



Wind of change : finance, regulation, deeptech

9th New Energy Investor Summit – Zurich – 20 May 2019

Aurélie Dethan by invitation of WindEurope

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
- 85+ professionals with offices in Boston (USA), Cape Town (South Africa), Hamburg (Germany), London (UK), Paris (France), and Utrecht (the Netherlands)
- Multi-disciplinary skillset including **project & corporate finance, M&A, tendering, contracting, and legal** expertise



Close to **EUR 25 billion** funding raised for renewable energy projects in **9 years**



85+ professionals in **6 countries** on 3 continents

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 M&A advisory (such as contracting, tender advice, strategic advisory, and development services)
- Widening geographical reach beyond Europe, with a growing presence in the Americas, Africa, and Asia
- Priority given to **getting the deal done!**



Involved in over **150 renewable energy transactions or projects** with a total capacity of circa **35 GW**

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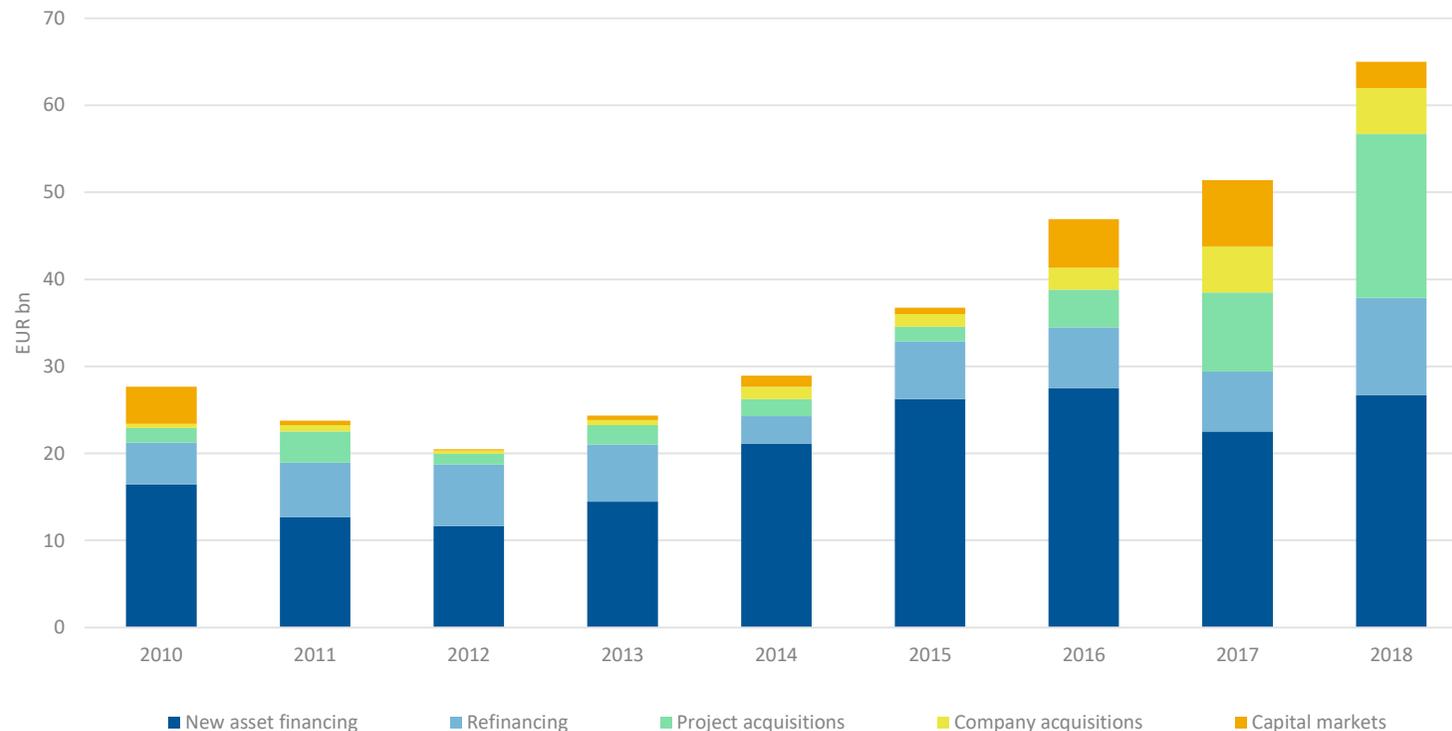
1. Finance
2. Regulation
3. Deeptech for deepwater



1. Finance

Funds flowing to the wind sector have never been as high

Total wind energy investments in Europe, 2010 – 2018 (EUR bn)



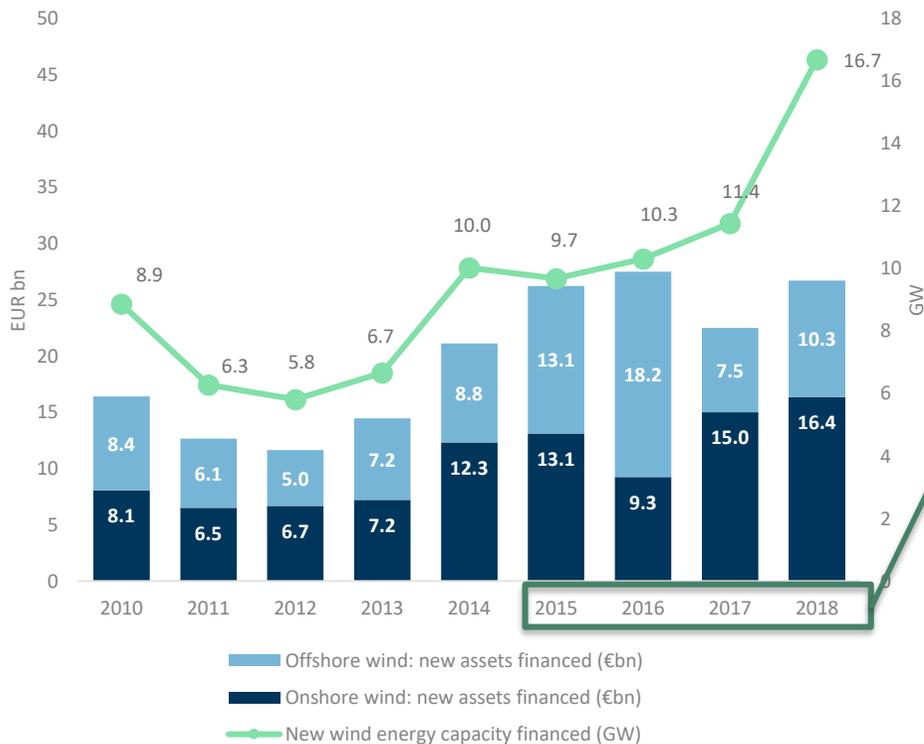
Source : WindEurope

Significant growth fuelled by a surge in project acquisitions

1. Finance

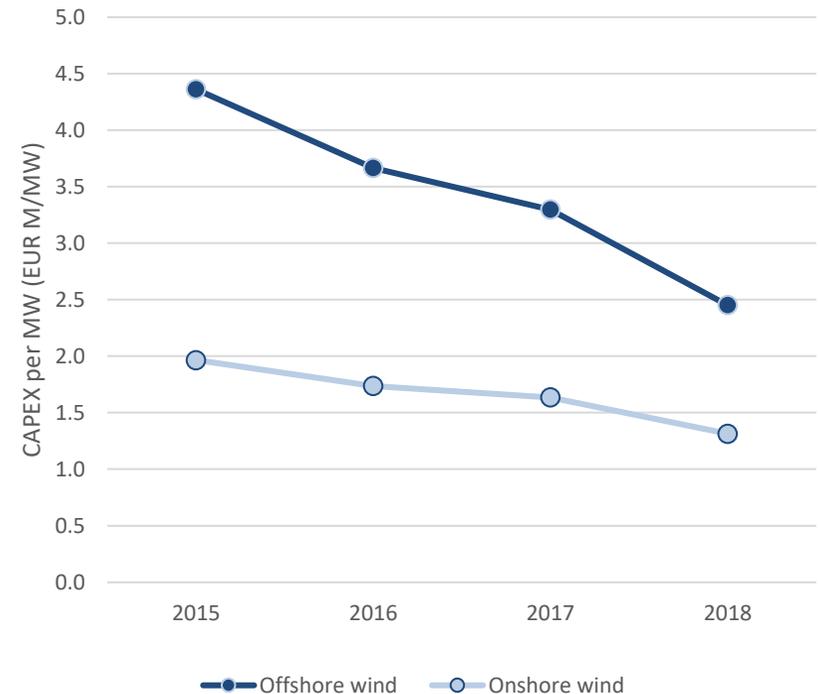
Both EU and non EU countries have contributed to this record year

New asset finance in wind energy, 2010 – 2018 (GW and bn)



Source : WindEurope

Capex / MW financed in wind energy, 2015 – 2018 (EUR M/MW)



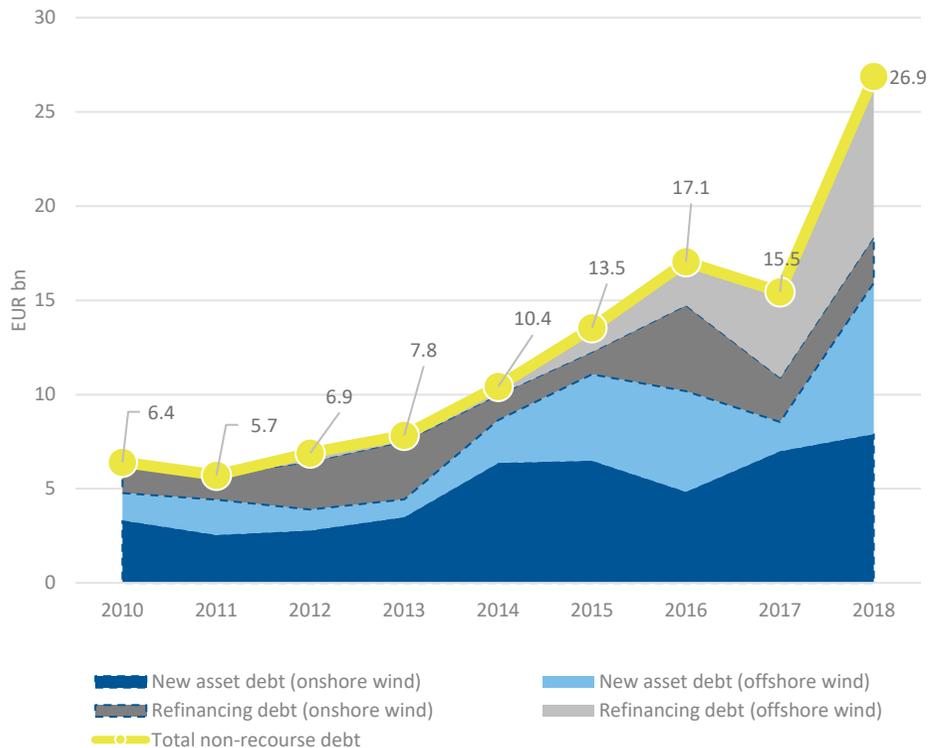
Source : WindEurope

Capex are still driven down by competitive auctions but also sector maturity especially for OW

1. Finance

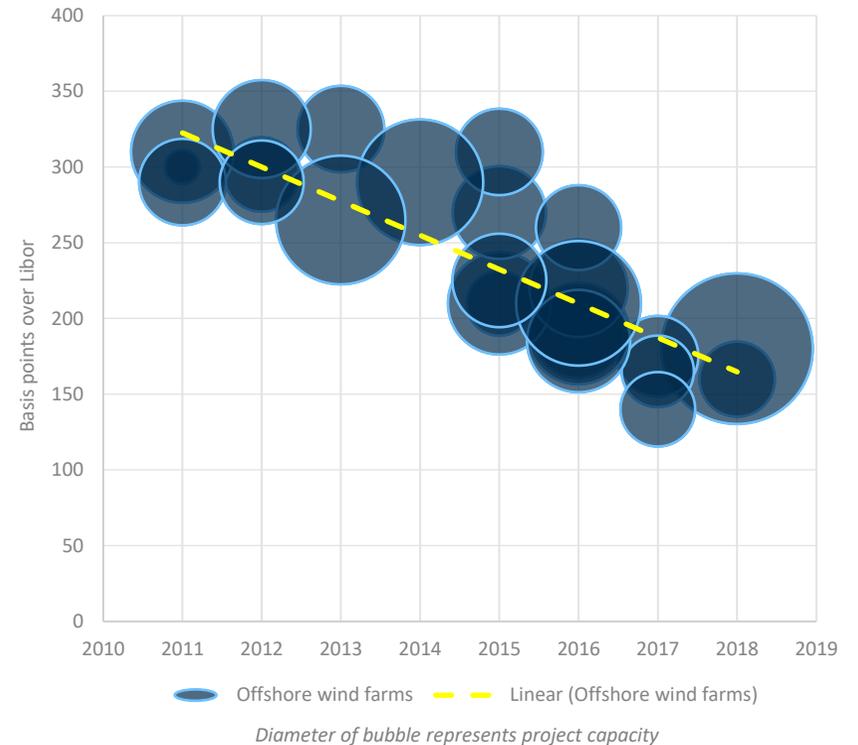
A record year not only for new asset financing but also for refinancing activities

Non-recourse debt financing, 2010 – 2018 (EUR bn)



Source : WindEurope

Interest rates in OW: bps per MW financed, 2010 – 2018



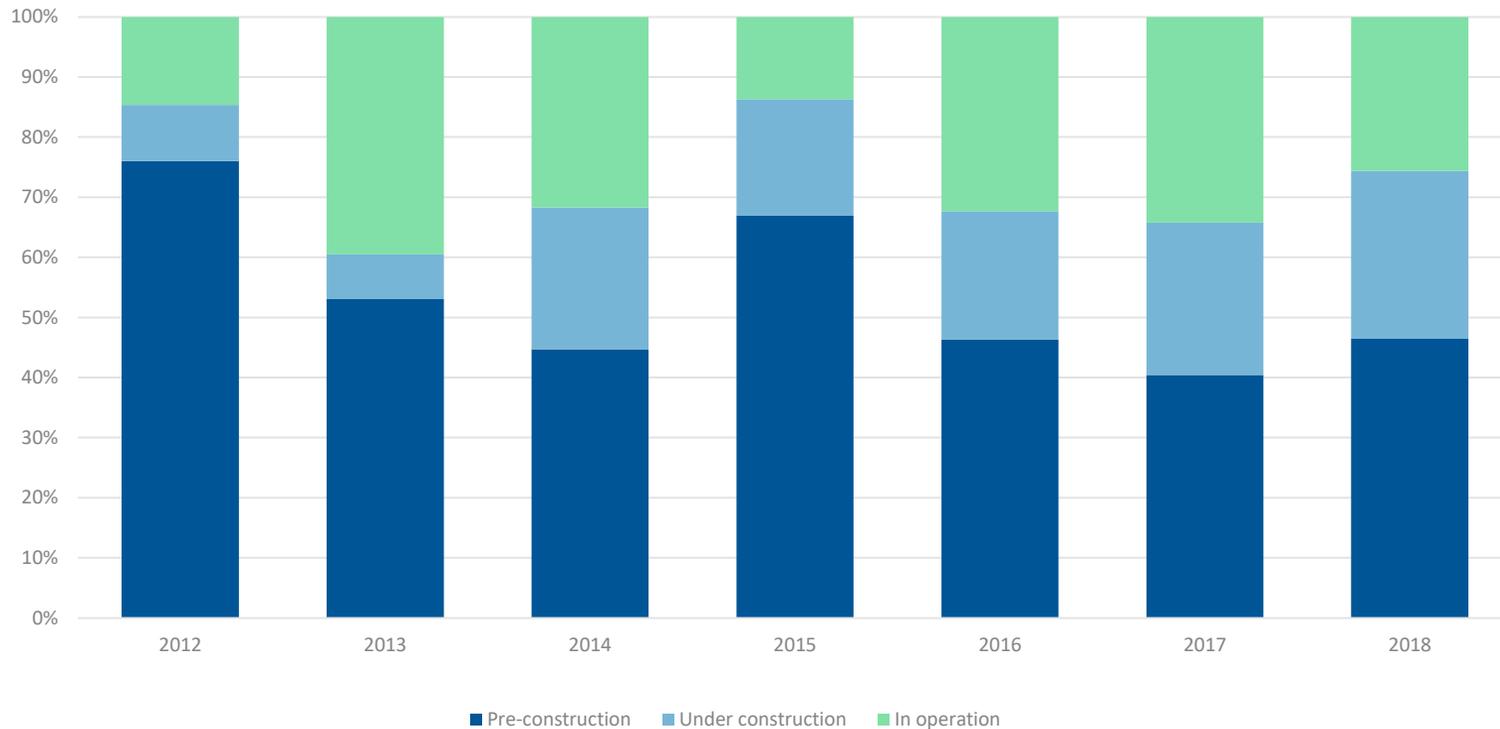
Source : Green Giraffe, WindEurope

The Triforce of senior financing - commercial banks, ECAs, debt funds - feeds the steady growth

1. Finance

The sector keeps maturing and expanding at the same time

Project acquisition activity by project phase (GW, %)



Source : WindEurope

New investors joining the club of operational asset owners, experienced ones moving to earlier phases of development, chasing higher returns

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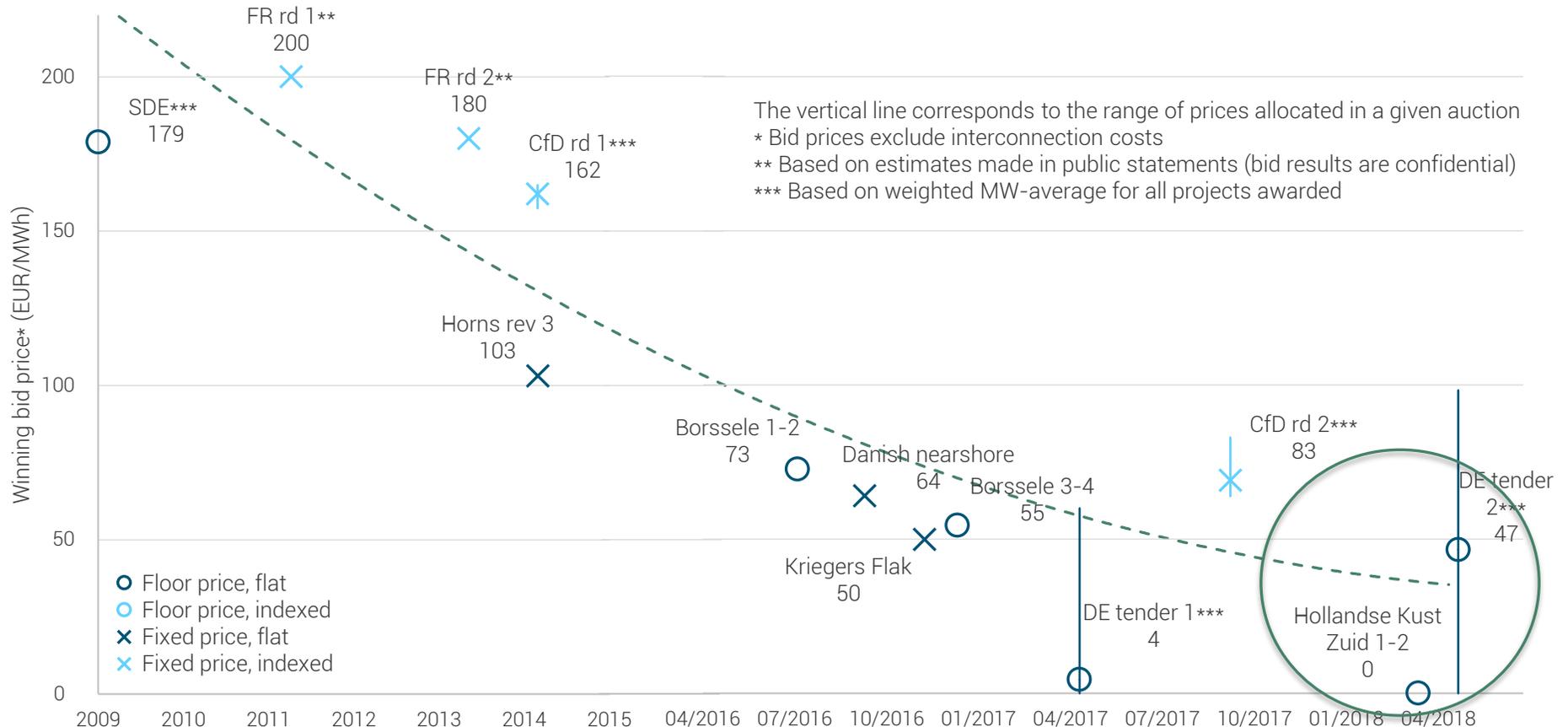
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2. Regulation

Consistent policy has resulted in falling power prices for OW projects



Recent tenders in continental Europe have shown that some investors are willing to build OW projects with 40 EUR/MWh tariffs (2018 prices), excluding grid connection

2. Regulation

Comparison of the main auction regimes – DE, FR, NL, UK

	DE	FR	NL	UK
Allocation	Tender	Tender	Tender	Accreditation
Tenor (years)	20	20	15	15
Price regime	Floor	Fixed	Floor	Fixed
Inflated / indexed	No	Yes, for 60% of the tariff	No	Yes
Negative prices	No support for periods of > 6 consecutive hours	No risk	No support for periods of > 6 consecutive hours	Support cap = strike price
Grid connection	TSO	TSO (via separate tariff)	TSO	Project
Permits	With tariff	No	With tariff	Condition to auction
Devex support	Pre-development by BSH	No	Soil studies & EIA	No

2. Regulation

Key parameter 1 – permits and early studies

	DE	FR	NL	UK
Allocation	Tender	Tender	Tender	Accreditation
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Including the permit in the tender makes a huge difference

- French round 1 & 2 are still waiting for their final permits today
- Development equity is the most expensive and has a direct material impact on final LCOE

2. Regulation

Key parameter 2 – tariff regime

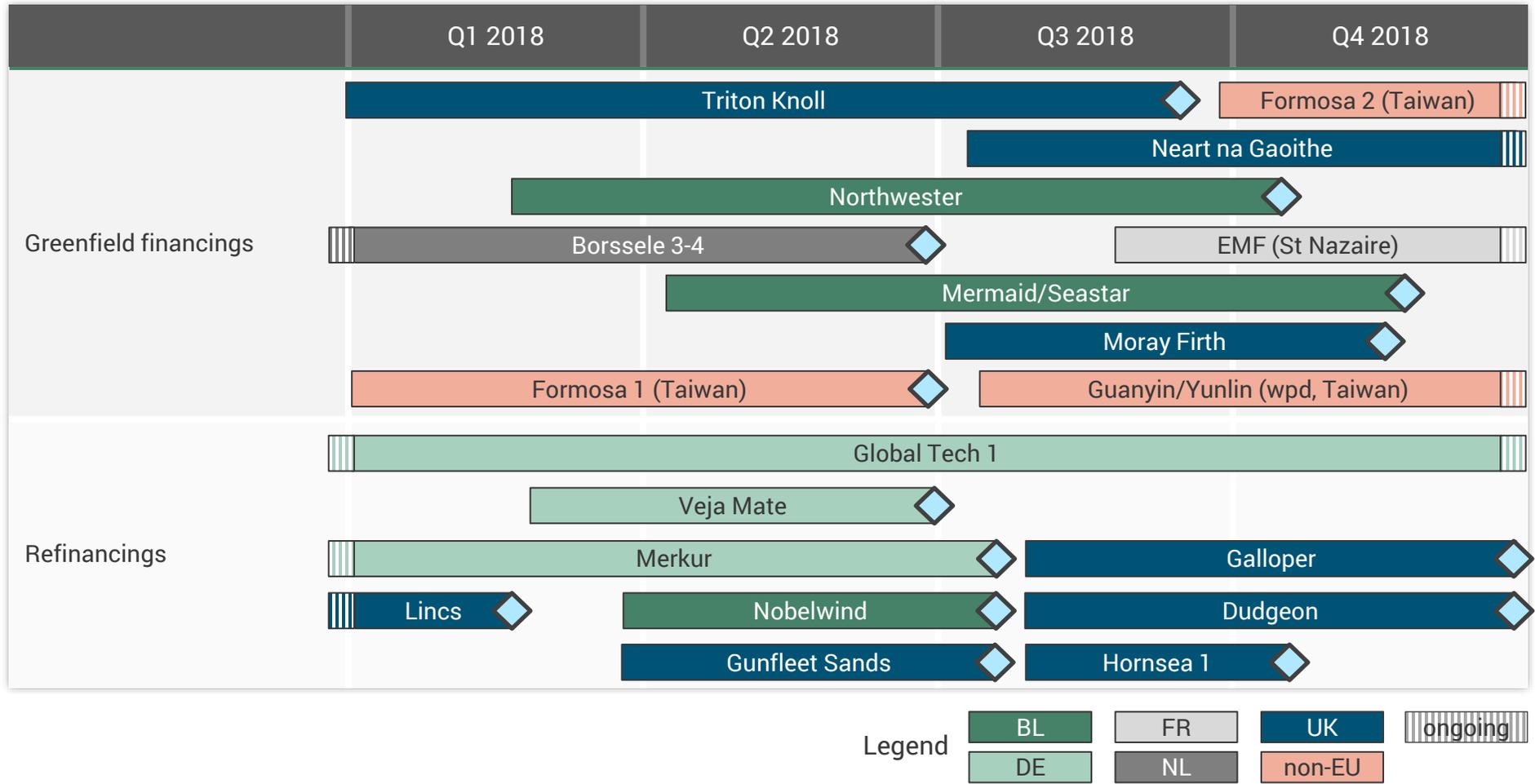
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The price formula creates wildly different incentives

- Floor regimes encourage zero-bids, with as-of-today unpredictable consequences
- Long tenors are more attractive to long term investors with cheap capital
- Lack of indexation increases the headline tariff while unnecessarily pushing macro-economic risk on the project

2. Regulation

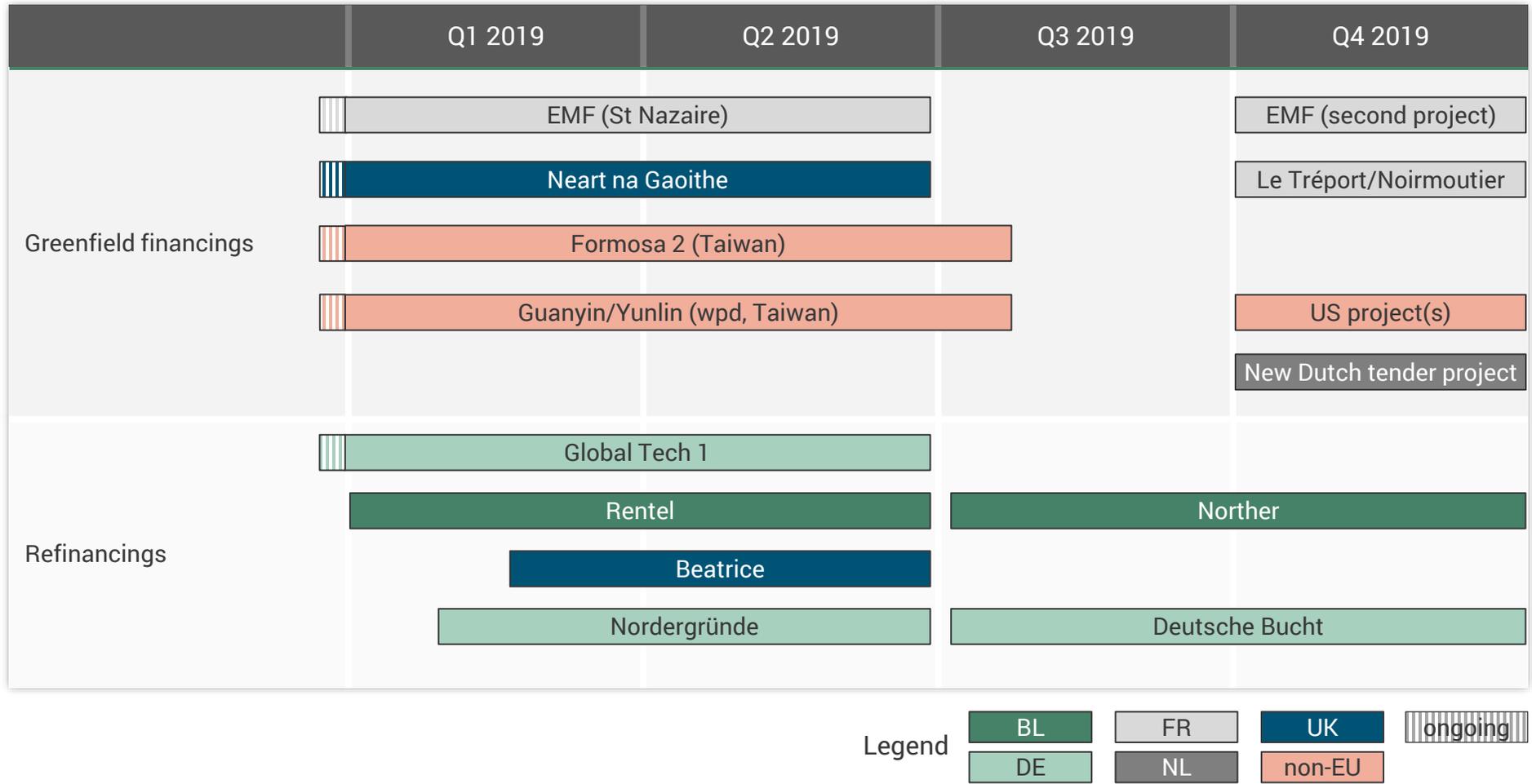
2018 was an extremely busy year for offshore wind finance – with limited merchant risk



Given the volumes to be raised, the most attractively structured deals with have an edge

2. Regulation

A number of deals can already be anticipated for 2019



Activity is likely to include additional projects and refinancings

2. Regulation

Market trends (for greenfield projects)

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
2009-2013	65:35	10-15 years	300-350 bps	EUR 30-75 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
2018	75:25	15-18 years	120-175 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 well below 3%

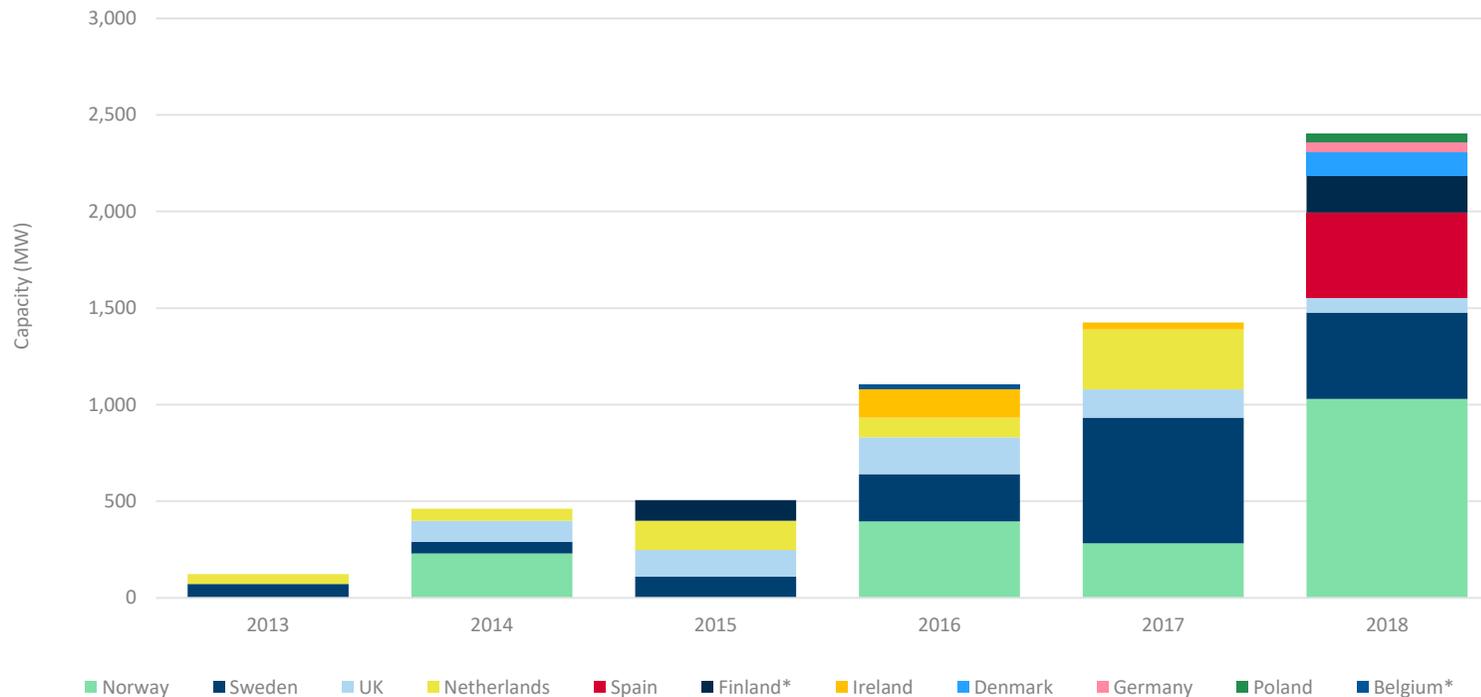
Structures (ratios, maturity, covenants) have actually been quite stable since 2007

- 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 few years

2. Regulation

Appetite for private PPAs depends on the regulatory framework

Renewable energy corporate sourcing through power purchase agreements (MW)



Source : WindEurope

Wind energy is cost-competitive, mature from a risk perspective and surely scalable

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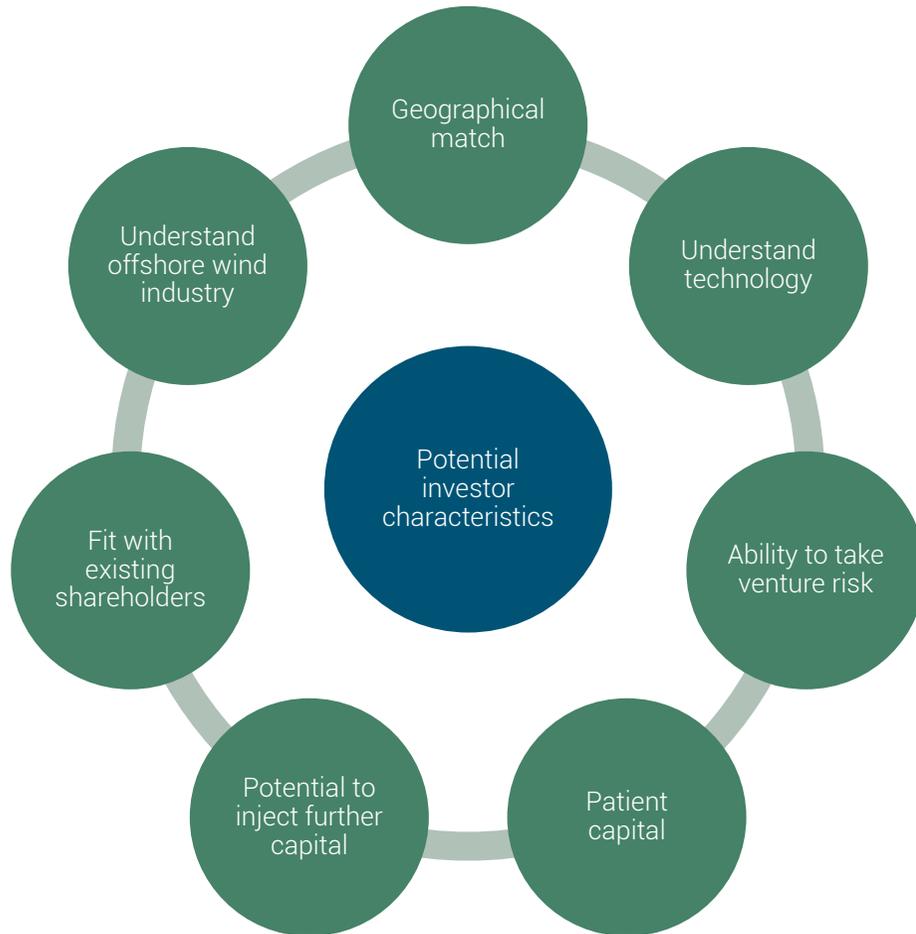
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3. Deeptech for deepwater

Companies enabling new technology infrastructures are attractive to VCs and CVCs



Which criteria to qualify for deeptech?

Impact

- Ultimate impact (maybe silent) on everyday lives by enabling affordable and clean energy
- Highly dynamic ecosystems

Time and scale

- Long development cycles
- Potential for massive implementation

Investment

- Don't to follow the standard funding path of start-ups
- Could require large commitments
- Public funds or similar funding contribution
- IP as a high barrier to entry, protecting the investment

3. Deeptech for deepwater

Floating offshore wind is pushing the horizon to solve global clean energy challenges

Potential for FOW

Europe : > 4,000 GW

France, Portugal, Norway, Scotland, Spain, UK

United States: ~ 2,450 GW

Northeast, California, Hawaii

Asia: > 600 GW

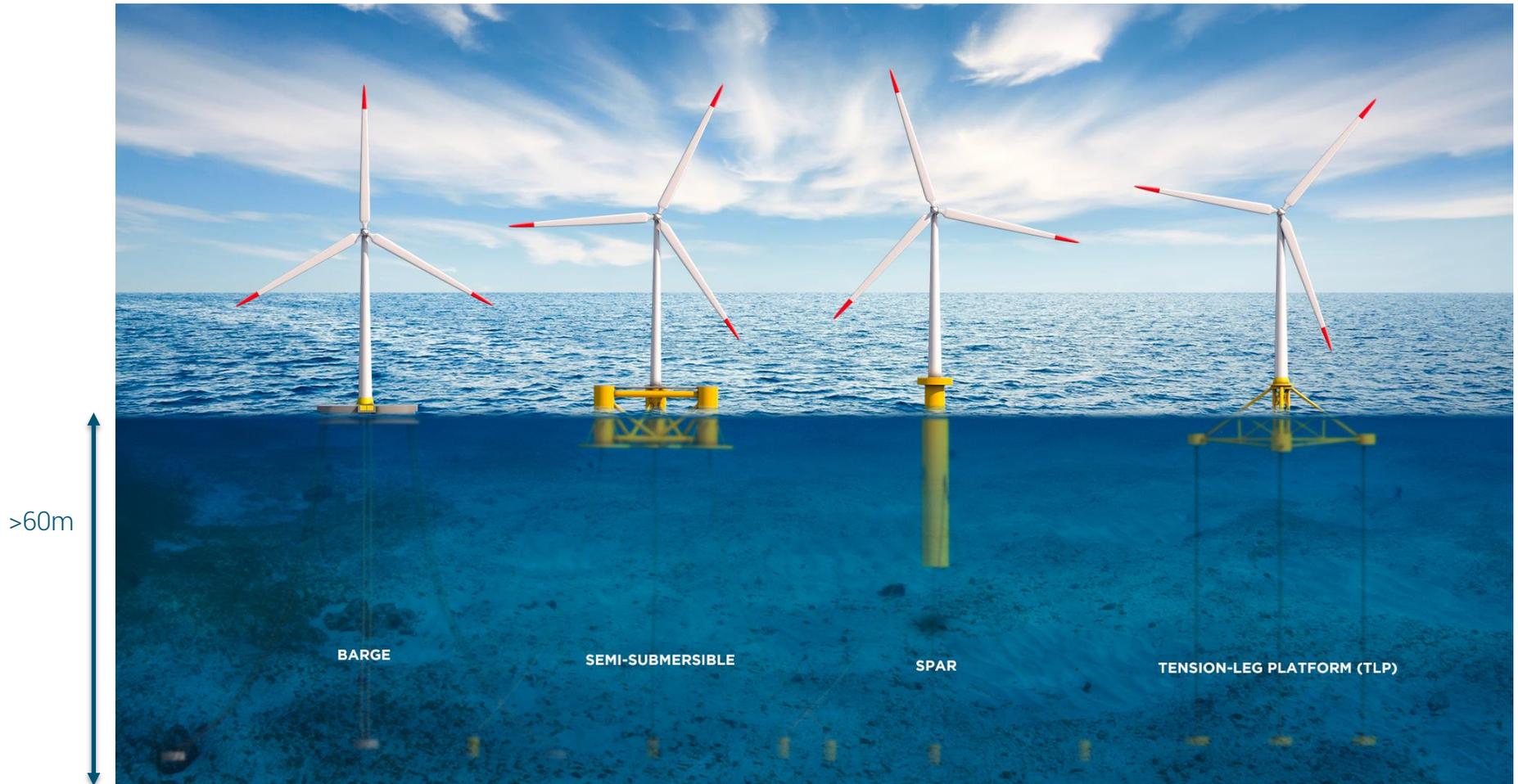
China, Korea, Taiwan, Japan



- Deep waters with good wind resources
- Attractive tariff scheme and/or market dynamic
- Upcoming offshore wind tenders

3. Deeptech for deepwater

One common goal, four main solutions

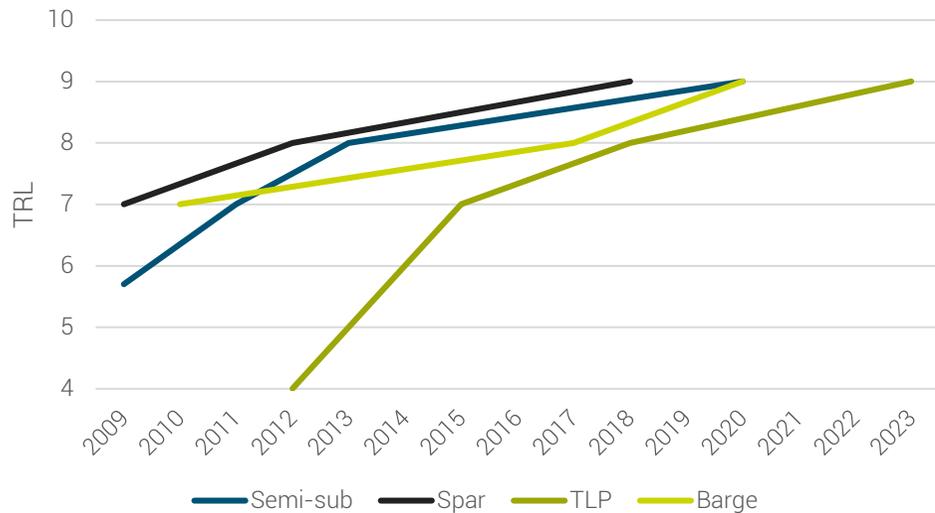


Source : WindEurope

3. Deeptech for deepwater

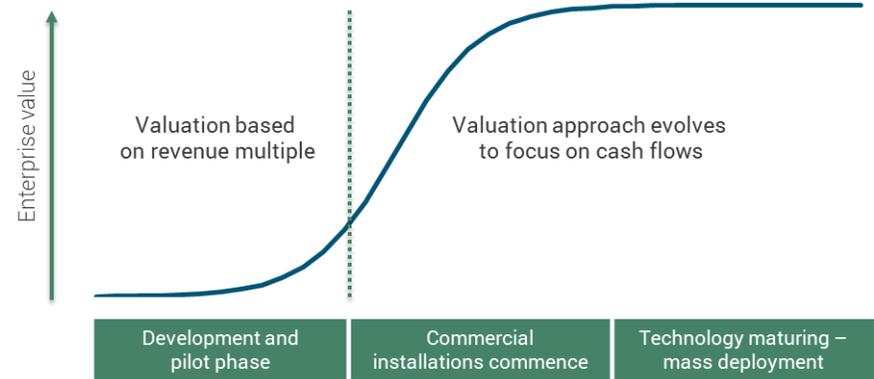
A 10-year cycle for the early technologies to reach global commercial deployment

Technology readiness level of FOW substructures



Source : The Crown Estate and WindEurope

Value increase with realised milestones



- Development milestones help to de-risk the technology
- De-risked technology can deliver deployment at scale
- Greater deployment helps to further drive down costs
- Key tipping point in the development lifecycle is the commercial deployment at industrialised scale

We expect dynamic M&A activity in the FOW industry over the next couple of years



Debt



M&A



Strategic



Contracting

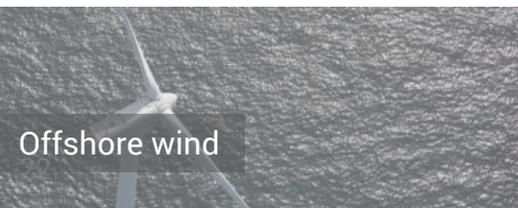


Green Giraffe

The renewable energy financial advisors

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Offshore wind



Onshore wind



Solar power



Other renewables