



Lessons learnt from the European offshore sector

Asia Offshore Wind Day

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Lessons learnt from the European offshore sector

Table of contents

1. Green Giraffe introduction
2. Lessons from Europe for the OW industry
3. Bankability of offshore wind projects
4. Financing lessons learnt from Europe
5. Offshore wind in Japan
6. Key takeaways



1. Green Giraffe – 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
- 70+ professionals with offices in Paris (France), Utrecht (the Netherlands), London (UK), Hamburg (Germany), and Cape Town (South Africa)
- Multi-disciplinary skillset including **project & structured finance, contract management, M&A, and legal** expertise



Close to **EUR 20 billion** funding raised for renewable energy projects in **8 years**



70+ professionals in **5 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 **100 renewable energy projects** with a total capacity of ca. **25 GW**

1. Green Giraffe – Consistently highly-ranked in league tables

2016 renewable energy – Inspiratia

	Company	Deal count	USD bn
1	KPMG	22	17.8
2	Green Giraffe	11	3.6
3	PWC	10	1.5
4	EY	8	-
5	JLL	7	-
6=	Santander	6	4.9
6=	Elgar Middleton	6	-
6=	Augusta & Co	6	-
9	Crédit Suisse	5	16.1
10	JC Rathbone	4	2.3

Inspiratia Global league tables 2016 (website)

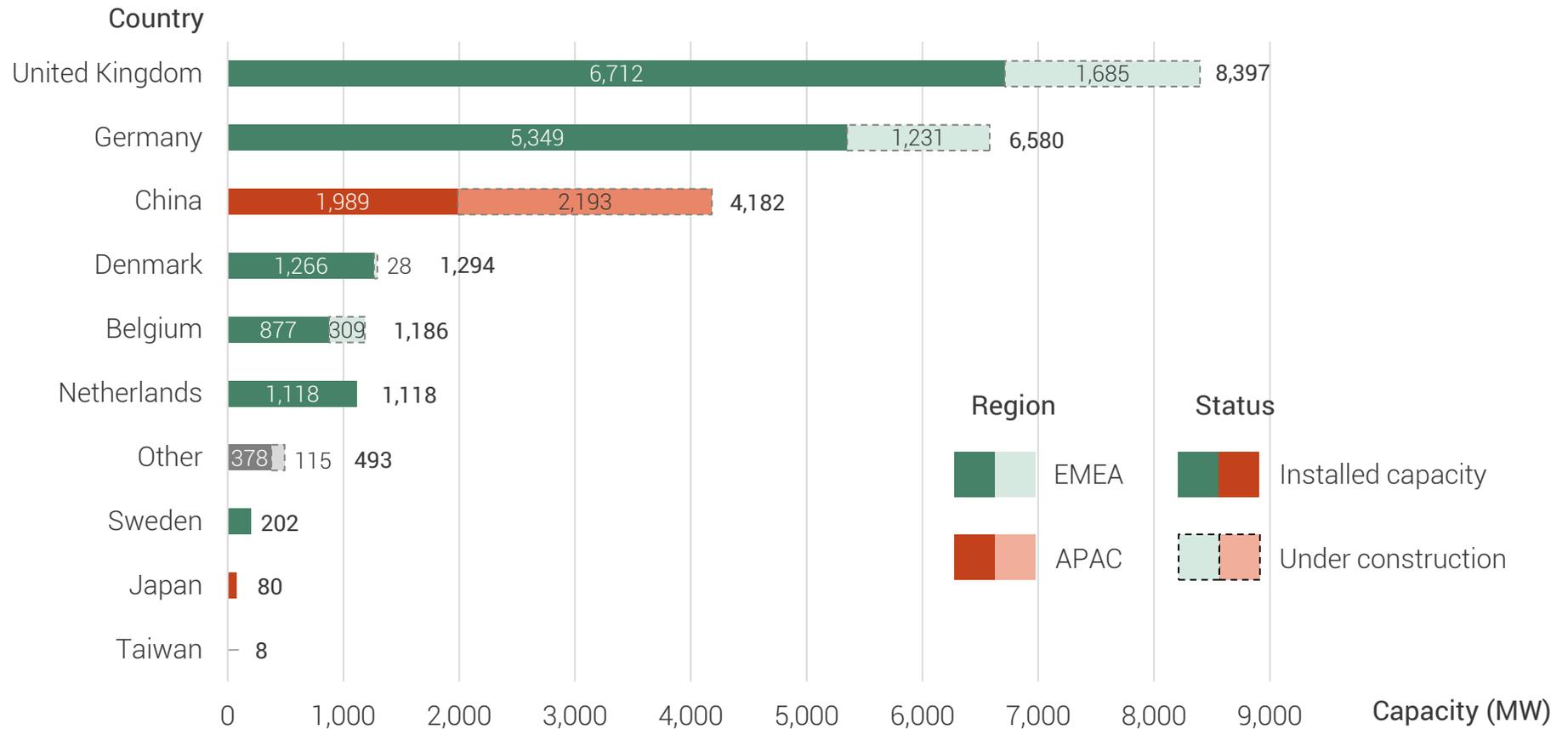
3Q 2017 renewable energy – InfraNews

	Company	USD bn	Deal count
1	Green Giraffe	5.8	11
2	Macquarie Capital	5.2	6
3	JP Morgan	3.7	3
4	Royal Bank of Canada	3.7	5
5	Bank of America Merrill Lynch	3.6	5
6	UBS Investment Bank	2.9	1
7	KPMG	2.3	9
8	Santander	1.9	17
9	Rothschild	1.6	7
10	Mitsubishi UFJ Financial Group	1.5	2

InfraNews league table (website)

2. Lessons from Europe for the OW industry

The European market is a good reference point for offshore wind



Source: 4COffshore, Market Review Report, October 2017

Out of 18 GW offshore wind capacity installed worldwide (Q3 2017), almost 16 GW is in Europe

2. Lessons from Europe for the OW industry

Where does the European market stand – an active offshore wind market in 2017

A lot of recent regulatory changes

- Germany approved a new EEG regime mid 2016 and provided clarity on volumes to be built by 2025, resulting in “zero bids” during the first auction in April 2017. The next auction will take place in H1 2018
- EMR (electricity market reform) in the UK up and running. The most recent CfD auction, long delayed saw prices halved compared to the previous ones and record volumes of new offshore wind capacity allocated as a result, creating new momentum for the industry; meanwhile all old ROCs and feed-enabling projects are now in operation or under construction
- Latest Dutch tender took place late 2017 and “zero-bids” were confirmed by several parties. Regular volumes to be auctioned
- In Belgium, a new “LCOE” regime has been implemented for two projects (Norther and Rentel, for which the financing is now secured) and recently approved for the last permitted projects, Northwester 2 and Mermaid/Seastar (tariff at 79 EUR/MWh)
- Projects from the first tenders in France have been delayed, but a tender for floating demonstrators has taken place and the third French tender is now ongoing under “competitive dialogue” process

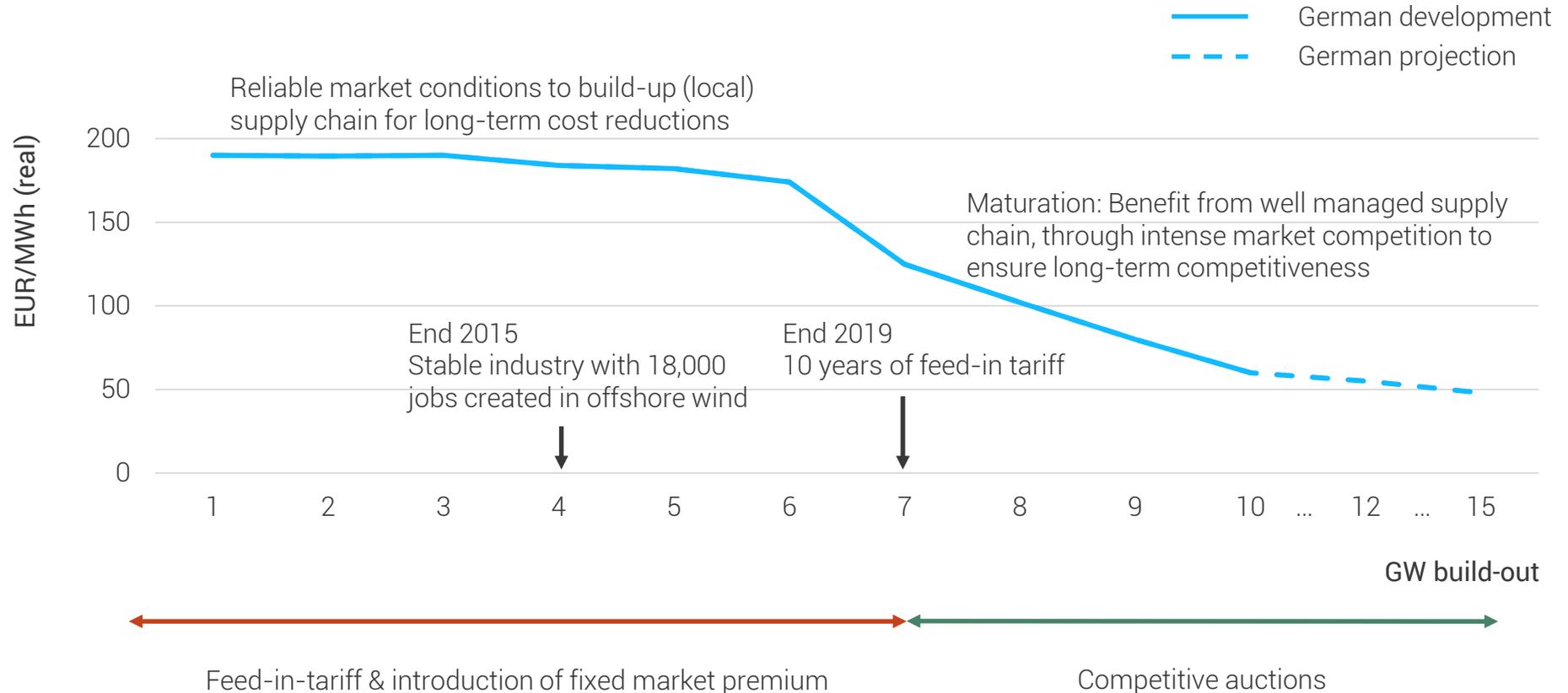
An active equity market

- Renewable energy assets are trading at high prices as investors competitively chase yield, pushing down IRRs
- Such IRR compression makes onshore wind and solar assets less attractive to yield-seeking investors and they are now switching their focus to offshore wind, with its higher, but increasingly understood, risks
- Continued high transaction volume in 2017 (both for projects and companies like GIB & A2Sea)
- Emergence of Chinese buyers (CTG, SDIC) and continued active presence of Japanese and Canadian investors

2. Lessons from Europe for the OW industry

How did Europe get there? The German example

Offshore wind LCOE development in Germany



Source: Ørsted

Germany enabled stable remuneration for a decade, setting the ground for drop in LCOE

2. Lessons from Europe for the OW industry

Key factors of success

A stable and long term regulatory framework

- Stable, predictable and reliable legal framework (including maritime legal framework)
- No volume risk & certainty about grid connection
- Remuneration & support schemes to attract both debt financiers & investors
- To create a strong supply chain, visibility of the deal flow is key
- Potential public or multilateral debt schemes to support initial deals (cf. KfW or EIB in Europe)

Building offshore wind farms is complex

- It is necessary to be surrounded by strong and experienced partners
- A limited number of key construction contracts to reduce interface risks (5-10 max)
- Time and cost buffers have to be factored in during the construction period
- When using project finance, an extensive risk analysis and due diligence should be performed by knowledgeable parties
- Long term O&M create long term jobs!

Stable framework & support scheme to allow for the supply chain learning curve and attract investors as well as banks to support the industry

3. Bankability of offshore wind projects

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

Large projects are typically developed through a standalone project company

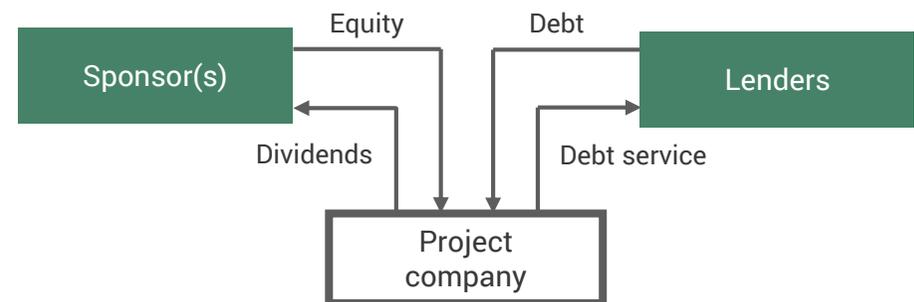
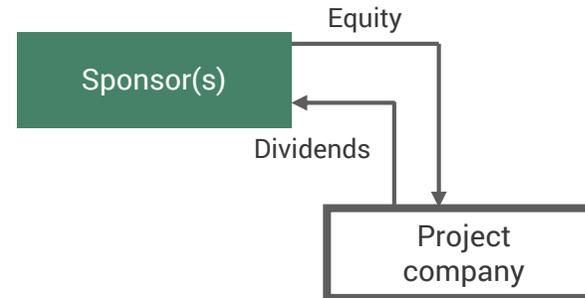
- Owned by the project investors
- With its own revenues & balance sheet and thus the ability to raise debt on its own merits

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



3. Bankability of offshore wind projects

A quick focus on project finance

No recourse

Recourse to investors is contractually limited

Lenders rely on project revenues only

Capital intensive projects requiring long term financing

Lenders need long term operational performance

No upside

Lenders receive a fixed remuneration

Lenders do not benefit from better performance

Low single-digit margins vs high leverage

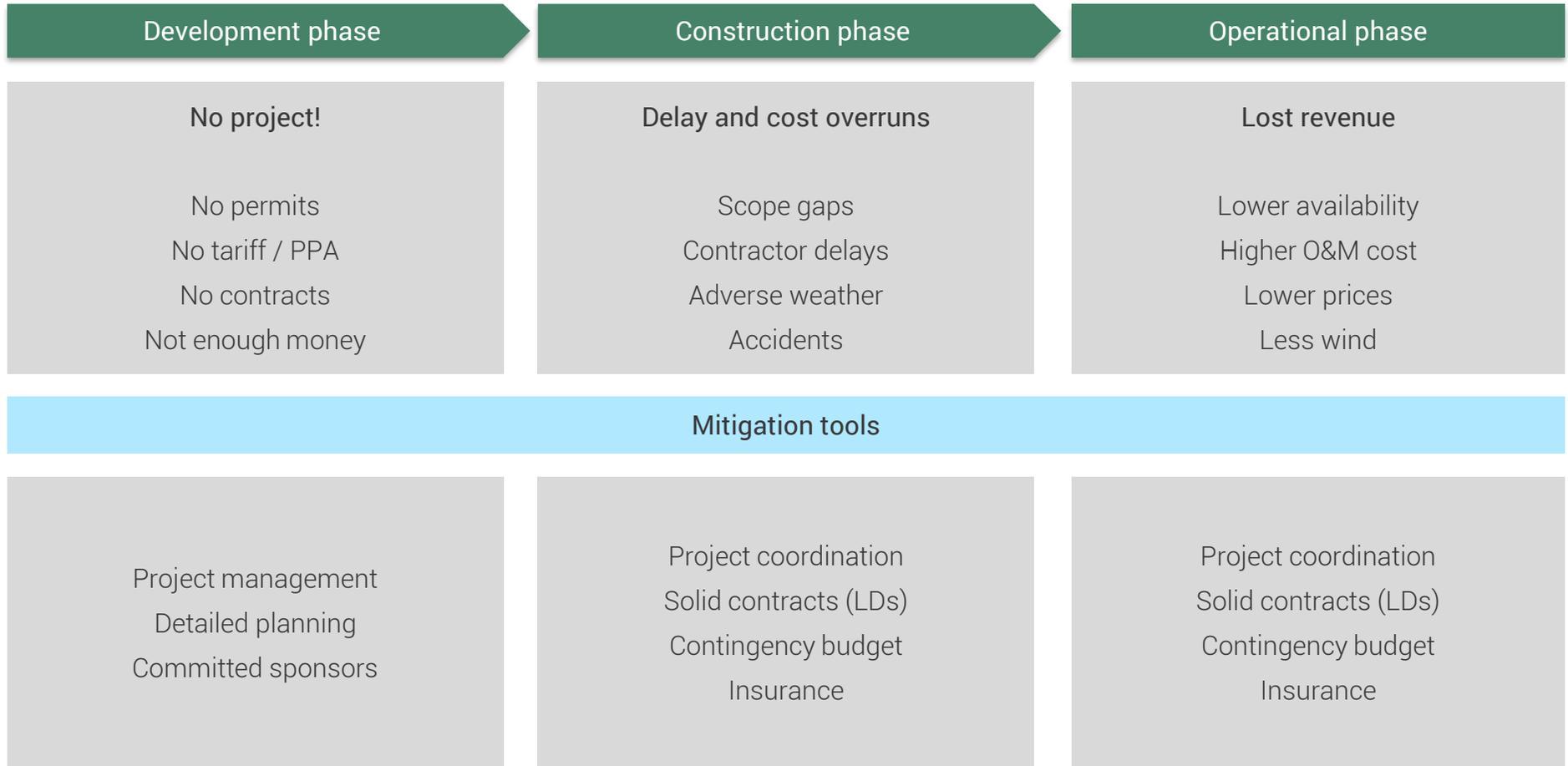
Risks to be commensurate with remuneration

- Lenders need to make sure that the project works on a standalone basis, with no third party commitments than those made at financial close. Such commitments must be realistic, credible and durable, both from a contractual and an economic standpoint
- This typically entails very detailed contractual frameworks and extensive due diligence

- Lenders need risks to be measurable and to have probabilities of occurring in the low single digits for investment to make sense. Risks which are (seen as) well understood are thus easier to bear
- Project finance lenders will usually have priority access to cash-flows and security on all assets, contracts and equity of the project

3. Bankability of offshore wind projects

Bankability is key for offshore wind projects requiring high capital expenditure



Projects are bankable when risks are well identified and tackled appropriately, in each phase

3. Bankability of offshore wind projects

Construction risk – banks focus on interfaces between key tasks as well as between contracts

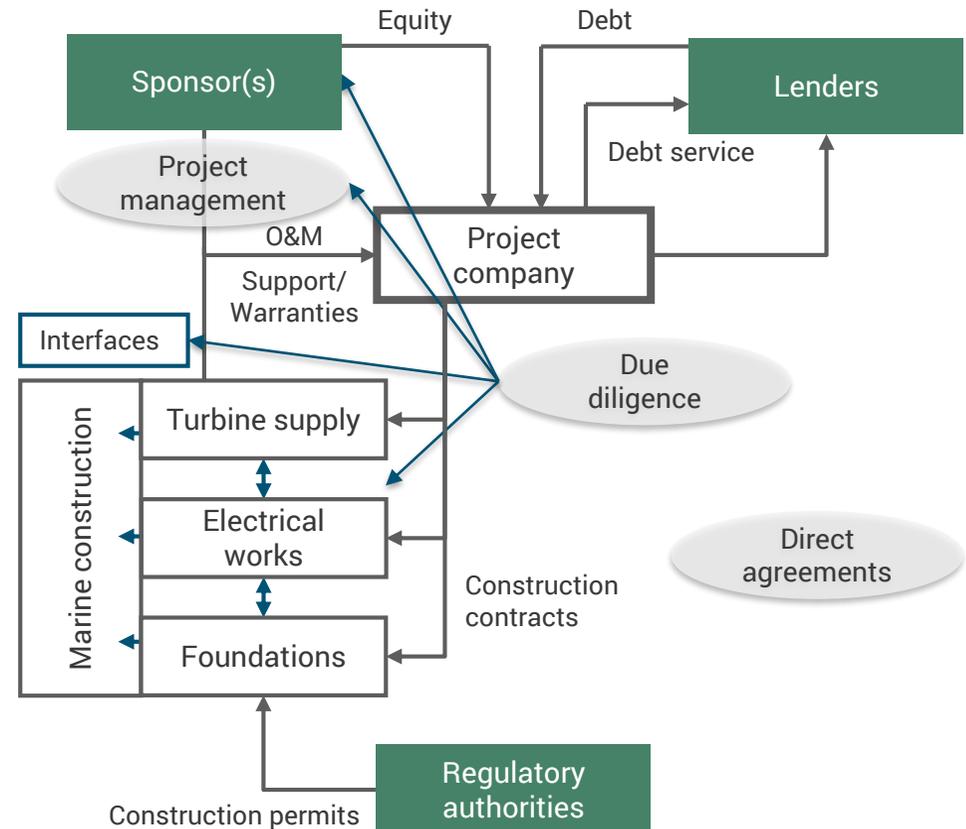
Several completely different industries

- Turbine manufacture
- Foundation / steelwork supplies
- Electricals
- Cabling
- Marine construction work

No obvious general contractor!

And yet banks do take construction risk

- Focus on project management
- Focus on key interfaces
- Understanding of critical path items
- Heavy involvement in contract negotiation



The higher risks borne by the banks impose different development and contractual approaches

4. Financing lessons learnt from Europe

Market trends – history

Typical project finance conditions - offshore	Leverage	Maturity post-completion	Pricing	Maximum underwriting
2006-2007	60:40	10-15 years	150-200 bps	EUR 50-100 M
2009-2011	65:35	10-15 years	300 bps	EUR 30-50 M
2012-2013	70:30	10-15 years	300-375 bps	EUR 50-75 M
2014-2015	70:30	10-15 years	200-250 bps	EUR 100-200 M
2016-2017	75:25	15-17 years	150-225 bps	EUR 100-150 M

Debt is currently extremely cheap

- Margins rose after the crisis (reflecting higher bank cost of funding), but have been trending down since 2014
- With low underlying rates, the overall cost of >15-year debt is now around 3%

Structures (ratios, maturity, covenants) have actually been quite stable since 2007

- Debt terms fundamentally driven by regulatory framework (duration, merchant risk, public financing opportunities)
- Commercial fights are rarely about debt sizing or pricing
- General improvement in commercial terms over the past two years

5. Offshore wind in Japan

Japan offshore wind context – challenges & opportunities



Key strengths & opportunities

Energy transition towards more OW generation

- High reliance on energy imports & high costs of gas
- Onshore wind is facing geographical & social opposition, caused by population density and solar is at its limits

Attractive FiT for offshore wind is a primary policy driver

- Japan has the highest OW FiT (315 EUR/MWh)

Strong local supply chain

- Able to supply WTG & world class leader in floating R&D

Solid financing landscape: mature market for project finance

- A lot of liquidity available from the Japanese banks
- No hedging issue – liquid market, for FX and interest rate
- Long term loans are available, up to 18-19 years for solar and onshore wind
- Pricing is competitive



Key challenges & threats

Offshore wind faces challenge to persuade government planners as OW energy costs remain high for now

Grid and onshore infrastructure are limited

- Supply and demand mismatch as regions with the best wind resources also have the least utility grid capacity
- Thus OW is heavily restricted by regional utilities and risk of curtailment is high
- Higher base costs to establish industry foundation and support infrastructure

Long consenting process

- Lengthy EIA process which takes at least 3y to complete
- Development mainly in port areas as easier due to permitting hurdles (only 5y right of usage at general sea)
- Lack of installation vessel (foreign vessels not allowed)

Challenging natural predispositions (earthquakes, typhoons)

5. Offshore wind in Japan

Planned offshore wind projects

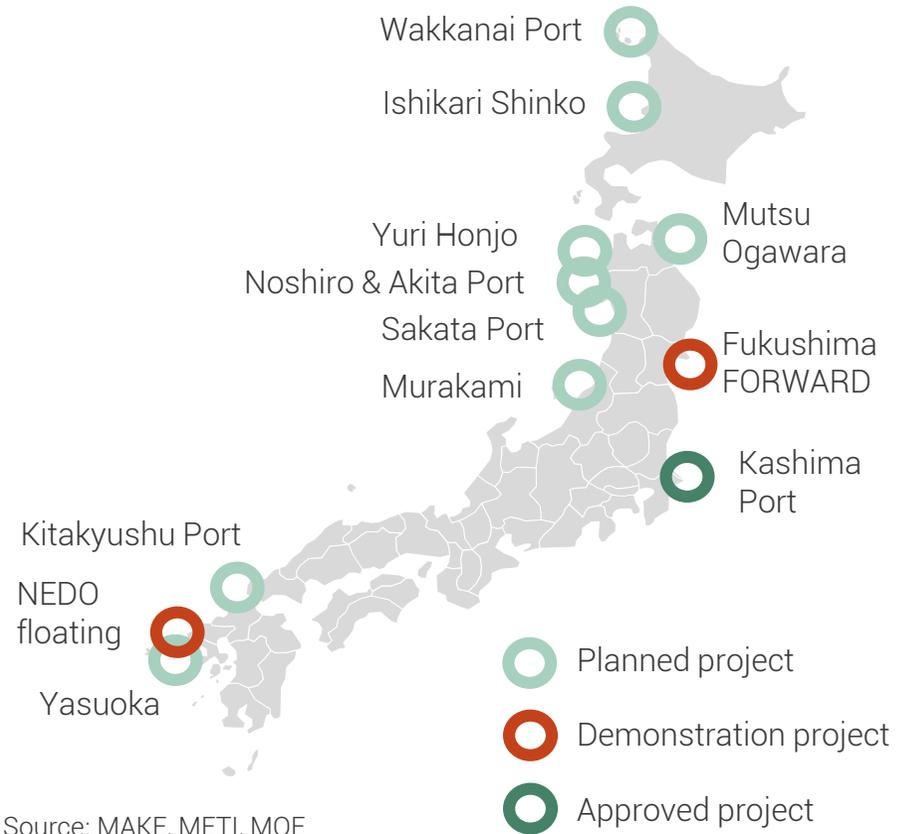
Majority of pipeline in planning stage

- Most of the current planned projects are clustered along the western coastline & central region due to lower water depth
- Project in central and northern regions face opposition from local grid utility operating in monopoly
 - Too much solar intake
 - Keeping grid space for potential nuclear restart
 - Reluctant to upgrade the grid
- Southern regions are more likely to face social opposition potentially interfering with the EIA process

Key focus on port/harbour areas

- Most projects are in general sea area but focus will be on port/harbour for easier permitting and lower costs

Selected announced projects in pipeline



6. Key takeaways

Hopefully some of the European lessons can allow Japan to bring down OW cost faster

I

Offshore wind development would allow Japan to rely less on imports & increase the renewable share of the energy mix

II

Japan has a strong local supply chain already able to supply turbines and some key component for OW development (high FiT, strong research in floating, etc.)

III

...but the development barriers remain high, mainly due to the complex and long approval EIA procedure and to the lack of long term regulation for general sea areas

IV

Bringing down the cost per MW installed quickly is key – Japan can benefit from Europe's experience to bring down the cost of capital (projects, FiT, land right etc.)

V

Even though the banking market is mature & liquid with some OW and PF experience, the lending thresholds & requirements for detailed due diligence will remain high



Debt



Equity



Strategic



Contracting

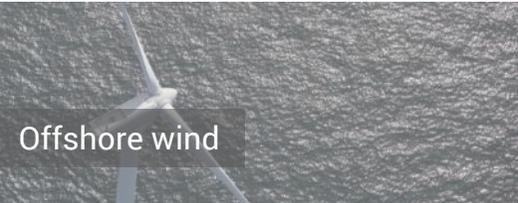


Green Giraffe

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Offshore wind



Onshore wind



Solar power



Other renewables