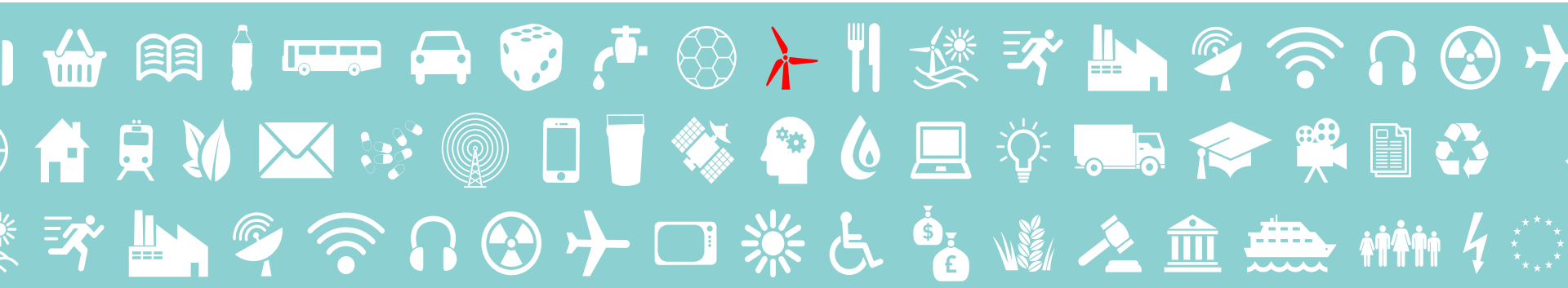


Current dynamics and perspectives of offshore wind in France and Germany

OFATE-DFBEW

08 September 2021



Agenda

1 France

2 Germany

1 France

2 Germany



Despite its large potential, offshore wind is almost inexistent in France today



France has the second largest coastline in Europe.



According to the last Multiannual Energy Plan (PPE), its technical potential of fixed and floating wind power is 16 and 33 GW, respectively.



Today, a single 2 MW prototype floating turbine installed in 2018 is in operation in Le Croisic.



The French National Energy and Climate Plan targets 5.2 – 6.2 GW offshore wind capacity by 2028.



The last tenders have awarded close to 3.5 GW that could be in operation before 2025

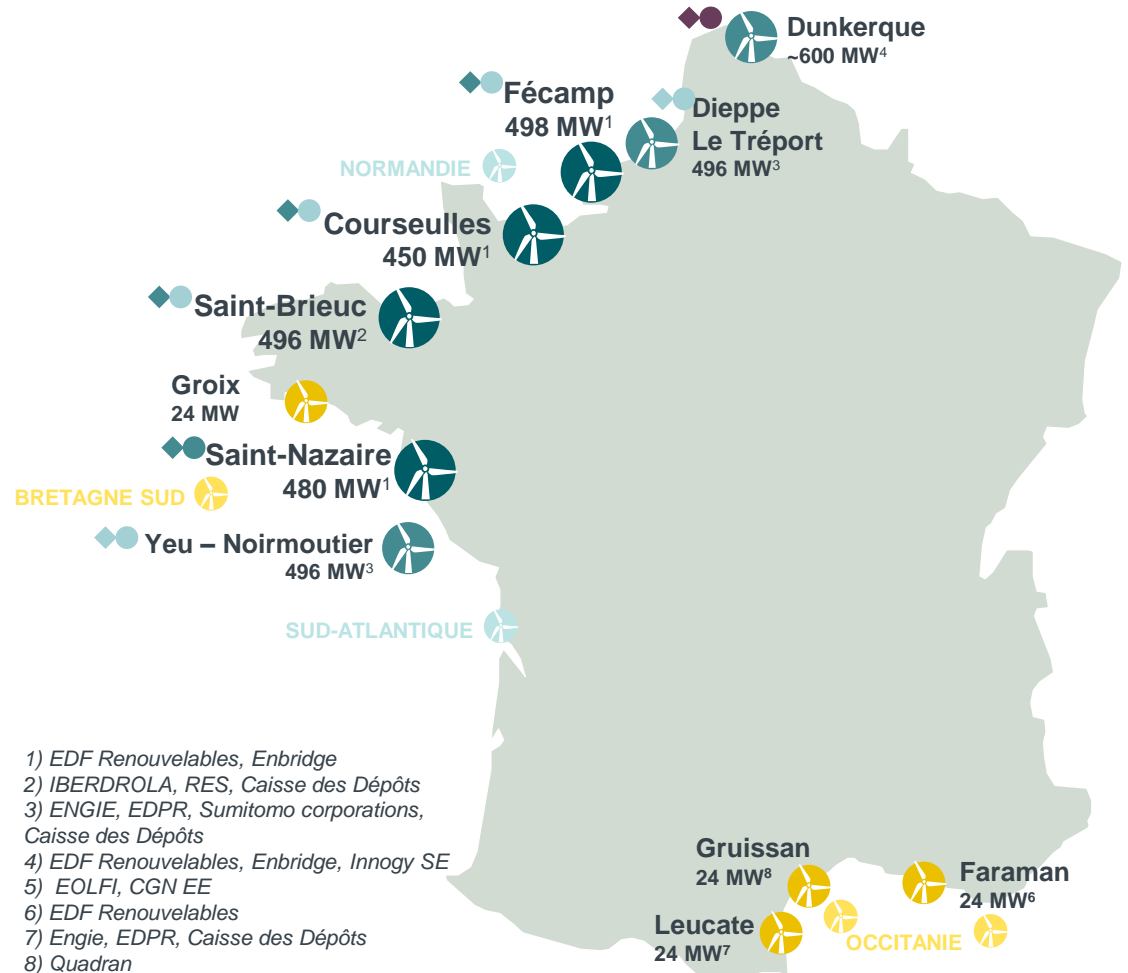
Fixed-bottom offshore wind turbines

- Under construction
- In pre-development
Authorisations obtained
- Areas to be tendered
Public debate

Floating offshore wind

- Under study
- Areas to be tendered

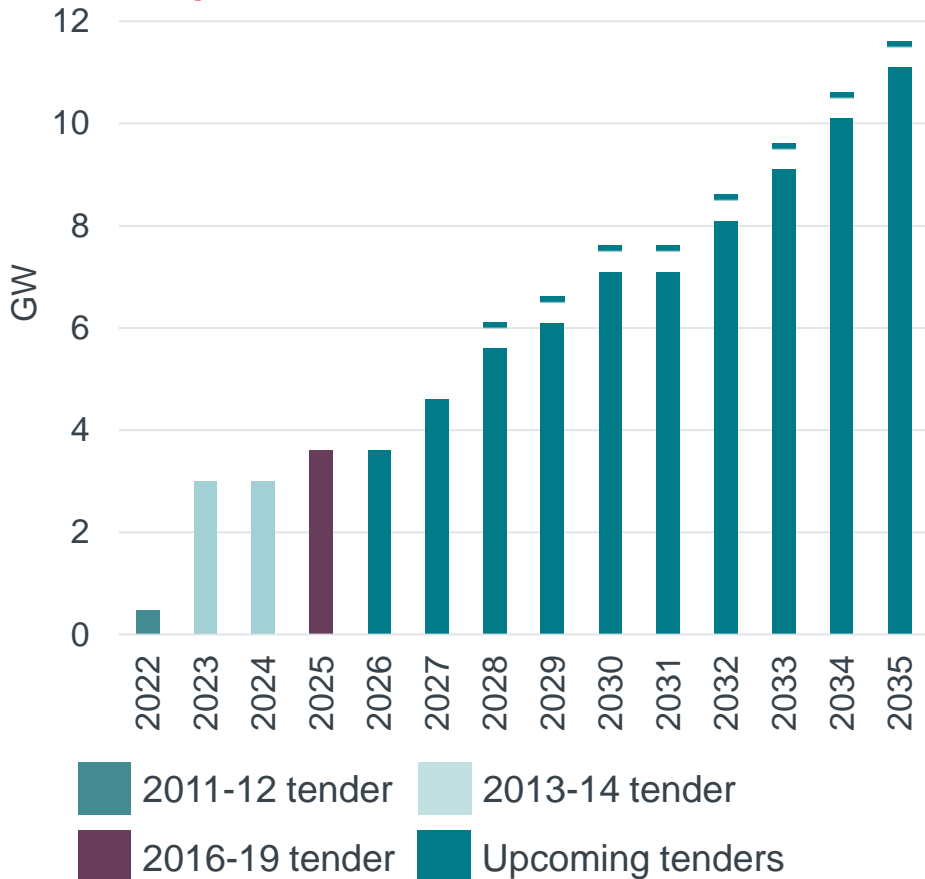
- Awarded in 2011-12 tender
- Awarded in 2013-14 tender
- Awarded in 2016-19 tender
- Expected commissioning 2022
- Expected commissioning 2023
- Expected commissioning close to 2025





The planned tendering programme could result in 5.5 and 12 GW in 2028 and 2035

Perspectives¹



Tender programme in the PPE²

Year	Fixed-bottom	Floating
2020	1,000 MW <i>Manche Est Mer du Nord</i>	
2021		250 MW <i>Bretagne Sud</i>
2022	500 – 1,000 MW <i>Sud-Atlantique</i>	2 x 250 MW <i>Méditerranée</i>
2023	1,000 MW	
> 2024	1,000 MW per year, fixed-bottom or floating	

¹ Assuming 7 years to commission once awarded in line with 2016-19 tender

² Multiannual Energy Plan



France is taking steps to tackle the main obstacles for offshore wind development



The Ministry of Energy is now enabled to run all or part of a project impact study.



Projects can be modified after receiving the authorisation without asking for a new one.



The Ministry of Energy is now responsible to request the intervention of the French national public debate before the tender.



The legislator has been reducing the steps to resolve actions challenging authorisations – for instance, due to environmental concerns.

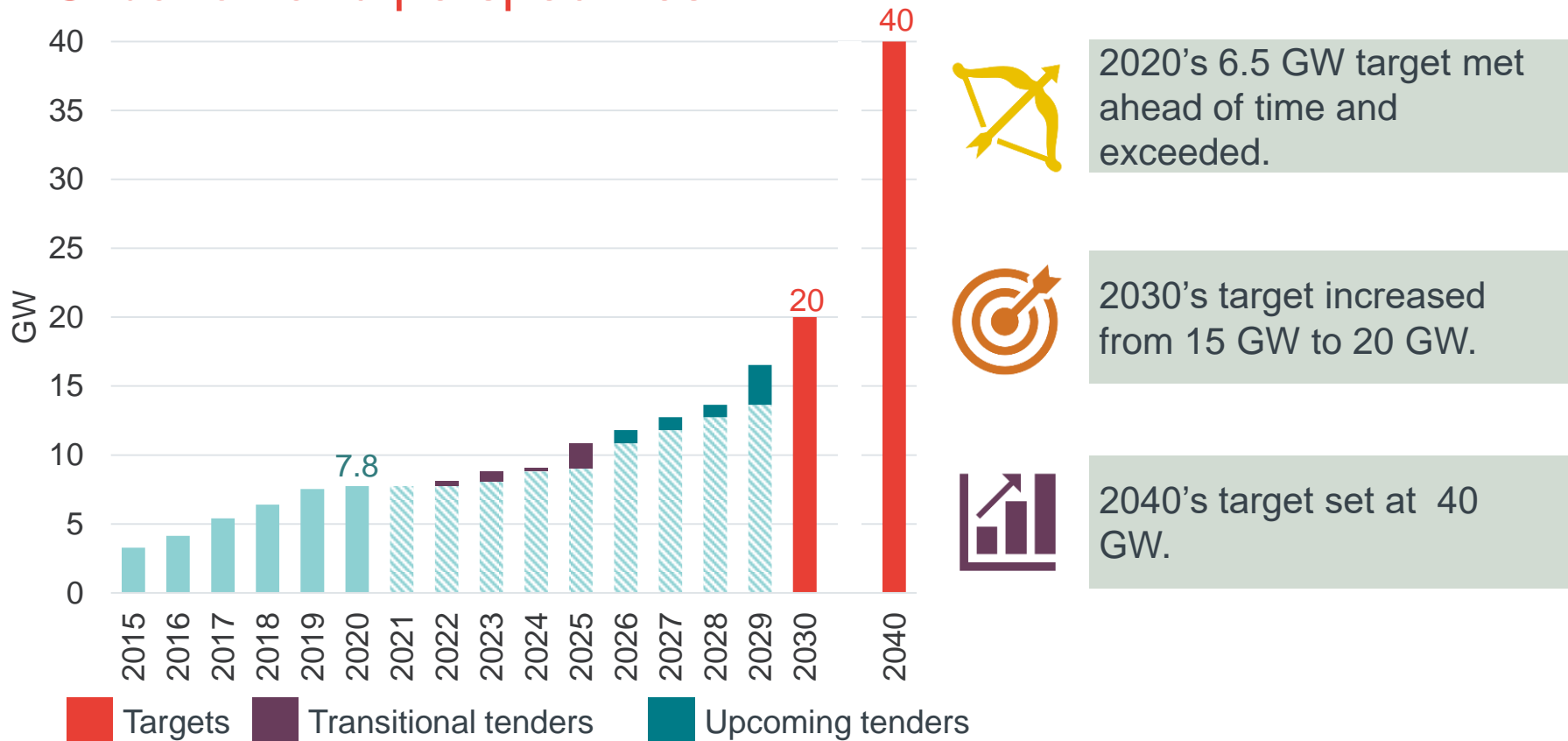
1 France

2 Germany



Germany is the world's third largest offshore wind market

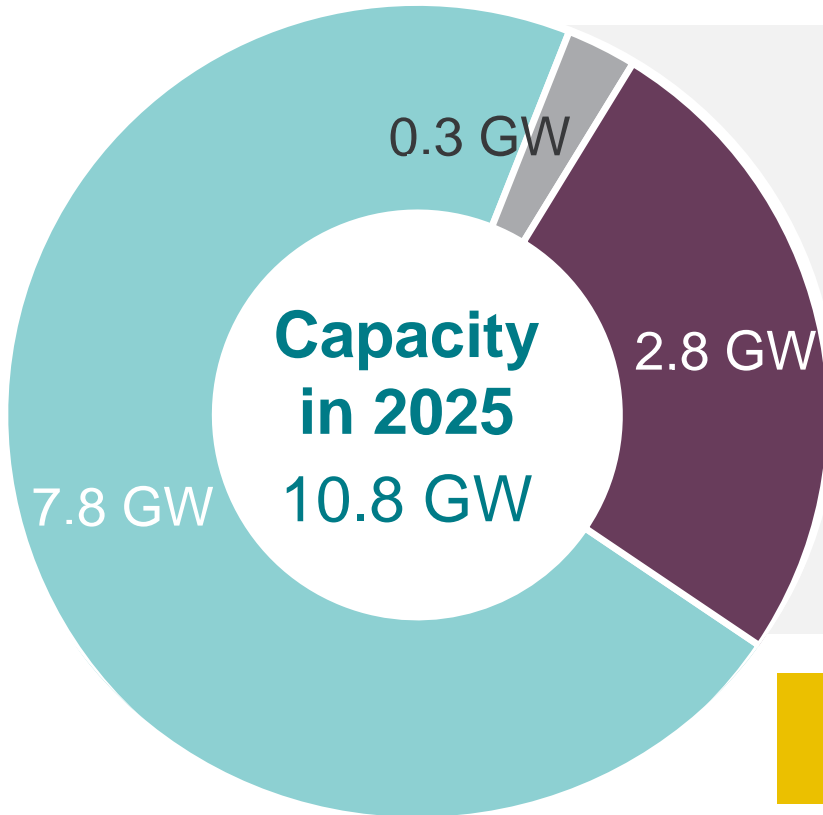
Situation and perspectives



Source: Irena, Deutsche WindGuard, WindSeeG, and 2020 Site Development Plan



Growth until 2025 will come from realised projects granted in 2017 and 2018 tenders



Project	Commissioning ²	Capacity ³
Kaskasi ¹	2022	342
Wikinger Süd	2023	10
Arcadis Ost 1	2023	247
Baltic Eagle	2024	476
Gode Wind 3	2024	242
Borkum R. 3	2025	900
EnBW He Dreiht	2025	900

More than 50% of capacity was bid at 0 €/MWh (no minimum guaranteed income)

■ Existing
 ■ ¹Final investment decision
 ■ Awarded in Transitional Tenders

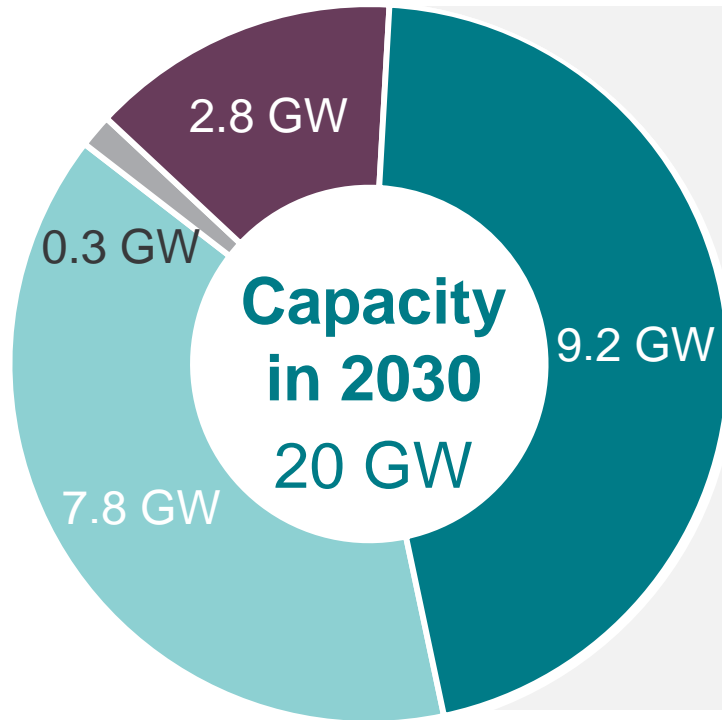
Source: Detusche WindGuard - Status of Offshore Wind Energy Development in Germany Year 2020

² Expected

³ Capacity in MW



Tenders between 2021 and 2025 aim reaching 2030s target



Date	Sites (North/ Baltic Sea)	Capacity (North/ Baltic Sea) ¹	Scheduled commissioning date
Sep 2021	2/1	225/433/300	2026
Sep 2022	1/0	930	2027
Sep 2023	2/0	420/480	2028
Sep 2024	4/0	630/270 /1,000/1,000	2029
Sep 2025	4/0	1,000 each	2030

Two additional sites will be tendered for offshore energy production other than electricity (for instance, green hydrogen)

■ Existing
 ■ Final investment decision
 ■ Transitional Tenders
 ■ Upcoming Tenders

Source: Detusche WindGuard, Hogan Lovells, Site Development Plan

¹ Capacity in MW



Germany appears to have an appropriate framework



Targets aligned with **transitional and upcoming** tenders.



Upcoming tenders allocate **pre-examined** sites.



Coordination with and **incentives** for TSO to connect on time.

The ability to meet targets on time depend on projects turnout in tenders, awarded projects compliance with capacity and time commitments and effective offshore and onshore grid capacity



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