



WindEurope

National Associations Task Force

Country overviews

7 June 2016

WindEurope National Associations Task Force

Country overviews

Table of Contents

| | |
|---------------------------|----|
| Introduction | 5 |
| Executive summary | 6 |
| Austria | 9 |
| Market Developments..... | 9 |
| Regulatory Framework..... | 10 |
| Other developments | 12 |
| Belgium | 13 |
| Political Context | 13 |
| Market developments..... | 14 |
| Regulatory Framework..... | 14 |
| Bulgaria | 17 |
| Political Context | 17 |
| Market Developments..... | 17 |
| Regulatory Framework..... | 17 |
| Denmark..... | 18 |
| Political Context | 18 |
| Market Developments..... | 18 |
| Regulatory Framework..... | 19 |
| Finland..... | 20 |
| Political Context | 20 |
| Market Developments..... | 20 |
| Regulatory Framework..... | 20 |
| France..... | 22 |
| Political Context | 22 |
| Market Developments..... | 22 |
| Regulatory Framework..... | 22 |
| Germany..... | 24 |

| | |
|----------------------------|----|
| Political Context | 24 |
| Market developments | 25 |
| Regulatory Framework | 25 |
| Greece | 27 |
| Political Context | 27 |
| Market developments | 28 |
| Regulatory Framework | 30 |
| Ireland | 32 |
| Political Context | 32 |
| Regulatory Framework | 33 |
| Other Developments | 34 |
| Italy | 37 |
| Political Context | 37 |
| Market Developments | 38 |
| The Netherlands | 39 |
| Political Context | 39 |
| Regulatory Framework | 40 |
| Poland | 41 |
| Market developments | 41 |
| Regulatory Framework | 42 |
| Portugal | 46 |
| Political Context | 46 |
| Market Developments | 46 |
| Regulatory Framework | 48 |
| Romania | 50 |
| Political Context | 50 |
| Market Developments | 50 |
| Regulatory Framework | 50 |
| Spain | 52 |
| Political Context | 52 |
| Market Developments | 53 |
| Regulatory Framework | 54 |
| Sweden | 57 |
| Political Context | 57 |
| Market Developments | 57 |
| Regulatory Framework | 57 |
| Turkey | 59 |
| Political context | 59 |

| | |
|---|----|
| Regulatory framework | 60 |
| Market developments | 60 |
| United Kingdom | 62 |
| Political context..... | 62 |
| Market Developments..... | 63 |
| Regulatory Framework..... | 65 |
| Annex - Guidelines for countries' contributions | 67 |
| Executive summary | 68 |

Introduction

This document compiles updates on wind energy's regulatory frameworks and market advancements in different EU Member States. Information is collected by WindEurope through the National Associations (NAs) members in the National Associations Working Group Task Force before each meeting of the National Associations Task Force.

This document supports the activities of the WindEurope CEO National Associations Working Group (WG) and Task Force (TF) towards addressing strategic industry issues. It provides timely information about wind energy progress in countries involved in the WG and contributes to share lessons learnt and best practices. As such, the report represents together with the Support Mechanism Overview (SMO) the concrete output of the work of the WG, organized in a deliverable circulated to all WG participants.

Content

The contribution of each country is organized in four sections:

- a) Political context: political discussions regarding wind energy, impact of coming and past political elections, ongoing legislative processes affecting wind energy.
- b) Market developments: latest data for wind energy installations, contribution to the country's power mix, information on industry market shares (wind turbines manufacturers, wind farms developers, supply chain, etc.).
- c) Regulatory framework: description of current regulatory framework for wind energy, foreseen changes in regulatory schemes and likely impact on the market and the industry.
- d) Other developments: other relevant information about wind energy development national initiatives or best practices of the NA of use to other NAs or likely to have an impact at a European level (i.e. R&D programs, social and macro-economic impacts of wind energy such as employment, turnover, CO2 emissions reduction...).

In addition, an executive summary table gathering the most salient highlights from all countries is displayed at the beginning of the document and provides a brief overview of the most important novelties per country.

The date of the last update of each country is displayed.

An annex at the end of the document provides guidelines for countries' contributions.

For queries and questions please refer to the Working Group content coordinator Giorgio Corbetta, National Policies and Markets Analyst at gco@windeurope.org

Photo cover: courtesy of EGP.

Executive summary

Highlights from countries:

| Country | General comments | Political context | Market development | Regulatory framework | Other developments |
|----------|---|---|--|--|---|
| Austria | | Advocacy efforts are focused on keeping the FiT running for longer, despite the falling power prices pushed by cheap German and Polish coal power | | | |
| Belgium | State of Play for offshore wind on 6/6/2016 | Political tensions at the highest level over offshore wind cost for consumer & ROE for investors | FID Rentel 30/6/2016 (308 MW) FID Norther 15/10/2016 (370 MW) if regulatory certainty | Regulatory uncertainty also due to pending State Aid notification | Modular Offshore Grid: FID 30/6/2016 |
| Bulgaria | | | | | |
| Denmark | | The government green ambitions have been reassessed because of falling electricity prices and the gov.'s presumption that the cost of the green transition has exploded | 200 MW of onshore wind are expected to be built in 2016 | The current FiP scheme is to expire in February 2018. The offshore wind near shore tender was slashed to 350 MW and the subsidy period for Kriegers Flak (now 11 years) is being debated | |
| Finland | | The national energy scenarios to 2030 are being worked out | | The old FiT system was capped and it's ending in 2018. The government is looking at auctions for the next term and all legislation should be in place by 2018 | Infrasound is the object of recurrent complaints by wind energy opponents |
| France | | Elections are to be held in one year and | In Q1 2016 less than 500 MW of | | |

| | | the government is likely to change | onshore wind was constructed | |
|-----------------|---|---|---|---|
| Germany | | The conclusion of the Federal Council is expected for the end of June, the Parliament is expected voting on 8 July | 3.5 GW of onshore wind is expected to be installed in 2016 and several 100 MW offshore wind | A trajectory for onshore wind energy installations with an annual 2.8 GW gross capacity installed has been agreed between the federal states and the states, together with a one off digression of 5% |
| Greece | | | | |
| Ireland | | General elections held in February led to a minority government where ministers with energy responsibilities are generally supportive of wind | A new energy market design is being developed, including capacity mechanism | — The RES penetration cap has been increased to 55% |
| Italy | | The situation is the same as the last quarter. The industry is waiting for a new decree | | The lack of an industrial plan for the future makes 2020 targets look difficult to reach |
| The Netherlands | | | | |
| Poland | The general anti-wind attitude of the new government is openly manifest | Two pending legislations: the “distance law” and the amendment to the renewable energy law. As things stand now, the implementation of the combination of the two laws is likely to make further wind energy development hard | | |
| Poland | | | | |
| Portugal | | | | |
| Romania | | | | |
| Spain | | | | |

| | | |
|--------|--|---|
| Sweden | A parliamentary commission is looking at energy scenarios | Investments are decreasing and the effect on new constructions starts to be seen. In 2016 another 500 MW of new build out is expected |
| UK | General uncertainty stemming from the June 23 EU membership referendum | There is 3 GW of onshore wind under construction as well as 5 GW of offshore wind under construction or with final investment decision taken. In 2016 1.5 GW of new build out is expected |

Austria

Last update: February 2016

MARKET DEVELOPMENTS

Austria is among the global leaders in renewable energy with nearly 70% of renewable energy sources (RES) in its electricity mix. Without any doubt, natural conditions in Austria—hydropower, biomass, and a high wind energy potential—allow such a development. For the fifth year in a row wind energy in Austria increased by more than 300 MW (Table 1).

By the end of 2015, 2,411.5 MW of wind power was operating in Austria. Burgenland, the easternmost of Austria's nine federal states, reached its goal and now generates enough electricity from wind power to cover more than 130% of the overall annual energy consumption of the state. Also the federal state of Lower Austria, reached 100% renewable electricity.

Table 1: Key National Statistics Austria, 2015

| | |
|--|-----------------------------|
| Total installed wind capacity | 2,411.5 MW |
| New wind capacity installed | 323 MW |
| Total electrical output from wind | 3.9 TWh |
| Wind generation as % of national electric demand | 8.7-% |
| Average national capacity factor | -% |
| Target (of Green Energy Act): | 3,000 MW wind power by 2020 |

Source: *IG Windkraft*

Economic impact

The Austrian wind power market is made of wind turbine operators and planning offices on the one hand and component suppliers for international wind turbine manufacturers on the other hand. In 2015, the annual turnover of operators of existing wind parks was over €300 million.

Austria's wind energy industry includes more than 170 supplier and service companies. These are leading companies in the fields of conducting, wind power generators, wind turbine generator design and high tech materials. Moreover, Austrian service providers such as crane companies, planning offices, and software designers work intensively abroad. Local companies are committed successfully both in the onshore and the offshore sector. At the same time, many wind energy operators have taken the step abroad to be able to realize their expertise on a global level. More than 170 companies of the Austrian wind energy supplier industry obtain an export volume of more than €660 million.

Industry status

Cooperatives own 20% of all existing wind turbines, and another 40% are owned by utilities. The rest are owned by private companies. The first wind turbines in Austria were built in 1994 when

cooperatives or single wind turbines built by farmers were most common. With a more stable framework in the support system since 2000, but especially since 2003, utilities and other companies entered the market. The Austrian operators are very active in the neighbouring countries of central and Eastern Europe, and some independent companies have also started businesses outside Europe. The one domestic manufacturer of large turbines, Leitwind, began the manufacture of wind turbines in Telfs in Tyrol in 2008. Apart from Leitwind, there are no major manufacturers of wind turbines in Austria. However, there are manufacturers of small (micro) wind turbines.

Austrian component suppliers also serve the international wind turbine market. Bachmann Electronic GmbH is a leading manufacturer of turbine control systems. Hexcel Composites GmbH develops and produces materials for blades. Elin EBG Motoren GmbH is an important supplier for the global market for generators.

Fostered by the growth of the domestic market, the number of SMEs (Small and Medium Enterprises) entering the market increased during the last years. Due to the economic structure of the Austrian industry there is a significant potential for high quality products on the software, service and component sector, which is partially transferred from the automotive and aerospace industry.

Operational details

Enercon and Vestas are the most important suppliers of turbines (Figure 3). Most of the turbines in Austria are 1.8 MW to 2.3 MW in capacity. 2015 more or less all new installations are 3-MW turbines or larger. Enercon and Energie Burgenland Windkraft GmbH built two of the largest wind turbines in the world—E-126 models rated at 7.5 MW each. In 2013, Windkraft Simonsfeld built the tallest turbine in Austria. The 3.2-MW turbine reaches a total height of 200 m (tower plus blade).

REGULATORY FRAMEWORK

The *Ökostromgesetz* (Green Electricity Act - GEA) 2012 launched a significant expansion in wind power installations in 2012 and 2013. This law maintained the existing FIT system and established a target of additional 2,000 MW of wind power capacity from 2010 on by 2020. The FIT is still set by an ordinance of the Minister for Economic Affairs and is not fixed in the GEA itself. The FIT for 2016 is fixed at €0.0904/kWh, and for 2017 it is fixed at €0.0895/kWh.

National targets

The GEA 2012 adheres to the existing target of 15% of renewable energy supply –excluding large hydro- and a specific target of an additional 700 MW of wind power capacity by 2015 (a rise to 1,700 MW). This target was already reached in the first quarter of 2014. But GEA 2012 establishes a new long-term target of additional 2,000 MW of wind power by 2020, which means a target of 3,000 MW total installed capacity by 2020. This target is even higher than Austria's target for wind energy in its National Renewable Energy Action Plan (NREAP). In this NREAP (according to the European Commission directive 2009/28/EC), Austria set a target of 1,951 MW by 2015 and 2,578 MW by 2020. The Austrian Wind Energy Association estimates that by 2020 a cumulative wind power potential of 3,800 MW can be achieved.

Progress

The large expansion of wind power installations started in 2012. The 2.409 MW cumulatively installed in 2015 produced around 5.2 TWh, equivalent to 8.7% of Austrian electricity demand and avoids approximately 3.4 million tons of CO₂.

Most wind turbines (1.248 MW) are still installed in Lower Austria, followed closely by Burgenland (986 MW), Styria (126 MW), Upper Austria (41 MW), Vienna (7 MW), and Carinthia (0.5 MW).

National incentive programs

GEA 2012

The GEA adopted in 2002, triggered investments in wind energy in 2003–2006 (Figure 1). Then, an amendment in 2006 brought uncertainty to green electricity producers and new restrictions for projects. This led to nearly four years of stagnation of the wind power market in Austria. A small amendment to the GEA in 2009 and a new FIT set in 2010 (€0.097/kWh) improved the situation.

In July 2011 the Austrian parliament adopted new legislation for electricity from renewable energy sources, GEA 2012. This law sticks to the existing FIT system but for the first time establishes a stable legal framework through 2020, with a target of adding 2,000 MW wind power to the existing capacity (1,011 MW) by 2020. However, there are still restrictions for new projects which only get a purchase obligation and a FIT if they get a contract with the *Ökostromabwicklungsstelle* (Clearing and Settlement Agency - OeMAG), the institution in charge of buying green electricity at the FIT and selling it to the electricity traders. The OeMAG has to give contracts to green electricity producers as long as there are enough funds for new projects. The budget started with €50 million per year for new projects. This is enough for approximately 120 MW to 350 MW of new wind capacity per year depending on the market price for electricity and the applications from PV and small hydro power plants. For the first ten years the law is in action, this budget decreases by €1 million per year. Applicants have to submit all legal permissions to get money from these funds. After a positive state-aid decision of the European Commission dating from February 2012, the GEA 2012 entered into force on 1 July 2012.

2012 Green Electricity Regulation

The FIT is still set by an ordinance and is not featured in the GEA 2012 itself. The FIT is foreseen in the *Ökostromverordnung* (Green Electricity Regulation) by the Minister of Economy in accordance with the Minister of Environment and the Minister of Social Affairs. The tariffs are guaranteed for 13 years. The purchase obligation is limited to a specific amount of capacity (depending on the available funds for new projects). Currently there are 1,555.4 MW supported by a FIT under the Green Electricity Regulation, producing more than 3.3 TWh per year. The FIT for 2014 is fixed at €0.0936/kWh, €0.0927/kWh for 2015, €0.0904/kWh for 2016 and €0.0895/kWh for 2017.

Issues affecting growth

Crucial for the growth of wind power capacity are the amount of the FIT, the stability of the incentive program, and the annual amount of money for new projects (annual funds). Due to the adoption of the GEA 2012, the determining factor for wind power growth will be the amount of the FIT. Because the tariffs are fixed for two years, some stability is guaranteed. But with the growing demands from the grid providers, the installation costs are expanding rapidly and constrain growth.

Due to the low electricity market price the amount of supported projects is shrinking rapidly. Since September 2015 there are already ready planned projects that couldn't get an FIT any more. More than 660 MW have already gained all permits, but have to wait for the FIT for some years or have no perspective to get this FIT at all. Therefore the IG Windkraft is forced to ask for a new GEA. The aim is to reach a premium system without a tender. IG Windkraft sees this support mechanism in line with the state aid guidelines.

OTHER DEVELOPMENTS

National R&D efforts

Since 2007, 13 wind energy related R&D projects were supported by the Austrian Climate and Energy Fund (4 million EUR; 5.5 million USD). One 2.5-year project is improving understanding of the risk of ice fall from wind turbines. The project (ending in 2014) will develop a model to estimate risk zones near wind turbines, taking into site-specific parameters into account. In another effort, funds from 2013 have been allocated to compile a Wind Energy Technology Roadmap (end 2014).

National Research funds have also been applied to investigate the usability and economics of small wind turbines to accommodate growing demand in this field. This project is funded by the Austrian Research and Development Program "*Neue Energien 2020*" of the Austrian Climate and Energy Fund.

Minimum Distances

In Austria there are different regulations on minimum distances between wind turbines and houses. They differ across different federal state. In Lower Austria the minimum distance is 1,200 metres (m) for the county in which the turbines will be erected and 2,000 m for the neighbouring county. This minimum distance can be reduced to 1,200 m if the neighbouring county agrees. Only farms can be a little bit closer (750 m).

As far as we know, the 1200 meter minimum distance is the strictest law worldwide. In Burgenland the minimum distance is 1,000 m and in Upper Austria 800 m. In Carinthia, where only one turbine was erected more than 17 ago a visibility restriction is implemented. Only 5% of the houses should be able to see a wind park within a distance of 50 km. No wonder that no wind turbine was erected since the implementation of this law.

The Next Term

A new GEA will be crucial for the growth of wind power capacity in Austria. The GEA is supposed to last until 2021 but the current disordered electricity market situation forced a change to the system to keep on track with installation numbers.

The aim of the wind energy industry in Austria is to reach a premium system without the need to make use of a tender scheme. IG Windkraft sees this support mechanism in line with the state aid guidelines. In the last four years Austria witnessed the failing of a tender system in the electricity system. The system for balancing was been changed in 2012. Since then, balancing costs doubled and are around €100 million more.

Belgium

Last update: June 2016

POLITICAL CONTEXT

Since May 2014, the regional and federal governments are composed as followed:

- Regional governments: socialist and democrat coalition for Wallonia and Brussels and a liberal, conservative and Christian democrat coalition for Flanders
- Federal government: Flemish liberals, conservatives and Christian democrats, and Walloon liberals.

The Flemish minister of energy, Mrs. Turtelboom, resigned in May mainly because of the tax she introduced to absorb the surplus of green certificates but also because of her decision not to grant subsidies to a new biomass plant (140 MW in the port of Ghent). The tax has been strongly criticized and was immediately renamed Turtel-taks by the opposition, this nickname has been broadly used in all the communication, even from the majority.

The new minister, Bart Tommelein, is rather in favor of solar PV because it doesn't get green certificates anymore. ODE Vlandereen did not yet had the opportunity to meet the Minister therefore his position on wind energy and tenders cannot be speculated.

The Minister is organizing a seminar in June about the constitution of an energy pact/vision for Flanders. The regions are not competent for security of supply and conventional generation, so a priori, the pact would rather cover renewables, energy efficiency, net integration (DSO-level).

In Wallonia, the government is not pro-actively in favour of renewable energy and in particular wind energy. The installation rate has dramatically decreased during the last years but 2015 was a little better than the previous ones with more than 10% growth on 2014.

The main problem comes from the juridical uncertainty and it becomes urgent that the government takes the adequate measures. The Walloon energy minister has adopted annual targets for wind energy, corresponding to about 130 MW per year between now and 2020.

The permit delivering strategy is however in the hands of another ministry who is not really in line with wind energy targets. The Walloon wind sector therefore suffers from incoherence within the Walloon government strategy and the incoherence between the regional approach, focused on supporting renewables at the lowest-cost, and the federal approach, that is in charge of the energy security.

At the federal level, there is the ambition to build an energy pact to create a long term vision. Although this pact should have been a priority for the federal government, the process has not yet started. Belgium has been confronted last year with punctual generation capacity problems, due to a combination of factors such as the unforeseen shut off of some nuclear generation plants and the mothballing of gas power plants.

To guarantee peak demand during the winter months, a capacity mechanism has been developed. At the end of 2015, Belgium has decided to review the phase-out calendar of the nuclear plants. The oldest reactors could now function 10 years more than planned. This creates a situation of

overcapacity, detrimental to the renewable investment climate, it means all Belgian nuclear reactors will have to be closed in 3 years' time (55% of the current power production). Such a massive closure seems unrealistic and leads some policy makers to even challenge the deadline of the nuclear phase-out (2025), decreasing any political incentive to massively develop renewables in Belgium. Instead of preparing the energy transition, Belgium is essentially in an energy stagnation strategy.

The federal level is (exclusively) in charge of the regulatory framework for offshore wind energy. In November 2015 a draft legislation reforming the offshore wind support mechanism was put out by the new government. However, at the end of the legislative process (second reading), the (same) government reassessed its decision and further reduced the support for offshore wind.

At the moment (6/6/2016) the regulatory framework is uncertain for the developers of Rentel, Norther and the three other windfarms to be developed by 2020.

MARKET DEVELOPMENTS

In 2015 Belgium installed 274.2 MW, unevenly shared between the regions (see following table). Installation increased in both Flanders and Wallonia but was 19.3 MW lower than 2014 as no offshore wind was installed.

Table 2: Belgium annual wind energy statistics highlights

| Installed capacity (MW) | New installation 2015 (MW) | Cumulative capacity end 2015 (MW) |
|-------------------------|----------------------------|-----------------------------------|
| Flanders | 209.4 | 812.9 |
| Wallonia | 64.8 | 707.9 |
| Offshore | 0 | 712.2 |
| Total Belgium | 274.2 | 2,233 |

Source: *Belgian Offshore Platform, Edora, ODE-Vlaanderen*

REGULATORY FRAMEWORK

Flanders

PLANNING PROCESSES

There are planning initiatives in different provinces in Flanders and also from the Flemish spatial planning administration but there is little or no coordination between the different initiatives. There are mapping the potential for wind energy and trying to identify suitable landscapes to create some large scale projects. Although the intentions are good, this kind of initiatives is creating uncertainty for developers because some areas are being excluded for wind energy and current projects are being blocked.

FLEXIBILITY AND CONGESTION MANAGEMENT

The Flemish government has asked VREG (Flemish regulator) advice on the transposition of the European Directive on flexible access. Implementation of flexibility is therefore still being discussed by various market parties (DSO's, Gas & Electricity Suppliers' federation (FEBEG), renewables and aggregators) at VREG.

Wallonia

SUPPORT MECHANISM

The system has been adapted in order to prevent any windfall profit. The support level is defined by technology and guarantees a determined internal rate of return for producers in function of the current cost of development and the electricity market price. Some uncertainties remain regarding the precise implementation of the new support mechanism.

NOISE CRITERIA

The new noise rules in Wallonia have been challenged by wind energy opponents at the Council of State level. The renewable energy sector is part of the appeal to defend the legislation. The Council of State has sent a specific question to the European Court of Justice regarding the fact that these sectorial conditions should have been considered as plan and programs. The decision of the European Court of Justice will have significant impact on any sectorial conditions in Europe. The renewable energy industry will go to Luxembourg to plead against the fact that sectorial conditions should be considered as plans or programs.

If the wind energy sectorial conditions are defeated in appeal, it will create major uncertainties for all the Walloon wind energy sector, hampering the realization of most of the current projects.

The Walloon government is also preparing a specific legislation clarifying the criteria for the noise prediction models and noise follow up studies.

JURIDICAL UNCERTAINTY

Wind energy development in Wallonia is currently blocked because of a systematic challenge of any delivered permit by the wind energy opponents at the Council of State level. Permits for more than 600 MW have been delivered but this capacity cannot be built due to these legal challenges. The wind energy sector therefore currently discusses with the government in order to find juridical solutions to these legal challenges.

The Walloon parliament is currently discussing a new major piece of legislation on spatial planning that could solve most of the problems. The political willingness is however missing and the renewable energy sector will intensify his lobbying activities regarding this new opportunity.

TARGETS

Wallonia adopted new targets for wind energy that would allow the installation of about 130 MW/year between now and 2020. This level of ambition could boost the future development but must be supported by drastic changes in the current wind energy policy. Indeed, the minister in charge delivers permits for wind farms in the vicinity of motorways or in municipalities supporting the project. To be in line with the new objectives for 2020, it is essential that the minister also allows wind energy development in open field (not especially next to motorways), and that new pieces of legislation improving the juridical certainty of its permits are adopted.

ENVIRONMENTAL CONSTRAINTS

The environmental constraints (compensation and mitigation measures) are currently excessive, not objective and sometimes without scientific basis. Consequently, the renewables sector is currently in negotiation with the relevant administration to elaborate a compromise protocol. Once concluded, this compromise will be proposed to the authority to get new specific rules regarding the environment criteria

AERONAUTIC CONSTRAINT REMOVAL

The Walloon government, in good collaboration with the renewables sector, is going to start negotiations with the federal government to reduce the importance of military and ATC constraints and to make some criteria more objective. The aim is to allow wind farm installations in military training zones currently forbidden and in the vicinity of airports and radars (military, meteorological and civilian).

Offshore wind energy Federal policy

The federal level is (exclusively) in charge of the regulatory framework for offshore wind energy. In November 2015 a draft legislation reforming the offshore wind support mechanism was put out by the new government. The proposed modifications have been transposed into draft legislative texts by the services of the federal Minister of Energy. The publication of the modified Royal Decree on the support mechanism for offshore wind energy and the modified electricity Act were to be published in the Belgian Gazette by Easter.

However, at the end of the legislative process, the government reassessed its November decision, declaring it wants to further reduce the support for offshore wind. At the moment (6/6/2016) the political and regulatory uncertainty are threatening the projects Rentel and Norther with planned FC in 2016, but also Mermaid, Northwester II and Seastar, the three other windfarms to be developed by 2020.

POLITICAL CONTEXT

In Bulgaria, the development of newly installed RES capacity gained a rapid momentum during 2012 because of the higher feed-in tariffs for PV. However, the renewable energy installations were declared high cost-inducing technologies and were further branded by the Bulgarian government as a major perpetrator of the electricity bills increase and in the mainstream media there was an unofficial campaign to create a negative image of RES among the general public.

MARKET DEVELOPMENTS

The added installed capacity in 2014 was 9.4 MW. At the end of 2014 the installed wind power capacity is 690.5 MW.

REGULATORY FRAMEWORK

In June 2012, the State Energy and Water Regulatory Commission introduced a moratorium on all kinds of new large-scale RES-E installations. The moratorium is valid up to 2016 and it does not apply only to wind and PV installations up to 30 kW mounted on rooftops and for biomass and hydro power plants of up to 1.5 MW. As stated on numerous occasions before, such ban on the development of RES-E will hinder the achieving of Bulgaria's target set by EU.

Recently there have been made additional retrospective changes. In December 2013, the government passed a 20% tax on the income of wind and solar energy producers, despite the fact the measure is discriminatory and in clear violation of the Bulgarian Constitution and several obligations under the legislation of the European Union. Fortunately, in August 2014 the Constitutional Court revoked the tax but its decisions have no retroactive force and the collected sums will not be recovered.

In February 2014, the State Energy and Water Regulatory Commission (SEWRC) approved a permanent grid access fee only for wind and PV producers. The price for it amounts to 2.45 BGN/MWh and it will be paid to the Transmission System Operator. The fee will be applied retroactively as of 18 September 2012.

Meanwhile, the Supreme Administrative Court has revoked the provisional grid access fee from September 18th 2012 so the SEWRC has determined a mechanism to compensate the producers with a deadline to 15 April 2014.

In May 2014, an amended version of the Electricity Trading Rules entered into force and the balancing energy market, which now includes responsibilities for balancing for RES producers, was launched in June 2014. The Electricity Trading Rules do not take account of the characteristics of different types of technologies and do not provide a level-playing field for all market participants. The balancing market is not structured to achieve balancing of the electricity system at the lowest cost. Under the existing provisions of the Electricity Trading Rules, the costs for wind power plants due to imbalances in the system have reached, in the months of June, July, August and September, up to 37% of their income.

POLITICAL CONTEXT

The Energy Agreement 2012 was changed in July 2014 due to political pressure to lower the cost of the green transition and the development of renewables support. As a consequence, the timetable for Kriegers Flak offshore wind energy tender is adjusted to the postponement of the guaranteed connection date by six months to 1 January 2019, and its construction time postponed by two years, resulting in expected commission of the park at the end of 2021. A new timetable will be presented for the tender process

The nearshore tender was reduced from 450 MW to 350 MW, and a cap was put on the average strike price for the 350 MW at DKK 0.70/ kWh (€0.09/kWh) for the first 50,000 full load hours. In addition in April 2016 the Minister for Energy, Supply and Climate and the parties behind the energy agreement decided to withdraw the Sejerø Bugt site as an option for an offshore wind farm in the nearshore tender. Furthermore, it was decided to postpone the deadline for final tender to 1 September 2016 in order to give sufficient time to adjust to the new tender conditions.

The reasoning behind this decision is that the consultants responsible for the EIA have concluded that it seems unfeasible that a realistic project will remain below the critical threshold for effects on the common scoter in the Natura2000 site nearby.

50 MW near shore capacity remains excluded from the tender for test and demonstration purposes. The winning demonstration project was awarded in February 2016. It is a 28 MW project consisting of 4 Siemens SWT-7.0-154 turbines to be installed in 2017 in the western part of the inlet Nissum Bredning. The remaining 22 MW in the test and demonstration pot will be postponed and will be subject to a separate application procedure.

Onshore support will be reduced by DKK 100 million (€13.4 million) in the period up to 2020. The size of the small subsidy compensating for balancing cost was reduced from €3.08/MWh to €2.41/MWh and the supporting period was reduced to 20 years.

The post 2020 debate is about to set off with the establishment in March of an Energy Commission with political negotiations expected to start in the last part of 2017.

The 10 year state aid approval of the current subsidy scheme for onshore wind is going to expire on 21 February 2018. The Danish Wind Industry Association hopes to see early political decision in 2016 on a new subsidy scheme to apply from 2018 on in order to avoid stop-go effects.

The hottest topic currently is the cost of the green transition. The low electricity prices leads to higher subsidy cost on electricity consumer bills. Most recently this has led to signalling from the minister of Energy, Utilities and Climate regarding a possible cancellation all together of the near shore tender. However, the coalition partners behind the Energy Agreement do not support such a suggested cancellation.

MARKET DEVELOPMENTS

In 2015, 217 MW was installed onshore. Cumulative capacity at end 2015 was 5,064 MW.

The tenders for Horns Reef 3 (400 MW) have been finalized in 2015 and Vattenfall won it with a strike price of €103.16/MWh for the first 50,000 Full load Hours (amount not indexed to inflation). The tenders of Kriegers Flak (600 MW), and the 350 MW near shore have started and the winners will be awarded after final offers have been submitted in April for near shore and November for Kriegers Flak.

REGULATORY FRAMEWORK

Offshore wind

According to the 2012 Energy Agreement, the regulation of offshore wind farms is divided into two categories:

1. Large scale offshore, typically more than 15 km away from the shore, starting from 400 MW, tendered, no local ownership or compensation scheme for property owners and the TSO pays the connection from the offshore substation to the onshore grid
2. Near-shore offshore wind farms, max 200 MW, 4-20 km distances from the shore, tendered, regulation on local ownership, compensation scheme for property owners. TSO/DSO pay from the nearest grid connection point on shore, and the developer pays for both internal grid and the connection of the wind farm to the shore.

The regulation of the near-shore wind farms is a mix between large scale offshore wind farms (tender, EIAs are delivered to the bidders with the Danish Energy Agency as a “one stop shop”) and onshore (regulation on local ownership and the loss- of-value schemes for property owners).

Regulation on aeronautical marking and lighting of wind turbines

The Danish Transport Authority has revised the regulation on aeronautical marking and lighting of wind turbines two times with effect from 15 March 2013 and again from 28 March 2014. The new regulation is a thorough revision of the existing regulation and represents substantial improvements from an industry point of view. The regulation has the following key elements:

1. Standard regulation for turbines btw 100 and 150 metres is 10 cd. Procedure for approval is significantly simplified.
2. Wind turbines above 150 metres: marking can be placed at the nacelle when the highest point (i.e. the blade) does not exceed the marking by 120 metres. Marking consists of medium intensive flashing lights. White during day, red during night. Plus lighting on tower.
3. Use of visibility metering
4. Option to use alternative measures for aeronautical marking.
5. Distinction between turbines at corners in parameter of wind farm and other turbines in the wind farm.

Health effect survey

An elaborate register study has been initiated on noise from wind turbines and health. The aim of the project is to use the unique Danish registers to investigate whether long-term exposure to wind turbine noise is associated with increased risk for cardiovascular diseases, diabetes, use of anti-hypertensive medicine, increased use of anti-depressants, sleep medication or low birth weight. The survey will run until end of 2016 and has resulted in some municipalities halting the planning and building of turbines leaving a lower estimate for onshore development than previously anticipated.

Finland

Last update: June 2016

POLITICAL CONTEXT

The political acceptance of financial support for wind power has suffered due to the extremely low electricity market price (30 €/MWh). In the governmental program the Finnish government decided to close down the current feed-in-tariff but no change will affect projects already awarded the support in terms of support level and duration of the support.

The main changes are the following:

1. The reserved quotas will not be distributed again even though a project which already reserved a quota gets cancelled later on
2. The projects which reserved quotas need to be producing electricity at the latest on 1st of November 2017. The 2,500 MVA limit for wind power is in practice fully booked now. This means high construction of wind power for 2016 and 2017.

In the governmental program the Finnish Government has also set a 50% renewable energy target of energy consumption to be reached during the 2020s. In 2016, the Government is updating the Climate and Energy strategy for defining the means to reach the target. In the former Energy and Climate strategies there have been two targets for wind power: 6 TWh target for 2020 and 9 TWh target for 2025. At the moment it is unclear what the expected share of wind power in the 2030 target is.

At the same time, the Ministry of Employment and Economy has also established a working group for designing a new support mechanism for renewable energy. According to the governmental program, the support mechanism should be technology neutral and be based on auctioning.

MARKET DEVELOPMENTS

By the end of 2015 Finland had an installed capacity of 1,005 MW. Wind energy provided 2.8% of Finnish electricity consumption. During 2015, 379 MW of new capacity was built.

REGULATORY FRAMEWORK

The government approved new noise limits in 2015. The noise limit during the day is 45 dB(A)¹ and during the night 40 dB(A). The noise limits are same for permanent houses and summer cottages. The wind energy industry welcomes these noise limits together with the guidelines for modelling and measuring the wind turbine noise (published in 2014). Even though noise limits are lower than before, the new regulation clarified the rules for designing and locating the wind farms.

In the beginning of 2015, one offshore demonstration project was successful in an auction awarding the investment subsidy (€20 million on top of the feed-in-tariff). 10 turbines will be constructed in Pori Tahkoluoto by Suomen Hyötytuuli Oy in 2017.

¹ Decibel, A-weighting, measure of sound pressure level.

The current Government is making big changes in the planning, environmental impact assessment and environmental permit processes during the 2016 and 2017. The aim of the work is to make processes smoother and faster. At this moment it is still unclear how these changes will affect the planning and permitting of wind farms.

France

Last update: February 2016

POLITICAL CONTEXT

The Energy Transition for Green Growth Law has been adopted in July 2015. It reinforces the renewable energy targets for 2030 with 40 % of the electricity mix.

The Ministry of Energy is leading consultations in order to modify the energy targets for the following periods: 2016-2018 and 2019-2023. This “programmation pluriannuelle de l’énergie” (Plurennial energy programme, PPE) expected by mid-year 2016 will set the targets for each energy technology (except nuclear power).

The sector still deplores the insufficient coexistence between wind turbines and radars and military sectors. Lack of political arbitration on this issue jeopardizes the achievement of near 3,500 MW of wind projects, little less than 40% of the country’s capacity installed, is blocked by these sectors.

MARKET DEVELOPMENTS

With 1,073 MW connected to the grid in 2015 (4.1% of the final energy consumption), the French wind energy sector confirms the growth that started in 2014. FEE estimates that the PPE 2016-2023 is the opportunity to set an ambitious industrial timetable for launch and award new tenders for new capacities in 2030.

FEE also sets the target of achieving 20% of electricity from wind power in France in 2030 distributed as follows: 40 GW of onshore wind, 12 GW offshore (including 6 GW of floating). Four essential conditions are required: the necessary simplification and stabilization of the regulatory framework, accelerating the processing of litigation against projects, reducing grid connection delays and loosen spatial constraints, especially those linked to military radars.

Current legal targets: 19 GW onshore and 6 GW offshore in 2020. The draft PPE proposes between 21 and 23 GW onshore and 3.5 GW offshore installed in 2023. These targets are clearly not enough considering the 2020 targets. For offshore, 6 projects are under development for a total capacity of 3,000 MW over 6 areas: Le Tréport, Courseulles-sur-Mer, Fécamp, Saint-Brieuc, Saint-Nazaire, Yeu and Noirmoutier Islands. Between 1 and 1.5 GW should be installed by 2020. The sector is expecting a new tender by the end of 2016, discussions with the Ministry of Energy are ongoing.

REGULATORY FRAMEWORK

The Energy transition law introduces a new remuneration mechanism for renewables based on feed-in-premium. The mechanism will enter into force in spring 2016 but the wind power sector will benefit from the current feed-in-tariff for a few years more since it has been notified to the European Commission before the European guidelines entered into force. According to recent political

announcement from the Ministry of Energy, this transition should occur in 2018. Simultaneously in 2017 should begin the new remuneration mechanism for wind power (CfD under tenders), in parallel to the current FiT.

The law also generalizes the simplified appraisal process of wind projects to all continental regions for onshore wind projects. As a reminder, this “Autorisation unique” includes five different authorizations and proceedings pertaining to environmental and land use regulations.

Finally, measures to accelerate the grid connection of wind farms have been taken. Between 2007 and 2013, time and connection costs have increased by 50% and 100% respectively.

POLITICAL CONTEXT

Renewable Energy Sources Act

- In July 2014, the German government approved a revised Renewable Sources Act (*Erneuerbare-Energien-Gesetz*, EEG), which was set into force in August 2014 and contains substantial changes compared to the 2012 legislation, but sets the regulatory framework for continued installations of onshore as well as offshore wind turbines until the end of 2016 with transitional solutions until end of 2018 (onshore) and end of 2020 (offshore).

Administrative barriers and regulatory uncertainty

- Technical and environmental as well as acceptance issues have been increasingly occurring throughout the last couple of years. In particular, random distance regulations and height restrictions challenge future wind power developments, should more federal states follow the example of Bavaria, which has adopted a 10h distance rule (10 times the hub height of a wind turbine) for wind farms and residential buildings. So far, no other federal state implemented similar legislation. However, there are appeals to state governments by anti-wind power organisations to take similar measures.

State Aid

- The German government notified the EEG 2014 to DG Competition of the European Commission according to the Environment and Energy Aid Guidelines (EEAG), even though it is officially still claiming that the EEG 2012 was not to be considered as state aid.
- The EC finally approved the EEG 2014 under the new EEAG's after the German government included additional provisions with regard to:
 - Setting up a tender system by 2017
 - Opening the system to foreign renewable energy producers to some extent
 - Discouraging electricity generation in times of negative prices, and
 - Adjusting the surcharge exemption regulations for customer generation.
- In the end of November 2014 the EC concluded that the support granted under the EEG 2012 qualifies as state aid but was generally in line with the new EEAG provisions. On 10 May 2016 the General Court of the European Union has rejected the February 2015 appeal of the German government against the EC decision that the EEG 2012 qualifies as state aid.
- The notification procedure for projects bigger than 250 MW, according to the State Aid Guidelines was initiated in October 2014 for some 20 offshore wind farms by the Federal Ministry for Economic Affairs and Energy (BMWi). In April, the EC approved all projects as in line with state-aid guidelines.

MARKET DEVELOPMENTS

Onshore wind energy

- In 2015 annual onshore installations (gross) decreased by 21% compared to 2014, with 1,368 new wind turbines totalling 3,730.95 MW installed.
- At least 484.1 MW of these were registered in repowering projects. 253 onshore wind turbines with totalling approximately 195.18 MW were decommissioned.
- On average, new onshore installations in 2015 had a capacity of around 2.727 MW (2.7 MW in 2014), a rotor diameter of 105 meters (99 meters in 2014) and a hub height of 123 meters (116 meters in 2014).
- By the end of 2015 25,980 onshore turbines with a total capacity of 41,651.5 MW were online in Germany.

Offshore wind energy

- In 2015, 546 new offshore wind turbines with a combined capacity of 2,282.4 MW were connected to the grid.
- 792 turbines located in German territorial waters with a combined capacity of 3,294.9 MW fed into the German grid by 31 December 2015.
- Aside from the turbines already connected to the grid, 41 more turbines (246 MW) have been installed throughout the year, but not yet grid-connected. Moreover, another 122 foundations have been installed.
- The average nameplate capacity of offshore wind turbines feeding in for the first time in 2015 was 4.145 MW (9.5% increase on 2014), the average rotor diameter has been 119.3 meters (1.2% decrease on 2014) and the average hub height 88.5 meters (0.2% decrease on 2014).

REGULATORY FRAMEWORK

- The EEG 2014 foresees a renewables share in the total power supply of 40% to 45% in 2025 and 55% to 60% in 2035.
- The annual installation target for onshore wind power is set at 2,500 MW (net), the overall target for offshore wind power until 2020 is 6,500 MW.
- The long-term offshore target for 2030 has been set as a cap of 15,000 MW, a cut of 40 per cent compared to the previous indicative target of 25,000 MW.
- A transitional period has been set between the EEG 2012 and EEG 2014. The terms and conditions of the EEG 2012 apply to all plants permitted before 23 January 2014 and starting operation before 1 January 2015.
- For onshore wind energy an initial tariff of €0.089/kWh paid for at least five years and a basic remuneration of €0.0495/kWh thereafter apply starting from 1 August 2014.
 - The duration of the initial tariff depends on site conditions. It varies between five years at sites with a wind energy yield of 130% of the reference site and up to 20 years at sites with or below a yield of 80%.
 - Starting in 2016, the basic remuneration for onshore wind energy decreases quarterly by 0.4% (degression). If the newly installed capacity exceeds or falls below the annual target corridor of 2,500 MW, the digression in- or decreases accordingly. The tariff for the

- respective quarter is announced five months in advance, whereby the reference period for the tariff calculation are the twelve months preceding the publication date.
- The bonuses for grid services and for repowering were cancelled since 1 August 2014. Adding to the amendments in the reference system, tariffs for wind onshore are actually reduced by roughly 20% compared to 2013.
 - Offshore wind energy producers can choose between the basic model and the acceleration model, which has been extended until the end of 2019. The basic remuneration is set at €0.039/kWh only (for a period of 20 years). Under the basic model the initial tariff is €0.154/kWh for at least 12 years. This period may be extended given a water depth of more than 20 meters and a distance to shore of more than 12 nautical miles. The initial tariff under the acceleration model is €0.194/kWh for the first eight years of operation. Here, the same extension conditions as in the basic model apply, except that only the initial tariff of the basic model is paid in the extension period.
- A digression component for offshore wind farms is built into the law, too. The initial tariff under the acceleration model is reduced by €0.01/kWh for all projects which go online after 31 December 2017. Under the basic model, the digression is €0.005 as of 1 January 2018, and another digression of €0.01 as of 1 January 2020 (para 30 of the EEG 2014).
- From 1 August 2014, energy from renewable sources has normally to be sold directly in the market and will be remunerated through a market premium.
 - A FiT will be paid only for installations with a nominal capacity of at most 500 kW having started operation before 1 January 2016 and in emergency cases (e.g. absence of a direct marketer). For the latter, producers can claim 80% of the remuneration from the grid operator.
 - If market prices are negative for six consecutive hours, installations bigger than 3 MW, which have been grid-connected after 1 January 2016, can be switched off without compensation.
 - Beginning in 2017, the market premium shall be deduced throughout a tendering process. The concrete design for a tendering procedure has not been set up yet. However, a tendering design for ground-mounted PV installations has been agreed on in January 2015 and the first four tendering rounds have been carried out. The resulting prices have been slightly higher than the FiT. Even though it is supposed to act as a pilot, there is a common understanding that lessons learned from ground-mounted PV can hardly be applied for other technologies. In April, the public stakeholder consultation closed. The Federal Ministry for Economic Affairs and Energy (BMWi) is now involved in talks with the heads of states and the chancellor office. The conclusion of the Federal Council is expected for the end of June, the Parliament is expected voting on 8 July.

POLITICAL CONTEXT

- Following six years of recession and austerity oriented fiscal measures combined with half-hearted efforts for structural reforms, the left opposition party of SYRIZA won the elections and came to power in coalition with a small extreme right party, after the 25th January 2015 elections.
- In February 2015, the Government negotiated a four-month extension to Greece's bailout in return for dropping key anti-austerity measures and undertaking a Eurozone-approved reform programme. After a series of Eurogroup meetings that failed to achieve an agreement on a successful completion of the last programme review, the second economic adjustment programme expired on 30 June 2015. A referendum to decide whether Greece was to accept the bailout conditions in the country's government-debt crisis proposed jointly by the European Commission (EC), the International Monetary Fund (IMF) and the European Central Bank (ECB) on 25 June 2015, took place on 5 July 2015. Soon after its announcement, Greek Banks shut down and capital controls were imposed.
- On 9 July 2015, Greece submitted to the European Stability Mechanism (ESM) a request for financial assistance (a separate request for financial assistance was sent to the IMF on 23 July 2015) along with a new reform plan. On 20 July, Greek banks reopened (after a three-week bank-holiday) following the adoption by the Greek Parliament of the required actions to initiate negotiations on a third programme.
- On Sunday 20 September, Greek legislative election was held for the second time in 2015. The election resulted in a large victory for Alexis Tsipras' Coalition of the Radical Left (SYRIZA), which fell 6 seats short of an absolute majority and was able to reform its coalition government with the right-wing Independent Greeks (ANEL).
- According to the third programme and the signed Memorandum of Understanding, the Greek energy markets need wide-ranging reforms to bring them in line with EU legislation and policies, make them more modern and competitive. Specifically:
 - The authorities will implement a scheme for the temporary and permanent capacity payment system; modify electricity market rules to avoid that any plant is forced to operate below their variable cost, and to regulate according to the final decision of the Council of State on the netting of the arrears between Public Power Corporation (PPC –the main Greek utility) and the market operator; begin implementation of the gas market reform according to the agreed timeline, whilst prioritising distribution tariffs; implement interruptible contracts as approved by the European Commission.
 - The authorities had to discuss with the European Commission the design of the NOME system of auctions, with the objective of lowering by 25% the retail and wholesale market shares of PPC, and to bring them below 50% by 2020. Because the agreement on NOME was not finally reached by the end of October 2015, the authorities have to agree with the

institutions structural measures to be immediately adopted leading to the same results mentioned above in terms of market shares and timelines. In any case, by 2020 no undertaking will be able to produce or import, directly or indirectly, more than 50% of total electricity produced and imported in Greece.

- The authorities have to: a) take irreversible steps to privatize the electricity transmission company, ADMIE, unless an alternative scheme is provided, with equivalent results in terms of competition and prospects for investment, in line with the best European practices and agreed with the institutions to provide full ownership unbundling from PPC; b) review energy taxation; c) strengthen the electricity regulator's financial and operational independence; d) transpose Directive 27/2012 on energy efficiency adopting the legislation already submitted to Parliament.
- The authorities have to approve a new framework for the support of renewable energy, while preserving financial sustainability, and for improving energy efficiency, making best use of EU funds, international official financing and private funding. Moreover, they will introduce a new plan for the upgrade of the electricity grids in order to improve performance, enhance interoperability and reduce costs for consumers. The authorities will start the implementation of the roadmap for the implementation of the EU target model for the electricity market, to be completed by December 2017; in this context, the balancing market will be completed by June 2017.
- The authorities will make use of technical assistance for designing the new framework on renewable energy and energy efficiency.

MARKET DEVELOPMENTS

Despite the economic crisis, investment in RES accelerated between 2009 and 2012 and continued growing over the period 2013 - 2015. At the end of 2015 Greece had 2,150.8 MW installed wind capacity. Overall during 2010-2015, approximately €6.6 billion were invested in renewable energy technologies, almost five times as high compared with the investments made during 2005-2009. PV technologies and wind power absorbed the largest share. As a result, installed capacity in RES has grown at an average rate of 24% per year between 2006 and 2015.

On an annual basis, the new capacity of wind power installations in Greece increased from 146 MW in 2006 to 315 MW in 2011 which was an all-time record year, representing an average annual growth rate of over 14%. The total wind power installed decreased in the period 2012-2014 to levels close to the average annual figures of the market in the pre-crisis period. However, and despite the political turbulence, signs of recovery were seen in 2015 as the annual installed capacity reached 172 MW.

Meanwhile, wind energy installations were outpaced by photovoltaic systems. The total installed capacity of PV reached 2,606 MW by the end of 2015 accounting for more than half of RES installed capacity, out of which 1,028 MW were added in 2013 but only 18MW in 2014 and 10 MW in 2015. The RES investor interest shifted almost exclusively to photovoltaic projects in 2012 and 2013, due to their very high returns from sharply lower panel installation costs. The decelerating feed-in tariffs in the law also contributed to this, causing a rush of investment in order to secure higher feed-in tariffs.

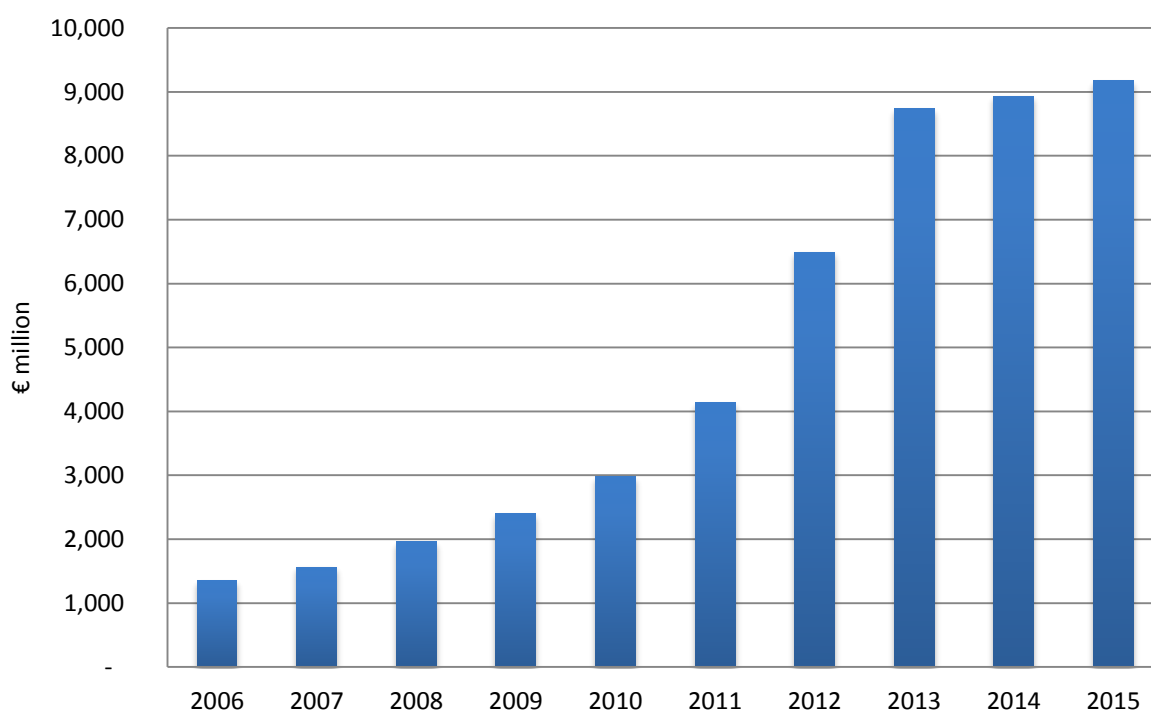
However, after meeting the 2020 target for PVs and the subsequent rapid reduction of the tariffs for the new PV plants, investor interest has again shifted towards wind.

The return to the growth path of wind energy in Greece is mainly driven by large Greek and foreign investors. In 2015 EDF, ENEL Green Power and the Greek Terna Energy and Ellaktor connected new wind parks to the grid. In parallel, new major players entered the Greek wind market, with the Hellenic Petroleum Group and the Greek-French EREN Group acquiring operating assets and the US based fund York Capital entering the share capital of Terna Group. Additionally, PROTERGIA, a wholly-owned subsidiary of MYTILINEOS Group, has also connected a 27MW wind park in 2015.

Meanwhile, Italian ENEL Green Power, after a significant investment in the Greek PV sector, is expected to return to wind energy with a 150 MW wind park in the Kafireas area, its license having been acquired already in mid-2012, predicting a positive shift in the wind market, as well as the Greek Terna Energy group which currently completes the installation of the first wind park on an uninhabited islet (72MW on Agios Georgios islet), which is connected through an underwater cable to the electrical grid.

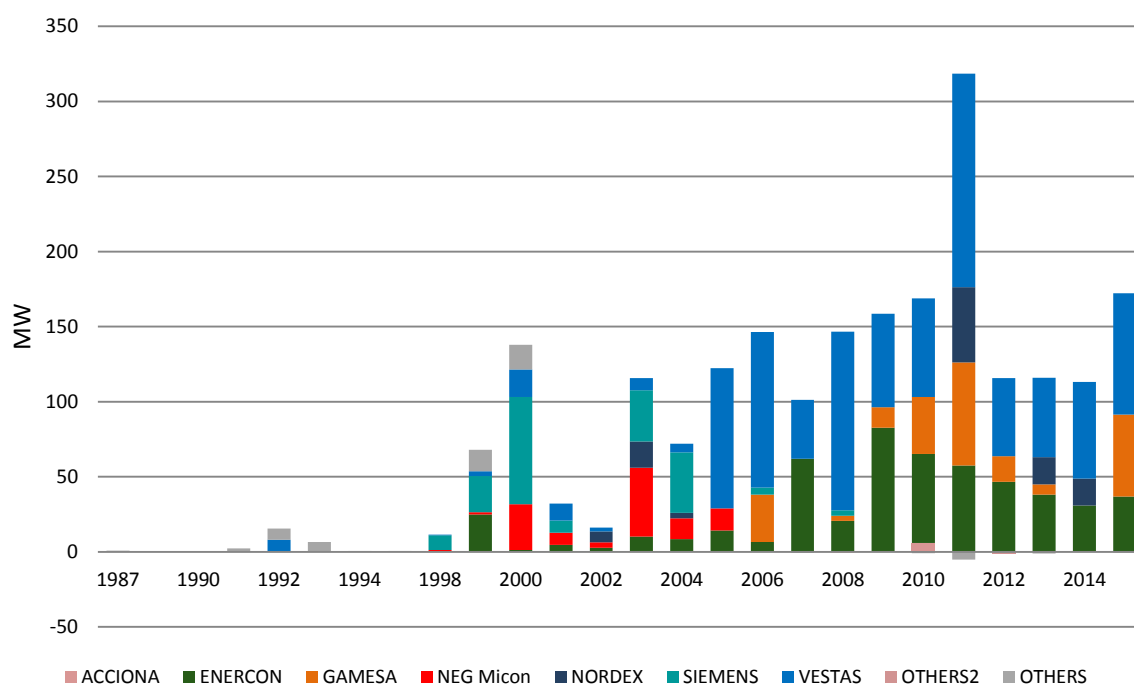
The following figures present the evolvement of RES and wind investments in Greece within the last years.

Figure 1: Total RES investments in Greece, 2006-2015



Source: *Greek Wind Energy Association*

Figure 2: Annual installed capacity per manufacturer, 1987-2015



Source: Greek Wind Energy Association

Interestingly, 2016 is expected to be the second record year after 2011 since more than 200 MW of wind parks have been under construction by the end of 2015 and are expected to be connected within 2016.

REGULATORY FRAMEWORK

- A reduction in the quantitative targets (in MW) for 2020 is expected, mainly due to the reduction in energy demand due to the recession. The previous government had established a committee to update the long term energy plan. The new Minister is expected to clear up the picture of the priorities and the directions of the new government.
- Law 4254/2014 defined new Feed-in Tariffs for the new RES projects. Particularly, for new wind parks with capacity greater than 5MW installed on the interconnected grid of mainland, the following FITs have been defined:
 - If realized with subsidy on investment cost: €82/MWh, stable for the whole duration of the Power Purchase Agreement (PPA)
 - If realized without subsidy on investment cost: €105/MWh stable for the whole duration of the Power Purchase Agreement (PPA).
- However these tariffs are not anymore applicable. 2016 is a year of change for Greece as well as many other EU countries, with respect to RES supporting scheme. Until now, the Greek RES

market was operating under a feed-in tariff scheme, while from now a feed-in premium scheme will be introduced.

- The proposed new RES/CHP support scheme, effective from the 1st of January 2016, will be based on the introduction of a new type of operating aid granted for the electricity generation from RES in the form of a sliding premium, in addition to the market price whereby the RES generators sell their electricity directly in the market. The foreseen premium will be granted for a certain period of time that will be required until the full depreciation of the specific RES plants and will be based on a differential value that will consider the revenues that will accrue from their direct participation in the electricity market. The strike price proposed by the Government for onshore wind park is €98/MWh in case of no subsidy on investment cost

Taking into account the ongoing process for the adoption and operation of a new electricity market model in Greece, estimated to be concluded in 2018, as well as the central policy objective for the protection of the final consumers from non-optimum levels of granted aid, the proposed new support scheme foresees on the one hand the gradual increase of market participation of new RES plants, along with specific market obligations that these plants would be subjected to. On the other hand, a regular monitoring of the levelised cost of electricity (LCOE) of the different RES technologies and categories of projects is foreseen in order to ensure that no excessive operating aid is granted.

It has been decided that the new RES plants should be subjected to specific obligations based on their direct participation in the electricity market, which upon the activation of the new electricity market model would take the form of standard balancing responsibilities. During the transitory period towards this new electricity market, it is considered to provide incentives (in the form of bonuses and penalties) to the new RES plants in order to optimize their hourly generation forecasts. All new RES plants for electricity generation will receive aid under the new support scheme, while at least initially, RES plants with an installed capacity up to 500 kW, except for electricity from wind energy where an installed capacity up to 3 MW applies, will have the right to choose to receive the granted aid in the form of fixed guaranteed prices (FiT). The duration for the provision of operating aid is going to follow the general accounting rules in relation to the time period under which a RES plant can be fully depreciated and therefore will be kept at 20 years.

Moreover, from the 1 January 2017 the Greek State intends adopting competitive bidding processes for the allocation of the relevant RES operating aid. The feasibility of the adoption of such competitive bidding processes will be analysed and assessed on the basis of existing and expected market conditions for the different RES technologies in Greece. In order to support this assessment, at least one round of a competitive bidding process, equal to at minimum 5% of the new installed RES capacity in the period 2015-2016, will be conducted within 2016. However, already from 2016 all new photovoltaic plants above the threshold of 500 kW will be only entitled for support under the new scheme on the basis of a successful and awarded bid during such a competitive bidding process. The generalized adoption of competitive bidding processes from 2017 will be decided on until the end of 2016 on the basis of the above-mentioned assessment.

It should also be highlighted and mentioned that especially for new RES electricity generation plants on the Non-Interconnected Islands (NII), and due to the current absence of functional electricity markets on the NII, the support scheme will continue to be solely provided on the basis of a fixed guaranteed tariff (FiT) until the introduction of such markets or the interconnection of the NII.

Ireland

Last update: June 2016

POLITICAL CONTEXT

General Election & current Issues

Following an inconclusive General Election held in February and an extensive period of Government negotiation, a minority Government has now been formed led by the Fine Gael Party (Christian Democrat) with the support of a number of Independent TDs (MPs). The previous Taoiseach (Prime Minister) Enda Kenny has remained in office and he has now appointed his Ministerial team.

The incoming Government which took office in May, has seen a number of Departmental changes which impact on wind energy. The previous Department of Environment, Communities and Local Government has had its functions split between a number of new Departments, while the Department of Communications, Energy and Natural Resources has seen restructuring to bring in a specific focus on Climate Change.

For the wind energy sector specifically the following changes are highlighted:

Independent TD (MP) Denis Naughten has been appointed as Minister for the newly established Department of Communications, Climate Change and Natural Resources and will probably come under significant political pressure from opponents on further onshore wind deployment. The clear focus on climate change as a specific focus for Government is a welcome first. The Irish wind energy associations (IWEA and NOW Ireland) is clear however that the “energy” focus while dropped from the previous title of the new Climate Change Department, must be kept front and centre for the duration of this Government, as this Government stands at the sharp point of delivering on our binding EU 2020 renewable energy targets. The wind energy sector has also welcomed the clarity from Minister Naughten reported in the National Irish Times newspaper following his appointment that *“We have an overdependency on imported fuels. Wind farms will play a part in reducing that dependency,”*

Fine Gael Cork TD Simon Coveney has been appointed as Minister for the newly established Department of Housing, Planning and Local Government. The planning area has been one of key challenges over recent years and the wind energy associations, as ever will be engaging directly to ensure that there is a sustainable, strategic, plan-led and fact based approach to planning our energy transition.

The Programme for Government has been published, and on renewable energy it is clear that the new Government believes that Ireland’s long-term interests are best supported by further decreasing our dependence on foreign fossil fuels through the continued development of indigenous renewable energy. The new Partnership Government, it is stated, will comprehensively review price supports for renewable energy following the closure of the REFIT 2 scheme. There is a clear focus within the Programme for Government on the role of local communities in new energy infrastructure projects. The review of the current Wind Farm Planning Guidelines is also listed within the Programme for Partnership Government alongside several other energy and climate related issues. A National Low Carbon Transition and Mitigation Plan up to 2050 will be developed within 6 months of the new government with focus on electricity generation, the built environment, transport & agriculture.

The new Government has also stated that it will establish a National Dialogue on Climate Change that will involve extensive public consultation. Wave, tidal energy and offshore wind technologies will be supported through the Development Stage, and the Government will facilitate the development of Solar. A Renewable Heat Incentive (RHI) targeted at large heat users will also be introduced and there will be a focus on energy efficiency and smart energy. The Government has also stated within the document its goal to become a leader in the take-up of electric vehicles.

NOW Ireland and IWEA are engaging where necessary in relation to the role wind energy plays in Ireland's electricity mix. Provisional figures for 2015 saw 24% of Ireland's electricity demand met by wind energy alone. A review of the national Wind Farm Planning Guidelines is ongoing and is now expected to be dealt with under the incoming Government. In anticipation of a new Government being formed, the associations reached out to each elected member of the Irish Parliament with a package of information on the benefits of Irish wind energy and renewables, and our calls for a stable regulatory environment in promoting Irish wind and renewable energy.

NOW Ireland calculations show that, assuming Ireland will at least assume responsibility for the 27% 2030 EU target, at least 3,000 MW of offshore wind energy will be required. Offshore wind has not yet come onto the political agenda and firm policy direction from Brussels is required.

Grid connection policy

The regulator (CER) is developing a new connection policy for generators in Ireland. The only new connection offers that have been issued since 2009 are those which do not fall under the Group Processing Approach (i.e. sub 0.5 MW wind, or other technologies, R&D projects, or Autoproduction projects), as there is currently a backlog of projects waiting to connect to the system, however it is recognised that a new connection policy is now required. IWEA is engaging with the regulators on determining an appropriate enduring policy, as well as identifying the transitional arrangements that might be required.

REGULATORY FRAMEWORK

Ongoing market development

Work is ongoing on a new Market design to ensure that the All Island Electricity Market in Ireland is compatible with the European Target Model. The market is due to go live in Q3 2017. Work is currently underway on the detailed design of the energy trading arrangements, as well as ongoing work on a capacity remuneration mechanism and a market for system services.

System services market

Development of a market for system services is also underway. There are two phases to this project – the first is the interim arrangements which will be in place on October 2016 and will be based on regulated tariffs. This will be followed by a competitive tendering process for longer term arrangements. This was due to take place in 2017 but now looks like it will be delayed until 2018.

Support scheme development

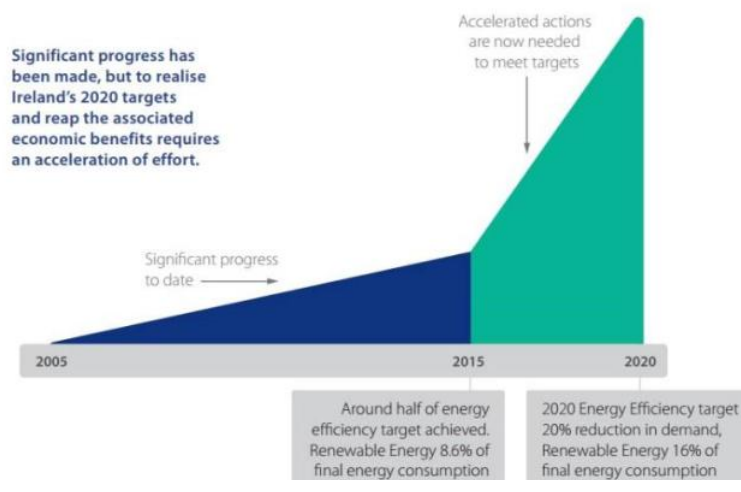
The current support scheme for wind energy, REFIT 2, is now closed for new applications. IWEA is engaging with the newly formed DCCCNr to establish a follow on support scheme for projects which

will not be able to connect under the timelines set out in the REFIT 2 terms and conditions, however further work will be required before this will be in place.

Maritime Spatial Planning and trajectory to 2020 targets

NOW Ireland continues to actively engage in relation to a Consultation on draft Regulations to transpose the Maritime Spatial Planning Directive into Irish law. This is a very important issue for offshore wind energy in Ireland, of which there is only 25 MW installed despite circa 3,000 MW in four projects being in an advanced stage of development.

Figure 3: Ireland's trajectory to 2020 renewable energy target



Source: Sustainable Energy Authority of Ireland

The Taoiseach (Irish Prime Minister) recently acknowledged that Ireland will not meet 2020 EU RES targets. This is confirmed by the content of a report from the Sustainable Energy Authority of Ireland (SEAI) in which extremely challenging requirements to achieve 2020 targets are outlined². The image to the left, from this SEAI report, shows, in reality, that the target will not be met. This is also confirmed by a recent press release from the [Irish Environmental Protection Agency](#). There is now some concern in Ireland that

Government will attempt to roll the 2020 targets into 2030 targets. Clearly, any such initiative, to be plausible, would need immediate radical change in Irish renewables policy. Meanwhile, it is clear that in terms of onshore wind in Ireland, site development has become very significantly more difficult in the last two years. In effect, onshore wind is close to saturation based on lack of available sites/recent adverse planning decision. Solar and biomass are very limited so far in Ireland; wave and tidal technologies are immature. Given that Ireland will require at least 7,500 MW of wind energy capacity for domestic consumption by 2030, at least 3,000 MW of offshore wind will be required. Irish energy policy as presented in a recent [Energy White Paper](#) is that offshore wind energy in Ireland is for export only. This policy is now clearly unworkable.

OTHER DEVELOPMENTS

SNSP increase

The All Island system has been in operation with a limit of System Non Synchronous Penetration of 50%. Trials were carried out at the end of 2015 which led to a formal increase in SNSP to 55% at the beginning of March 2016. This has resulted in a 6% decrease in curtailment levels which is very much welcomed by the wind energy associations.

² See section 3.2 of the [report](#).

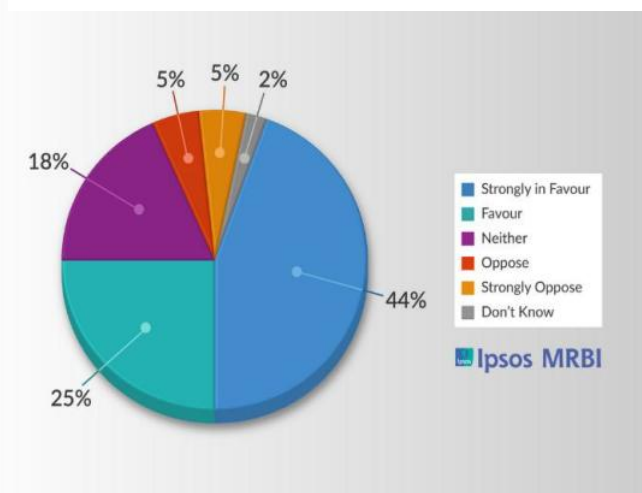
Public Support for Wind Energy Remains high

The results of an independent IPSOS/MRBI survey commissioned by IWEA and carried out over the first two weeks of February 2016 have been released.

When asked “To what extent are you in favour of or opposed to the use of wind power in the Republic of Ireland?” 70% of people overall support for wind energy nationally, with 10% opposed and 20% either undecided or as ‘don’t knows’. (see pie chart)

Furthermore the people surveyed were also asked about their attitudes to renewable energy, with 86% stating their clear preference for the use of renewable energy over fossil fuel alternatives (9%).

Figure 4: Wind energy public support in Ireland



Source : Irish Wind Energy Association

NSCOGI

Following strong representations from NOW Ireland to Irish officials, Ireland has now engaged fully with the Northern Seas Countries Offshore Grid Initiative (NSCOGI). It is anticipated that the circa 3,000 MW of offshore wind capacity in four projects which are currently either permitted or close to permitted off the east coast of Ireland will form the core of Ireland’s contribution to NSCOGI (see figure below). NOW Ireland calculations show that this capacity will be required for 2030 under the 27% target, even under optimistic projections for Irish onshore wind capacity. However, Ireland is the only EU member with a significant offshore wind resource that has no programme for the development of that resource. Interestingly, Ireland is also one of the few EU members that has already (2014) carried out a full Strategic Environmental Assessment of that same offshore wind resource including the 3,000 MW of capacity referred to above and shown in the figure below. Clearly, this policy anomaly needs to be addressed urgently given Ireland’s poor performance in relation to 2020 targets. It is anticipated that political impetus for this will be forthcoming from the Energy Council meeting on June 7th 2016. NOW Ireland continues to actively engage with officials in DG Energy and with WindEurope in relation to this important issue.

Figure 5: Irish offshore wind energy capacity from Strategic Environmental Assessment



Source: NOW Ireland

POLITICAL CONTEXT

The current regulatory framework and the Dutch auction system were introduced by the Legislative Decree 3 March 2011 and then implemented by the Decree 6 July 2012. The system presented some loopholes and it has not worked efficiently so far.

The projects submitted to auctions have in fact registered low installations levels. Such a situation penalizes investors and prevents many others from entering the Italian market. Moreover, the administrative procedures are still a burden to developers and the overall process is often too long.

The Government is expected to shortly approve a new Decree on supporting renewables, which should be published in June. The draft of this new Decree has been available for several months but it has not received the final approval yet. The Decree will be in force for just one year which will not likely give wind energy investors the certainty the need to commit resources.

The structure of the new Decree is similar to the previous system, with Dutch Auctions and Registers. The quota available for the wind energy tenders is 800 MW, with a base tariff of 110 €/MWh. It is now likely that the quota will be assigned through a single tender in July 2016, with results published before 20 September. The Decree contemplates the possibility that renewable energy project located in areas with a high concentration of renewables plants could be excluded from the support for reasons of security of the electrical system. However, this will be quite hard to implement.

Support to renewable energy is capped at €5.8 billion by a mechanism called “RSE Counter”, from the institution tracking the national expense for renewables (Ricerca Sistema Energetico³). If total support exceeds the cap, then all new incentives will be suspended. To date, there are no new economic resources available for renewables support, so the next Decree will be financed by what is left of the €5.8 billion, namely the difference between the cap and the sum of all forms of incentives granted annually by Gestore Servizi Energia (Energy administrative regulator⁴).

In the draft of the new Decree, the methods for calculating the overall support basket has been modified in order not to reach the remuneration cap. The main difference compared to the past systems concerns the way to estimate the price of energy for the future. Actually, in Italy the incentivizing tariff is obtained through the difference between the base tariff and the price of energy. In this view, if the price of energy is too low, the overall expense for the incentives grows. The new estimate is calculated considering the energy price of the last two years and the price for the next two years. This is a way to increase the price of reference. Naturally, this calculation is valid only for the RSE Counter.

The wind energy sector is currently waiting on the government to issue the new Decree. It will be very important to understand what will happen in the period 2017 – 2020. It is likely that in that period there will be another incentivizing Decree in line with the guidelines of the European Commission but there is no information about it yet.

³ For more information please see <http://www.rse-web.it/home.page?country=eng>

⁴ For more information please see <http://www.gse.it/it/Pages/default.aspx#&panel2-1&panel3-1>

The lack of support schemes would cause the stop of the entire wind energy sector. The relative high costs of wind energy compared to the current energy prices would stop – without incentives –all new initiatives.

In the coming years, it will be necessary to start some evaluations on the repowering activities. This topic is strategic because in Italy there are 1.5-2 GW of plants that were installed before 2005. The repowering of these plants should be fostered. There should be more policies promoting the optimization of brown field plants.

MARKET DEVELOPMENTS

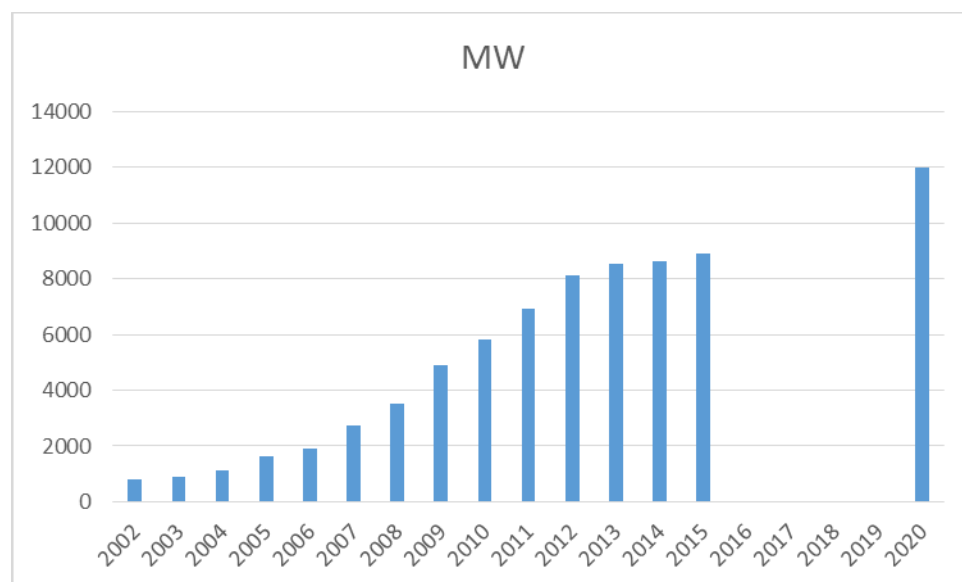
In 2015 little less than 300 MW were installed in Italy. The cumulative wind power installed in the country is 8,950 MW. In order to achieve the wind energy national target for 2020, the producers should install additional 3 GW over the next four years. It seems an unreachable goal.

The situation of small wind energy plants (up to 200 kW) is rather positive as the last Decrees encourage this kind of installations.

On the contrary, it is difficult to realistically imagine offshore wind energy deployment in Italy, due to the high installation costs, administrative barriers and problems of social acceptance. However, some investments have been proposed in the last years.

Offshore wind could be a useful infrastructure investment opportunity in Italy, but the lack of national guidelines discourages this kind of projects. The only project to highlight is the 30 MW near shore plant in Taranto.

Figure 6: Cumulative wind power installed in Italy



Source: assoRinnovabili

The Netherlands

Last update: May 2015

POLITICAL CONTEXT

National energy agreement

In the middle of 2013 over 40 parties, including the organizations of employers, NGO's such as Greenpeace, trade unions, utilities, the RE-sector and the united TSO's joined a national energy agreement (*SER Nationaal Energieakkoord*). The parties agreed on how to achieve the target of 14% sustainable energy in 2020 (European target) and 16% in 2023 (Dutch target). At least 6,000 MW of wind onshore in 2020 (presently around 2,500 MW) and 4,500 MW wind offshore (presently online and under construction: around 1,000 MW) are needed.

Offshore

The Agreement meant a breakthrough for offshore wind that was originally put on hold by a previous government. There will be tenders for offshore wind from 2015 onwards: 450 MW will be tendered in 2015, 600 MW in 2016, 700 MW in 2017, and 800 MW in 2018 and 900 MW in 2019. To have these tenders, it is necessary however, that price of offshore wind drops in the coming years by approximately 5 euro/MWh a year. That equals the 40% cost reduction path in 10 years the wind energy sector earlier announced and has become a condition in the Agreement, although there are discussions on the meaning of 40% and how it can be achieved. For instance, the government does not consider the socialization of offshore grids costs as part of cost reduction path.

The ministries and NWEA are working together to make 2015 and beyond tenders possible with respect to spatial planning, legislation, and other issues.

One issue is how to deal with existing permits (about 12 existing permits equal to approximately 2,500 MW). The minister of Economic Affairs stated in June in Parliament that he thinks these permits are no longer of any use; he would like to start from scratches (Borssele) with no permits. Discussions on existing permits continue. Possibilities of level playing field with the use of existing permits were investigated by NWEA.

Two offshore wind farms are under construction: Gemini (600 MW) and Luchterduinen (129 MW).

Onshore

Earlier this year the Government released the spatial plan for 6,000 MW (*'Structuurvisie wind op land'*). An agreement was signed last year between the Government and the Provinces: each province has its own 2020 target for wind energy and can determine where the wind farms can be built. Provinces should appoint these areas by July, but not all provinces are really committed and some have been granted a few months delay by the Parliament because of opposition on specific projects. There is a national platform of the Government departments, provinces and NWEA to look into all possible barriers for onshore wind.

Elections for the Provincial parliaments will be held in May 2015; it is questionable if all projects and areas will survive these elections. In some Provinces there will be probably be delays.

Main onshore barriers being discussed are military issues, such as radar and lightning on turbines.

REGULATORY FRAMEWORK

Onshore

The Dutch support scheme SDE+ may not facilitate onshore wind development. The system will be changed in 2015, taking more into account regional wind conditions; the KNMI (Meteorological Institute) is working on a new wind map of the Netherlands. It is not yet known how this change in the support scheme will look like; there are now discussions between Government and NWEA. The feeling is that conditions in the SDE+ for the regions with best wind conditions will deteriorate.

Previously there were not enough SDE+ funds for all RES-projects; because the cheapest projects come first, for several wind project at the end of the year no funds were available. In 2013 for the first time all submitted wind projects were granted SDE+. This year (until 1 September) there are just few RES-projects; it seems that the 3.5 billion euro of SDE+ will not be entirely used.

Onshore wind code of conduct: 'Gedragscode wind op land' and publicity campaign

The Dutch wind sector published a code of conduct about involvement and participation of local residents in wind projects. This '*Gedragscode draagvlak en participatie wind op land*' (Conduct for the support to and participation into onshore wind) was also signed by three main environmental NGO's realizing the importance of (more) local support for wind energy projects. The Government and Provinces will respond to the code of conduct.

Just before summer, a campaign was started from NWEA together with one of the NGO's to gain more support for wind energy. This campaign ('*Die molens draaien ook voor jou*', 'those turbines also run for your benefit') includes ads in newspapers and magazines, radio spots and outdoor advertising.

Offshore: near shore

There is still a discussion ongoing on 'near shore' wind energy. The 12 miles zone was a no go area for wind turbines. The discussion started mainly because near shore could be cheaper than offshore (outside the 12 miles zone). If near shore becomes feasible, it is estimated that up to 2,000 MW – 3,000 MW can be build. The Dutch government investigated the possibilities and will publish its near shore policy probably in September (it was already expected in April).

Poland

Last update: August 2015

POLITICAL CONTEXT

RES Act

The Polish Government completed work on the new RES regulation which seeks to guarantee the full implementation of the RES Directive into Polish law (more in last section). The RES Act presents a transition from a tradable certificates system to an auction system as well as a change in the feed-in tariff model. Part of regulations, including support for new forms of renewable energy generators (Chapter 4) will come into force on 1 January 2016.

Government assumed the new Act on RES should contribute toward reducing the cost of support system of renewables in Poland. New regulations offer 15 years of stable (CfD) and predictable (CPI indexed) cash flows.

Polish Energy Policy to 2050

In 2014 the Ministry of Economy started to update the Polish Energy Policy which is now valid until 2030. The new energy policy has to assume a systematic decrease share of energy produced from coal to a level of about 57% in 2030, mainly through the use of nuclear energy, shale gas and renewables.

Second draft is currently under public consultation procedure.

The draft Energy Policy assumes a 19% RES share in the energy mix in 2020, a 25% share in 2030 and 33% in 2050. Cumulative installed wind energy capacity is forecasted to be 7,050 MW in 2020 MW, 13,500 in 2030 and 21,000 MW in 2050.

MARKET DEVELOPMENTS

Onshore

In 2014 the wind energy capacity installed in Poland grew by 444.29 MW to 3,833.832 MW. The number of wind farms built in Poland is increasing. The whole 2005 – 2014 period saw significant increase in installed capacity (see table 1).

Table 3: RES installed capacity in Poland, 2005-2014

| RES | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---------|---------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | Capacity (MW) | | | | | | | | | |
| Biogas | 32,000 | 36,760 | 45,699 | 54,615 | 70,888 | 82,884 | 103,487 | 131,247 | 162,241 | 188,549 |
| Biomass | 189,800 | 238,790 | 255,390 | 231,990 | 252,490 | 356,190 | 409,680 | 820,7 | 986,872 | 1008,245 |
| Wind | 83,300 | 152,560 | 287,909 | 451,090 | 724,657 | 1180,272 | 1616,360 | 2496,748 | 3 389,54 | 3833,832 |
| Hydro | 922,000 | 934,031 | 934,779 | 940,576 | 945,210 | 937,044 | 951,390 | 966,103 | 970,128 | 977,007 |
| PV | 0,000 | 0,000 | 0,000 | 0,000 | 0,001 | 0,033 | 1,125 | 1,29 | 1,9 | 21,004 |
| Total | 1227,100 | 1362,141 | 1523,777 | 1678,271 | 1993,246 | 2556,423 | 3082,042 | 4416,088 | 5510,682 | 6028,637 |

Source: PSEW

In the first six months of 2015, onshore wind capacity in Poland increased to the level of 4,117.421 MW.

Offshore

Poland has one of the biggest offshore wind market potentials in the Baltic Sea region and the offshore sector in attracts strong interest from investors although there is yet no operating offshore wind farm. The regulatory framework - mainly assumptions of the RES Act - will be crucial in determining the future of offshore wind in the country. The RES Act isn't perfect in regards to the offshore wind projects - lack of dedicated solutions for offshore wind, offshore projects will have to compete will other, more mature under one technological basket.

Till date, 37 location permits for offshore wind farms was issued. 9 permits were paid with the first instalment (If the investment is located within the exclusive economic zone - and all offshore project will be located there- an additional fee in the amount of 1% of value of the planned project is charged; the investor shall pay the additional fee in 4 instalments – first one shortly after the day that the permit become valid).

Till date, the TSO determined the connection conditions and signed a connection agreement for two investments:

1. Offshore wind farm Baltica-3 with a capacity of 1045.5 MW - the investment will be carried out in 5 stages.
2. Offshore wind farm Bałtyk Środkowy of 1200 MW obtained connection conditions that enable connection to the national grid in two stages during the period 2022-2026.

REGULATORY FRAMEWORK

As mentioned above, the Polish Government completed work on the new regulation implementing the European RES Directive into Polish law. Focal points of the Act are a transition to an auction system and a modification of the feed-in tariff model.

Under the new system, support will be granted for each power plant separately, by way of a reverse auction conducted by the President of the Energy Regulatory Office.

Existing Projects: those where energy was first generated before the effective date of the new support system (until Dec. 31, 2015) will continue to benefit from the Green Certificate System (or CfD in cases where the owners of Existing Projects wish to switch from the GC System to the CfD, through a separate auction). In any case, the total period during which a project can benefit from support schemes cannot exceed 15 years from the date when energy was first generated.

New Projects: those projects who will win the tender(whos energy was first generated after the effective date of the new support system i.e. on, or after Jan. 1 2016) will benefit from the CfD System, with a fixed, CPI-indexed Strike Price for 15 years.

The amount of electricity produced will be subject to auctions. The price of 1 MWh of electricity generated will be the primary criterion of the auction, which will remain unchanged for 15 years.

Support will be granted to bidders proposing the lowest price.

The amount of energy to be purchased from eligible new projects will be determined each year, taking account the demand for energy from renewable energy sources and the upper limit of support for eligible projects (the so-called *reference prices*).

Only projects which passed a prequalification procedure may participate in the auction. Investors will have to demonstrate project's compliance with the local zoning plan and must have gained all the administrative permissions (incl. the building permit) as required by the law. Bids exceeding reference prices, that will be determined for individual technologies and installation capacities, will be rejected.

The Act on renewable energy sources was approved by the Polish Parliament on 20 February and was passed to the President's signature. On 11 March 2015 the President of Poland Bronisław Komorowski signed the RES Act. The Act came into force after 30 days from the date of the announcement. Part of regulations, including support for new forms of renewable energy generators (Chapter 4) will come into force on 1 January 2016.

Wind turbine distance regulations in Poland

According to the current regulations in Poland there is no rigid regulations setting minimum distances for the location of wind turbines. Location of the investment is purely based on the environmental impact assessment procedure with the significant focus on the accordance with the Noise Regulation (please see below).

Recently situation becomes more complicated due to the Spatial Development Plans developed by some Voivodships, which include rigidly specified distances for wind energy installations. Although these documents have no legal force, local spatial plans prepared by municipalities, based on which wind farms location is stated, need to be consistent with their provisions. Such situation recently took place in Warmia and Mazury province which Spatial Plan concluded minimal distance for turbines location at 2 km from buildings. Similar provisions occur in Subcarpathian province.

Sejm currently proceed the project amending the law on spatial planning and development which states that wind farms location need to be obligatory based on the local spatial plans which due to the regional regulations can bring significant difficulties for the wind investment development.

Wind turbine noise regulations in Poland

Polish noise legislation is not wind turbine-specific (there are no wind power noise specific limits) and based on national regulation of a binding nature: Regulation of the Minister of Environment of 1st of October 2012 amending the regulation on permitted noise levels in the environment (pol: Rozporządzenie Ministra Środowiska z dnia 1 października 2012 r. zmieniające rozporządzenie w sprawie dopuszczalnych poziomów hałasu w środowisku).

The regulation amends the earlier version of regulation (Regulation of the Minister of Environment of 14th of June 2007 on the permitted noise levels in the environment), but the rules from 2007 are still applicable in practice. There were no changes implemented on category of "other" (which includes limits concerning wind power) noise sources since 2007 version. The details of permitted noise limits of different type of land use and housing are included in following tables.

Table 4: Permitted noise levels in the environment caused by the different groups of noise sources, with the exception of noise of take-offs, landing and departing of aircrafts and power lines, expressed as LAeq indicators LAeq D and N, which are applicable to d

| No. | Type of area | Maximal permitted noise level [dB] | |
|-----|---|--|--|
| | | Other noise generating areas and activities (incl. wind turbines) | |
| | | LAeq D reference time interval equal to 8 least favorable following hours | LAeq N reference time interval equal to 1 least favorable hour during the night |
| 1 | a) The "A" protection zone of health resorts b) Areas of hospitals outside the city | 45 | 40 |
| 2 | a) Single-family housing areas b) Grounds with buildings associated with permanent or temporary stay of children and adolescents c) Areas of social care homes d) Hospitals in urban areas | 50 | 40 |
| 3 | a) Areas of multi-family housing and collective residences b) Farm building areas c) Recreational areas d) Residential and service areas | 55 | 45 |
| 4 | Downtown areas in the cities of over 100 000 inhabitants | 55 | 45 |

Source: PSEW

Table 5: Permitted noise levels in the environment caused by the different groups of noise sources, with the exception of noise take-offs, landing and departing aircraft and power lines, expressed by indicators LDWN and LN, which are indicators that applicable

| No. | Type of area | Acceptable long-term average sound level in dB [A] | |
|-----|---|---|--|
| | | Other noise generating areas and activities (incl. wind turbines) | |
| | | LDWN reference time interval equal to all days during the year | LN reference interval equal to all the night time |
| 1 | a) The "A" protection zone of health resorts c) Areas of hospitals outside the city | 45 | 40 |
| 2 | b) Single-family housing areas c) Grounds with buildings associated with permanent or temporary stay of children and adolescents d) Areas of social care homes e) Hospitals in urban areas | 50 | 40 |
| 3 | a) Areas of multi-family housing and collective residences b) Farm building areas c) Recreational areas d) Residential and service areas | 55 | 45 |

| | | | |
|---|--|----|----|
| 4 | Downtown areas in the cities of over 100,000 inhabitants | 55 | 45 |
|---|--|----|----|

Source: PSEW

There is no specific legislation for environmental emission of low frequency sounds neither outdoors nor indoors – in Poland there are only rules for low frequency in a workplace (workplace health & safety regulations), which do not apply for wind power facilities.

A wind energy project could be challenged on the basis of noise on different stages of development and operation:

1. Planning phase (SEA),

Acoustic research is optional on the planning phase – it is often discussed together with the minimal distances from dwellings. Some of municipality councils establish minimal allowed distances on the local spatial plan. As rigidly defined standoffs are not site-specific, PWEA recommends acoustical modelling during the planning phase to ensure the minimal distances will be reasonable and maintain the required acoustical standards.

2. EIA,

At the stage of the EIA wind investments are being challenged by local communities and sometimes by the RDOS (Regional Directorates of Environmental Protection). Local communities often express concerns about the emission of noise, infrasound and health effects. Usually resulting from insufficient environmental awareness and lack of education. Equally often impacts on health subjects are topics associated to organizational issues in local politics and economics. Prominent barrier in development is RDOS (Regional Directorates of Environmental Protection) having more restrictive approach to the interpretation of the existing standards. Themes often quoted by investors include imposing an additional acoustic penalty of 3-5 dB at propagation forecasting stage, the requirement to include in the calculation the soil attenuation coefficient at the level of $G=0$, regardless of the actual characteristics of the ground and exclusion of taking into account the optimization modes.

3. Operation.

International norms of wind turbine noise measurement standards which are fully implemented in Poland, nevertheless they are often discussed by neighboring communities. The controls most of the times show no exceedance of permitted noise levels. The protests are believed to arise from factors other than environmental.

Noise measurements are conducted in IEC 61400-11 standard implemented in Polish regulation as PN-EN 61400-11. The authority who is responsible for noise control is WIOŚ (Voivodship Inspectorate of Environmental Protection). When the excessive noise levels are proven to appear in the vicinity of wind farm, WIOŚ reports the fact to RDOŚ (Regional Directorate of Environmental Protection), who has the power to implement more strict regulations and to recommend solutions (usually optimization of regulation modes) to make sure the acoustic standards are met.

Portugal

Last update: June 2016

POLITICAL CONTEXT

In 2013, the Portuguese National Renewable Energy Action Plan (NREAP) was published in accordance with Directive 2009/28/EC on the promotion of the use of energy from renewable sources. This plan was prepared using the template published by the European Commission, and provide detailed roadmaps of how each Member State expected to reach its legally binding target in 2020 for renewable energy share in final energy consumption. Portugal assumed the bidding target of 31% of RES penetration in the energy sector (transport, electricity and heating and cooling), which implies a RES-E contribution of 60%.

However, with the economic crisis in Portugal the renewables market has slowed and it was agreed with the Troika⁵ a legal framework revision of the electricity sector including the policies that support renewables. However, in 2015 5,059 MW of wind energy capacity were installed (close to the 2020 target set by the NREAP).

The overall investment in the sector is stalled due to the lack of incentives in energy policies. Moreover, the increasing share of RES electricity decreased significantly the daily marginal spot price, which is nowadays so low that does not suffice to payback the real costs of the electricity production of any kind of technology, either renewable or conventional thermal. So, a deep reformulation of the energy market rules - a process that is running at EC level- is of paramount importance.

Nevertheless, Portugal has a 40% renewable in final energy consumption target in 2030, representing around 80% of RES in the electricity sector, an important growth taking into consideration the 60% target in 2020.

MARKET DEVELOPMENTS

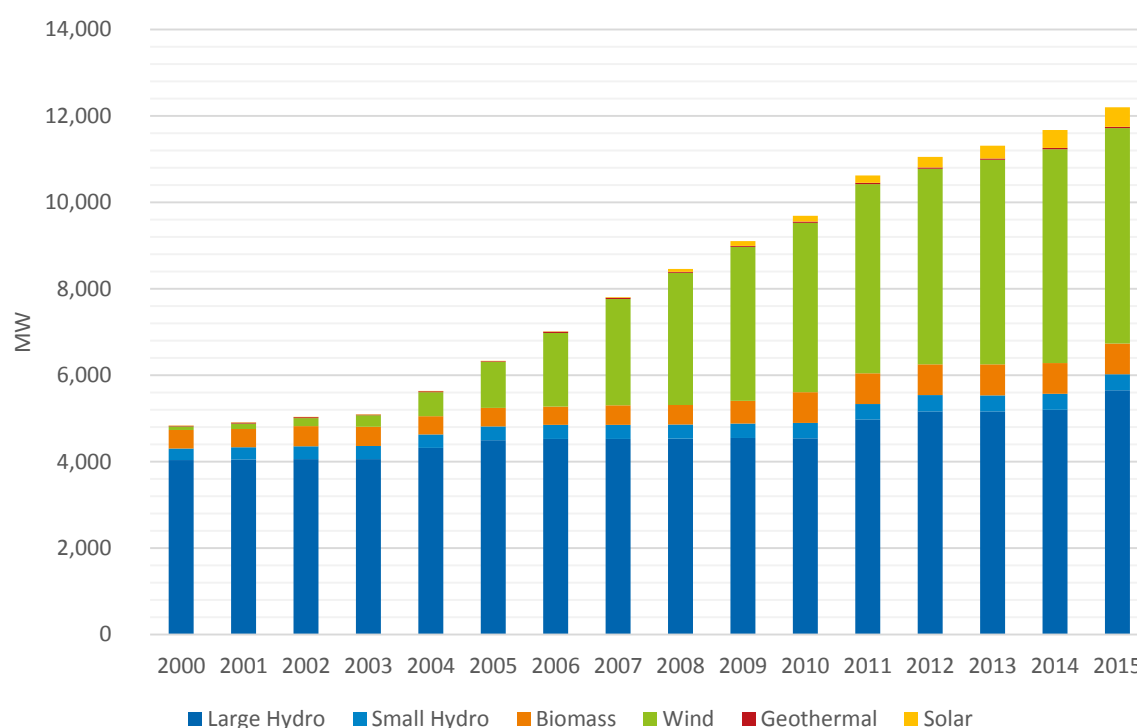
Since 2000 wind energy technology has grown remarkably in Portugal, supported by the national policy strategy in endogenous and renewable energy resources. In the last 15 years wind energy has become an indispensable resource in the electricity sector. In 2015, a very unfavourable year in terms of hydroelectricity, the RES-E concerning only Portugal Mainland represented 48.2% of total electricity generation (51.7% according to the Directive 2009/28/EC on renewable energy) and wind generation contributed with 22.5%.

⁵ The Troika is the group formed by the European Commission (EC), the European Central Bank (ECB) and the International Monetary Fund (IMF) with whom Portugal had to negotiate a bailout strategy in 2010-2014.

In 2015 wind power installed capacity increased 3% compared to 2014, to 5,059 MW. Since 2012, the decree-law 215-B/2012 put an end to the support mechanisms and a considerable stagnation has been registered since then.

The next figure shows the RES-E installed capacity in the last 15 years, displaying the outstanding wind evolution.

Figure 7: Evolution of RES-E Installed capacity in Portugal



Source: APREN

The table below summarises the cumulative installed capacity and number of wind turbines in 2015, as well as the power capacity under construction and the respective number of wind turbines.

Figure 8: Installed capacity and number of wind turbines 2015

| WIND FARMS IN PORTUGAL | | Grid connected | | Under construction | | Total | |
|------------------------|----------|----------------|---------------|--------------------|---------------|---------|---------------|
| | | MW | Wind turbines | MW | Wind turbines | MW | Wind turbines |
| ONSHORE | MAINLAND | 4,980.6 | 2,497 | 26 | 13 | 5,006.6 | 2,510 |
| | MADEIRA | 46.2 | 60 | 0 | 0 | 46.2 | 60 |
| | AZORES | 32.2 | 50 | 0 | 0 | 32.2 | 50 |
| OFFSHORE | | 2.0 | 1 | 0 | 0 | 2 | 1 |
| TOTAL | | 5,059 | 2,608 | 26 | 13 | 5,087 | 2,621 |

Source: e2p, 2015

The wind industry cluster in Portugal is mainly made of North American and European companies. It was responsible in 2015 for more than €350 million of exports (Enercon and Senvion and other smaller manufactures and suppliers). Senvion has expanded its blade unit in the beginning of 2015 with the aim to produce a new type of blade and increase exports.

REGULATORY FRAMEWORK

In the beginning of 2013, the RES-E sector began struggling with lack of deployment policies. Presently, with the existing legal framework package⁶, the FiT for large scale renewable power plants was extinguished (except for small scale units, that have a different legal regime). So, new utility scale RES-E projects have no incentive mechanisms; they have to be integrated in the regular energy spot market. The decree-law 215-B/2012, the one that ends the FiT regime, considers the possibility of capacity auctions but to date no new procedures were opened. Some new wind farms that are expected to be installed in Portugal until 2017 had their licensing process started before decree-law 215 B/2012, which means they will still have a remuneration mechanism in accordance with their bidding conditions.

In addition, an alternative tax compensation regime imposed to wind farms⁷ was introduced in February 2013 as an outcome of negotiations between the Government and wind promoters in order to reduce the electricity deficit. As reward the wind producers will have an extended 5-7 years period of regulated market prices with a floor and a cap.

A new licensing regime was issued⁸ in August 2013. However, this regime set deadlines difficult to comply due to administrative reasons which jeopardize RES-E goals. Promoters have requested its revision and are currently under negotiations with the Government.

Also worth noting the publication of a new legislation for environmental impact assessment⁹ in October 2013. Currently almost all RES projects are subject to environmental impact studies and experience shows that the procedures of the Environmental Impact Assessment Committees impacts negatively on the project. However it should be noted that, under the new regime, the energy licensing authority is already eligible to take part in environmental evaluation committees, which was a previous policy recommendation from APREN.

In June 2014, the framework for wind farms' overpowering was published that sets a FiT of €60/MWh for a 20% over-equipment of the existing wind farms and defines the concept of additional capacity (the capacity already installed in old farms exceeding the allowed injection power into the grid), enabling the removal of existing limitations on the injection of electricity into the grid since the System Operator does not oppose. Finally the metering and technical specifications for over-equipment were

⁶ See DL 215-A/2012 and DL 215-B/2012.

⁷ See DL 35/2013.

⁸ See Ordinance 243/2013.

⁹ See DL 151-B/2013.

published¹⁰, though requiring individual certification metering for the new turbines, which increases the investment cost. Alternatively the over-equipment production can be estimated from the overall production but with a significant discount rate in total wind farm production is applied. This fact has hold down the investment in over-equipment and reduce the expected power raising for wind energy.

The new self-consumption and FiT regime regulation for small units has been published in October of 2014 (decree law 153/2014)¹¹, which repeals the old FiT scheme. It defines rules for self-consumption systems with grid-connection, which had no regulation before, and new rules for FiT scheme (systems under 250 kW). The regulation is fully operational. It is estimated that the installed solar PV power under this scheme can reach up to 300 MW in 2020, which is a small contribution to the overall electrical system, not taking advantage of Portugal's large natural capacity.

The Green Tax Reform has been under implementation since 1 January 2015. It was established that a new value for the maximum tax depreciation of wind and solar technologies has set at 8%, which represents twelve and half years (minimum is twice this value). The proposal of reducing 50% of the Municipal Real Estate tax (IMI) for RES power producing buildings was accepted and will be carried out within five years, though the conversations between representatives of the sector and the government regarding the most accurate method to evaluate the real asset value and the respectively IMI tax for wind and PV power plants is still ongoing.

¹⁰ See Ordinance 102/2015

¹¹ See DL 153/2014

POLITICAL CONTEXT

In January 2013 the Romanian Government started to reconsider the legal framework in force for the renewable energy investments in Romania. The Government's position was based on the National Authority for Energy Regulation ("ANRE") estimates of significant increases in consumers' electricity bill in 2013 because of increased RES-E fed into the grid.

At the same time a mass-media campaign was started by large industrial consumers and conventional power plants operators against renewable energy producers. Public support to renewable energies was blamed of increases in the electricity price by several categories of consumers.

MARKET DEVELOPMENTS

Romania succeeded to exceed the expectations with the development of renewable energy. Romania's wind and photovoltaic energy installed capacity is 3,640.64 MW. 354 MW of wind energy were installed in 2014 in Romania and cumulative installations were 2,953.6 MW at end 2014.

REGULATORY FRAMEWORK

At the beginning of June 2013 the Governmental Emergency Ordinance 57/2013 ("GEO 57") was approved by the Romanian Government, which brought important amendments to the support scheme for RES in Romania. On 17 December 2013, the law approving GEO 57 was voted by the Deputies Chamber of the Romanian Parliament. The law featured other important amendments to the support scheme for renewable energy with major impact on the possibilities to recover investments for certain renewable technologies.

For the moment the law approving GEO 57 was sent by the Romanian president to the Constitutional Court for the analysis of the unconstitutional grounds. Until the Constitutional court will issue a judgement, the provisions of GEO 57 are applicable.

The main amendments to the support scheme for RES in Romania are the following:

- Not granting green certificates for electricity delivered by the dispatchable units in addition to the amount of electricity from the hourly physical notification transmitted by producers of RES-E to the (TSO);
- The postponement of trading of one green certificate of two green certificates for each MWh of renewable energy produced and delivered in the electric grid for the period 1 July 2013 to 31 March 2017 for producers accredited before 31 December 2013;
- Exemption from the payment of green certificates of a percentage from the electricity

- delivered to end-users, in compliance with the relevant European regulations;
- RES producers need to provide financial guarantees by to get grid connection;
 - Reduce annual quotas of renewable energy previously stipulated by Law 220/2008;
 - Reduction of the validity of green certificates to 12 months;
 - Instituting an access regulation for the renewable energy on the electric power market up to the safety limit of the national electro-energetic system;
 - The new projects accredited after 1 January 2014 will receive 1.5 green certificates until 2017 and 0.75 since 2018.

Given that GEO 57's provisions are valid new wind projects accredited after 1 January 2014 could benefit from both measures: the postponement and the reduction of the green certificates' number further to applying the results of monitoring process of overcompensation. The same legal interpretation is applicable also for the projects which previously accessed state aid.

POLITICAL CONTEXT

After four years of lack of political support for wind power the Government ruled by the conservative party (Partido Popular) changed slightly its view on wind energy at the end of its legislative term. This change has been prompted by the closeness of the general elections (last December), the pressure from the European Commission, regional governments (affected by the freeze of new installations), NGOs, the industry itself, and other stakeholders.

The Ministry of Industry (and energy) launched in October 2015 an Industrial Plan (PRIE¹²) to revitalize the wind power sector together with the Spanish Wind Power Association (AEE), and a working group to flesh out practical measures has been established, but it is too early to assess if the Plan will result in positive actions given that for the moment there is no Government appointed (the previous is acting as interim) and on 26 June new elections will be held.

An official indicative planning for the power mix to 2020 published by the Ministry in 2015 has established a preliminary goal of additional 4.5-6 GW of wind power to be installed by then in order for Spain to comply with the RES Directive objectives, but even the national market regulator (CNMC) has commented that the plan seems not feasible to achieve those goals given the current regulatory and market situation.

The other political goodwill signal was the announcement of a 500 MW auction for new wind power installations by the Ministry. The auction was held in January 2016 and the result was that the winning bidders have compromised themselves to build the 500 MW before the year 2020 without any incentive (just the market price). It is the opinion of AEE, that the fact that the auction was isolated (there is no calendar for further auctions), with lax requirements to participate, and small-sized (only 500 MW) in a context where the sector has been paralyzed for several years due to the green moratorium has caused this unexpected result.

Before the moratorium of 2012, there were around 10,000 MW of wind power in Spain that had been awarded through the years in different regional competitions but were never installed due to the forced paralysis of the sector. Amongst these projects, some are in special circumstances (even with investments already made), something that has shown in the interest of the sector in attending the auction and in the lower bids. Nevertheless, these circumstances cannot be extrapolated to most companies' greenfield portfolios or to already operating wind farms, which were installed when technology costs were higher and with a bigger investment.

In order to install the 6,400 MW of wind power necessary to comply with Spain's 2020 Energy Planning and meet the EU's 2020 goals in terms of energy consumption, AEE believes that it is necessary to launch and hold a new auction of the remaining 5,900 MW before the end of 2016. This would be ideal in ensuring enough time for the project's installation. The Government should also ensure a stable and predictable regulation for the future. Otherwise, it will be almost impossible to meet the goals set by the EU of 20% of final energy consumption from renewable sources by 2020.

¹² Plan de relanzamiento de la industria eólica, http://www.aeeolica.org/uploads/PLAN_PRIE_.pdf

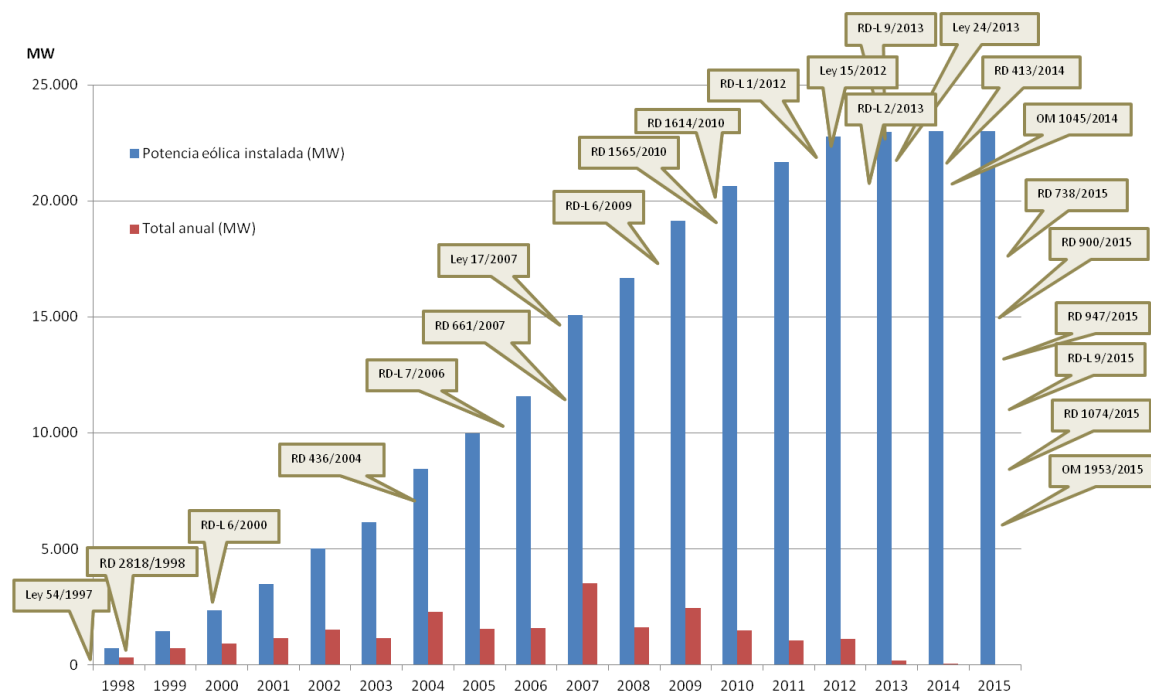
The Ministry is also trying to speed up the installation of 450 MW of wind power in the Canary Islands. The projects' owners have not been eager to respond to the incentives put forward (the equivalent of €80-95/MWh depending on the island) given the overall regulatory instability. Hence, the administrative requirements to enter this special quota for the Canary Island have been relaxed and finally it has been covered, although a significant part of the projects have not gotten all the permits to go ahead.

MARKET DEVELOPMENTS

By the end of 2014 Spain had an installed capacity of 22,986 MW. Wind energy stood for 20.4% of Spanish electricity consumption. In 2014 27.5 MW of new capacity was built (the lowest growth since last century) and in 2015 no new capacity was added.

As can be seen in the following graph, the development of the Spanish wind power sector was stalled starting in 2012 due to the extensive regulatory reform that was approved in the period 2012-2015.

Figure 9: wind power development in Spain and regulatory interventions



Fuente: AEE

Source: AEE

REGULATORY FRAMEWORK

The regulatory reform in Spain 2012-2014

The alleged underlying objective of the wide ranging regulatory reform for the power system that the Ministry of Industry has put in place during the last three years was to lower the regulated costs of the electrical system in order to match the regulated revenues from consumers (eliminate the so called “tariff deficit”). During the last twelve years there has been a recurring mismatch between those regulated revenues and regulated costs that has accumulated in a 26 bn € deficit = the Spanish Tariff Deficit. Political decisions during this time have not only failed to address this problem but, in some cases, also aggravated the creation of the deficit. As was stated in the previous report on Spain (2009) by the IEA, the original cause of the tariff deficit was the rising commodity prices that were not passed on to consumers:

The tariff deficit has accumulated over the recent years, as rising commodity prices have increased generating costs to much above the tariff levels. The government has in effect forced the utilities to sell electricity at a loss. That has resulted in a deficit, estimated at EUR 14 billion in May 2009, which the government owes to Endesa, Iberdrola, Unión Fenosa, Hidrocantábrico and E.ON.

Page 117

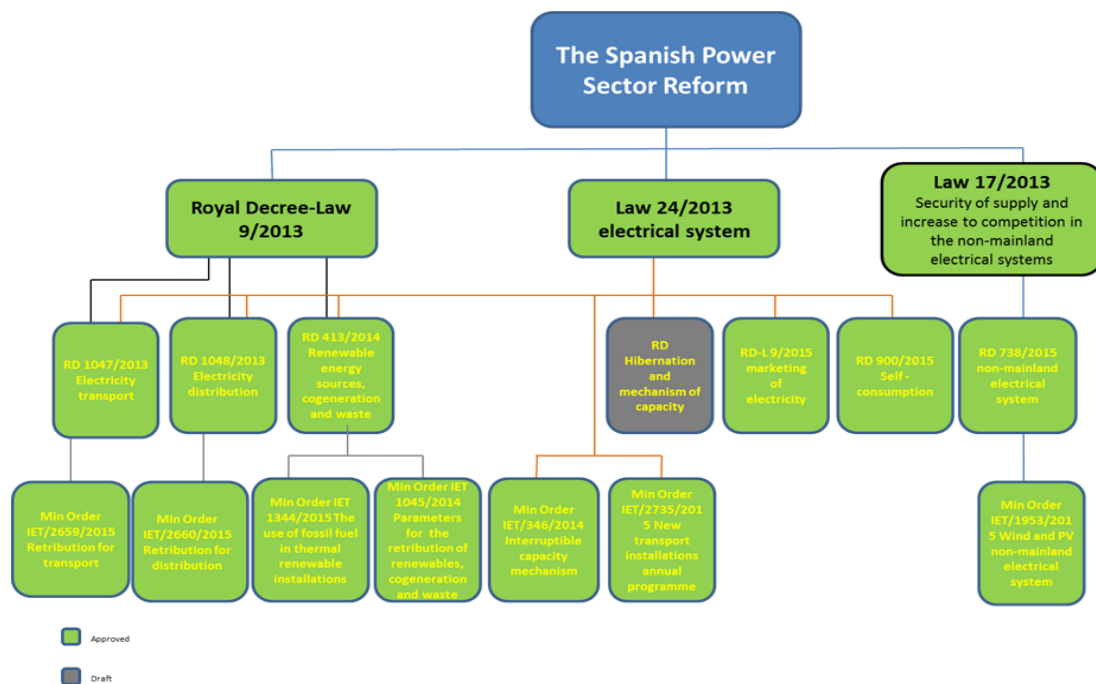
The reform tries to solve a problem created during more than a decade in just a few months with disruptive measures that destroy most of the value invested in the wind power sector. There is no mention in the reform on the fact that the investments in the past in the wind power sector have been made in order to comply with national and EU objectives, neither does the reform establish how Spain is going to comply with its obligations under the EU 2020 Package on Climate and Energy.

A complex reform

The Reform is extraordinary in its complexity: **it is articulated** around **two laws**, one regulating the whole electrical system, and another one for the non-mainland systems (both already under debate in Parliament). Plus a **Royal Decree-Law** (RDL 9/2013) in force since July 2013. In Spain, Royal Decree Laws have the same validity as Laws but have immediate effects and cannot be changed by Congress. They are either approved or rejected.

Furthermore, the fine details of the reform are set in **seven Decrees and six Ministerial Orders** plus other minor instruments. The following diagram shows the relationship between the regulatory instruments:

Figure 10: The Spanish reform, 2013



Source: AEE

The Royal Decree-Law 9/2013 (RDL 9) and the Electricity System Law 24/2013 (L24)

The key points of the RDL 9, L24 and the Royal Decree 413/2014 that set the details of the cutbacks are:

i) the cutbacks:

Estimated average yearly savings impact according to the Ministry: € 4.5bn

Subdivided as follows:

- Royal Decree-law 9/2013 of urgent measures: to assure immediate implementation of cost reduction measures. New measures include (for a total impact of € 2.5bn in cutbacks):
 - RES & CHP support will be reduced
 - Remuneration for transmission, distribution and extra costs of non-peninsular systems will be reduced
- Capacity payments and other system costs will be reduced approx. €300M per year.
- The Government Budget will contribute with €900M per year to cover extra-cost of insularity.
- Remaining annual gap (€900M) should be covered by electricity access tariff increases by 6.5% (equivalent to a 3.2% rise in the most widespread comprehensive tariff for consumers), a possibility considered in the Royal Decree-law.

ii) the change in the retribution system for renewables and chp = a cut of 1.75 bn €

The Current feed-in-tariff support is completely eliminated and replaced by a totally new investment support mechanism. This aspect of the reform is included in the draft Law but already

entered into force, without any prior notice, by the Royal Decree-Law 9/2013. The main characteristics of the new regime are:

- It affects existing installations from the 14th of July 2013 even if the new support mechanism was approved in June 2014
- The investment incentive is paid per installed MW. Under the previous scheme (since 1998 until 2013) the incentive was paid per MWh produced.
- Renewable energies will receive the spot market price, plus
- *“when needed”*, an extra retribution to cover their costs and attain a “so called” reasonable profitability.
- For the next six years, reasonable profitability is set at the Spanish ten year Bond yield plus 300 basis points, 7.39% return on capital for renewables installed capacity in Spain (pre-tax return). **This will be a 5.17% post-tax return, which does not even match the larger renewable companies' WACC.**
- **This “reasonable profitability” is set now but is applied to all existing investments, independently of the year of completion and the financing situation at that time, and this profitability is calculated for the existing assets since their commissioning date.**
- In order to determine the level of the extra retribution, benchmark “generation facilities” are considered for each technology. Also, an “efficient and well managed facility” will be the reference.
- The reasonable profitability of the benchmark generation facility will be determined on **past and future revenues. That is, past revenues will be taken into account when calculating that profitability (7.39%), and future retribution is calculated based on those past revenues;** there is a discount in future retribution based on incomes obtained in the past.
- Regulatory parameters will be reviewed every 6 years, considering the revenues in the previous period: this methodology creates a higher level of uncertainty and disincentives future investment. Investors will only have

POLITICAL CONTEXT

A parliamentary committee is currently working towards a post-2025 cross party agreement on energy policy. The aim is to render the energy policy landscape less volatile over time. The committee is expected to deliver its conclusions by 1 January 2017, but negotiations are already on their way. This is partly driven by the low wholesale prices of electricity and the investment needed in nuclear power plants.

There is generally wide support for wind power, the debate at the moment is mainly about support to onshore wind power and other mature technologies. Offshore wind power is not widely debated at the moment. The joint green certificate system with Norway only foresees RES targets until 2020 and nothing thereafter. Norway will not set any new targets, while in Sweden the topic is still up for debate.

The hottest topic currently is the direction of the future energy politics and whether the choice will be between nuclear and renewables in the short run. An export strategy could be a solution to this problem. The current Swedish electricity mix consists of 47% Hydro, 10% Wind, 8% CHP (mostly biofuel) and 35% Nuclear. Last 12 months, 22 TWh (net) was exported to surrounding countries.

MARKET DEVELOPMENTS

In 2015, 614.5 MW of onshore wind power was installed. This is a decline compared to 2014 mainly driven by the low prices of both electricity prices as well as the green certificates. Nonetheless, wind power production increased five times in the last five years. No offshore project was installed, and offshore wind installations remain minor relative to onshore wind. Cumulative capacity at end 2015 was 6,029.1 MW. At end of Q1 2016 the total cumulative capacity installed was 6,207 MW.

REGULATORY FRAMEWORK

Support schemes

Onshore wind

Wind energy is supported by the joint green certificate system with Norway. As such, it has the same support as other new installations or capacity upgrades within bio, hydro and solar.

In the last years, the level of green certificates price has been low level due to a large surplus of certificates, mainly due to forecast errors when the Swedish quotas were established. During the same period the electricity price also dropped considerably. Despite low electricity and certificates price some companies made investment decisions. The low cost of developing wind energy is one potential explanation, as well as larger institutional investors that require lower returns on capital entering the wind energy market.

In order to restore the balance in the system and to ensure the fulfilment of the 2020 target, the Swedish and Norwegian governments decided on technical quota adjustments in 2015 within the so

called control station. At this point Sweden also raised its target from 25 TWh by 2020 to 30 TWh. The first adjustment will take place in 2016. At the same time there is a new check point coming up in June 2016.

Offshore wind

The green certificate system supports both onshore and offshore wind, but the level of compensation is too low to be attractive for offshore wind investments. *Energimyndigheten*, the Swedish Energy Agency, was tasked to look at the potential for different kinds of offshore wind, both in terms of technology and cost development. They have previously looked at the financial support needed for offshore and got at the conclusion that auctions would be the most suitable way to access support.

Grid connection

Svenska Kraftnät, the Swedish TSO has implemented a solution aiming at facilitating wind power grid connection. So far, the first actor who wants to connect to the grid needs to pay for all necessary reinforcement of the grid (even excess capacity), whereas all following developers are exempted from such an expense – leading to a catch 22 situation. The solution is that Svenska Kraftnät loan money to grid operators that are then paid back in relation to added generation capacity for those who wants to connect.

Obstacle lightning

Transportstyrelsen, the Swedish transport agency, has current regulations for obstacle lightning under review. Changes includes requirements for infrared light (IR) or equivalent for LED-bulbs in order to ensure airborne pilots to perceive the light, even with use of night vision devices (NVD).

Since one year and a half all permission requests for exemption from radar regulations (obstacle light controlling) are stopped by an internal investigation of the Swedish armed forces. The industry is trying to find solutions through dialogue.

POLITICAL CONTEXT

Renewable Energy Sources Act

The cornerstone of Turkey's legislation on electricity from renewable sources is the Renewable Energy Law (Law on utilization of renewable energy sources for the purpose of generating electrical energy), enacted in 2005, and its subsequent amendments. The RE Law sets the legal framework for promoting electricity generation from renewable sources and include the main instruments like feed-in tariffs and purchase obligations, connection priority, exemptions from license obligation for small-scale generations etc. the RE Law governs the principles for the conservation of renewable resource areas and introduces further incentives for renewable energy projects.

The main legislation governing the electricity sector is the Electricity Market Law. The Electricity Market Law deals mainly with the actors of the electricity market, licenses required in order to operate in the sector and the duties of the Energy Market Regulatory Authority (EMRA). EMRA Board Decisions on pre-license applications acceptance dates and announcements of the Ministry of Energy and Natural Resources (MENR) on grid connection capacities are also very important issues in the RE Sector.

Wind energy support scheme

Turkey's Renewable Energy Support Mechanism (YEKDEM) was introduced by the Renewable Energy Law. According to the RE Law, Renewable power plants that have come into operation since 18 May 2005 or will come into operation before 31 December 2020 will be eligible to receive the feed-in tariffs for 10 years if decide to apply for the RE Support Mechanism.

The Turkish Government guarantees, via a feed-in tariff, to buy electricity from licensed renewable plants for a fixed price depending on the type of renewable plant facility. License owners may also sell their output on the wholesale markets or via bilateral contracts with eligible customers. Average wholesale prices have been close to the maximum feed-in tariffs, and sometimes higher than the feed-in tariff.

Interesting topic for investors on renewable energy sources in Turkey is the use of domestic mechanical or electro-mechanical components. The Turkish Government promotes domestic manufacturing of the mechanical or electro-mechanical component to be used in renewable power plants. If some mechanical or electro-mechanical component of the RE power plant is produced locally, a premium shall be added to the feed-in tariffs during the first five years of operation. Wind energy investors operating a wind power plant are benefiting from the local contents just for the rotor blades and turbine tower at the moment. In Turkey, with relatively high wholesale electricity prices, on-shore wind has been sold with few incentives on the spot market or in bilateral contracts for several years. Besides FIT's, Turkey also offers additional various opportunities for investors within the RE Law, Licensing Regulation and Cabinet Decree on State Aid Investments, including the following:

- Grid operators are in principle obliged to provide grid access to renewable energy power plants
- A priority on allocations from the appropriate parts of treasury and forestry lands

- If the power plants are in forestry lands, an 85% discount is applied to the costs of license; rent, servitude right and use permit during the first 10 years of the investment and operating periods of such plants
- In the forestry lands, the General Directorate for Forest Village Relations (ORKÖY) and Afforestation Special Appropriation Revenues are not collected
- Some types of protected areas might be exploited by renewable installations provided that the necessary permissions are awarded
- License owners shall pay only 1% of the total licensing fee
- Exemption from annual license fees for the first 8 years following the facility completion date
- Renewable energy power plants exempt from the liability stemming from being a Balancing Mechanism Entity
- Tax incentives in renewable investment, investment Support Certificate holders exempt from VAT for domestic equipment
- Exemption from VAT, Customs Tax, Resource Support Utilization Fund payments in imports
- Each license holder can increase the installed electrical capacities when the plant is in operation
- Before entering into operations, asset owners can increase the mechanical capacity only provided that electricity capacity is the same as well

REGULATORY FRAMEWORK

Turkey has enacted important pieces of legislation to encourage the use of different renewable energy resources, to increase the energy production from domestic and natural energy resources, to decrease the use of fossil fuels and reduce greenhouse gas emissions in Turkey. The Turkish Government has set 2023 renewable energy targets in the “Electricity Energy Market and Supply Security Strategy Paper”, according to which RES will represent at least 30% of the total generation.

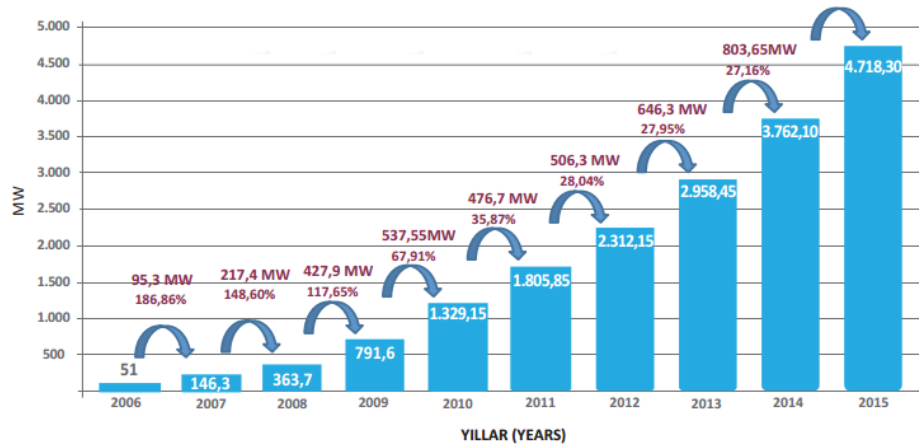
In addition to the two main laws, some secondary regulations governing the Renewable Energy sector are implemented. The regulator amended the support mechanism portfolio for electrical production based on renewable resources. The amendment is summarized as unbundling implementation for each plant. The purpose of the new amendment is estimating production and reducing imbalances. The renewable energy sources support mechanism allow investors benefiting from feed in tariffs to be charged only of the predicted production, not the actual production. The most important change brought about by the amendment is to allow wind power plants to participate in the electricity day-ahead market participant. As a consequence, wind power plants operators have to forecast production with a 0.98 tolerance coefficient. In case that does not occurs, operators have to bear the imbalance cost. Investors will have to sell generation to the four available markets – balancing, intra-day-, bilateral or day-ahead markets.

MARKET DEVELOPMENTS

The Ministry of Energy and Natural Resources announced the total electricity installed capacity at end 2015 73,147 MW. In the same year wind power covered 6.4% of national electricity consumption (from a total 4.718 MW wind power installed).

In 2015 956 MW of wind power entered into operations. 74 % of wind power installed capacity is in the Aegean and Marmara Regions. The municipality with the most wind power installed in its territory is Balıkesir (923 MW), İzmir is second with 807 MW and Manisa is third with 574 MW. In 2013 and 2014 between approximately 600 MW and 800 MW of new wind energy capacity was added whilst in 2015 almost 1000 MW of new capacity was connected. These increasing rates of installations show investors’ appetite for the wind energy sector.

Figure 11: Wind energy installations development in Turkey



Source : Turkish Wind Energy Association

wind energy project in Turkey at the moment. By the end of April 2016, a total of 74.627 MW power capacity was installed in Turkey.

In addition to this project stock, The Ministry of Energy and Natural Resources (MENR) announced that it expects an additional 3 GW of wind power to be installed by the end of 2018.

For this additional 3 GW capacity, 47 specific regions were announced by the MENR and 1016 pre-license applications were labelled technically feasible by the General Directorate of Renewable Energy.

Turkey is one of the biggest on-shore wind energy markets in Europe with 10 GW planned and with a national target of 20 GW for 2023. Turkey is expected to play a key role in the European wind energy market. All wind power installed in Turkey is onshore. There is no commercial offshore

United Kingdom

Last update: April 2016

POLITICAL CONTEXT

The renewables industry in the UK is still absorbing the impact of the Conservatives' surprise election victory in May 2015. While the wave of policy reversals appears to have ended, there is only a small amount of clarity on what will replace the mechanisms and instruments being ended, despite a much-anticipated 'reset' speech in November 2015 by Amber Rudd, the Secretary of State for Energy and Climate Change.

Government continues to legislate for the early closure of the Renewables Obligation (RO) to onshore wind through the Energy Bill currently before Parliament, which at time of writing was in its very last stages. While the RO will now nominally close to onshore wind on the date that the Bill becomes law, a grace period up to 31 March 2017 is being made available for projects that had planning permission and a grid connection agreed by 18 June 2015. There will also be a further grace period of about 10 months for projects that can demonstrate that the legislative process prevented access to project finance. It is not yet clear how much capacity will be able to take advantage of the grace periods on top of that already in construction.

The other existing support mechanism, the small-scale Feed-in Tariff (ssFiT) has also been reviewed, with support slashed for the technologies covered. While solar PV is the main beneficiary of the ssFiT, the scheme has been important for smaller wind energy projects. Alongside considerably reduced tariff levels, deployment caps have also been imposed as a cost control measure. The caps for wind are very restrictive and were reached for the 50-100 kW and 100-1,500 kW wind bands within 20 minutes of the system being reopened for applications at midnight on 8 February. There are now queues formed for the support available right to the end of 2016.

The excuse used for the wholesale cutting of policy support across the board for renewables has been that the budget, the Levy Control Framework (LCF), is on course to be significantly overspent by 2020 and therefore action needed to be taken to limit this. However, government has been less than forthcoming regarding how it has come to this conclusion, and has shown no interest in providing a 'soft landing' for the renewable industries. It is also unclear what impact the policy changes of the last year have made to the projected overspend and therefore if there is remaining budget available for the other main policy tool, the Contract for Difference (CfD).

The 'reset' speech by Amber Rudd brought some comfort to the offshore wind sector, with a commitment to three CfD allocation rounds aimed at this technology up to 2020, so long as cost reduction objectives are met. The first of these rounds is expected in late 2016, and the three rounds will help deliver the 10 GW of new capacity in the 2020s that Secretary of State Rudd indicated was in Government's mind for future development. At the spring Budget, some further detail was given on prospective rounds, with a total £730m of annual budget set aside for them, with the first taking up £290m of this. Projects can bid to deliver from the 2021/22 financial year onwards, with bids initially limited to £105/MWh for the 15 year term of the CfD, dropping to £85/MWh for projects delivering in 2025/26. The budget for these rounds is coming from an extension to the LCF, which currently runs to 2020/21. At this time it is not clear when Government will agree the overall level of this new budget.

It is also unclear whether future auctions will be held for the ‘established’ technologies of onshore wind and ground-mounted solar. The reset speech did not refer to these, which in some ways was a hopeful sign that Government is considering the case for ‘market stabilisation’ CfDs, also referred to as ‘zero subsidy’ CfDs. The logic here is that a low-carbon technology that can deliver energy from new capacity at a price lower than alternative investments such as new CCGT gas plant can be regarded as subsidy-free, and a CfD at this price is not a subsidy but simply a route to market for high-capital, low-operating cost plant. This comparison should be on a full social cost basis, with a shadow social cost of carbon applied and full system costs factored in. The Government advisor the Committee on Climate Change (CCC) calculates this point as £80/MWh (£102.5/MWh), which onshore wind can meet. At this time it is not certain that CfDs will be offered to onshore wind under this approach, with the prime issue being the political one of opposition within the Conservative rank and file, though logic is on the side of this happening.

At the higher policy level, the Government is now considering the CCC’s recommendation for the 5th Carbon Budget under the UK’s Climate Change Act, which is for the period 2027-32. The CCC recommends that the power sector aims for a Carbon intensity level of under 100gCO₂/kWh, down from about 450gCO₂/kWh currently. This aim would appear difficult to meet without a significant contribution from lower-cost renewables, and indeed the CCC’s scenarios have about 20 GW of onshore wind installed in 2030. The Government must legislate for the level of the 5th Carbon Budget by the middle of 2016. It has also committed to bringing forward a new policy package by the end of 2016 to ensure that the 4th Carbon Budget is met – under current policies this is set to be missed. Whether this will include further policy for the power sector is not clear.

MARKET DEVELOPMENTS

Despite the hostility of the majority Conservative part of the previous governing coalition, the minority Liberal Democrat party, which held the key Energy and Climate Change ministry, managed to keep the market for wind power remarkably healthy over the past five years. The current snapshot (at 16 February 2016) is:

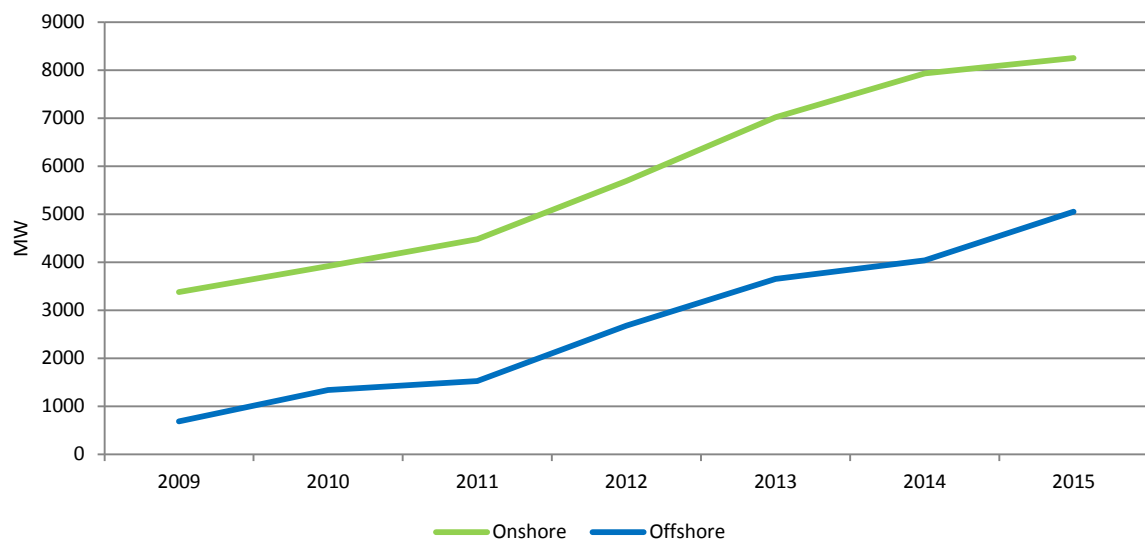
Table 6: Wind energy capacity in the UK

| MW | Operational | In construction | Consented |
|----------|-------------|-----------------|-----------|
| Onshore | 8,577 | 2,588 | 4,589 |
| Offshore | 5,098 | 400 | 13,852 |

Source: RenewableUK

This cumulative graph shows that in the period 2012-2015, total installed wind capacity grew from 6 GW to 12 GW, and now stands at over 13.5 GW:

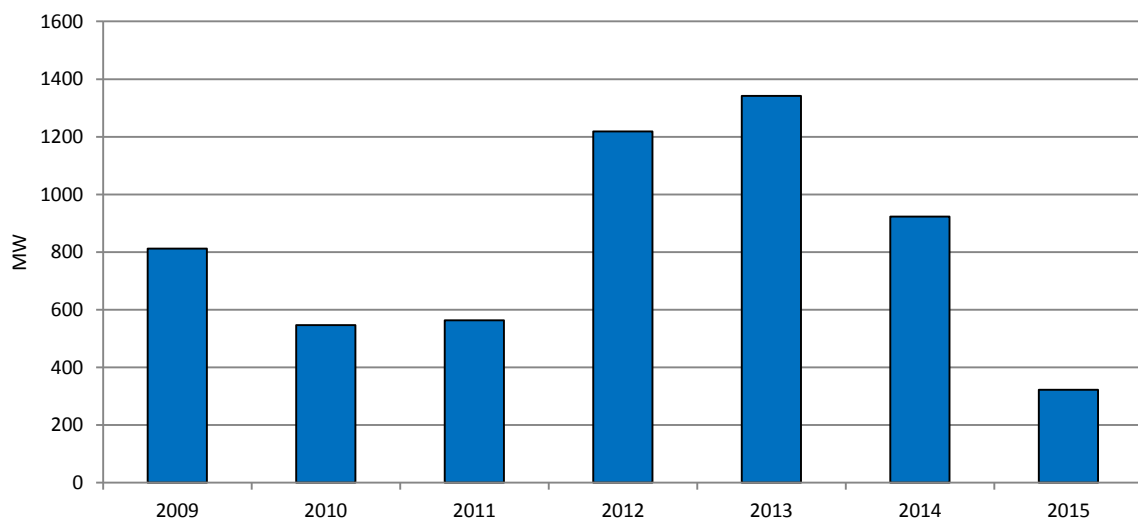
Figure 12: Cumulative operational capacity in the UK, MW



Source: RenewableUK

The following graphs of the market per year show onshore to be relatively steady in 2012-2014 at about 1 GW per year, though 2015 saw a dip in delivery, while offshore wind is more variable due to the 'lumpy' nature of the projects (RenewableUK figures record projects at the point of full commissioning and therefore can show significant variability if a large project is finished the year after most of the turbines are installed):

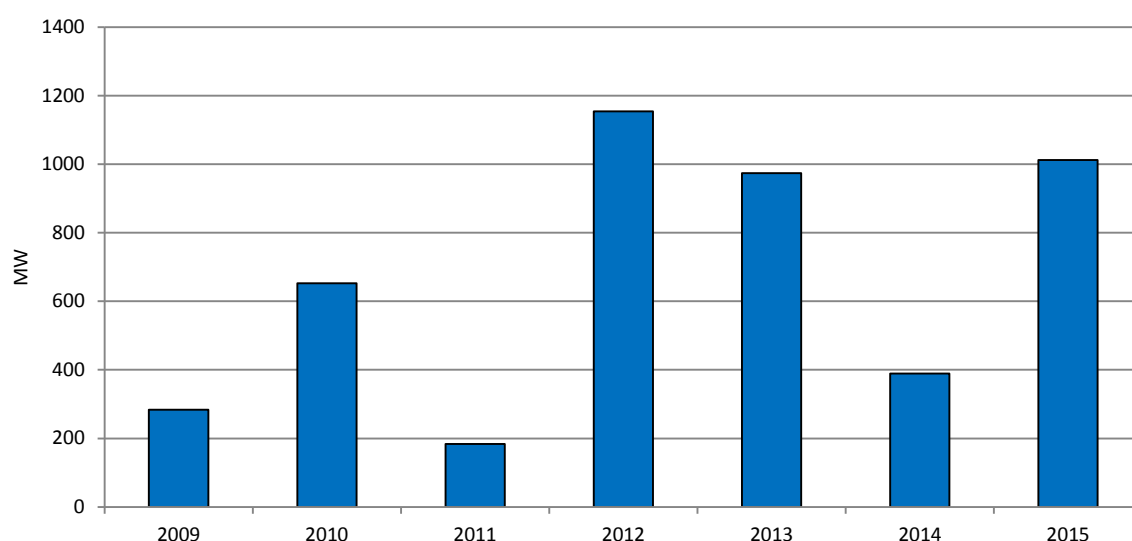
Figure 13: Onshore annual installed capacity in the UK, 2009-2015



Source: RUK

Figure 10: Offshore annual installed capacity in the UK, MW, 2009-2015

Figure 14: Onshore annual installed capacity in the UK, 2009-2015



Source: RenewableUK

Up to 2020, onshore wind should grow to an installed base of 11-13 GW and offshore to 10-11 GW; there are enough projects to meet these targets and they could be exceeded if government was supportive, though that seems highly unlikely given the political developments described above.

REGULATORY FRAMEWORK

Wind power is currently supported through the Renewables Obligation (RO), a green certificate type system (though it has become more of a quasi-fixed premium over time), and, at the <5 MW scale, through a Feed-In Tariff (though this is really a fixed premium system).

The RO currently supports onshore wind at the rate of 0.9 Renewables Obligation Certificates (ROCs) per MWh, while offshore wind gets 1.8 ROCs/MWh, down from 1.9 ROCs/MWh in 2015/16 and 2.0 ROCs/MWh in 2014/15. ROCs are currently worth about £43/MWh (£58/MWh). The RO will close to new projects in April 2017 (see above for the situation for onshore wind), with projects then being supported for a maximum of 20 years until 2037, when the system will end completely.

The RO is being replaced with the new Contract for Difference (CfD), which is awarded competitively. One auction has been held so far, with wind power scooping 90% of the capacity awarded. Headline 'strike prices' were down significantly on the maximum bid prices set by Government. The original timetable, though never confirmed, was for auctions to be run annually, though industry would prefer for the 'established' auction, which includes onshore wind, to be held every six months. The next auction process is due to start in late 2016 and finish 3-6 months later; the exact dates are not yet known. This round will be for the 'less established' technologies only, with offshore wind the major component of this technology pool. £290m of budget has been set aside for this auction.

As noted above, what budget remains in the LCF is very unclear. The LCF rises to £7.6bn (£10.3bn) in 2020 (in 2012 money), but the new administration claims that this is on course to be £9.1bn (£12.3bn) by that time, despite saying in October 2014 that there was as much as £1bn (£1.35bn) of unallocated

budget for 2020. Given this new narrative and the presence of some key uncertainties, how much budget will be released for CfD allocation is very difficult to forecast. In the longer term the new Government must decide how the LCF will grow after 2020; knowing this budget will allow developers, particularly of offshore wind projects, to make rational investment decisions, which they currently cannot. Government has committed to extending the LCF beyond 2020, but it is unclear how they will approach setting this new budget.

Annex – Guidelines for countries' contributions

This report is a living document. NAs are expected to update it before each Task Force meeting and the Secretariat will edit it and circulate it after the meeting. To render the editing phase swifter and to speed up the exchange of information, it is important to keep consistency in the terminology, font and date formats.

The font used is Calibri (Body), 11. Dates are written in the format Day Month Year. Graphs and tables come with a caption above and the source below. It would be preferable to copy graphs into the text keeping their format (and not copied in as images, as they cannot be formatted) to allow then harmonisation of formats of all graphs in the text.

Names of national legislations are reported in the original language and followed by the translation in English in parenthesis; an acronym is also provided if the word is going to be used frequently afterwards (e.g. *Erneuerbare-Energien-Gesetz*, Renewable Sources Act, EEG). The same applies to national institutions (e.g. *Vlaamse Reguleringsinstantie voor de Elektriciteits - en Gasmarkt*, Flemish Regulator for Electricity and Gas, VREG).

For numbers, the Anglo-Saxon format of comas and points is used (e.g. 1,000, *one thousand*; 1.5, *one point five*). Numbers from one to nine are to be spelled out (e.g. 8, *eight*). Numbers referring to capacity installed or electricity produced are distanced from the words *MW* (as well as *KW*, *GW*, *TW* and the like) and *MWh* (*KWh*, *GWh*, *TWh*) by one space (e.g. *100 MW*, *100 MWh*).

Tariffs for support schemes are written in the format €XXX/MWh (e.g. €100/MWh). In countries using currencies different than EURO, tariffs can be written in their original currency followed by the conversion in € in parenthesis: e.g. *DKK 70/MWh* (€9/MWh). Conversion rates are updated in the table below.

| Currency | Rate | Updated on |
|--------------------|---------|------------|
| 1 Bulgarian Lev | €0.51 | 01/09/2015 |
| 1 British Pound | €1.35 | 01/09/2015 |
| 1 Danish Krone | €0.13 | 01/09/2015 |
| 1 Hungarian Forint | €0.0032 | 01/09/2015 |
| 1 Polish Zloty | €0.24 | 01/09/2015 |
| 1 Romanian Leu | €0.22 | 01/09/2015 |

The following abbreviations are used in the document:

| Term | Definition |
|---------|---------------------|
| EC | European Commission |
| FiD | Feed-In Premium |
| FiT | Feed-In Tariff |
| GC | Green Certificate |
| HV grid | High Voltage grid |

| | |
|---------|--|
| LV grid | Low Voltage grid |
| RES | Renewable energy sources |
| RES-E | Electricity produced from renewable energy sources |
| TSO | Transmission System Operator |

EXECUTIVE SUMMARY

The executive summary at the beginning of the document aims at displaying in a quick and easy to read way the most important changes in each country. The table reflects the main sections in which country updates are organised: *political* context, *market development*, and *regulatory framework*. Two more sections are added; *general comments* should give a snapshot of the hot issues ongoing in the country and the main activities of the NA and *other developments* should entail any other major development not already classified in the sections mentioned above.