

# ADAPTING FOR THE FUTURE: OFFSHORE WIND

NOVEMBER, 2020



# Agenda

**Update on global offshore wind markets**

**Colombia offshore potential**

**Experience from Europe**

**Concluding remarks**





# Update on Global Offshore Wind

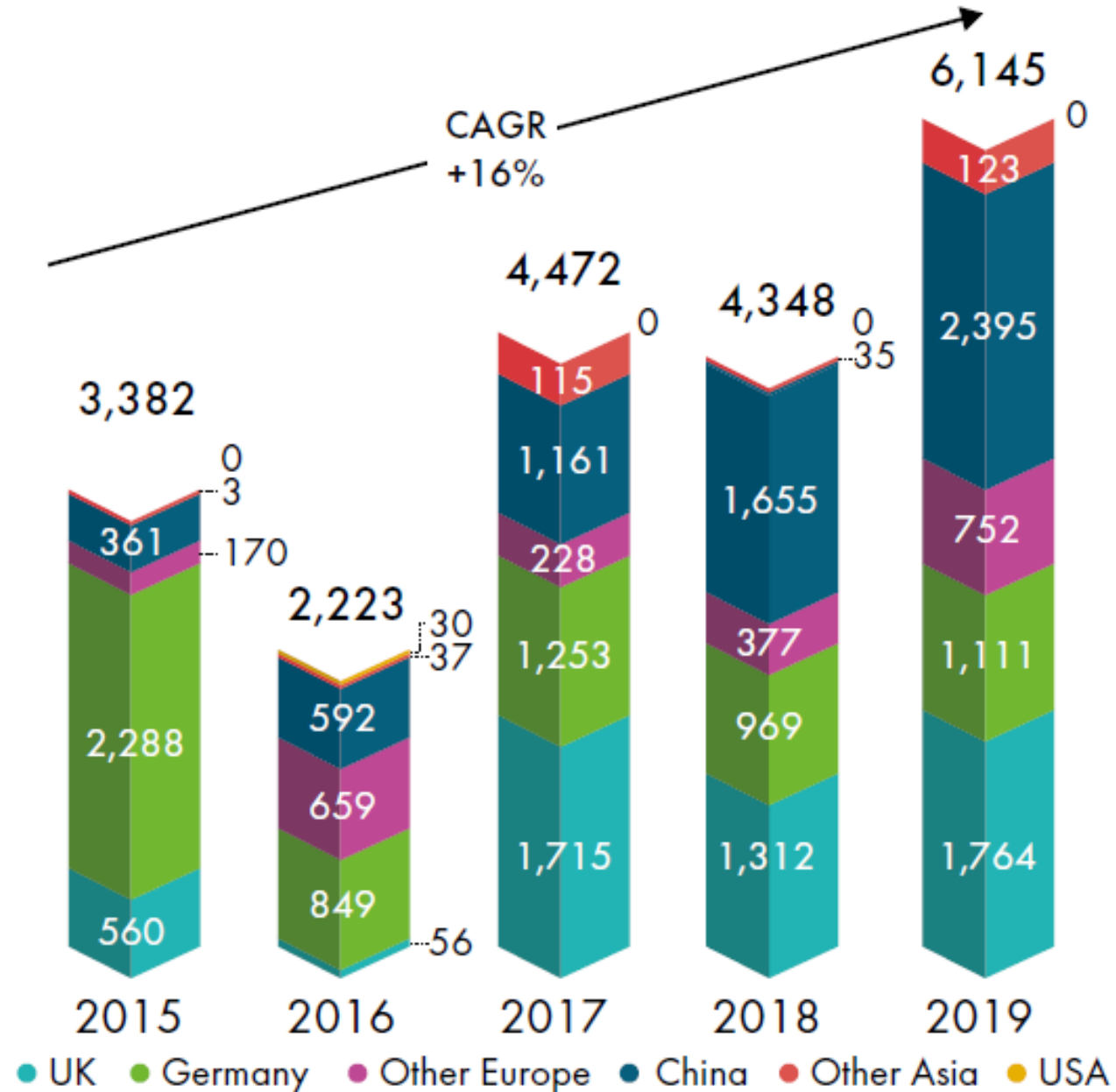


# Offshore wind has grown quickly ...

## New Offshore Wind Installations (GW)

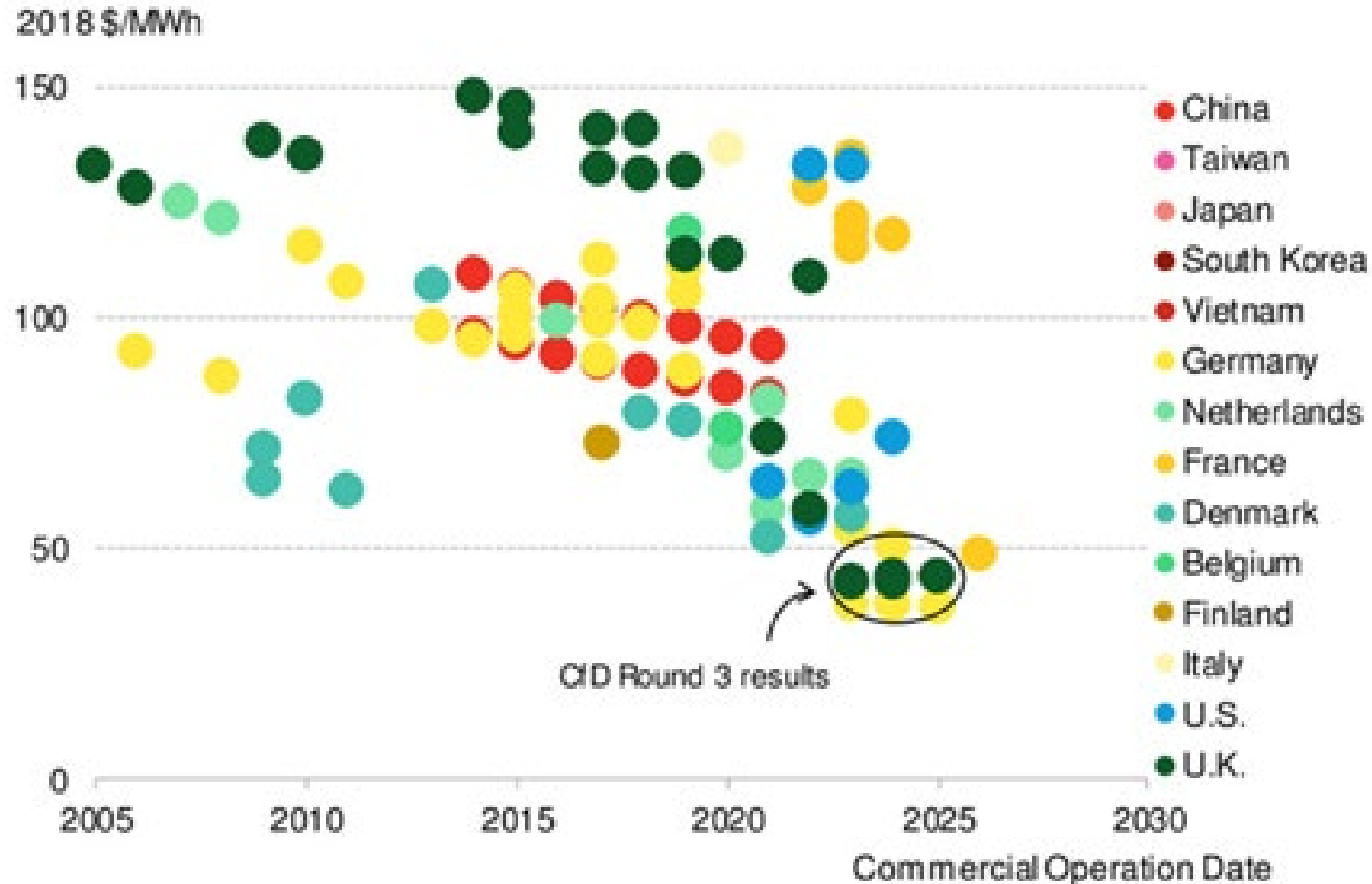
Source: Global Wind Energy Council (GWEC)

Now ~29GW currently operational worldwide



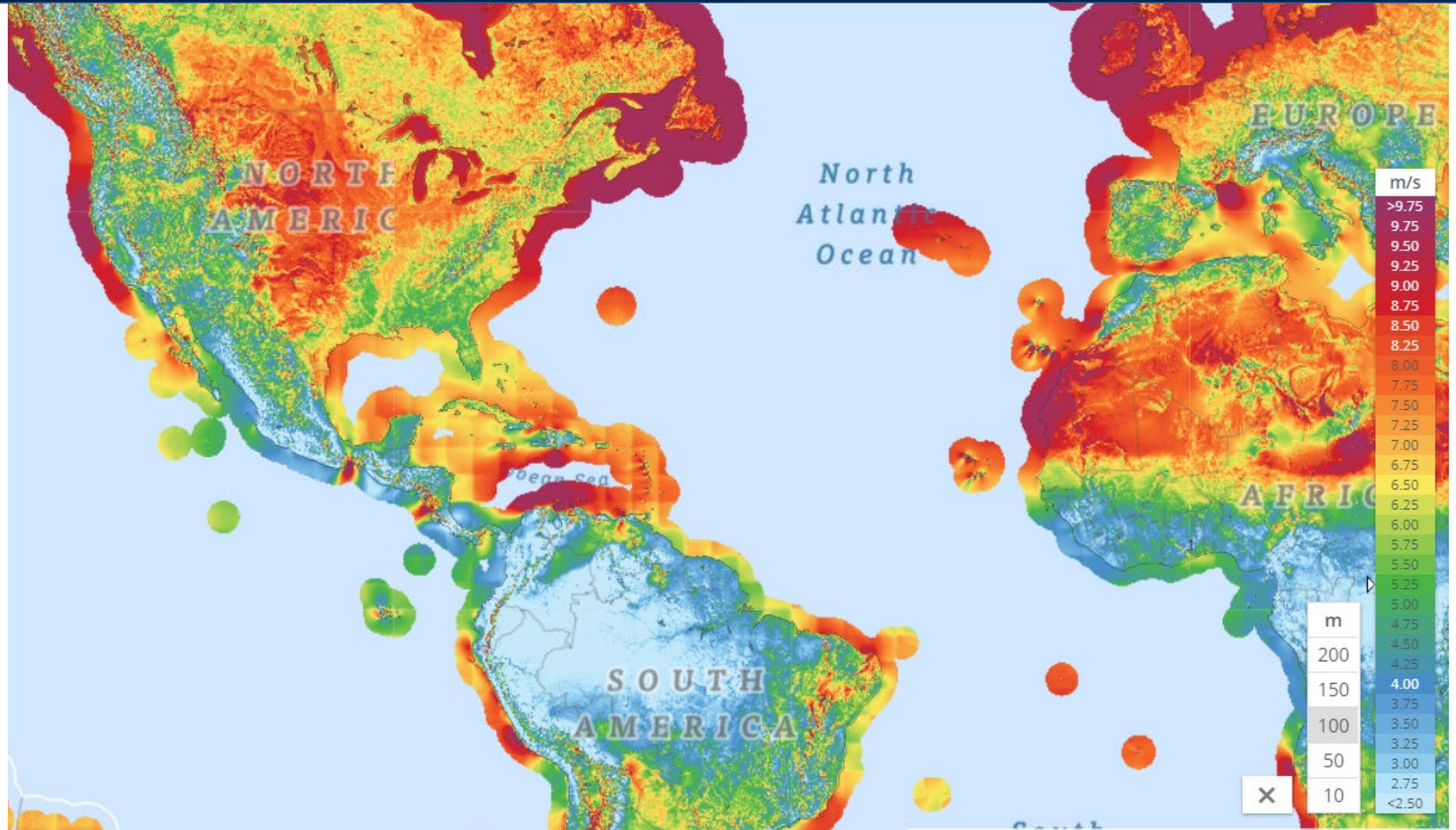
# Why? Power at a competitive price ...

Levelized offshore  
wind tariffs,  
2005 – 2030  
(2018 \$/MWh)

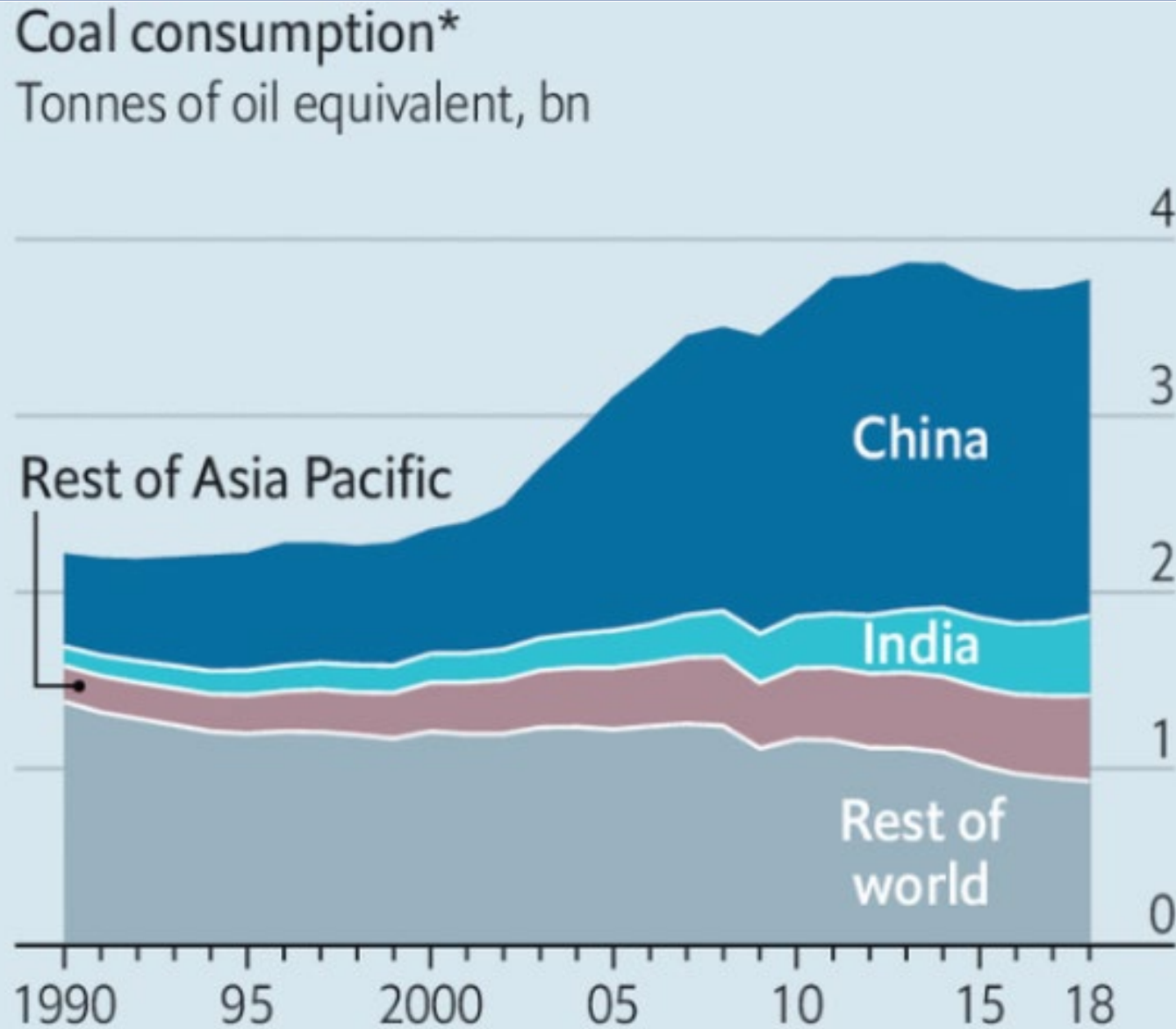


Source: BloombergNEF. Note: Figures refer to an estimated levelized price, taking into account tariff price and length, inflation, a merchant tail assumption and a 25-year lifetime. Prices above \$150/MWh were omitted. The full cost of transmission to shore is included in some but not others.

# Why? Power where you need it with no land constraints



# Why? Power with energy security (and no pollution)



Source: BP

\*Commercial solid fuels only



# Why? Power even in deep waters ...

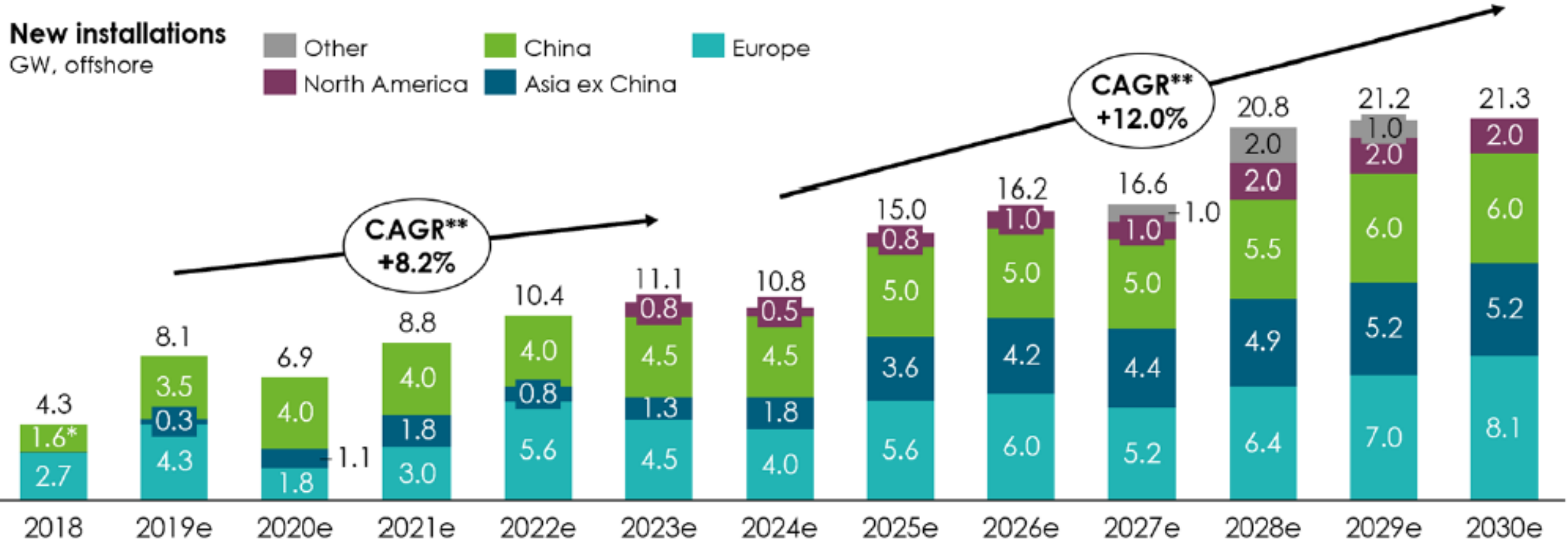




# Not surprising that it is now moving to new geographies ...

## New installations

GW, offshore



\* Chinese installation adjusted to 1.6 GW new installations for 2018, Source: CWEA

\*\* CAGR = Compound Annual Growth Rate

Source: GWEC Market Intelligence Offshore Wind Outlook 2030 (June 2019)



**Offshore wind potential in Colombia**



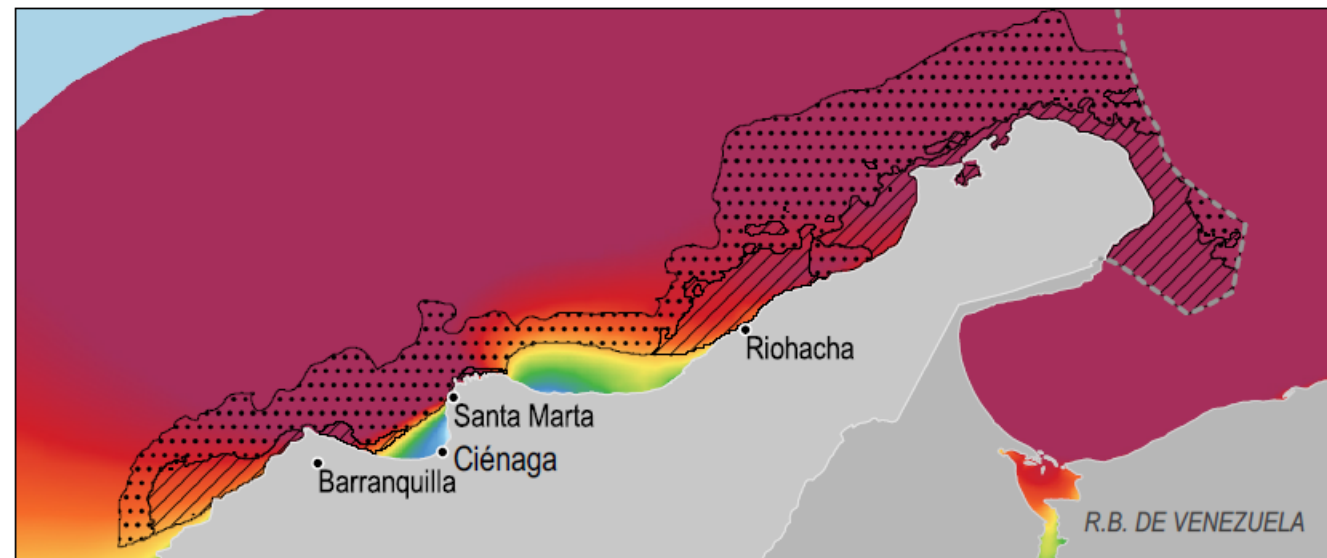
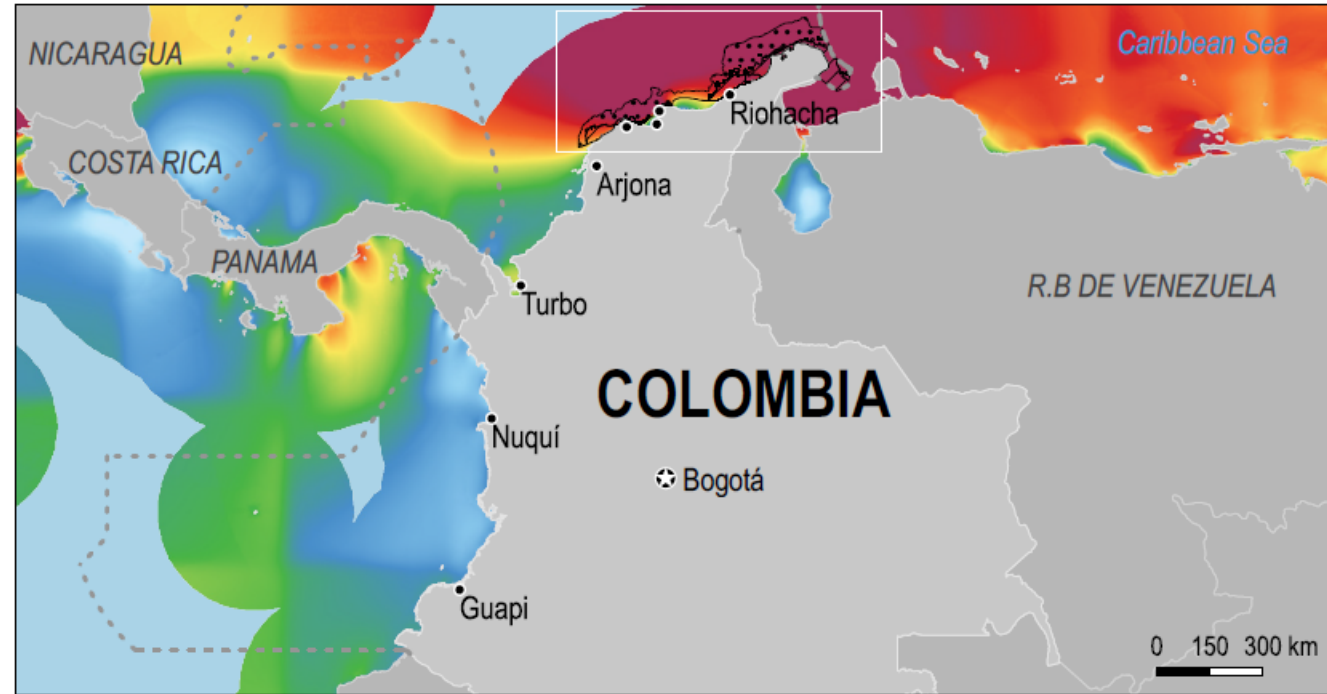
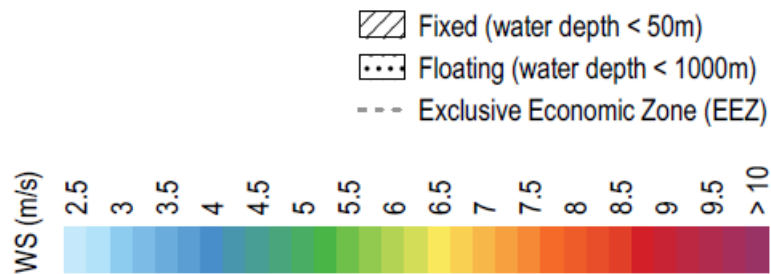
# Colombia's Offshore Wind Potential

## Offshore wind possible :

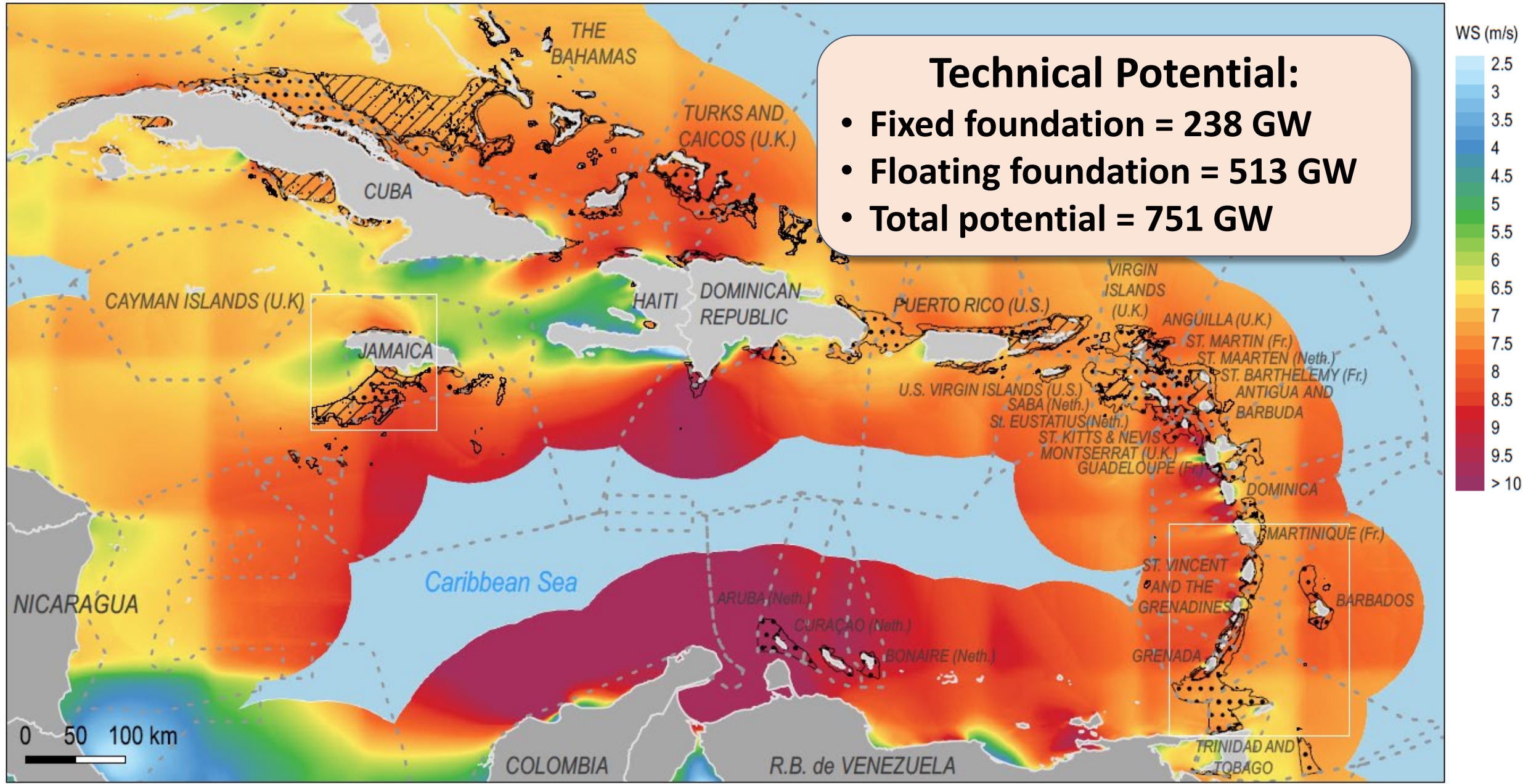
- Wind speed > 7 m/s
- Water depth < 50m (fixed)
- Water depth < 1000m (floating)

## Technical Potential:

- Fixed foundation = 31 GW
- Floating foundation = 78 GW
- Total potential = 109 GW



# Caribbean Region's Offshore Wind Potential





# Lessons Learned from Europe





# 1. Offshore wind is not like onshore wind

- It may look similar but it requires a very different supply chain and value chain
- Offshore wind construction is much more complex and time-consuming than onshore
- Because risks are different, cannot “cut and paste” from onshore wind development





## 2. No “one size fits all” approach to tendering

- There are two different approaches to procurement for developed markets; each with different risk allocation between the government and the developers
- For developing markets, demonstration projects have been used to kick-start industry

### One-stage market

**Markets** – Germany, Netherlands, Denmark

**Tender process** - Projects are selected and developed by government then tenders are for consented sites

**Challenge** – Very difficult to beat Ørsted, Vattenfall, etc. who have mature portfolios

### Two-stage market

**Markets** - UK, US and Taiwan

**Tender process** – Government provides zones for developers to select specific project locations for development and then entered into tender

**Challenge** – Upfront investment of developers and need for local partners

### Developing markets

**Markets** – Emerging markets, mainly Asia

**Tender process** – Pilot projects with expected long development time needed to go through legislative and administrative process of tendering

**Challenge** –High uncertainty of long-term perspective, need of strong and experienced partner

# 3. Offshore wind has to be adapted to the context

- Technical adaptation: Fit-for-purpose turbines, foundations and infrastructure
- Environmental adaptation: Different risks for avian and marine fauna
- Social adaptation: Recognize different groups impacted by offshore wind (e.g. fishermen)



Source:  
Audubon  
Society

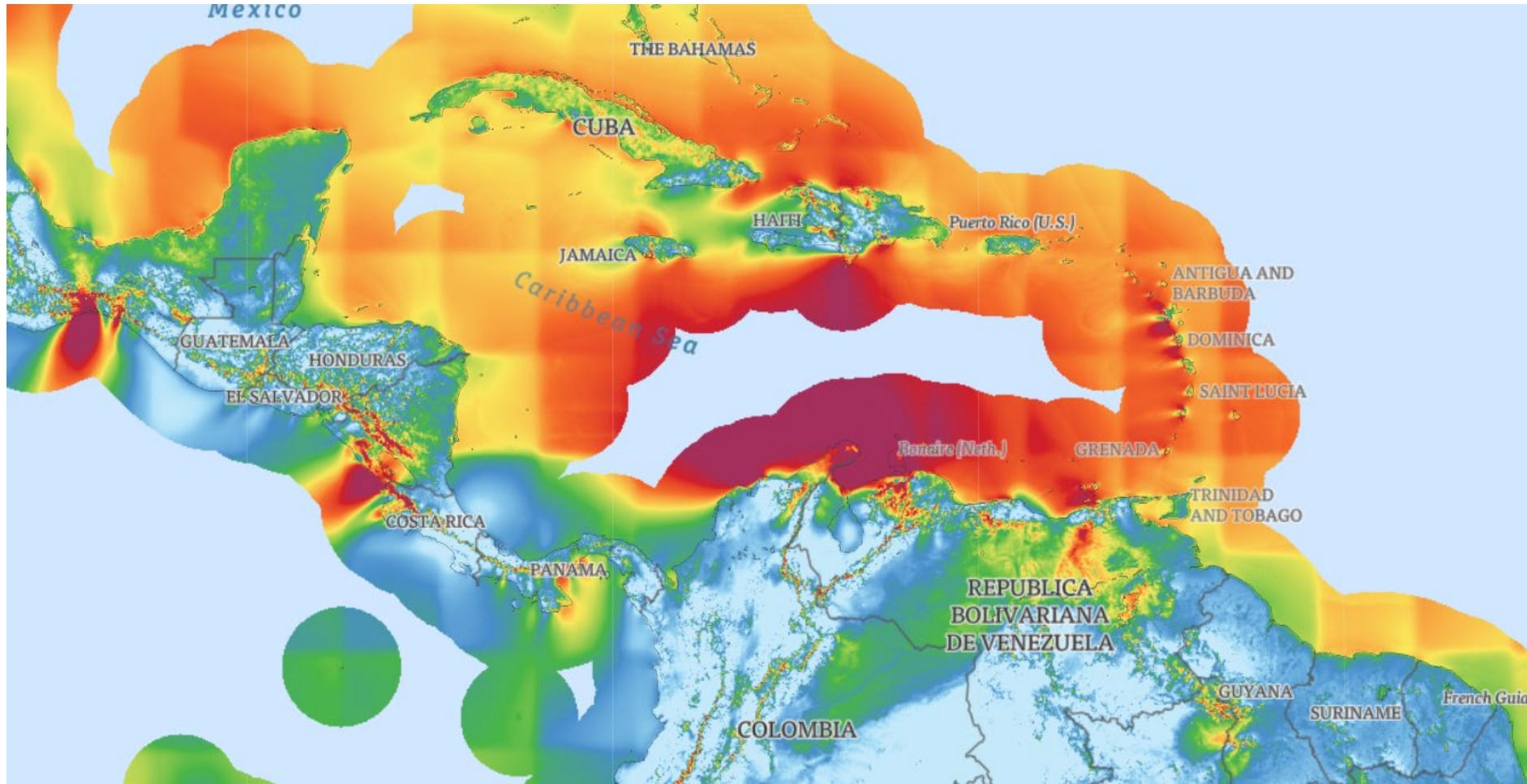


Source: Deepwater Wind



# 4. Regional cooperation drives down costs

- Europe needed the combined demands of the UK, Germany, Netherlands, Denmark and Belgium to create sufficient demand for the supply chain to develop
- Similar cooperation will be needed for emerging markets to drive down costs

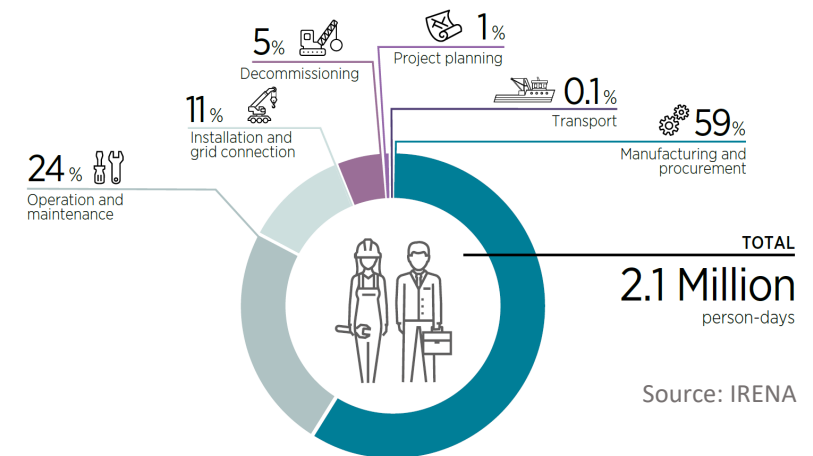


# 5. Offshore wind brings many economic benefits



Source: KPMG Oct 2019

- Reducing fuel imports
- Investment in wind farms, grid, ports and supply chain
- Creation of jobs in construction and long-term O&M
- Local businesses engage in the wider economy
- Zero operational water footprint
- Near zero lifecycle pollution, both local and global
- A long term solution with multiple benefits to the nation, the provinces and the people



A 500MW offshore wind farm requires 2.1million person days from direct jobs across 110 different roles

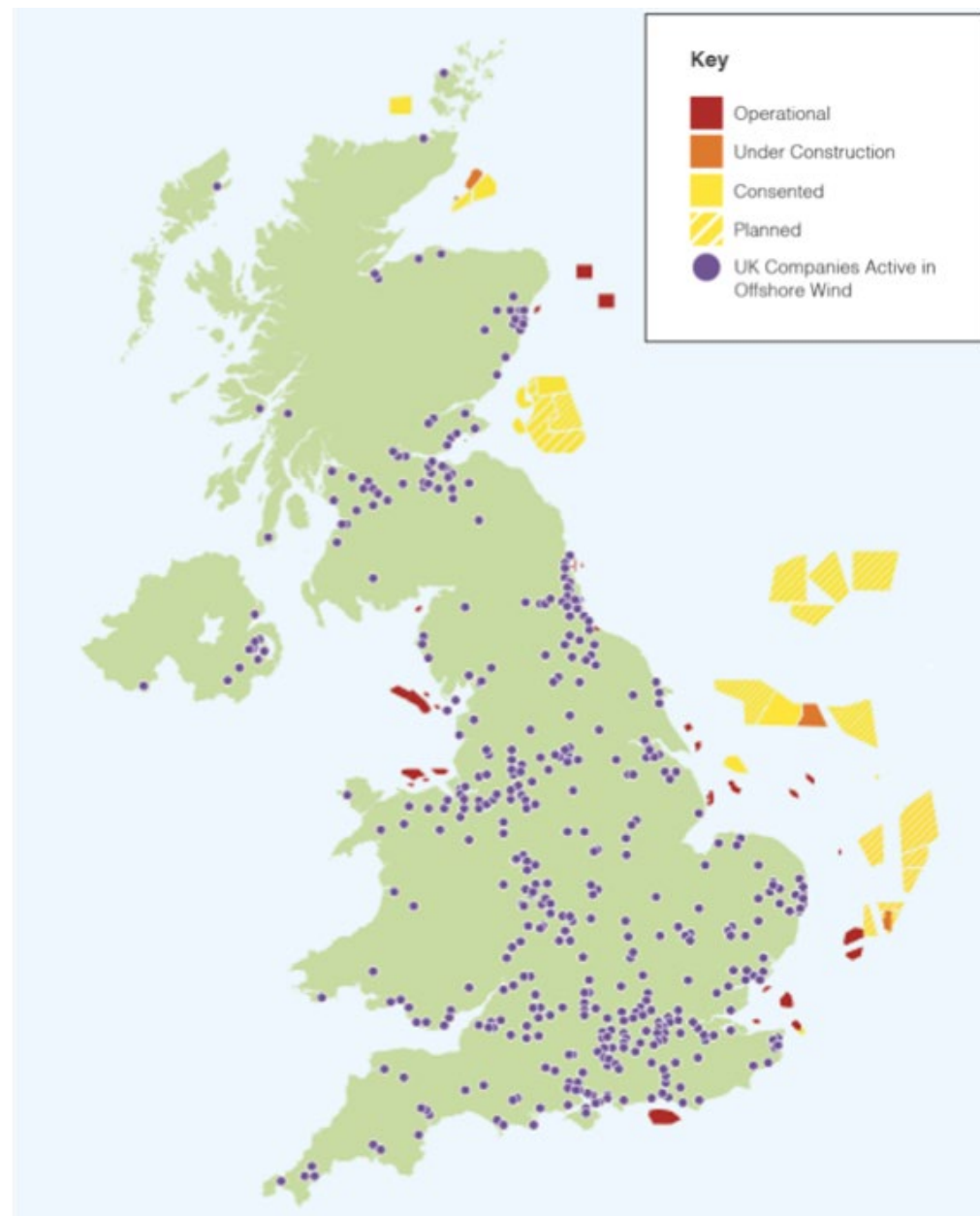


# 6. Long-term policy needed to attract investment + jobs

1. To attract investments in offshore wind the market needs visibility on targets 10 years ahead and supportive regulation.
2. Larger volumes result in greater in-country investment in the supply chain and therefore more local jobs.
3. The impact of this investment is deep and wide in the economy.

## For example:

- The UK government has committed to up to 40GW by 2030 and auctions every two years for contracts for difference, to fund a steady flow of projects.
- New leasing competitions for around 15 GW of new capacity to create the next wave of projects, to be built later this decade and into the 2030s.





**Concluding remarks**



# Concluding thoughts ...

## **Offshore wind is growing and moving to new markets:**

- It is competitive, clean, close to demand and deployable anywhere
- 3.1 TW of potential in just eight emerging markets
- Colombia has a particularly good (109 GW) offshore wind potential and excellent wind speeds (~10m/s)

## **Need to build on lessons learned:**

- Offshore wind needs supportive policy to grow
- Must adapt to context of emerging markets

# Common areas of interest in Emerging Markets



1. Why should we develop offshore wind over other energy resources?
2. Can we increase the jobs and local economic benefits?
3. Where should we site offshore wind projects and how to use the oceans with other stakeholders?
4. Which activities should the government take responsibility for?
5. How much will offshore wind projects cost?
6. How can costs be reduced?
7. What policies and targets can be used to establish a new market?



# Some uncomfortable discussions in Emerging Markets

- Approach to environmental & social topics
  - Planning
  - Stakeholder engagement
  - Consenting & ESIA requirements
- Affordability of early projects
  - Scale of first projects
  - Support mechanisms
  - Concessional financing
- Risk & bankability of projects
  - Permitting
  - Grid
  - PPAs & counterparty
- Really benefiting local industry & stakeholders
  - Avoid importing everything



# THANK YOU

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