In December, Gamesa signed a contract with India's Green Infra, the independent energy producer, to develop a wind farm in Maharashtra State comprising the installation and maintenance of 25 of its G97-2.0 MW turbines for 10 years.

WIND ENERGY BAROMETER

A study carried out by EurObserv'ER.

Global wind energy capacity increased by 12.4% in 2013 to 318.6 GW (283.4 GW at the end of 2012), while the global market shrank to 35.6 GW shedding 10 GW. Worldwide market contraction is largely attributable to the collapse of the US market, as a result of the eleventh-hour extension of the federal incentive system. The European market also declined because of investors' lack of confidence in the region's new policies. If we take the United States and Europe out of the equation, the global market continued to grow, driven by the Chinese and Canadian wind power sectors.

35.6 GW

Worldwide wind power capacity installed during 2013

11.3 GW

Wind power capacity installed in the EU during 2013

+10.2%

The growth of the total wind power capacity in the EU in 2013

Preliminary estimates of newly-installed worldwide wind power capacity in 2013 should skirt 35 572 MW **(table 1 and graph 1)**, which equates to 318 576 MW of global capacity to date. The Asian market appropriated just over 1 out of every 2 MW of installed capacity across the globe in 2013, giving it a market share of 51.2% **(graph 2A)**. Europe cluing on to the number two slot for installation with just over 1 out of every 3 MW installed (34.1%). This contrasts with North America which took a nosedive because of the slump in installations in the United States, leaving it with less than 10% (9.3%) of the 2013 global market. The other regions of the world trailing behind these three major zones mustered a 5.3% market share.

The Asian and European share-outs of global capacity in service inched closer together **(graph 2B)**, yet Europe still has the upper hand (with a 38.3% share as opposed to a 36.4% share). North America (including Mexico) has been outpaced in the three-horse race as it now only accounts for 22.3% of global wind power capacity.

THE GLOBAL MARKET SHRINKS BY 10 GW

For the first time since wind turbines entered the industrial era, its market registered a significant drop in installations, of about 10 GW. Its 2013 performance (35.6 GW) is even lower than that of 2009, and reflects the lack of continuity if not reversal of public renewable electricity promotion policies by a number of countries.

NEWS FROM THE MAJOR COUNTRIES

The United States blowing hot and cold

The decline of the global wind energy market witnessed in 2013 is largely attributable to the US installation market collapse that started at the beginning of that year. The AWEA (American Wind Energy Association) reports that 1 084 MW of capacity was installed in 2013, compared to 13 078 MW in 2012. The reason for this difference is the eleventh-hour extension of the federal Production Tax Credit (PTC) that was due to expire on 31 December 2012. The American Congress left it until 2 January 2013 to extend the PTC for another year. The mechanism awards an incentive of 0.023 USD per kilowatt-hour for the first ten years of production. Because there were no financial guarantees, investors took a break from setting up new wind energy projects. Bearing in mind the time it takes to organize new project applications, it was only in the last quarter of the 2013 that the first projects started to come out of the ground.

While one could describe 2013 as a disaster, 2014 is bound to be much better, as the American legislator's 2012 tax law known as the "the American Taxpayer Relief Act" (adopted in January 2013) added an important provision that makes all the plants under construction before 1 January 2014 eligible for PTC. Thus the AWEA identified 12 300 MW of wind power capacity under construction in some twenty American states as of 31 December 2013.

The Chinese market returns to growth

Fortunately, the 2013 global wind energy market was able to count on the resilience of the Chinese market that, according to the GWEC (Global Wind Energy Council), surged by 24.2%, rising from 12 960 MW in 2012 to 16 100 MW in 2013, thereby taking capacity to date to 91 424 MW. However, the China National Renewable Energy Centre reckons that 75 480 MW of capacity was actually connected to the grid (preliminary figures), which means that installed capacity awaiting connection dropped below the 20% threshold. Thus the Chinese market appears to be showing signs of strength, boosted by the government's new commitment to 200 GW of wind turbines by 2020.

Mixed fortunes in the Indian and Canadian markets

If we look at the world's other major non-European markets (in excess of one gigawatt), the vigorous growth of the Canadian market (by 70.3% to 1 599 MW) stands out. This performance contrasts with Indian market which contracted (by 26.0%) to just 1 729 MW. The Indian government is stepping in to revive the market by implementing a National Wind Energy Mission (NWEM) mid-2014, combined with a 100 GW target to be reached by 2022. In the interim, the government has reinstated its incentive system that it curtailed in 2012 – the GBI (Generation Based Incentives) – for another five years. The system awards developers a 0.50 INR subsidy per kilowatt-hour of wind power (0.06 EUR/kWh).

EU INCENTIVE SYSTEMS TO BE REVISED

A more concentrated European Union market

The European Union internal market slowed down in 2013, yet managed to keep above the 11 GW threshold **(table 2)** – the sector's second best performance for annual installations. According to EurObserv'ER, the EU, which now includes Croatia, connected 11 264 MW to the grid compared to about 12 700 MW in 2012, i.e. an 11.3% drop. If the wind turbines taken out of service are excluded from the figure, installed capacity to date across the EU at the end of 2013 stood at 117 730 MW.

In 2013, the national components of the EU market were much more volatile and more concentrated than of recent years, which point to a level of fragility. The reason for this concentration is that in 2013 the two main European markets, namely Germany and the UK, accounted for more than half of the installed capacity in the EU. This trend gives cause for concern, because it is at odds with that of the past few years that tended to indicate wind power capacity build-up across a growing number of countries. This level of concentration has not been seen since 2007, when the German, Spanish and Danish markets were the sole drivers of European growth.

The momentum in Germany and the UK

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Methodology note

It should be pointed out that the sources used to create the indicators of this theme-based barometer (listed at the end of the survey) may differ from those used in our recent publication: The state of renewable energies In Europe, 2013 edition. EurObserv'ER prefers to use the same source for the two years it is presenting in the interests of statistical consistency and to chart market trends more accurately. This choice may explain the slight differences from the indicators previously published sourced from official bodies that will become available later on in the year.

differ. A new installation record was set in Germany (the previous one dated back to 2002), while the UK market, which is still offshore-driven, looks to be down on its 2012 level (see below). They are the only two countries to have exceeded the one gigawatt threshold for newly-installed capacity, because Spain and Italy, which shared this distinction in 2012, stalled badly in 2013. The French market is also struggling. In 2013 it contracted for the third year in a row and its installation level was half that of 2010. On a more positive note, the Northern European markets (Denmark, Finland and Sweden) and some of the Eastern European countries such as Poland, Romania and Croatia held up well. However, the situation is causing alarm because of the announced overhaul of the incentive systems. Some of the region's markets such as Bulgaria, Hungary, the Czech Republic and Estonia, are already practically on hold.

The size of the European sector is increasingly visible when installed capacity is related to the number of inhabitants. It now stands at 233 kW per 1 000 inhabitants in the EU **(graph 3)**. This indicator draws up a new hierarchy that reflects the real importance of wind energy in a country. The top three EU countries are Denmark (852 kW/1 000 inhabitants), Spain (492 kW/1 000 inhabitants) and Sweden (468 kW/1 000 inhabitants). Portugal, Ireland and Germany can be associated with this group of leaders, as they are pulling away from the other Member States on this indicator.

If we consider newly installed capacity, the wind energy sector remains the best placed of all the electricity generating technologies. The EWEA (European Wind Energy Association) claims that wind energy accounts for 32% of the newly-installed electricity capacity in Europe (of a total of 35 GW), ahead of solar photovoltaic (31%, 11 GW), and gas- (21%, 7.5 GW) and coal-fired power plants (5%, 1.9 GW). The impact on the structure of the European Union electricity mix is even higher because many gas- and coal-fired power plants are reaching the end of their service life and are being dismantled. According to the EWEA, roughly 10.1 GW of gas-fired capacity and 7.7 GW of coal-fired capacity were decommissioned in 2013.

Tabl. n° 1

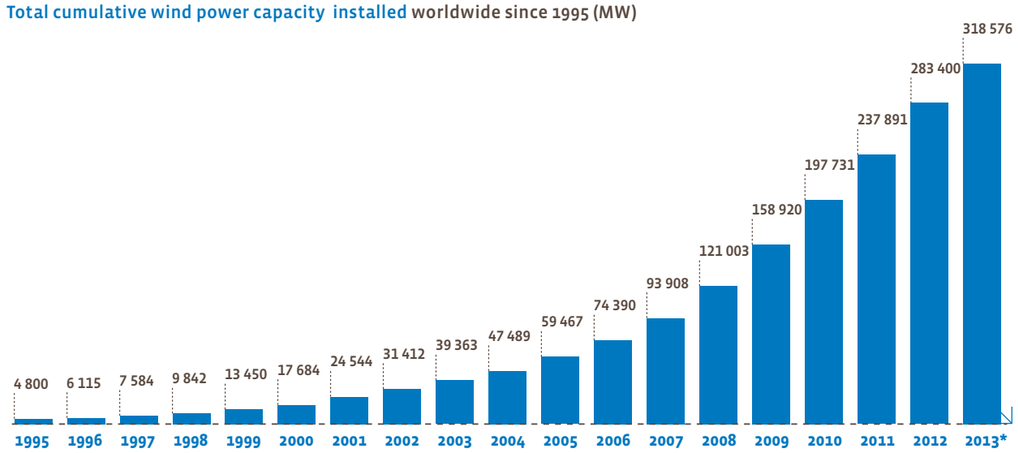
Worldwide installed wind power capacity at the end of 2013* (MW)

	Cumulative capacity at the end of 2012	Cumulative capacity at the end of 2013	Capacity installed in 2013	Decommissioning in 2013
European Union	106 806.6	117 730.0	11 263.6	340.2
Rest of Europe	3 362.0	4 183.0	871.0	50.0
Total Europe	**110 168.6**	**121 913.0**	**12 134.6**	**390.2**
United States	60 007.0	61 091.0	1 084.0	0.0
Canada	6 204.0	7 803.0	1 599.0	0.0
Mexico	1 369.0	1 992.0	623.0	0.0
Total North America	**67 580.0**	**70 886.0**	**3 306.0**	**0.0**
China	75 324.0	91 424.0	16 100.0	0.0
India	18 421.0	20 150.0	1 729.0	0.0
Japan	2 614.0	2 661.0	50.0	3.0
Other Asian countries	1 356.0	1 704.0	349.0	1.0
Total Asia	**97 715.0**	**115 939.0**	**18 228.0**	**4.0**
Africa and Middle East	1 165.0	1 255.0	90.0	0.0
Latin America	3 552.0	4 709.0	1 158.0	1.0
Pacific region	3 219.0	3 874.0	655.0	0.0
Total world	**283 399.6**	**318 576.0**	**35 571.6**	**395.2**

** Estimate.* ***Sources: EurObserv'ER 2014 (EU figures)/AWEA 2014 (US figures), GWEC 2013 (others).***

Graph. n° 1

Total cumulative wind power capacity installed worldwide since 1995 (MW)



** Estimate.* ***Source: EurObserv'ER 2014.***

The offshore market on the crest of the wave

In 2013, almost 1.5 out of every 10 MW of capacity was installed offshore. EurObserv'ER puts the offshore capacity that went on-grid over the twelve months at 1 772.9 MW **(table 3)**, which takes the EU's total offshore fleet capacity to 6 949.2 MW (provisional figure, because the UK figures are not firm).

The UK leads Europe thanks to the finalization of the connection of its London Array, Lincs, Gunfleet Sands 3 and Teesside wind farms and the partial connection of its Welsh wind farm, Gwynt y Môr. DECC (Department of Energy and Climate Change) puts the combined capacity of the UK fleet in the third quarter of 2013 at 3 657 MW, which amounts to 53.0% of the European Union's offshore wind power capacity.

Denmark holds on to its number two rank in the European league with 1 271.1 MW of capacity to date thanks to the full connection of the Anholt offshore wind farm.

According to the Deutsche WindGuard offshore report, Germany connected 468 MW of capacity over the twelve months, by practically doubling its offshore fleet to 903 MW. The main project is the Bard Offshore 1 wind farm (400 MW). The country's offshore fleet is due to increase sharply in 2014, as construction of the Borkum Riffgat wind farm is complete and is just waiting to be connected to the grid. The first wind turbines of the Meerwind Süd/Ost and Borkum West II wind farms have also been installed and are awaiting connection. The DanTysk foundations were finished at the end of 2013, and likewise the first foundations of the EnBW Baltic 2 wind farm – the only wind farm currently under construction In the Baltic Sea.

Belgium has completed full connection of its Thorntonbank 2 and 3 offshore wind farms and partial connection of the Northwind wind farm, which takes its offshore capacity to 625.2 MW.

Sweden added the 48 MW of the Kårehamn wind farm to take its total to 211.4 MW, and Spain is now ranked tenth for offshore wind power in the European Union with its 5-MW demonstration wind turbine on the Arinaga Quay site.

These good results announced in 2013 and 2014 hide the growing concern of the offshore players, because according to the EWEA, the number of projects under construction is dropping ... 11 projects in 2014 compared to 14 in 2013. Concerns about the United Kingdom and Germany's policies have delayed a number of projects and curbed new investments. Some of the have been simply abandoned, such as RWE Innogy's Atlantic Array farm. The German utility finally decided that the technical constraints imposed by the construction of this 1 200-MW wind farm between England and Wales were too onerous to make the project economically viable.

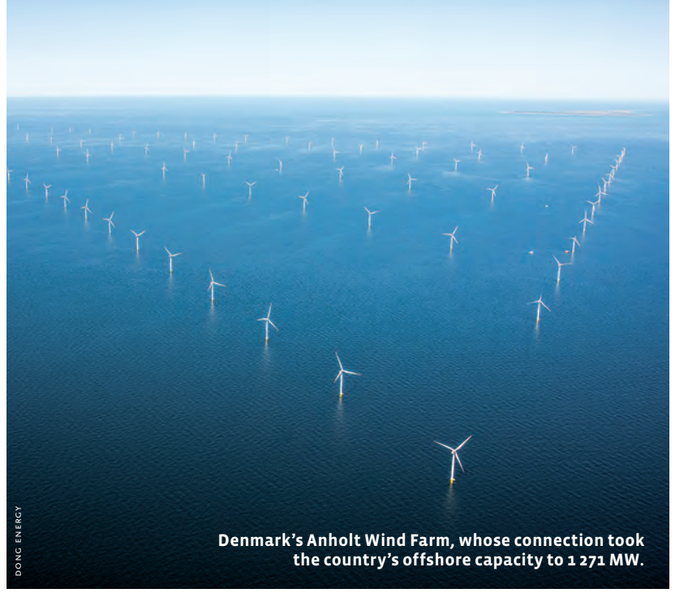
Wind power output rises sharply in 2013

The increase in onshore and offshore production capacities made itself felt by the increase in the wind power share of electricity output in the European Union electricity mix. EurObserv'ER estimates this increase at 15.2% between 2012 and 2013, with a total of 234.4 TWh **(table 4)**. Thus wind power accounts for roughly 7.2% of Europe's electricity output of 3 270 TWh compared to 6.2% in 2012, and only 1.8% in 2004. The development of offshore wind power whose load factors are much higher than those of onshore wind power are particularly responsible for this high increase.

NEWS FROM THE MAIN EUROPEAN UNION MARKETS

Germany gets ready for its energy transition

2013 was a watershed year for wind power in Germany. According to the Deutsche WindGuard report, Germany installed 3 466 MW in 2013 (2 998 MW onshore and


DONG ENERGY

Denmark's Anholt Wind Farm, whose connection took the country's offshore capacity to 1 271 MW.

468 MW offshore), which is more than 1 GW higher than the 2012 market figure (2 415 MW). Thus the German market returned to the boom it left behind in 2002 (with 3 247 MW) and performed slightly better still by adding 219 MW.

Much of the credit for the German market's exceptionally good year can be taken by the developers' resolve to exploit the best wind power purchasing terms before the advent of the forthcoming renewable energies law (EEG) reform, currently being drafted by the new ruling coalition (Christian- and Social Democrats). The government and the industrial sector are facing a huge challenge, for since the Fukushima nuclear accident, the government has rolled out a major energy transition programme, the Energiewende plan. Germany has decided to pull out of nuclear power completely by 2022 and targeted full transition to renewable energy sources by 2050. The crux of the matter for today's government is to put this policy into practice, namely to keep up the investment level yet keep its grip on electricity production costs. The government has already decided that management of the electricity bill will entail defining no-overrun "corridor" targets for each sector. Under the terms of this new policy, payment terms for offshore wind power, whose production costs are higher, should not be too heavily hit in order to guarantee a modicum of profitability and enable the sector to move down its experience curve. However, the quantitative targets for offshore may be pared down to 6.5 GW in 2020 and 15 GW by 2030 from the initial 10 GW and 25 GW targets, to limit the overall cost of the energy bill. In the case of onshore wind power, reasonable reductions are clearly planned combined with tighter installation conditions that favour the most efficient production sites. One possible course of action is to force producers with capacities in excess of 5 MW to sell their green electricity themselves in exchange for a premium that would be added to the market price. This option has been available since 1 January 2012, with the adoption of the renewable energies law on electricity production (EEG 2012), as an alternative to the Feed-in Tariff system. The mechanism provides for the premium to be revalued every month to reflect the mean market price of electricity for the month in question.

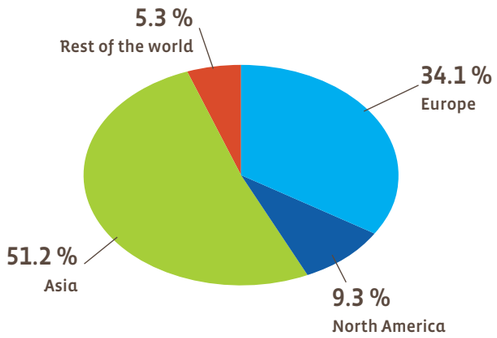
This energy revolution in preparation is creating waves not only in Germany, where debates are lively, but also outside the country. Germany's political choice is frowned on by a number or decision makers and energy operators who are much less inclined to abandon nuclear energy or coal on their home ground.

The UK's offshore wind power ambitions confirmed

In 2013 the level of UK offshore activity was high with more than 1 out of every 3 MW connected being offshore. At the end of January DECC published partial data (figures up to the end of the Q3 2013), showing that the UK had already connected 1 888 MW (1 227 MW onshore and 662 MW offshore). The market will probably turn out to perform slightly below its 2012 level, when 2 353 MW of capacity was connected to the grid. Nonetheless the UK is the number two European Union wind power market. Turning to incentives, the UK implemented its new market-based incentive system at the start of the year as part of its Electricity Market Reform, known as Contract for Difference (CfD). In December 2013, the government published the strike price for each renewable energy technology, which is the de facto minimum price it will pay to companies for the electricity they produce. As a reminder, in the CfD system, producers sell their energy at the wholesale market price and receive a top-up payment in the form of a premium if the "difference" between the strike price and the reference price (generally the wholesale market price) is positive. If the difference is negative, the producers have to pay back the surplus received. The reference price for onshore wind power, which applies to >5-MW projects was set at £ 95/MWh (€ 116.1/MWh) for tax years 2014-2015, 2015-2016 and 2016-2017, and will drop to £ 90/MWh (€ 110/MWh) for the following two years. The reference price for offshore wind power amounts to £ 155/MWh (€ 189.4/MWh) for the two tax years 2014-2015 and 2015-2016 and will

Graph. n° 2A

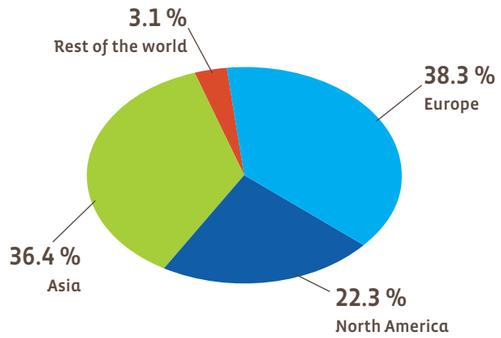
World wind turbine market - breakdown for 2013*



** Estimate.* ***Source: EurObserv'ER 2014.***

Graph. n° 2B

Cumulated breakdown at the end of 2013*



** Estimate.* ***Source: EurObserv'ER 2014.***

Tabl. n° 2

Installed wind power capacity in the European Union at the end of 2013* (MW)

	Cumulative capacity at the end of 2012	Cumulative capacity at the end of 2013	Capacity installed in 2013	Decommissionned in 2013
Germany	31 424.0	34 633.0	3 466.0	257.0
Spain	22 784.0	22 959.0	175.0	0.0
United Kingdom**	8 889.0	10 777.0	1 888.0	0.0
Italy	8 118.0	8 551.0	444.0	11.0
France***	7 513.0	8 143.0	630.0	0.0
Denmark	4 162.8	4 772.5	656.6	46.9
Portugal	4 531.0	4 724.0	193.0	0.0
Sweden	3 743.2	4 468.6	725.4	0.0
Poland	2 496.7	3 389.5	892.8	0.0
Netherlands	2 433.0	2 713.2	303.2	23.0
Romania	1 822.0	2 459.0	637.0	0.0
Ireland	1 879.3	2 011.0	131.7	0.0
Greece	1 749.4	1 864.6	115.2	0.0
Belgium	1 393.2	1 722.5	329.3	0.0
Austria	1 377.0	1 684.0	307.0	0.0
Bulgaria	669.6	676.7	7.1	0.0
Finland	288.0	448.0	162.3	2.3
Hungary	331.0	331.0	0.0	0.0
Croatia	179.6	298.8	119.2	0.0
Estonia	269.4	279.9	10.5	0.0
Lithuania	225.0	279.0	54.0	0.0
Czech Republic	258.0	270.0	12.0	0.0
Cyprus	146.7	146.7	0.0	0.0
Latvia	60.0	62.0	2.0	0.0
Luxembourg	58.3	60.6	2.3	0.0
Slovakia	3.1	3.1	0.0	0.0
Slovenia	2.3	2.3	0.0	0.0
Malta	0.0	0.0	0.0	0.0
Total European Union 28	**106 806.6**	**117 730.0**	**11 263.6**	**340.2**

** Estimate. ** Provisional figures in Q3 2013. *** Overseas departments not included for France.* ***Source: EurObserv'ER 2014.***

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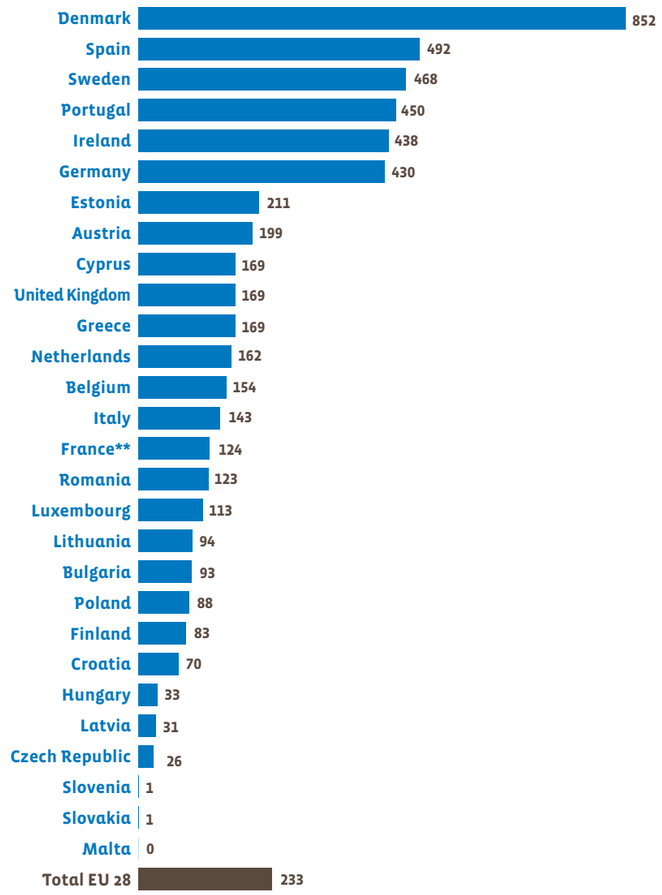
be reduced to £ 150/MWh (€ 183.3/MWh) in 2016-2017, and drop yet again to £ 140/MWh (€ 171/MWh) for the following two tax years.
The sector's representatives have generally welcomed the publication of these prices that confirm the government's support for onshore and offshore wind power for the next five years. However RenewableUK is disappointed that the onshore strike price is lower than had been announced in the initial project (£ 5/MWh less), but notes that the strike price for offshore wind power has been upgraded by £ 5/MWh (€ 6.1/MWh) from the proposal made last June, after taking into consideration the sector's recommendations. Thus the association has commended the government's strong political signal of its support for the offshore sector, which is essential if the major wind turbine manufacturers are to be attracted to the UK and create thousands of jobs. As good things come in pairs, the government awarded licences to construct the Able Marine Energy Park industrial cluster at the end of 2013 dedicated to the construction of offshore wind turbine components and their installation. According to its developers, this investment which is worth £ 450 million could create around 4 000 skilled jobs. The UK's aim, restated by the Energy Ministry in November 2013, is to install 39 000 MW of offshore capacity by 2030.

Graph. n° 3

Wind power capacity per 1,000 inhabitants in the EU in 2013 (kW/1,000 inhab.)*



** Estimate. ** Overseas departments not included for France.* ***Source: EurObserv'ER 2014.***

Poland's market ranked third in Europe in 2013

Poland became the number three wind power market in the European Union with only 892.8 MW installed in 2013, having put on a 28.1% spurt over the previous year. According to the Institute for Renewable Energy (IEO), this additional capacity takes the Polish wind turbine base to 3 389.5 MW and generated 6.6 TWh in 2013. There are a number of reasons for this good showing.
Firstly, Poland has the right geographical conditions to accommodate wind turbines, with very favourable wind patterns along the Baltic Sea coastlines, especially the East and North-East, or in the mountainous areas of the South in the Lower Silesian and Lower Carpathian regions.
Secondly, this good performance should be compared with the preparation of a new, less lucrative legal framework for the producers that aims to overhaul the support system for renewable energy sources. The current law ("RES Act v. 6.0") proposal favours a system of tenders, whose criteria would be based on both the current electricity feed-in tariff and the stability of electricity supply on the grid. The government aims to manage the development of wind power production, so that it achieves its targets at the lowest possible cost, as the country intends to install 7 000 MW of capacity by 2020.

Is the tide finally going to turn for the French market?

Every year, France appears to stray a little further away from its targets for 2020 (25 GW including 6 GW offshore). In a joint publication by RTE, ERDF, the SER and ADEeF about wind and PV power(1), France only installed and connected 630 MW during 2013 (excluding the overseas territories) This amounts to a 23% year-on-year drop in new grid connections (821 MW of new capacity was connected during 2012) and a 32% drop on its 2011 performance (when it connected 928 MW). Legal uncertainty about the regulatory framework and the associated administrative red tape surrounding sector development in the wake of the Grenelle 2 law (cf. the February 2013 wind energy barometer) are partly to blame for the slowdown.
In March 2013, the French government tried to loosen the administrative stranglehold throttling wind energy by adopting new legislation. The Brottes law finally cancelled the minimum 5 masts rule and abolished ZDE (wind power development zones) in favour of regional wind power schemes (SRE). The schemes, which were finalized in the middle of the year now clearly assign the possible wind farm installation zones for each geographical region, and set qualitative and quantitative energy potential recovery objectives for onshore wind power by 2020. Additionally in March, the government established a new model purchasing contract, to preempt the signing of the electricity purchase contract and complete it when the connection agreement is signed, without prior need for meters to have been installed or grid access contracts to have been entered into. In October 2013, the installation rules were relaxed further by experimenting with a single licensing process in some regions, with the idea of offering developers a one-stop shop for all the procedures required. The aim is to issue the necessary licences within a timeframe similar to the German model, namely two years as opposed to the six years it currently takes in France.
Although the industry players welcome the progress made on slashing through red tape, they reckon that it will take at least two years for this new policy to come to fruition. By then, new changes could be made to the incentive mechanisms. At the end of 2013, the Ecology Minister announced it was launching a consultation on new market reality-oriented support mechanisms to run alongside the current Feed-in Tariffs… changing the goalposts yet again. Nonetheless the market should pick up as early as 2014 and expand by 2015. According to the publication mentioned above, 10 285 MW of wind power capacity was waiting to be connected to the RTE, ERDF and ELD (local distribution company) grids as of 31 December 2013.

(1) *Le panorama des énergies renouvelables.*


CHPV OFFSHORE ENERGY MEDIA SERVICES

The UK holds on to its European leadership, primarily through the partial connection of the Welsh Gwynt y Môr wind Farm.

Spain, on standby

Spain vies for the European wind power output leadership with Germany every year. Preliminary estimates for 2013 sug-

Tabl. n° 3

Installed offshore wind power capacity in European Union at the end of 2013 (MW)

	2012	2013
United Kingdom	2 995.0	3 657.0
Denmark	921.9	1 271.1
Belgium	379.5	625.2
Germany	435.0	903.0
Netherlands	228.0	228.0
Sweden	163.7	211.7
Finland	26.0	26.0
Ireland	25.2	25.2
Portugal	2.0	2.0
Spain	0.0	5.0
Total EU 28	5 176.3	6 949.2

** Estimate.* ***Source: EurObserv'ER 2014.***

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gest that it is slightly ahead of Germany (with 54.3 TWh as opposed to 53.4 TWh), primarily thanks to particularly good winds over the year and highly productive sites. However if we look at the Spanish market the picture could not be more different. The AEE (Spanish Wind Energy Association) reports that Spain only connected 175 MW in 2013 – its lowest installation level for the last 16 years. Total capacity now stands at 22 959 MW, which is 2 000 MW less than planned in the 2011-2020 Renewable Energies Plan. The 175 MW installed are part of the remaining capacity already accepted in the pre-allocation register, which is the installation quota allocated by the Spanish government in 2009 eligible for the compensation provided for in Royal Decree 661/2007. The Spanish association points out that for the time being some of the companies that still have capacity assigned to the register (i.e. another 928 MW) decided to hold off constructing their wind farms, pending the forthcoming energy reform which is currently in the pipeline. Once the details of the reform are published, the companies will make their decisions.

Tabl. n° 4

Electricity production from wind power in the European Union in 2012 et 2013* (TWh)

	2 012	2 013
Spain	47.560	54.301
Germany	50.670	53.400
United Kingdom	19.584	25.626
France**	14.900	15.900
Italy	13.407	14.886
Portugal	10.260	11.939
Denmark	10.270	11.105
Sweden	7.165	9.900
Poland	4.746	6.600
Netherlands	4.999	5.574
Ireland	4.010	5.000
Belgium	2.750	4.474
Romania	2.923	4.047
Greece	3.259	3.500
Austria	2.463	2.882
Bulgaria	1.212	1.240
Finland	0.494	0.777
Hungary	0.768	0.698
Lithuania	0.500	0.600
Estonia	0.434	0.515
Croatia	0.329	0.494
Czech Republic	0.416	0.478
Cyprus	0.185	0.225
Latvia	0.122	0.140
Luxembourg	0.075	0.079
Slovakia	0.006	0.006
Slovenia	0.001	0.005
European Union 28	203.507	234.386

** Estimate. ** Overseas departments not included for France.* ***Source: EurObserv'ER 2014.***

THE EUROPEAN INDUSTRY DRIFTING RUDDERLESS

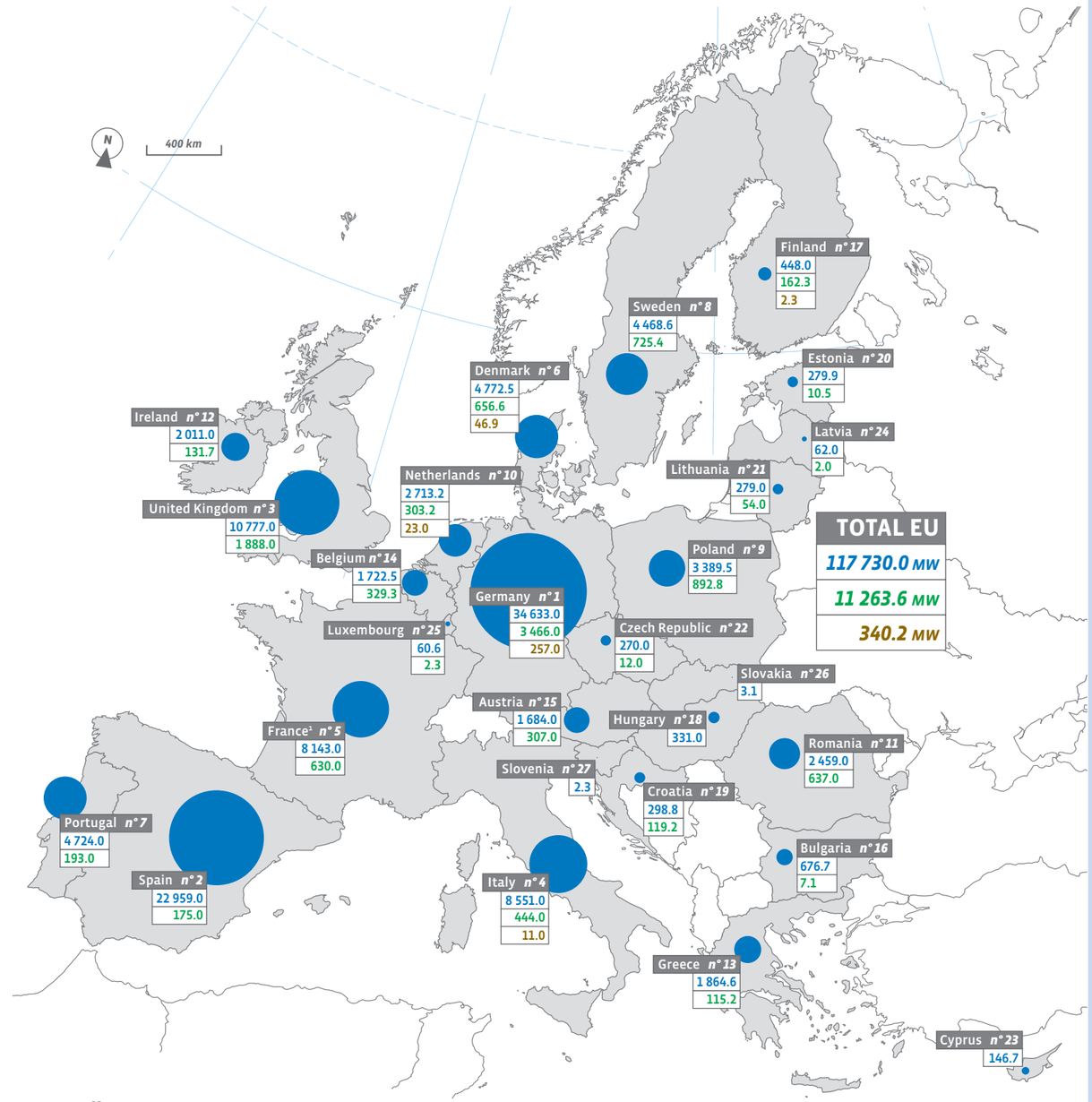
A "POLITICAL" TRANSITION FOR THE INDUSTRY

The renewable energy sectors are worried by the way the current debate on energy has developed. The European wind energy industry continued to suffer in 2013, and is still plagued by lack of visibility and dwindling incentive levels that upset and undermine the market. The central issue is lack of hard information on the future incentive systems due to replace the guaranteed payment mechanisms for wind energy. The political decision-makers view the historical renewable electricity policy as inappropriate because it is too expensive for consumers. They feel that the system is too rigid in relation to the real production cost trends and the market price and thus needlessly increases the energy bill to the consumer. They consider that the wind energy sector's production cost structure is now sufficiently mature to tackle market regulation mechanisms and with them take on the other energy sectors.

The European Commission now supports this move, and, early in November 2013, presented its new orientations for reforming the renewable energy support mechanisms, declaring that the transition to market mechanisms should be gradual to avoid investments drying up and that is precisely what the sector fears.... for going back to the drawing board on incentive systems that have been in place for more than 15 years in several countries is a tall order. Its timing coincides with several years of industry restructuring because of much tighter market conditions. The manufacturers are already in the throes of reducing their investments and have started laying off employees to return to profitability. Thus the overhaul of energy policies carried out hand-in-hand by a number of EU countries compounds an already extremely challenging financial context.

This overhaul not only attempts to align the wind power kilowatt-hour price to that of the market price in a more appropriate

Installed wind power capacity in European Union at the end of 2013* (MW)



Key

117 730.0 Installed capacity to date in the countries of the European Union at the end of 2013 (MW)

11 263.6 Capacity installed in the countries of the European Union 2013 (MW)

340.2 Capacities decommissioned during 2013 (MW)

** Estimate. ** Provisional figures in Q3 2013. ¹ Overseas departments not included for France.* ***Source: EurObserv'ER 2014***

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way, but has sparked off heated discussion about the future of national energy policy, and the position each sector will be able to garner for the next twenty years. The energy players are exerting very strong pressure, in particular those who have already lost market shares as a result of European renewable energy promotion policy. The issues of which pick-up point they will be at in relation to market mechanisms and lower payment for renewable energies are thus extremely thorny. The key challenge for the sector is to safeguard its investment capacities so that it can continue cutting its production costs and thus to compete with the other electricity-generating methods. Equally crucial is the issue of investments in electricity grid infrastructures, which over the medium and long term will dictate how much room is available to the renewable sectors. As it stands, the European grids are designed to take the output of major centralized production plants, such as nuclear or fossil fuel power plants. A significant increase in the renewable energy share implies that the grid will have to be restructured to accommodate decentralized production means.

COOPERATIVE STRATEGIES BEING SET UP

The offshore wind energy industry is particularly exposed because it has the highest production costs. The EWEA claims that the European target of 40 GW for 2020 is no longer feasible and that 27 GW is a much more realistic target. The offshore industry now knows that it will have less room for manœuvre than it was banking on to make its productivity gains.

The environment is such that all the industry players, and there are many of them in this market, cannot survive unless they revise their strategy. Consolidation started last year and is continuing through 2014.

The first casualty is the German manufacturer **Bard**, which filed for insolvency in November 2013 and plans to close down its two factories at Emden and Bremen by mid-2014 with the loss of 300 jobs. The runaway costs of constructing the Bard Offshore 1 Wind Farm it was developing have caused its demise.

Rapid cost-cutting is thus vital to ensure the sustainability of the offshore market. According to one of its operators Dong Energy, a Danish utility company, the costs of the recently commissioned UK wind farms amount to around € 0.16/kWh. The constructors and developers are looking to cut costs to less than € 0.10/kWh by 2020. This level of cost would naturally attract investors and overcome the incentive systems.

One of the conventional solutions for cutting the offshore per kilowatt-hour cost is to increase the unit capacity of the wind turbines to reduce installation costs. The size of wind turbines has increased from the very first 450-kW offshore turbine installed in 1991 at Vindeby, Denmark, to the most powerful at 8 MW in January 2014, if we take into account the Vestas (V164-8.0 MW) wind turbine being tested at Østerild, Denmark.

There are other methods and some of the constructors are setting up cooperative strategies. Taking a leaf out of the automotive industry, alliances are forming and interests being pooled. An example of this is the **Vestas** and **Mitsubishi Heavy Industries Ltd.** (MHI) joint-venture. They have decided to merge their offshore divisions into a common subsidiary, which will be officially created at the end of March 2014 and aims to create synergies by combining MHI's strong foothold in the global energy market with the Danish industrialist's expertise, which could lead to more opportunities for the V164. The agreement states that Vestas will contribute its existing contracts for its V112 turbine, its service contracts and technological development of its V164-8.0 MW. For its part, MHI will finance the subsidiary to the tune of 100 million EUR. Initially, the two partners will have 50% of the shares, but if the venture turns out to be successful, MHI will increase its shareholding to 51% in April 2016 and increase its contribution by 200 million EUR. MHI has built up a track record in the onshore wind turbine market having chosen the United States as its preferred stamping ground, but like many manufacturers, it has developed interest in the offshore market. In December 2013, MHI started testing a mass wind power production system on its Yokohama site (Japan) that integrates a hydraulic drive train instead of conventional gear-driven systems. This new system will be the basis for development of its brand new 7-MW SeaAngel offshore wind turbine. Its first operational prototype will be installed at the Hunterston Centre in the UK during the course of the year.

In a similar vein, on 20 January 2014 Spain's **Gamesa** and France's **Areva** confirmed that they were at the advanced stage of discussions on setting up a joint 50:50 subsidiary, to develop and sell offshore wind turbines. This joint-venture will cover Areva's 5-MW wind turbine and the joint development of an 8-MW turbine. Gamesa's 5-MW turbine will not be included in this agreement, although Gamesa will continue to manufacture the turbine itself but sell it exclusively into the onshore wind energy market. The G128-5.0 MW offshore prototype, Spain's first offshore wind turbine installed off the Canary Islands, will thus be the only wind turbine to be installed at sea. In November 2013, Areva had already announced its project to construct an 8-MW wind turbine, with a prototype for 2015 and mass production scheduled for 2018. Areva plans to transfer the ownership of its Bremerhaven assembly plant and its Stade blade manufacturing plant, in addition to its offshore technology and sales contracts. Gamesa will contribute its offshore technology and operating and maintenance capacities. However Areva will not escape restructuring. At the beginning of the year the company announced it would be shedding 160 of the 660 permanent jobs in its two German facilities, while about one hundred fixed-term contracts will not be renewed.

Siemens has not disclosed any alliances but remains confident about its manufacturing cost-cutting capacities. As the German manufacturer is the offshore segment leader, it is in a better position to make economies of scale in this market. It claims that it intends to reduce the levelized cost of energy (LCOE) for offshore wind power by 40% by the end of the decade. Siemens says that from 2020 onwards, it will be in a position to offer its customers technologies capable of producing offshore wind power for less than € 0.10/kWh, which is the level at which they would no longer need public subsidies. It claims that the productivity gains need to be found in better turbine output, lighter components and better manufacturing and installation processes. At the Frankfurt offshore trade fair, Siemens presented a number of innovations that have already enabled it to reduce costs, such as designing out the gear box in its latest 6-MW wind turbine, the SWT-6.0-154, and making the rotor and nacelle about a third lighter than those of its rivals. Last December, Siemens announced that it would be the first company to sign a commercial offshore contract in the very promising US market. It will supply the 486 MW for the Cape Wind project whose installation and commissioning are scheduled for 2016.

Tabl. n° 5

Main Suppliers in 2013

Company	Country	GW supplied in 2012*	GW supplied in 2013**	Turnover 2013 (M€)	Employees 2013
GE Wind Energy	USA	6 696	n.a.	n.a.	n.a.
Vestas	Denmark	6 039	4 862	6 084	16 000
Siemens	Germany	4 114	n.a.	5 174	10 900
Enercon	Germany	3 538	4 900	n.a.	13 000
Suzlon Group (incl. Senvion, ex-REpower)	India/Germany	3 177	1 859	2 200	10 000
Goldwind	China	2 609	n.a.	850	3 558
Gamesa	Spain	2 119	2 000	n.a.	6 600
United Power	China	2 029	n.a.	n.a.	< 4 000
Sinovel	China	1 380	n.a.	n.a.	7 500
Mingyang	China	1 183	n.a.	n.a.	2 100

** Navigant Consulting estimation March 2013, except Vestas and Gamesa (official report). ** Estimate.* ***Source: EurObserv'ER 2014.***

2020 AND 2030 TARGETS ON HOLD

This year, 2014, will be pivotal for the future development of wind energy and its share of the energy mix by the 2030 timeline. The current debate on the Euro-

pean Union's climate and energy policy, geared to the forthcoming climate/energy package, will largely dictate the sector's development prospects for the next 15 years. Investors must be convinced that the European Union's renewable energies policy is a long-term policy that will make for more effective and less costly growth. To do that, the 2020 targets must be fulfilled and the 2030 targets need to be both ambitious and binding.

The current momentum surrounding the 2020 targets is less propitious than it has been in the past. In view of the recession and their budget deficits, most of the Member States are much less inclined to subsidize the development of their renewable energies at a high price. It is now clear that much tighter control will be wielded over wind energy development to minimize the cost overruns stemming from excessively fast-paced development. Despite the fact that it has long been ahead of target, current momentum is not enough to reach the intermediate Europe-wide target of 143.2 GW for 2015 set by the National Renewable Energy Action Plans (NREAP) **(graph 4)**. It is already clear that the 44.2-GW European offshore target for 2020 will be missed. In contrast, if the onshore wind energy sector stays on course, it may still be able to exceed 160 GW by 2020 (168.8 GW planned in the NREAPs). While the short-term growth prospects look poor, the market still has the second half of the decade to turn around, provided there is a clearly defined legal framework. EurObserv'ER feels that the 200 GW threshold is still attainable, even if it is on the high side.

As for 2030, unfortunately the European Commission's proposal on the climate-energy package, presented on 22 January 2014, is a let-down for an ambitious renewable energies policy and has not striven for clarity and simplicity. The proposal only sets a binding climate target for each Member State, namely a 40% reduction of greenhouse gas on the 1990 level. The Commission also posits a binding renewable energy target of 27% by 2030, but only taking the European Union as a whole. Therefore this target will not be transposed into national targets in European legislation. It aims to allow Member States a measure of flexibility to transform their energy systems to suit their national preferences and particularities. Achievement of the target across the EU will be guaranteed by a governance system based on national energy plans to be drawn up by the Member States as part of a common approach. In other words, negotiations will have to be entered into between the Member States and the Commission, which will facilitate system consistency, to determine which countries accept to produce more renewable energy to make up for the choice of those nations that prefer to develop other energy sectors, such as nuclear energy or new generation thermal or even shale gas power plants.

For the moment, the position of the European Parliament is a little more favourable towards the development of renewable energies. During a meeting held on 9 January 2014, the Euro MPs of the Committee on Environment, Public Health and Food Safety (ENVI) and the Committee on Industry, Research and Energy (ITRE) voted in favour of three binding targets: a 40% reduction in greenhouse gas emissions, 30% of energy to be produced from renewable sources by 2030 and an (as-yet-to-be-defined) energy efficiency target.

While the current negotiating bases for renewable energies are far from ambitious, the debate is still running. The European Commission and Parliament recommendations will be discussed during the European Summit on 20 and 21 March 2014 in Brussels. The European Parliament elections will follow in May 2014 and new discussions at the European Council in June 2014. A new proposal should then be formulated in September, three months before the international Climate Change Conference is held in Lima (Peru) in December. A final agreement will have to be reached a few months before the following climate conference which will start on 30 November 2015 in Paris. □

Tabl. n° 6

Mains developpers involved in the wind power sector in 2013

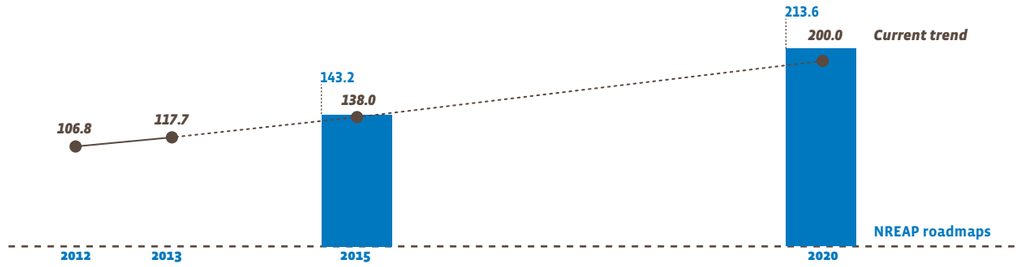
Company	Country	Wind capacity (including offshore)* commissionned at the end of 2013 (MW)	Annual turnover 2013 (M€)	Employees 2013
Iberdrola Renewables	Spain	13 688	1 760*	30 650
EDP Renováveis	Portugal	8 165	1 003*	900
Acciona Energy	Spain	7 159	2 107	2 500
Gamesa	Spain	6 000	1 655*	6 700*
EDF Énergies Nouvelles	France	5 531	1 471	2 750
Enel Green Power	Italy	5 100	2 800	3 600
Alstom Renewable Power	France	4 865	1 830*	52 000
E.ON Climate & Renewables	Germany	3 900	987*	72 000
Wpd AG	Germany	2 742	2 500	860
RWE Innogy	Germany	2 138	387	1 600
Dong Energy	Denmark	2 100	9 800	6 500 (1 900 in wind)
Vattenfall	Sweden	1 800	13 800	32 800
Juwi AG	Germany	1 500	1 025*	1 700

Large energy companies are well represented in this ranking because of their size and their ability to raise capital, but outside of this type of player, there are a large number of specialized in renewable energy private developers with substantial portfolios near or above the GW. Certain wind manufacturers like Gamesa, Enercon or Nordex also chosen to develop projects with their own machines.

** The most updated data available. This may include 9 Month/2013 data and forecasts, and not the full financial year.* ***Source: EurObserv'ER 2014.***

Graph. n° 4

Comparison of the current trend against the NREAP (National Renewable Energy Action Plans) roadmaps (GW)



Source: EurObserv'ER 2014.

Sources table 2, 3 et 4: *Deutsche WindGuard (Germany), ZSW (Germany), AEE (Spain), REE (Spain), DECC (United Kingdom), Anev (Italy), Terna (Italy), ERDF (France), SER (France), RTE (France), ADEeF (France), ENS (Denmark), CBS (Netherlands), ECN (Netherlands), Windstats.nl (Netherlands), Svensk Vindenergie (Sweden), Institute for Renewable Energy (Poland), DGGE (Portugal), Econet (Romania), EirGrid (Ireland), IWEA (Ireland), Eletaen.gr (Greece), APERe (Belgium), ODE Vlaanderen (Belgium), Elia (Belgium), IG Windkraft (Austria), APEE (Bulgaria), University of Miskolc (Hungary), Estonian Windpower Association, Ministry of Industry and Trade (Czech Rep.), VTT (Finland), LWEA (Lithuania), FER (Croatia), CERA (Cyprus), STATEC (Luxembourg), Energy Centre Bratislava (Slovakia), IJS (Slovenia), EWEA.*

The topic of the next barometer will be photovoltaic

Download

EurObserv'ER is posting an interactive database of the barometer indicators on the www.energies-renouvelables.org (French-language) and www.eurobserv-er.org (English-language) sites. Click the "Interactive EurObserv'ER Database" banner to download the barometer data in spreadsheet format.

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