



PORTUGUESE RENEWABLES' UPDATE

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MACEDO VITORINO & ASSOCIADOS
Sociedade de Advogados, RL

background

Renewable energy sources ("RES") play an important role in the energy mix of the future. The requirements set for climate preservation, the increase in energy consumption and the limited life of fossil fuels have been taken into account by European Institutions and countries in order to stop the vicious circle of energy consumption and climate changes.

The alternative is renewable energy. There are several clean and environment-friendly energy sources that do not have negative effects over the climate such as the sun, the wind, biomass or ocean waves. In 2016, from January to September renewable sources represented 62% of the electricity generated in Portugal. Still, more than 34% of the renewable quota was achieved by the electricity generated by large-scale hydro power plants (with more than 10 MW of capacity), which in the market are not considered as being part of the renewables sector.

Portugal has been one of the most enthusiastic countries as regards renewable energies. Portugal has achieved its commitments under the Kyoto Protocol and was allowed to increase 27% of the emission of greenhouse gases, however they had increased only by 19% until 2012. Decree-Law 141/2010, of 31 December 2010 established as a binding target that, by 2020, at least 31% of Portugal's primary energy consumption should come from renewable sources (higher than the 20% set by the European Union). By 2020, the use of energy from renewable sources in energy consumption in all modes of transport is set at 10% of the total energy consumption. In 2016, from January to September, 62% of our electricity was already coming from renewable sources. Portugal reduced its foreign energy dependency from 89%, in 2005, to 71% in 2014. Between 2011 and 2014, a total 2.757 MW from renewable sources were licensed, achieving 11.6 GW of installed capacity.

As far as MIBEL is concerned, according to the monthly report of October 2015, 18.506 GWh of energy were negotiated on the daily market (14.410GWh of energy acquired in Spain and 4.096 GWh of energy acquired in Portugal. 54% of the energy placed on the daily market came from renewable energies.

Portuguese renewables' sources

Wind

As of July 2016 there were approximately 255 wind farms and 2,540 wind turbine generators ("WTG") installed in Portugal, a 33% increase from the 192 wind farms installed in 2008.

In Portugal, the most attractive values of wind speed and regularity have been registered at the top of the mountains situated on the north bank of river Tagus.: regions where most power has been licensed Viseu, Coimbra, Vila Real, Castelo Branco, Lisboa and Viana do Castelo. Bragança, Guarda, Lisboa, Vila Real, Santarém, Porto, Viana do Castelo and Aveiro have superior registries of hours of wind per year, with values between 2,019 and 2,633 hours.

Water

More than 70 hydroelectric plants with approximately 7,370 MW of total installed power are operated by EDP – Energias de Portugal.

Recent studies have rated wave energy in Portugal as an energy resource with a medium-high potential. With an average annual flow of 30 MW per kilometre of water front with a depth of 50 meters, the Portuguese coast has the potential to generate approximately 10 TWh/year of electricity (about 20% of Portuguese consumption).

Biomass

To encourage the construction and operation of forest biomass power plants Decree-Law 5/2011, of 10 January 2011, provided a beneficial feed-in tariff calculus for power plants that start operating until 31 December 2016.

In 2016, biomass with combined heat and power (CHP) represented 743 MW of the installed power, while biomass without CHP represented 105 MW. As regards Municipal solid waste, it generates about 88 MW of power. Today, biomass is a major export in Portugal: in 2013 the country had exported 824,000 tons of biomass worth € 1 11,000,000.00. Italy, United Kingdom and Belgium are the main importers.

Solar

Boosting an annual average of 2,200 to 3,000 hours of sun in the mainland, and between 1,700 and 2,200, respectively, in the Azores and Madeira islands. Portugal is the European country with most hours of sun exposure, with a strong potential for solar energy.

In 2016, the installed power in Portugal was of 612MW. This represented a 946% increase considering the mere 58.5 MW installed in 2008.. The Moura solar park with its installed 46MW and an annual production of 93 GWh. And is the largest in Portugal

legal framework

Over time, the following main regulations have set out the legal framework for the licensing, generation and distribution of renewable energy:

- Decree-Law 189/88, of 27 May 1988, as amended by Decree-Law 313/95, of 24 November 1995, Decree-Law 168/99 of 18 May 1999, Decree-Law 339-C/2001, of 29 December 2001, Decree-Law 33-A/2005, of 16 February 2005, Decree-Law 225/2007, of 31 May 2007, and Decree-law 35/2013, of 28 February 2013 (the "Old Renewables Law"),
- Decree-Law 312/2001, of 10 September 2001, as amended by Decree-Law 33-A/2005, of 16 February and Decree-Law 118-A/2010, of 25 October 2010 which governs the access to the transmission and distribution grids ("Old Renewables Access Law");
- Decree-Law 29/2006, of 15 February 2006, as amended by Decree-Law 104/2010, of 29 September 2010, Decree-Law 78/2011, of 20 June 2011, Decree-Law 75/2012, of 26 March 2012, Decree-Law 112/2012, of 23 May 2012 and Decree-Law 215-A/2012, of 8 October 2012, and Decree-Law 178/2015, of 27 August 2015 which approved the general rules applicable to the National Electric System (Sistema Eléctrico Nacional – "SEN") and to the different activities relating to energy production;
- Decree-Law 172/2006, of 23 August 2006, (the "Renewables Law") as amended by Decree-Law 237-B/2006, of 18 December 2006, Decree-Law 199/2007, of 18 May 2007, Decree-Law 264/2007, of 24 July 2007, Decree-Law 23/2009, of 20 January 2009, Decree-Law 104/2010, of 29 September 2010, Decree-Law 215-B/2012, of 8 October 2012, and Law 7-A/2016, of 30 March 2016 (that revoked the Old Renewables Law and the Old Renewables Access Law)
- Decree (Portaria) 243/2013 as amended by Portaria 133/2015, of 15 May (the "Renewables Access Regulation").

licensing procedures

From 1988 to 2006 the licensing procedures for renewable energy power generation were only dependent of the verification of technical requirements following the promoters' request for a grid connection point in accordance with the Old Renewables Law and the Old Renewables Access Law that ruled the award of grid connection points.

The Renewables Law and Renewables Access Regulation both establish that the attribution of grid connection points must result of a public initiative, such as a public tender or similar procedure.

In fact, power generation based on RES is a strongly regulated activity. The Renewables Law and the Renewables Access Regulation set a licensing procedure for the installation and operation of RES facilities, in three stages: (i) obtaining a point of reception of the energy in the RESP grid ("grid connection point"), (ii) obtaining an authorisation to install the facility and (iii) requesting a license to operate the facility.

The grid connection point is granted by DGEG subject to a favorable preliminary assessment in respect of the availability of capacity in the RESP, which is followed by an application for the awarding of the grid connection point. This grid connection point is subject to a power generation capacity cap.

The authorisation to install the facility is granted (i) by the Ministry of Economy, for facilities whose capacity exceeds 1 MW, or (ii) by the Director-General of DGEG, for facilities with capacity up to 1 MW.

Last, the license to operate the unit is granted after a final inspection conducted by (i) the competent Regional Directorate of the Ministry of Economy (Direcção Regional do Ministério da Economia), if the capacity is up to 10 MW, or (ii) by DGEG, in the remaining cases.

The Renewables Law and the Renewables Access Regulation also set other conditions applicable to the projects of power generation using RES, such as:

- A 24 months deadline, starting from the date the authorisation is granted, for the installation of the facility; and
- The connection to the RESP must be supported by the promoter.

feed-in tariff

The Old Renewables Law first established in 1988 the feed-in tariff ("FiT") mechanism with prices of €40-50/MWh. The framework was modernised in 1999 with a feed-in tariff increase, which was further increased to an average €80/MWh in 2001. From 2005 onwards feed-in tariffs for new facilities were reduced, but earlier facilities under operation were not affected by such reduction.

The FiT is thus a guaranteed price for sale to the RESP of energy generated from RES. The applicable tariffs are determined by adding up three components:

- Avoided investment costs on new power plants;
- Avoided costs on transmission, operation and maintenance, including fuel costs; and
- Environmental benefits arising from the use of renewable sources.

The tariffs are paid to the operators upon purchase of their production. These costs are not borne by the Government – instead, they are included in the electricity invoice paid by all end-users. This cost transfer system is considered acceptable as long as there are no substantial discrepancies between the consumer market and business market.

Operators were granted a 15-year feed-in tariff. An extended tariff period of 5 to 7 years has been negotiated in 2012 by the Portuguese Government and the wind farm producers.

Along with the FiT, energy generated at renewable energy facilities benefits from a 100% offtake obligation of EDP - Serviço Universal S.A. and several other local companies that are operators of last resort (comercializador de último recurso / comercializador regulado). This offtake obligation continues after the feed-in tariff period comes to an end, with a "market facilitator" taking the place of the operator of last resort.

other support measures

The Government has undertaken a "Commitment to Green Growth" granting access to an €4,000,000,000.00 fund in connection for energy efficiency and the efficient management of water and waste projects. Municipalities, by resolution of the municipal council, may set a reduction up to 15% of the property tax (IMI) applied to buildings with high energy efficiency:

- Buildings with energy class equal or higher than A, in accordance with Decree-Law 118/2013, of 20 August 2013;
- Building where the execution of construction works, reconstruction, modification, extension and maintenance, improve their energy class in at least two classes;
- A reduction of up to 50% of IMI may be applied to properties that are solely affected to the production of energy from renewable sources.

The promoters of renewable energies facilities benefit of some special powers in order to ensure their project's deployment, such as:

- The power to use the State and the Municipal public and private domain;
- The right to expropriate real estate (once expropriated, the properties become property of the State or of the Municipality and will remain allocated to the project for a period of 35 years in exchange of the payment of a periodical fee); and
- The right to establish rights of way necessary to the project under the same terms applicable to expropriation procedures.

wind power statistics

According to DGEG's Renewables Report of July 2016, the annual wind power production between August 2015 and July 2016 was of 12,595 GWh, or 12,000 GWh normalized in accordance with Directive 2009/28/EC. Further statistics can be found in the table below.

As of July 2016	
Production (GWh)	12,000
Installed capacity (MW)	5,117
Hours of equivalent production	2,461
Total wind farms	255
Total WTG	2,590

extended regulated tariffs

Wind power facilities benefit from a 15-year FiT. After the guaranteed FiT period expires, and as alternative to free market pricing, Decree-Law 35/2013 allowed for an extension of regulated tariffs for wind power plants, through agreements between the Government and individual producers. The following options exist

Option	Tariff	Duration of regulated tariff	Monthly consideration 2013/2020
1	Floor: €74/MWh Cap: €98/MWh	5 years	€5,000/MW
2	Floor: €60/MWh	5 years	€5,000/MW
3	Floor: €74/MWh Cap: €98/MWh	7 years	€5,800/MW
4	Floor: €60/MWh	7 years	€5,800/MW

overpowering and additional energy

Along with repowering, overpowering has been regulated since 2007 by Decree-Law 225/2007 and subsequently by Decree-Law 51/2010 "Old Overpowering Regulations". The installation of new wind turbines is allowed in order to attain an increase in installed capacity, limited to 20% of the grid connection capacity, subject to authorisation from DGEG.

Under the Old Overpowering Regulations and in those cases where guaranteed FiT tariffs apply, overpowering implied a reduction to the FiT, applicable to the total wind farm energy output, of (initially of 0.3% to 0.4%) 0.12% per each new 1% of increased power.

The Old Overpowering Regulations have been replaced by Decree-Law 94/2014 that has set a new tariff of €60 per MWh applicable to overpowering output only (and additional energy¹); allowing promoters with overpowering authorisations obtained prior to 25 June 2014 the option to request the application of this new regime or remain attached to the discounted tariff.

¹ Active energy resulting from usage of additional capacity. The maximum amount of additional energy is reached by subtracting the connection capacity from the installed capacity (excluding overpowering)

what 's next?

The Portuguese Government has set the following measures for the four year period of 2015-2019:

- The approval by the Government of licenses for the installation of 400 megawatts of photovoltaic power plants, projects without subsidy, that will double production of solar energy in Portugal;
- Funding of 25 million euros by the Government for low-dispersive renewable energy projects, namely, wave energy, geothermal energy, biogas or wind in off-shore. The financing of projects takes the form of non-repayable aid, corresponding support to the amount necessary to ensure the economic viability of investments;
- Provide for €5,000,000.00 per annum for an annual tender of energy efficiency where energy service companies may submit proposals to the public administration;
- Still blocked the allocation of new points of reception, however, *Portaria* 133/2015 of 15 May 2015 updated the regime of renewable energy, allowing that the mini hydro concessions could be converted to licenses for other purposes such as photovoltaic energy.

Some of the long term programatic policies are:

- Promoting the installation of solar thermal systems in the residential sector, in swimming pools and sports facilities, as well as the renovation of dated solar thermal systems;
- Encourage the development of mini-hydro, with little environmental impact and enough potential, being a way to revitalize the construction sector;
- Take advantage of the fact that Portugal has the EU territory with the most hours sun exposure, and enough wind, attracting solar power and wind projects, whose share is intended solely to other state members, by strengthening interconnections;
- Encourage the use of forest biomass, particularly from waste, cleaning or thinning, not only to diversify energy sources, but also as a contribution to the sustainability of Portuguese forests and fire prevention;
- Improving electric mobility, by expanding the national public grid of charging stations and privileging installation of charging infrastructures at home and in the workplace, reduce the price difference of electric vehicles and plug-in hybrids vis-à-vis conventional vehicles, through the green taxation reform, as well as to sponsoring the acquisition of electric vehicles in the public administration.

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Tel.: (351) 21 324 1900 – Fax: (351) 21 324 1929

Email: mva@macedovitorino.com



Rua do Alecrim 26E | 1200-018 Lisboa | Portugal
Tel.: +351 213 241 911 | Fax: +351 213 241 929
www.macedovitorino.com