

18 October, 2013

Economic-environmental Indicators – Air emissions accounts
1995-2011

Air emissions accounts: greenhouse gas emissions kept on reducing in 2011

It is estimated that in 2011 there has been a decrease of 1.2% in greenhouse gas emissions (after a decrease of 5.6% in 2010), attaining a new minimum for the series started in 1995. A smaller reduction of these emissions in 2011 is partly explained by the below average rainfall level, which implied a lower production of electricity by hydropower plants, with the consequent use of more polluting energy sources. This indicator registered, between 2006 and 2010, successive reductions, showing a dissociation between the evolution of economic activity, which increased in some of those years. In 2011, the greenhouse gas emissions decreased in line with Gross Value Added (GVA).

Statistics Portugal publishes Air Emission Accounts data for 2011, presenting revised data for the period from 1995 to 2010. This information, consistent with Portuguese National Accounts (Base 2006) is transmitted annually to Eurostat under Regulation (EU) No 691/2011 of the European Parliament and of the Council of 6 July 2011 on European environmental economic accounts.

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

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

1. ENVIRONMENTAL INDICATORS

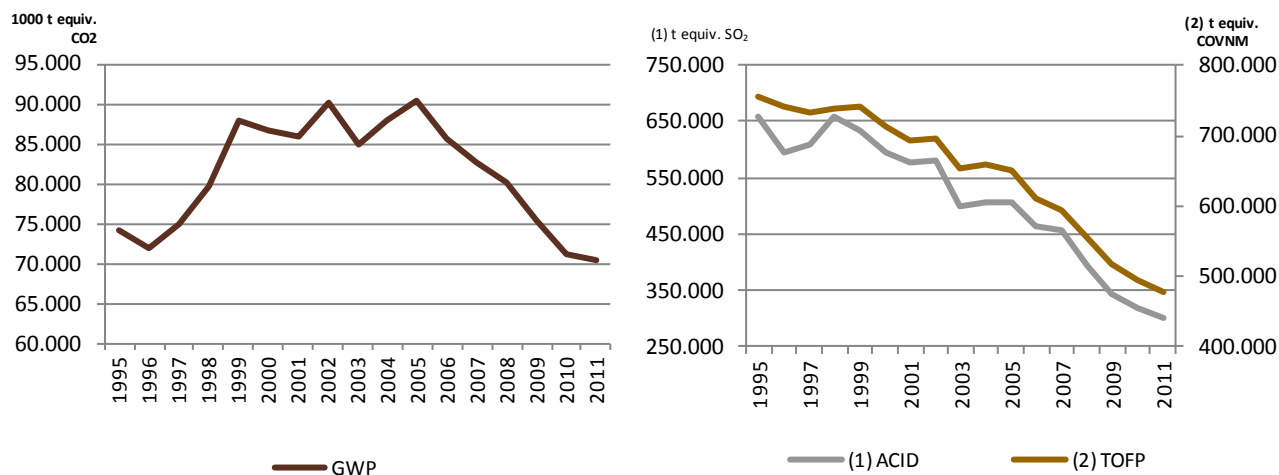
For the assessment of environmental effects of various gases emitted by economic activity and households there are three important indicators: Global Warming Potential (GWP), Acidification Potential (ACID) and Troposphere Ozone Formation (TOFP).

Chart 1 presents the evolution of these three environmental indicators for the period 1995-2011. GWP increased significantly until 1999, presenting an irregular behaviour in the period between 2000 and 2005 (the peaks of 2002 and 2005 are justified by the low level of water in reservoirs, with consequent change in the sources of electricity production, using more fuel oil, natural gas and coal). 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 industry and thermal power plants), by efficiency improvements in industrial production processes and by the increase in installed capacity of electricity production from wind power. A less significant reduction of this indicator in 2011, compared to those observed in previous years, was largely due to the level of 2011 rainfall, which was lower than the average value observed in the period from 1971 to 2000, after 2010 had been the rainiest year of the decade (2001-2010), thereby decreasing the production of electricity by hydropower plants that year.

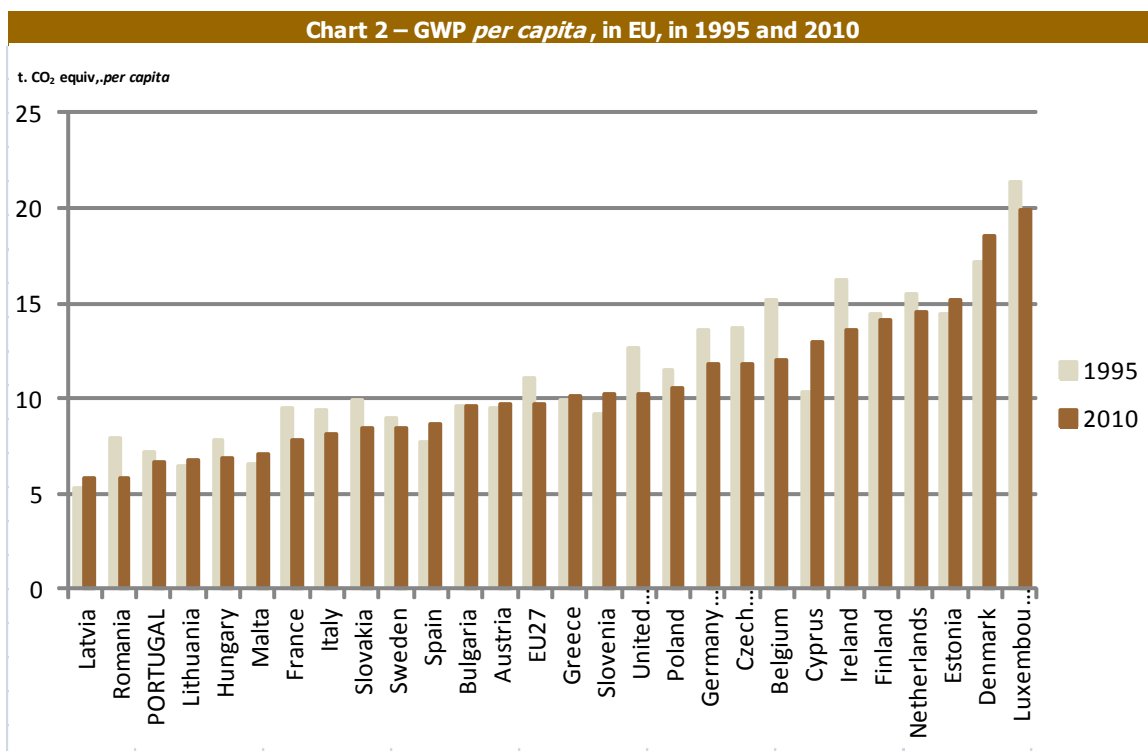
ACID decreased at an annual average rate of 6.0% after 1999. Emissions of sulphur oxides come primarily from the burning of coal and fuel oil by the branch of Industry and Energy, water and sanitation. Its decline in recent years is explained, on one hand, by the substitution of those fuels by natural gas and, secondly, by technological adaptations as a result of the entry into force, in 2000, of legislation that limits the sulphur emissions from certain types of liquid fuels derived from petroleum, including heavy fuel oil, marine gas and diesel. With respect to nitrogen oxides, the main emission sources are the Industry and the Transport and storage industries. There was a decrease in recent years, largely explained by the technical evolution of engines, which made them less polluting, in compliance with existing European legislation in this field. It should also be mentioned that, in 2011, there was a marked reduction in fuel consumption.

The reasons for the evolution presented for nitrogen oxides also explain the similar behaviour of TOFP, since they constitute the largest part. This indicator recorded, since 2000, an annual decrease rate of about 3.6%.

Chart 1 - Evolution of environmental indicators GWP, ACID and TOFP



Since it is the most updated information at European level, the indicator "greenhouse gas emissions per capita" is analyzed only for the period 1995-2010. Portugal has one of the lowest per capita greenhouse gas emissions in the EU27: the fourth lowest in 1995 and the third in 2010. In the last year, the EU27 average was 9.66 tonnes of CO₂ equivalent per capita, while in Portugal it was 6.63 tonnes of CO₂ equivalent per capita (i.e. 68.6% of the EU27 average).



1. ENVIRONMENTAL-ECONOMIC INDICATORS

In this section physical environmental data and economic data are compared, using, as much as possible, 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.

Chart 3 allows for comparing the evolution of the GVA in volume with the three above mentioned environmental indicators. Analyzing the data between 1995 and 2011, there is a tendency for GWP to follow economic performance until 2005, although presenting, during that period, an average annual rate generally lower than the GVA. Between 2006 and 2010, there has been a successive reduction of GWP, even in years when there was an increase in GVA (2006, 2007 and 2010), indicating a decoupling between the economic activity and the greenhouse gas emissions evolutions. In 2011, GWP decreased 1.2%, a reduction close to the one observed for GVA (-1.3%). Therefore, there was no dissociation between the two variables in this year.

The emissions are largely dependent on the types of energy used by the Energy, water and sanitation industry, in which the water source has a significant importance, which is, in turn, significantly conditioned by the rainfall levels recorded every year. However, from 2005 on, this conditioning has been attenuated with the increase of the weight of wind energy production in total gross production of electricity (from 3.8% in 2005 to 17.5 % in 2011).

Regarding ACID and TOFP, there is a downward trend, which began in 1999 in the first indicator and in 2000 in the second indicator, in dissociation with the economic activity.

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

