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Assessment of climate change policies in the context of the European Semester

Country Report: Portugal



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The report provides an overview of current emission trends and progress towards targets as well as policy developments that took place over the period from February 2013 to November 2013.

Please feel free to provide any comments or suggestions to the authors through the contacts listed above.

Short summary

Background: Portugal has made broad strides towards meeting and surpassing its 2020 GHG emissions reduction goals, largely through comprehensive national plans addressing renewable energies and energy efficiency. These plans have included funding, taxation, and regulatory programmes that all simultaneously encourage the reduction of Portugal's climate impact.

Non-ETS emission reduction target: Portugal's 2020 target is +1% (compared to 2005) but in actual fact emissions decreased by 11% between 2005 and 2012. According to the latest national projections submitted to the Commission and based on existing measures, GHG emissions are projected to decrease even further, down to 31% (compared to 2005) by 2020, overachieving the target by a high margin of 32 percentage points.

Key indicators 2011:

GHG emissions	PT	EU
ESD EU 2020 GHG target (comp. 2005)	1%	
ESD GHG emissions in 2011 (comp.2005)	-11%	-9%
Total GHG emissions 2012 (comp.2005)	-21%	-12%
GHG emissions/capita (tCO ₂ eq)	6.6	9.0

→ **27% lower** per capita emissions than EU average

GHG emissions per sector	PT	EU
Energy/power industry sector	25%	33%
Transport	25%	20%
Industry (incl. industrial processes)	20%	20%
Agriculture (incl. forestry & fishery)	12%	12%
Residential & Commercial	5%	12%
Waste & others	12%	3%

→ **Energy/power industry** and Transport followed by Industry

Energy	PT	EU
EU 2020 RES target	+31%	
Primary energy consumption/capita (toe)	2.3	3.4
Energy intensity (kgoe/1000 €)	153	144
Energy to trade balance (% of GDP)	-4.2%	-3.2%

→ **33% lower** per capita consumption, **6% higher energy intensity**, contribution of energy to trade balance **above** EU average

Taxes	PT	EU
Share of environmental taxes (% of GDP)	2.4%	2.4%
Implicit tax rate on energy (€/toe)	135	184

→ **Same** share of environmental taxes and **45% lower** implicit tax rate on energy than EU average.

Key policy development in 2013: In 2013, the Portuguese government made much progress in the establishment of GHG reduction policies. The new national renewable energy plan will support solar thermal installation and renovation, streamline renewable energy installation procedures, reshape rules regarding the sale of renewable electricity, support the use of biofuels, and strengthen e-mobility infrastructure. The latest national energy efficiency plan has funded ten programmes supporting measures in the residential, agricultural, and public sectors. Additionally, Portugal has introduced new legislation on waste to reduce landfilling and increase recycling.

Key challenges: Portugal's level of environmental taxation is currently below average for the EU and their level of diesel fuel taxation is also relatively low. Discussions are underway to introduce an additional levy in 2014, but it has not been adopted yet. Industrial energy efficiency and GHG intensity is above the EU average. Furthermore, transport is the largest sectoral source of emissions (despite progress in the emission levels of new cars), with no comprehensive strategy in place to reduce it significantly.

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I Background on climate and energy policies

Portugal is still conducting a comprehensive structural reform in several sectors due to macroeconomic imbalances in the country. The reform encompasses, among other things, actions in the labour market, taxation system, energy sector, and business environment. With regards to the energy sector, efforts continue to be directed towards improving the sustainability of the national electricity system (e.g. through the liberalization of electricity and gas markets) and to gradually decrease the tariff debt ⁽¹⁾ until its complete elimination by 2020 (MoEFP, Att. I, 2013).

The main objectives of the current government's programme regarding climate and energy policy include the development of a low carbon economy and more specifically increased energy efficiency, effective liberalization of energy markets, and the reduction of Portugal's dependence on fossil fuels through an increase in the use of biofuels and improvements to the quality of public transport. The government's programme also mentions compliance with GHG emission reduction targets as one of its objectives (Governo de Portugal 2011, p.49-51; 58).

In late 2012, the Portuguese Government released a National Low Carbon Roadmap, aiming at analysing the technical and economic feasibility of GHG emissions reduction pathways by 2050 (APA 2012). The Roadmap used two socio-economic scenarios and concluded that it is possible to define trajectories for Portugal to achieve a GHG reduction of 50% to 60% by 2050 compared to 1990 levels (RNBC 2012, p.33). The study especially stressed the potential in the field of renewable energy and showed that the adoption of a low-carbon pathway could lead to the creation of green jobs. In particular, jobs in the renewables sector could double by 2050 compared to a scenario without reduction targets (RNBC 2012, p.47, 56) ⁽²⁾.

It is worth highlighting, however, that the delays in the elaboration of the instruments mentioned in the Roadmap to support strategic planning and reduction of GHG emissions - such as the National Programme for Climate Change (PNAC) ⁽³⁾ for the period 2013–2020, low-carbon sectoral plans, as well as progress reports of the adaptation strategy - might indicate that discussions about climate policies still did not regain priority in the political agenda due to Portugal's need for economic restructuring. The current National Energy Strategy (ENE 2020) was set by RCM 29/2010, focussing on the following areas: supporting growth and competitiveness, promoting renewables and energy efficiency, ensuring security of supply, and economic and environmental sustainability. With regards to green jobs, there are currently around 29,000 people working directly with renewables

¹ Producers of renewable electricity have benefited from a feed-in tariff in the past years. However, costs of the support to electricity generation were sometimes not fully transmitted to consumers and a considerable tariff debt of €1.8 billion was created in 2011. According to an OECD report, this debt could reach €5 billion if no reforms are implemented (OECD 2012, p. 30).

² According to the National Institute for Statistics in Portugal (INE), the number of green jobs in 2008 was estimated to be around 0.4% of total employment.

³ A National Programme for Climate Change was introduced in 2006 (reviewed in 2007) with a set of policies and measures aiming at complying with Kyoto targets for the period 2008–2012. The PNAC (Programa Nacional para as Alterações Climáticas) for the period 2013–2020 is still being elaborated (as of November 2013) and shall consolidate measures and instruments mentioned in the PNAC 2006 and define new policies for non-ETS sectors.

- in the electricity, transport, and heating & cooling sectors (RCM 20/2013, p. 2090) - and more than 120,000 additional jobs are expected to result from the National Energy Strategy (OECD, 2012, p. 117-121). Taking into account the measures included in the Memorandum of Understanding (hereinafter MoU) signed between Portugal and the Troika partners ⁽⁴⁾, the programme of the new government reemphasized the main priorities of the energy strategy to be pursued in the next years (Odyssee 2012), which can be summarized as follows:

- improvement of energy efficiency (25% reduction in consumption by 2020);
- diversification of primary energy sources and reduction of oil dependence;
- creation of an energy mix with affordable prices;
- liberalisation of energy markets to make them more competitive.

Besides the National Energy Strategy, two key action plans are also part of strategic energy planning, namely the National Action Plan for Energy Efficiency (PNAEE) 2016 and the National Action Plan for Renewable Energy (PNAER) 2020. Both plans were reviewed in the first half of 2013 to redesign actions and targets. The creation of green jobs was also addressed in the reviewed plans and the Portuguese government expects to create around 70,000 new direct and indirect jobs with the implementation of the measures foreseen in the PNAER 2020 (RCM 20/2013, p. 2090).

Finally, the eighth review of the MoU highlights the need of providing an updated estimation of the tariff debt that takes into consideration the impact of measures already adopted (MoU 8th Update 2013). According to APREN, the Portuguese Association of Renewable Energy, changes made to the regulatory framework for renewable energy sources (RES) since 2010 have created an environment of instability and have discouraged investments, potentially compromising Portugal's ability to achieve its 2020 target (Gonçalves 2013).

2 GHG projections

Background information

In 2011, Portugal emitted 70 Mt CO₂eq (UNFCCC inventory 2011), which is 17% higher than in 1990. However, there has been a downward trend since 2005, partly owing to the economic recession. Transport is the greatest contributor to emissions, with 25% of the total. Emissions from this sector also showed the greatest increase, by more than 70% between 1990 and 2011. This reflects the growing number of private cars and increased road freight transport. Emissions from energy supply were, until recently, the primary source of emissions due to Portugal's high dependency on oil for power generation. Emissions from energy use account for 19% of total emissions but have been declining since 2005, partly due to the economic recession and energy efficiency measures. Emissions from industrial processes grew by 10% between 1990 and 2011 as a result of increased production of ammonia, cement, and lime. However, since 2009 emissions

⁴ The Portuguese government signed in 2011 a Memorandum of Understanding with the Troika partners (the European Commission, the International Monetary Fund, and the European Central Bank), which is regularly reviewed (Memorandos, 2013).

from this sector have been declining. Due to decreasing agricultural activity, reduced livestock and fertilizer use, and replacement of crops with permanent pasture, emissions from agriculture have decreased slightly since 1990 (UNFCCC inventory 2011, EEA 2012, UNFCCC 2012). In 2012, it is expected that total GHG emissions were slightly below 2011 levels (EEA 2013b).

Progress on GHG targets

There are two sets of targets to evaluate: 1) the Kyoto Protocol targets for the period 2008-12 (which has just ended) and 2) the 2020 targets for emissions not covered by the EU ETS.

Under the Kyoto-Protocol the emission reduction target for Portugal for the period 2008-2012 has been set to plus 27% based on 1990 for CO₂, CH₄, and N₂O and on 1995 for F-gases. An evaluation of the latest complete set of greenhouse gas data (for the year 2011; there is only preliminary data for 2012) shows that Portugal's emissions have increased by 16.4% from the Kyoto base year to 2011 (EEA 2013a). Therefore, Portugal is on track to meeting its Kyoto target through domestic emissions reductions directly.

By 2020, Portugal can increase its emissions not covered under the EU ETS by 1% compared to 2005 according to the Effort Sharing Decision (ESD) ⁽⁵⁾. The latest data suggests that Portugal is presently on track. Emissions in 2012 were 7% below Portugal's Annual Emissions Allocation ⁽⁶⁾ for the year 2013. National projections (EEA 2013b) show that Portugal is expected to overachieve its target significantly by 2020 in the scenario with existing measures by about 31.7 percentage points (see Table 1), which is the third highest value among MS (after Cyprus and Slovakia with 43.5 and 37.2 percentage points expected overachievement).

⁵ Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020.

⁶ Commission decision of 26 March 2013 on determining Member States' annual emission allocations for the period from 2013 to 2020 pursuant to Decision No 406/2009/EC of the European Parliament and of the Council. Online available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:090:0106:0110:EN:PDF>

Table I: GHG emission developments, ESD-targets and projections (in Mt CO₂eq)

	1990	2005	2010	2011	2012*	ESD target**		2020 Projections***	
						2013	2020	WEM	WAM
Total	61.0	88.0	71.4	70.0	69.8				
Non-ETS (% from 2005)		49.0	47.2	45.0	44.2 -10%	47.7 -3%	49.0 1%	34 -31%	34 -31%
Energy supply (% share of total)	16.3 27%	25.5 29%	14.6 20%	16.5 24%					
Energy use (w/o transport) (% share of total)	14.5 24%	17.9 20%	14.5 20%	13.3 19%					
Transport (% share of total)	10.3 17%	19.9 23%	18.9 27%	17.6 25%					
Industrial processes (% share of total)	4.8 8%	7.1 8%	6.1 8%	5.3 8%					
Agriculture (% share of total)	8.2 13%	7.7 9%	7.5 11%	7.5 11%					

Source: UNFCCC inventories; EEA (2013b); Calculations provided by the EEA and own calculations.

* proxies for 2012 emissions summarised by EEA (2013b)

** The ESD target for 2013 and for 2020 refer to different scopes of the ETS: the 2013 target is compared with 2012 data and is therefore consistent with the scope of the ETS from 2008-2012; the 2020 target is compared to 2020 projections and is therefore consistent with the adjusted scope of the ETS from 2013-2020. 2005 non-ETS emissions for the scope of the ETS from 2013-2020 amounted to 49 Mt CO₂eq.

*** Projections with existing measures (WEM) or with additional measures (WAM).

Legend for colour coding: green = target is being (over)achieved; orange = not on track to meet the target

Total greenhouse gas emissions (GHG) and shares of GHG do not include emissions and removals from LULUCF (carbon sinks) and emissions from international aviation and international maritime transport.

National projections of GHG emissions through 2020 need to be prepared by the Member States in accordance with the EU Monitoring Mechanism ⁽⁷⁾ every two years, and the latest submission was due in 2013. The projections need to be prepared reflecting a scenario that estimates total GHG emissions reductions in line with policies and measures that have already been implemented (with existing measures, WEM), and an additional scenario that reflects developments with measures and policies that are in the planning phase (with additional measures, WAM) may also be submitted.

In the following table, the measures in Portugal's WEM scenario have been summarised with a focus on national measures and those EU instruments expected to reduce emissions the most. Portugal has not listed any additional measure (WAM) in the 2013 projections. Please note that the WEM table also includes measures that address GHG emissions covered under the ETS such as measures reducing emissions from electricity generation (e.g. feed-in tariffs). An update on the status of the policies and measures is included in order to assess the validity of the scenarios.

⁷ Decision No 280/2004/EC of the European Parliament and of the Council of 11 February 2004 concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol.

Table 2: Existing and additional measures as stated in the 2013 GHG projections

Existing Measures (only important national measures)		Status of policy in November 2013
Energy	Investment subsidies and specific tariffs for renewable electricity generation	Feed-in tariffs are in place. However, the remuneration regime is under review and might be changed to a market regime. An alternative remuneration regime for wind farms was introduced in 2013. Further changes to the feed-in tariffs are expected to take place.
	Investment subsidies and specific tariffs for co-generation	Implemented by Decree-Law 23/2010. Review of remuneration regime: Ordinance 140/2012, amended by Ordinance 325-A/2012.
Energy Efficiency	Regulation on acclimatisation and thermal behaviour of buildings	Implemented. DL 80/2006 set the Regulation for the Characteristics of the Thermal Behaviour of Buildings (RCCTE). DL 79/2006 set the Regulation on Heating, Cooling and Air Conditioning (RSECE).
	Improvement in energy efficiency from the electricity demand-side. Reduction of electricity consumption through regulations	Implemented. Consumption Efficiency Promotion Plan (PPEC). See Order 26/2013 of 24 January 2013.
Transport	Realignment of the tax burden. Tax harmonization on diesel fuel for heating (residential and service sector) and for transport by 2014.	Implemented. Gradual harmonization foreseen. However, with the changes from Law 64-B/2011 (Art. 132, State Budget 2011), the maximum rate of the ISP tax for heating and for transport already coincide.
	Investments in expansion and new building of metro networks	Implemented. Network extension in Lisbon in 2012.
	Provision of monetary incentives for the substitution of end-of-life vehicles to promote the renovation of the car stock	The end-of-life vehicle disposal incentive programme ended in 2010 and the incentive for demolition of old cars for acquiring an electric car was cancelled in 2011.
	Increase of biofuel share through concession of subsidies to investment and proper tariffs for biofuels	Implemented. See tax exemption for small producers of biofuels in the transport section.
	Biofuels Directive - Increase of the 5.75% goal to 10% in 2010 regarding biofuel incorporation tax in the road fuels.	There is a biofuel quota in place with companies being obliged to blend certain amounts of biofuels to fuels supplied to the market (see section 4, transport).
Other non-ETS sectors	Packing and Packing Waste Directive	Decree-Law 366-A/97 set rules applicable to the management of packaging and packing waste, transposing into national legislation the provisions of Directive 94/62/EC. Decree-Law 366-A/97 was amended on 2 August 2013 by Decree-Law 110/2013, which included examples of what should be considered packaging and packaging waste.

Programme for the Sustainable Development of Portuguese Forests (in the context of IIIFSP).	Adopted by RCM 27/99.
Treatment and energy recovery of livestock waste	Adopted. Measure introduced by RCM 104/2006.

Source: Reporting of MS in accordance with Decision No 280/2004/EC about their GHG emission projections up to 2020, May 2013.

Relevant policies listed in the WEM scenario as specified in the national GHG emission projections of May 2013 are implemented. In sum, considering that the main instruments in the non-ETS sectors are in place and are projected to lead to a significant overachievement, Portugal is expected to meet its reduction target.

3 Evaluation of National Reform Programme 2013 (NRP)

In April of each year, Member States are required to prepare their National Reform Programmes (NRPs), which outline the country's progress regarding the targets of the EU 2020 Strategy. The NRPs describe the country's national targets under the Strategy and contain a description of how the country intends to meet these targets. For climate change and energy, three headline targets exist: 1) the reduction of GHG emissions, 2) the increase of renewable energy generation, and 3) an increase in energy efficiency ⁽⁸⁾.

Similarly to the previous National Reform Programme, the current Portuguese NRP maintains the emphasis on policies focused on the energy sector and no adaptation measures are foreseen. In the following table, the main policies and measures as outlined in the NRP of May 2013 ⁽⁹⁾ have been summarised, and their current status (implemented, amended, abolished, or expired) is given, with specifics on latest developments.

Table 3: Main policies and measures as outlined in the NRP, April 2013

New planning of the energy sector	
Status as stated in the NRP	To be developed
Status as per Nov 2013	Under development
Description of policy or measure	The NRP mentions inter alia the creation of conditions for the development of a Planning Unit of the Energy Sector (<i>Unidade de Planeamento do Sector da Energia</i>) within the public administration. With the development of the Planning Unit, the government aims at encouraging early discussion of sector planning in long-term perspective, as well as identifying future needs.

⁸ There are specific targets for all MS by 2020 for non-ETS GHG emission reductions (see section 2) as well as for the renewable energy share in the energy mix by 2020 (see section 4, renewable energies). Specific energy efficiency targets were defined (or revised) by the MS in line with the methodology laid out in Article 3 (3) of the Energy Efficiency Directive (Directive 2012/27/EU).

⁹ All NRPs are available at: http://ec.europa.eu/europe2020/making-it-happen/country-specific-recommendations/index_en.htm

Consolidation of programs to support energy efficiency: National Action Plan for Renewable Energy (PNAER) and National Action Plan for Energy Efficiency (PNAEE)

Status as stated in the NRP	PNAER 2020 and PNAEE 2016 have been approved by Resolution of the Council of Ministers 20/2013 of April 2013.
Status as per Nov 2013	The plans have been reviewed to design new actions and targets. Some measures described in the plans, such as the review of the regulation applicable to electricity produced from micro and mini-generation units have already taken place.
Description of policy or measure	The National Action Plan for Energy Efficiency encompasses programmes and measures considered essential to achieve the targets under Directive 2006/32/EC. The National Action Plan for Renewable Energy focuses on the promotion of renewable energy by 2020 under the target set by Directive 2009/28/EC.

Promotion of Smart Grids (Redes Inteligentes)

Status as stated in the NRP	To be developed
Status as per Nov 2013	InovGrid under development
Description of policy or measure	An intelligent electricity distribution system with remote management is being developed by EDP Distribution.

Elaboration of instruments to reduce GHG Emissions: 1. National Low Carbon Roadmap (RNBC) 2020–2050

Status as stated in the NRP	The RNBC has been finalized and published in 2012.
Status as per Nov 2013	Published. No changes in the past months.
Description of policy or measure	The Roadmap analysed the technical and economic feasibility of GHG emissions reduction pathways for Portugal by 2050. The RNBC used two socio-economic scenarios and concluded that it is possible to define trajectories with a reduction of 50% to 60% by 2050 based on 1990 levels.

Elaboration of instruments to reduce GHG Emissions: 2. National Programme for Climate Change (PNAC) 2020

Status as stated in the NRP	In process of tender for the procurement of developing the PNAC 2020.
Status as per Nov 2013	Delayed. The Plan for 2013–2020 has not been published (as of November 2013). After the procurement is awarded, a period of six months is estimated as necessary for the elaboration of the PNAC.
Description of policy or measure	The PNAC 2020 shall set policies and measures aimed at reducing GHG emissions in non-ETS sectors. The PNAC for the period 2013–2020 shall consolidate measures and instruments mentioned in the PNAC 2006 (reviewed in 2007), define new policies for non-ETS sectors, as well as set sectoral responsibilities and instruments for funding and monitoring.

Elaboration of instruments to reduce GHG Emissions: 3. Low-Carbon Sectoral Plans (PSBC)

Status as stated in the NRP	Under revaluation due to synergies between the sectoral plans and other measures already in place.
Status as per Nov 2013	Delayed. Low-Carbon Sectoral Plans are still under development (as of November 2013). In addition, there are ongoing training initiatives on energy efficiency and low carbon strategies in the public administration addressed to local managers that include a module on the preparation of PSBCs.
Description of policy or measure	There is not a model for the sectoral plans, but they must include the GHG emissions from activities in each Portuguese ministry, especially those related to government procurement, buildings, fleets, and use of resources.

4 Policy development

This section covers significant developments made in key policy areas between February 2013 and November 2013. It does not attempt to describe every instrument in the given thematic area.

Environmental Taxation

In 2011, the share of Portugal's environmental tax revenues in total tax revenues amounted to 7.1%. While this value is above EU average, environmental tax revenues as a proportion of GDP (2.36%) ranked below this average value. The implicit tax rate on energy was at € 134.5 per tonne of oil equivalent (toe) in 2011. In 2010, Portugal's economy exhibited only slightly lower energy intensity in comparison with other EU MS. The share of energy tax revenues in total tax revenues was moderate in 2011 (Eurostat 2013a).

A study on the potential of an environmental fiscal reform in Portugal (EEA 2013c) released by the European Environment Agency argues that despite the high share of environmentally related taxes as a percentage of GDP achieved in the 1990's in Portugal, there has been a decline in this share in the past decade. There is still some possible additional areas to consider, such as the development of a balanced taxation regime for diesel and petrol cars, a carbon tax, new taxes on certain goods (e.g. shopping bags and beverage packaging), as well as higher fees on waste. Portugal has demonstrated an effort to shift taxation from labour to environment and energy through a few primary policy instruments.

With regards to the energy sector, an extraordinary levy on this sector (*Contribuição extraordinária sobre o setor energético*) is expected to be introduced in 2014. According to the draft of the State Budget for 2014 (See Article 217 of the PL 387/2013), the levy aims at financing mechanisms to promote the sustainability of the sector through a fund to contribute to the reduction of the tariff debt and to finance social and environmental policies in the energy sector. Natural and legal persons are liable to pay the levy, which will cover:

- a. production, transport, distribution or commercialization of electricity;
- b. transport, distribution, storage or commercialization of natural gas;

- c. refining, processing, storage, transport, distribution or commercialization of petroleum and its products.

In addition, the levy will not be applicable to electricity produced from renewable sources, mini and micro generation units, or CHP units with an installed capacity under 20MW. More details of the levy will be confirmed when the State Budget for 2014 is approved and published in December 2013.

With regards to the transport sector, a Road Service Contribution (*Contribuição de Serviço Rodoviário* - CSR) was introduced in 2007 by Law 55/2007 as a requirement for use of the national road network. An increase of the Road Service Contribution was introduced by the State Budget for 2013 ⁽¹⁰⁾. The Road Service Contribution is included under the tax on petroleum and energy products (ISP) and went from € 65.47 to € 66.32 per one thousand litres of petrol and from € 87.98 to € 89.12 per one thousand litres of diesel. In addition, there is an exemption of the Vehicle Registration Tax (*Imposto sobre Veículos* - ISV). Electric vehicles continue to be exempt from the payment of the ISV and hybrid vehicles continue to benefit from a 50% reduction of this tax (DSIECIV, 2012).

There is also an additional fee added to the tax on petroleum and energy products (*Imposto Sobre Produtos Petrolíferos e Energéticos* - ISP). This fee of € 0.005 per litre of gasoline and € 0.0025 per litre of diesel, up to a maximum of € 30 million, is expected to remain in force in 2014 ⁽¹¹⁾.

In addition, the Portuguese government plans to increase the Single Circulation Tax (*Imposto Único de Circulação* - IUC) for light passenger cars and motorcycles in 2014. The additional levy varies depending on the engine capacity, vehicle category, CO₂ emission, and registration year. This measure was suggested in the Proposal of the State Budget for 2014 (See Article 198 of the PL 387/2013), presented on 13 October 2013 and expected to be approved in December 2013.

According to the proposal, taxes for vehicles (category B) based on the CO₂ emissions should be in 2014:

- a. € 57.76 for vehicles with CO₂ emissions up to 120g/km;
- b. € 86.55 for vehicles with CO₂ emissions with more than 120g/km and up to 180g/km;
- c. € 187.96 for vehicles with CO₂ emissions with more than 180g/km and up to 250g/km;
- d. € 321.99 for vehicles with CO₂ emissions with more than 250g/km.

Energy Efficiency

The energy intensity of the Portuguese economy declined by 14% between 2005 and 2011, slightly above the EU average of 12%. Final energy consumption decreased by 8% between 2005 and 2011. Between 2010 and 2011 this progress was less rapid, but still reached 4%, the same level as the EU average (Eurostat 2013a). Energy efficiency of

¹⁰ In April 2013, some provisions of the State Budget for 2013 (Law 66-B/2012) were declared unconstitutional by the Portuguese Constitutional Court. Law 66-B/2012 was then amended in July 2013 by Law 51/2013; however, there were no changes to the contribution.

¹¹ These additional fees were already in force in 2012 and 2013. See Art. 194 of proposal of the State Budget for 2014 (PL 387/2013)

Portuguese industry increased, but by only 1% between 2000 and 2010. The paper industry has been the sector that has seen more progress, with a 10% efficiency improvement while energy efficiency decreased in the chemical industry. Overall all branches, coal consumption was reduced to near zero but oil consumption was only partly substituted and still has a share of 21% (Odyssee 2012, ABB 2012). Thus, the CO₂ intensity is rather high while the energy efficiency is slightly above EU average (World Energy Council 2013). In contrast, the household sector achieved an improvement in energy efficiency of 18% over the same period of time. This success was mostly facilitated by the introduction of natural gas and the use of portable gas (LPG) for water and space heating, as well as improvements in construction and insulation (Odyssee 2012).

The main plan in place with regards to energy efficiency is the reviewed version of the National Action Plan for Energy Efficiency covering the period from 2013 to 2016 (*PNAEE - Plano Nacional de Acção para a Eficiência Energética 2013-2016*)⁽¹²⁾. The measures foreseen in the previous plan led to a 49% achievement of the 2016 target and the reviewed PNAEE considers "residential and services" a sensitive sector for the success of the plan, bearing in mind that this sector accounted for approximately 28% of final energy consumption in 2011. In total, 10 programs focused on energy efficiency measures are foreseen for the broad sectors covered by the plan (i.e. transport, residential and services, industry, public sector, and agriculture). In addition, the reviewed PNAEE emphasizes that the energy savings and GHG emission reductions will have a positive economic impact for the country and could amount to € 410 million in 2016 and almost € 855 million in 2020 (RCM 20/2013, p. 2066)⁽¹³⁾. In terms of financial instruments to support energy efficiency measures in Portugal, there are two funds, namely the Energy Efficiency Fund (*Fundo de Eficiência Energética - FEE*) to finance measures listed in the PNAEE and the Innovation Support Fund (*Fundo de Apoio à Inovação - FAI*) to finance innovation and technological demonstration projects in the fields of renewable energy and energy efficiency.

Under the Energy Efficiency Fund, the primary policy instruments to reduce energy consumption and increase efficiency in households in the first half of 2013 was the funding programme "Efficient Building 2012" (Edifício Eficiente 2012)⁽¹⁴⁾. This programme supported the installation of solar thermal systems (STS) and energy efficient windows (EEW) in existing residential buildings. The programme had a € 2 million budget (€ 1 million for STS and € 1 million for EEW) and the subsidy covered 50% of the investment costs, including installation, up to €1,500 for STS and up to € 1,250 for EEW. Owners of multi-dwelling residential buildings or owners of dwelling units could apply for the subsidy only through certified Energy Service Companies (ESCOs) or companies

¹² The reviewed PNAEE was approved by Resolution of the Council of Ministers 20/2013 (*Resolução do Conselho de Ministros 20/2013*).

¹³ The impact of the implementation of the PNAEE's measures with regards to CO₂ emission reductions could amount to 2.6 Mt CO₂ in 2016 and 5 Mt CO₂ in 2020 (RCM 20/2013, p. 2066).

¹⁴ New calls for funding in 2013 in the sectors covered by the reviewed PNAEE were approved by the Executive Committee of the PNAEE in July 2013, but application requirements/guidelines have not been published yet - as of November 2013. In the transport sector, for example, two calls (i.e. Enchimento de Pneus por Nitrogênio 2013 and Promoção da Mobilidade Urbana Sustentável 2013) are foreseen with a total budget of € 350.000, but further details have not been published yet (FEE 2013b).

supplying STS and EEW that met the programme requirements. The scheme was launched on 30 November 2012 and accepted applications until July 2013 (FEE 2012). In total, 1,459 applications were submitted, with the large majority of them addressing solar thermal systems. Therefore, the Executive Committee of the PNAEE decided to reallocate the funds that were not used in energy-efficient windows to solar thermal systems (FEE 2013a). In the second half of 2013 (as of November), no new call for applications or new programs were launched by the Portuguese Energy Efficiency Fund.

Under the Innovation Support Fund, three projects in the building sector will receive financial support to implement energy efficient measures and the selection process is divided in two phases (FAI AVISO 01/2013a). Firstly, private buildings with high energy efficiency potential could submit applications between January 2013 and March 2013 of which three buildings would be selected. After that, ESCOs had to present until 26 August 2013 their proposals on how to achieve high energy efficiency in these buildings. In the sequence, selected ESCOs will sign a contract with the Portuguese Energy Agency (ADENE) to receive refundable subsidies for a maximum period of three years. Another contract will be signed between the owner of the building and the ESCO. The total budget for this programme was set at €1,050,000 with a maximum of €350,000 per project (FAI AVISO 01/2013b).

In addition to the aforementioned funding programmes for households, the Energy Efficiency Programme in the Public Administration (*Programa de Eficiência Energética na Administração Pública*) - Eco.AP - is aimed at promoting energy efficiency in the public administration (departments and agencies). The government intends to reduce 30% of its energy bill by 2020, while simultaneously reducing its CO₂ emissions. The Programme intends to promote energy efficiency through a barometer of energy efficiency for public buildings and contracts with energy service companies (ESCOs), which should identify opportunities for energy savings in public buildings and implement measures to improve energy efficiency. The initial target was 20%, later increased to 30% (RCM 67/2012). Tenders can be launched as the requirements for contracts under the programme were approved through Order 60/2013 (*Portaria 60/2013*), detailing procedures to select ESCOs and defining liabilities in contracts signed by the public administration and ESCOs. The pilot-phase of the programme is expected to cover 300 buildings by 2015 and among the specifications set by Order 60/2013, contracts normally have a maximum term of 16 years; however, contracts in which energy is produced from renewable sources are exceptions to this rule and have a 20-year maximum term. Additionally, ESCOs must implement the energy efficiency measures within one year, or they will be subject to penalties. On October 2013, a report published by the Portuguese audit office evaluated the results of the programme, pointing out among others the following (TC, 2013):

I. The Executive Directorate of the PNAEE was responsible for the coordination and monitoring of the ECO.AP, as well as the training of local energy managers; however, the coordination conducted by this Directorate was considered minimal and significant measures of the programme were not implemented (with exception of the barometer to compare and publicly disclose the energy performance of buildings);

II. The barometer of energy efficiency was created by ADENE in June 2012. The costs of development and implementation of the barometer, totalling approx. € 431.000, were supported by ADENE;

III. Lack of technical knowledge of most of the designated local energy managers. The costs of training the local energy managers, totalling approx. € 150.000, were supported by the Human Potential Operational Programme;

IV. The Directorate General for Energy and Geology at the Ministry of Economy, Innovation and Development was responsible, together with ministries, for identifying buildings and equipments with greater potential for implementation of energy efficiency measures; nonetheless, due to lack of human and material resources, the performance of the Directorate was also considered minimal;

V. Tenders for the first 30 buildings were expected to be launched in 2013, but as of November 2013 no tender have been published.

Finally, with regards to rules and standards on energy efficiency in buildings, Decree-Law 118/2013 of 20 August 2013 transposed Directive 2010/31/EU of the European Parliament and of the Council into the national order and merged the sparse legislation⁽¹⁵⁾ on energy certification and energy performance in buildings into one piece of legislation in order to harmonize terminologies and simplify rules. A few energy efficiency requirements have been introduced and some systems (i.e. lighting, air conditioning and water heating) are subject to minimum efficiency standards. Additionally, the concept of buildings with nearly zero energy consumption was also introduced and shall be the standard for constructions after 2020⁽¹⁶⁾.

Renewable Energy

Renewable energy technologies in Portugal made up 24.9% of total final energy consumption in 2011, placing Portugal in a good position to meet its 2020 goal of 31%. The electricity sector also exhibits a high proportion of renewable generation, but this proportion has been inconsistent in recent years. Almost 36% of final electricity consumption was from renewable sources in 2003, but this dropped to 28.9% in 2005 before climbing to 2011's value of 46.5% (Eurostat, 2013b).

In the first months of 2013, 68% of electricity consumption was supplied by renewable energy sources, a considerable increase compared to the same period in 2012 (46%). According to the Transport System Operator (REN, 2013), the increase resulted from a combination of favourable weather conditions that allowed the increase of water and wind production with the latter supplying 25% of domestic consumption.

The main policy instrument to promote electricity generation from renewables is a feed-in tariff (FiT). Most of the tariffs were defined in 2007 and are applicable to renewable technologies (except large hydropower plants) for a certain timeframe (i.e., 2, 12, 15, 20, 25 or 35 years) or until an upper limit of production is reached, whichever occurs first.

¹⁵ Decree-Law 118/2013 will enter into force on 1 December 2013. It compiled the following sparse legislation: a. Energy Certification of Buildings System - SCE (*Sistema de Certificação Energética dos Edifícios*); b. Regulation of Energy Performance of Housing Buildings - REH (*Regulamento de Desempenho Energético dos Edifícios de Habitação*); and c. Regulation of Energy Performance of Trade and Service Buildings - RECS (*Regulamento de Desempenho Energético dos Edifícios de Comércio e Serviços*).

¹⁶ The concept of buildings with nearly zero energy consumption (*edifícios com necessidades quase nulas de energia*) is provided for in Art. 16 of DL 118/2013 and refers to buildings with high energy performance and whose energy needs are largely satisfied by renewable sources. In case of new public buildings, the concept shall already be applied from January 2019 onwards.

Currently, a new regime for the remuneration of RES-E is under discussion ⁽¹⁷⁾ and it is likely that the system will be changed from FiTs to a market regime (Eclareon 2013).

Due to the serious budget deficit that Portugal has been addressing in the past years, the 8th Update of the Memorandum of Understanding, as the previous one, reinforces the need for changes in the policies that support renewables, such as a downward revision of the feed-in tariffs for new contracts in order to ensure that the tariffs do not over-compensate producers for their additional costs, as well as the development of alternative mechanisms (e.g. a premium feed-in tariff) for mature technologies (MoU 8th Update 2013). In this context, changes to the legal framework applicable to micro and mini-generation units and the establishment of an alternative regime for wind farms were introduced in the first half of 2013 and can be summarized as follows:

I. Micro and mini-generation units: Decree-Law 25/2013 simplified the existing legal framework applicable to micro-generation (up to 3.68kW) and mini-generation units (up to 250 kW) and according to the new rules, regardless of the applicable remuneration regime, electricity produced from these units shall be bought by the Last Resort Supplier (i.e. EDP Serviço Universal);

II. Wind farms: Decree-Law 35/2013 introduced four alternative remuneration regimes, enabling producers to choose between selling the electricity to the market or voluntarily joining one of the alternative regimes (for another 5 to 7 years) once the 15-year guaranteed remuneration period is over. Joining one of the alternative regimes requires the payment of an annual compensation ⁽¹⁸⁾ (i.e. € 5,000 or € 5,800 per MW of installed capacity), which is intended to support the sustainability of the National Electric System (SEN).

In terms of strategic planning, the main plan in place in the field of renewable energy is the reviewed version of the National Action Plan for Renewable Energy 2013-2020 (*PNAER - Plano Nacional de Ação para as Energias Renováveis*) ⁽¹⁹⁾. The main measures foreseen in the PNAER to promote the use of renewables can be summarized as follows:

I. Heating & Cooling: support to the renovation and installation of solar thermal systems in the residential sector and in pools and sport halls;

II. Electricity: introduction of a general remuneration regime, which would enable electricity produced from renewables to be sold under the same rules as electricity produced from other sources, reshape of the regulation for micro and mini-generation units, streamline licensing procedures, etc;

III. Transport: support to the use of biofuels and rationalization of the infrastructure for e-mobility.

¹⁷ As of November 2013, no proposal for a feed-in premium system was identified in Portugal. (MoU 8th Update, 2013, p.83).

¹⁸ In March 2013, Order 119/2013 of the Ministry of Economy and Employment regulated the legal consequences of non-compliance with the obligation to pay the aforementioned annual compensation.

¹⁹ The reviewed PNAER was approved by Resolution of the Council of Ministers 20/2013 (*Resolução do Conselho de Ministros 20/2013*).

Additionally, it is worth adding that the government expects to create 70.000 new direct and indirect jobs with the measures described in the PNAER, as well as to reduce the energy dependency in 2020 from 79% to 74%. In terms of CO₂ emissions, compliance with the PNAER 2020 is expected to lead to an emission reduction of 28.6 MtCO₂e.

Transport

Emissions from transport have increased between 1990 and 2011. However, since 2005 there has been a downward trend. Also, their proportion among Portugal's total emissions has decreased again slightly in 2011 to 25% after reaching a temporary peak in 2010. However, the transport sector remains the biggest source of emissions in comparison with the other sectors. The emissions from transport will, therefore, be especially important to address in the future.

Average emissions for newly registered cars are very low in Portugal with a level of 117.6 CO₂/km. The level is the 2nd lowest in the EU and has decreased at a higher rate than the EU average between 2005 and 2012 (Eurostat 2013a). This might be the result of the registration tax, which is among the highest in the EU and partly calculated based on CO₂ emissions. The circulation tax is also a combination of a cylinder capacity and a CO₂ component and tax rates are near the EU average. Distance-based road tolls are charged on certain section of the road network, but rates are comparatively low (ACEA 2012, CE Delft 2012). Petrol is taxed near the EU average. However, excise duties applied to diesel for transport are much lower and below the EU average at only € 367/1000 litres (European Commission 2013).

In fact, GHG emissions from transport are mainly addressed through taxes, such as the road service contribution, the vehicle registration tax, as well as the tax on petroleum and energy products, and the additional fee on this tax for gasoline and diesel (see section environmental taxation).

Along with these measures, the use of biofuels is promoted through the Biofuel Quota and according to the reviewed PNAER, the use of biofuels shall be the main source for achieving the target of 10% renewables in the transport sector. By the end of 2014, oil companies are obligated to blend a minimum of 6.75% (v/v) of domestically produced biodiesel (specified by EN 14214) into road diesel. Companies supplying fuels to the market are also obligated to blend a certain amount of biofuels, which increases gradually from 5% (2011–2012) to 10% (2019–2020). In 2012–2013 this percentage is 5.5% (Art. 11 of Decree Law 117/2010 amended by Decree-Law 6/2012) (Res Legal Europe, 2012). In addition, there is a tax exemption to small producers of biofuels. In Portugal, small producers of biofuels (also known as Dedicated Small Producers – PPDs ⁽²⁰⁾) benefit from a total exemption of the petrol product tax (ISP - *Isenção de Imposto sobre Produtos Petrolíferos e Energéticos*). PPDs benefit from this tax exemption up to the global limit fixed in the IEC Code (*Código dos Impostos Especiais de Consumo*), which is 40,000 t/year (Art. 90 of the IEC Code - DL 73/2010 amended by Law 55-A/2010).

In addition to that, support to electric mobility is under review. Decree-law 39/2010 established in 2010 a pilot network and set subsidies for the use of electric vehicles, which were repealed by the State Budget in 2012 (Art. 139 of Law 64-B/2011).

²⁰ Dedicated Small Producers (PPD) as defined in Art. 19(1) of Decree Law 117/2010.

Nonetheless, the Portuguese programme for electric mobility (*Programa para a Mobilidade Eléctrica*), also known as Mobi.E, is under review until the end of November 2013 and will have its pilot phase extended until 31 March 2014 (Order 9220/2013). The review of the programme shall include a reevaluation of target group and network planning, as well as a review of the geographical scope of the pilot network and the feasibility of including new municipalities. Among other things, Order 9220/2013 (Despacho 9220/2013) of 15 July 2013 requires a couple of measures to be completed in the second half of 2013, including:

- I. the Mobility Intelligence Centre (MIC) shall deliver a detailed report on the use of the e-mobility network;
- II. the Mobility Intelligence Centre (MIC) shall deliver a proposal and a budget plan for the update of charging stations;
- III. the Portuguese Energy Agency (ADENE) shall conduct an analysis of electric mobility models in other European countries;
- IV. the Energy Services Regulatory Authority (ERSE) shall open the reviewed regulation on e-mobility for public consultation ⁽²¹⁾.

Waste

The Assembly of the Republic ⁽²²⁾ passed a Resolution (RAR 8/2013) in the beginning of 2013 recommending the Government adopt economic instruments for waste management as listed in the study "Use of Economic Instruments and Waste Management Performances" ⁽²³⁾. The resolution explicitly mentioned the use of PAYT (pay-as-you-throw) schemes to stimulate the reduction of waste production and to increase recycling.

In the sequence, the Assembly of the Republic passed another Resolution (*Resolução da Assembleia da República nº 19/2013*) recommending that the Government promote measures to review waste management policies. The Assembly recommended that the Government reassess and consolidate waste plans, set goals for waste management aligned with European policies, as well as develop a proposal for downgrading the status of some wastes (e.g. organic compound and waste fuels) in order to extend and simplify the use of these products.

From the Government side, a commission was created to coordinate the privatization of EGF (*Empresa Geral de Fomento*), a sub-holding of the state company (*Águas de Portugal*) in charge of waste treatment. Discussions on issues related to waste management have already been initiated. In May 2013, the secretary of State for Environment and Spatial Planning, Paulo Lemos, announced that the government has been working on amendments to the waste law and a monitoring committee for the review of the Strategic Plan for Solid Waste (*Plano Estratégico para os Resíduos Sólidos Urbanos*) was established through Order 6321/2013 of 15 May 2013 to draft the next

²¹ As of November 2013, the last public consultation on the regulation of e-mobility published at the website of ERSE took place in 2011 (ERSE, 2013).

²² The Portuguese Parliament is composed of a single Chamber, which is the Assembly of the Republic. This chamber is responsible, in conjunction with the Government, for drafting national legislation.

²³ For more information on this study see Watkins, 2012.

strategic plan (PERSU 2020), which should be the key instrument of municipal waste policy in the country. On 17 October 2013, the government presented the proposal for the *PERSU 2020* (MAOTE, 2013a). The plan aims to achieve an annual recycling rate of 47 kilograms per person by 2020 and intends to reduce the amount of urban solid waste that is sent to landfills by 20%. Expected investments total €320 million and the cities of Lisbon and Porto are expected to receive higher shares of investments, due to their large production of waste (MAOTE, 2013b).

In short, implementation and monitoring of actions are expected to take place through 2020 and the plan focuses on:

- I. Prevention of hazardous waste production, including the review of the Prevention Programme for Urban Waste (RUPP);
- II. Increase of recycling rates;
- III. Reduction of land filling;
- IV. Definition of economic instruments to encourage recycling and discourage land filling;
- V. Strengthening of research and innovation in the sector.

Agriculture

The agrarian sector represents around 3% of the final energy consumption in Portugal and agriculture has been recently included as one of the target sectors in the National Action Plan for Energy Efficiency 2013-2016. In the agrarian sector, there is one programme, namely the Energy Efficiency in the Agrarian Sector (*Eficiência Energética no Setor Agrário*), which comprises measures that mainly focus on energy consumption reduction through modernization of equipment, introduction of management systems and energy audits. In total, the PNAEE estimates a potential of 40,000 toe in energy savings that could be achieved through this programme by 2020 (RCM 20/2013, p. 2062-63).

5 Policy progress on past CSRs

As part of the European Semester, Country Specific Recommendations (CSRs) for each MS are provided by the EU Commission in June of each year for consideration and endorsement by the European Council). The recommendations are designed to address the major challenges facing each country in relation to the targets outlined in the EU 2020 Strategy.

No CSRs related to climate change and energy were issued for Portugal in 2013.

6 References

- ACEA (European Automobile Manufacturer's Association) (2012). Taxation Guide 2012: Online available at: <http://yourfleet.volvocars.com/media/45427/taxguide2012.pdf>
- APA (2012) Roteiro Nacional de Baixo Carbono. Agencia Portuguesa do Ambiente (APA). Available at: <http://www.apambiente.pt/index.php?ref=16&subref=81&sub2ref=117&sub3ref=301>
- BN Portugal (2012): Portugal entre os três melhores no desempenho climático. Rita Carvalho. 03.12.2013. Available at: http://www.dn.pt/inicio/portugal/interior.aspx?content_id=2923585
- CE Delft (2012): An inventory of measures for internalising external costs in transport. Final report. European Commission, Directorate-General for Mobility and Transport
- Decree-law 117/2010 of 25 October, which sets sustainable criteria for biofuels production. Available at: <http://dre.pt/pdf1sdip/2010/10/20700/0478204795.pdf>
- Decree-law 39/2010 of 26 April, which regulates the access and organization of electric mobility in Portugal. Available at: <http://dre.pt/pdf1sdip/2010/04/08000/0137101386.pdf>
- Decree-law 71/2006 of 24 March, which establishes the Portuguese Carbon Fund. Available at: <http://dre.pt/pdf1sdip/2006/03/060A00/22092210.pdf>
- Decree-law 118/2013 of 20 August. 2013 Available at: <http://dre.pt/pdf1sdip/2013/08/15900/0498805005.pdf>
- Decree-law 25/2013 of 19 February 2013. Available at: <http://dre.pt/pdf1sdip/2013/02/03500/0103701058.pdf>
- Decree-law 35/2013 of 28 February 2013. Available at: <http://dre.pt/pdf1sdip/2013/02/04200/0115401165.pdf>
- DSIECIV (2012): Direção de Serviços dos Impostos Especiais sobre o Consumo e do Imposto sobre Veículos. Autoridade Tributária e Aduaneira. Manual de Procedimento Simplificado do ISV. Version 1, 04/05/2012. Eclareon (2013): Keep on Track! National Report for Portugal. Available at: <http://keepontrack.eu/contents/publicationsanalysisdeviationsbarriers/analysis-of-deviations-and-barriers2013.pdf>. All reports available at: <http://keepontrack.eu/publications/>. EEA (2012a): Approximated EU GHG inventory: Early estimates for 2011. Technical report 13/2012. Available online at <http://www.eea.europa.eu/pressroom/publications/approximated-eu-ghg-inventory-2011/>
- EEA (2012): Greenhouse gas emission trends and projections in Europe 2012 - Tracking progress towards Kyoto and 2020 targets. EEA Report No 6/2012. Online available at: <http://www.eea.europa.eu/publications/ghg-trends-and-projections-2012>
- EEA (2013a): EEA greenhouse gas - data viewer: Change in emissions by country (%), Kyoto base year - 2011. Online available at: <http://www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer>
- EEA (2013b): Trends and projections in Europe 2013. Tracking progress towards Europe's climate and energy targets until 2020. EEA Report No 10/2013. Online available at: <http://www.eea.europa.eu/publications/trends-and-projections-2013>
- EN AAC (2010). Resolution of the Council of Ministers No. 24/2010 of 1st April, which approves the National Strategy for Adaptation to Climate Change (EN AAC). Available at: <http://dre.pt/pdf1sdip/2010/04/06400/0109001106.pdf>
- EN AAC (2010). Resolution of the Council of Ministers No. 24/2010 of 1st April, which approves the National Strategy for Adaptation to Climate Change (EN AAC). Available at: <http://dre.pt/pdf1sdip/2010/04/06400/0109001106.pdf>

- ERSE (2013). Public Consultation (open and closed). Available at: <http://www.erse.pt/PT/CONSULTASPUBLICAS/CONSULTAS/Paginas/consultaspublicas.aspx> and <http://www.erse.pt/pt/consultaspublicas/historico/Paginas/concluidas.aspx>
- European Commission (2013): Excise duty tables. Part II – Energy products and Electricity. RED 1036. January 2013. DG Taxation.
- Eurostat (2012): Source of data is Eurostat “Taxation trends in the European Union 2012”. Collection: Statistical books. 2012. Brussels.
- Eurostat (2013a): Source of data is Eurostat using the following tables: Implicit tax rate on energy (tsdcc360). Energy intensity of the economy (tsdec360). Final energy consumption (ten00095). Share of renewable energy in gross final energy consumption (t2020_31). Average carbon dioxide emissions per km from new passenger cars (tsdtr450). Final energy consumption, by sector (tsdpc320). Greenhouse gas emissions by sector (tsdcc210). Environmental tax revenues - % of total revenues from taxes and social contributions (ten00064). Total environmental tax revenues as a share of GDP (ten00065).
- Eurostat (2013b): Shares 2011 – Short assessment of renewable energy sources. Last update: 11 June 2013 including the latest data on renewable energy generation. Online available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/energy/other_documents
- FAI AVISO 01/2013a. Projetos de Demonstração de Contratos de Gestão de Eficiência Energética em Edifícios Available at: http://fai.pt/wp-content/uploads/Call_Gestao_Edificios_22_01_2013_final.pdf
- FAI AVISO 01/2013b. Prazos e procedimentos da Segunda Etapa da 2ª fase do Concurso para Projetos de Demonstração de Contratos de Gestão de Eficiência Energética em Edifícios Available at: http://fai.pt/wp-content/uploads/Fai_Prazos2Fase_rev.pdf
- FEE (2012): Fundo de Eficiência Energética. Aviso 03 - Edifício Eficiente 2012. Available at: <http://fee.adene.pt/avisos/Paginas/Aviso-03-Edif%3%ADcio-Eficiente-2012.aspx>
- FEE (2013a): Comissão Executiva PNAEE aprova transição de verbas não utilizadas para Solar Térmico. Available at: <http://fee.adene.pt/agenda/Paginas/26-07-2013-Comiss%3%A3o-Executiva-PNAEE-aprova-transi%3%A7%C3%A3o-de-verbas-para-Solar-T%3%A9rmico.aspx>
- FEE (2013b) Comissão Executiva PNAEE aprova Avisos 2013. Available at: <http://fee.adene.pt/agenda/Paginas/26-07-2013-Comiss%3%A3o-Executiva-PNAEE-aprova-Avisos-2013.aspx>
- Gonçalves (2013): Portugal em risco de incumprimento das metas das renováveis. Diário Económico, p. 30. 10.09.2013. Available at: <http://www.pt.cision.com/cp2013/ClippingDetails.aspx?id=20bc6b0d-0fe0-4c6d-be3c-0c1d1457392c&analises=1>
- Governo de Portugal (2011): Programa do XIX Governo Constitucional [XIX Constitutional Government Programme]. Available at: http://www.portugal.gov.pt/media/130538/programa_gc19.pdf
- Law 55/2007 of 31 August, which regulates the financing of the national road network in Portugal. Available at: <http://dre.pt/pdf1sdip/2007/08/16800/0607506076.pdf>
- Law 64-B/2011 of 30 December: State Budget for 2012. Available at: <http://dre.pt/pdf1sdip/2011/12/25001/0004800244.pdf>
- Law 66-B/2012 of 31 December. State Budget for 2013. Available at: <http://dre.pt/pdf1sdip/2012/12/25201/0004200240.pdf>

- MAOTE (2013a): Ministério do Ambiente, Ordenamento do Território e Energia. Proposta PERSU 2020 Available at: <http://www.portugal.gov.pt/media/1218711/20131017%20maote%20apres%20persu.pdf>
- MAOTE (2013b): Ministério do Ambiente, Ordenamento do Território e Energia. Governo destina 320 milhões de euros para aumentar reciclagem de resíduos urbanos até 2020. Available at: <http://www.portugal.gov.pt/pt/os-ministerios/ministerio-do-ambiente-ordenamento-do-territorio-e-energia/mantenha-se-atualizado/20131017-maote-persu-2020.aspx>
- Memorandos (2013): MoUs and their reviews are available at: <http://www.portugal.gov.pt/pt/os-ministerios/primeiro-ministro/secretarios-de-estado/secretario-de-estado-adjunto-do-primeiro-ministro/documentos-oficiais/memorandos.aspx>
- MoU 7th Update (2013): Memorandum of Understanding on Specific Economic Policy Conditionality - Seventh Update - May 2013. Available at: http://www.portugal.gov.pt/media/1121851/7R_MoU_20130625.pdf
- MoU 8th Update (2013): Memorandum of Understanding on Specific Economic Policy Conditionality - Eight Update - October 2013. Available at: http://www.portugal.gov.pt/media/1245556/8_9R_MoU_20131121.pdf
- MoEFP, Att. I (2013): Memorandum of Economic and Financial Policies, Attachment I. 12 June 2013. Available at: http://www.portugal.gov.pt/media/1112953/7R_MEFP_20130612.pdf
- Odyssee (2012): Energy Efficiency in the EU - Country Profiles and National Reports. Energy Efficiency Policies and Measures in Portugal. Monitoring of EU and national energy efficient targets. ADENE. Lisbon, November 2012. Available at: http://www.odyssee-indicators.org/publications/PDF/portugal_nr.pdf
- OECD (2011): OECD Environmental Performance Reviews: Portugal 2011. Available at <http://www.oecd.org/env/country-reviews/oecdenvironmentalperformancereviewsportugal2011.htm>
- OECD (2012): Economic Surveys - Portugal, July 2012. Available at: http://www.oecd.org/eco/surveys/PORTUGAL_2012_Overview.pdf
- OECD (2013): Taxing Energy Use. A graphical analysis. OECD Publishing.
- Order 9220/2013 of 15 July (Despacho 9220/2013). Gabinetes dos Secretários de Estado do Empreendedorismo, Competitividade e Inovação e da Energia. Available at: <http://dre.pt/pdf2sdip/2013/07/134000000/2210922110.pdf>
- Order 6321/2013 of 15 May 2013 (Despacho 6321/2013). Cria a comissão de acompanhamento dos trabalhos de revisão do PERSU II, com vista à elaboração do PERSU2020. Available at: <http://www.ersar.pt/>
- Order 60/2013 of 5 February (Portaria 60/2013). Ministério das Finanças da Economia e do Emprego. Available at: <http://dre.pt/pdf2sdip/2013/02/025000000/0551605516.pdf>
- Order 119/2013 of 25 March (Portaria 119/2013). Ministério da Economia e do Emprego. Available at: <http://dre.pt/pdf1sdip/2013/03/05900/0185501857.pdf>
- PNAEE 2013-2016 (2013). Resolution of the Council of Ministers 20/2013 of 28 February 2013 (Resolução do Conselho de Ministros 20/2013), which approves the National Action Plan for Energy Efficiency for the period of 2013-2016 (PNAEE - Plano Nacional de Acção para a Eficiência Energética 2013-2016). Available at: <http://dre.pt/pdf1sdip/2013/04/07000/0202202091.pdf>
- PL 387/2013. Proposta de Lei do Orçamento do Estado para 2014. Available at: <http://www.publico.pt/economia/noticia/orcamento-do-estado-na-integra-1609229>

- Quercus (2012): Francisco Ferreira, Associação Nacional de Conservação da Natureza - Quercus. Interviewed per Skype on 1st February 2013.
- RAR 8/2013 (2013): Resolução da Assembleia da República 8/2013 of 11 January 2013. Available at: <http://dre.pt/pdf1sdip/2013/01/02200/0061300613.pdf>
- RCM 2/2011. ECO.AP. Programa de Eficiência Energética na Administração Pública. Available at: <http://dre.pt/pdf1sdip/2011/01/00800/0027000271.pdf>
- RCM 67/2012. ECO.AP. Resolução do Conselho de Ministros 67/2012. Available at: <http://dre.pt/pdf1sdip/2012/08/15400/0427804279.pdf>
- RCM 20/2013. PNAEE 2013-2016. Resolução do Conselho de Ministros 20/2013. Available at: <http://dre.pt/pdf1sdip/2013/04/07000/0202202091.pdf>
- REN (2013): Renováveis abastecem 68% do consumo de electricidade no 1º semestre. Available at: http://www.ren.pt/media/comunicados/detalhe/renovaveis_abastecem_68__do_consumo_de_electricidade_no_1__semestre/
- RCM 27/99. Resolução do Conselho de Ministros 27/99. Available at: <http://dre.pt/pdf1sdip/1999/04/082B00/19061906.pdf>
- REN (2013): Available at: http://www.ren.pt/media/comunicados/detalhe/renovaveis_abastecem_68__do_consumo_de_electricidade_no_1__semestre/
- Reporting of Member States in accordance with Decision No 280/2004/EC of the European Parliament and of the Council concerning a mechanism for monitoring Community GHG emissions and for implementing the Kyoto Protocol. Last submission: May 2013. Overview on policies and measures available at the website of the EEA: <http://www.eea.europa.eu/data-and-maps/pam>
- Res Legal Europe (2012): Res Legal Europe Database - Portugal. Available at: <http://www.res-legal.eu/search-by-country/portugal/>
- Resolution of the Assembly of the Republic 19/2013. Resolução da Assembléia da República 19/2013. Available at: <http://dre.pt/pdf1sdip/2013/03/04700/0127601276.pdf>
- RNBC (2012): Roteiro Nacional de Baixo Carbono. Opções de Transição para uma economia de Baixo Carbono Competitiva em 2050. Agencia Portuguesa do Ambiente (APA). Governo de Portugal. Available at: http://www.apambiente.pt/_zdata/DESTAQUES/2012/RNBC_COMPLETO_2050_V04.pdf
- Roadmap for New Energy Technologies: PORTUGAL 2010-2050. D3: Analise da Competitividade das Novas Tecnologias Energéticas. Available at: http://climate.cense.fct.unl.pt/docs/DL3_Report_6DEZ.pdf
- TC (2013): Auditoria ao Programa de Eficiência Energética na Administração Pública (ECO.AP). Report 19/2013 published on 28.10.2013 by the Audit Office. Available at: http://www.tcontas.pt/pt/actos/rel_auditoria/2013/2s/audit-dgtrc-rel019-2013-2s.pdf
- UNFCCC (2012): Reports on in-depth reviews of the fifth national communications of Annex I Parties. Online available: http://unfccc.int/national_reports/annex_i_natcom/idr_reports/items/4056.php
- UNFCCC inventory (1990-2011): National greenhouse gas inventories (IPCC Common Reporting Format sector classification). Online available for the EU: <http://www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer> (Last modified : May 29, 2013 09:30 AM)
- Watkins, Emma; et al. (2012): Use of Economic Instruments and Waste Management Performances. Available at: http://ec.europa.eu/environment/waste/pdf/final_report_10042012.pdf