

Economic-environmental Indicators – Air emissions accounts

1995-2017

Global Warming Potential increased 6.9% in 2017, outpacing the economic activity growth

In 2017, the main environmental indicators increased: Global Warming Potential (6.9%), Acidification (1.4%) and Tropospheric Ozone Formation (1.3%), while economic activity (measured by Gross Value Added) grew 3.3%.

Between 2008 and 2017, CO₂ emission per GVA unit, which is part of the set of monitoring indicators of the Sustainable Development Goals, decreased 11.2% in Portugal and 21.3% in the EU28. Since 2014, Portugal has been showing higher CO₂ emissions per unit of value added than the EU28.

Statistics Portugal publishes Air Emission Accounts data for 2017, revised data for the period 1995 to 2016 and provides information for environmental indicators (quantifiers of global warming, acidification and tropospheric ozone formation), environmental-economic indicators (direct comparison of physical and economic data to measure the environmental efficiency of the economy) and comparisons with the European Union (EU28).

Air Emissions Accounts allow for an analysis of the environmental implications of the country production standards, since their results, which are consistent with the National Accounts, enable the development of an integrated environmental-economic analysis.

On Statistics Portugal website, in the National Accounts release area (section of Satellite Accounts) tables with more detailed information are available ([Air Emissions Accounts](#)).

1. MAIN RESULTS

For the assessment of environmental effects of various gases emitted by economic activity and households there are three important indicators: Global Warming Potential (GWP), Acidification Potential (ACID) and Troposphere Ozone Formation Potential (TOFP).

In 2017, these three environmental indicators, as a result of the increase in emissions of most of the gases that contribute to their calculation, increased compared to the previous year, with particular emphasis on the Global Warming Potential (+ 6.9%), which grew more than GVA in real terms (+ 3.3%).

Table 1. Evolution of Global Warming, Acidification and Troposphere Ozone Formation Potentials

Indicators	Years		Change (%)			Annual average change (%)		
	2016	2017	2016/2015	2017/2016	2017/1995	1995 2017	2008 2017	2013 2017
GWP (1000 t equiv. CO ₂)	63,945	68,383	-3.1	6.9	-3.1	-0.03	-1.4	1.2
ACID (t equiv. SO ₂)	273,393	277,188	-1.2	1.4	-58.9	-4,0	-4.8	-0.5
TOFP (t equiv. NMVOC)	408,150	413,321	-2.8	1.3	-41.6	-2.6	-3.1	-0.5
memorandum item GVA at basic prices (10 ⁶ Euros)	161,993	167,316	1.6	3.3	32.5	1.3	0.2	1.2

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

2. GLOBAL WARMING POTENTIAL (GWP)

By 2017, greenhouse gas emissions reached 68.4 million tonnes of CO₂ equivalent. GWP increased by 6.9% over the previous year and, although below the values observed in 2005, the highest in the series under analysis, reversed the downward trend registered between 2006 and 2014. This increase was mainly due to the growth of carbon dioxide (CO₂) emissions by 8.4%.

Chart 1: Greenhouse gas emissions, 1995 - 2017

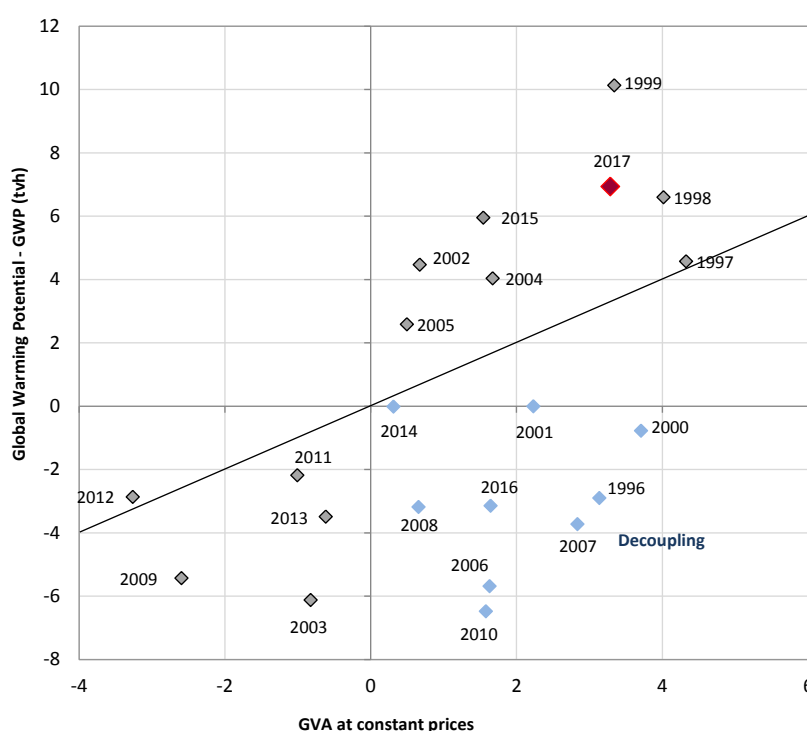


Source: Statistics Portugal ([Air Emissions Accounts](#))

Despite the gradual increase in the share of wind and photovoltaic power generation since 2005, hydropower continues to have a significant weight in renewable energy based electricity generation, 31.4% in 2017. This feature causes that GWP remains strongly linked to rainfall levels, varying by hydrological year.

In 2017 there was once again a situation of economic and emissions growth, as had already happened in 1997-1999, 2002, 2004-2005 and 2015. 2017 stood out for being the second highest growing year of GWP, only bigger in 1999.

Chart 2: Dissociation between GWP and GVA - year-on-year change rate, 1996 – 2017

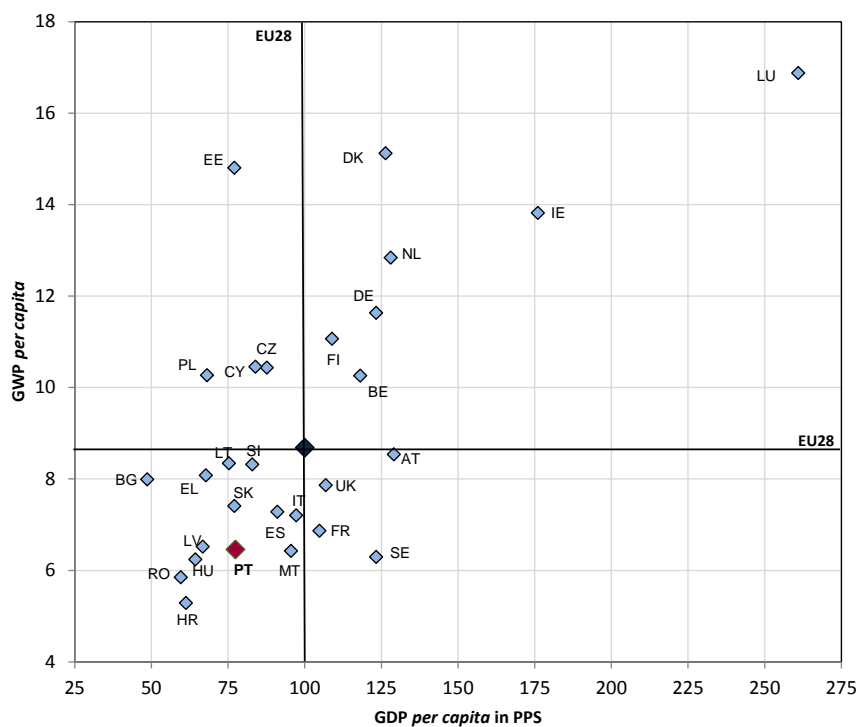


Source: Statistics Portugal ([Air Emissions Accounts](#); [National Accounts](#))

Jointly analysing "GWP *per capita*" and "GDP *per capita*" indicators of the EU28 countries in 2016 (last year with information available for the 28 member states), it turns out that Portugal shows a relatively low "GDP *per capita*" compared to countries with similar "GWP *per capita*".

The national economy structural differences and energy consumption may explain these differences: Industry and Energy, water and sanitation have a less relative important GVA and the share of electricity from renewable sources in gross electricity consumption is comparatively higher (in 2017 Portugal was the fifth country in the EU28).

Chart 3: Global Warming Potential (GWP) *per capita* and GDP *per capita* in PPS, EU28, 2016



Source: EUROSTAT ([Air emissions accounts](#); [Population](#); [Main GDP aggregates per capita](#))