

OFFSHORE WIND

Industry Highlights

Giles Dickson
CEO, WindEurope

Wind[•]
EUROPE


seanergy
BIARRITZ 2016

windeurope.org

June 2016

EWEA is now WindEurope



EWEA



Wind[•]

E U R O P E

Market Leaders



Leading Members



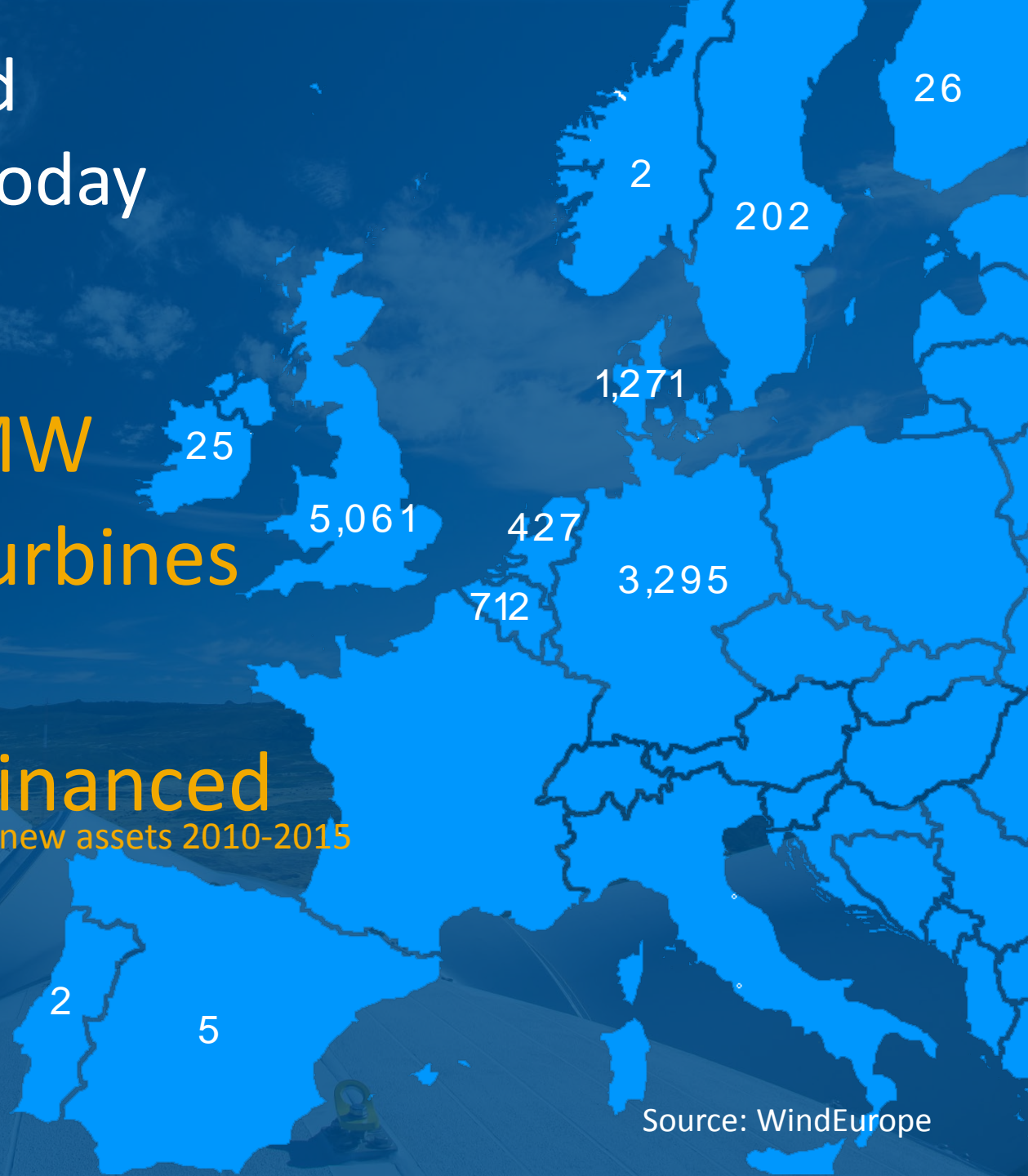
The offshore wind industry today

Offshore Wind

The industry today

11,027 MW
3,230 Turbines
82 Sites
€47bn
41 TWh

Financed
in new assets 2010-2015



Offshore wind in 2015

3,019 MW

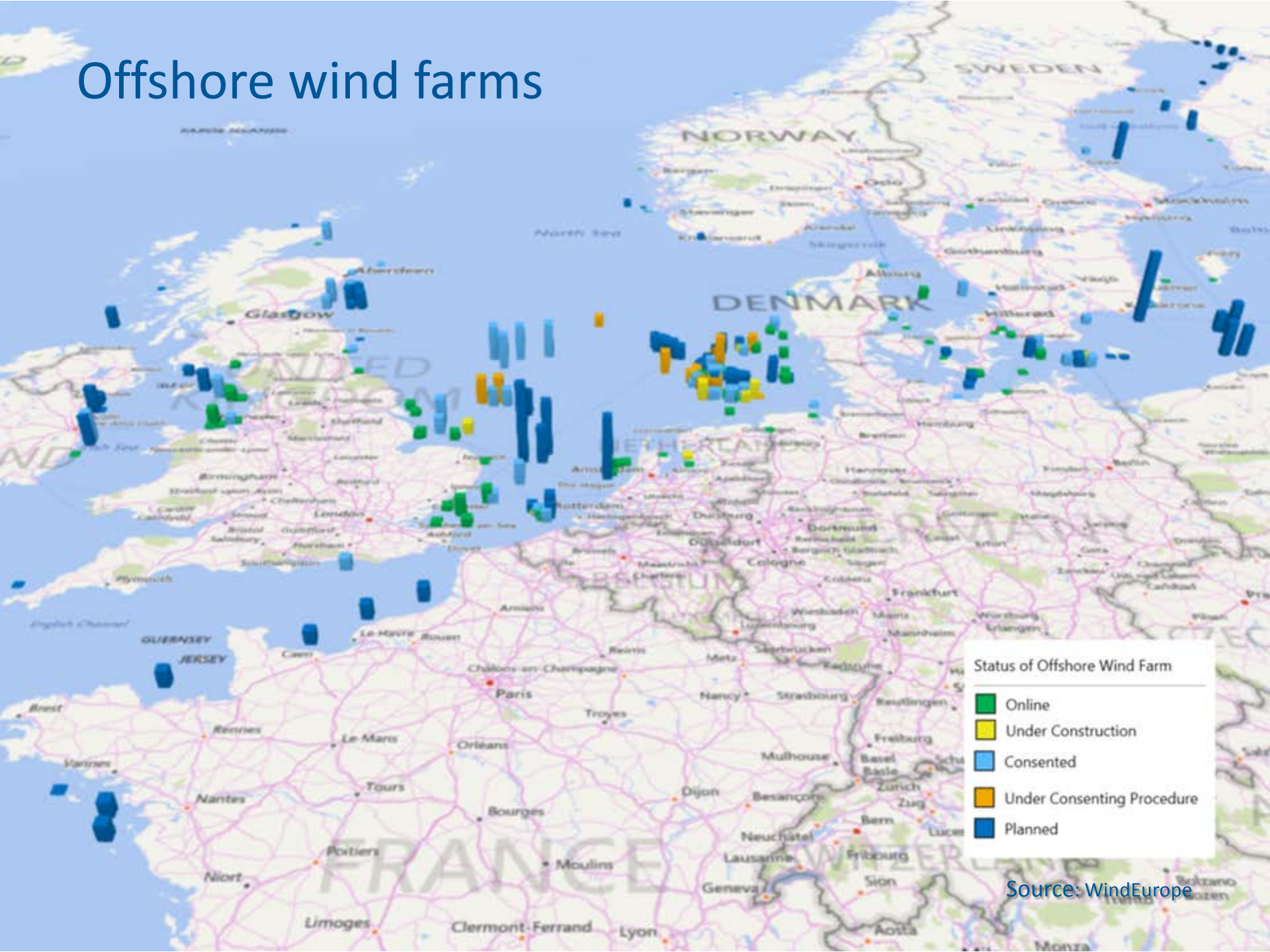
754 Turbines

22 Sites

€13bn Financed

in new assets

Offshore wind farms



Source: WindEurope

A truly European project: Wikinger offshore wind farm

Wikinger

DENMARK

SWEDEN

Wikinger
OWF

GERMANY

Wind
EUROPE



Wikinger

Developed by Iberdrola

- Construction started in 2016
- Online in 2017
- €1.4bn investment
- 350 MW from 70 x 5 MW turbines
- Distance to Baltic shore: 75km
- Average water depth: 35m

Wikinger



German wind farm



Spanish Developer



French/Spanish turbines



Danish/Spanish jackets



Dutch vessels



Italian cable maker



**Additional Manufacture in
Sweden / Norway**

Future industry highlights

Opening up the seas

Finland – Overcoming sea ice

- Commercialisation of steel coffer foundations freeing up the icy Baltic Seas – Pori 2 in the pipeline

Floating wind takes next leap

- Scotland is developing first commercial arrays
- Tenders in France in the Atlantic and Mediterranean



Image: Seppo Keranen

Increasing turbine capacities

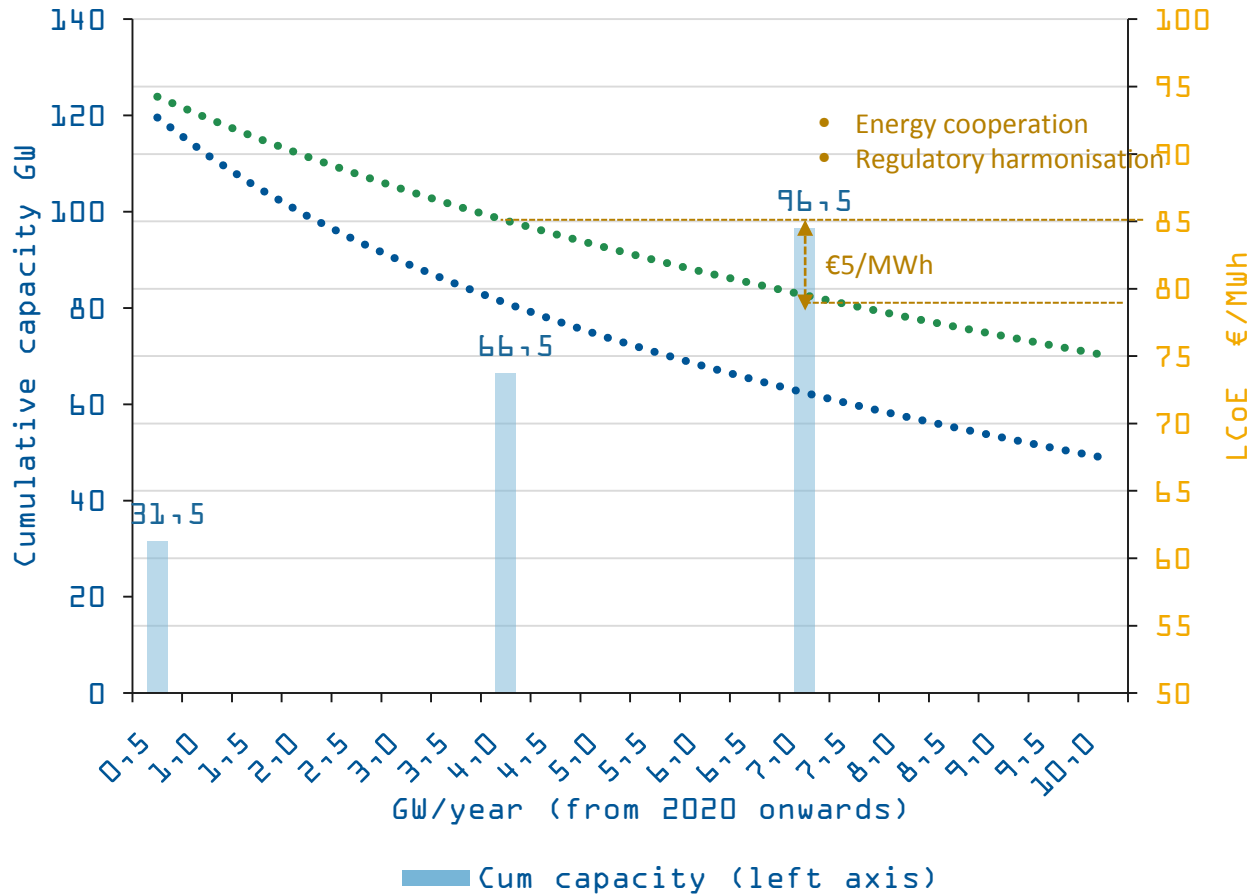
Larger turbines are aiding cost reduction through increased energy yields

- **450kW** First turbines in 1991
- **4.2 MW** Average turbine installed in 2015
- **8MW** Largest turbine – installation Q1 2017

Orders for turbines in 2015 exceeded 5GW, an increase of 75% over the previous year

Effect of project volumes in cost reduction

- Delivering LCoE <€80/MWh (£65/MWh), incl. grid costs for FID in 2025 is feasible:
- 4 GW/year and Energy cooperation and regulatory harmonisation



4 GW/year (from 2020 onwards)

FID 2025 = €85/MWh

FID 2030 = €80/MWh

7 GW/year (from 2020 onwards)

FID 2025 = €79/MWh

FID 2030 = €72/MWh

Analysis is based on Central and High Scenario projections in WindEurope Wind Energy Scenarios 2030 with a 20% learning rate applied to derive the cost of energy.

The starting point is an LCoE of EUR 96/MWh for projects reaching FID in 2020 and based on the current national offshore wind energy targets it is expected that over 24 GW will be installed in 2020. Prices are EUR 2012.

Source: WindEurope

THANK YOU

Wind[•]
EUROPE

windeurope.org



WindEurope, Rue d'Arlon 80
1040 Brussels, Belgium