

Economic-environmental Indicators – Air emissions accounts

1995-2018

Global Warming Potential decreased 4.5% in 2018, despite growth in economic activity

In 2018, the main environmental indicators decreased: Global Warming Potential (-4.5%), Acidification (-2.4%) and Tropospheric Ozone Formation (-1.6%), while the economic activity (measured by Gross Value Added) grew, in real terms, by 2.7%. Thereby, there was a reduction in the environmental impact with economic growth (decoupling), contrary to what had happened in 2017.

Despite the circumstances determined by the pandemic COVID-19, Statistics Portugal calls for the best collaboration by companies, families and public entities in responding to Statistics Portugal data requests. The quality of official statistics, particularly its ability to identify the impacts of the pandemic COVID-19, crucially depends on this collaboration, which Statistics Portugal thanks in advance.

Statistics Portugal publishes Air Emission Accounts data for 2018, and also presents revised data for the period 1995 to 2017. On Statistics Portugal website, in the National Accounts release area (section of Satellite Accounts) tables with more detailed information are available ([Air Emissions Accounts](#)).

In 2018, the Global Warming Potential (GWP), the Acidification Potential (ACID) and the Tropospheric Ozone Formation Potential (TOFP) decreased compared to the previous year, with special emphasis on the GWP (-4.5 %). In the same period, Gross Value Added (GVA) at base prices grew 2.7% in real terms.

Table 1. Evolution of Global Warming (GWP), Acidification (ACID) and Troposphere Ozone Formation (TOFP) Potentials

Indicators	Years		Change (%)			Annual average change (%)		
	2017	2018	2017/2016	2018/2017	2018/1995	1995-2018	2009-2018	2014-2018
GWP (1000 t equiv. CO ₂)	70,074	66,891	6.4	-4.5	-3.3	-0.1%	-1.1%	1.1%
ACID (t equiv. SO ₂)	275,728	269,024	1.3	-2.4	-59.8	-3.9%	-2.7%	-0.1%
TOFP (t equiv. NMVOC)	395,744	389,454	1.3	-1.6	-44.3	-2.5%	-2.5%	-0.6%
memorandum item GVA at basic prices (10 ⁶ Euros)	167,316	171,838	3.3	2.7	36.1	1.3%	0.7%	2.3%

Source: Statistics Portugal ([Air Emissions Accounts](#); [National Accounts – Table A.1.4.4.5](#))

1. Global Warming Potential (GWP)

Global Warming Potential (GWP) reached 66.9 million tons of CO₂eq in 2018. Emissions to the atmosphere of Carbon Dioxide (CO₂), Nitrous Oxide (N₂O) and Methane (CH₄) decreased by 6.0%, 0, 8% and 0.5%, respectively, compared to 2017. Emissions from Other gases increased 4.4%.

Table 2. Global Warming Potential, by gas type, 2018

Unit: 10³t CO₂eq

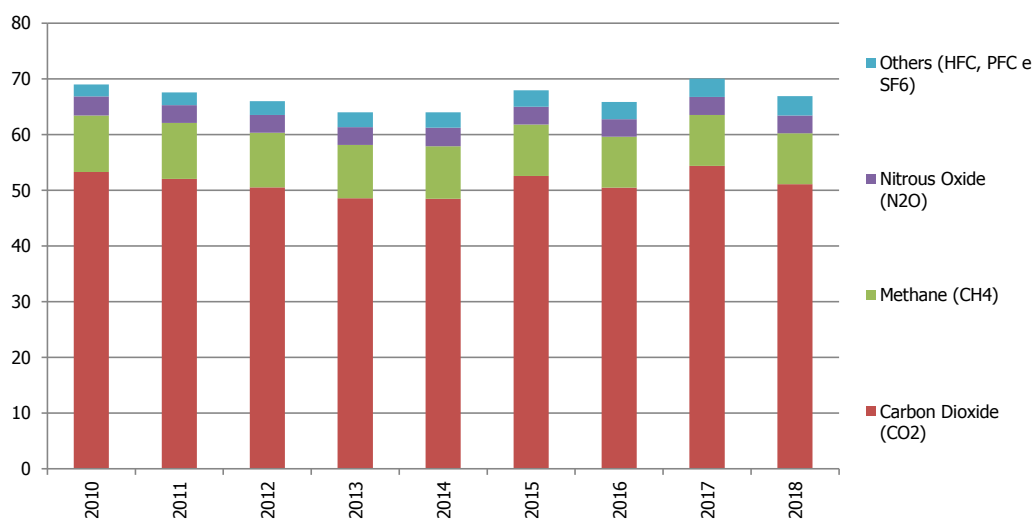
	GWP	% over total	annual variation compared to 2017	
			absolute	%
Carbon Dioxide (CO ₂)	51,121.1	76.4	-3,259.9	-6.0
Methane (CH ₄)	9,126.2	13.6	-42.1	-0.5
Nitrous Oxide (N ₂ O)	3,188.0	4.8	-26.8	-0.8
Others	3,454.6	5.2	145.7	4.4
TOTAL	66,890.5	100.0	-3,183.1	-4.5

Source: Statistics Portugal ([Air Emissions Accounts](#))

Despite the decrease observed in 2018, the GWP is still above the values observed in 2013-2014, the lowest since 2010.

Chart 1: Global Warming Potential by type of gas, 2010 - 2018

Unit: 10³t CO₂eq



Source: Statistics Portugal ([Air Emissions Accounts](#))

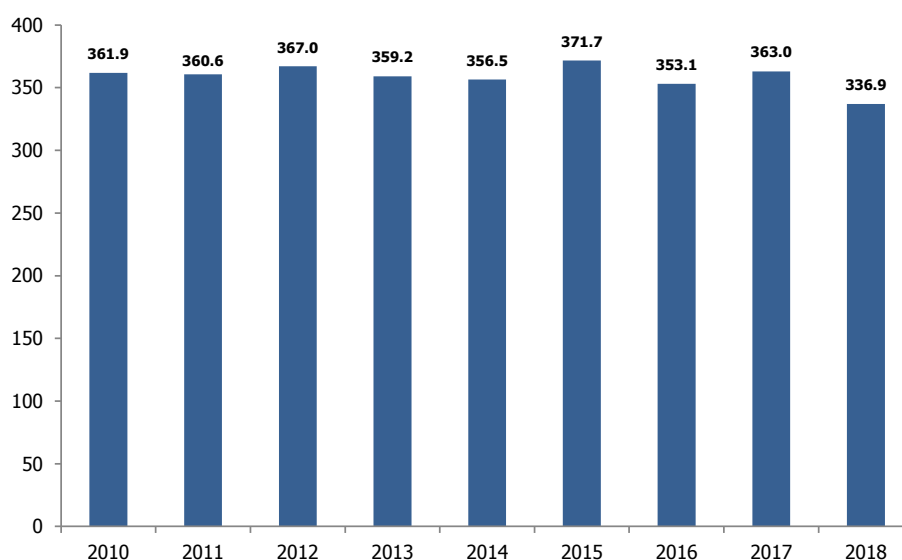
2. Economic-environmental indicators

2.1. Carbon Intensity of the economy

The Carbon Intensity of the economy quantifies the relationship between the GWP emissions necessary to obtain all the goods and services produced. The indicator consists of the ratio between the national total of GWP measured in CO₂eq and GDP. In 2018, the Carbon Intensity of the Portuguese economy was the lowest in the series under analysis, having decreased by 7.2% compared to the previous year. Between 2010 and 2018, it decreased by 6.9%.

Chart 2: Carbon Intensity of the economy, 2010 – 2018

Unit: t CO₂eq per million GDP

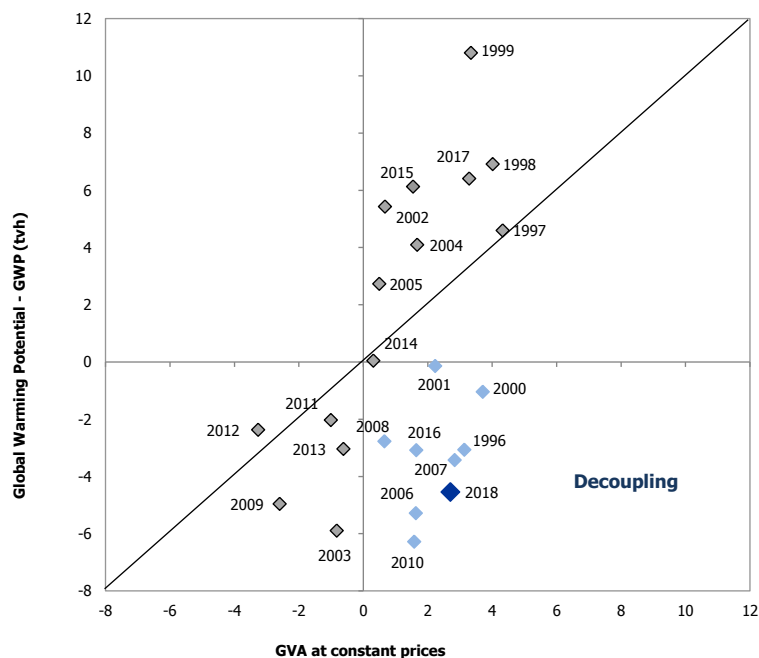


Source: Statistics Portugal ([Air Emissions Accounts](#); [National Accounts – Table A.1.1.6](#))

2.2. Decoupling

Despite the gradual increase in the weight of photovoltaic, wind and solar energy production since 2005, the water source continues to present a significant weight in the production of electric energy from renewable sources. Considering this characteristic of the national electricity generation system, the "decoupling" between GWP and GVA, i.e. a decrease in GWP with growth in economic activity, is generally observed in years when normal or higher levels of rainfall are observed.

Chart 3: Dissociation between GWP and GVA - year-on-year change rate, 1996 – 2018



Source: Statistics Portugal ([Air Emissions Accounts](#); [National Accounts – Table A.1.4.4.5](#))

The year 2018, according to the Annual Climatological Bulletin, was a normal year, in which the average annual total rainfall was 939.9 mm, which corresponded to about 107% of the normal value. In that year, there was decoupling between GWP and GVA, previously seen in 2010 and in 2016. Note that 2017 was classified as an extremely hot and dry year, in which the average annual total rainfall (541.3 mm) corresponded to about 60% of the normal value.