



The First Ever Off-Shore Wind Farm Financed by Banks...

Posted by [Prof. Goose](#) on October 31, 2006 - 11:37am

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[editor's note, by Prof. Goose] *This is a guest post by Jérôme à Paris from the [European Tribune](#).*

I am finally in a position to write about a project that has kept me busy in the past year and a half and that may interest the readers of the Oil Drum...



This Wednesday, a few banks, including mine, signed and disbursed a [ground-breaking loan](#): we put 378 million euros on the table, to build 60 wind turbines in the North Sea, 25 kilometers off the coast of the Netherlands, near Amsterdam. The wind farm, at 120 MW is not the biggest to be built offshore (that title goes to [Nysted](#), built three years ago, which has a capacity of 165 MW), but it is the **first-ever offshore wind farm to be financed by banks**.

Above is a picture of one of the first piles, built just a few weeks ago. In just over a year, 60 of them will have been planted in the seafloor, have a wind turbine bolted on top, and the farm will start producing electricity - enough to provide power to 125,000 households and to avoid 225,000 tonnes of carbon emissions per year. It will look a lot like this one, [North Hoyle](#), completed in 2004 and which uses the same turbines:



I explained [in a diary written almost two years ago](#) what project finance was and how it works, but the principle is simple: you finance a specific asset, and you get repaid only from the revenues generated by that asset, without recourse to the investors that own the project. This is a financing technique that works well for project with well identified assets with high initial investment costs, and strong cash flows after that, like big infrastructure items (toll bridges, pipelines) and energy assets (oil fields, power plants).

Wind farms are quite easy to fund using this project finance mechanism, and it has indeed been done on a wide scale in most Western countries, which have stable regulatory frameworks for renewable energy, i.e. mechanisms that guarantee that renewable energy sources get a high enough price (usually higher than "grey" power, but not always these days with the price increases for gas) for each kWh put on the grid. But so far, offshore windfarms seemed to be scaring banks, for a number of reasons:

- construction costs are higher than onshore, as you need special boats and equipment to build the turbines, and you need to build a longer cable. The high cost of the cable, which must be borne by the wind farm (as it is built exclusively to connect it to the grid) also means that only larger scale projects make economic sense, thus implying bigger investment outlays;
- operating costs are also higher, as the marine environment is tougher on parts, and access is similarly more difficult: even minor repairs will require the intervention of a boat and will take more time;
- more problematic for the banks, operating costs are also more uncertain: there is little track record for offshore operations, and risks are not completely understood, such the long term impact of corrosive salt, and stronger winds, on turbines initially designed for onshore use. Bad weather can prevent access to the farm altogether and mean that even minor technical problems can cost big production losses as repairs are delayed;
- finally, the issue of the size of the projects (which reach hundreds of millions of euros) has become an issue. Developers can be utilities, but they can be pretty small players; similarly, turbine manufacturers (with the exception of GE and, more recently, Siemens- Bonus) are also relatively small industrial companies. The presence of such small players was not an obstacle in the onshore sector, where the technology is well known, and nimble wind investors proved capable to develop, and these manufacturers to build, the windfarms

typically seen onshore, i.e. in the 10-50 MW (or 10-50 million euros) range, and banks were comfortable to support both. For the bigger, longer, more expensive offshore projects, this is no longer the case. How reasonable is it to finance a project costing 400 million but developed by companies with 10 millions euros turnover and built by a company with 50 million euros in annual profits?

The fact that wind is stronger and steadier offshore, and energy production is typically 50% higher per turbine than onshore helps make the case for offshore wind economically more compelling, but does not alleviate the above problems, and both investors and financiers have been reluctant to put money in this sector, despite currently being extraordinarily aggressive for onshore wind assets.

So how did we solve this?

Now, I have to walk a fine line not to reveal any confidential information, so I'll use the [press release](#) which is in the public domain, and explain some bits briefly:

The financing structure includes a number of novel features to mitigate the risks associated with the construction and long term operation of wind turbines at sea, including the availability of a contingent facility (jointly with contingent equity provided by ENECO) to cover potential cost overruns or delays, cash sweep mechanisms and specially tailored availability guarantees under the operating contract with Vestas that allow debt service to continue even during periods of lower availability than expected. The project also benefits from a comprehensive, 11-year insurance programme with Delta-Lloyd N.V.

- *Availability of a contingent facility.* That means that we have some additional funds available should there be unexpected spending or problems that cause the production (and thus revenue) to be delayed. We rely on fairly standard construction contracts, which have a given price and date, and usually include penalties if commitments are not meant, and I'm certainly not going to give ideas to people that there is more money out there to be spent. There will need to be real problems that are not covered by normal contractual terms, and banks will have a final say on whether any money is provided. But it is fairly unusual for banks to put up such reserves (usually, this is done exclusively by the investors), and we've done it in this case because it gives us additional control over construction and a higher certainty that the project will be built successfully. We've been willing doing this because we have studied the plans and contracts in much detail and are comfortable with the technical challenges, the solutions used to solve them and the backup plans.
- *Cash sweep mechanisms.* That simply means that if the project is successful, we get repaid faster, by taking ("sweeping") a portion of the surplus to reimburse the loans. Banks always use more conservative revenue estimates than investors to have a higher certainty that such revenue levels will always be reached - and make it possible for the debt to be paid. If things go well, or even just as expected, there will be more revenue than the banks plan, and the investors will make a lot more money. So in this case, we have a right to a portion of these extra revenues in the "better-than-the-pessimistic-scenario" cases. That means that it is actually quite likely that we be repaid faster than we expect. We don't earn more, but we take risk over a shorter period, and it does lower the rate of return of the investors (as their own income is delayed by these payments).

- *Availability guarantees.* That's the operator, Vestas, guaranteeing that its turbines (which it will be running and maintaining on behalf of the investors) will indeed produce the expected amounts of electricity, and agreeing to pay penalties if the production levels are lower than guaranteed. I cannot go into much detail here, but the general principle here is that these guarantees should not only cover the impact of lower revenues for the investors, but rather for the lenders. So the penalty payments take place for *really* degraded performance, rather than for *slightly* degraded performance, in order to ensure that there is still some income in the project even if things go really bad (if things go a little bit bad, we are covered to some extent by the fact that the banks already count on things going less well than normal as their "base case" scenario).
- *Insurance programme.* That's fairly simple: you can buy insurance that compensates you if some things that should not go wrong do go wrong. Insurances make money because they charge you a slightly higher fraction of revenues than the probability of that thing happening. Risks like lightning, boat accidents, mechanical failures or weather events are known to insurers and they can quite easily quote prices for such circumstances. In this case, the project has managed to get insurance coverage for a fairly comprehensive set of events, which brings additional comfort to the lenders.

For those of you that know the business, this is all maddeningly vague, I suspect, while those of you that do not know much finance will probably already find it unbelievably complex and mind-numbing. Let's say that this is a compromise between the desire to explain what we did and the confidentiality requirements inherent to this job, and it may be slightly frustrating.

I will say that I am extremely proud of having brought this project to fruition, and I will further say that I consider that I had an instrumental job in getting it done, and I think that this financing will be a reference and a model for future transactions. I also consider myself lucky to work in a sector where I can do some good for the planet and which is fully compatible with the political ideas that I push here.



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