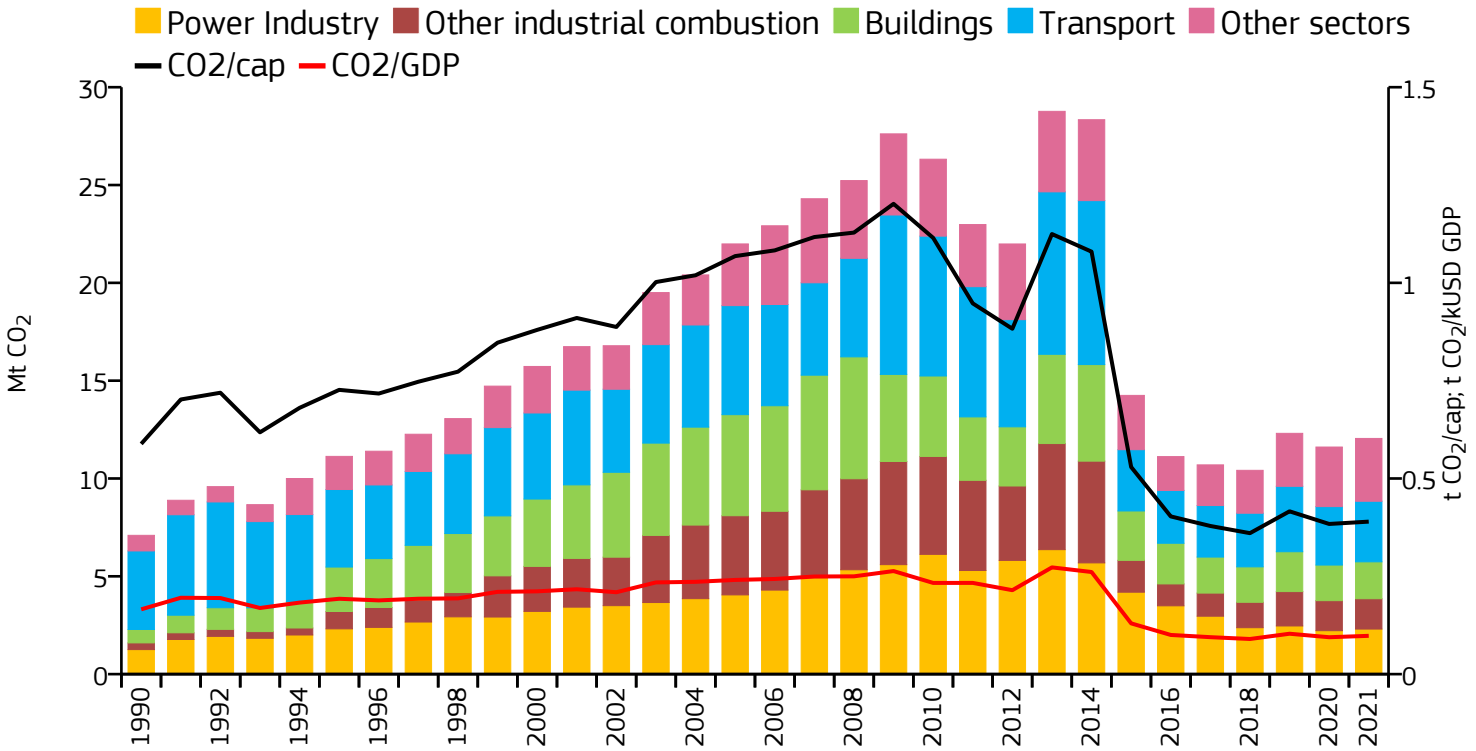


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	0.239	0.390	n/a	612.000k
2020	0.197	0.331	n/a	597.339k
2005	0.259	0.593	n/a	437.515k
1990	0.150	0.689	n/a	217.258k

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+39%	-14%	+21%
Other industrial combustion	+188%	+55%	+21%
Buildings	+6%	-41%	+21%
Transport	+61%	-7%	+21%
Other sectors	+48%	+9%	-2%
All sectors	+59%	-8%	+21%

Yemen

Fossil CO_2 emissions by sector

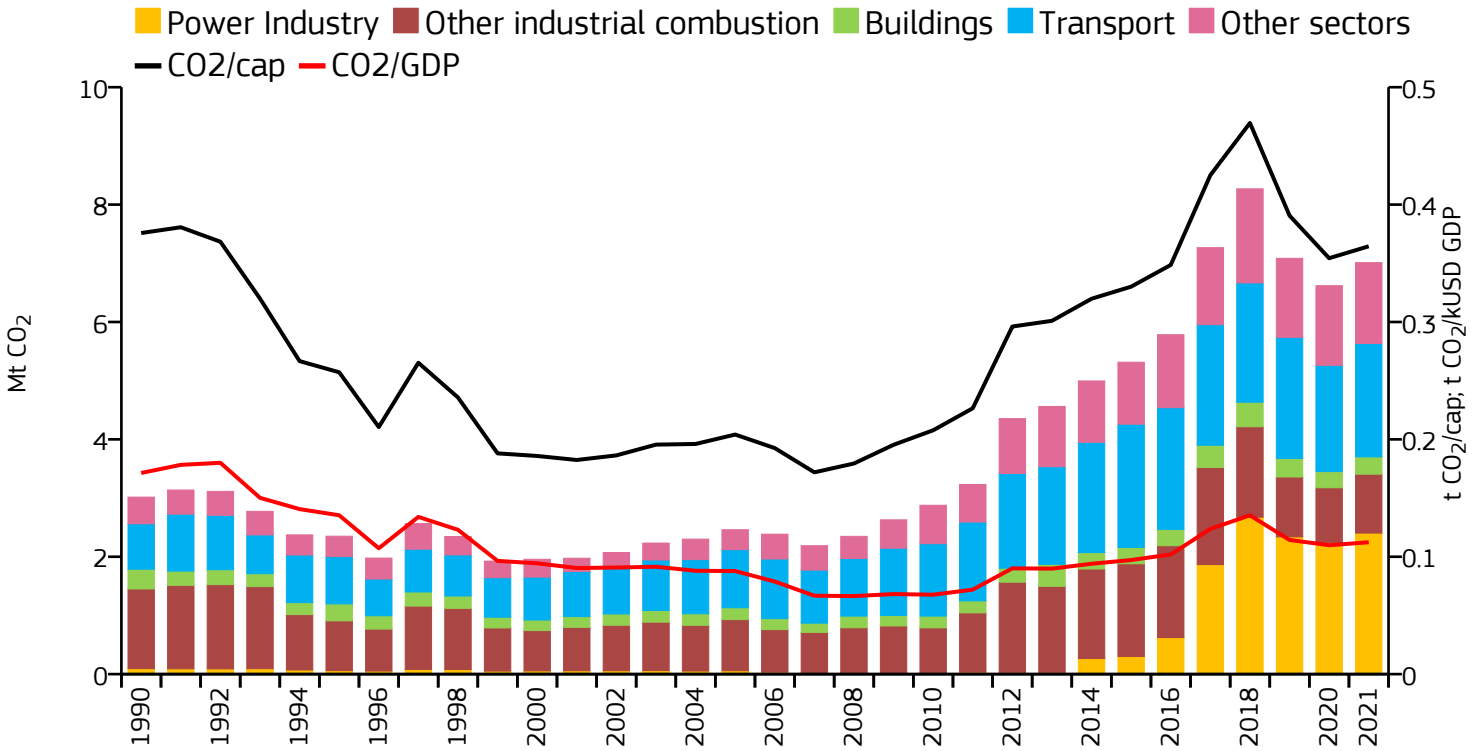


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	12.047	0.390	0.098	30.911M
2020	11.608	0.384	0.094	30.245M
2005	21.989	1.068	0.241	20.583M
1990	7.095	0.588	0.166	12.057M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+84%	-43%	+4%
Other industrial combustion	+353%	-62%	+1%
Buildings	+175%	-63%	+4%
Transport	-23%	-44%	+4%
Other sectors	+302%	+2%	+5%
All sectors	+70%	-45%	+4%

Zambia

Fossil CO_2 emissions by sector

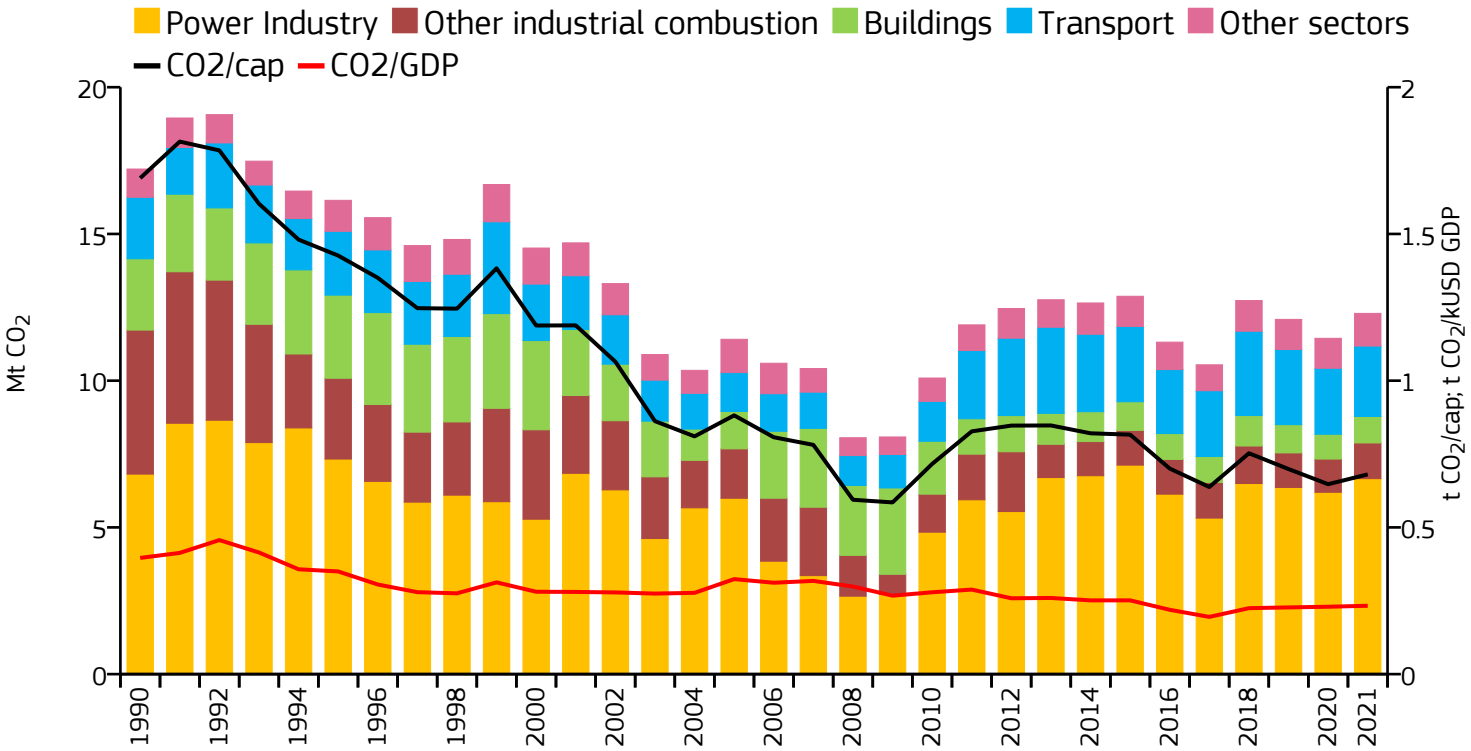


Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	7.011	0.364	0.112	19.235M
2020	6.618	0.354	0.110	18.679M
2005	2.460	0.204	0.088	12.053M
1990	3.016	0.376	0.171	8.027M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	+2480%	+4087%	+7%
Other industrial combustion	-26%	+15%	+7%
Buildings	-13%	+46%	+7%
Transport	+150%	+95%	+7%
Other sectors	+203%	+306%	+2%
All sectors	+132%	+185%	+6%

Zimbabwe

Fossil CO_2 emissions by sector



Year	CO_2 emissions Mt CO_2/yr	CO_2 emissions per capita t CO_2/cap/yr	CO_2 emissions per unit of GDP PPP t CO_2/kUSD/yr	Population
2021	12.293	0.681	0.233	18.060M
2020	11.443	0.647	0.230	17.680M
2005	11.410	0.882	0.324	12.940M
1990	17.211	1.690	0.396	10.183M

	2021 vs 1990	2021 vs 2005	2021 vs 2020
Power Industry	-2%	+11%	+7%
Other industrial combustion	-75%	-28%	+7%
Buildings	-63%	-29%	+7%
Transport	+15%	+81%	+7%
Other sectors	+16%	-2%	+9%
All sectors	-29%	+8%	+7%

Annex 7. CO_2 emissions and removals from LULUCF sector by macro-regions

The following ten macro-regions[34] are presented:

Africa, Asia-Pacific Developed, Eastern Asia, Eurasia, Europe, Latin America and Caribbean, Middle East, North America, South-East Asia and developing Pacific, Southern Asia.

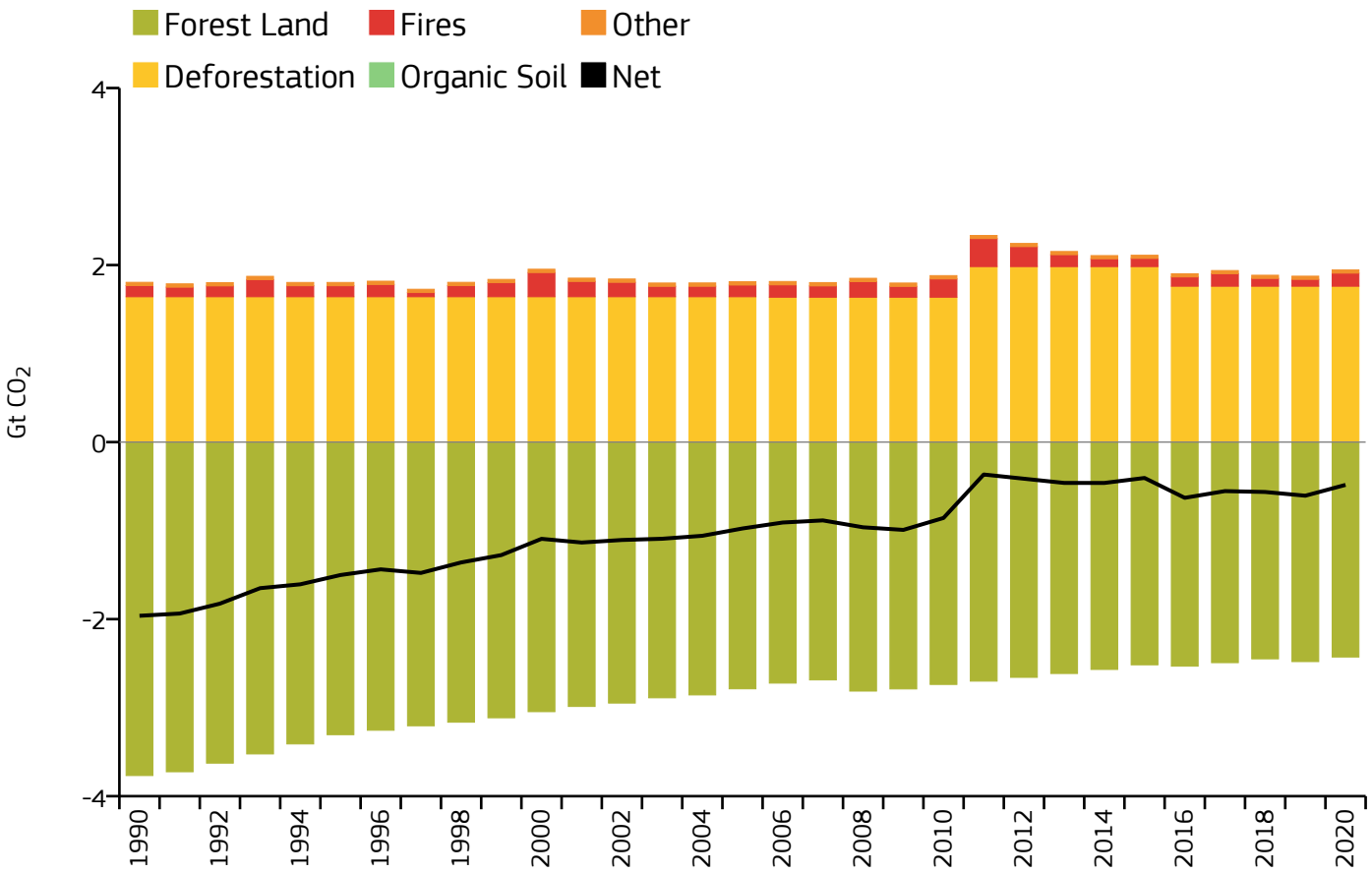
The following LULUCF sectors are included:

Forest Land, Deforestation, Organic Soil, Other and Fires.

(34) Macro regions classification follows the definition used in the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR6).

Africa

CO_2 emissions and removals from LULUCF sector

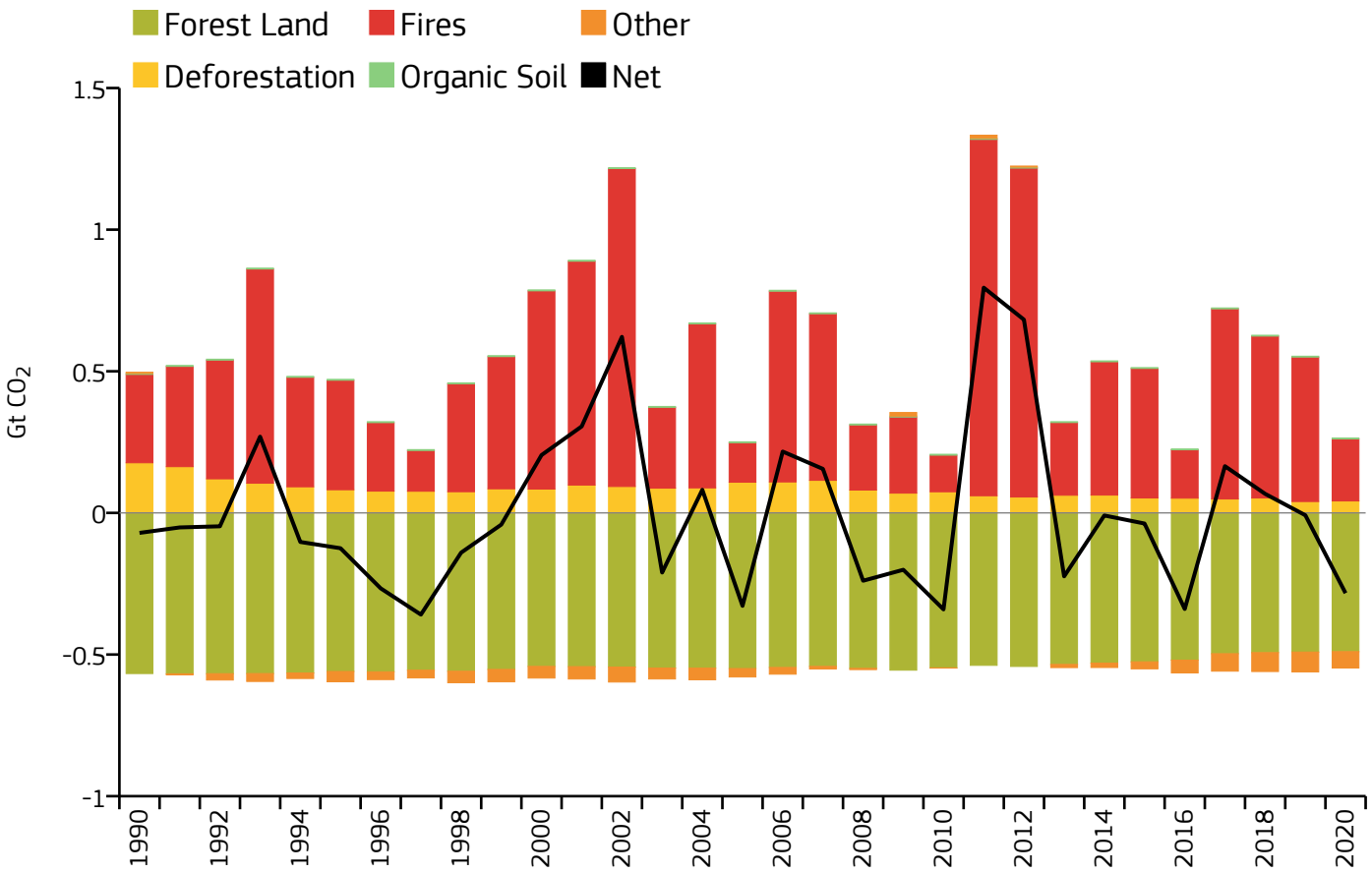


Year	1990	2000	2015	2020
Net flux (Gt CO_2/yr)	-1.962	-1.093	-0.405	-0.483

Countries included in Africa:
Algeria; Angola; Benin; Botswana; Burkina Faso; Burundi; Cabo Verde; Cameroon; Central African Republic; Chad; Comoros; Congo; Côte d'Ivoire; Democratic Republic of the Congo; Djibouti; Egypt; Equatorial Guinea; Eritrea; Eswatini; Ethiopia; Gabon; Ghana; Guinea; Guinea-Bissau; Kenya; Lesotho; Liberia; Libya; Madagascar; Malawi; Mali; Mauritania; Mauritius; Morocco; Mozambique; Namibia; Niger; Nigeria; Rwanda; Réunion; Saint Helena, Ascension and Tristan da Cunha; Senegal; Seychelles; Sierra Leone; Somalia; South Africa; Sudan and South Sudan; São Tomé and Príncipe; Tanzania; The Gambia; Togo; Tunisia; Uganda; Western Sahara; Zambia; Zimbabwe.

Asia-Pacific Developed

CO_2 emissions and removals from LULUCF sector

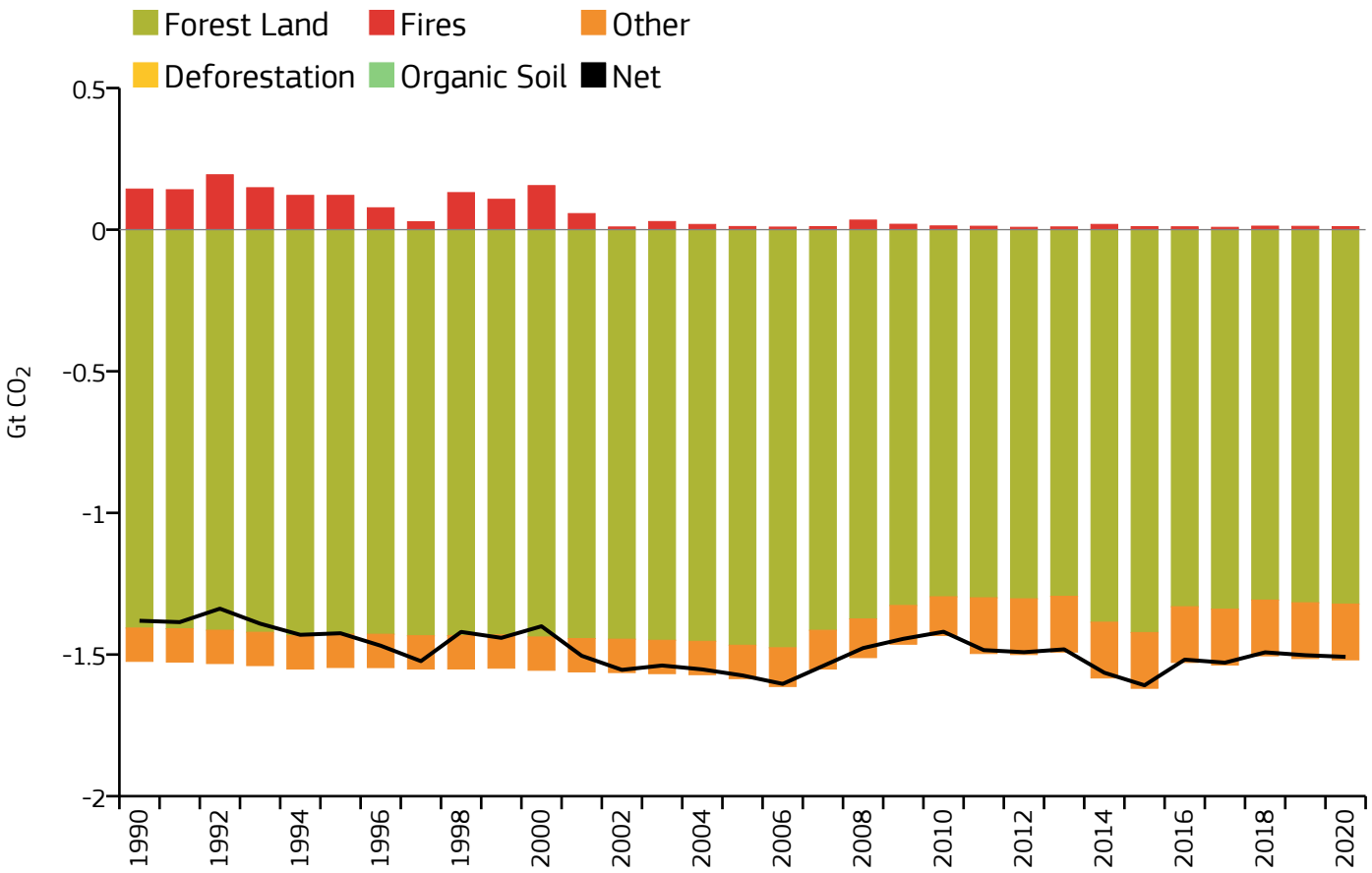


Year	1990	2000	2015	2020
Net flux (Gt CO_2/yr)	-0.071	0.204	-0.038	-0.283

Countries included in Asia-Pacific Developed:
Australia; Japan; New Zealand.

Eastern Asia

CO_2 emissions and removals from LULUCF sector

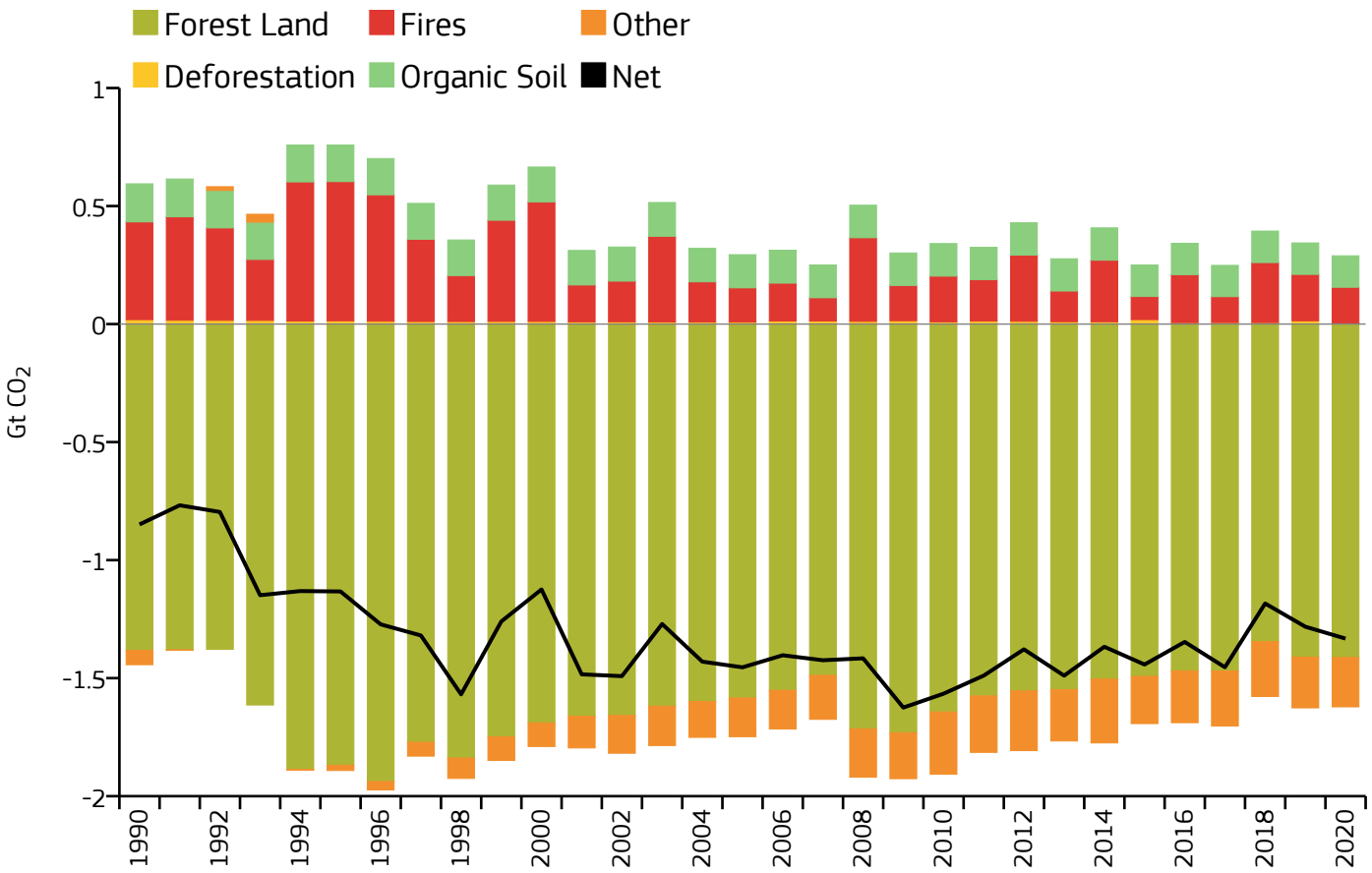


Year	1990	2000	2015	2020
Net flux (Gt CO_2/yr)	-1.381	-1.400	-1.609	-1.508

Countries included in Eastern Asia:
China; Hong Kong; Macao; Mongolia; North Korea; South Korea; Taiwan.

Eurasia

CO_2 emissions and removals from LULUCF sector

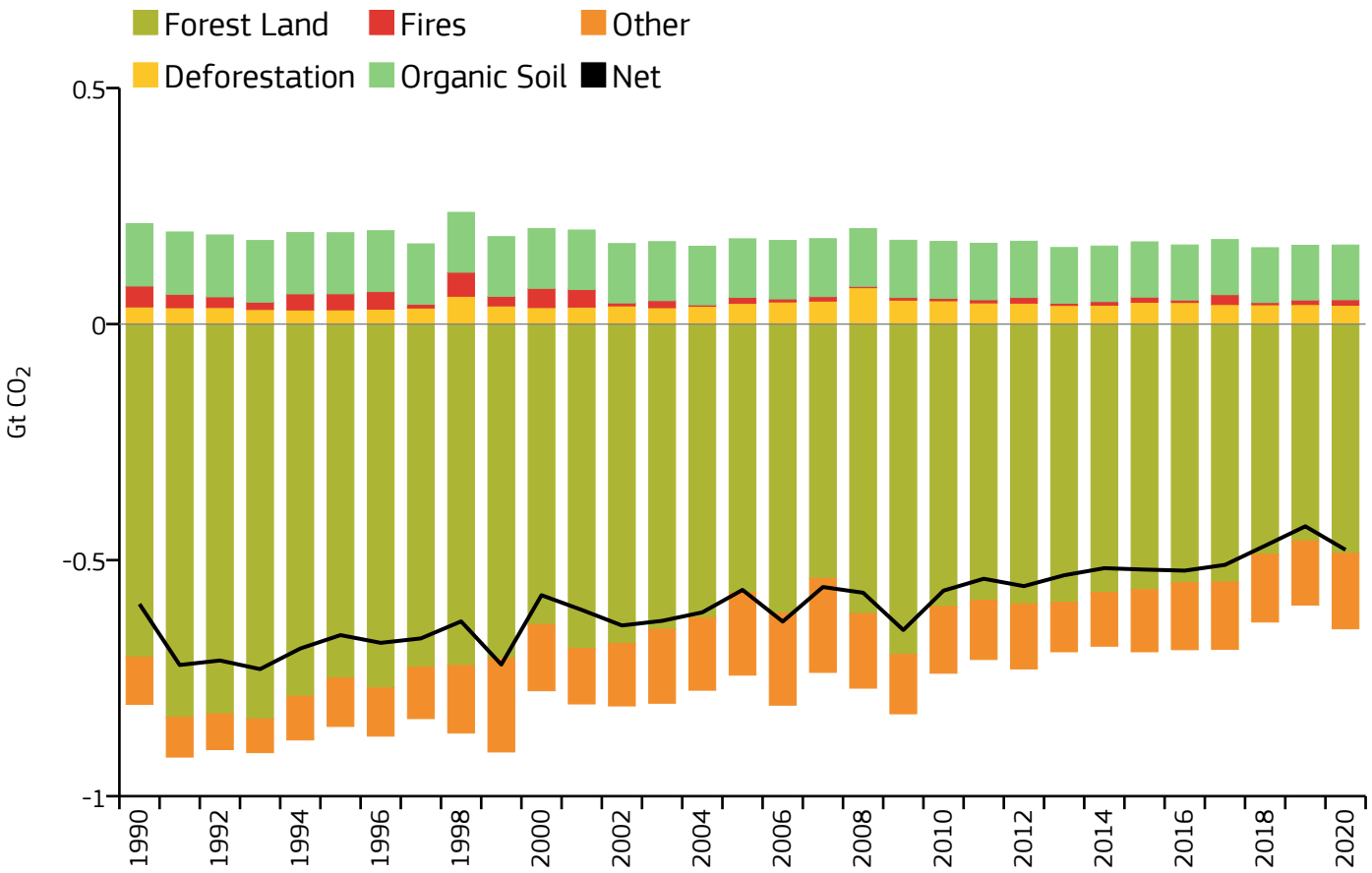


Year	1990	2000	2015	2020
Net flux (Gt CO_2/yr)	-0.849	-1.124	-1.442	-1.332

Countries included in Eurasia:
Armenia; Azerbaijan; Belarus; Georgia; Kazakhstan; Kyrgyzstan; Moldova; North Macedonia; Russia; Serbia and Montenegro; Tajikistan; Turkmenistan; Uzbekistan.

Europe

CO_2 emissions and removals from LULUCF sector

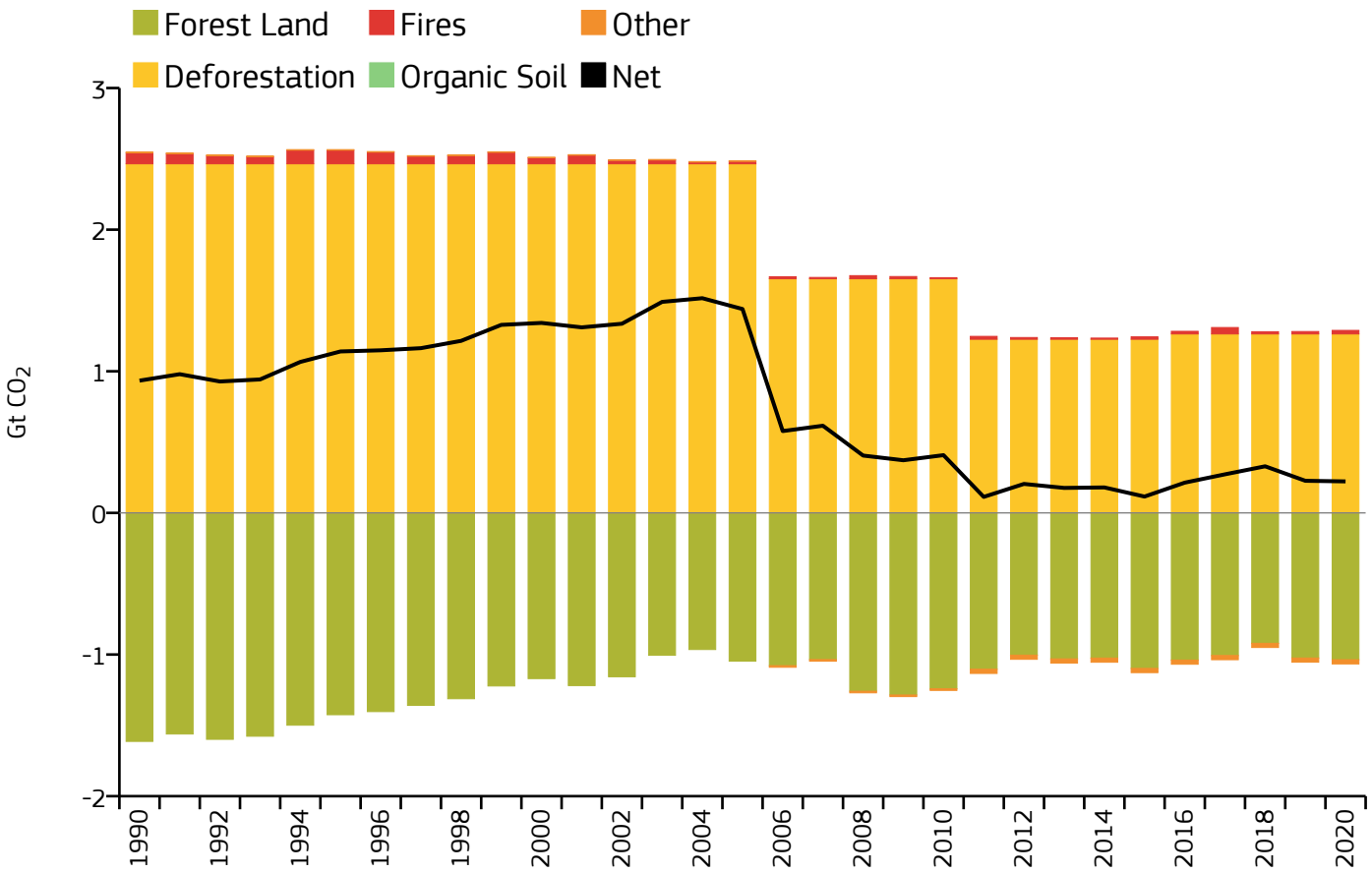


Year	1990	2000	2015	2020
Net flux (Gt CO_2/yr)	-0.593	-0.574	-0.520	-0.478

Countries included in Europe:
Albania; Austria; Belgium; Bosnia and Herzegovina; Bulgaria; Croatia; Cyprus; Czechia; Denmark; Estonia; Faroes; Finland; France and Monaco; Germany; Gibraltar; Greece; Hungary; Iceland; Ireland; Italy, San Marino and the Holy See; Latvia; Lithuania; Luxembourg; Malta; Netherlands; Norway; Poland; Portugal; Romania; Slovakia; Slovenia; Spain and Andorra; Sweden; Switzerland and Liechtenstein; Turkey; Ukraine; United Kingdom.

Latin America and Caribbean

CO_2 emissions and removals from LULUCF sector

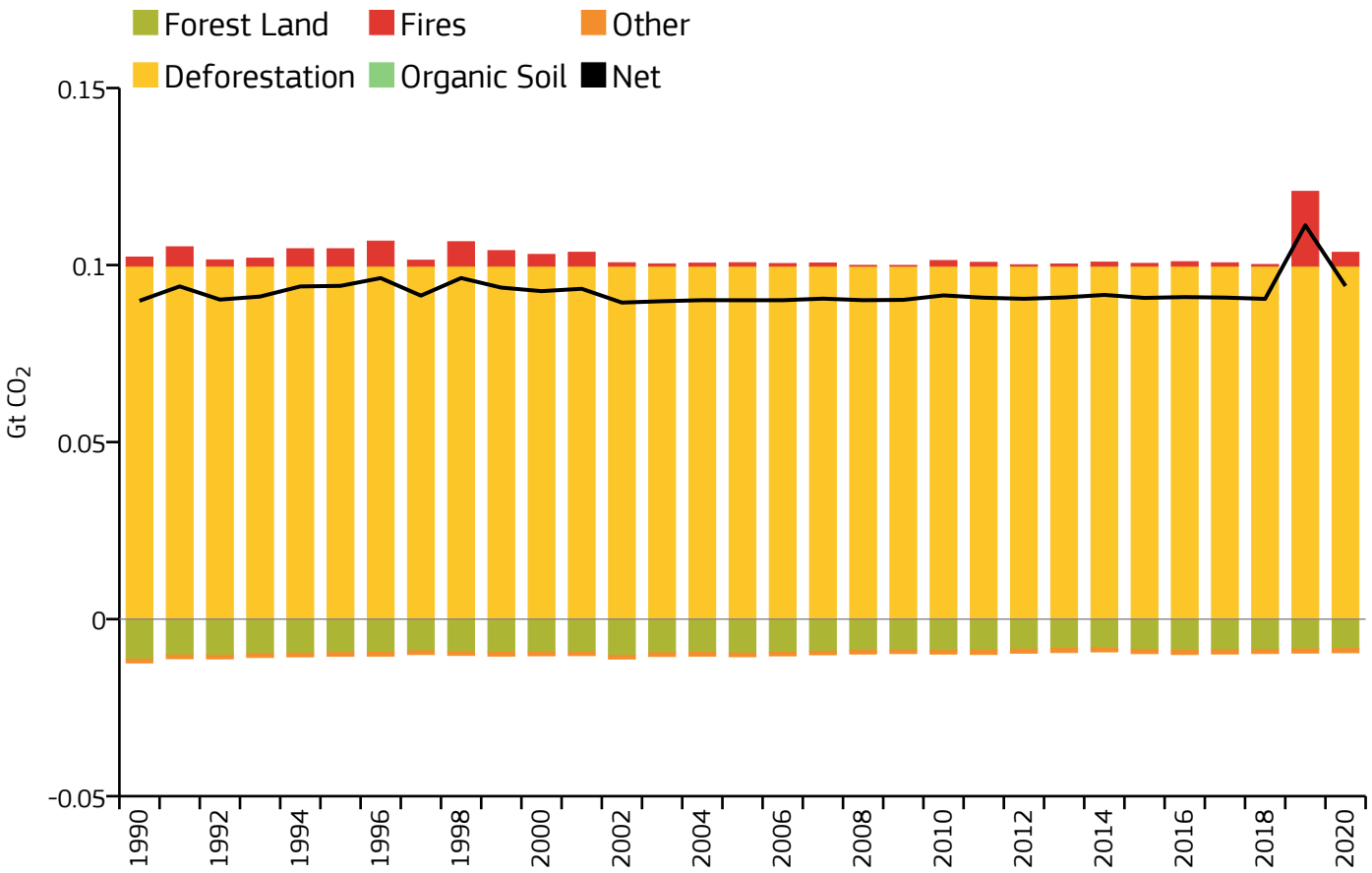


Year	1990	2000	2015	2020
Net flux (Gt CO_2/yr)	0.934	1.341	0.115	0.222

Countries included in Latin America and Caribbean:
Anguilla; Antigua and Barbuda; Argentina; Aruba; Bahamas; Barbados; Belize; Bolivia; Brazil; British Virgin Islands; Cayman Islands; Chile; Colombia; Costa Rica; Cuba; Curaçao; Dominica; Dominican Republic; Ecuador; El Salvador; Falkland Islands; French Guiana; Grenada; Guadeloupe; Guatemala; Guyana; Haiti; Honduras; Jamaica; Martinique; Mexico; Nicaragua; Panama; Paraguay; Peru; Puerto Rico; Saint Kitts and Nevis; Saint Lucia; Saint Vincent and the Grenadines; Suriname; Trinidad and Tobago; Turks and Caicos Islands; Uruguay; Venezuela.

Middle East

CO_2 emissions and removals from LULUCF sector

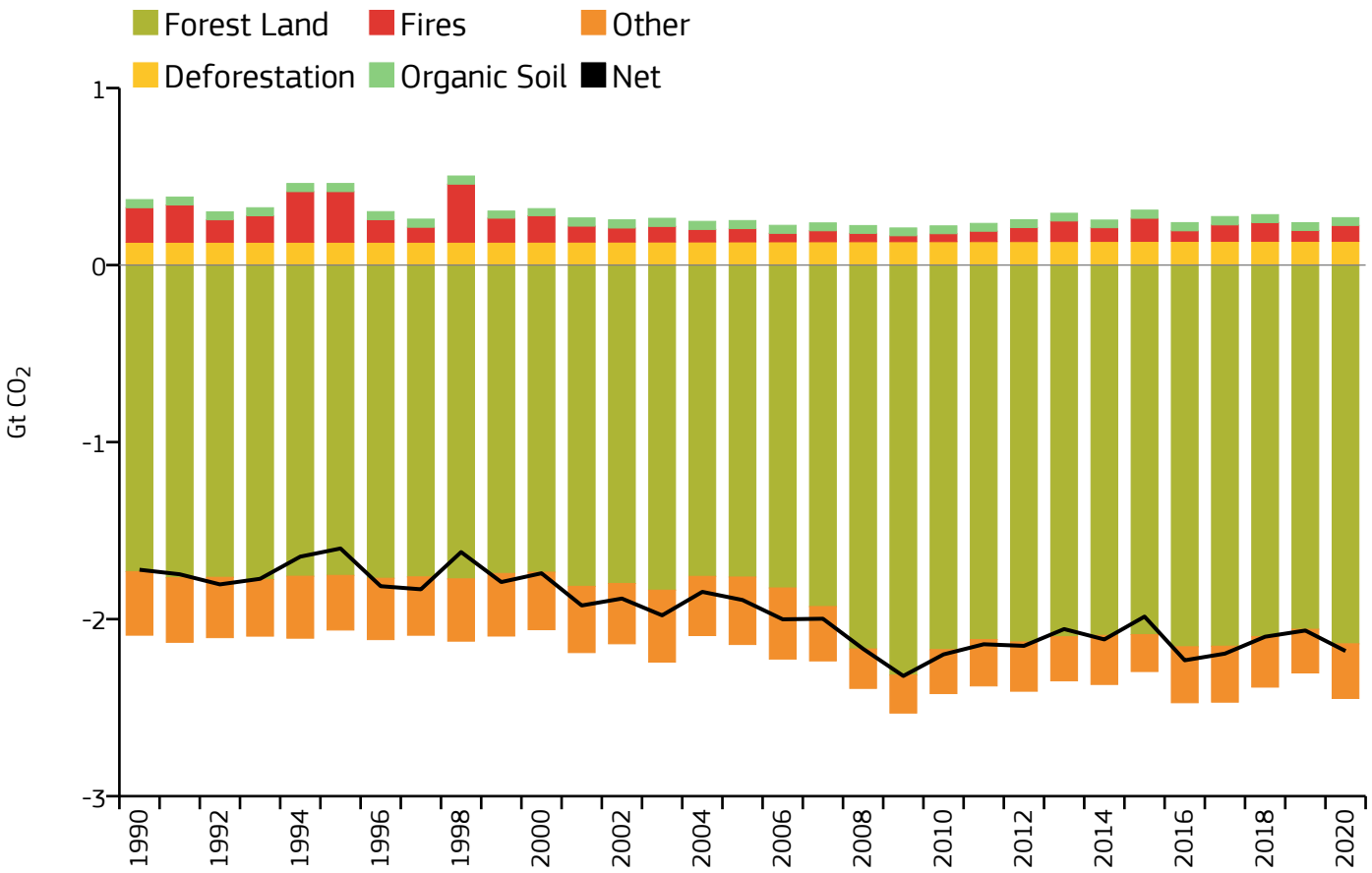


Year	1990	2000	2015	2020
Net flux (Gt CO_2/yr)	0.090	0.093	0.091	0.094

Countries included in Middle East:
Bahrain; Iran; Iraq; Israel and Palestine, State of; Jordan; Kuwait; Lebanon; Oman; Qatar; Saudi Arabia; Syria; United Arab Emirates; Yemen.

North America

CO_2 emissions and removals from LULUCF sector

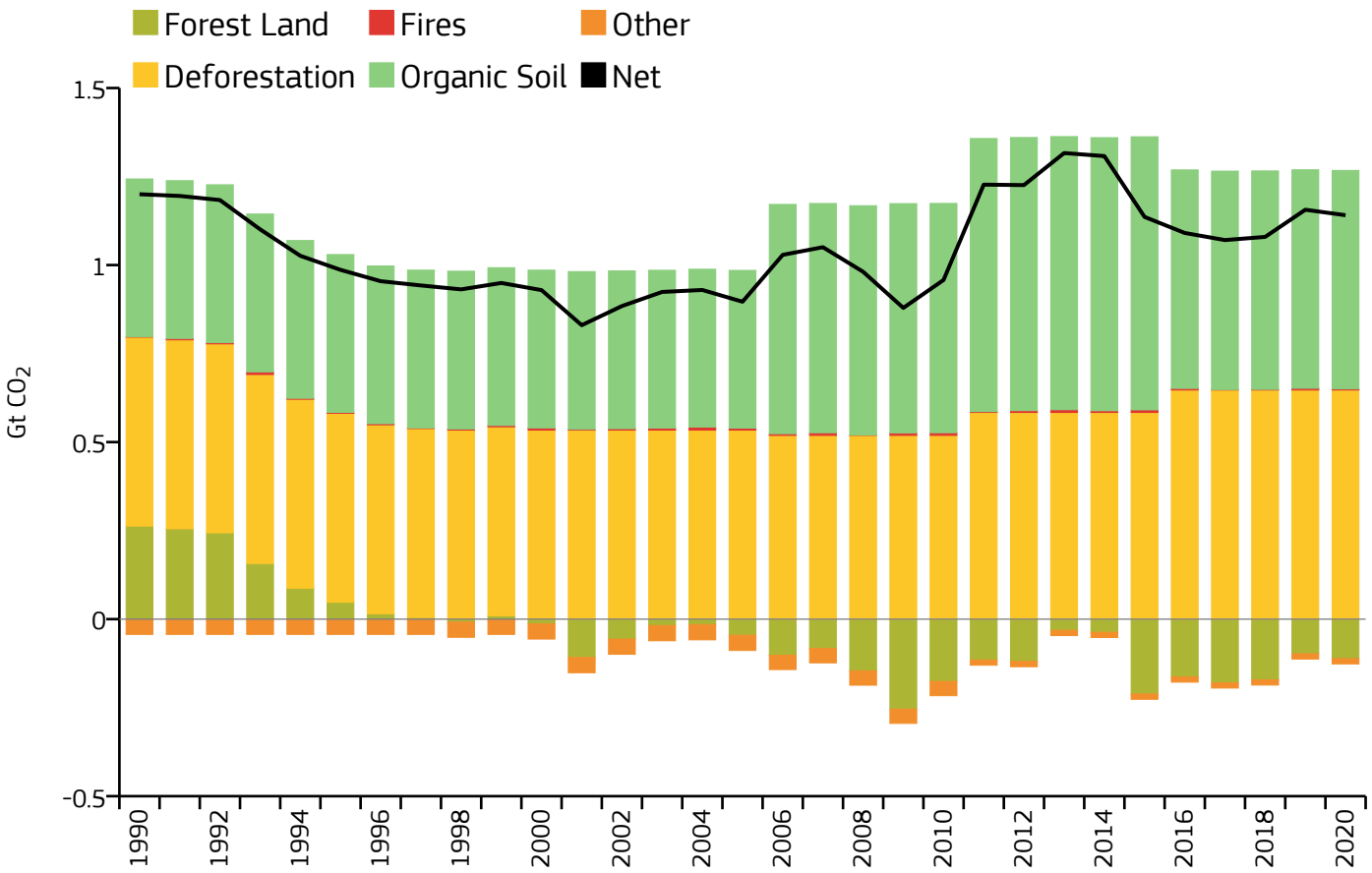


Year	1990	2000	2015	2020
Net flux (Gt CO_2/yr)	-1.721	-1.741	-1.986	-2.180

Countries included in North America:
Bermuda; Canada; Greenland; Saint Pierre and Miquelon; United States.

South-East Asia and developing Pacific

CO_2 emissions and removals from LULUCF sector

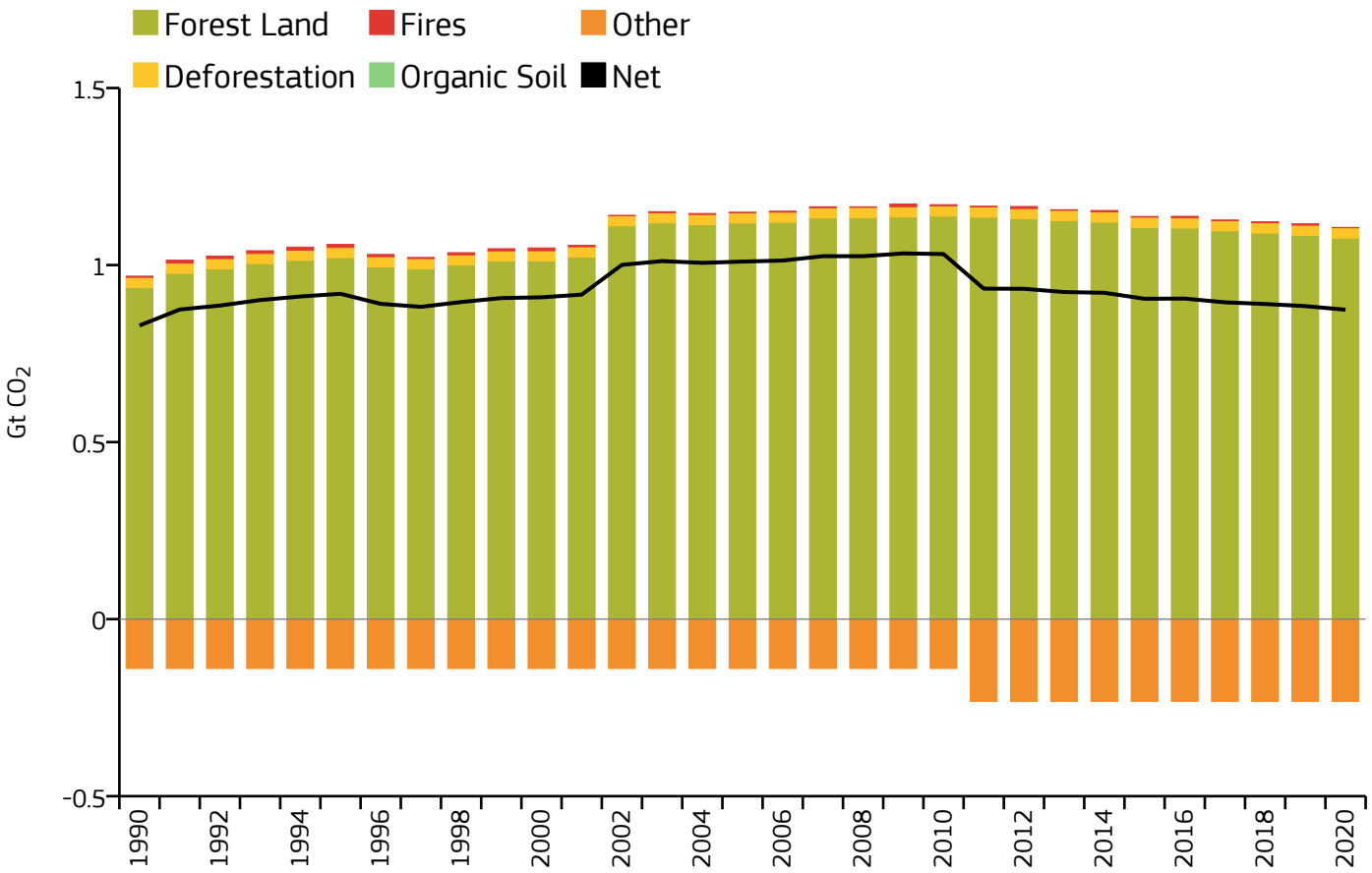


Year	1990	2000	2015	2020
Net flux (Gt CO_2/yr)	1.200	0.929	1.136	1.141

Countries included in South-East Asia and developing Pacific:
Brunei; Cambodia; Cook Islands; Fiji; French Polynesia; Indonesia; Kiribati; Laos; Malaysia; Myanmar/Burma; New Caledonia; Palau; Papua New Guinea; Philippines; Samoa; Singapore; Solomon Islands; Thailand; Timor-Leste; Tonga; Vanuatu; Vietnam.

Southern Asia

CO_2 emissions and removals from LULUCF sector



Year	1990	2000	2015	2020
Net flux (Gt CO_2/yr)	0.829	0.909	0.905	0.874

Countries included in Southern Asia:
Afghanistan; Bangladesh; Bhutan; India; Maldives; Nepal; Pakistan; Sri Lanka.

Disclaimer

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