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#### COVER NOTE

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From: Secretary-General of the European Commission,  
signed by Mr Jordi AYET PUIGARNAU, Director

date of receipt: 19 November 2015

To: Mr Jeppe TRANHOLM-MIKKELSEN, Secretary-General of the Council of  
the European Union

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Subject: COMMISSION STAFF WORKING DOCUMENT  
Country Factsheet Portugal

Accompanying the document COMMUNICATION FROM THE  
COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE  
EUROPEAN ECONOMIC AND SOCIAL COMMITTEE, THE COMMITTEE  
OF THE REGIONS AND THE EUROPEAN INVESTMENT BANK

State of the Energy Union

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Delegations will find attached document SWD(2015) 235 final.

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**COMMISSION STAFF WORKING DOCUMENT**

**Country Factsheet Portugal**

*Accompanying the document*

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PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL  
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**State of the Energy Union**

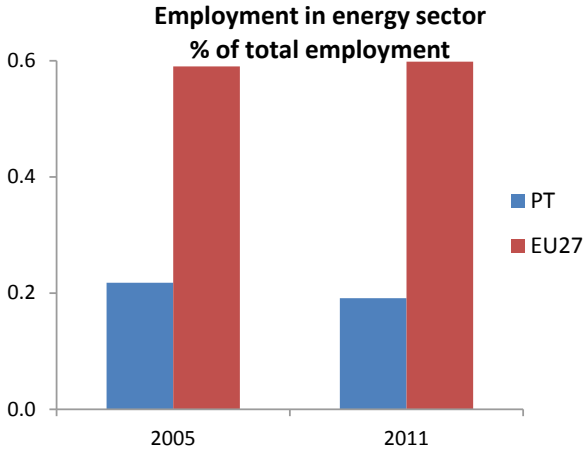
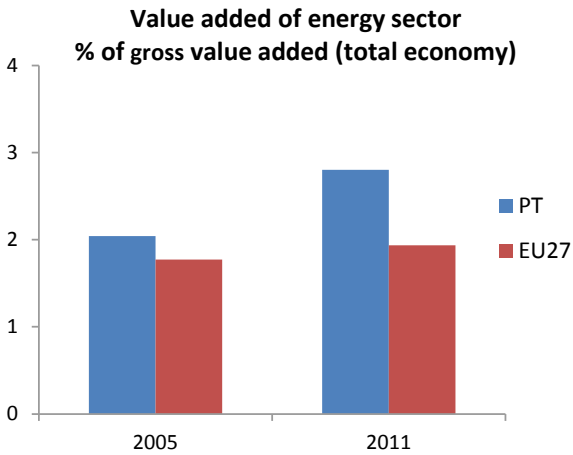
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## Macroeconomic relevance of energy

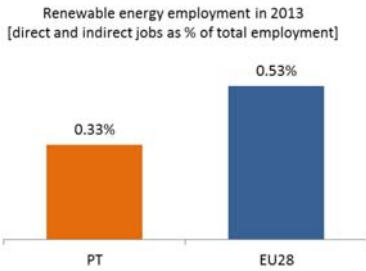
### IMPORTANCE OF THE ENERGY SECTOR

The macroeconomic significance of the energy sector in Portugal is relatively limited compared to the EU average, in terms of share of total employment. In contrast it is relatively higher in terms of share in gross value added. However while the share of energy in Portugal's gross value added has increased (0.8 percentage points) considerably between 2005 and 2011, the share in total employment has instead decreased (0.3 percentage points) over the same period.



Source: EUROSTAT – National Accounts

According to EurObserv'ER, in 2013, the share of direct and indirect renewable energy related employment in total employment of the economy in Portugal was at about 0.3%, below the EU average of 0.5%.

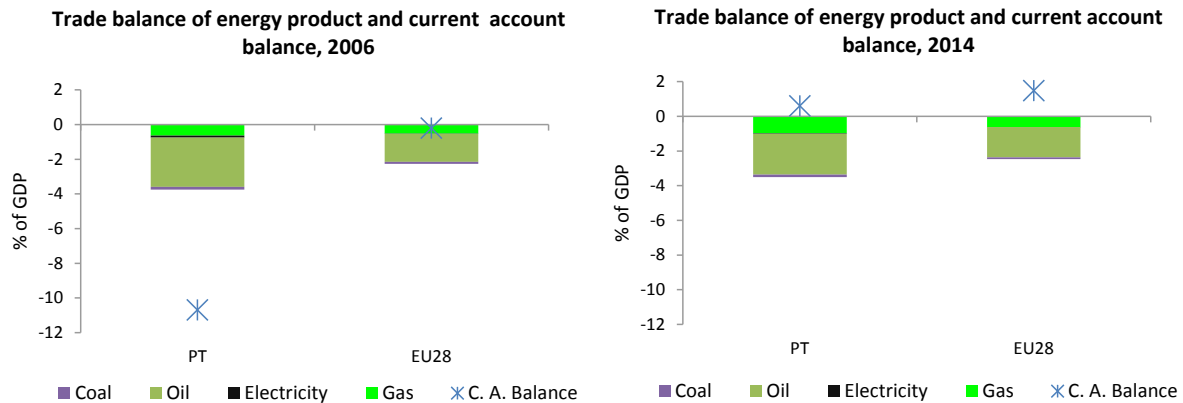


Source: European Commission, based on EurObserv'ER and EUROSTAT

### TRADE BALANCE OF ENERGY PRODUCTS

Between 2006 and 2014, the overall energy trade deficit of Portugal was considerably higher than that of the EU28. The largest components of the deficit are the oil and natural gas trade balance, both in 2006 and in 2014, but they presented a diverging path throughout this period. The deterioration of the natural gas energy trade deficit in 2014 was outweighed by the improved oil trade balance and left the energy trade deficit relatively constant. Despite the stable energy trade

deficit, the country moved from a current account deficit in 2006 of 10.9% of GDP to a current account surplus in 2014 of about 0.3% of GDP.



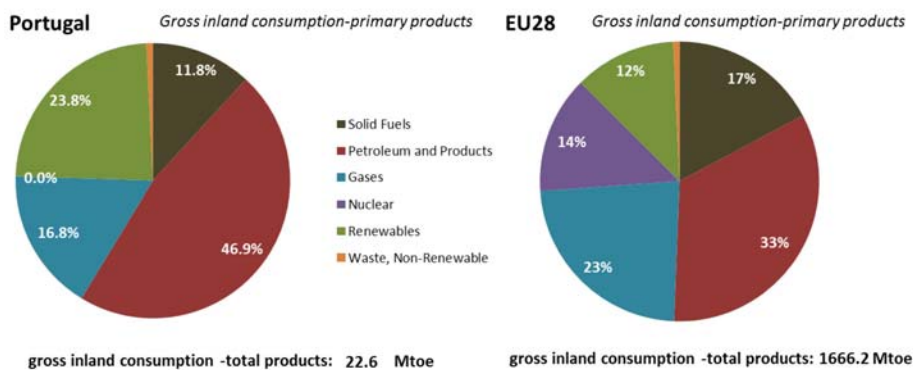
Source: EUROSTAT  
 Note: Current account balance for EU28 from European Commission (AMECO)

## 1. Energy Security, solidarity and trust

### ENERGY MIX

The energy mix of Portugal differs from the one of the EU-28, with the notable difference of a much higher share of oil and petroleum products and – to a lesser extent – renewable energy. Compared to 1995, the share of gases sharply increased, more than EU average (from less than 1% to 18% of gross inland energy consumption), as well as the renewables share (by 10 percentage points). The share of solid fuels only slightly decreased (by 6 percentage points). The main decrease concerns oil and petroleum and products (by 23 percentage points).

Gross inland energy consumption in 2013



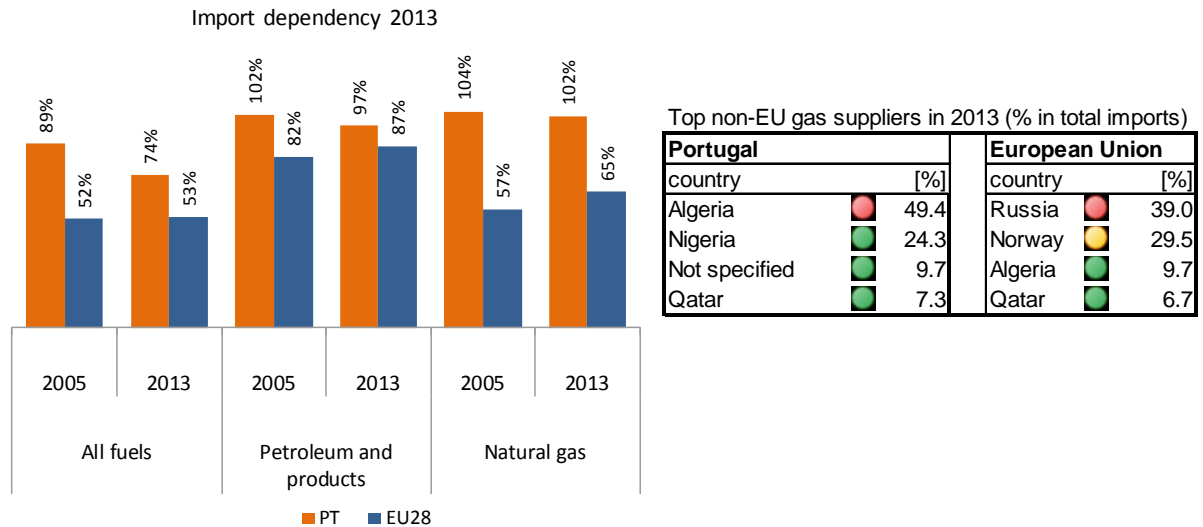
Source: European Commission, based on EUROSTAT

### IMPORT DEPENDENCY

Portugal has a high import dependency ratio<sup>1</sup>, although it has decreased between 2005 and 2013. It is particularly high for petroleum products and natural gas. At the same time, Portugal imports gas (and

<sup>1</sup> Note: A dependency rate in excess of 100% indicates that energy products have been stocked.

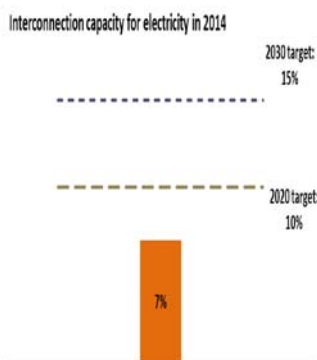
oil) from a relatively well balanced range of import sources<sup>2</sup> thanks to the LNG terminal in Sines and the possibility to take advantage of the supply diversification in the Spanish market, leading to a low country supplier concentration index.



Source: European Commission, based on EUROSTAT

## 2. A fully-integrated internal energy market

### INTERCONNECTIONS



Source: European Commission based on ENTSO-E scenario outlook and adequacy forecast 2014

Note: Reference to 2030 target is based on October 2014 European Council conclusions stating that "the Commission will also report regularly to the European Council with the objective of arriving at a 15% target by 2030"

The electricity interconnection capacity was 7% in 2014. It should increase to 12% in 2016 thanks to the commissioning of the current Projects of Common Interests (PCIs) (e.g. Spain interconnection between Vila Fria and Beariz). New PCIs are necessary to reach a 15% interconnection capacity by 2030. In addition, there is a need to strengthen the interconnection capacity between Spain and France to plug the Iberian Peninsula into the internal energy market.

The Madrid declaration in the context of the High Level Group on the interconnectivity of the Iberian Peninsula identifies 3 projects: Biscay Bay project (this HVDC subsea cable between Spain and France is one of the 33 key security of supply infrastructure projects, which will double the interconnection capacity of the Iberian peninsula to above 5000 MW), and two projects through the Pyrenées - not yet PCIs.

The Portuguese natural gas system has three entry points: an LNG terminal at Sines and two interconnections with Spain. The key gas project for Portugal is the 3rd interconnection point with Spain, which is closely linked to Eastern Axis Spain-France interconnection point between the Iberian Peninsula and France at Le Perthuis (MidCat, listed as key infrastructure project in the European Energy Security Strategy (EESS)).

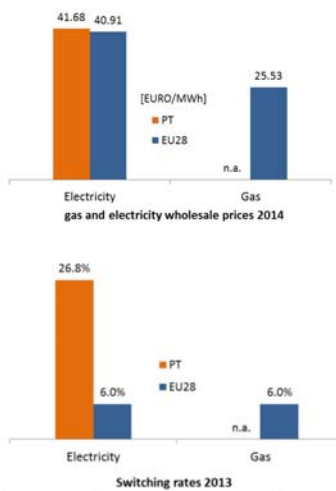
<sup>2</sup> Top non-EU gas suppliers table is based on EUROSTAT data. The share of imports from non-EU countries is calculated as the ratio between volumes of imports from that specific non-EU supplier and total imports (from EU and non-EU countries).

## ELECTRICITY AND GAS MARKETS

Market concentration index for power generation (left) and gas supply (right) (2013) (Herfindahl index – 10000 means monopoly)



Sources: European Commission based on ESTAT, CEER and Platts Power Vision



Sources: ESTAT and European Commission Calculations

Concentration on power generation and gas supply markets are at a high level, but slightly below EU average. Wholesale electricity prices are slightly above EU average. In the gas sector, wholesale market development is still constrained partly as a result of the slow integration with the Spanish market.

In the retail market, regulated tariffs are being phased out gradually until 2017. Major energy companies still have a market share between 85% and 95% of the retail electricity and gas markets. However, some progress in the liberalisation of the electricity and gas markets has been made.

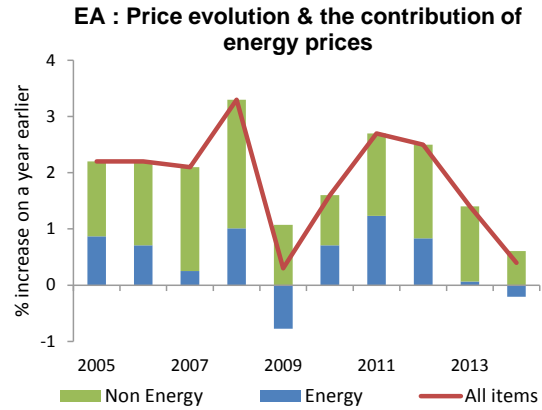
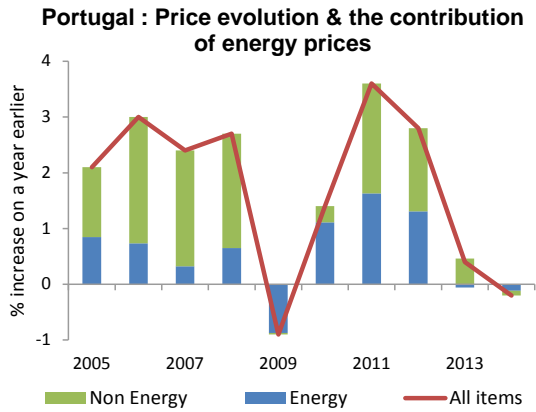
Domestic electricity prices grew on average by 7.8% between 2008 and 2012 and being among the highest in Europe. Also domestic gas prices were one of the highest in Europe. In 2013, Portugal had its highest provider switching rate in the electricity market for domestic consumers. Natural gas consumers have also the ability to switch their gas provider. Consumers' overall assessment of the retail electricity market was below the EU average<sup>3</sup>.

Smart metering pilot projects continue while the Cost Benefit Analysis is to be revised.

## CONTRIBUTION OF ENERGY TO CONSUMER PRICE EVOLUTION

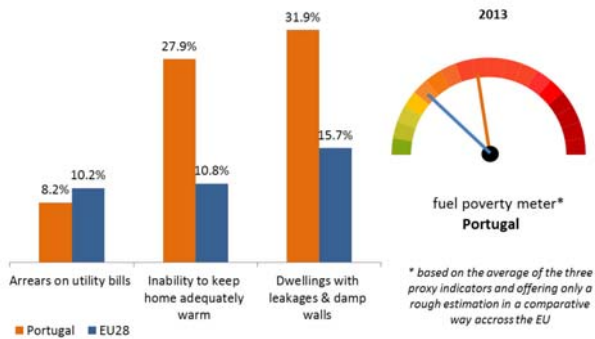
The inflation rate in Portugal followed a broadly similar pattern with the average inflation rate of the Euro area between 2005 and 2014. However, in 2009 it presented a considerably stronger decrease than the EU28 average. Since the end of 2012, both energy and non-energy components contributed to disinflationary pressure for Portugal and for the Euro area as a whole, but the declining slope was much steeper for Portugal.

<sup>3</sup> 10th Consumer Markets Scoreboard (June 2014), [http://ec.europa.eu/consumers/consumer\\_evidence/consumer\\_scoreboards/10\\_edition/index\\_en.htm](http://ec.europa.eu/consumers/consumer_evidence/consumer_scoreboards/10_edition/index_en.htm)



Source: DG ECFIN based on Eurostat

### VULNERABLE CONSUMERS

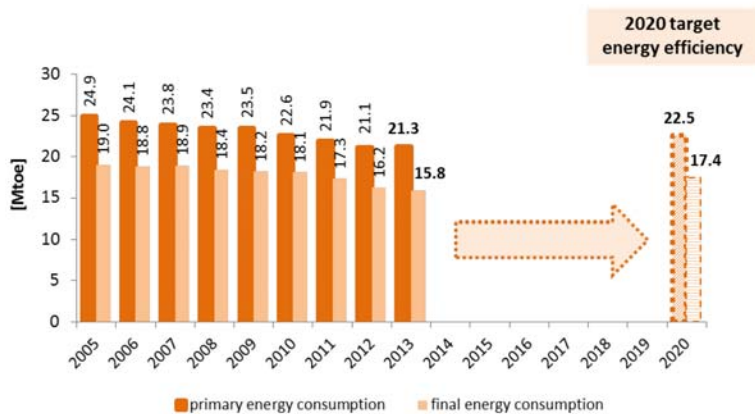


Source: European Commission, based on EUROSTAT SILC survey

Based on a Eurostat survey on income and living conditions, three indicators are used to assess fuel poverty. On this basis, three in every ten households lived in dwellings with leakages and damp walls while a slightly lower proportion of households was unable to keep their homes adequately warm. This indicates a relatively acute issue for Portugal in this respect. Portugal maintains public service obligations to vulnerable customers who retain the right to access the regulated tariff with a limited annual increase established by the government. Social tariffs have also been implemented to support customers meeting the eligibility criteria.

## 3. Energy Efficiency and moderation of energy demand

### ENERGY EFFICIENCY TARGET 2020 (22.5 Mtoe primary energy and 17.4 Mtoe final energy)



Source: European Commission, based on EUROSTAT and on national energy efficiency targets as declared by the MS under the EED

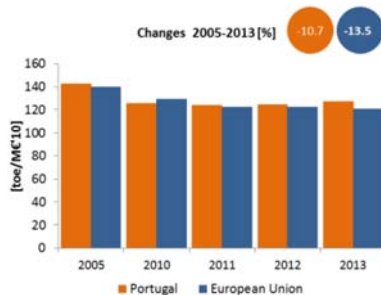
Portugal's EU 2020 energy efficiency target is 22.5 Mtoe expressed in primary energy consumption and 17.4 Mtoe final energy use.

If the trend in primary and final energy consumption observed in the period 2005-2013 will continue up to 2020, Portugal would meet its national target, which could have been set at much more ambitious level.

## ENERGY INTENSITY

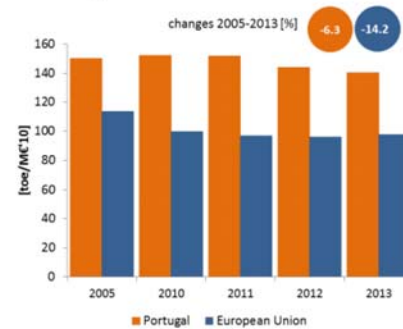
Primary energy intensity in Portugal has decreased in line with EU28, and remains close to average. However, only a low energy intensity reduction is recorded in the industrial sector, which remains above EU average.

### Primary energy intensity of the economy



Source: European Commission based on EUROSTAT and European Commission/AMECO

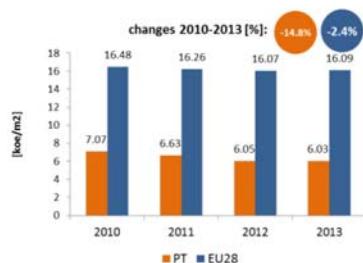
### Final energy intensity in industry



Source: European Commission based on EUROSTAT and European Commission/AMECO

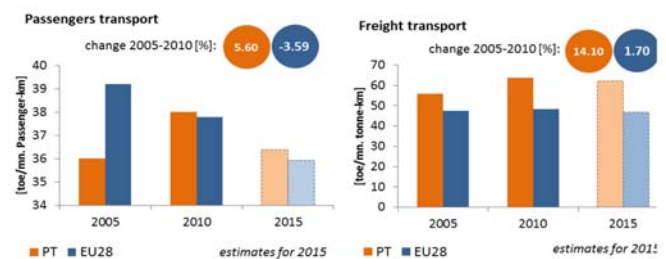
Specific energy consumption by households is much below EU average and decreased sharply since 2010. This can be the result of a conjunction of factors, including fuel poverty issues. The specific energy intensity of passenger cars increased between 2005 and 2010. The specific energy intensity for freight transport also increased between 2005-2010, i.e. from the same unit of energy fewer tonnes of good are transported and/or on shorter distances.

### Final energy consumption per m<sup>2</sup> in residential sector, climate corrected



Source: European Commission based on Odyssee database

### Specific energy intensity for passenger cars and freight transport<sup>4</sup>

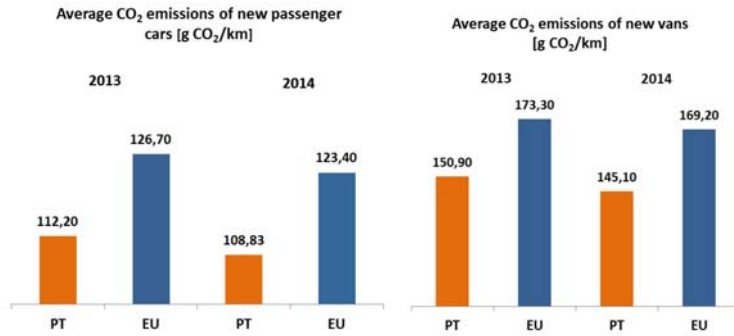


Source: PRIMES model background data and estimations based on EU Commission and EU MS inputs

EU legislation sets mandatory CO<sub>2</sub> emission reduction targets for new cars and vans. By 2021, the fleet average to be achieved by all new cars is 95 g/km of CO<sub>2</sub>. For new vans, the fleet average is set at 147 g/km by 2020.

<sup>4</sup> Statistics on energy demand for passengers and freight transport are not available and model estimates have been used instead. These issues should be borne in mind when comparing energy intensity in freight or passenger transport between Member States, which should be regarded as merely indicative.

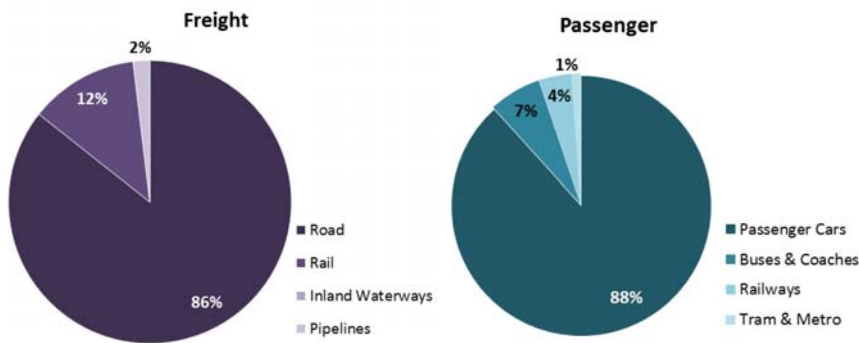




Source: European Environmental Agency. 2014 values are provisional. 2013 EU average refers to EU-27.

Regarding transport performance, in EU-28 the inland freight modal shares are 71% by road, 17% by rail, 7% by inland waterways and 5% by pipelines. The respective inland passenger modal shares are 82% by private car, 9% by buses and coaches, 7% by railways and 2% by tram and metro.

Modal share Portugal



Source: Eurostat and EU transport in figures 2015. Data refers to 2013. Modal shares based on tonne-kilometres for freight sector and passenger-kilometres for passenger sector, freight data based on activity within country territory. Estimates are made when data is missing.

## 4. Decarbonisation of the economy

### NON-ETS GHG EMISSION REDUCTION TARGET 2020 (+1% by 2020 as compared to 2005 in the non-ETS sector)



Source: European Commission based on EEA. Based on preliminary inventory data.

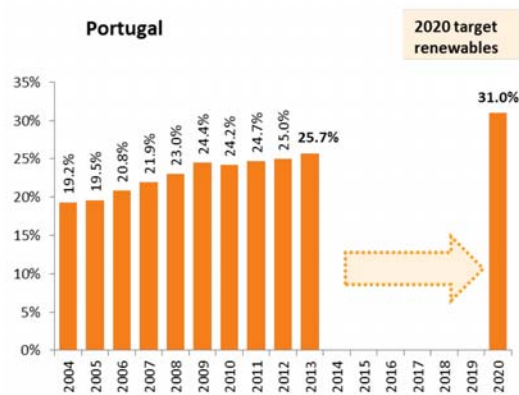
ESD (Effort Sharing Decision) emissions are the emissions from sectors not covered by the EU ETS.

Portugal has decreased its emissions by 23% between 2005 and 2014 approximated data.

According to its 2015 projections, Portugal is expected to reach its 2020 target, with a margin of 26% as compared to 2005.

| Non-ETS Emissions (vs. 2005)            | Projections/proxy | target |
|---|-------------------|--------|
| Projections with existing measures 2020 | -25%              | +1%    |
| Proxy 2014                              | -23%              | -2%    |

### RENEWABLE ENERGY SHARE TARGET 2020 (31%)



Source: European Commission based on EUROSTAT

In 2013 the renewable energy share in gross final energy consumption was 25.7%, and therefore Portugal seems to be on track to reach its 31% target in 2020. However, Portugal may need to intensify its efforts, as the trajectory towards 2020 becomes steeper over the coming years. Moreover, Portugal is lagging behind fulfilment of the renewables in the transport sub-target.

### GREENHOUSE GAS EMISSION INDICATORS

- Emissions per capita in Portugal are significantly lower than the EU average.
- In 2014, the revenues from the auctioning of ETS allowances amounted to EUR 67 million, most of which have been allocated to further develop the renewable energy sector. This in line with Portugal's efforts to reduce dependency on fossil fuels, which have led to a steady increase in the share of renewables in recent years.

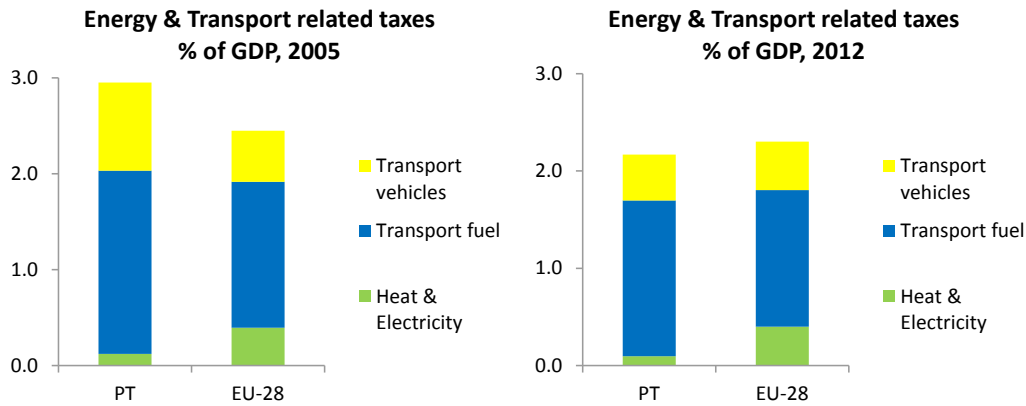
| Largest Sectors of GHG Emissions in 2012 (*) | Portugal | EU Average |
|--|----------|------------|
| Energy/power industry                        | 27%      | 33%        |
| Transport                                    | 25%      | 20%        |
| Industry                                     | 19%      | 19%        |
| Agriculture (incl. forestry & fishery)       | 12%      | 12%        |
| Residential & Commercial                     | 5%       | 13%        |
| Waste & others                               | 12%      | 3%         |

| GHG Emissions  | Portugal | EU   |
|--|----------|------|
| EU ETS auctioning revenues in 2014 (EUR millions)                                    | 67.1     | 3205 |
| Share of ETS emissions in 2013   | 39%      | 42%  |
| GHG emissions/capita in 2013 (tCO <sub>2</sub> equivalent)                           | 6.2      | 8.5  |
| Carbon intensity of the economy in 2013 (tCO <sub>2</sub> equivalent/(EUR millions)) | 388      | 328  |

Source: European Commission based on EEA  
 (\*)Sectoral breakdown for 2013 data not available

### ENERGY & TRANSPORT TAXATION

In 2005 energy and transport related taxes as a share of GDP amount to 3%, which is significantly higher than the EU-average during the same period. This is mainly due to high taxation of transport vehicles (0.9%) and transport fuels (1.9%), while the taxes on electricity and heating fuels were relative lower. In contrast in 2012 the overall taxation of energy and transport fuels is in line with the EU-average, due to the significant decrease in the taxation of transport vehicles.

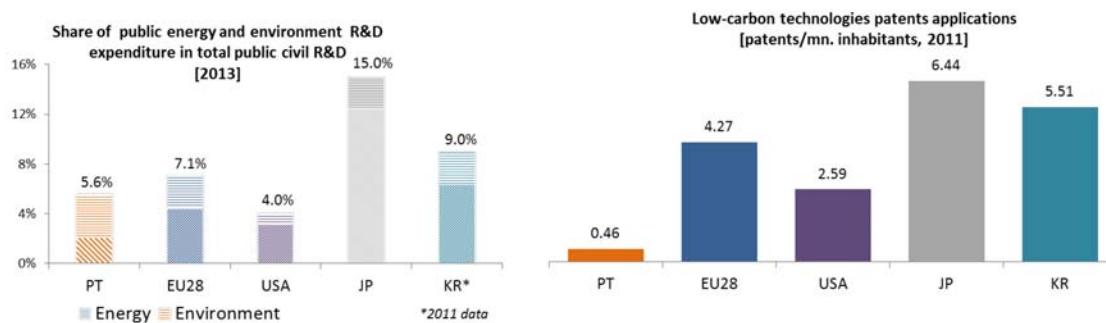


Source: Eurostat

## 5. Research, innovation and competitiveness

### RESEARCH AND INNOVATION

Portugal is close to the EU average, above the US and below Japan and South Korea in terms of public support allocated to research and innovation in the field of sustainable energy, low-carbon and environment. In terms of intensity of low-carbon technologies patents, Portugal is much behind the EU average and main worldwide partners. Portugal gives high policy relevance in their research efforts to e.g. increasing energy efficiency and developing ocean energy. Portugal also aims at developing leadership as regards electric mobility.



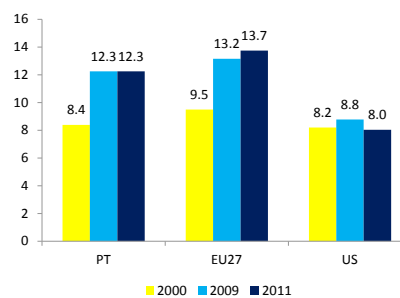
Source: European Commission based on EUROSTAT

### COMPETITIVENESS

The real unit energy costs<sup>5</sup> in Portugal are slightly below the EU average, but well above the US average. No reliable data can be used to break down this trend between energy prices and energy intensity factors.

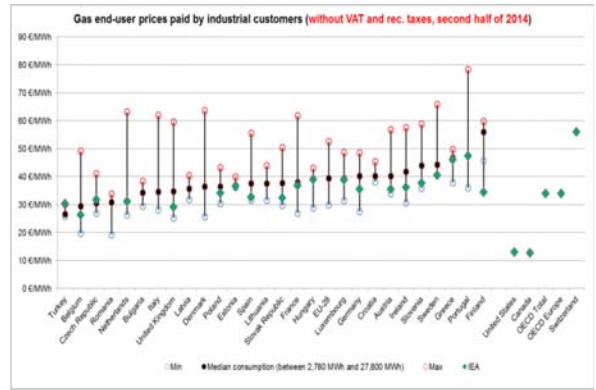
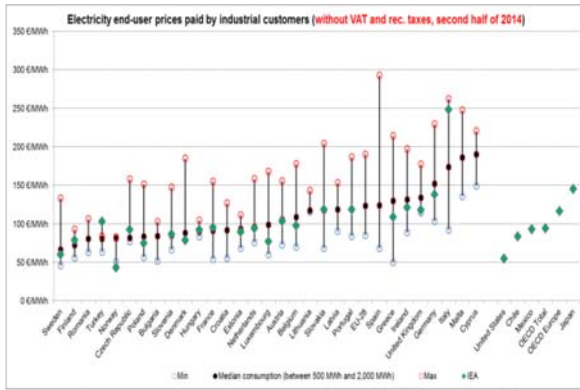
However, it can be noted that electricity prices paid by industrial customers are in line with EU average, while gas prices are among the highest, and well above OECD average and other main trading partners.

Real unit energy costs (% of value added)



Source: European Commission

<sup>5</sup> This indicator measures the amount of money spent on energy sources needed to obtain one unit of value added.



Source: European Commission based on EUROSTAT and IEA

## 6. Post-2020 Energy and Climate policy Strategy

### COMPREHENSIVE MEDIUM TO LONG-TERM STRATEGY (post-2020) FOR CLIMATE AND ENERGY

- Portugal recently agreed on a Strategic Framework integrating both Energy and Climate covering the post-2020 period. This framework includes revised targets for climate and energy for the period 2013-2020, addressing mitigation policy, and an outlook to 2030.
- Furthermore, earlier this year, the government approved the Green Growth Strategy which aims to include the climate and energy objectives up to 2030 and the targets included in the National Climate Change Programme and the National Adaptation Strategy. Additionally, this framework foresees the establishment of an inter-ministerial Commission for Air and Climate Change in order to ensure the engagement by the government and promote sectorial cohesion, accountability and integration of policies.
- A Low Carbon Roadmap 2050 has been elaborated in 2012. Its aim is to analyse the technical and economic viability of GHG emission reduction pathways up to 2050 consistent with overall EU objectives. The Roadmap supports strategic planning and development of national emission reduction plans and provides high-level long term guidance for climate policy.

#### NATIONAL TARGETS, especially for 2030

| Objective, 2030-2050        | Targets   | Comments  |
|-----------------------------|---|---|
| GHG reduction               | 30%-40% (62-53 MtCO <sub>2</sub> ) for 2030                     | According to the National Low Carbon Roadmap 2050, it is possible to define trajectories to achieve a GHG reduction of 50% to 60% by 2050 compared to 1990 levels.<br>The Green Growth Strategy established as target 30%-40% reduction of CO <sub>2</sub> emissions (62-53 MtCO <sub>2</sub> ) for 2030. |
| Renewable energy            | 40% of final energy consumption by 2030                         | The National Low Carbon Roadmap foresees that 60 to 85% of electricity produced in 2050 will come from renewable sources.<br>The Green Growth Strategy established as target 40% share of final energy consumption from renewable energy sources by 2030.   |
| Energy Efficiency / savings | Decrease the energy intensity to 101 toe/millionEUR GDP in 2030 | The Green Growth Strategy is established as target a decrease in energy intensity to 122 toe/millionEUR GDP in 2020, and 101 toe/millionEUR GDP in 2030.  |

## 7. Regional cooperation

Regional cooperation on infrastructure development is necessary to optimise the identification of regional infrastructure priorities and to coordinate cross-border investments. Portugal is a member of 2 Regional Groups which have been established under the TEN-E Regulation: North-South Gas interconnections in Western Europe and North-South electricity interconnection in Western Europe.

Portugal is a member of the High Level Group on the interconnectivity of the Iberian Peninsula, formalised in consequence of the Madrid Summit which led to the Madrid Declaration, which aims to tackle the existing interconnection issues both for electricity and gas through the adoption of an Action Plan.

## 8. Cohesion policy contribution

The EU Cohesion policy provides for important investment possibilities to implement energy policy objectives in Portugal which will be complemented by national public and private co-financing, aiming at optimal leverage. It also ensures integrated territorial solutions to challenges by supporting capacity building, technical assistance and territorial cooperation.

*Internal energy market:* Over 2014-2020, EU Cohesion Policy will invest some EUR 6 million in energy storage pilot-projects and natural gas supply stations to urban collective public transport vehicles. Around EUR 120 million is also planned for investments in smart electricity distribution grids in Portugal. These investments are expected to contribute to around 1 200 000 additional users connected to smart grids.

*Energy efficiency:* Over 2014-2020, EU Cohesion Policy will invest some EUR 817 million in energy efficiency improvement for public and residential buildings and productive processes in enterprises in Portugal. A further estimated EUR 1 317 million will be invested in supporting the move towards an energy-efficient, decarbonised transport sector. These investments are expected to contribute to around 28 000 households with improved energy consumption classification and a decrease of around 830 463 000 kWh per year of primary energy consumption in public buildings, as well as to around 260 km of reconstructed or upgraded railway lines.

*Decarbonisation:* Overall, the EU Cohesion Policy investments in Portugal over 2014-2020 are expected to contribute to an estimated annual decrease of GHG of around 215 000 tonnes of CO<sub>2</sub>eq. Over 2014-2020, EU Cohesion Policy will invest some EUR 159 million in renewable energy in Portugal. This funding will be complemented by national public and private co-financing, aiming at optimal leverage. These investments are expected to contribute to around 80 MW of additional capacity of renewable energy production.

*Research, innovation and competitiveness:* Over 2014-2020, EU Cohesion Policy will invest significantly in R&I and in SME competitiveness in Portugal. This will be based on the national strategy as well as regional strategies for smart specialisation. For Portugal, the strategies include a focus on innovative technologies for the production of renewable energy, more efficient industrial processes in terms of use of energy and promoting R&I applications for low-carbon urban mobility. At this stage, at least EUR 383 million is foreseen for investments in R&I and adoption of low-carbon technologies in Portugal, but this might increase further in line with the evolving content of the smart specialisation strategy.