



INTERVIEW

**JUKKA-PEKKA MÄKINEN**  
CEO, The Switch

INTERVIEW

**JÜRGEN ZESCHKY**  
CEO, Nordex



# Turkey takes off

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THE EUROPEAN WIND ENERGY ASSOCIATION



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By Sarah Azau

Editor

## Uniting in times of crisis



Global Wind Day, 15 June, is an annual example of how wind energy can unite people of all ages from across the world and the political divide. I had a vivid example of this when I visited Turkey for *Wind Directions*. While anti-governmental protests raged elsewhere, children, teenagers, adults, ministry officials and industry representatives came together for a Global Wind Day party.

Turkey is one of the most exciting wind energy markets in the world right now, with a hugely ambitious target and impressive growth figures. During a four day visit, I had the opportunity to find out more about the benefits – and obstacles – to the wind industry of the giant on the EU's doorstep. Read about it on p. 30, and about what else went on for Global Wind Day on p. 22.

Speaking of targets, the EU is currently considering 2030 legislation for energy, and it is crucial that is based on binding objectives for renewables and greenhouse gas emission reductions, as well as energy efficiency. I investigate why this is so vital on p. 14.

Global Wind Day is all about discovering the power of wind energy – not just for those of us already in the sector, but also for those who know little. Although survey after survey shows massive public support across Europe for wind energy, frequently there is opposition at a local level to a planned wind farm, as residents recall scare stories sadly still often bandied about by irresponsible newspapers and anti-wind campaigners. Zoë Casey gathered together some 'best practices' on getting communities onside. Read her conclusions on p. 12.

Some people see offshore as a way of avoiding local acceptance issues. Offshore is a newer technology than onshore wind and costs are considerably higher for now, but the potential around Europe's shores is tremendous. It becomes

bigger still as floating wind turbines – suitable for water over 50 metres deep, like much of the Mediterranean, for example – are developed. EWEA's new report looks at what stage this technology is at, and there is an explanation of its findings on p. 27.

Concepts like floating turbines will be debated at EWEA's 2013 offshore event in Frankfurt this November, but one of the event's most crucial discussions will revolve around the thorny issue of financing offshore projects in a time of economic crisis and low liquidity. One person who knows an awful lot about the questions is Dima Rifai, who is chairing the finance track at the offshore conference. On p. 58, she shares an analysis of financing conditions in two of the biggest offshore markets – the UK and Germany. And on p. 24, Zoë considers a whole new angle for the sector – offshore wind farms as tourist attractions.

Money is also always an issue when it comes to Europe's badly needed new grid infrastructure – but a new project has shown that with just a few small actions – like measuring the temperature of power cables in real time – more wind energy can come onto the network and money can be saved, without even having to add new grid lines. Chris Rose finds out more on p. 16.

While this issue is all about Turkey – which may or may not one day join the EU – there is another country which has now joined. Croatia is the 28<sup>th</sup> member state, but what opportunities does it offer the wind industry? Jessica Anania takes a peek on p. 46.

Finally, there is a bonus with this issue of *Wind Directions* – a photo supplement capturing some of the 'wind energy stories' that were on display as part of EWEA's Global Wind Day photo exhibition in Brussels' European Parliament in June. ■



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## Software to show how to group wind farms

Where should you place the turbines in your offshore wind farm to maximise energy production and reduce costs? Software currently under development could show you.

The aim of the EU-funded European Energy Research Alliance - Design Tool for Offshore Wind Farm Cluster project (EERA-DTOC) is to develop a tool to help optimise the design of offshore wind farms and wind farm clusters acting as wind power plants.

At a project workshop held in London on 6 June 2013, participants highlighted the importance of the upcoming tool for wind farms developers and strategic planners. The benefits discussed include reduced wake effects, improved electricity infrastructure layout and energy yield and reduced costs for



increased wind power capacity. The tool is currently under development and it will start being tested and validated this autumn.

The project is funded by the EU's Seventh Framework Programme and is coordinated by the Technical University of Denmark - DTU Wind Energy. It runs from January 2012 to June 2015. EWEA is a project partner.

Project website: [www.eera-dtoc.eu](http://www.eera-dtoc.eu)

## EWEA and national associations fight support scheme changes

In several European countries the wind energy industry has been plunged into an uncertainty crisis as governments have cut or changed support mechanisms for renewable energy.

EWEA is working closely with its members, particularly the national wind energy associations, to fight such changes and give stability back to the sector. On 13 June EWEA's CEO Thomas Becker, alongside the Spanish associations AEE and APPA, met with the EU Energy Commissioner Oettinger to put forward their concerns. Previously they had sent him a joint letter together on the issue, saying the European Commission needed to act consistently on retroactive changes,

and those in Spain could impact the whole EU given the large Spanish market.

Thomas Becker, EWEA's President Andrew Garrad and representatives of France Energie Eolienne also met with the Cabinet of then French energy minister Delphine Batho on 13 May, following an EWEA briefing to the Minister and President Hollande's cabinet. EWEA's position is that France needs to develop a new Feed-in Tariff to end the instability caused by the debate over possible State aid to renewables.

Becker met with the Lithuanian energy minister on 27 June. Lithuania is the holder of the rotating EU presidency until 31 December 2013.

## MEPs offer lifeline to the ETS by voting in favour of backloading

EU climate policy got a strong signal of support on 3 July when the European Parliament voted in favour of 'backloading' - the temporary removal of permits to pollute under the Emissions Trading System (ETS).

"Today's vote will give a small boost to the carbon price but most importantly it will build confidence in the ETS," said

Rémi Gruet, EWEA's Senior Regulatory Affairs Advisor. "It is crucial that the EU Member States now agree backloading as soon as possible. Then the European Commission should propose a 2030 Climate and Energy Package, with headline renewable and GHG reduction targets, without delay."

## EU steel plan underplays potential of wind power

An EU steel action plan published in June, which aims to address the crisis in the sector, fails to properly consider future markets with huge potential steel demand like wind energy.

While it does mention the opportunities offered by the wind energy sector in terms of innovative steel products, the plan considers renewables in terms of their impact on costs and electricity prices. It does not seriously look at the broader context of the overall increased need for steel as a growing wind energy sector will have and rather focuses on construction and automotive sectors which cannot rescue the steel industry's demand-side problem.

A high-level group on steel will be set up and meet every year. The action plan will be assessed in 2014.

## Citizens to help finance German power networks

Power to the people? Or at least power networks to the German people. The German Ministers for the Environment and Economic Affairs jointly with the CEOs of Germany's major grid companies have launched a scheme to involve citizens in grid financing. This idea was proposed in 2010 by Dr Klaus Rave, former President of the Global Wind Energy Council and long-standing member of EWEA Board), who wrote in *Wind Directions*:

"So why not initiate a new, attractive investment opportunity? After all, everyone is an electricity customer! What would it be like with a citizens' grid? Citizens' wind farms have offered an excellent investment opportunity and are not only extremely popular but a much admired model for the world." ■



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# Why is 2030 so important?

By Sarah Azau

To most people it may just be a year that's still a way off, but in the corridors of the EU institutions and offices of many lobby associations in Brussels, 2030 is a buzzword. And it should be of huge significance to anyone who has a business interest in the energy sector.

The reason for its prominence at the moment is that the European Union is

considering what legislation to put in place for when the current climate and energy framework comes to an end in 2020. In the energy sector, investors think long-term and need to know where they will get the best returns on their money at least 20 years down the line. So it is vital that the legislative framework which will be in place in 2030 is clarified as soon as possible.

EWEA, along with its national associations and corporate members, is calling strongly for the 2030 energy legislation to be centred on three targets. These targets are for renewables, for greenhouse gas emission reductions and for energy efficiency. This "hat-trick" of targets would drive investments in wind energy, which would increase Europe's technology leadership and exports, create more green jobs, lower our crippling and costly dependence on foreign imported fuels and reduce the amount of carbon dioxide pumped into our air in line with the EU's pledge of 80-95% reductions by 2050.

## What's happened so far in EU renewable energy policy - and what next?

**2001:** Renewable electricity directive setting a target for electricity to come from renewables of 21% in 2010

**2007:** Heads of State and governments agree on the 20-20-20 targets

**2009:** European Union adopts Renewable Energy and ETS Directives and effort-sharing decision, setting binding 2020 renewable energy and climate targets

**2011:** The EU Commissioner for Climate Action gives her support to a 2030 renewable energy target

European Commission Energy Roadmap 2050 says renewable energy, energy efficiency and infrastructure are "no regrets options" for decarbonisation with wind energy producing between 32% and 49% of EU power production by 2050

**2012:** The European Commission's Renewable Energy Strategy's consultation results shows broad stakeholder support for 2030 renewable energy target. The Communication's impact assessment gives economic and energy supply reasons to favour legally binding renewable energy targets for 2030

The EU Commissioner for Energy gives his support to launching a discussion on the 2030 renewable energy target

**2013:** European Parliament votes in favour of "setting targets and milestones for renewable energy, energy efficiency and greenhouse gas emissions" and subsequently for setting a binding 2030 renewable energy target

The European Commission's Green Paper on a "2030 framework for climate and energy policies" officially launches the consultation on 2030 targets, and closed in July. The European Council and Parliament are now debating the Green Paper

**By end 2013:** European Commission to publish 2030 energy and climate proposals, at the minimum an ambitious impact assessment and a white paper setting targets

**March 2014:** Heads of State to decide on the next climate and energy framework

## But why targets?

Because we know they work. In particular, the 2010 renewable electricity targets, and 2020 binding targets for renewable energy (20%), have enabled wind energy to become a major industry and mainstream power technology.

### To summarise:

- Today, Europe gets 7% of its electricity from wind energy.
- Today, wind energy avoids €5.71 billion in fuel imports.
- Today, there are 250,000 European jobs linked to wind energy.
- Today, non-polluting wind energy avoids 140 million tonnes of carbon dioxide.

The benefits of wind energy will be even greater in 2020, thanks to the current targets:

- In 2020, Europe should get 14% of its electricity from wind energy.
- In 2020, wind energy should avoid €25.3 billion in fuel imports.

- In 2020, there should be 520,000 European jobs linked to wind energy.
- In 2020, non-polluting wind energy should avoid 646 million tonnes of carbon dioxide.

And they could be even greater for 2030, if the three targets are put in place.

### What will the targets do?

An ambitious and binding 2030 renewable energy target will :

- lower the long-term costs of decarbonisation by driving deployment of, and cost reduction in, a wide range of renewable energy technologies, particularly onshore and offshore wind energy, which will all be needed up to 2050
- bring down costs of offshore wind just as the costs of onshore wind have been brought down
- promote energy security, green growth and jobs and leadership in technologies in which Europe excels and needs to keep a competitive edge, such as wind power
- facilitate the achievement of the 2020 targets by signalling to investors that renewable energy is a long-term EU priority
- lower the costs of renewable energy policy and of support levels by sending a confidence signal to investors
- avoid a fossil fuel lock-in

An ambitious and binding 2030 greenhouse gas target will :

- put the EU on the path to the 80-95% greenhouse gas reduction by 2050 agreed by EU leaders (which requires a zero carbon power sector)
- help ensure a sound Emissions Trading System which drives emissions down long term
- put a price on carbon and price emitting technologies at their real cost to society

Moreover, a 2030 target will help re-balance the playing field, compensating renewables for the advantages fossil fuels and nuclear have long received in the form of protected markets, high subsidies, and power markets and grids designed for them.

### Is that it?

Not quite. Alongside the three targets, the EU must take steps forward in crucial areas such as energy infrastructure, electricity markets, and R&D to ensure the 2030 policy framework succeeds.

#### 2020 implementation

Member States must keep their climate and energy policy stable in order to meet their 2020 targets and be en route to 2030. The European Commission must ensure they are on track.

#### Electrification

The EU should increase the electrification of its economy to reduce exposure to high fossil fuel prices (eg petrol) and use its renewable energies such as wind energy fully.

#### Infrastructure

A 2030 climate and energy package has to consider ways to ensure that a sufficient level of necessary infrastructure and grid investment are in place in a timely manner in order to ensure the most cost-effective integration of the 2030 energy mix.

#### Electricity markets

The European Commission must propose an ambitious timetable for implementing a suitable future electricity market in order to move to a decarbonised power sector.

#### Innovation and R&D

Ambitious EU and national R&D and innovation policies are necessary to drive innovation in the wind industry: the EU should finance and implement its Strategic Energy Technology Plan. ■

### Support for 2030 targets

“Since 2050 is quite some time away, if we are to continue to promote a stable framework for the growth of renewable energy, we must start to consider the renewable energy targets we need for 2030. The renewable energy industry has already called for 45%.”

**Günther Oettinger, European Commissioner for Energy**

“We should be looking to avoid a lock-in to fossil fuels. We should be discussing a renewable energy target for 2030. We need to have ambitious targets. It would be one way to send a long-term price signal for renewable energy – that renewable energy is not just going to stop growing after 2020.”

**Connie Hedegaard, European Commissioner for Climate Action**

“In order to mobilise the necessary investments in renewable energies, energy efficiency and infrastructure, ambitious objectives for 2030 must be defined rapidly for the reduction in emissions of greenhouse gases, the development of renewable energies and energy efficiency.”

**Peter Altmaier, German Environment Minister and Delphine Batho, then French Energy Minister**

“We strongly recommend implementing an EU-wide renewable energy target [...] In combination with consistent carbon and energy efficiency targets, this is the best way to keep costs of a low-carbon pathway towards 2050 low [...] Mandatory renewable energy targets will also create much more (co-) benefits for the environment and economy [...] improve policy stability and reduce risks for investors”.

**European Copper Institute and Leonardo Energy**

“According to the EU Commission, developing a 2030 framework is necessary to provide certainty and reduced regulatory risk for investors as well as for the EU carbon market (EU-ETS); to help mobilise funding for renewable energies and energy efficiency measures; support progress towards a competitive low carbon/green economy; and establish the EU’s 2030 ambition level for GHG reductions”.

**Health and Environmental Alliance**

# Getting the community alongside



Photo: Von Muller

**Public opinion surveys show that people are in favour of wind power, but when it comes down to individual wind farms local opposition can be fierce. Can this be avoided? Zoë Casey takes a look.**

People resist change. Especially when they know little about the changes taking place. The energy sector is in a time of change – from a system reliant on burning fossil fuels that is now ageing and outmoded to one based on creating electricity from renewable sources like wind power.

While on a broad level people welcome these changes – a recent survey found that 70% of Europeans think renewables should be prioritised over fossil fuels – on a local level this could mean differences to people’s views from their houses and gardens, as well as the raising of possible concerns over noise and the health effects of wind turbines people read about in the media – even if they are unfounded.

## Being a good neighbour

Wind energy developers and planners are well aware of the need for a wind farm to be a ‘good neighbour’ to those who live in its vicinity. From investment in local schemes and locally owned cooperative wind farms, to regular and committed community engagement, there is a way for every wind farm to sit well with its neighbours.

To help this process along the way, several wind energy associations have developed community engagement guidelines.

## Funding local projects

“Increasing community acceptance of wind energy is central to the efficient deployment and expansion of wind energy in Ireland,” says Kenneth Matthews, Chief Executive of the Irish Wind Energy Association (IWEA). “A well-considered and executed community engagement plan will improve the likelihood of community acceptance of projects,” he adds.



Photo: EWEA/Dunne

In Ireland, funds from some wind farms go to local schools

### Wind power and health – the facts

2013: the Health and Environment Alliance (HEAL) found that coal-fired power stations cost the EU up to €42.8 billion a year in health costs and 18,200 premature deaths.

2013: a University of Sydney study found that supposed health warnings from anti-wind power activists are likely to be causing some people to think they are getting sick.

2012: a study for the Massachusetts Department of Public Health said: “there is insufficient evidence that noise from wind turbines is directly...causing health problems or disease.”

2012: the Bavarian Environment Agency in Germany found that wind turbines do not generate infrasound at a level that would damage human health.

2010: the Australian government’s National Health Medical Research Council concluded: “there are no direct pathological effects from wind farms and any potential impact on humans can be minimised by following existing planning guidelines.”

2009: The American Wind Energy Association and the Canadian Wind Energy Association found that: “there is no evidence that the audible or sub-audible sounds emitted by wind farms have any direct physiological impacts.”

Links to the above studies can be found on EWEA’s blog: [www.ewea.org/blog](http://www.ewea.org/blog)

The IWEA Best Practice Community Commitment and Engagement Principles paper sets out the range of benefits for local communities including jobs, local authority rates and land rents, as well as the broader benefits of wind power including more stable energy prices for the consumer, reduced dependency on imported fossil fuels, and lower carbon emissions.

Developers should engage with the community from an early stage allowing local concerns to be considered during the planning phases of the wind farm, as well as informing locals about the benefits of the wind farm, IWEA says. Community engagement and dialogue should then be continued throughout the different phases from planning and environmental impact assessments, to construction and operation.

One wind farm – Lisheen – in county Tipperary, set up a community fund as soon as the farm became operational. Funds generated by the wind farm are channelled into a local athletic club, a community hall, a youth group, and a local school among others. “Over the lifetime of the development, it is expected that approximately €600,000 will be contributed to the local community in total,” the IWEA guide says. “The community funding scheme has been highly successful to date, with tangible benefits visible within the local area,” it adds.

Another set of wind farms in Ireland – in Bindoo, Gartnaneane and Mullananalt – also contribute to local community funds, including the local school. The fund has supported the replacement of single glazed windows and doors in the school with double-glazed energy efficient ones. “This will result in an estimated 20% cut in our energy costs and reduce heat loss by around 50%,” said Berni Power, from the board of management of Laragh National School.

Other examples outlined in the IWEA guide include funding a soft play area for children in the vicinity of a wind farm, travel help for senior citizens, and transport and equipment for pupils taking part in classes run by the Disabled Association.

### Not taking local acceptance for granted

The Canadian Wind Energy Association (CanWEA) in its community engagement guidelines warns wind energy developers against taking local acceptance for granted. It says that residents of every community have a right to ask questions, be sceptical, be concerned and oppose plans.

“A successful community engagement programme should include a wide range of activities geared to creating and maintaining opportunities for two-way communication between the developer and members of the community,” it says.

As key pointers, the guide recommends identifying key local opinion leaders, such as politicians, media, farmers, environmentalists and academic experts from a local university or college, trying to understand what they think about plans to develop wind energy, and engaging with them before they become potential high-profile opponents.

Ways of actively engaging with the local community stated in the guide include: community bulletins outlining questions from locals along with answers; setting up a project website; establishing a dedicated phone number for questions; regularly scheduled meetings, workshops and trips to other wind farms; and media interviews and advertisements.

### Local energy for local people

Germany is in the midst of a huge energy shift away from nuclear towards renewables known as the Energiewende. While this is taking place at



national level, Hermann Albers, President of the German Wind Energy Association (BWE), said that this transition will “not be possible without popular acceptance”. In BWE’s guidelines on community ownership of wind farms published in 2011, he said that, “community ownership is therefore key to the success of Germany’s energy transition. Here, we are not only talking about a technological or ecological transition, but mainly a societal one.”

Community wind farms allow locals to play an active role in energy policy and one in which they can also voice concerns, increasing public acceptance, the BWE guidelines say. Ways in which this can be achieved include: local developer firms plan the wind farm; local firms take part in construction; local banks provide financing; trade tax revenue can be paid to local government and long-term jobs can be created for turbine servicing and maintenance, BWE outlines.

In one example, in the North Frisian town of Friedrich-Wilhelm-Lübke-Koog, the wind farm “was only possible because local citizens were so committed to it,” the guide says. When the farm was first conceived 20 years ago, the 44 local share-holders wanted to set up 22 turbines. By 1999 it had expanded to 32 turbines with an installed capacity of 18.5 MW. Throughout the lifetime of the project locals have been informed and included, thus conflicts could be dealt with early in the planning stage.

### No energy transition without local engagement

From a community hotline and visits organised to other wind farms for those living near a potential wind farm site, to active financial engagement, there are a plethora of ways of getting the locals onboard a wind energy project.

And, as wind farms can face vocal opposition, it is vital to the future sustainability of a project to be a ‘good neighbour’ by listening to and acting on local concerns, in addition to fully communicating the benefits of wind power. Only then will the times of change happening now and in the future to the energy sector be accepted where it matters most – at a local level. ■



# OFFSHORE 2013

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Offshore wind power continues to expand rapidly in markets where support regimes and government policies provide incentives for investment. In the first six months of 2013, Europe fully grid connected 277 offshore wind turbines, with a combined capacity totalling over 1 GW. With ambitious 2020 targets, the offshore wind industry will become increasingly important in the years ahead.

EWEA OFFSHORE 2013 will address the challenges of doing business in a difficult market with **massive potential**. The conference programme will cover many of the exciting innovations happening in offshore wind technology; finance specialists will explore how the sector can attract (new) investors; and leading industry experts will discuss everything from policy frameworks to grids, the supply chain and competitiveness.

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# Ten percent more wind power can be put on EU networks

By Chris Rose



Recent results from one of Europe's most ambitious renewable energy demonstration projects determined that wise management practices coupled with technological advances could use wind power and other renewables to improve grid operation and security.

The results of the EU-funded TWENTIES project — “Transmission system operation with a large penetration of wind and other renewable electricity sources in electricity networks using innovative tools and integrated energy solutions” — also show that investments in wind energy have beneficial outcomes.

The three-year project, which had a budget of over €56.8 million, and a European Commission contribution of close to €32 million, was charged with advancing the development and deployment of new technologies which facilitate the widespread integration of more onshore and offshore wind power into the European electricity system by 2020 and beyond.

The project was coordinated by Spanish Transmission System Operator Red Eléctrica de España (REE) and involved transmission system operators, wind companies, EWEA and other partners. It was funded by the EU's 7th Framework Programme.

*"The solutions are already in the field."*

A report on the project, which found Europe's transmission grid capacity can be used more efficiently and bring far more power online, was released in Brussels in June.

“Not only did this project take major technical steps forward, it also brought the wind industry and transmission system operators together in a successful collaboration, showing how wind energy can provide essential services to the grid,” Vicente González López, TWENTIES technical manager, from REE, said.

The project found that 10% more wind power could be brought online by measuring transmission and distribution lines temperature in real time and confirming the cooling effect that wind produces on the cables.

In addition, deploying TWENTIES technologies could reduce power prices in the German system by 2.2%, marginal electricity prices by up to 0.4% and cut carbon emissions by 3.5% by putting wind turbines together with other power generation in a “virtual power plant.”

TWENTIES was organised around six large-scale demonstration projects grouped into three task forces. The large-scale demonstrations were complemented by three work packages.

One of the work packages focused on the assessment of non-technology barriers to the development of a real offshore grid. The other two were related to the replicability and scalability at EU level of the results of the demonstration projects.

Results for the TWENTIES project prove that larger amounts of wind energy can be integrated in such a cost-effective way with existing technologies that the entire sector will be able to benefit, according to two members of the analysis unit of EWEA's policy department.

In essence, Project Manager Filippo Gagliardi said in an interview, the results will also give the industry even more confidence as it transitions from being seen as an “alternative” power source to acceptance as a “mainstream” electricity-generating technology capable of helping Europe fulfill its ambitious energy and climate goals.

“We are no longer thinking about possible solutions because the solutions are already in the field,” said EWEA's Research Officer Ivan Pineda.

“This project has large amounts of wind power can be integrated into the grid.”

Saying that the demonstration project results “lower the risk of technologies associated with wind power,” Pineda added that potentially problematic issues can be solved with existing technologies that are already working.

González said in an interview that the overall project results were far better than his expectations as all demonstration projects achieved their initial goals.

“The lesson learned for both the wind industry and the transmission system operators (TSOs) is that the outcomes of collaboration are more fruitful than the ones of confrontation,” he said. “If we would like to support the EU policy targets for the coming years, the wind industry must focus its efforts in supporting system security and TSOs must think in accommodating more renewables in their grids.”

Describing the level of cooperation among all the project partners as being excellent,

González added that the results clearly justified the considerable money spent on the three-year project.

“The best proof, in my opinion, is that a large number of companies have also invested a large amount of money during the worst, I hope, period of the financial crisis in Europe.”

Both Pineda and Gagliardi said that one of the most exciting findings came out of the part of the project which explored the management of offshore wind power in storms, when winds are extremely high.

That finding, they said, showed that wind energy output could be increased in stormy conditions, especially offshore, by using “high wind ride through control” which meant turbines were cut off at higher wind speeds of 32 metres per second rather than the usual 25 metres per second.

“In stormy conditions, your wind farm will remain in operation much longer and that means more energy produced and less money being lost,” said Gagliardi.

Pineda and Gagliardi were also impressed by the part of the project which looked into improving the flexibility of the grid and found using real-time monitoring of the temperature of the power cables, instead of statistical data, allows over 10% more wind-generated power — and sometimes up to 25% more — to be brought online.

That’s because, they said, transmitting large amounts of electricity from wind over long distances could potentially mean cable temperatures go too high, leading network operators using only theoretical cable temperatures to limit wind power to avoid that risk. However if the real cable temperature is known all the time, operators will be able to transmit wind power for as long



Wind farms will produce more power in stormy weather

Photo: Zacarias Pereira da Mata

as the temperature remains within the limits. Implementing real-time monitoring could also reduce the need to upgrade or build expensive new grids because the existing systems could be used more efficiently.

They also singled out the part of the project which examined the technical specifications of offshore high voltage direct current (HVDC) networks and tested a DC circuit breaker prototype successfully.

Pineda said that the DC circuit breaker prototype showed it can isolate a system fault in a massive offshore wind farm that generates enough electricity equal to a small- to medium-sized nuclear reactor and prevent it from affecting the rest of the power system, much like a typical residential breaker has the ability to protect the fuse-box and household wiring.

This ability, he added, provides the level of security and reliability system operators expect and, in case of a fault, will avoid huge power losses in the system by isolating the problem.

“The TWENTIES project demonstrated that it is possible to integrate more wind power cost efficiently and securely into the grid. The technologies the project tested are already on the market. It is not about R&D anymore, it is about decisive action,” said Pineda.

Gagliardi said the results showed that wind players, grid operators and consumers could expect considerable savings in the future.

“This is particularly important for the offshore sector, which presents higher financial challenges in comparison to onshore: any means to reduce costs there will have a hugely beneficial impact on future developments,” he said.

“The next step is to ensure that the technology demonstrated by TWENTIES will be implemented on a EU scale, to make sure that the whole energy system will benefit from this game-changing project.”

More information about the TWENTIES project, the results achieved and the report are available at: [www.twenties-project.eu](http://www.twenties-project.eu). ■

*“The results mean more energy produced and less money lost.”*



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#### AUSTRALIA

### “Don't let myths dictate our future.”

Vestas in June launched the first phase of a global campaign to separate myths from facts and to channel public support toward political action favouring wind energy. The campaign embodies a unique approach to dealing with significant business challenges, integrating multiple marketing, communications, and public affairs channels and platforms.

Starting in Australia, a hot-bed of anti-wind activity, the “Act on Facts” launch event at the University of Melbourne featured a discussion about the tactics used by anti-wind energy activist groups and what the wind industry can do to counter the wild claims and convert the quiet majority of wind energy supporters into active campaigners.

More information: [www.vestas.com](http://www.vestas.com)

#### BRAZIL

### 210 MW for two wind farm clusters in Rio Grande do Norte

Subsidiaries of ACCIONA wind power have signed a contract for the supply of turbines with a capacity of 210 MW for two of Voltalia's wind farm clusters in the Brazilian state of Rio Grande do Norte. Announced in June, the agreement covers the supply of seventy latest-technology ACCIONA's 3,000 turbines of 3 MW capacity each. Electricity generation is expected to start in 2014 and 2015.

More information: [www.accionacom](http://www.accionacom)

#### DENMARK

### All turbines at Anholt offshore wind farm now operational

Dong Energy announced in June that the last of 111 turbines at the Anholt

offshore wind farm had been connected to the grid and transmitted its first CO<sub>2</sub>-free kilowatt hour of power into the Danish mainland electricity grid.

With a total of 400 MW, the offshore wind farm is Denmark's largest, and the turbines generate clean electricity equivalent to the total consumption of 400,000 Danish households or 4% of total Danish electricity consumption.

More information: [www.dongenergy.com](http://www.dongenergy.com)

#### GERMANY

### Laying the groundwork for Amrumbank West

E.ON started preparations for constructing the Amrumbank West offshore wind farm in April by installing two layers of special sand bags on the seabed to prevent the current from washing away the sand around the foundations of the wind turbines, thus ensuring turbine stability.

Northwest of Helgoland, Amrumbank West is one of three offshore wind farms being built by E.ON in the North and Baltic Seas in the next two years. A total of 80 wind turbines are being erected from this autumn on an area of about 32km<sup>2</sup>. The 3.6 MW turbines will have a total capacity of 288 MW and can thus supply up to 300,000 homes.

More information: [www.eon.com](http://www.eon.com)

#### GERMANY

### New rotor blade factory in Germany

In the presence of Lower Saxony's Prime Minister, Stephan Weil, ENERCON officially inaugurated its new rotor blade manufacturing facilities in Haren/Emsland in early June. Operations at the new rotor blade factory for ENERCON's E-101/3 MW series started up in record time. Construction of the approximately 26,600 m<sup>2</sup> production facility started in summer 2011 and test operations began just slightly over a year later. Aero Ems GmbH is now producing one to two blade sets per week.

More information: [www.enercon.de](http://www.enercon.de)

#### MEXICO

### Wind farm is to be located in one of the windiest areas in the world

Iberdrola announced in May it has acquired from Gamesa the project for the construction of the Dos Arbolitos wind farm in Mexico, which will have an installed capacity of 70 MW and be located in the town of Juchitán de Zaragoza, in the State of Oaxaca. The Dos Arbolitos complex is expected to come into operation in 2014 and will increase Iberdrola's wind power capacity in Mexico to 278 MW, becoming the country's fourth renewable energy facility.

More information: [www.iberdrola.es](http://www.iberdrola.es)

More wind turbines have been ordered for Brazil



A new wind farm is on the cards for Sweden



#### SWEDEN

### Wind power plant to be built north of Stockholm

Siemens announced in May it had been awarded an order for a wind power plant with a combined capacity of 144 megawatts (MW) from Sweden. The customer of the project Sidensjö is Nordisk Vindkraft, Göteborg. Nordisk Vindkraft will realise this project on behalf of Stadtwerke München. Siemens will supply 48 direct drive wind turbines with an output of 3 MW each and a rotor diameter of 113 metres. After commissioning, which is scheduled for spring 2015, Sidensjö will be one of the largest wind farms in Sweden and will supply power sufficient to power about 160,000 households with clean energy.

More information: [www.siemens.com](http://www.siemens.com)

#### UK

### New wind farm can meet the average needs of more than 10,000 homes

RES celebrated in mid-May the completion of The Grange Wind Farm, which lies between Sutton Bridge and Tydd St Mary in Lincolnshire. At 14 MW, the wind farm is capable of generating enough clean renewable electricity to meet the average needs of more than 10,000 homes. Construction work started in January 2012 and the turbine components were

delivered to site 12 months later. All seven turbines were erected, and the grid connections energised, by the end of March 2013, since when commissioning and testing of the turbines has been taking place.

More information: [www.res-group.com](http://www.res-group.com)

### Mainstream receives onshore planning consent for offshore wind farm

Mainstream Renewable Power has been granted planning consent by East Lothian Council for the onshore cable works to connect its 450 MW "Near na Gaoithe" offshore wind farm, located off the coast of Fife, to the National Grid.

East Lothian Council's Planning Committee agreed on 18 June to grant consent for the onshore works which include 12 kilometres of buried cable between Thorntonloch Beach, East Lothian, where the subsea cable is planned to reach shore, and Crystal Rig onshore wind farm in the Lammermuir Hills, where the grid connection would be made.

More information: [www.mainstreamrp.com](http://www.mainstreamrp.com)

### North East wind farm to start generating power in 2014

Vattenfall said in May a 36.9-MW onshore wind farm will be built near Huntly, Aberdeenshire. The 18 wind turbine

Clashindarroch Wind Farm will cost more than £60 million (€70 million) to construct and is expected to be completed in late 2014 with first power generated at the same time and the wind farm working at full power in early 2015.

More information: [www.vattenfall.com](http://www.vattenfall.com)

### Galloper offshore wind farm receives development consent

SSE Renewables announced in May that Galloper offshore wind farm, a 50-50 joint venture between SSE and RWE npower renewables, has received development consent from the Secretary of State for Energy and Climate Change.

The Galloper site is located 27 km off the Suffolk coast, adjacent to the fully operational Greater Gabbard offshore wind farm, and has a potential capacity of up to 504 megawatts.

More information: [www.sse.com](http://www.sse.com)

#### US

### Extended Production Tax Credit incentive helps industry

EDP Renováveis, SA (EDPR), through its fully owned subsidiary EDP Renewables North America, signed a 20-year Power Purchase Agreement (PPA) with Indiana Michigan Power Company, a fully owned subsidiary of American Electric Power, to sell the renewable energy produced from its 200 MW Headwaters wind farm project located in Indiana and expected to be installed in 2014. The company said in June that the Production Tax Credit extension in January 2013 enabled a more favourable environment for the development of wind energy and for the establishment of new long-term PPA in the US creating new growth opportunities for EDPR on the short-term.

Moreover, in May GE announced it had 1 GW of new US wind turbine orders following the extension ruling of the production tax credit. Once installed, these turbines will provide 1 GW of energy to the grid across the United States. This equates to enough clean energy to power 330,000 US homes and taking more than a million cars off the road.

More information: [www.edpr.com](http://www.edpr.com); [www.genewscenter.com](http://www.genewscenter.com) ■



# Global Wind Day 2014 is taking shape

– get involved

## Discovering wind energy

**Global Wind Day** is a worldwide event that occurs annually on 15 June. It is a day for discovering wind, its power and the possibilities it holds to change our world.

**It is also a day that gives you the opportunity to support wind energy with a range of actions**, both online and at events.

The European Wind Energy Association (EWEA) and the Global Wind Energy Council (GWEC) coordinate Global Wind Day through a network of more than 60 partners worldwide.

Find out more on: [www.globalwindday.org](http://www.globalwindday.org)  
or by emailing: [info@globalwindday.org](mailto:info@globalwindday.org)





Flamingos and wind in the Dominican Republic, by Marvin des Cid (Americas winner, Global Wind Day photo competition)

# What happened this year on Global Wind Day?

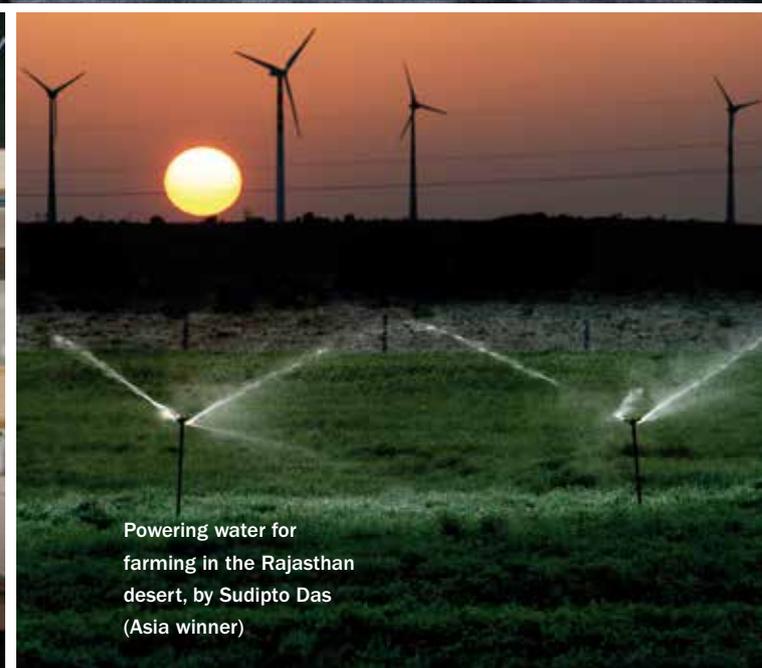
By Jessica Anania



A wind farm in Victoria, by Patrick Finnegan (Australasia winner)



Balancing rotor discs in Kenya, by Tom Gilks (Africa winner)



Powering water for farming in the Rajasthan desert, by Sudipto Das (Asia winner)



Building a wind turbine in Canada, by Joan Sullivan (global winner)



At the top of a turbine, by Mihalis Konstandinidis (Europe winner)

**Worldwide, people gathered on and around 15 June to learn about and celebrate the reality and potential of wind energy. The day marked a time for both wind energy novices and enthusiasts to visit a wind turbine, learn about the environmental and economic benefits of wind energy, or just experience the power of wind by flying a kite or sailing a boat. Jessica Anania provides a summary of everything that went on.**

#### Events around the world

- 200 events were held globally
- Five continents were involved – Europe, Asia, the Americas, Africa, Australasia
- Events were organised in 32 countries

#### Virtual action

This year, wind energy supporters had the opportunity to call on the world's eight most powerful leaders – the G8 – to phase out fossil fuel subsidies and switch to renewables through the Global Wind Day app. The campaign proved so successful it resulted in an official response from the UK and Canadian governments.

- 32,000 'Likes' for the Global Wind Day Facebook page, including 21,663 new 'Likes'
- 2,124 wake-up calls via email, Twitter and Facebook from 115 different countries
- Over 300 #GlobalWindDay mentions on Twitter in June, including from WWF, Greenpeace and the UN

#### Friends

Global Wind Day is coordinated by EWEA and the Global Wind Energy Council with the support of many individuals and groups. In 2013 these included:

- Christiana Figueres, Executive Secretary of the UN Framework Convention on Climate Change.
- The Irish Presidency of the Council of the EU.
- 61 different partners, the full list of whom are available on the Global Wind Day website: [www.globalwindday.org](http://www.globalwindday.org)

#### Photos

- EWEA organised a photo competition called 'Discover the stories behind wind energy'. See some of the winning photos on the opposite page and above.
- EWEA also teamed up with photographer Robert van Waarden to publish 'wind energy stories' – of ordinary people whose lives have been touched by wind energy – on the Global Wind Day website ([www.globalwindday.org](http://www.globalwindday.org)) and EWEA's blog ([www.ewea.org/blog](http://www.ewea.org/blog)). You can see a selection of these stories in the supplement to the paper version of *Wind Directions* or if you're reading the electronic version, on [www.ewea.org/wd](http://www.ewea.org/wd). ■

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Photo: Fuse and Clara Ros

## Sea, sun, surf and a trip to an offshore wind farm

**Zoë Casey investigates how offshore wind farms can add more to the seaside holiday experience.**

Where did you go for your summer holiday this year? No doubt a trip to the seaside featured somewhere on your holiday agenda. Swimming, kite flying, sailing, sand castle building – all of these activities and more make up a typical seaside break, but how about if something different was added to this mix – like a trip to an offshore wind farm?

Wind energy's naysayers will tell you that offshore wind farms ruin tourism but, with a whole array of activities across Europe including boat trips, entertaining visitor centres and even sight-seeing flights on offer, the tourism industry is gearing up behind offshore wind.

### Touring offshore farms

Take Middelgrunden offshore wind farm in Denmark. The 20 turbine offshore wind farm part-owned by DONG and part-owned by a local cooperative which is set out in an elegant curved line reflecting the curvature of the coast, offers boat tours to the farm on small boats of up to nine people, or large boats of up to 170. Passengers can take in the sights, learn about the

wind farm and enjoy dinner – the only proviso being that boats can't tour in high winds or when there is sea ice.

Still in Denmark, at Nysted offshore wind farm south of Lolland, the Nysted harbour boasts a visitor centre called "the world of wind". The centre hosts exhibits on how turbines are made, how much electricity is produced by the 373 MW farm, information on the environmental impact and benefits of wind power, as well as short films, virtual helicopter rides, and a pair of powerful binoculars for turbine viewing.

Over in Germany, 45 km north of the island of Borkum, lies the country's first offshore wind farm, Alpha Ventus, and here tourists can take part in an activity with a difference. Although not cheap, a local airline company, FLN (Frisa-Luftverkehr GmbH Norddeich), offers one hour-long sight-seeing flights over the wind farm.

Slightly less adventurous, but more accessible and easier on the wallet, is the free-of-charge visitor centre at

the Scroby Sands offshore wind farm in Great Yarmouth, UK. Attracting over 35,000 visitors a year, the centre has interactive displays on how the wind farm was built, information about energy and energy efficiency and a good view of the offshore farm.

So next time you're on a coastal break, why not consider adding something different to the agenda and visit an offshore wind farm centre or hop on a boat tour?

### Impacting tourism?

The question of wind farm aesthetics can only be in the eye of the beholder, but with such an array of offshore wind farm activities taking place, offshore wind farms can add to the seaside tourism experience. In fact, fears that an offshore wind farm might undermine tourism are "more a subjective fear...than a measurable fact," and tourists do not avoid areas where wind farms are located, according to a report by the German Offshore Wind Energy Foundation published earlier this year.

The report even found evidence that offshore wind farms can boost tourism: the number of sailing boats visiting the Nysted harbour in Denmark increased once the offshore wind farm was up and running since boats are allowed to sail on some routes through the farm, it said.

Offshore wind farm developers and even local tourism firms should take note. According to the report, "fascination with offshore wind technology" and "its contribution to active environmental protection" are key perceptions to tap into. What is more, "attractions related to offshore wind energy can open up the opportunity for a municipality, city or village to stand out and find a niche in the highly competitive tourism market," it says, adding that offshore wind farm-themed restaurants and merchandising products are opportunities to be explored.

### Find out more...

Take a boat trip to Middelgrunden: [www.middelgrunden.dk](http://www.middelgrunden.dk)

Visit Nysted: [www.dongenergy.com/Nysted](http://www.dongenergy.com/Nysted)

Fly over Alpha Ventus: [www.fln-norddeich.de](http://www.fln-norddeich.de)

See Scroby Sands: [www.eon-uk.com](http://www.eon-uk.com) ■



# Into deep waters

By Sarah Azau and Zoë Casey

In 1991 wind energy made history by going offshore. That was in Denmark – Vindeby – the world’s first commercial offshore wind farm. It was installed at a distance of two kilometres from the Danish coast and is still producing power more than 20 years later.

Over those 20 years offshore wind power has pushed the boundaries a lot further. Today, offshore wind farms are located in 10 European countries in water depths of up to 50 metres.

But that’s where it stops. Current offshore turbine and structure designs are no longer economically viable beyond 50 metres – but much of the Mediterranean and Atlantic basins are deeper than that even relatively close to shore. So how can these winds be captured? EWEA’s new report tries to find the answer.

## What is “deep offshore”?

Offshore wind is already a strong player in the European maritime economy and its competitive punch is picking up a pace. Today around 5 GW are installed in European waters, and this is projected to rise eight-fold by 2020 to 40 GW, meeting 4% of Europe’s electricity demand. By 2030, Europe could have 150 GW of offshore wind turbines spinning in its seas, meeting 14% of its electricity demand.

However, the turbines out at sea so far are only in water up to 50 metres deep. If the industry could go into deeper waters the amount of energy produced would be many times higher. In fact, the energy produced from turbines in waters over 50

metres deep in the North Sea alone could meet the EU’s entire electricity consumption four times over. That is one of the findings of EWEA’s new report, ‘Deep Water’, based on the work of the ‘Deep offshore and new foundation concepts’ Task Force, which is part of EWEA’s Offshore Wind Industry Group.

Not only would these turbines be able to supply vast amounts of free – and emissions free – electricity to Europe, the development of deep water technology would create an export opportunity for Europe, which already leads the world in offshore wind energy.

“The report found that, providing the right conditions are met, and the challenges overcome, the first deep offshore wind farms could be

## Deep water technology – where are we now?

There are two full-scale grid connected offshore wind turbines on floating substructures: Hywind (developed by Statoil, with a 2.3 MW Siemens turbine, installed in Norway’s North Sea in 2009) and Windfloat (installed off the Portuguese Atlantic coast in 2011, developed by Principle Power and EDP, using a 2 MW Vestas wind turbine).

In addition to the two full scale deep offshore turbines at the end of 2012, there are three grid connected experimental floating substructures and around 35 deep water designs under development worldwide.

Of all 40 projects identified, either grid connected systems or under development, twenty-seven (more than 60%) are located in Europe, in nine countries: Denmark, France, Germany, the Netherlands, Norway, Portugal, Spain, Sweden and the UK. Four (10%) are in the US and nine (23%) in Japan.

installed and grid connected by 2017. This would be a massive step forward for the industry”, say EWEA’s Athanasia Arapogianni, one of the main authors of the report.

However, the report also warns that this technology is at a very early stage of development and much more research is needed before the designs become commercially viable.

“As well as considerable research, an EU regulatory framework is needed with binding renewables targets for 2030”, points out EWEA’s Anne-Bénédicte Genachte, the other main report author. “There also needs to be a European industrial strategy to guide offshore wind development. But if these things are put in place and the industry moves into deeper waters, the potential is simply tremendous.”

### Finding out more at EWEA OFFSHORE 2013

Deep offshore designs will be the focus of one of the sessions in the ‘future technologies’ track at EWEA’s upcoming offshore conference and exhibition. The session will look at deep offshore foundation concepts, including floating, concrete and hybrid solutions for deep waters.

The event, which takes place in Frankfurt from 19-21 November, will discuss a range of other technological questions such as new installation vessel concepts, grid integration, operations and maintenance and resource assessment. The other conference session tracks will look at markets, the supply chain and finance. The last of these is particularly significant at the moment, explains EWEA’s Head of Conferences Amy Parsons.

“The importance of the financing issue – particularly right now in a time of crisis – was one of the reasons we chose to hold the event in the financing capital of the Eurozone, Frankfurt”, she explains.

The ongoing economic instability has hit all sectors hard, and this includes offshore wind energy projects which require high amounts of long term financing over 15 to 20 years. Banks are having to pay more for those long-term loans so they are becoming much more reluctant to offer them. Instead, they are preferring shorter loans of up to ten years.

However, other financing solutions are opening up. Institutions like the European Investment Bank (EIB) or Germany’s state-owned development bank, KfW, which have maintained lower

borrowing costs than commercial banks, are stepping into the gap. Another even newer source of capital is pension funds such as PensionDanmark, which has invested in Danish offshore wind energy. The offshore event in November will look at not only financing for offshore turbines but also the supply chain – such as vessels, ports, cables to name but a few.

EWEA is planning to release new research on offshore wind financing at the event and *Wind Directions* will also be covering the results in its next issue in November.

#### Careers and employment focus

Another major issue in the offshore supply chain is the skills and careers gap – which relate to training and identifying companies’ recruitment needs. EWEA’s offshore event will discuss some of the initiatives undertaken across the EU to try and address this gap in an introductory seminar. EWEA is also partnering with Greenfish to highlight the results of their jobs barometer (which emphasises the most wanted jobs in the sector) and to deliver a matchmaking activity between companies and candidates.

#### On the box

Many other activities are taking place alongside the conference sessions and careers discussions at OFFSHORE 2013. One such is a new project featuring a television crew which will be onsite at the event, filming, interviewing and broadcasting, launched this year in collaboration with Wind Power Monthly. This



project is designed to give both participants and non-attendees an insight into the latest news from key players via in-depth interviews and also an overview of what’s happening at the event. Although it will be the first time at an EWEA OFFSHORE event, the television project was also used at the EWEA 2013 event in Vienna. Participants are welcome to get involved and can check the event website for more information.

As usual, a vast exhibition will run alongside the conference in Frankfurt to enable participants to meet, find out about business opportunities and sign deals. At the previous offshore event in 2011, there were more than 480 exhibitors and over 8,200 participants. There will also be a range of networking events such as the opening reception and the conference dinner in the historic Gesellschaftshaus Palmengarten building.

More info on the EWEA OFFSHORE 2013 event: [www.ewea.org/offshore2013](http://www.ewea.org/offshore2013)

Read EWEA’s new report on deep offshore: [www.ewea.org](http://www.ewea.org) ■

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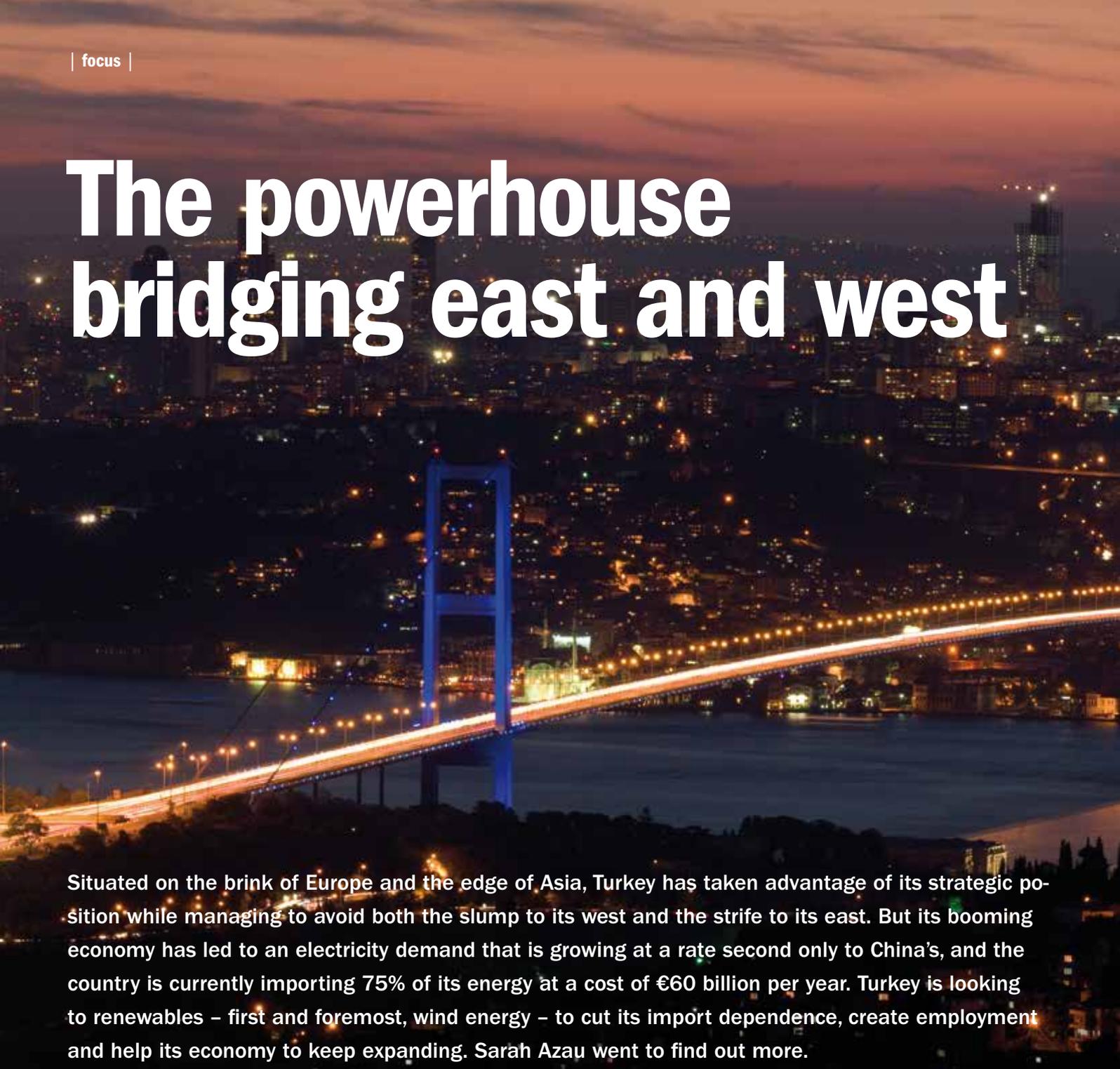
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# The powerhouse bridging east and west



Situated on the brink of Europe and the edge of Asia, Turkey has taken advantage of its strategic position while managing to avoid both the slump to its west and the strife to its east. But its booming economy has led to an electricity demand that is growing at a rate second only to China's, and the country is currently importing 75% of its energy at a cost of €60 billion per year. Turkey is looking to renewables – first and foremost, wind energy – to cut its import dependence, create employment and help its economy to keep expanding. Sarah Azau went to find out more.

There was little sign of the anti-governmental protests that were then at their peak in Turkey amidst the traffic, cranes and shiny new hotels of Ankara's business district. Bristling with building sites, chaotic with cars, everything about the capital testifies to Turkey's stunning economic growth.

This growth is echoed in the burgeoning demand for electricity – up by around 7% a year – and now in the rapidly expanding wind energy sector. In four years, Turkey has installed 500 MW of capacity annually to reach over 2,500 MW, and in the next ten years it intends to multiply this amount by eight. In addition, Turkey has one of the largest wind energy pipelines in Europe

with operational, under construction and planned projects adding up to 11,000 MW.

Despite these already significant figures, the Turkish government decided to invest in renewables only a few years ago, in order to correct an energy mix that is heavily reliant on fuel imports.

"We want alternative sources not just to be dependent on foreign countries like Russia which provides natural gas for nearly half our electricity" explains Mustafa Serdar Ataseven, CEO of the Turkish Wind Energy Association (TWEA).

Turkey's new renewable energy law was published in 2005, but it was in 2009 that the country's ambitious wind energy objective – reaching



Photo: iStockphoto

### Turkish wind energy in numbers

Installed wind energy capacity June 2013: 2,500 MW  
 Target: 20,000 MW by 2023  
 Planned wind farms: 11,000 MW  
 Wind energy potential: 50,000 MW  
 Support mechanism: Feed-in tariffs of \$0.073 per kWh



Picture: pavalena - Fotolia.com

20,000 MW by the republic's centenary in 2023 as part of a 30% renewable electricity target – was set.

“Wind is an important opportunity for Turkey. Wind energy is dependable, sustainable, and clean and has less effect on the environment”, says Minister for Energy and Natural Resources Taner Yildiz.

However, while the target may be impressive – nearly a fifth of the EU-27's installed capacity – a governmental Wind Energy Atlas gives the country's potential as a massive 50,000 MW. This resource is particularly strong on the Aegean coastline, where Turkey's first wind turbines were put up in 1998, near the port city of Izmir (for more, see p. 34).

EWEA and the wind industry in Europe is currently fighting for a 2030 renewable energy target to give much-needed stability to the sector and security to investors, but Turkey's Deputy Minister of Energy and Natural Resources Hasan Murat Mercan says he's “not sure of the importance of Turkey's wind energy target, it is important for policy makers but at the end of day we will have to develop short and medium and long term plans to meet energy needs. But I'm not sure whether investors will be affected by target values because when we reach target it doesn't mean we stop investing especially when it comes to renewables.”



Turkey will increase its wind capacity eightfold in ten years

Photo: Bahattin Bagdadıoglu

“When it comes to natural gas power plants these targets may be important to reduce licence applications but for renewables they are not policy targets but to give a global picture and show our eagerness for the sector”, he adds.

### Supporting the sector

In 2005 Turkey introduced a renewable energy support scheme based on feed-in tariffs and additional investment incentives. In December 2010, this was amended and producers currently receive \$0.073 per kWh of electricity, plus a bonus for using certified and locally manufactured components ranging from \$0.06 to \$0.13 per kWh.

“You can sell your electricity in three ways: through power purchase agreements, the feed-in tariff or on the market”, clarifies Ataseven from TWEA. “The market price is a bit higher than the feed-in tariff – last year averaged \$0.083 per kWh on the market, but \$0.073 on the feed-in tariff. I expect the electricity prices to go up according to the growing industry. There is a crisis in Europe but in Turkey the industry is strong.”

The relatively low government support is something the deputy energy minister cites as a key difference between Turkey and the EU.

“Subsidies and government incentives must be carefully designed and drafted to avoid heavy burden on the economy. This has been seen in the EU especially for solar and wind energy. So any incentive given to a specific sector should not jeopardise other sectors.”

Wind energy in Turkey also gets priority access to the grid, discounts for leases and the right to use state owned land.

Turkey also has less strict environmental regulations for wind farm siting than the EU. Provided the right permits are obtained, wind turbines can be put up in natural parks, conservation areas, protected forests and wildlife habitats including those with a special environmental status, with authorisation from the relevant national or regional environmental authorities.

“Wind energy has some special privileges and limited access to certain areas where you can’t build but there is no obsession with this. While the government protects certain zones, we have lots of places wind farms can be done even with ten times more projects”, says MP and head of the Parliament’s Environment Council Erol Kaya.

While Turkey itself may be more or less unscathed by the economic crisis elsewhere, the global tightening of purse strings has made it a little more difficult to find financing for wind farms. “The market was really good before the financial

crisis with local banks being active, shorter construction periods and feed-in tariffs that were providing a certain comfort”, Tunc Alyanak, Investment Officer at International Finance Corporation (IFC), told *Wind Directions* earlier this year. “All of these factors helped to bring in financing with competitive pricing, which benefited market participants. However things changed after the start of the crisis- partly because Turkish banks were getting their funding from the international market and partly because of domestic economic conditions. The pricing in the market went up, the terms and conditions became more stringent.”

This has meant other institutions such as the IFC, the EIB and export credit agencies getting more involved to enable access to long term financing.

“Local banks are reluctant to go ahead and provide funding; they’re quoting really high interest rates so the IFC is partly filling the gap”, said Alyanak.

EWEA’s ‘Eastern Winds’ report, published in February 2013, said that “With intensifying competition over the financing of a large share of the total 11 GW project pipeline, a substantial number of mergers and acquisitions are expected in the near future.”

### Gridlocked?

EWEA’s ‘Eastern Winds’ report identified two main obstacles to wind energy in Turkey. Firstly, “complicated administrative procedures” and planning procedures and local content requirements which need clarification. Secondly, whether there is actually sufficient grid capacity to meet the 11,000 MW that has been allocated to wind energy.

“We’ve had submissions for wind energy connection of 78,000 MW – this is too much for Turkey, we have to eliminate this type of project”, Director-General of Turkey transmission system operator TEİAŞ, Kemal Yıldır. “Wind energy has to go to maximum 20-30% and the higher the percentage is, the more problematic for the system. When the wind drops you have to supply that much power from conventional sources.”

The capacity is allocated to the producer that pays the most: Yıldır agrees this puts too much pressure on power producers.

“If we have to make another competition like this we will do it by price per Megawatt – for example if want to add 30 MW, they will offer us a certain amount, only once.”

Turkey has both a day ahead and intraday electricity market, and it both imports and exports electricity from its neighbours.

“We are importing from Bulgaria and we export to Greece. We import from Georgia and are Interconnected with Europe,” says Yıldır.

*“Government incentives must be carefully designed.”*

### Think local

Unlike European countries, Turkey also has a local content requirement of 55%, which means wind producers receive a bonus for using locally manufactured components ranging from \$0.06 to \$0.13 per kWh. Early this year the World Trade Organisation ruled that a similar requirement in Ontario, Canada, was illegal.

Turkey's Energy Minister Yildiz argues that many countries have local content requirements in place. "The world has become a village with globalisation. Many countries have agreed to remove customs barriers. The labour force and resources and can be transported freely. Some countries have taken steps towards securing their industry like Turkey has with legal arrangements in the automotive sector. Our policy is to help both foreign and domestic investors equally as much as we can. Obviously we need to promote investors who use domestic resources more."

"We are providing more value to investors and manufacturers in Turkey", says Mucahit Findikli, MP and Head of the Energy Council in the Parliament. The nationality of the investors not important, only that production takes place in Turkey."

For the deputy energy minister, the aim is to increase local content up to 100% if possible, over time, using additional incentives where necessary. However Ataseven from TWEA believes that Turkey's local content requirement is ineffective.



Photo: Behatın Bağdaoğlu

Many countries have local content requirements like Turkey, says the Energy Minister

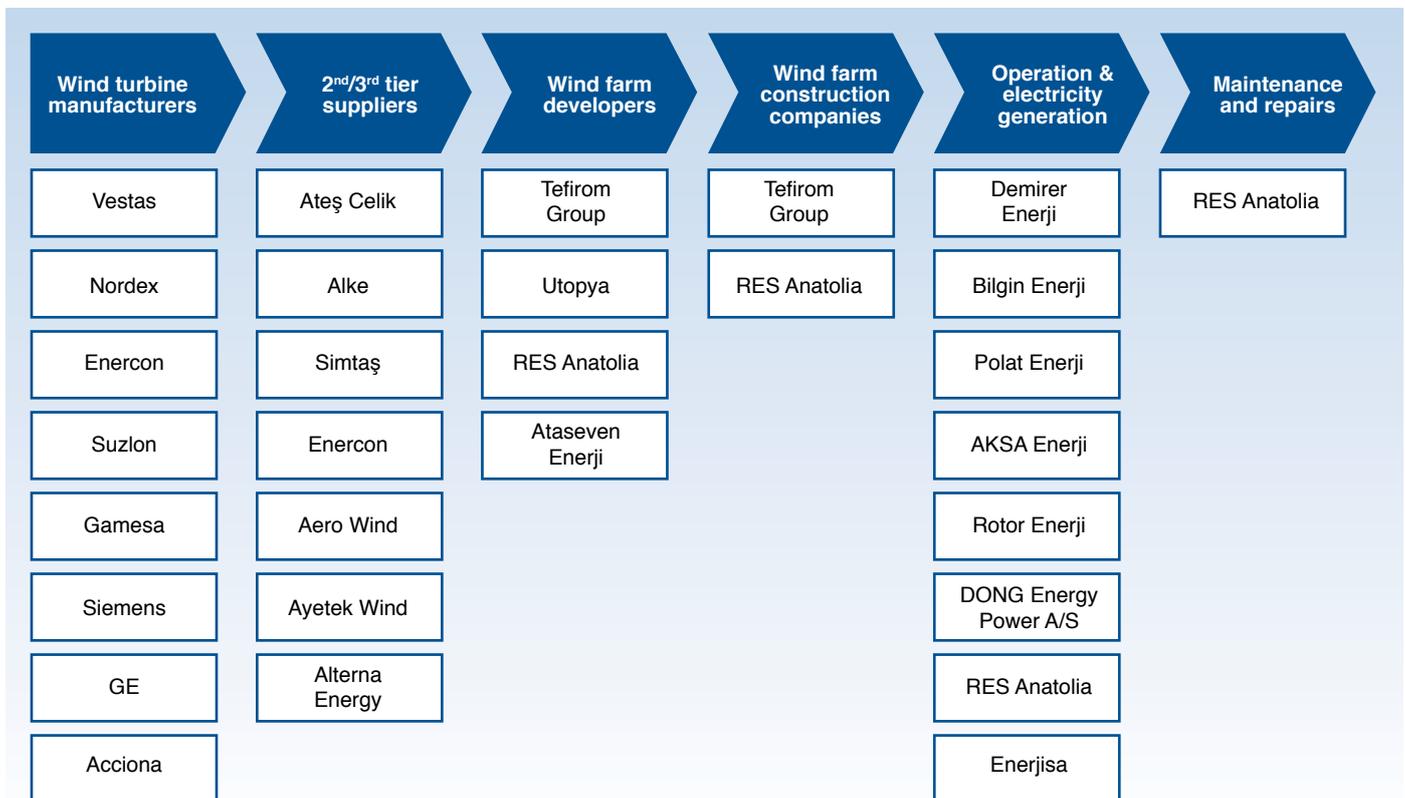
"When they revised the renewables law in 2011 they put in an article on local content requirement (LCR). But in the real world there is no LCR. When you look at other countries industries are developing with local incentives. Turkey wants to develop its wind industry, hence the LCR. But it didn't work. So everyone can invest in Turkey."

The Turkish wind energy industry supply chain includes many Turkish companies who produce components like blades and towers, and are increasingly involved in installing and transporting turbines. However, the majority of wind farms use turbines from ten international manufacturers: Vestas, Nordex, Enercon, Siemens, GE Energy, Suzlon, Gamesa, Alstom and Sinovel.

(continued on p. 36)

*"Everyone can invest in Turkey."*

### Wind energy supply chain in Turkey



Source: EWEA's 'Eastern Winds' report



A winner of the picture contest shows off her artwork



The Energy Minister peruses the Global Wind Day exhibition



## Global Wind Day in Turkey

Photos: Bahattin Bagdadioglu

The Turks have an expression: “begin something like a Turk and finish it like a German”, yet both Turkish enthusiasm and German efficiency characterised the Global Wind Day activities organised by the Turkish Wind Energy Association (TWEA).

On 14 June there was a party atmosphere in the Turkish capital as parents, children, wind energy representatives and government officials came together for wind energy. They were attending the opening ceremony of the exhibition of paintings and photos organised by the Turkish Wind Energy Association (TWEA) on the eve of Global Wind Day.

Children from local schools in Ankara had submitted brightly coloured paintings showing what wind can do – from blowing kites high in the sky to making boats sail. Their proud mums and dads looked on and took photos as their offspring – dressed in their finest – received their awards from Turkish Energy Minister Yildiz. The winner of the photo competition had gone for a far more haunting and mysterious black and white image of

numerous hot air balloons rising above the clouds.

The paintings and photographs made a highly colourful display in a room belonging to the energy ministry, with a big glass window looking out onto the street, so passer-by would also be able to get a glimpse of the wind energy artwork. Guests nibbled on Turkish pastries and sipped fruit juice as they had a look around the exhibition.

The hardiest ministry officials and wind energy enthusiasts then boarded two buses and began the overnight journey across to Izmir on the Aegean coast. Saturday 15 June – Global Wind Day itself - was to be spent on an outing to two wind farms and two Enercon factories making blades and towers.

The buses wended their way through the rolling green landscape dotted with pink flowers – the sea an occasional streak of blue in the distance – to their first stop: Turkey’s oldest wind farm. Set up in 1998, three turbines of 500 kW are still turning today, and a panel proudly proclaims it has been 5,557 days since the last onsite accident. Turkish wind farms have the particularity



An unusual wind-related sport



Global Wind Day participants at Turkey's first wind farm



Batman was carried in on the wind



The picnic kicks off on Global Wind Day

of being named after women – this farm is called Alize after the owner's wife.

The second wind farm was far bigger, and it had been set up for a Global Wind Day picnic with tables, chairs and canopies to give shade from the hot southern sun, which were bedecked with balloons. Many local families had made the trip and children were flying kites, bouncing on the inflatable castles and being entertained by figures dressed as Batman and other comic book heroes. For the parents, there was a barbecue and a DJ, and a game of 'wind football' – which involves players blowing on a lightweight ball to score goals.

Erol Demirer, the president of Demirer Holding, which owns the country's first wind farm, explains that "Global Wind Day is a good opportunity to tell people about wind energy but also to let them discover it for themselves. For example here at the picnic we are right under the turbines but people can hear the turbines are not noisy. Words are good but can only go so far – Global Wind Day lets us show what wind energy can do."

Deputy Energy Minister Mercan commented that

Global Wind Day "increases the awareness of the Turkish people and society and we should thank for that reason the Turkish Wind Energy Association for organising these events to improve public awareness of wind energy."

Mustafa Ataseven, TWEA's president and the driving force behind Turkey's Global Wind Day activities, comments: "Our main purpose is to let the Turkish people know more about wind energy in their daily lives and its potential for the Turkish economy. Our second aim is to be the bridge to the investors and international stakeholders in the sector. We want to inform our children about wind energy and teach them what it is. If we organise activities for Global Wind Day people can learn a lot or they hear something wrong and they won't believe it as they will know the truth."

He believes that generally Turks like wind energy, and points out to ways in which wind turbines are used as icons in Turkish adverts for a bank and for clothing.

For more on Global Wind Day see p. 22 and [www.globalwindday.org](http://www.globalwindday.org)

*"Words only go so far - Global Wind Day lets us show what wind energy can do."*

(continued from p. 33)

In terms of developers, the top five Turkish wind energy developers in 2011 together accounted for a fraction over half the total installed wind capacity. While large international developers and utilities are entering or eyeing with interest the Turkish market, foreign companies remain less prevalent than in many EU markets.

Turbines may be springing up on land, but a glance at a map of Turkey shows that the country has many kilometres of coastline, bordering three different seas - the Mediterranean, Aegean and Black. So does it have plans to utilise its long coastlines and begin putting turbines offshore?

“Eventually, yes we will go offshore, but this is not yet planned”, says Minister Yildiz. “Our first priority is to ensure cost effectiveness so we go with land turbines, but if an investor asks for application for licence for offshore we will not decline it, we will treat it as other applications. So although offshore wind energy is not planned, it doesn’t mean the sector is out of our sphere. However some legal and bureaucratic work needs to be done before we begin accepting applications.

He adds: “While there is a cheaper field of investment I wonder why any investor is eager to invest offshore.”

### Thinking big

While Turkey’s wind energy growth is impressive, TWEA warn that it is not yet enough to meet the 2023 target.

“In these economic conditions, Turkey can invest in 500-800 MW of wind power in a year, but it is not enough for our target. We have to invest in more than 1,800 MW every year until 2023”, says Ataseven. “So we have to find some mechanisms to help wind energy investments to be realised very quickly. At TWEA, we are lobbying and forcing the government to make regulations about wind investments.”

One example he gives of how things have improved is the now simpler processes for wind farm permits. Aside from the support mechanism (the feed-in tariff), there are also benefits for wind and renewables projects such as the 85% discount on rent for government land.

“One of our main aims now is to smooth the path of the investors”, explains Energy Minister Yildiz. “We are trying to do this by giving incentives to the investors. We are advising the cabinet of the Republic of Turkey on this.”

While there are of course obstacles and difficulties to be tackled on the path to 2023 and beyond - most notably the grid infrastructure – Turkey is already wind energy’s eastern star, and looks likely to shine ever brighter.

“I don’t want to bore you with numbers and statistics, but the tripling of per capita income probably demonstrates how Turkey’s economy is sustainably developing”, says Minister Yildiz. “Wind is an important opportunity for Turkey. Wind energy is dependable, sustainable, and clean and has less effect on the environment.” ■



Turkish companies are producing components, but turbines come mainly from international suppliers

Photo: Bahattin Bagdadiloglu

### Turkey – the facts

Official name: Republic of Turkey  
 President: Abdullah Gül  
 Prime Minister: Recep Tayyip Erdoğan  
 Capital: Ankara  
 Population: 75,600,000  
 Ethnicity: Turkish (75%), Kurds (18%), others (12%)  
 GDP: \$1.306 trillion  
 GDP per capita: \$17,651  
 Language: Turkish  
 Borders with: Bulgaria, Greece, Georgia, Armenia, Iran, Iraq and Syria  
 Energy imports: importing 75% of its energy, costing €60 billion per year  
 Growth in electricity demand: 7% a year



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# “The more dependable the legislation, the better”

Jürgen Zeschky, CEO of Nordex, told Sarah Azau about financing, renewable energy policy and the need to reach grid parity.



Photo: EWEA/Bickley

## **How is the financial crisis impacting wind turbine manufacturers?**

Classic financing with banks is getting harder. But there is still a lot of money in the market that needs to be invested. We see that alternative types of financing is happening, for example insurance companies, private wealth funds and so on - as when they invest in wind farms they get a certain return over a certain period of time.

## **Traditional markets in western Europe are slowing down. Where do you see the next business opportunities?**

For us the countries in Scandinavia and Finland are very important – we are active

there and just won several big projects in the region – this area in northern Europe is very interesting for us. Further, in the east, in the Ukraine and so on, usually the problem is the demand for local content, and we don't have a supplier base in the country. In Turkey we have a high market share, also in Pakistan, where we have won five projects. The Asia-Pacific countries like the Philippines and Thailand are interesting, also South America - in Uruguay, and in South Africa where currently we are the second big player.

## **What is your view of the changes to ongoing renewable energy support mechanisms?**

The impact of support mechanism changes is different in different countries – in Spain of course the impact on the wind energy industry has been really bad, but Germany for example, has a good history of stable development. We sometimes get excited during the political debates, but usually in the end the change is more gradual than black and white in our

country, so there may be good reasons to change the legislation. However they should be gradual changes that people can adjust to.

## **The European wind industry has been calling for 2030 renewables targets. How important is it in your view that these are put in place – what difference will they make?**

Targets are absolutely important. There has to be a European approach to renewable energy policy, and even more than that – the more unified the approach and dependable the legislation, the better. That would help in my book quite a lot. The cost of wind energy needs to reach grid parity. We need to change the support but in a way that allows us to reach the grid parity target.

## **As a German company, Nordex will be well aware of the debate over extending the power grid. How relevant is the discussion to you as a turbine manufacturer?**

It is essential to have the right power grid - now we are shutting down nuclear, as a country we need better adjustment of the power grid to energy generation and consumption. For the Nordex situation we are even less affected as we have good products for low wind sites, for example in southern Germany where we have lots of projects.

## **What will be the key wind energy technology trends of the next few years?**

From the customer perspective, bringing the cost of energy to grid parity and doing it to have a good quality supply to the grid, but also getting the quality right, delivering real quality in terms of erection time, the technical quality of turbines. Project management is considerably improved, so is the quality – getting the load management right - and getting the cost of energy right, and everything else follows that. ■

Nordex is a Lead Sponsor of EWEA

*“There may be reasons to change the legislation, but they should be gradual changes.”*

# “Investing in wind costs the same as traditional sources”

Jukka-Pekka Mäkinen, CEO of The Switch, spoke to Sarah Azau about bigger and better turbines, the importance of targets and having a more agile supply chain.

**There is much discussion of emerging wind energy markets in central and eastern Europe. What do you see as the main opportunities in those markets? And what are the major challenges?**

In eastern Europe of course I see a possibility in Romania and Turkey; the markets are good there. As for the challenges, let's say that of course it's how the market is opening up. I'm not a real expert in this area since we are delivering components to turbine manufacturers and they are going into those markets, so I know something of the markets and some of their challenges such as land ownership have been in the papers but I'm not a specialist.

**Some EU governments are changing their renewable energy support mechanisms, even retroactively. What impact is this having?**

I see that there are difficulties but can still see that wind power is one power generation area that is most attractive for investments. I believe money will be available for projects, I'm not concerned by the changes as long as support mechanisms are in place; there are new players like private equity players coming on board. However the potential support changes are a threat, so we need long term commitments from countries to make it transparent for investors.

At the same time the industry should improve the technology and output of the turbines, using newer technology such as permanent magnet generators in order to prepare for the times when support mechanisms won't be there. Bigger and better turbines that have higher energy production will make the industry attractive. Investing in wind costs the same as traditional sources in good wind conditions. We are not far off grid parity, but support mechanisms make it interesting enough for investors to invest, and when products become better and more cost efficient energy can be produced, then the investors which have invested with support mechanisms keep investing.

**EWEA is calling for 2030 renewables targets: is this important? What else needs to happen for the sector to meet its potential?**

There has to be a common will from different countries because the targets are the only way of keeping focus. The 2020 targets have been well communicated and Finland has been slow to adopt wind power, but still people have ingrained in their mind those targets. I believe it is a good thing to get confidence if there's something after 2020.

**You have talked in interviews about the wind industry adopting a “networking approach”. What exactly is this and how would it help?**

I have been working since 1980s with same type of technology – generators, motors and trends in other OEM [original equipment manufacturer, ed.] businesses. OEMs become logistic centres where they get parts from different partners and they develop those subparts.

The wind industry has been unique in that it has had stiff vertical integration – meaning the more you make yourself the better you are. This is now changing; there was a shortage of equipment, but now the equipment is available, now people are selling off component factories, Vestas is supplying towers in the US to their competitors and so on. The networking approach means everyone should concentrate on their core competences not on the whole wind turbine. If you buy a power plant you don't buy it all from one supplier. Or look at the elevator business – at first they all made the converters and motors themselves and now they are buying parts and motors from partners.

So I believe when you have this network approach you have more agility in the supply chain to ramp up and down the production. ■

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Photo: EWEA/Bickley

*“Targets are the only way of keeping focus.”*

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# Turkey and the hare

Those who move quickly are able to seize market opportunities ahead of their competitors. Those who wait, however, can more easily avoid the potential pitfalls that might lie ahead of the trailblazers.

As the biggest wind power country in central and eastern Europe, with plans to attract much needed investment for ambitious wind power growth, Turkey is keen to avoid doing anything that might derail its plans.

Having moved early to embrace renewables, up until around 2008 the EU was by far the world leader in terms of annual installed wind capacity. Yet for all its success, the pace of renewable development in the region has thrown up some hard lessons, lessons that Turkey can learn from.

Turkey is a dynamic country with regards to renewables, both in terms of the investments that are being made and ongoing developments in legislation.

Electricity demand was 240 TWh last year and is expected to reach more than 500 TWh in 2023.

Most of Turkey's generating capacity is in the form of natural gas combined cycle power plants. In recent years, the country has been looking to reduce its dependence on natural gas but has only had limited success. Three or four years ago, gas fired plants provided about 49% of the country's electricity; today that figure still stands at about 43%.

It had been hoped that dependence on gas would fall much more quickly as the country utilised its significant wind resources. Turkey has a wind power potential of 48 GW and aims to have wind represent 20% of its generating capacity by 2023. This would see wind power grow from around 2,500 MW at present to 20,000 MW.

However, licensing for wind farms aimed at achieving this goal has been a long and drawn-out process. It has been almost six years since the first wind licence tender was held on 1 November 2007 and the process of installing new wind farms is gathering momentum.

According to the Turkish Wind Energy Association more than 60 wind farms are now in operation and another 23 are under construction in 12 cities across the country (as of June 2013).

In May, Turkish industrial and financial conglomerate, Sabanci Holding together with the German utility E.ON completed the country's largest

wind farm to date in the province of Balikesir. The 143 MW project is expected to generate 524 GWh a year.

Speaking at a recent webinar on opportunities for renewables in the Turkish power market, Kerim Ertan, Chairman of Turkish energy consultants, Barok, said: "In a strange way, Turkey has benefitted from not being part of the EU. Some EU member countries were under pressure to rapidly increase their renewable generation portfolios and as a result were forced to provide levels of support that were unsustainable."

Indeed Spain and Germany have provided invaluable lessons for everyone, in terms of the dangers of trying to promote renewable energy too quickly.

The law enacted in February that retroactively cancelled subsidies to the wind industry in Spain has created a mess. In May, the country's Supreme Court told the association of Spanish wind electricity generators that it has grounds for legal redress. At the same time, further energy reform in July will slash profitability across the industry and banks have warned it is likely to trigger a series of defaults on projects.

Turkey seems unlikely to repeat such mistakes. Certainly the feed-in tariffs (FITs) offered by the Turkish government for renewables are quite low compared to those offered elsewhere in Europe.

While the sector needs support, lower FITs make sense in that they force developers to create projects whose economic viability depends on the sale of power rather than the level of subsidy.

During the webinar, Peter Laurens founder and senior consultant, Rockwell Risk Advisors LLC in New York commented: "Investors were burned in Spain by the sudden retroactive change in the renewables support scheme. I don't see that happening in Turkey. There will be a measured and slow development, with the government showing good progress in making the process for foreign investment more efficient and speedier over time."

Like in Aesop's fable, 'The Tortoise and the Hare', Turkey's slower approach – whether by luck or design – reaffirms the moral of the story: sometimes slow and steady wins the race. ■



By Junior Isles

**Junior Isles** is the Editor-in-Chief of *The Energy Industry Times* newspaper and an Energy Media Consultant with Man in Black Media.

*"The pace of EU renewable development has thrown up lessons Turkey can learn from."*

# Keeping up with the blog

Do you follow the EWEA blog on [www.ewea.org/blog](http://www.ewea.org/blog)? Updated several times a week, the blog covers news and opinion on a variety of topics linked to wind energy. Below, acting blog editor Tom Rowe selects his top stories from the past few months.

Photo: EWEA/Bickley



Tom Rowe picks his favourite blog posts from the summer

## *EWEA's debate pitched pro and anti-renewables targets speakers against each other*

By Tom Rowe

In a European Commission building in Brussels yesterday morning, high-level representatives from business groups, renewable energy, the chemical industry, the gas industry, a health and environment alliance and an MEP battled it out in front of an audience of over 100. The topic was EU energy policy after 2020.

The scene was set by Moderator Arthur Neslen, Climate and Energy Editor at Euractiv. On the panel beside him were Thomas Becker, CEO EWEA; Anne Stauffer, HEAL; Ms Beate Raabe, Secretary General of Eurogas; Peter Botschek, Director of Energy & Health, Safety & Environment, Cefic; Adrian Van den Hoven, Deputy Director General, BUSINESSEUROPE and Frauke Thies, Policy Director of the European Photovoltaic Industry Association. MEP Claude Turmes also joined the debate.

The lively two-hour debate generated some interesting quotes.

EWEA CEO Thomas Becker made the point that "We should demand that politicians take us there because the market will not do it by itself", referring to the fact that the EU has decided to be almost carbon free by 2050.

"An international agreement is key because it levels the playing field", he said, referring to an international climate agreement.

"The unfortunate thing about the shale gas is that it has pumped cheap coal into Europe, and we are then faced with an even bigger problem now. We need urgent measures because in my opinion, coal belongs to another century".

"Fossil fuel and nuclear energies are heavily subsidised in Europe."

"Do not see the renewable industry as a burden. See it as an opportunity. It will provide cheap, green power and provide Europe with a leading position in something that the rest of the world will ask for."

Peter Botschek of Cefic, representing the chemical industry said:

"The new framework for 2020 needs to be a different one. We must bring the European supertanker back on course. At the moment we are losing 200,000 jobs per month."

"While in theory we should leave fossil fuels in the ground...we need to make the economy work again, to re-industrialise".

Frauke Thies, Policy Director at EPIA said:

"Climate and energy policy is economic policy".

"Currently we are paying more than a billion euro for fuel in Europe every day. Not doing anything is going to cost us the same, if not more".

"I would not wait till we see a global deal (on climate change) to move in the EU. If we sit and wait we will lose out".

Adrian Van den Hoven of BUSINESSEUROPE said:

"We are in favour of climate regulation, we support the 2020 emissions cap, and we expect businesses to meet that cap".

"Our position is for the phase-out of subsidies for renewables".

"We are opposed to backloading. We are calling for a single mechanism to deal with price, outside of political decisions".

"For climate change, we want a technologically neutral solution and an international agreement".

"We are not looking for subsidies for fossil fuels, if you look at the EU, fossil fuels are taxed".

Beate Raabe of Eurogas said:

"Market barriers shouldn't exist for renewables and we should bring them down".

"This competition between renewables and gas, I don't think that's necessary".

Anne Stauffer of HEAL said:

"Our fossil fuel dependency comes with huge costs to our health and to the environment".

"We will have huge savings by having a higher CO<sub>2</sub> reduction goal and more renewables. We will have huge health benefits".



Photo: EWEA/Bickley

Over 100 people attended EWEA's debate on targets.

“According to the European Environment Agency, air pollution costs from industrial sources cost 169 billion euros”.

MEP Claude Turmes said:

“My answer to divergent energy policies at the EU level is binding renewable targets”.

“Eurelectric and BUSINESSEUROPE are stopping the energy transfer”.

“Energy intensive BUSINESSEUROPE member companies have only gained from climate change policies”.

(Published 27 July)

Tom says: “Representatives from the main actors in the European energy scene were present at this exciting two-hour debate in Brussels. There was a frank exchange of views. It was a learning experience for the more than 100 people who attended.”

*“Fossil fuel and nuclear energies are heavily subsidised.”*

## Cutting renewables support to increase competitiveness is nonsense

By Sarah Azau

Those European countries which have cut support schemes for renewable energy, have – just like Professor Butler writing on an FT blog yesterday – jumped to the wrong conclusion.

“Competitiveness is the watchword of the moment. Recession and unemployment are the crises which require attention”, the Professor writes. Yes indeed. Yet withdrawing public support for wind energy and other renewables to boost competitiveness, to tackle recession and unemployment is as illogical as eating an orange a day for your health – and stopping as soon as you get a cold.

The renewables sector employs over 1.2 million people in Europe. Wind energy alone contributed €32 billion to the EU economy in 2010 and employs well over 200,000 people in Europe. Europe is a net exporter of wind energy technology. Support for renewables is support for European jobs; a European industry and European growth.

Removing that support destroys those jobs and industrial leadership – in Spain, over 20,000 jobs have been destroyed between 2008 and 2010 due to the retrospective changes introduced in 2010. Moreover, it means Europe has to get its power from elsewhere: yet more polluting coal and gas; yet more money handed over to Russia, Algeria and other exporters.

“In Germany the mood has shifted decisively against more costly renewables”, Professor Butler claims. More costly than what?

“Renewables will reach cost parity with conventional fuels (including gas) in many parts of the world in the very near term”, says Citibank. Wind energy is already far cheaper than nuclear, coal – if you count the €42.8 billion annual health costs – and increasingly competitive with gas.

Finally, those governments who are changing their support for renewables should bear in mind where public money is really going: OECD figures show that coal, oil and gas in the UK were subsidised to the tune of £3.63 billion in 2010, while onshore and offshore wind received only £700 million in the year to April 2011 – that’s more than five times less than fossil fuels. Moreover, International Energy Agency figures show that coal, oil and gas subsidies in 37 countries received a total of \$409 billion in 2010, compared to \$66 billion for renewables.

Published 24 June

Tom says: “The focus on “recession and unemployment” in the media is justified in these times of crisis, but it is important to point out the economic benefits of renewable energy – it provides jobs and income all over Europe, and the reality of energy subsidies are that fossil fuels receive far more support than renewables.”

### What else?

Other stories on EWEA’s blog ([www.ewea.org/blog](http://www.ewea.org/blog)) recently include:

- A discussion of the European Parliament’s vote in favour of removing ‘permits to pollute’ which should help fix the carbon market by making it more expensive to emit carbon.
- Reports on wind energy from countries as diverse as Belgium and Brazil.
- A look at the ‘WindMade’ project label – and how you can get your favourite companies to go green by becoming ‘WindMade’.
- How Vestas, Greenpeace and others are hitting back at anti-wind power campaigners down under.

EWEA’s blog is updated several times a week by different contributors – and you can receive the latest news in your inbox by signing up to the email alerts or RSS feed on [www.ewea.org/blog](http://www.ewea.org/blog) ■

*“Wind energy contributed €32 billion to the EU economy”*

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Adam Barber examines the thorny issue of financing and the wind industry.

# Tapping into transatlantic ties

For all the talk, you'd be forgiven for thinking that US offshore wind initiative, Cape Wind, has already been built.

It hasn't. Although it inches closer to construction kick off every week.

To date, power purchase agreements for over 50% of the electricity it will produce are in place. Federal and state permits are approved. And the consenting process continues to tick along, as the (predominantly European) consultancies working behind the scenes keep rattling through the hours.

However, that's not to say that for all those involved, it's been plain sailing. Far from it. Since many industry insiders are of the opinion that the project wouldn't have got even half as far were it not for the dogged determination of Cape Wind's President, Jim Gordon, and his wider team.

However, all this isn't to say that the project has lost the ability to surprise. Or that it's lost the interest of the European finance and investment community, either.

Something that's especially true following confirmation in June that Danish pension fund, PensionDanmark, will commit fresh capital to the project.

A €200m boost, to be precise. It's a sum that is being handed across in the form of a mezzanine loan and is conditional on the developer receiving a final decision to go ahead with the project before the end of 2013.

For the pension fund – that's already invested in two European offshore wind farms and three onshore in the US – investing in wind energy infrastructure isn't new. So there's some logic to the deal.

However, what's particularly interesting here is not the amount of money that's being invested. Or the way in which the capital is being lent. Especially since this pales in comparison to the overall cost of the project.

No, what's interesting is where this money is coming from, whom this positions the new lender alongside and what this might really mean for the wider US and the European offshore wind energy markets in the future.

For given its current track record PensionDanmark ought to know a thing or two about how to spot a promising project.

And the pension fund's name brings more to the table than pure capital alone.

Cape Wind has secured a partner that understands the complexities of this finely balanced project risk. In turn, bringing added gravitas

and fresh investor confidence to proceedings.

It's a valuable commodity that helps steady the ship. And for a project that has experienced such a protracted start, the certainty that this European investor brings is key.

Of course, Cape Wind's financial advisors, Barclays, who have been working with the developer for some time, won't have missed any of this. And the bank will be fully aware of the wider benefits of bringing the fund onboard.

Indeed, with PansionDanmark now sitting alongside Bank of Tokyo Mitsubishi on the project, the investment duo is undoubtedly going to help settle nerves.

The Asian investor may have only been operating in the European offshore wind sector for three years but that's not stopped it becoming the eight largest provider of project debt; having allocated \$185m to three wind farms in relatively quick succession.

Unsurprising then to see this international investor duo reflect favourably on the financial advisor helping to pull the strings.

Throughout this process, Barclays has received unparalleled exposure into the various intricacies and details of the project and they've still of course, retained the possibility to invest – perhaps something that could provide that final financial twist?

Over at Barclays, the man heading up operations is Theodore Roosevelt. He's managing director at Barclays Capital Corporation and the great grandson of US President Franklin D Roosevelt.

His grandfather's legacy was the New Deal – economic programmes that, in the wake of the Great Depression, put the United States back on the road to recovery.

In energy and infrastructure terms, that meant initiatives such as the Hoover Dam, coupled with a wider commitment to fund future North American road and rail networks.

Scroll forwards almost 100 years and now, as his grandson establishes the foundations for US offshore wind energy, the similarities must surely be too difficult to miss.

Irrespective, with many European manufacturers and consultancies having bet heavily on the North American market, and looking for returns, all eyes will once again be on the Roosevelts. ■



Photo: Tamarindo Communications

**Adam Barber** is the publisher of *A Word About Wind* and the founder of Tamarindo Communications.

His team provide counsel and advice to ambitious businesses operating in the financial services and energy space.

Financing is one of the conference tracks at EWEA OFFSHORE 2013 in November. Read what the track chair thinks of the current financing situation on p.58, or for more on OFFSHORE 2013: [www.ewea.org/offshore2013](http://www.ewea.org/offshore2013)

# A closer look at... **Croatia**

In 2013, *Wind Directions* will take a look at a selection of wind energy markets across Europe and beyond.

By Jessica Anania



Photo: iStockphoto

Whether it is the pristine white beaches of Dubrovnik, the verdant national parks of Sibenik, or the bustling streets of Zagreb, Croatia offers something to every traveller that finds themselves on its shore. But, the country, which has recently grabbed the headlines by joining the European Union on 1 July, also offers Europe something arguably more valuable: a fresh market for wind energy development.

However, despite ideal wind conditions, obstacles remain that may hinder the growth of wind energy. Croatia's awe-inspiring landscape could slow progress as authorities struggle to decide where to actually place wind turbines, and Croatia's dense bureaucratic structure

weighs down the decision making process.

Croatia's current wind energy status is promising. The first wind turbine was constructed on the island of Pag in 2004, and since then, wind energy has experienced solid growth. Installed capacity increased from 6 MW to 131 MW between 2005 and 2011. Over 70% of the installed wind turbines are located along the Southern Adriatic coast, where there are appropriate higher wind speeds. A well-developed local supply chain helps expedite the production and transport of wind turbines nationwide.

Croatia is also poised for further development, with a 14 year guaranteed feed-in tariff of €76.03 for up to 2,250

hours of operation and €67.85 for more than those 2,250 hours. This ensures access to financing and 4.7 GW of wind energy planned. Croatia has set a goal to reach 35% renewables in electricity consumption by 2020, and is currently on track to meeting it. Although wind energy capacity is currently limited to 400 MW by the grid, plans have also been made to upgrade the grid system and increase capacity by 2014. Currently, both the transmission and the distribution systems have insufficient capacity to connect more than 400 MW of wind energy according to grid operators. However, both the landscape and bureaucratic structure could potentially slow growth.

## Landscape and tourism

Tourism serves as a sizeable chunk of Croatian industry, with the total contribution of tourism equating to 26.5% of total GDP and 28.3% of total employment in 2012. Both numbers are forecast to rise significantly in 2013. As such, Croatian officials have great stake in protecting the tourism industry and tourist attractions. For tourists, one of the biggest draws is the unique landscapes Croatia offers. Beaches, coral reefs, cave systems, forests and lakes, all remain pristinely preserved within Croatia's borders in part due to the strict laws governing the development of such places.

Currently, Croatia has identified both national parks and nature parks. There are eight national parks and eleven nature parks. National parks, such as Plitvice Lakes National Park, are entirely off limits to any sort of wind energy development. Wind turbines could technically be placed in nature parks. However,

development in such areas is subject to an arduous process as authorities determine whether or not the wind turbines would threaten the parks' essential characteristics.

Moreover, Croatia has identified some sites as Natura 2000 locations. These locations are subject to strict protection, but wind turbines could potentially be constructed there under specific conditions. Currently, 47% of its land and 39% of its waters are designated Natura 2000. These limitations, while crucial to preserve Croatia's landscape, do serve to complicate wind turbine development.

### Cumbersome bureaucracy

Additionally, Croatia has a dense bureaucratic structure that could stall further wind energy development. Prior to obtaining a permit, wind farm developers must register with the Ministry of Economy and be listed in the eligibility register. A feasibility study must then be started within the next six months. Upon completion of those requirements, it generally then takes another three to four years to obtain the licensing and permits necessary to begin construction of a wind farm. The Croatian Energy Regulatory Agency (HERA) also holds significant power over licensing. Licenses are valid for between five and thirty years with no absolute limits or terms, leaving discretionary powers to HERA. HERA has the power to contract electricity purchases and distribute incentives, and they are in charge of regulating all energy in Croatia, so they have the power to start and stop projects. According to an EWEA report published earlier this year – 'Eastern Winds, emerging European wind power markets', the procedures in Croatia are overly bureaucratic and in need of improvement.

However, such improvement could come now Croatia has become part of the European Union.



As of 1 July, Croatia is the EU's 28<sup>th</sup> member state

Photo: iStockphoto

"Entering the European Union completely changes the prospects for Croatian wind energy," explained Pierre Tardieu, Regulatory Affairs Advisor on Stable Legislative Frameworks for EWEA.

Croatia is already a part of the European Energy Community. However, being part of the EU means Croatia must comply with additional, EU guidelines including internal market rules, CO<sub>2</sub> reduction goals, and the renewables directive for a 20% share of renewable energy by 2020. Should Croatia fail to comply, it would be sanctioned by the EU.

As the country follows these rules, opportunities for land and ownership rights for foreign investors will open up. Additionally, joining the EU may jumpstart more decisive action within the wind industry, such as setting and meeting more concrete goals, expanding

the grid system, easing bureaucratic bindings on expansion

"As a new EU Member State, Croatia will need to develop a National Renewable Energy Action Plan to comply with the 2009 Renewables Directive. The plan will address support mechanisms for renewables, grid operation and development and the simplification of administrative procedures, all key enabling factors for the development of onshore wind in Croatia," said Tardieu.

With its strong wind resource and increased accessibility as a member of the EU, Croatia stands in a prime position to expand its wind industry, despite various obstacles. With plans already made to expand and improve wind energy, Croatia could soon be a destination not only for tourists, but for a burgeoning wind energy market. ■

### Croatia – the wind energy facts

<b>CURRENT CAPACITY</b> . . . . .	.400 MW (plans to upgrade by 2014)
<b>2020 FORECAST:</b> . . . . .	1,200 MW
<b>PERCENTAGE OF ELECTRICITY TO BE MET BY RENEWABLES BY 2020:</b> . . . . .	35% renewables target in electricity consumption

# Booming boats

As the offshore wind sector continues to grow, the challenges of building bigger wind farms deeper and further from shore are being met by a new generation of ever more-sophisticated installation vessels at the forefront of ship design and innovation, as Philippa Jones discovered.

The offshore wind industry is getting bigger and bigger. Even a cursory glance at the latest figures from EWEA make this patently clear: the average capacity of the 293 offshore wind turbines connected to the European grid in 2012 was 4 MW, 11% bigger than in 2011; the average size of the 18 wind farms under construction in 2012 was 285.6 MW, 43% more than 2011.

And wind farms are not just getting bigger, they are being installed deeper under the sea and further offshore as well. The average water depth of wind farms completed, or partially completed, in 2012 was 22 metres, while the average distance to shore last year was 29 km, almost 24% more than in 2011. EWEA forecasts that both average water depth and distance to shore will increase over the coming years.

Meeting the challenge of building wind farms that are bigger, deeper and further offshore naturally requires a new generation of support infrastructure, and 2012 saw several new vessels launched designed to do just that. They all feature innovative technologies, allowing them to operate in deeper waters of up to 75 metres and in

harsher sea conditions, where they must be able to cope with higher waves.

They are also bigger, and have a greater storage capacity: there is space for more foundations and turbines, and they have stronger cranes that are capable of lifting and installing wind farm components with enhanced precision.

There are many advantages to these purpose-built vessels. They not only reduce the number of harbour-to-wind-farm-site trips required during the installation process but they also increase the “weather window” during which offshore work can be carried out. And perhaps most important of all, this improved efficiency will ultimately lead to lower costs for installing offshore wind farms.

## The latest models

Several new vessels went into service in 2012: these include the Northwind Installer by NorWind, Pacific Orca by Swire Blue Ocean, Seajacks Hydra and Zaratan by Seajacks, Seafox 5 by Seafox Group, Friedrich Ernestine by RWE Innogy and Innovation by HGO InfraSea Solutions.

Swire Pacific Offshore, the parent company of Copenhagen-based Swire Blue Ocean, took delivery of the Pacific Orca in July 2012. The vessel was created to provide service for Dong Energy and is an impressive 161 metres long, 49 metres wide and 10.4 metres deep. For obvious reasons, these vessels are all large, and the marketing that accompanies them is suitably hyperbolic: Swire claims that Pacific Orca is “the world’s largest structure for installing wind turbine generators (WTGs), with a capacity to carry and install up to 12 units of a 3.6 MW design”.

The hyperbole doesn’t stop there either: the vessel can install offshore wind foundations and WTGs in ocean depths of up to 60 metres, and her design will enable the installation of the ultra-large WTGs of 10 MW or more that are currently being developed to meet the future needs of the industry, says the company. “By fixing her six jack-up legs to the seabed and lifting herself up to 17 metres above the surface of the ocean, Pacific Orca can conduct offshore windfarm installation in a manner least affected by wind and waves, and with maximum accuracy and promptness,” says Swire.

Swire is not alone in vaunting the elephantine credentials of its vessels. At the launch of its offshore installation vessel, the Victoria Mathias, in May 2012, RWE Innogy claimed the vessel was “the first of its kind worldwide to be able to transport up to four offshore wind turbines of the multi-megawatt class at the same time and then install them at a depth of more than 40 metres”.

The Victoria Mathias will build the Nordsee Ost wind farm around km north of the island of Heligoland, off the coast of Bremerhaven in Germany. The specialised vessel is more than 100 metres long and 40 metres wide, and is equipped with a satellite-controlled navigation system that can position the vessel “precisely at centimetre accuracy for the construction works at sea”, according to the company. It has extendible steel beams that fix it securely to the seabed, and a crane with 1,000 tons of lifting capacity. When on the building site itself, the vessel turns into a jack-up rig from which foundations and wind turbines can be installed.

### Bigger and better

Each company seems determined to outdo its rivals when it comes to size and sophistication. In June 2013, the UK-based Seajacks International announced an agreement with Samsung Heavy

RWE's vessels can transport four turbines at once



Photo: RWE

*"The improved efficiency of these boats will reduce costs."*

Industries (SHI) to build what it claims will be the world’s “largest and most advanced offshore wind farm installation vessel”, specifically designed to meet the demands of working on UK Round three (the proposed nine offshore zones of varying sizes in which a number of wind farms could be developed) as well as in Scottish territorial waters and other North West European markets.

Named Seajacks Scylla, the new vessel is based on the Gusto MSC NG14000X design and will be equipped with a 1500 tonne leg-encircling crane, incorporate useable deck space in excess of 5000m<sup>2</sup>, and have over 8000 tonne of available variable load. Sailing at speeds of at least 12 knots, Scylla will be fitted with 10 metre long legs that have the ability to install components in water depths of up to 65 metres. Seajacks Scylla will be delivered in the second half of 2015.

“Drawing on our extensive experience, and based on feedback from discussions with clients across the supply chain, the design of Seajacks Scylla has been developed to meet the



Photo: EWEA/Bickley

**EWEA's Athanasia Arapogianni explains the benefits of new vessels**

installation needs of jumbo-monopiles, jackets and turbines of future wind farms in deeper waters and further from shore," says Blair Ainslie, the company's CEO. "Seajacks Scylla is a significant milestone for [us] and for the offshore wind industry. She is a Round three vessel and is more technically advanced than any other installation vessel that we see on the market today," he added.

So who decides exactly what these vessels will look like? "A new vessel is really dictated by the owner/operator, and depends also on how much he wants to pay," says

Rob Whillock, renewable energy lead offshore specialist for the UK certification body Lloyd's Register. "Generally when an owner is developing a new specification for a vessel he will have to make some kind of trade-off in the design for economic reasons. For example, if he wants to have a larger crane, the costs of the vessel will go up and the owner may have to decide whether this is the most important operational aspect for the design vessel and whether to accept a capability reduction elsewhere." Certification bodies will therefore "ensure compliance against classification and statutory requirements," but won't dictate to an owner/operator what they need on a vessel from an operational perspective, says Whillock.

He suggests that the key aspects that should be taken into consideration in the design of a new vessel are the need for a larger working area and how to maximise the ability to store components for turbines such as towers, nacelles and blades on the vessel. "As the turbines and blades are getting larger, we are now starting to see some novel storage concepts, for example where the blades are stored on a rack at the front of the vessel," says Whillock. "In short, operators need to decide how to get the most out of a vessel in the most cost-efficient way."

But even if operators/owners have the final say on the kind of vessel with which they would like to work, they must make sure that the final design conforms to a plethora of rules. This means both class rules that deal with the construction and survey of the hull of the vessel, including its machinery and electrical equipment, and statutory regulations that govern aspects such as life-saving equipment, subdivision and stability, navigational aids and pollution control and are dictated by flag authorities. "The biggest problem regarding statutory regulations at the moment is that different countries demand different standards and it is not always easy for operators/owners to comply

with the demands of all the flag authorities," says Whillock. There have been a large number of discussions between some of the northern European authorities to try to and agree to harmonise the statutory regulations applied to wind turbine installation and maintenance vessels used in these areas, and as a result further discussions are now ongoing within the International Maritime Organisation (IMO). However, the IMO is looking to develop non-mandatory guidelines that can be used by all flag authorities, rather than introducing totally new standards for offshore installation vessels for the wind sector. "Non-mandatory guidelines would give some consistency, but it is open to debate how long it will take for these guidelines to be finalised," comments Whillock.

Nonetheless, it is important to have clarity and consistency with regards to statutory regulations, as these vessels are not cheap, costing €100-150 million for a new build. When building a new vessel, certification bodies such as Lloyd's Register can help with this aspect by liaising with owners, operators, designers and the flag authorities in order to come to a common agreement as to the statutory regulations which will be required to be applied.

### Keeping up

The need to have fit-for-purpose installation vessels is obviously a necessity if the offshore wind sector is to reach its potential in Europe, and so far at least the support infrastructure seems to be keeping apace. "We believe that there is a lot of progress in installation vessels, both in quantity and quality," says Athanasia Arapogianni, senior research officer at EWEA. "The offshore wind sector will continue to benefit from purpose-built vessels that will accommodate the need to install bigger turbines in harsher environments and with greater weather windows."

And in these times of economic downturn and high unemployment in Europe, Arapogianni believes that the creation of new offshore installation vessels could benefit more than just the wind power sector. "There are innovative concepts out there that are expected to cover these needs for bigger turbines and that could potentially put offshore wind high on the agenda of the European shipbuilding sector."

The supply chain - including vessels - will be under discussion at EWEA's upcoming OFFSHORE 2013 event in Frankfurt: [www.ewea.org/offshore2013](http://www.ewea.org/offshore2013) ■

*"As turbines are getting larger, we are starting to see some novel storage concepts."*

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# Wind worker

From underwater survey work to managing the operation of a wind farm, we meet some of the over 200,000 people who make the European wind industry tick.

## Bas Zoon, Project Manager, Seaway Heavy Lifting



Photo: Seaway Heavy Lifting

### **What does your job involve?**

As a project manager I am responsible for ensuring that the contract that has been agreed between our company and the client is executed as agreed. I will initiate processes required for executing the contract and monitor the delivery of all parties involved. The critical aspect of this work is ensuring timely intervention in case the processes are not performing as expected.

Within Seaway Heavy Lifting (SHL) I manage on average three different contracts.

### **What is a typical day like for you?**

In general the contracts I manage are in a different phase of the project, so for one project we could be setting up the documentation, subcontracts and client interface while for a second job we could be in the mobilisation phase preparing the vessel and equipment for the work and for a third job the work could be ongoing with another vessel. I will have to prioritise my actions to ensure all projects are running at their optimum pace.

Also the physical location for the work is very different: this could be in our or the client's offices, at a subcontractor's facility, at a load-out location, in port or even on one of the installation vessels. Whether or not my presence is required will depend on the nature of the issues at hand.

### **How did you come to work in a job related to the wind energy industry?**

That was a natural transition: SHL operates large crane vessels which are traditionally used for the oil and gas industry to install the offshore production platforms. With the big expansion in the wind industry [and] a shortage in crane capacity to install the foundations for the windmills and the

transformer stations, experience with offshore operations became important. Sheringham Shoal Foundations and TP's was my first project for SHL, since then I worked on the Gwynt Y Mor, Borkum West II, Meerwind, HeiWin and BorWin Projects. Apart from that I also still work on some oil and gas projects.

### **What is your favourite part of your job?**

That is hard to say: each part of the work has its merits. As long as we can work as a team, it can be very satisfying — working with colleagues to properly prepare the project, working with clients to ensure they will be satisfied with the end product. I feel in the end the most satisfying part is being offshore and witnessing the installation of the structures.

### **What is your least favourite part of your job?**

That would be reminding people of their commitment to tasks. It is easy for everyone to state that they will pick up a task. However, often due to other obligations, it may be lost in the grinder when a lot of other work is lying on their desks.

### **Do you work in a team or individually?**

Projects are team efforts: as a project manager you are the conductor of the orchestra, you do not play an actual instrument but without you chances are that it will not sound harmonic.

### **What are your predictions for wind energy in the future?**

Due to the depletion of liquefied carbohydrate resources and restrictions in CO<sub>2</sub> emissions, alternative energy and particularly offshore wind energy will become a vital part of the (Northern) European energy grid. The business will become more professional and more competitive which will ensure the price per kWh will at some point be economical without government funding.

*“As project manager you are the conductor of the orchestra.”*

## Malte Bruun, Master Mariner, A2SEA

### What does your job involve?

As master I have a very diversified job. But first and foremost it is to ensure the safe operation of all vessel systems and of course the safety of the vessel's crew and clients. Secondly I have got to ensure a smooth and efficient project execution. The manoeuvring and positioning of the vessel, preloading and jacking are just a small part of this. Meeting with clients and vessels senior officers on a regular basis helps to align expectations and create an open and professional relationship where crew and client assist each other in reaching the common goal, project completion on time and on budget.

### What is a typical day like for you?

My day normally starts at 7:00 with a cup of tea and a small talk with the Chief Officer and Chief Engineer regarding status of vessel maintenance and planned jobs that might require some coordination with the client.

At 9:00 I have the morning meeting with the client and the Marine Warranty Surveyor. A typical agenda is HSE [Health, Safety or Environment] incidents or improvements required for crew/vessel/project. Past 24 hours of activities and status on these, next 24 hours planned operations that influence the project and of course a run through the latest weather forecast.

Then I have a chance to attend the daily administration and sending of the daily progress report. I normally also have a walk through the entire vessel to say good morning to the crew and get an impression of housekeeping and ongoing maintenance.

During the afternoon I work on the daily administration. This could be project details, planned crew change, coordination with port authorities, planning of maintenance...

It is seldom that I go through an entire day without any movements of the vessel, either in vertical motion by jacking which I supervise or in horizontal by manoeuvring the vessel. Depending on the schedule of installation work, I can normally have an hour's rest before dinner.

After dinner I normally try and close as many mailbox items as possible before nodding off around 23:00.

### How did you come to work in a job related to the wind energy industry?

After eight years as navigator in large and medium sized container ships I needed a change of environment and tried a short period as master on a dive support vessel working on the North Hoyle Wind farm. This was followed by a year in tugs when I saw a job opportunity at A2SEA. I applied

for the position of Chief Officer on the jack up barge SEA JACK. The challenges and cooperation required I found very rewarding and decided this was a type of work I could positively contribute to as Master Mariner. I have been directly involved either as Master or Chief Officer on many wind farms.

### What is your favourite part of your job?

A definite plus is the interaction with many different people. All from vessels crew to clients and warranty surveyors as each play their part in the successful outcome of installing foundations or wind turbines.

Creating and maintaining a positive dialogue between the involved parties is certainly challenging but also has a win-win effect.

A large part of the job satisfaction also comes from being involved in building the new SEA INSTALLER, following the vessel evolution at the shipyard and doing what I can to make sure the vessel hits the ground running or more precisely, hits the water swimming.

### What is your least favourite part of your job?

A cause for concern is the lack of common rules applying to this industry. When the vessel is floating like any other ship the main governing body is the Danish Maritime Authority but when the ships legs are lowered onto the seabed we suddenly become an onshore construction site and when working the UK, must comply with British construction, design and management regulations. For example we can then only use hand tools with 110V instead of the normal 220V as for the rest of Europe. And now crew members must also have courses in operating various work specific equipment like, cherry pickers, fork lifts and deck cranes, something that is not a requirement under Danish maritime regulations.

### Do you work in a team or individually?

As master I work individually but I am highly dependent on a well-functioning team of officers and crew. I strive for an open and free dialogue where the other officers either on deck or in the engine department are most welcome to give their input or concerns. Nobody is perfect and if an accident can be avoided or a process made better by a junior officer or rating informing me of certain circumstances I am not aware of, then this should be taken seriously and accepted.

On a vessel like SEA INSTALLER a good team spirit, cooperation and trust is paramount for a successful operation. ■



Photo: A2SEA

*“A cause for concern is the lack of common rules applying to this industry.”*

# EWEA Technology Workshops

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**EWEA**

THE EUROPEAN WIND ENERGY ASSOCIATION

EWEA teams up with the experts to deliver technology workshops which leverage the know-how of the industry at large. We listen to our members to develop high quality events at the best value for money.

## Wind resource assessment results: how accurate can we be?



The wind is not the same everywhere, every day. It can vary depending on the landscape, the altitude and the climate. A turbine on a mountain in Switzerland will not have the same wind conditions as a turbine on a delta in Italy. Yet for wind energy developers and investors, knowing as far as possible how much energy a planned farm will produce – ‘resource assessment’ – is crucial. A recent EWEA technology workshop took a closer look.

“Resource assessment determines whether your wind farm will make money or go bust,” says Will Barker from ZephIR. “An accurate assessment means more profit and less risk for the investor.”

“If you get the resource assessment wrong, there’s uncertainty for manufacturers and financiers”, agrees Stefan Ivanell from Gotland University.

What’s more, as wind turbines evolve – getting taller and with larger rotors – measuring the resource becomes even more complex. And what impact does one wind turbine in a wind farm have on the wind that blows over the other turbines?

Well over 200 people – including those quoted above – attended EWEA’s technology workshop, in Dublin on 25-26 June.

The highlight of the workshop was the results of an ‘assessment comparison exercise’. Prior to the workshop, 60 teams from 56 different organisations in 17 countries had downloaded from EWEA’s website all the information required to perform an assessment of the energy production of a real 22 turbine wind farm in eastern Scotland owned by RES. Their estimates were compared with each other and contrasted with the “real” figures – and the results were presented in Dublin.

The teams’ estimates of the power production averaged 75.7 GWh (the range



Networking and watching cricket after workshop sessions at Trinity College, Dublin

went from 64 to 91 GWh). The real energy production – observed over five years – was 76.25 GWh – a difference of just 0.6%. The six teams with the most accurate estimations used a range of models to get their results.

“Wind resource assessment works if you do it right!” concluded Niels Gylling Mortensen from DTU Wind Energy, who presented the results. However he pointed out that there is always an element of the unknowable “human factor”.

The Dublin workshop was organised by EWEA with the Irish Wind Energy Association. EWEA’s technology workshops are organised in response to requests from members. The next workshop, on wind power forecasting both onshore and offshore, is entitled ‘From R&D to commercial offering – a 360° view of present and future’ and will be held on 3-4 December 2013 in Rotterdam, The Netherlands. It is organised in association with the Anemos Consortium.

Call for abstracts open: [www.ewea.org/workshops](http://www.ewea.org/workshops)

## Speak in front of an international audience at EWEA 2014

For more than three decades, EWEA has been supporting the wind energy industry and over the years the EWEA Annual Event has grown in both size and reputation. Now recognised by many as the leading pan-European wind energy event where the whole of the supply chain can meet, this event attracts more than 8,000 wind industry professionals from across the world.

In 2014, the EWEA Annual Event (10-13 March 2014) will take place in sunny Barcelona in Spain, providing networking, knowledge exchange and the latest industry news in a beautiful location.

The exhibition will showcase a number

of big wind turbine manufacturers: ACCIONA, ALSTOM, AREVA, ENERCON, GAMESA, GE, LEITWIND, NORDEX, REPOWER, SIEMENS, VESTAS. For more information about the exhibition: [www.ewea.org/annual2014/exhibition](http://www.ewea.org/annual2014/exhibition)

The conference programme will feature quality discussions and presentations on a wide range of topics. In addition to inviting speakers, we’re gathering presentation proposals via a call for abstracts, which will close in mid-October. So, if you have an exciting new development to share, let us know about it by submitting an abstract via the event website: [www.ewea.org/annual2014](http://www.ewea.org/annual2014)

## Board adopts new EWEA strategy

At its June meeting, EWEA’s Board of Directors adopted the association’s new strategy. The strategy focuses on advocating and communicating in order to ensure the 2020 targets are met, 2030 renewables targets are secured, the truth about fossil fuel and nuclear energy subsidies is exposed, research, grid development and access to financing for wind energy projects are promoted. It also seeks to maintain EWEA events as the foremost meeting points for the industry, with real political impact and business opportunities. ■

For more on the new strategy, see [www.ewea.org](http://www.ewea.org)

## EWEA welcomes new members

### **Asociacion de Industriales Metalurgicos de Galicia – ASIME (Spain)**

The Galician Association of Metal Industries (ASIME) is the business organization of the metalworking and shipbuilding in Galicia. Members of ASIME are suppliers for the wind industry and, particularly, for the offshore domain, as they have a long experience in the naval sector.  
[www.asime.es](http://www.asime.es)

### **Avent Lidar Technology (France)**

Avent Lidar Technology, joint investment of Leosphere and NRG Systems, develops, manufactures and sells turbine-mounted LIDAR solutions for wind farm performance optimization and integrated turbine control. Avent Lidar Technology has a large experience both onshore and offshore. Their customers are wind turbine manufacturers, operators, service providers and research organizations.  
[www.aventlidartechnology.com](http://www.aventlidartechnology.com)

### **C-Ventus Offshore Windfarm Services (The Netherlands)**

C-Ventus Offshore Windfarm Services BV provides a complete support package during installation and maintenance of offshore windfarms globally. Continuity is guaranteed by having a track record, in-house expertise, equipment and means of transportation.  
[www.c-ventus.com](http://www.c-ventus.com)

### **Detam High Solutions (Turkey)**

DETAM High Solutions Health&Safety Industries is active in the area of health and safety services and training, as well as in operations & maintenance.  
[www.detam.com.tr](http://www.detam.com.tr)

### **Erico Europe bv (The Netherlands)**

ERICO is a designer and manufacturer of precision engineered metal products serving niche markets in a diverse range of electrical, construction and utility applications. ERICO's brand names include: CADDY® fixings and fasteners; CADWELD® welded electrical connections; ERICO® industrial products; ERIFLEX® low-voltage power distribution; ERITECH® surge protection, lightning protection, grounding, bonding  
[www.ericom.com/wind](http://www.ericom.com/wind)

### **Greenbyte (Sweden)**

Greenbyte is a software company in the renewable energy sector. Their products are used by developers, consultants and owners of renewable production assets in wind and solar. Greenbyte's product suite covers the whole life cycle of a wind farm projects - from development to operation. Their product, Breeze Development, offers high end management and quality assurance of wind measurement campaigns and wind data. Breeze Production provides a must have portfolio overview with drill down to turbine and component level performance indicators used for production optimisation activities.  
[www.greenbyte.se](http://www.greenbyte.se)

### **Impax Asset Management (United Kingdom)**

Impax Asset Management is an award winning investment manager dedicated to investing in the opportunities created by the scarcity of natural resources and the growing demand for cleaner, more efficient products and services, through both listed and private equity strategies.  
[www.impaxam.com](http://www.impaxam.com)

### **Industrial Safety & Emergency Consult bvba (Belgium)**

ISEC is a consultancy organisation providing emergency and safety training - Including GWO-Basic Safety Training  
[www.isec-online.be](http://www.isec-online.be)

### **Institute of fluid-flow machinery – Polish academy of sciences (Poland)**

The Institute conducts fundamental research is active in the area of principles of operation, design and development of machinery for energy conversion in flows. Presently, the investigations are being carried out in the fields of fluid mechanics, machine mechanics, tribology and diagnostics, multiphase flows, thermodynamics and heat transfer of power sector machinery.  
[www.imp.gda.pl](http://www.imp.gda.pl)

### **Kongsberg Maritime AS (Norway)**

Kongsberg are bringing maritime and offshore knowledge base into the renewable energy segment by establishing a new department within "Wind Farm Management" in Trondheim. The main target for this development is to reduce the cost of the energy produced from the wind farm.  
[www.km.kongsberg.com](http://www.km.kongsberg.com)

### **Loksa Shipyard AS (Estonia)**

The Company is specialized in fabrication and painting different large-sized non-standard steel structures  
[www.ls.ee](http://www.ls.ee)

### **Ocean Foundations Ltd. (Ireland)**

Ocean Foundations Ltd. (OF) was formed with the singular purpose of bringing a novel and highly efficient concrete foundation solution to the offshore wind market. The Ocean Foundations substructure concept has engineered to support wind turbines in water depths up to 90 meters.

#### **Seaway Heavy Lifting (The Netherlands)**

Seaway Heavy Lifting is an offshore contractor in the global Oil & Gas and Renewables industry, offering tailored T&I and EPCI solutions. Seaway Heavy Lifting operates the crane vessels Stanislav Yudin and Oleg Strashnov. Seaway Heavy Lifting is a Subsea 7 Joint Venture company  
[www.shl.com.cy](http://www.shl.com.cy)

#### **SgurrEnergy (United Kingdom)**

SgurrEnergy is a multi-disciplinary global renewable energy consultancy with a reputation for engineering and technical excellence, professionalism, integrity and responsiveness. They deliver expert services for the full project lifecycle including feasibility, design and development, right through to construction management and operation and maintenance support for wind energy projects worldwide.  
[www.sgurrenergy.com](http://www.sgurrenergy.com)

#### **Stalalube (Finland)**

Stalalube is the manufacturer of highly developed stainless steel hollow sections. Their product range is globally wide. In the last 40 years they have built an international distribution network, covering all continents and 45 countries. Their headquarters are in Lahti, Finland, and the sales offices are located in USA, Netherlands and India.  
[www.stalalube.com](http://www.stalalube.com)

#### **Tecnalía Research & Innovation Foundation (Spain)**

Tecnalía is the first private applied research centre in Spain. They generate business opportunities to their clients, improving efficiency and competitiveness of the whole wind energy sector. They have technological competences and services in wind farm planning and design, off-shore wind foundation design, high-power electronics and electrical machines for wind energy, materials and manufacturing, operation and maintenance.  
[www.tecnalia.com](http://www.tecnalia.com)

#### **Wilhelmsen Ships Service (Belgium)**

Wilhelmsen Ships Service is a provider of safety products and services, Unitor marine products, Unitor and Nal fleet marine chemicals, maritime logistics and ships agency. These standardised product brands and service solutions are backed up by a global service organisation to meet requirements for quality, availability and performance.  
[www.wilhelmsen.com/shipservice](http://www.wilhelmsen.com/shipservice)

Photo: zentilia - Fotolia.com

## Events



### **EWEA OFFSHORE 2013**

19 – 21 November 2013  
Frankfurt, Germany  
[www.ewea.org/events](http://www.ewea.org/events)  
E-mail: [events@ewea.org](mailto:events@ewea.org)  
Tel: +32 2 213 1860

### **EWEA Technology Workshop: Wind Power Forecasting**

3 - 4 December 2013  
Rotterdam, The Netherlands  
[www.ewea.org/events/workshops/wind-power-forecasting](http://www.ewea.org/events/workshops/wind-power-forecasting)  
Email: [techworkshops@ewea.org](mailto:techworkshops@ewea.org)  
Tel: +32 2 213 1844



### **EWEA 2014 Annual Event**

10 – 13 March 2014  
Barcelona, Spain  
[www.ewea.org/annual2014](http://www.ewea.org/annual2014)  
Email: [events@ewea.org](mailto:events@ewea.org)  
Tel: +32 2 213 1860

# Financing offshore wind: the UK versus Germany



By Dima Rifai,  
CEO, Paradigm Change  
Capital Partners

Substantial numbers are touted in relation to financing the build out of offshore wind in Europe and nowhere are these more relevant than in two of its largest markets: the UK and Germany. While government regulators in both countries grapple with fine tuning subsidy levels, terms and conditions to attract the largest amount of cheap capital, financiers and investors face equally challenging assessments regarding the returns they should be remunerated for taking on varying levels and types, of sometimes new and uncontrollable risks. Increasingly, we see a bifurcation between those who find the sector attractive, but are only prepared to be involved in the safest end of the spectrum, and those who were early adopters and have developed the sophisticated understanding required to push this envelope of safety.

Besides attracting capital, regulators are equally focussed on minimising tax payers' bills. In the UK, this combined desire has led to a three year in gestation, highly engineered, but very effective package under the Electricity Market Reform. The Contract for Difference (CfD) is maturing effectively, as design issues have been whittled down to a few remaining outstanding issues. Priority of subsidy allocation to the outstanding pipeline of projects within the annual subsidy pot (under the Levy Control Framework) and route to market for independent producers are two of the detailed items remaining for year-end completion. The recently published draft strike prices provide visibility on subsidy levels, which together with the final terms should arm investors with clarity on risk adjusted returns. This - combined with the stable legal framework of the UK and its perceived low political risk - means that the foremost remaining barrier to investment in the UK is investors' comfort level with this ostensibly complex instrument. As with the Renewables Obligation regime though, after a certain number of deals have reached financial close, with farms built and operating, the ecosystem of financiers, lawyers, auditors, advisors, etc. with expertise will deepen and broaden. Barring any unexpected surprises, this will allow investors to gain confidence in the expected outcome of such investments, drawing in the more conservative followers.

Germany is also beginning an in-depth review of its regulation: the government is looking to

reduce the costs of its Renewable Energy Sources Act (EEG), distribute those costs more equitably, and ensure that grid investments deliver the most efficient outcome for consumers. Even as things ramp up in the UK, Germany, faces continued uncertainty as structural changes are contemplated for the medium to longer term with respect to the EEG. These and grid connection issues are causing delay to the ambitious offshore build out targets of 10 GW by 2020. The key concern of developers at the moment is capital recycling, as the development phase, with its expensive capital, is drawn out by delays in grid connection. This is further exacerbated by uncertainty over what level feed in tariff will be accessed after 2017. While the government has taken solid steps to address these liability issues, it is neither fully covering losses, nor any associated costs of delay. These cut into developers returns, if not outright capital. In addition, the learning curve and ecosystem's development are both being interrupted by these delays, meaning a wider investor base is not coming up to speed with the German offshore market (albeit the simple feed in tariff structure will mean a faster uptake once the tide turns).

In a competing landscape of investment opportunities, countries will be vying for the largest pools, and cheapest cost, of capital, as well as the speediest execution capability. Ultimately, these three factors will contribute significantly to reducing consumer cost and reaching decarbonisation targets on time. While the UK has taken the more highly engineered and therefore complex pathway, its rigorous consultation process (which at times led to endless delays), well executed design, as well as highly developed electricity market means that it can now ramp up rapidly. Conversely, Germany with its centralised grid/TSO build out, reassessment of the EEG and year end election looks to lag in attracting investment, with potentially serious consequences for the developer and supply chain community. Nonetheless, both will be exciting markets to watch and follow over the next decade, as hundreds of billions get deployed, building close to 30 GW of generation capacity and its accompanying transmission.

Dima Rifai is chair of the financing track at the upcoming EWEA OFFSHORE 2013 event: [www.ewea.org/offshore2013](http://www.ewea.org/offshore2013) ■

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The next issue of *Wind Directions* will be distributed at EWEA OFFSHORE 2013 – the world's largest offshore wind energy event (19 – 21 November)

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WIND DIRECTIONS

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