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press release
INSTITUTO NACIONAL DE ESTATÍSTICA
STATISTICS PORTUGAL

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Economic-environmental Indicators – Air emissions accounts
1995-2014

Global Warming Potential diminished 0.4% in 2014, despite the growth of economic activity

In 2014, the Global Warming Potential decreased 0.4%, the Acidification Potential 1.7% and the Troposphere Ozone Formation Potential 2.0%, in contrast with the growth of economic activity (the Gross Value Added increased 0.4%, in real terms). Portugal presented, in 2013, the fifth lowest Global Warming Potential *per capita* on the EU28.

In 2014, the share of renewable energy in total electricity production reached a new maximum (61.4%).

Statistics Portugal publishes Air Emission Accounts data for 2014 and revised data for the period 1995 to 2013. This revision was essentially motivated by the incorporation of the revisions of the National System of Emissions and Environmental Pollutants Removal Inventory (NSEEPRI) made by the Portuguese Environmental Agency.

On the Statistics Portugal website, in the National Accounts release area (section of Satellite Accounts[1]) tables with more detailed information are available.

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.

1. ENVIRONMENTAL INDICATORS

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). Chart 1 presents the evolution of these three environmental indicators for the period 1995-2014.

In 2014, the **GWP** diminished 0.4% in relation to 2013 (the average change rate from 1995 to 2014 was -0,7%) and registered a new minimum for the series started in 1995. The annual amount of rainfall in 2014 was the highest of the last 25 years. In fact, 2014 was a very rainy year in terms of the annual average amount of rainfall, 1098.2 mm, corresponding to an anomaly of +216.1 mm (in relation to the period 1971-2000).

The GWP reduction was mainly caused by the decrease on methane (CH_4), which maintained the downwards trend and, in a lesser degree, carbon dioxide (CO_2), while the nitrous oxide (N_2O) emissions increased, extending the previous

[1] http://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_cnacionais2010&contexto=cs&selTab=tab3&perfil=220674570&INST=220617355&xlang=en

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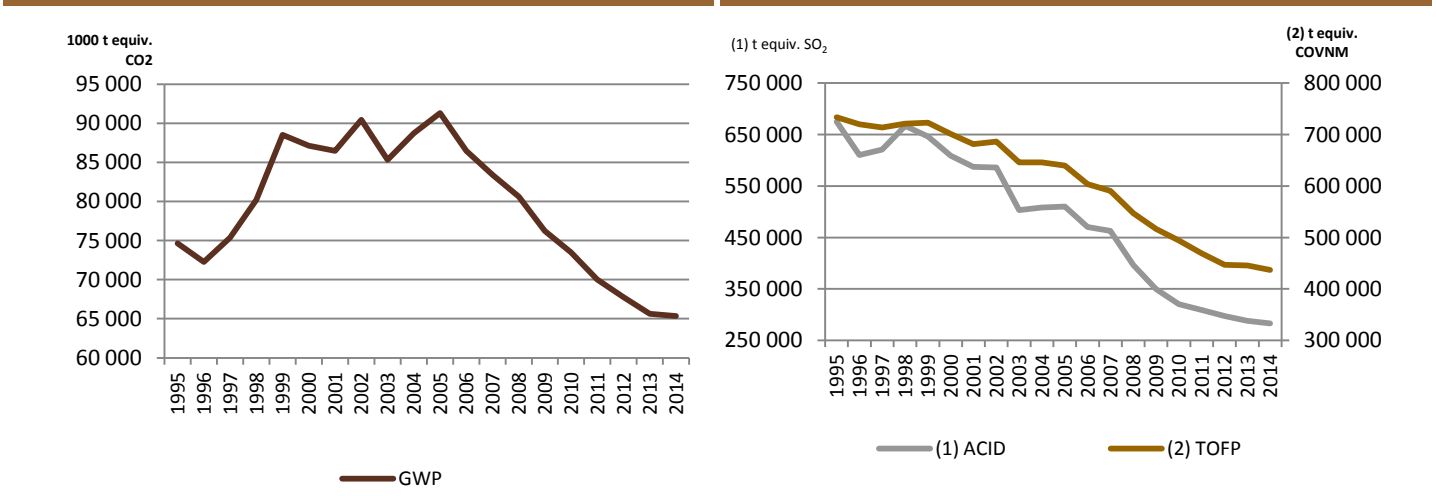
upwards trend. GWP increased significantly from 1997 to 1999 and observed an irregular behaviour in the period 2000-2005 (reference to the peaks of 2002 and 2005, justified by the low level of water in reservoirs, with consequent change in the mode of electricity production, using more polluting energy sources than water). After this period, the indicator has recorded successive decreases, largely explained by the introduction of natural gas (diminishing the consumption needs of coal and fuel oil), by efficiency improvements in industrial production processes and by the increase in installed capacity of electricity production from wind power.

ACID showed a marked downwards trend (the average change rate in the period 1995-2014 was -4.5%), with a decrease of 1.7% in 2014, mainly due to the reductions of the sulphur oxides (SO_x) and nitrogen oxides (NO_x) emissions. The ammonia (NH_3) emissions increased. The sulphur oxides (SO_x) emissions result mainly from the burning of coal and fuel oil by Industry and Energy, water and sanitation industries. The decrease of these emissions in recent years is explained by the replacement of these fuels by natural gas and by the technological adaptations, following the entry into force, in 2000, of legislation that limits the sulphur emissions from certain types of liquid fuels derived from petroleum. Nitrogen oxides (NO_x), the component with higher relative weight and that has as major emission sources the Industry and Transport industries, continued their descendent trend presented since 2006. This downwards trend was largely explained by technical developments in engines, which made them less polluting, in compliance with existing European legislation in this field. Ammonia (NH_3) emissions increased by 2.7% in 2014, mainly due to agriculture, forestry and fishing.

TOFP kept the downwards trend presented since 2000 (average rate in the period 1995-2014 was -2.7%), registering a decrease of 2.0% in 2014. The behaviour of this indicator was determined by decreases of the emissions observed in 2014 in all components of this indicator, especially non-methane volatile organic compounds (NMVOC) and carbon monoxide (CO), but also nitrogen oxides (NO_x) and methane (CH_4).

Chart 1. Evolution of environmental indicators



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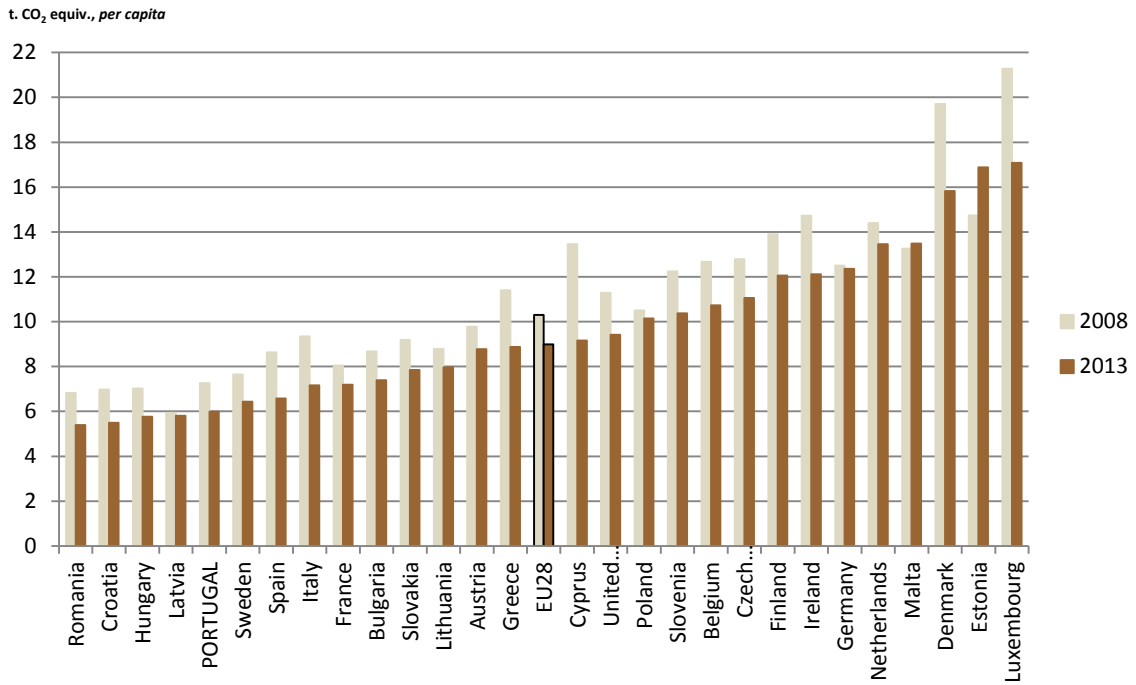
The European level data is only available until 2013. Hence, the indicator "GWP *per capita*" for Portugal has been showing lower values comparing to most countries in the EU28, presenting the fifth lowest value in 2013, like in 2008. In 2013, the EU28 average was 8.99 tonnes of CO_2 equivalent *per capita* and in Portugal was 6.00 tonnes of CO_2 equivalent *per capita*, i.e. 66.7 % of the European average.

Chart 2. GWP *per capita* in EU28, in 2008 and 2013



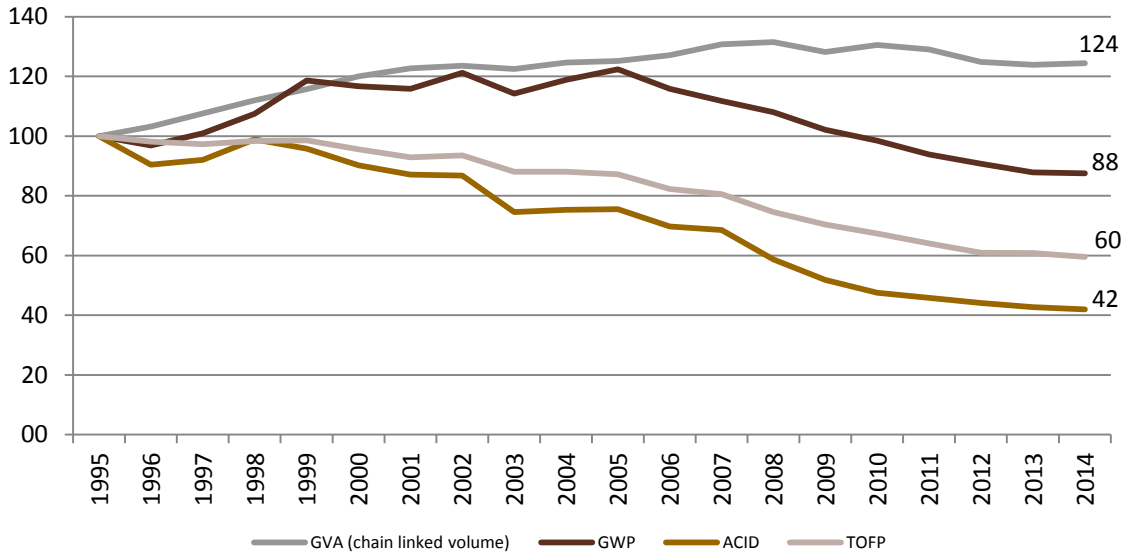
2. ENVIRONMENTAL-ECONOMIC INDICATORS

In this section physical environmental data and economic data are compared, using the same classification and rules of the National Accounts, in order to evaluate the environmental efficiency of the economy in the specific field of atmospheric emissions.

It is worth noticing that the three environmental indicators presented a decrease in 2014, in opposition to the real growth in Gross Value Added (GVA)), that registered a 0.4% increase that year.

Chart 3 allows comparing the evolution of the GVA in volume with the three above mentioned environmental indicators. In accumulated terms, it can be observed that all environmental indicators showed a significant decrease between 1995 and 2014, differing from the GVA behaviour, which registered an increase of 24%.

Chart 3 – Evolution of environmental indicators and GVA, in volume (1995 = 100)



The GWP showed an upwards trend until 2005, following the GVA evolution. As stated in chart 4, in 2014, like in 2006-2008 and 2010, once again we can see GWP decoupling, i.e., an emissions decrease with economic growth. The GVA decreases in 2009, 2011, 2012 and 2013 were, mainly, less intense than the GWP decreases.

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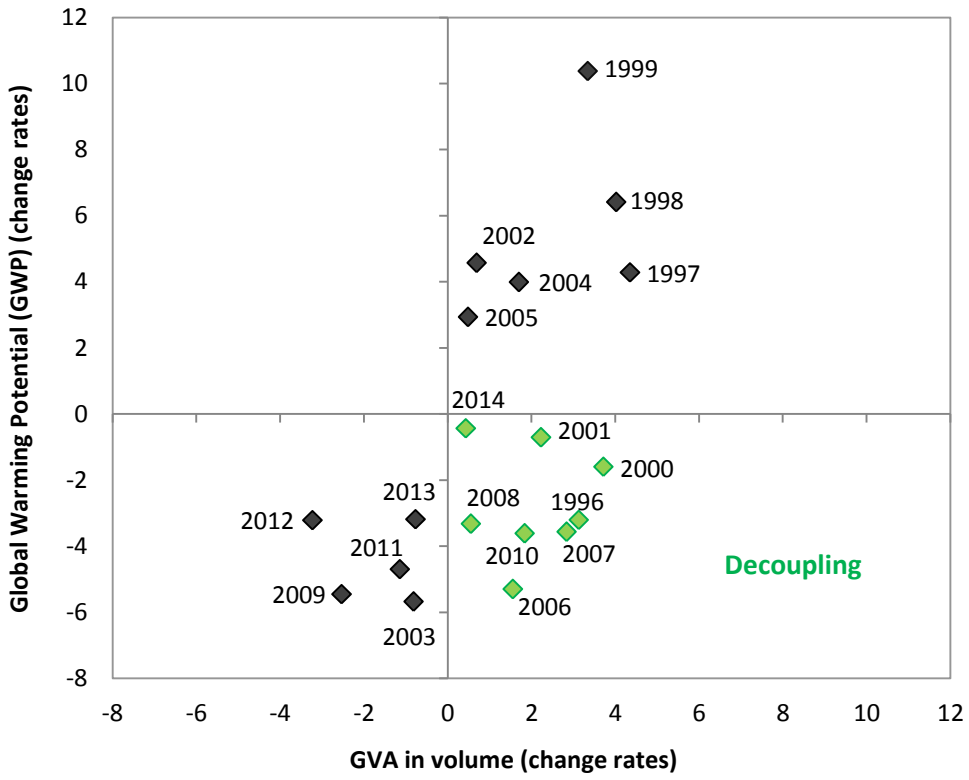
Chart 4 – Decoupling between GWP and GVA (volume change rates)



The emissions level is highly dependent on the types of energy used by Industry and Energy, water and sanitation, since they are the industries with the highest relative weight, representing, on average, about 57% of GWP total emissions. The water source has a significant weight in Energy, water and sanitation, which is, in turn, significantly conditioned by the rainfall levels recorded every year. However, this conditioning has been diminishing gradually since 2005, with the gradual increase in the share of wind energy production in total electricity production, and even showed a higher weight than the water source in 2013. In 2014 it was registered a new historic high of renewable energy in total electricity production (61.4%) in the series under review (31.1% of water and 22.9% of wind).

The ACID and the TOFP showed downwards trends since 1995 (the beginning of the series) in dissociation with economic activity, most of the years.