



Financing floating offshore wind projects

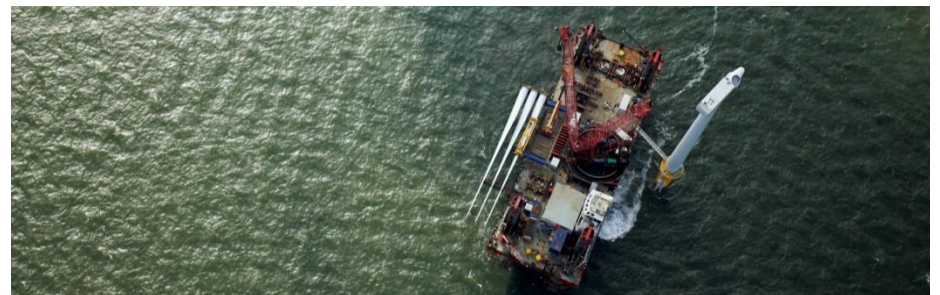
Floating offshore wind UK – 14 November 2017

Martin Guzzetti

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The renewable energy finance specialist

We get deals done

Deep roots in renewable energy finance

- Launched in 2010 by experienced finance specialists with a **strong and proven track record** in renewable energy
- 60+ professionals with offices in Hamburg (Germany), London (UK), Paris (France) and Utrecht (the Netherlands)
- Multi-disciplinary skill set including **project & structured finance, contract management, M&A, and legal** expertise



Close to **EUR 15 billion** funding raised for renewable energy projects in **7 years**



60+ professionals in **4 countries**

High quality, specialised advisory services

- Focus on projects where we can actually add value
- We can provide a holistic approach and are able to include sector-specific tasks in addition to traditional debt or equity advisory (such as contracting, strategic advisory and development services)
- Widening geographical reach with a burgeoning presence in the Americas and Africa in addition to Europe
- Priority given to **getting the deal done!**

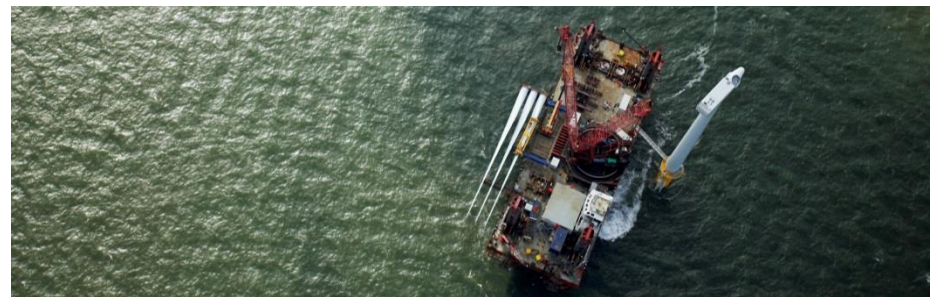


Involved in over **80 renewable energy projects** with a capacity of more than **18 GW**

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Floating at a turning point

The first array of floating wind turbines is operational off the coast of Scotland

Status	Project	Site	COD	MW	Type	Technology	Developer	Turbine
Operational	Hywind Demo	NO	2009	2	Spar	Hywind	Statoil	Siemens 2.3 MW
Decommissioned	WindFloat 1	PT	2011	2	Semi	PPI	EDPR et al	Vestas 2.0 MW
Operational	GOTO-FOWT	JP	2013	2	Spar	Toda	Toda	Hitachi 2.0 MW
Operational	Fukushima Forward	JP	2013	2	Semi	Mitsui	Marubeni	Hitachi 2.0 MW
Operational	Fukushima Forward	JP	2016	5	Spar	JPU	Marubeni	Hitachi 5.0 MW
Operational	Fukushima Forward	JP	2016	7	Semi	MHI	Marubeni	MHI 7.0 MW
Operational	Hywind Scotland	UK	2017	30	Spar	Hywind	Statoil	Siemens 6.0 MW
Commissioning	Floatgen	FR	2017	2	Barge	Ideol	Ideol et al	Gamesa 2.0 MW
Adv. development	GICON-SOF Pilot	DE	2018	2	TLP	Gicon	Gicon	Siemens 2.3 MW
Adv. development	Kitakyushu	JP	2018	7	Barge	Ideol	NEDO/Glocal	SCD 3.0 MW Hyosung 4.4 MW

In the coming years more arrays will be connected and new demonstrators sea-deployed

Floating at a turning point

Pilot farms up to 50 MW in size will be connected until 2020

Status	Project	Site	COD	MW	Type	Technology	Developer	Turbine
Adv. development	WindFloat Atlantic	PT	2018	25	Semi	PPI	EDPR et al	MHIV 8.3 MW
Adv. development	Kincardine	UK	2018	50	Semi-Spar	Cobra	Atkins et al	Senvion 6.2 MW
Adv. development	Dounreay Tri	UK	2018	10	Multi	Hexicon	Hexicon et al	CSIC 5.0 MW
Adv. development	Groix (EolFlo)	FR	2020	24	Semi	DCNS	Eolfi/CGN	Haliade 6.0 MW
Adv. development	Gruissan (EolFlo)	FR	2020	25	Barge	Ideol	Quadran	Senvion 6.2 MW
Adv. development	Faraman (EolFlo)	FR	2020	24	TLP	SBM-IFPEN	EDF EN	Siemens 8.0 MW
Adv. development	Leucate (EolFlo)	FR	2020	24	Semi	PPI	EDPR/Engie	Haliade 6.0 MW
Development	FLOCAN 5	SP	2020	30	Semi-Spar	Cobra	Grupo ACS	TBD
Development	Maine Aqua Ventus I	US	2020	12	Semi	VoltturnUS	U Maine et al	Haliade 6.0 MW

Floating at a turning point

Arrays up to 120 MW and large scale farms for hundreds of MW are under development

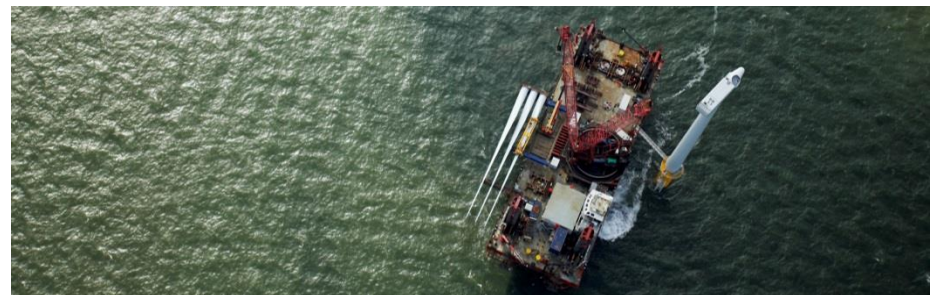
Status	Project	Site	COD	MW	Type	Technology	Developer	Turbine
Development	Goto Islands	JP	TBD	21	Spar	Toda	Toda	TBD
Development	TBD	IE	TBD	30	Barge	Ideol	Gaeletric	TBD
Development	TBD	UK	TBD	100	Barge	Ideol	Atlantis	TBD
Development	Dongbu	KR	TBD	100	Semi	GustoMSC	Halla	TBD
Development	Dyfed	UK	TBD	120	Hybrid	FPP	FPP, DPE	TBD
Development	Katanes	UK	TBD	120	Hybrid	FPP	FPP, DPE	TBD
Development	Hawaii OW	US	TBD	400	Semi	PPI	Progression	MHIV 8.3 MW
Development	Morro Bay	US	TBD	650	TBD	TBD	Trident	TBD

National strategies specific to floating wind may be launched by France, Norway, Scotland

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How projects are financed

“Balance sheet” (equity) vs “non-recourse” (debt)

Large projects are typically developed through a stand alone project company

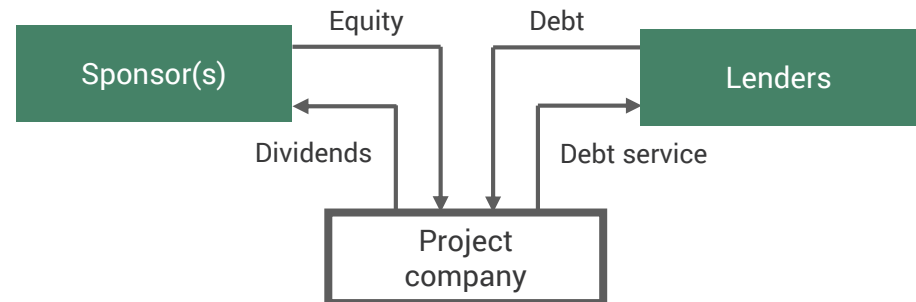
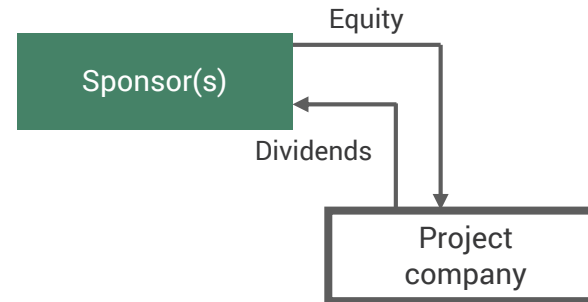
- Owned by the project investors
- With its own revenues & balance sheet and thus the ability to raise debt on its own merits

There are only two discrete sources of funding

- By the owners (directly via equity or shareholder loans, or indirectly via guarantees)
- By banks without recourse to the equity investors – this is “project finance”

The way a project is funded will have a material impact on how it deals with contractors

- In a project finance deal, you need to deal with the senior lenders' requirements!
- Tax, accounting, consolidation and rating issues



All parties have a direct incentive to understand who will be funding the project

Equity providers for floating wind – the different profiles

Investors and appetite for risk

Investor	Perm.	Dev.	Constr.	Ops.	Notes	PF
Utility / Oil & Gas	Yes	Yes	Yes	Yes	Several actively involved, sensing large scale potential. Want active role. Conservative assumptions, but long term plans	If possible
IPP	Yes	Yes	Yes	Yes	Several actively involved, including at early stage, as it offers potentially higher returns. Flexible & pragmatic investors & co-dev.	Yes
Trading house	Yes	Yes	Yes	Yes	Some actively involved. Others considering investing. In alignment with the Japanese government strategy for floating offshore wind	Yes
Private equity	Yes	Some	Some	No	Like the potentially high returns, but time scales are an issue. Active involvement in dev. phase with likely early exit	Yes
Financial (aggressive)	No	Maybe	Yes	Yes	Looking for higher returns, so could be interested, but will need comfort with the technology, so will likely seek partners	Probably
Financial (conservative)	No	No	Maybe	Yes	Will come in at a later stage, first on operational projects, then, once the technology is proven, may take construction risk	Not necessarily
Corporations	No	No	Maybe	Yes	Can invest to hedge power price risk or for strategic/marketing reasons. Happy (or require) to be junior partner. FOW new to them	Not necessarily
Contractors / Naval yards	Maybe	Yes	Yes	No	Can provide funding to secure / make projects viable (in FOW, FOU can be great part of capex). Want perspective on exit after COD	Not necessarily

Equity providers for floating offshore wind

Some degree of appetite for early deals

Industrial investors will dominate the early projects

- Utilities interested to test a new market segment
- Oil & Gas companies looking to enter into the renewable energy sector, making use of their competence in floating offshore structures
- IPPs looking for the “next new thing” – some private equity players might have the same approach
- Small developers – if they can find the early development equity

Strong political support required

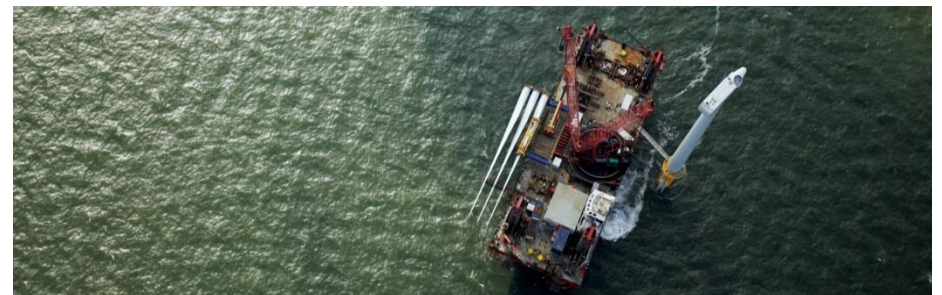
- Outright funding required for early projects (demonstrators and pilot projects), in addition to a specific tariff for power
- EU programmes (via EIB or otherwise) can contribute
- Lateral investments (which require public support or at least encouragement) to
 - Foster technology advancement
 - Improve the coastal infrastructure capacity, and
 - Support, where relevant, the necessary onshore grid upgrades and transmission extensions

With the 1st array in operation and more to be connected, investors are actively looking at FOW

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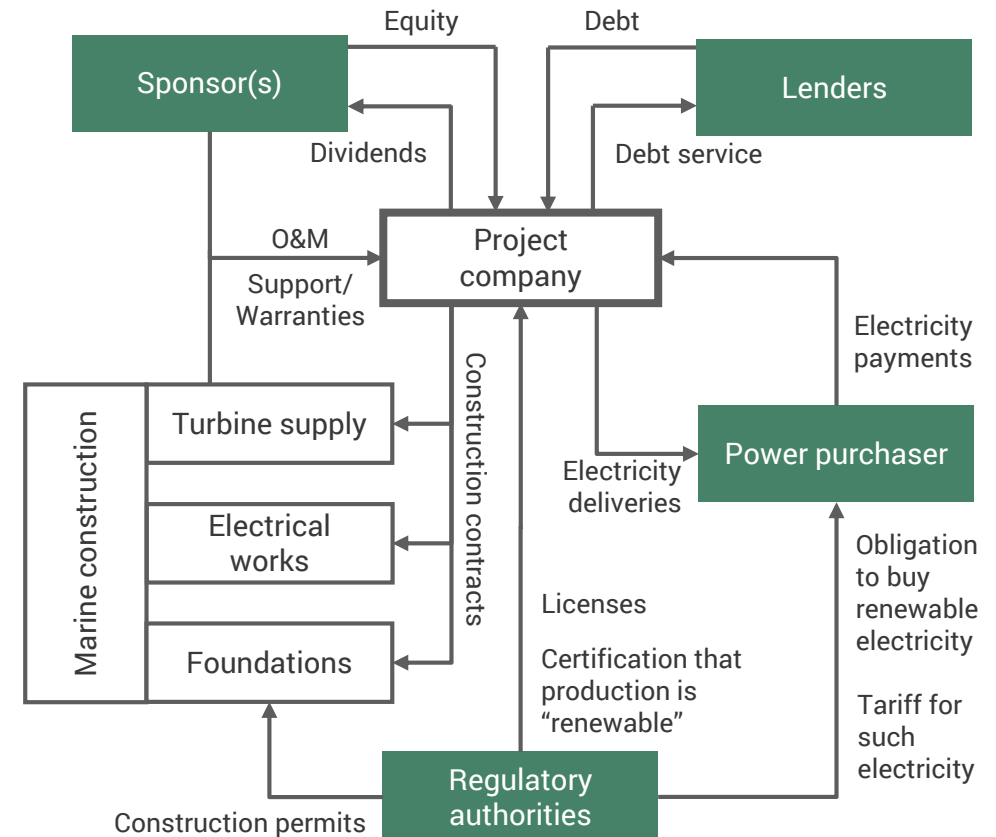


How projects are financed

Offshore wind transactions are always heavily contracted

Major contracts include

- Permits, licenses, authorisations, etc...
- Construction/supply contracts
- Electricity sales contracts (and, if applicable, green certificates / RO contracts)
- O&M contracts
- Financing documents



Offshore wind is a quintessential example of a comprehensive contractual structure

Offshore wind project finance – the early deals (1/2)

Early deals – 4 transactions around the financial crisis

Q7 (also known as Princes Amalia) (2006, the Netherlands, 120 MW, Vestas V80, EUR 219 M financing)

- The very first deal – set a number of precedents (debt sizing principles, multi-contract construction risk taken via heavy due diligence and contingent funding, 10-year O&M package)
- 3 MLAs, 3 additional banks, plus key support from EKF

C-Power phase 1 (2007, Belgium, 30 MW, Repower 5M, EUR 126 M financing)

- Consolidation deal – a more aggressive version of the Q7 structure (longer tenor, some merchant risk)
- 1 MLA, 3 additional banks, no multilateral

Belwind phase 1 (2009, Belgium, 165 MW, Vestas V90, EUR 544 M financing)

- First deal post-financial crisis – allowed to confirm that the early structures were sound (construction risk, some merchant risk) while increasing the size thanks to heavy multilateral involvement
- 3 MLAs, EIB and EKF, no syndication – heralded the “club deal” period

Boreas (2009, UK, 194 MW offshore, Siemens 3.6-107, GBP 340 M financing)

- First UK deal, with a large number of banks (14 altogether)
- No construction risk, but funding under the UK ROC regime, with some merchant risk

Offshore wind project finance – the early deals (2/2)

Early deals – pioneers and precedent-setting, but with a small number of players

Successful structures – and really non-recourse!

- DD + contingency mechanism structure to bear construction risk validated in subsequent deals
- Construction risk with multi-contract structure validated and repeated
- Repeated with several different turbines, sponsors and regulatory regimes
- All early projects built within agreed budget and timetable, and now operating to full satisfaction

A fairly small number of players involved

- Only a small number of institutions actually took construction risk
- Heavy reliance on a small number of multilaterals (EIB, EKF)
- The same advisors and people in almost every deal

A difficult market context

- No syndication market for what are fairly large deals – thus a need for “everybody” on each deal
- Lack of precedents at a time banks were retreating to favoured clients and familiar risks

Debt for floating offshore – what will be possible

Debt could be raised for the first commercial projects

The players

- By necessity, public financing institutions such as BPI, EIB and EKF will need to play a strong role
- Some commercial banks should be willing to finance early projects with the right parties and structure

The terms

- The early deals will naturally have conservative debt terms compared to traditional offshore wind
- A key requirement will be to have lower leverage – we would expect 50:50 or 60:40 to be a reasonable target for early projects
- Pricing will be above offshore wind, but likely not by that much (50-100 bps premium)

The other requirements

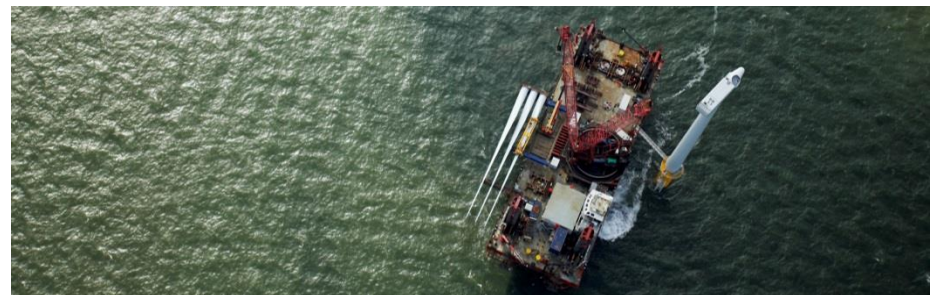
- Specific due diligence will be required on the items which are new to lenders (e.g. interaction turbine-floater, dynamicity and dis/connectivity of electrical cabling, mooring and ballast systems, floating offshore substation, tow-to-shore maintenance)
- Availability guarantees (for both the turbine and the substructure), together with the power curve warranty, to be discussed extensively (with strong commitments from the floating technology provider)
- Ample contingency budget, both for construction and for maintenance
- Focus on transparency, availability of track record (when available), design certification and strength of counterparties

Debt terms will not be aggressive, but should still help investors

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Conclusion

Funding is available, but will be subject to strict conditions and realistic LCOE expectations

The most advanced technologies will be the first to be financed

- Those with full scale prototypes already installed, and with a satisfactory operating track-record
- Project sponsors will need to make the effort and take the time to educate financiers on this new technology
- Terms will be guided by market precedents, to the extent they are applicable

Extensive due diligence and contractual requirements

- Transparency regarding the technology is critical
- Technical advisors trusted by the financiers should be involved early
- Thorough risk assessment and management process are paramount
- The contractual structure should be adapted on the corporate strength of the technology providers
- Specific focus on the experience of the supply chain and development team

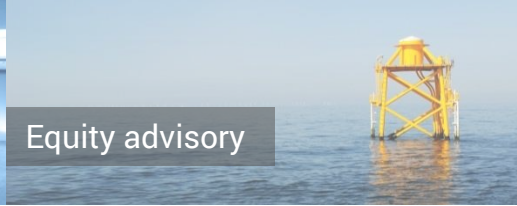
Different players for different stages

- Venture capital for technology development financing
- Private equity and developers for early projects
- Infrastructure funds and PF banks for larger projects

You can raise financing if you target the right providers and meet their requirements



Debt advisory



Equity advisory



Modelling



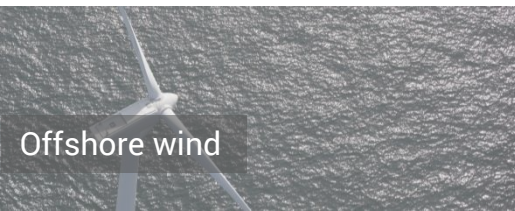
Strategic advisory



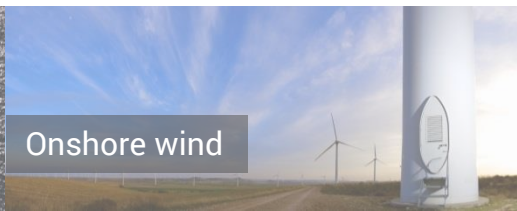
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Offshore wind



Onshore wind



Solar



Other renewables