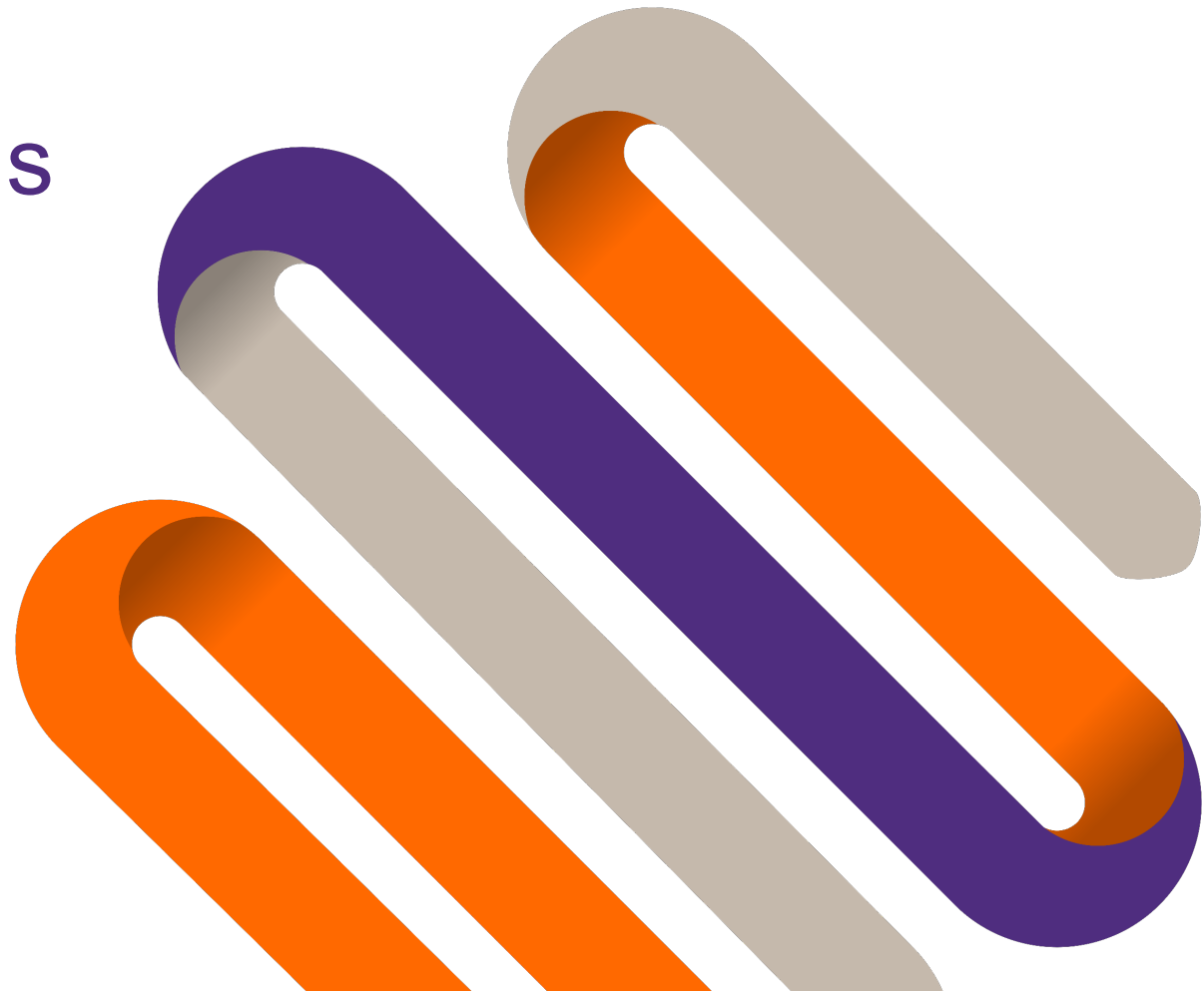


Low Carbon Contracts Company – CFD Investor Analysis

6 February 2020



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Agenda

Data source & limitations

- Limitations of the study

Key Findings

- Timing of investment
- Sources of capital: Equity vs Debt
- CfD compared to the rest of the energy market

Technology specific considerations

- Offshore wind
- Onshore wind, large thermal and solar

Data sources & limitations

Data source

- Desktop research covered 73 contracts across FIDER and CfD AR1-3.
- Analysed as 45 financed projects (phased projects, or jointly financed projects treated as 1 project)
 - Three projects in which Banks Renewable were the investor (Middle Muir, Moor House, Kype Muir) have been treated as a single project
- All the information contained within has been taken from sources in the public domain
- Data was cross referenced across multiple sources to confirm accuracy
- *No primary research was carried out to validate findings*

Breakdown of projects by AR

Allocation round (AR)	Number of Projects	Number of CfDs (Contracts)	Number of Analysed Projects	Allocation Round dates
FIDER	8	14	7	April 2014
Allocation Round 1	20	24	15	October 2014 – March 2015
Allocation Round 2	7	13	4	March 2017 – September 2017
Allocation Round 3	10	22	2	May 2019 – September 2019
Total projects	45	73	28	

Projects that have achieved Financial Close

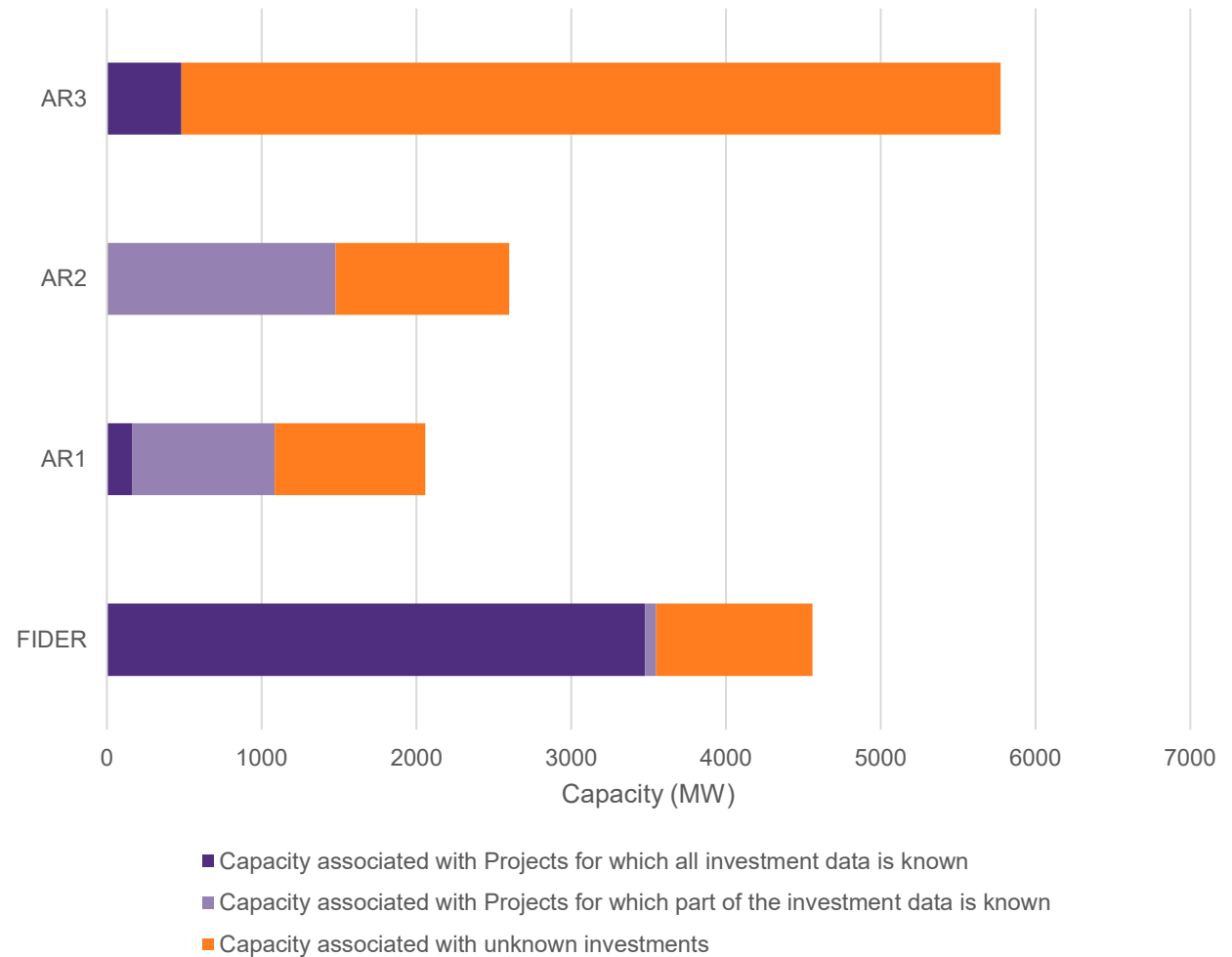
	FIDER	AR1	AR2	AR3
Financial Close Achieved	8	17	3	-
Financial Close Pending or unknown	-	3	4	10
Total number of projects	8	20	7	10

AR3 projects only signed their CfDs in September 2019, therefore we would not expect much investment data at this stage. In addition remote island wind projects have been delayed due to grid connections.

Limitations of the study: availability of data

- It has not always been possible to determine investor types and/or the amount invested into a project
- Chart opposite provides an illustration of the capacity (in MW) of projects where the investment figures are known, partially known or unknown.
- This may be because Financial Close has not been reached or public data is not available and details have been kept confidential

Known and unknown investment levels, Installed Capacity (MW) by Allocation Round



Breakdown of investors: type

	Investor type	Definition	Example
1	Commercial bank	A bank with the primary purpose of providing financial products and services to corporations, institutions and governments e.g. through commercial loans.	Lloyds Banking Group, Santander
2	State owned bank	A bank owned by a state with the purpose of operating as a state bank	Commonwealth Bank of Australia
3	Infrastructure fund	A fund managed by specialist fund managers to invest pools of money in infrastructure assets and projects.	Green Investment Group
4	Institutional investor	An entity which pools money to invest in investment assets (not specifically infrastructure assets) such as a pension fund or insurance company.	Aviva, Foresight
5	Developer	A company responsible for the design, project development or construction of a CfD project.	Banks Renewables, Lightsource
6a	Utility (European)	A company that supplies basic amenities (electricity, gas or water) to the end user/public, where the company's head office is based in Europe. The utility may also have generation or network assets.	Ørsted
6b	Utility (non-European)	A company that supplies basic amenities (electricity, gas or water) to the end user/public, where the company's head office is based outside Europe. The utility may also have generation or network assets.	Kansai
7	Traditional oil & gas company	A company that's primary activity was providing upstream oil and gas prior to the introduction of EMR.	Equinor, Repsol
8	Sovereign Wealth Fund	A sovereign wealth fund (SWF) is a state-owned investment fund or entity which comprises of pools of money derived from a country's reserves. Reserves are funds set aside for investment to benefit the country's economy and its citizens	China Investment Corporation
9	Other	Any investor that does not fall into the categories above has been classed as 'other'. For example, grant funding, technology developers, equipment providers or credit agencies.	EKF

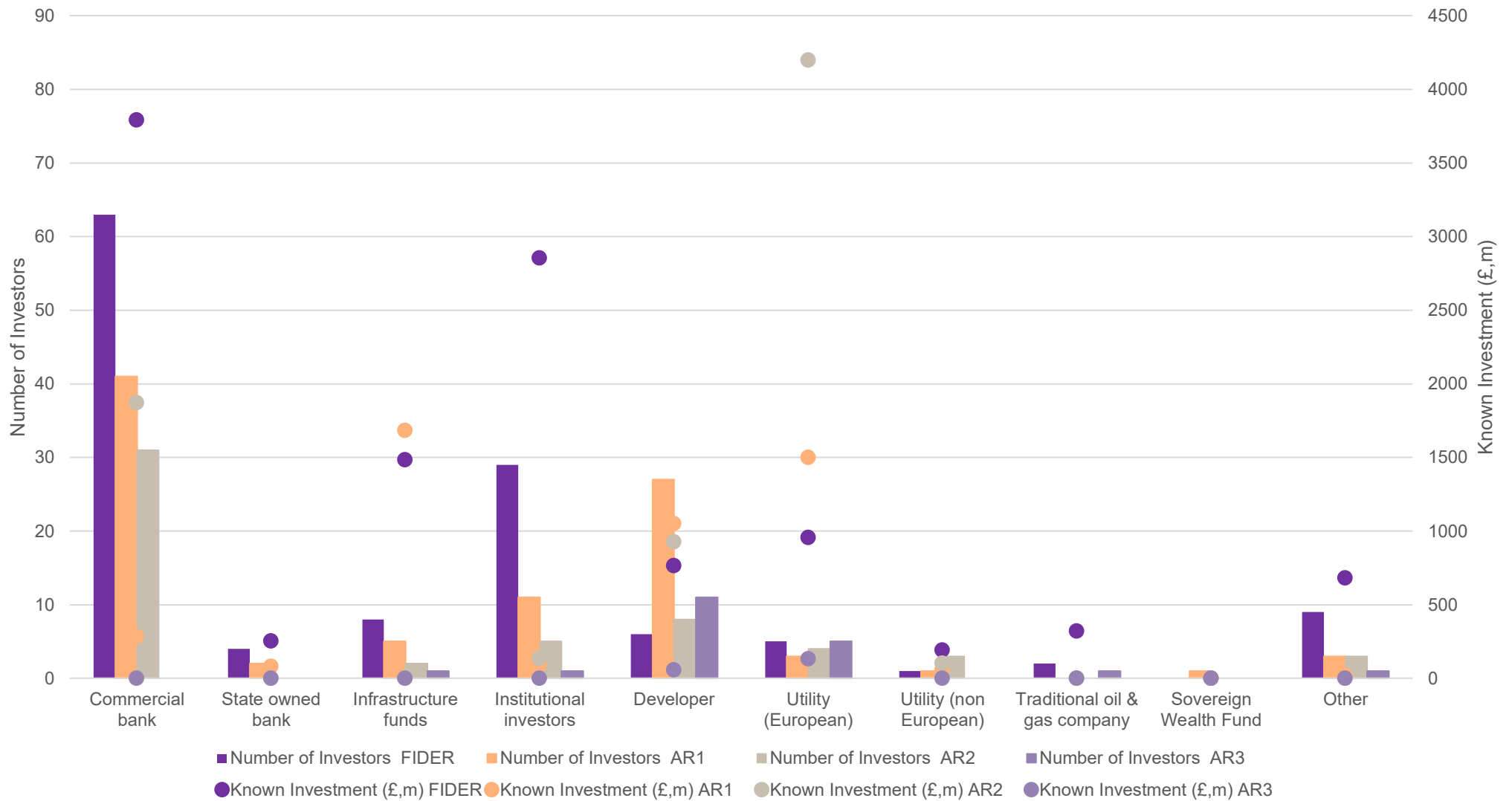
Breakdown of investors: volumes

- Across the 45 CfD projects we have identified 145 separate investors, that have invested over £18.7bn.
- The largest known investments to date have come from infrastructure funds, institutional investors, utilities and commercial banks.
- There is less known investment from developers, this is likely to be due to the fact that they often invest from their balance sheet therefore there is very little transaction information available.

Investor type	Number of investors	Amount invested – where known (£m, real terms)
Commercial bank	47	4,301
State owned bank	4	65
Infrastructure fund	10	3,611
Institutional investor	25	2,755
Developer	35	1,196
Utility (European)	8	5,002
Utility (non-European)	4	328
Traditional oil & gas company	2	64
Sovereign Wealth Fund	1	-
Other	9	1,414
Total	145	18,735

Key findings

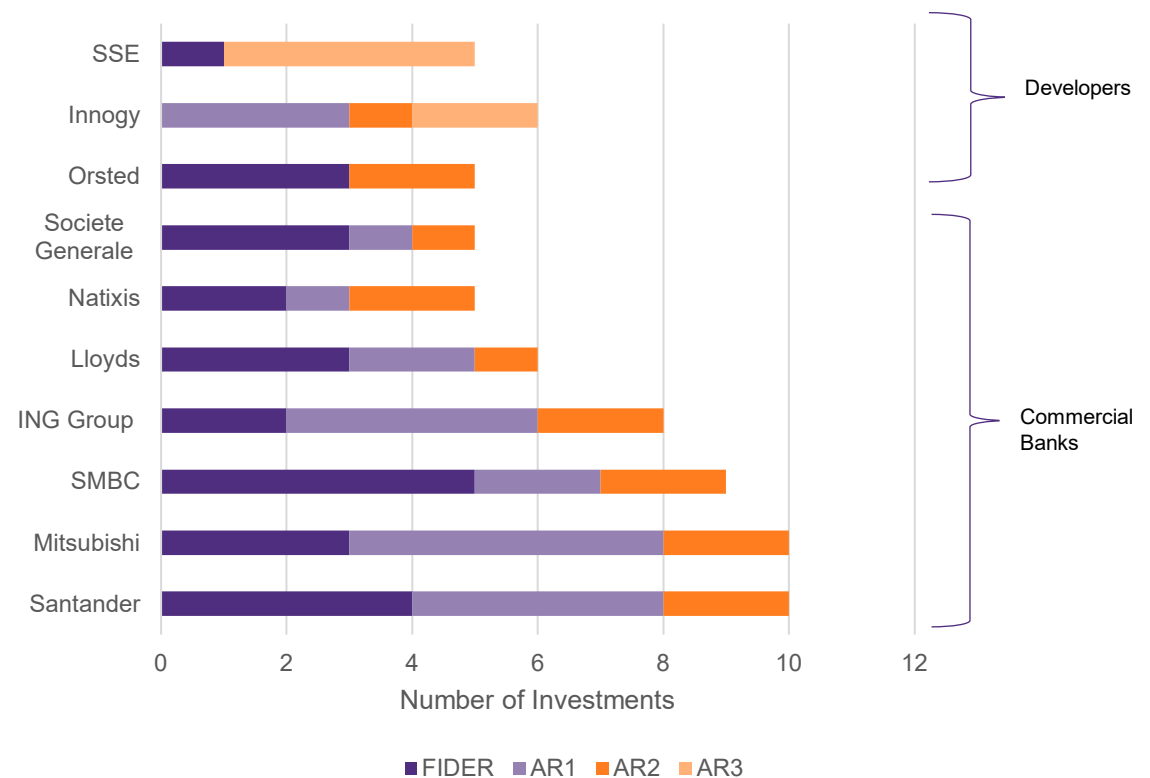
Number of Investors and Known Investment



Key investors – By number of Projects

- Commercial banks represent seven of the top ten most active investors (Mitsubishi, Santander, SMBC, ING Group, Lloyds, Natixis and Societe Generale) by number of projects invested in.
- Commercial banks predominantly invest in established projects, explaining the high proportion of investments made in FIDER and Allocation Round 1 projects. Further to this point no commercial banks have invested in Allocation Round 3 projects.

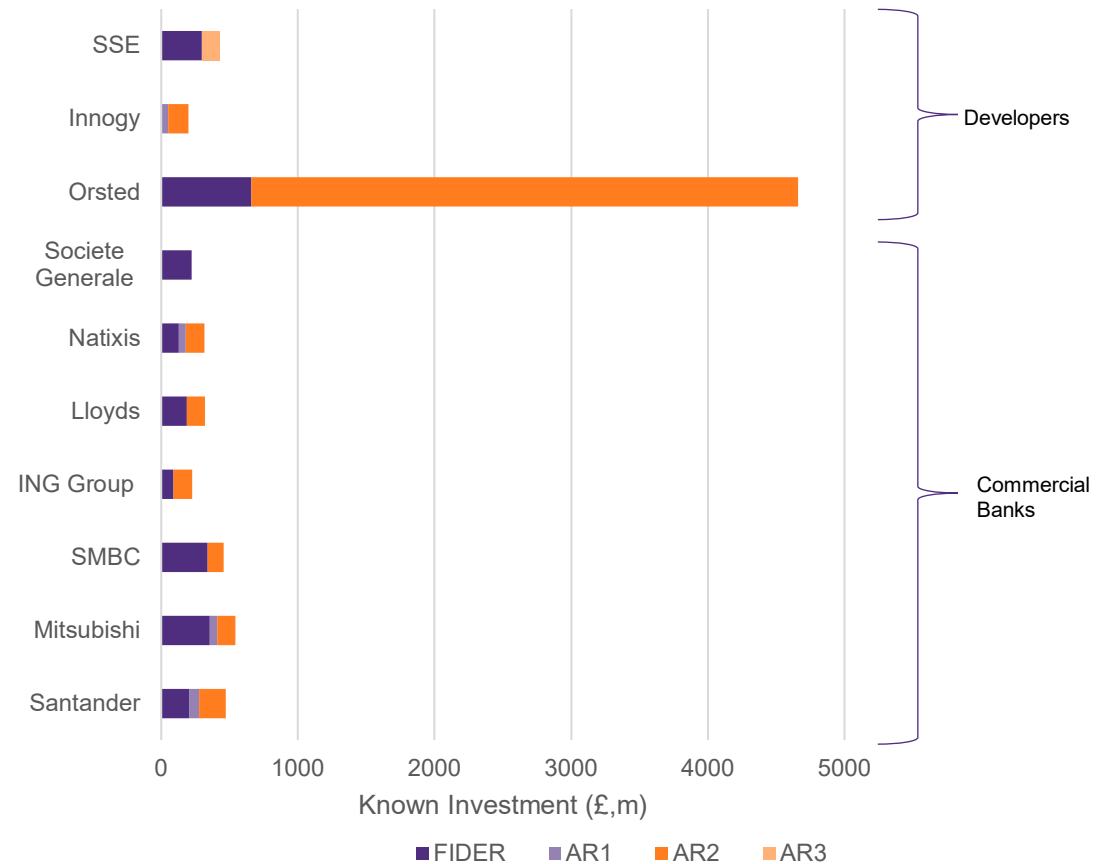
Most active investors by number of projects



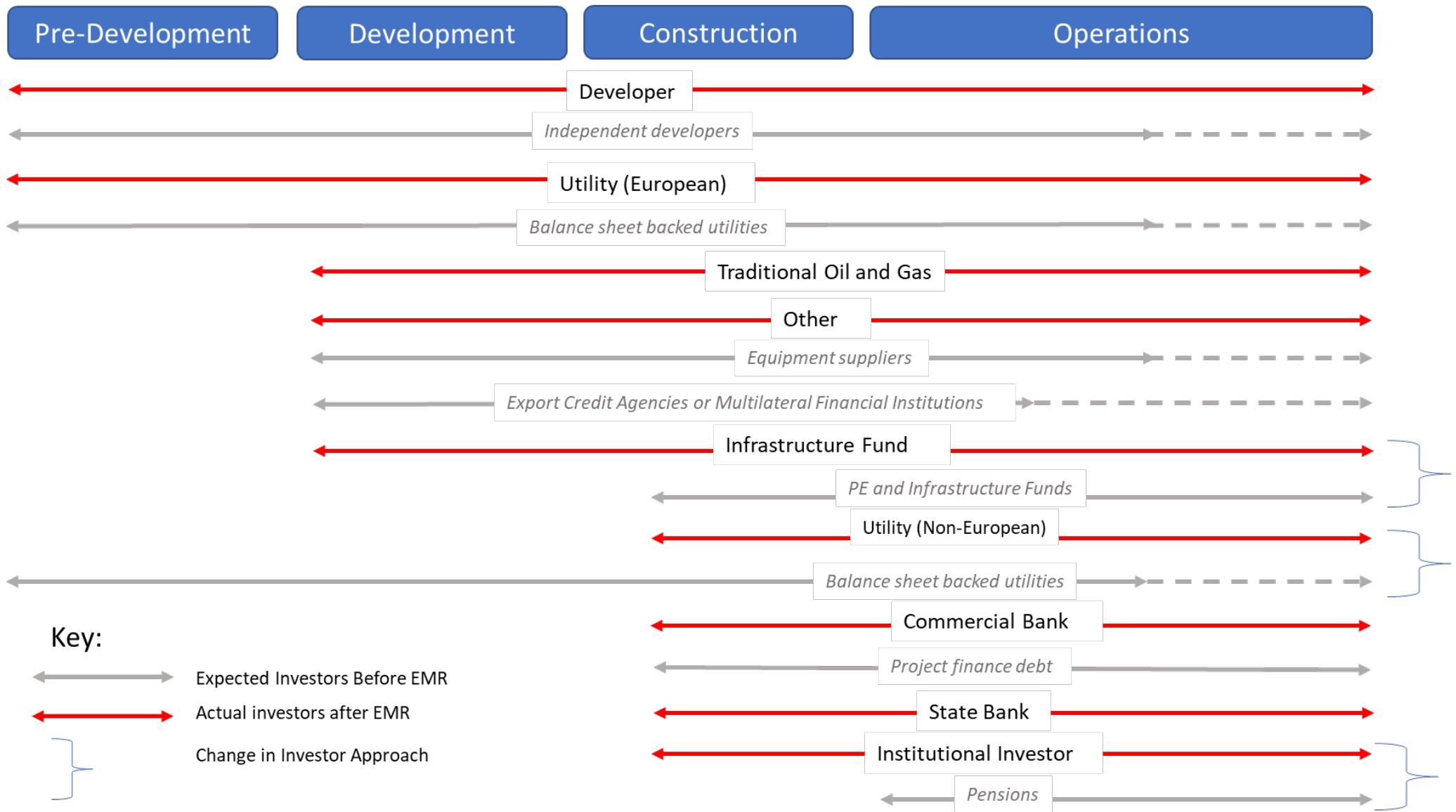
Key investors – By level of investments

Most active investors by value of investment made

- Unlike numbers of investments made, the value investment is far higher for developers (Ørsted) than for the commercial banks.
- The large investments made in the Hornsea and Walney project by Ørsted has meant that they have invested more than any other investor.
- The graph also interestingly suggests that, generally, known investment levels in Allocation Round 1 is lower than both the Investment Contracts and the Allocation Round 2.

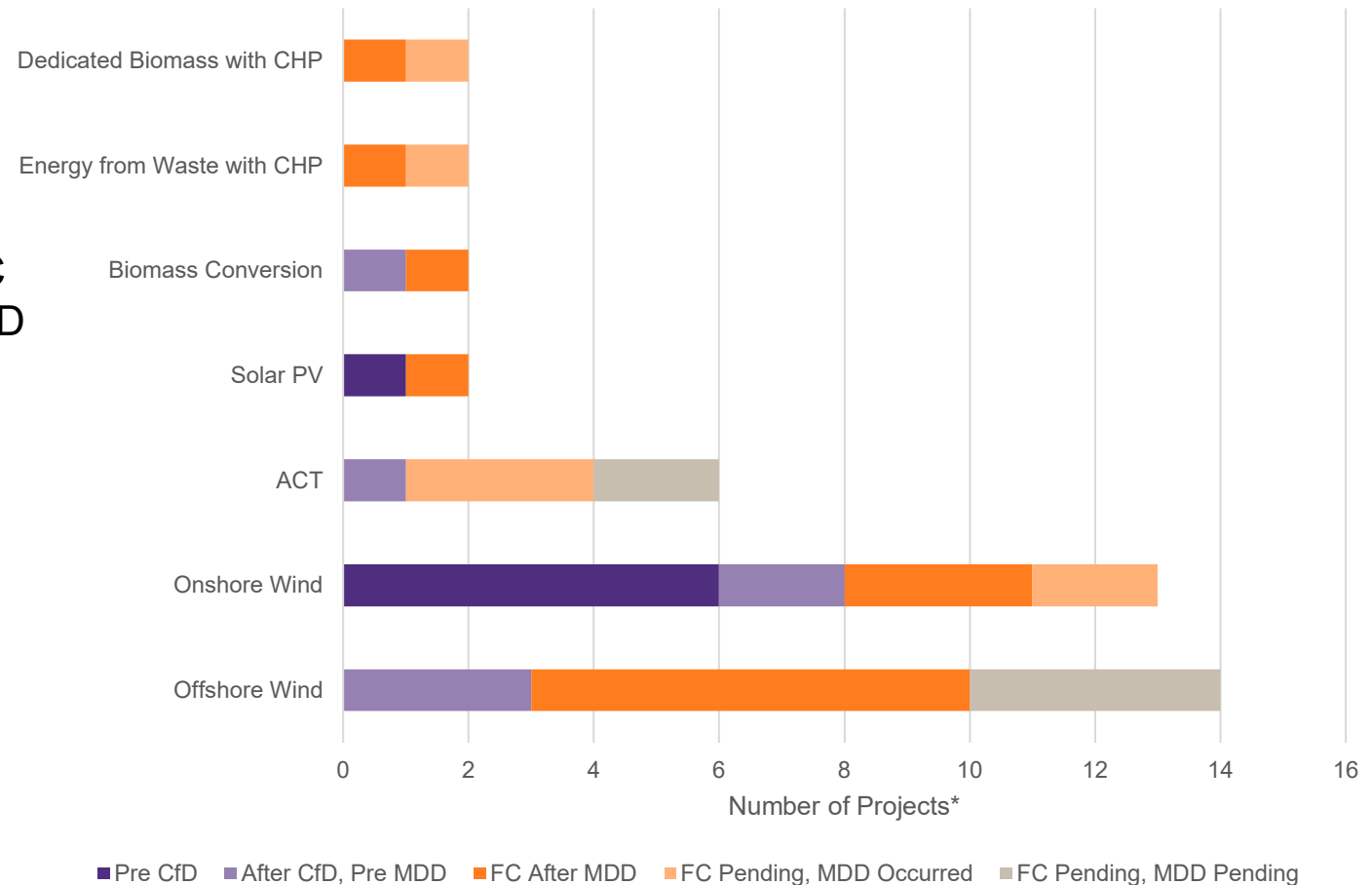


Investor Timelines



Timing of Investment: Financial Close

- Majority of Offshore Wind has FC date which was either after the Milestone Delivery Date (MDD) or is still Pending
- Some projects achieved FC before the signing of the CfD contract (solar, biomass conversion, onshore wind)
- ACT are almost all still waiting for FC
- Only a limited number of projects (7 of the 41) obtained FC between the signing of the CfD contract and before the MDD



* Four RIW projects have not been included in the graph. They are all FC Pending, MDD Pending.

Timing of Investment: Equity Sales

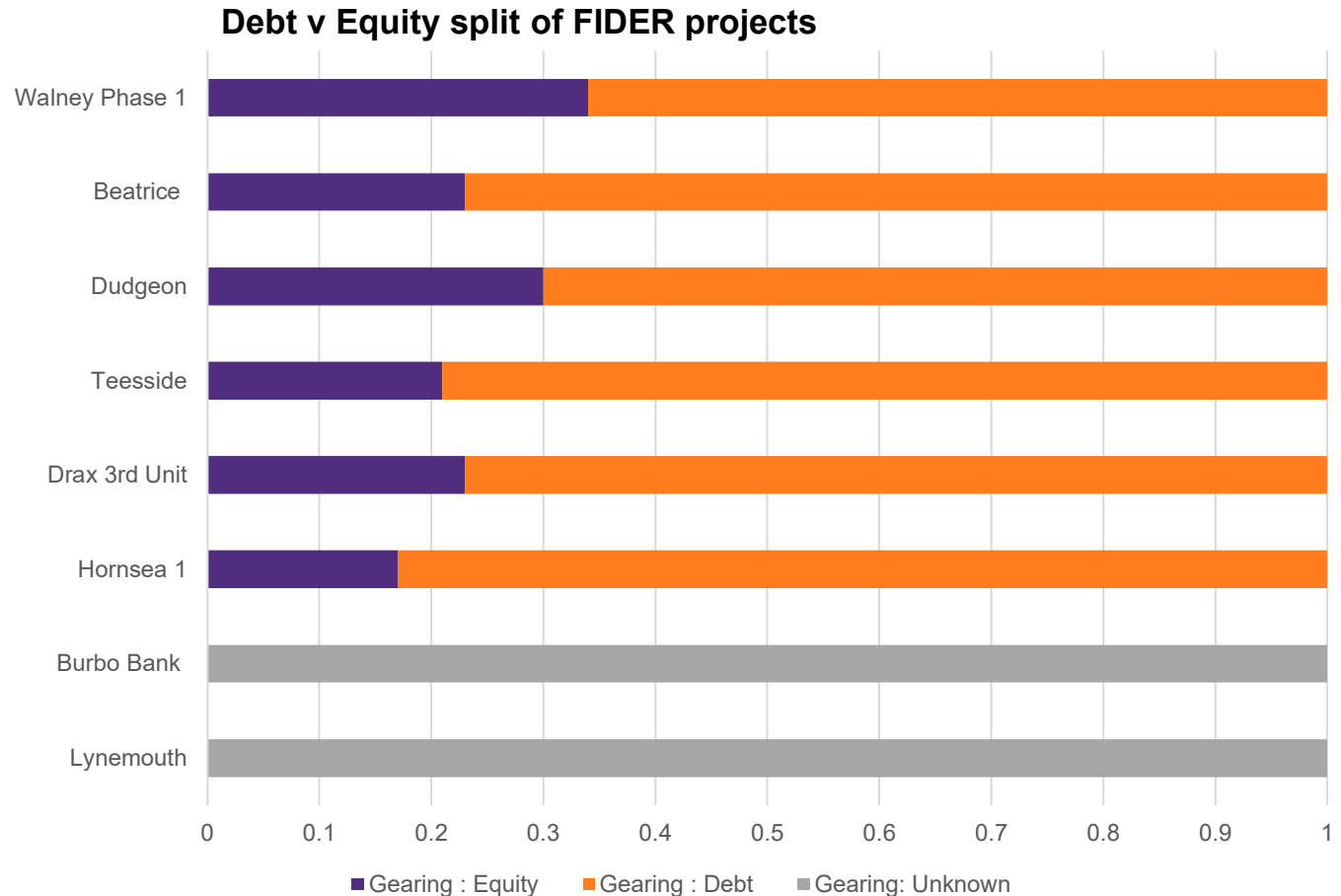
Projects which have sold 100% of the Equity interest in the project, since CfD contract signing

CfD project	Technology	Allocation round	Seller	Initial investor type	Buyer(s)	Current investor types	Date of Investment / <u>post MDD</u>
Dorenell Wind Farm	Onshore Wind	AR1	Infinergy	Developer	EDF Energy Renewables	Developer	<u>01/11/2015</u>
East Anglia One	Offshore Wind	AR1	Iberdrola	Utility (European)	GIG, Scottish Power Renewable Energy	Infrastructure fund, Utility (European)	30/08/2019
Energy Works (Hull)	Advanced Conversion Technology	AR1	Spencer Group	Developer	The Bioenergy Infrastructure Group, Hancock Natural Resource Group, Noy Fund	Institutional Investors, Other, Infrastructure fund	<u>24/11/2015</u>
K3 CHP Facility	Energy from Waste with CHP	AR1	Wheelabrator Technologies	Developer	Macquarie*	Developer, Commercial bank	01/02/2019
Nanclach Wind Farm	Onshore Wind	AR1	Cawdor Estate, Infinergy	Developer	Cawdor Estate, Greencoat UK Wind	Developer	01/02/2017
Neart na Gaoithe	Offshore Wind	AR1	Mainstream Renewable Power	Developer	EDF Renewables, ESB	Developer, Utility (European)	01/05/2018
Tralorg	Onshore Wind	AR1	Brookfield Renewable Energy Partners LP	Developer	Railpen	Institutional Investors	01/11/2018
Northacre Renewable Energy Centre	Advanced Conversion Technology	AR2	Hills UK Ltd	Other	Bioenergy Infrastructure Group	Infrastructure fund	22/10/2018
Lynemouth Power Station	Biomass Conversion	FIDER	RWE npower	Utility (European)	EPH	Developer	07/01/2016
Teesside	Dedicated Biomass with CHP	FIDER	MGT Power Limited	Developer	Macquarie Group, PKA	Institutional Investors	11/08/2016

*Macquarie bought Wheelabrator Technologies, as opposed to just K3 CHP Facility

Sources of capital: Equity Vs Debt

- High level of debt in the FIDER projects, with 6 of the eight projects having a ratio of equity : debt of between 30:70 and 20:80.
- This is apart from the Walney phase 1 project, which has a debt level of just under 70%
- For a couple of projects (Lynemouth and Burbo) there was no visible debt in the publicly available information.
- For projects where the debt is known the average debt gearing is 75%

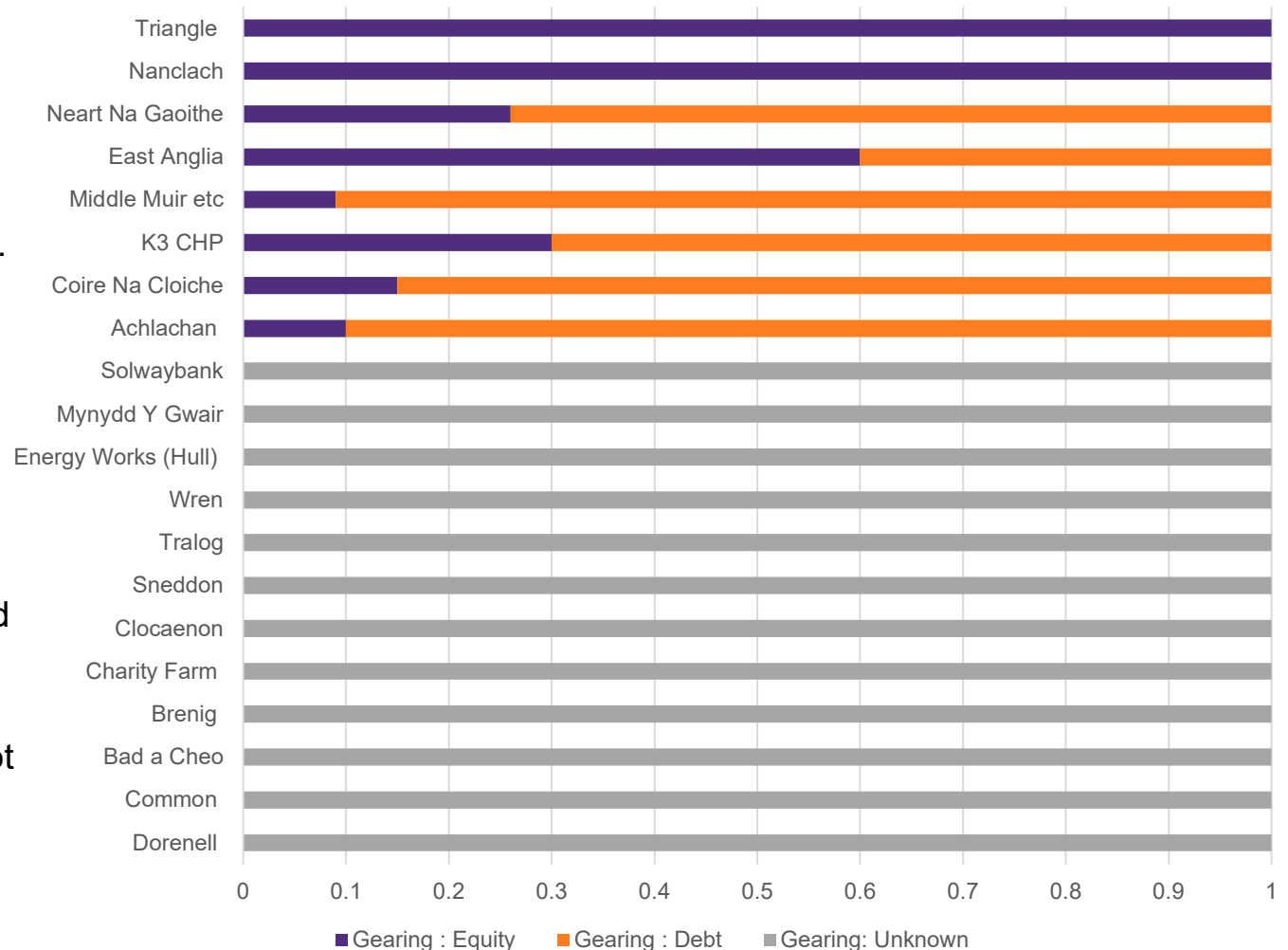


*Gearing information taken from public records at Financial Close.

Sources of capital: Equity Vs Debt

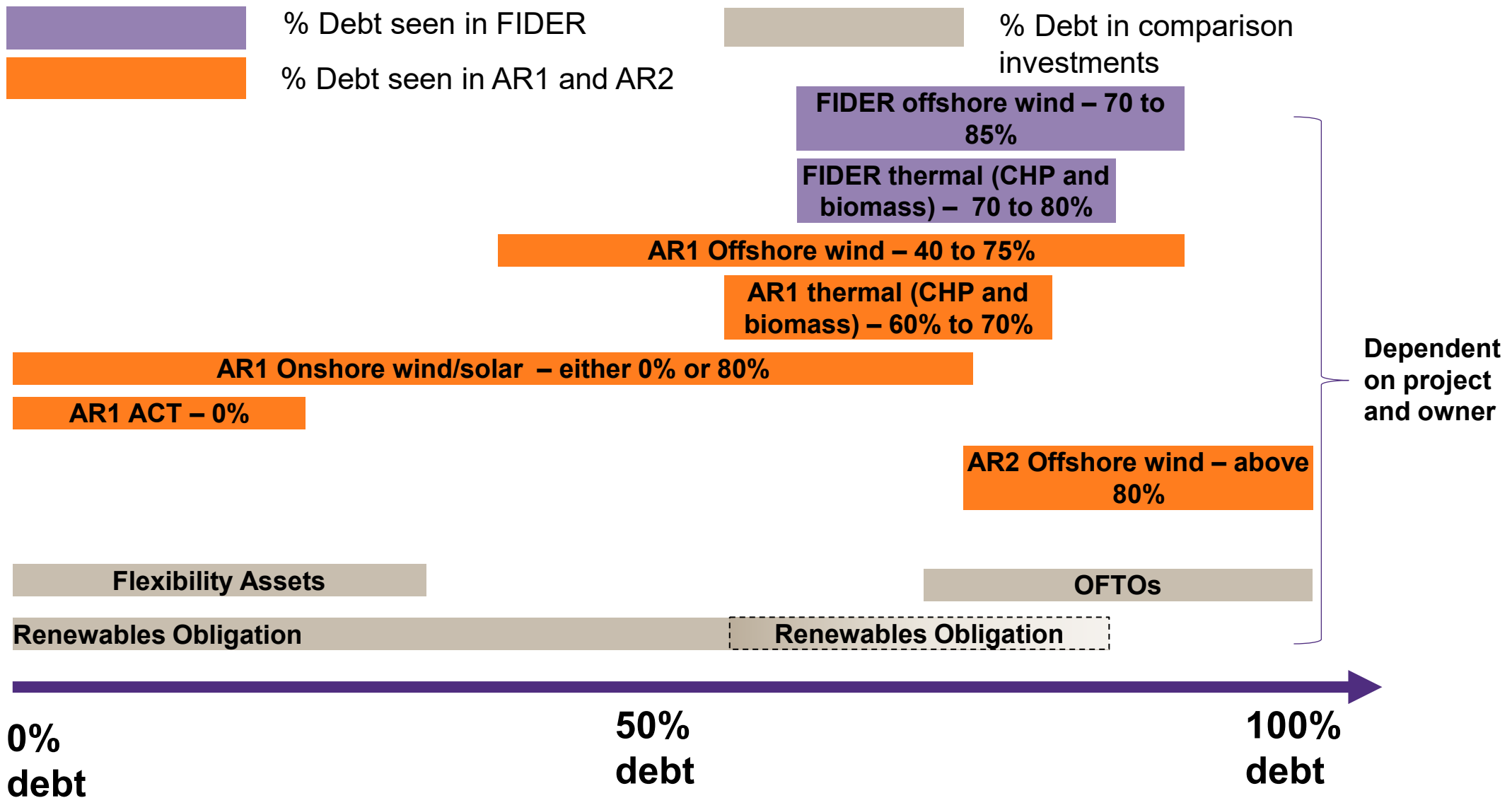
- Of the 20 projects, 6 projects are shown to have an investment of debt.
 - East Anglia shows a figure of around 40%
 - The remaining projects show debt investment of between 70 and 95%.
- Two projects (Triangle and Nan clach) indicate that they have 100% equity investments
- Neart Na Gaoithe site had a gearing of 70%, which is expected for this site, as it is a sizeable offshore wind farm and the funding approach taken for these types of projects are more complex and more likely to involve high levels of debt.
- For 9 projects, gearing figures could not be found

Debt v Equity Split of AR1 Projects



*Gearing information taken from public records at Financial Close.

Debt levels in the Renewables sector

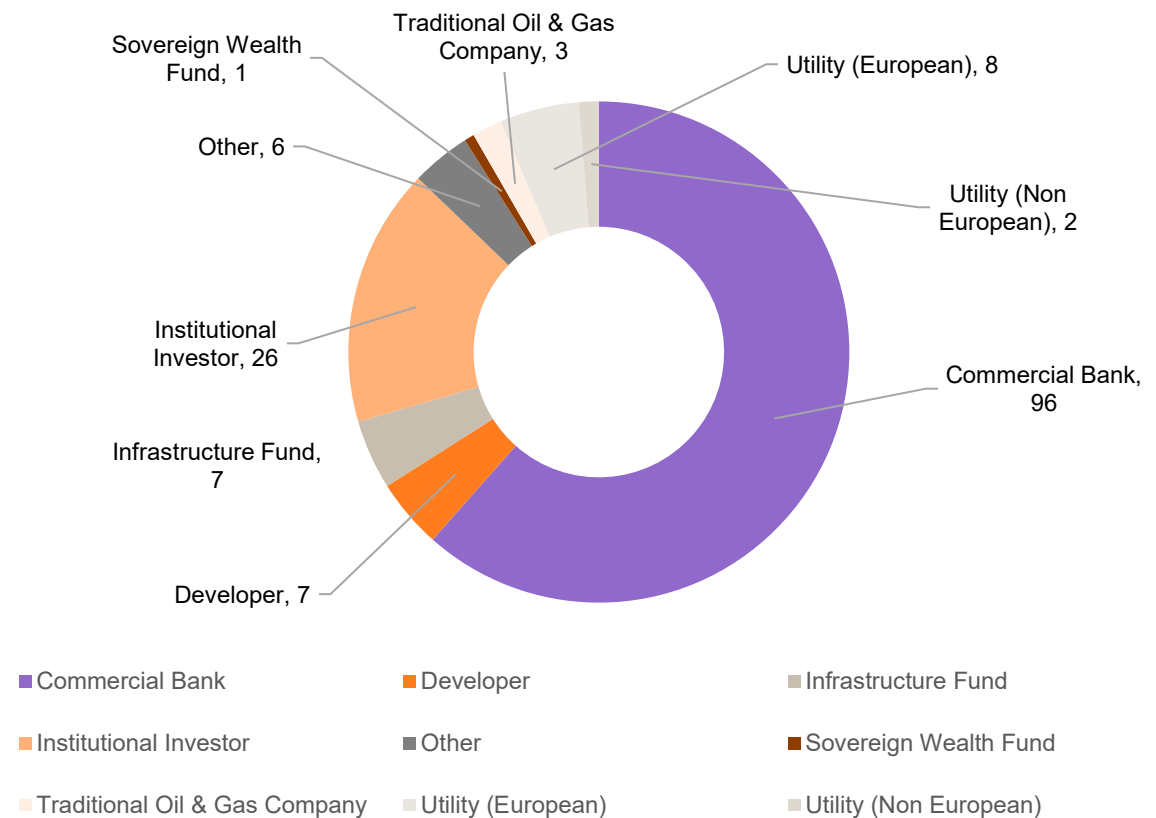


Technology specific considerations

Offshore Wind

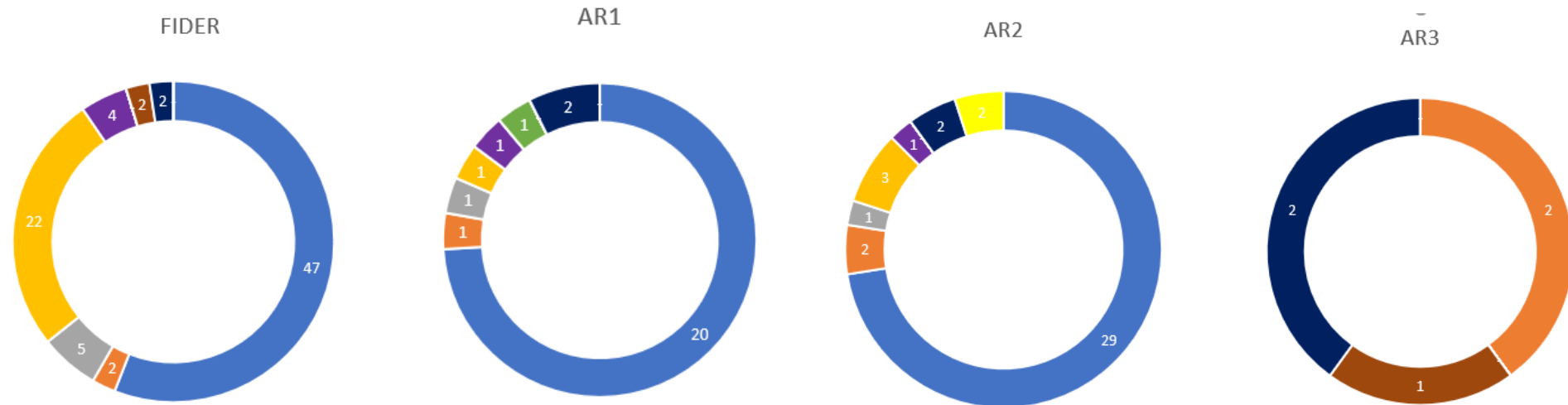
- Majority of investors are from Commercial Banks (62%), with institutional investors (17%) the second highest proportion.
 - Number of commercial banks have made a relatively small investment in a relatively large number of projects
- Three investor types each account for about 5% of investors;
 - European Utilities (primarily Orsted, SSE, along with Engie, Scottish Power and ESB)
 - Developers (including Innogy and EDF Renewables) and
 - Infrastructure Funds (PKA, Global Infrastructure Partners)
- The 'Other' category was also quite high (4%), due to the involvement of Danish Export Credit Agency (EFK) and Pension Insurance Corporation (PIC).

Number of different investors in Offshore Wind, by Investor Type



Offshore Wind Investor mix per AR

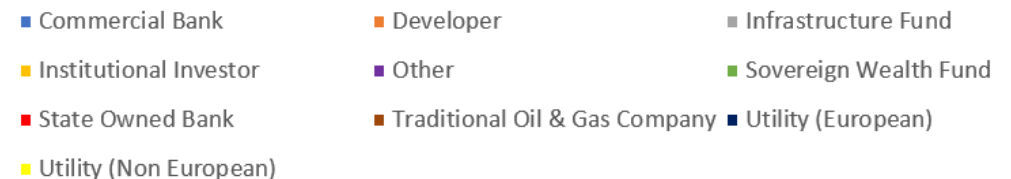
Type of investor by number, by Allocation Round – offshore wind



Similar patterns in investor type seen when broken down by Allocation Round.

Larger number of institutional investors investing in FIDER offshore wind projects.

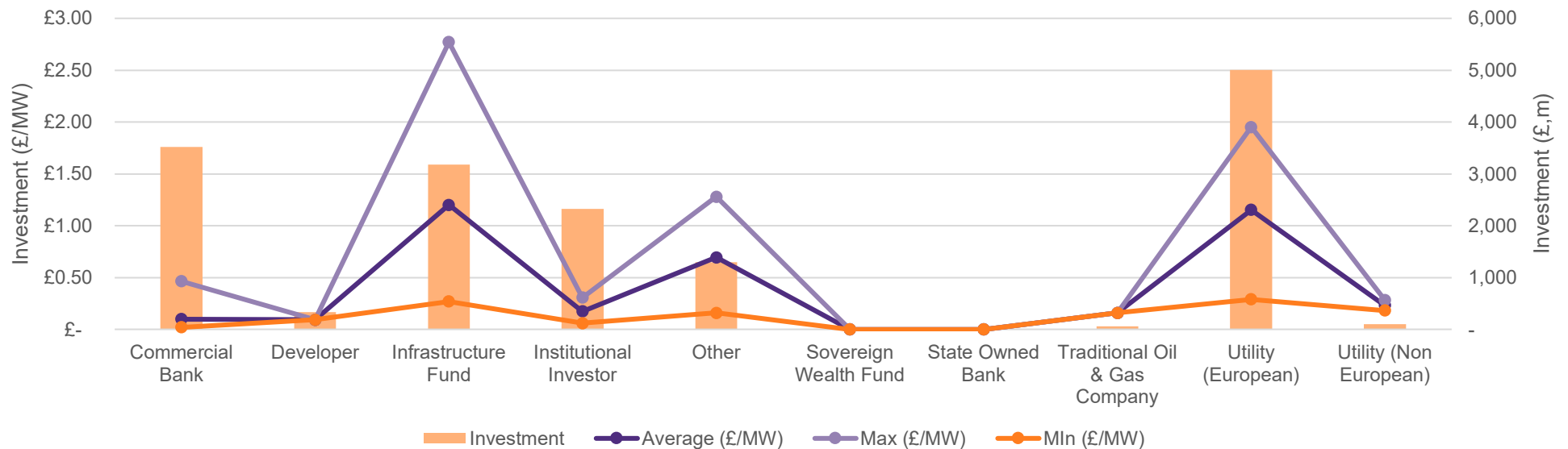
Developers and European Utilities share the majority of the involvement in AR3.



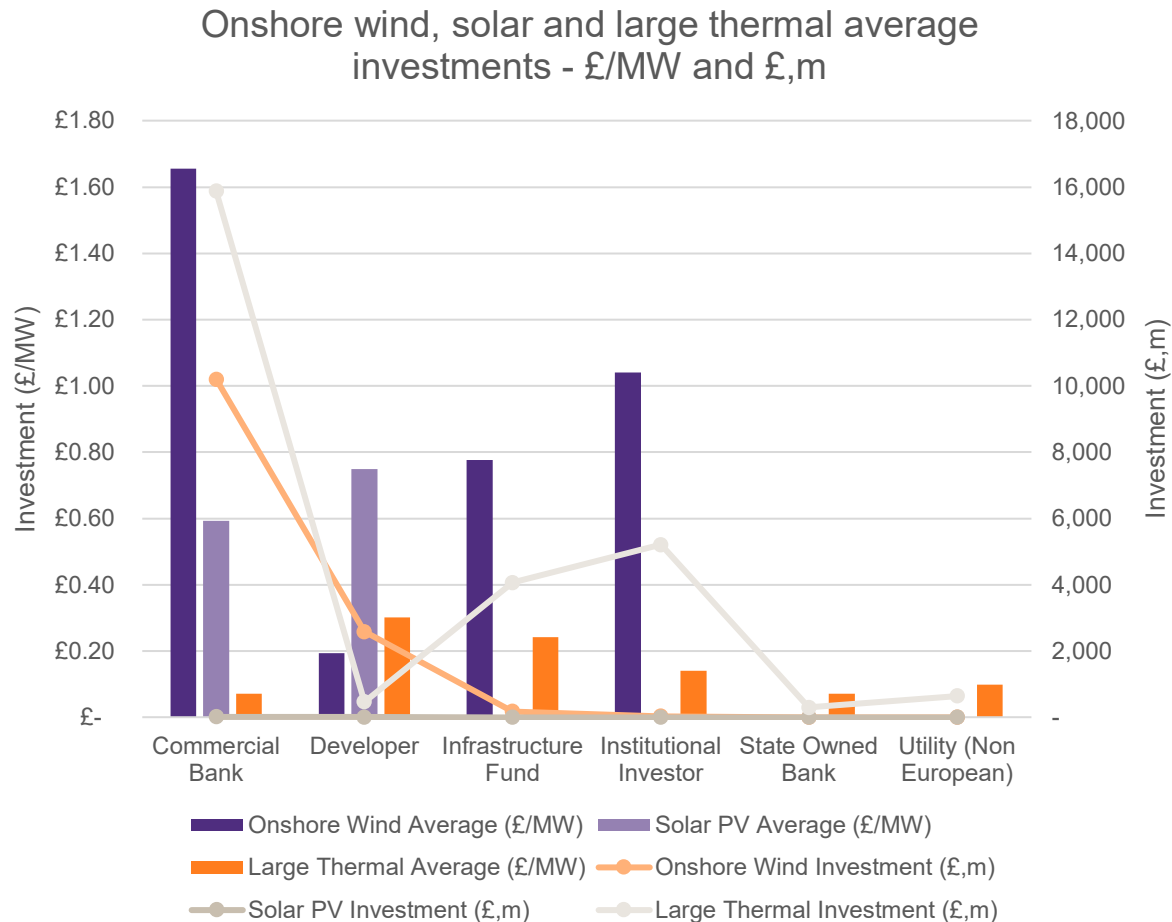
Offshore Wind investment levels

- The known investment levels & the relevant level of investment varies significantly depending on the investor type.
- The highest total known investment was from European Utilities
 - Primarily because of Orsted's £4 Billion investment in Hornsea Project 2
 - European Utilities however, had a lower average investment in £/MW than Infrastructure Funds.
- Commercial banks had the second highest total known investment, but have a much smaller £/MW investment cost than most other investor types.
 - This is because they have invested a small amount in a large number of large projects

Offshore wind investment per £/MW and investment value in £,m, by investor type



Technology specific considerations



Onshore Wind

- Onshore wind projects had the highest total investment figure.
- Commercial banks provided the highest level, with institutional investors and infrastructure funds providing additional elements.

Large Thermal

- For large thermal assets, the known investment figure is lower than for the other two technology types.
- More funding has come from developer, and limited amounts have come from commercial banks.

Solar

- Solar projects have seen just investment from commercial banks and developers.

Development since the investor study

Seagreen Phase One

- Seagreen Phase One being developed by SSE Renewables
 - Project is 1,075MW of which 454MW (42%) was successful in AR3
 - Leaving 621MW effectively subsidy free

- On the 3rd June 2020 reached final investment decision and financial close
 - 51% of the project was acquired by new joint venture partner Total – initial £70m with further £60m from earnings
 - Opportunity to be involved in 360MW extension
 - Second project in UK – 80% in floating project off wales (Simply Blue Energy)
 - SSE Renewables will continue to lead on development and construction – supported by Total – expected 2022/23
 - Around ~30% will be contracted with SSE group as route to market (private CfD)
 - Remaining ~28% likely to be Corporate PPA or merchant exposure

- Financing details

- Danish Export Credit Agency (EKF) has provided a GBP 304 million guarantee
- Norwegian Export Credit Guarantee Agency (GIEK) has provided USD 172.2m/EUR 152.2m
- 12 commercial banks
- Estimated project financing of 42%



