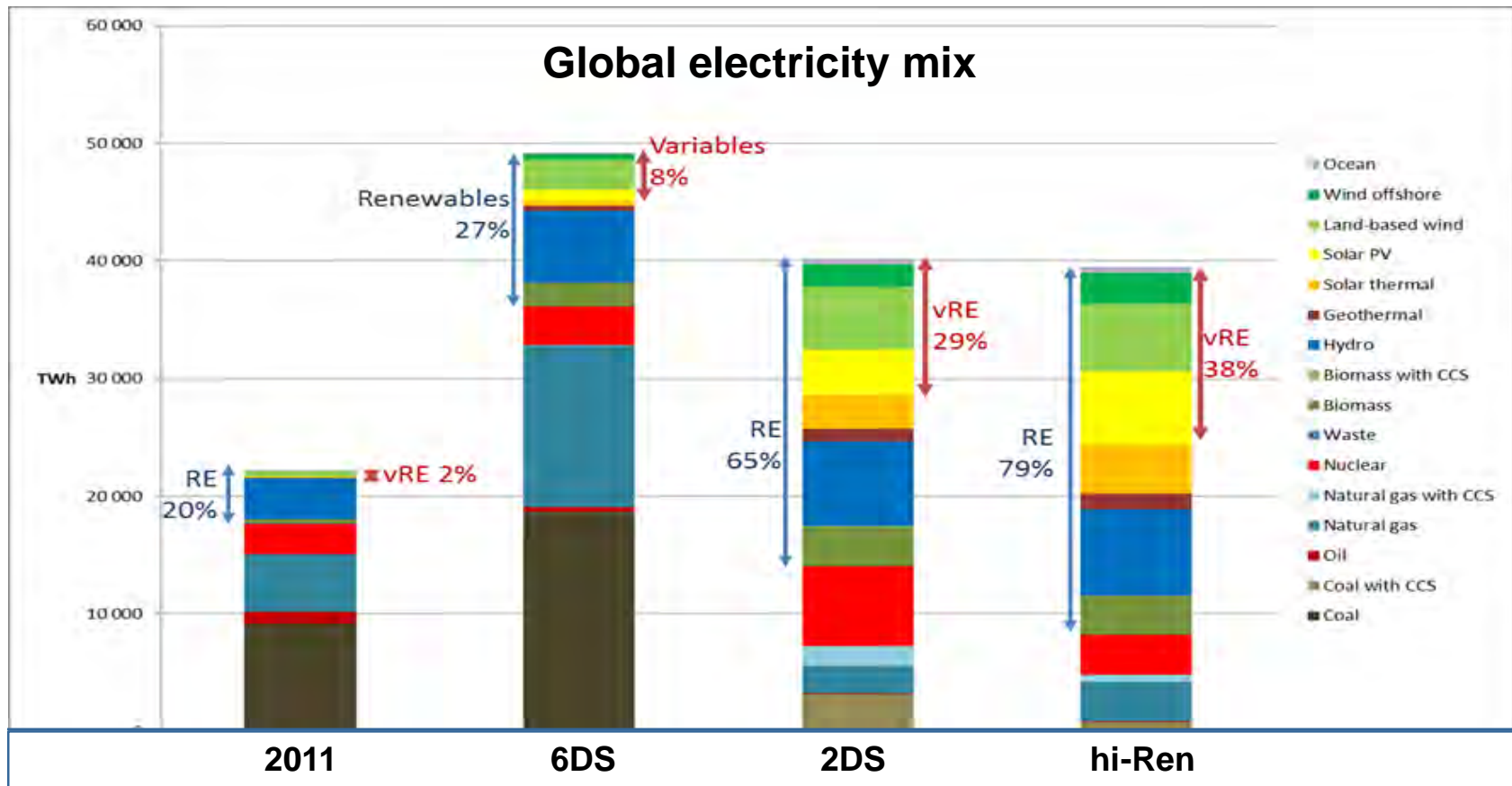


An Energy Revolution is needed

ETP
2014



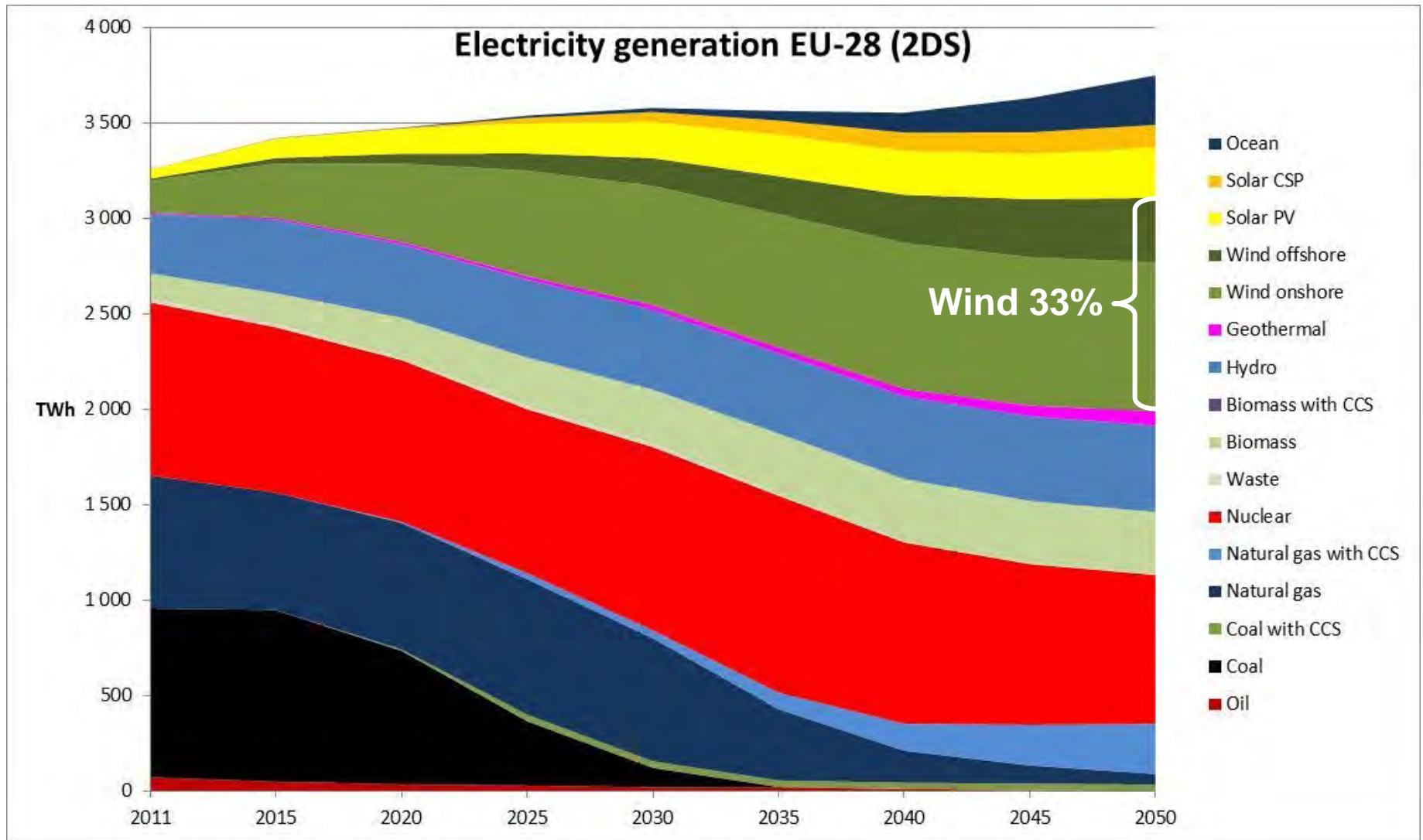
■ Generation today:

- Fossil fuels: 68%
- Renewables: 20%

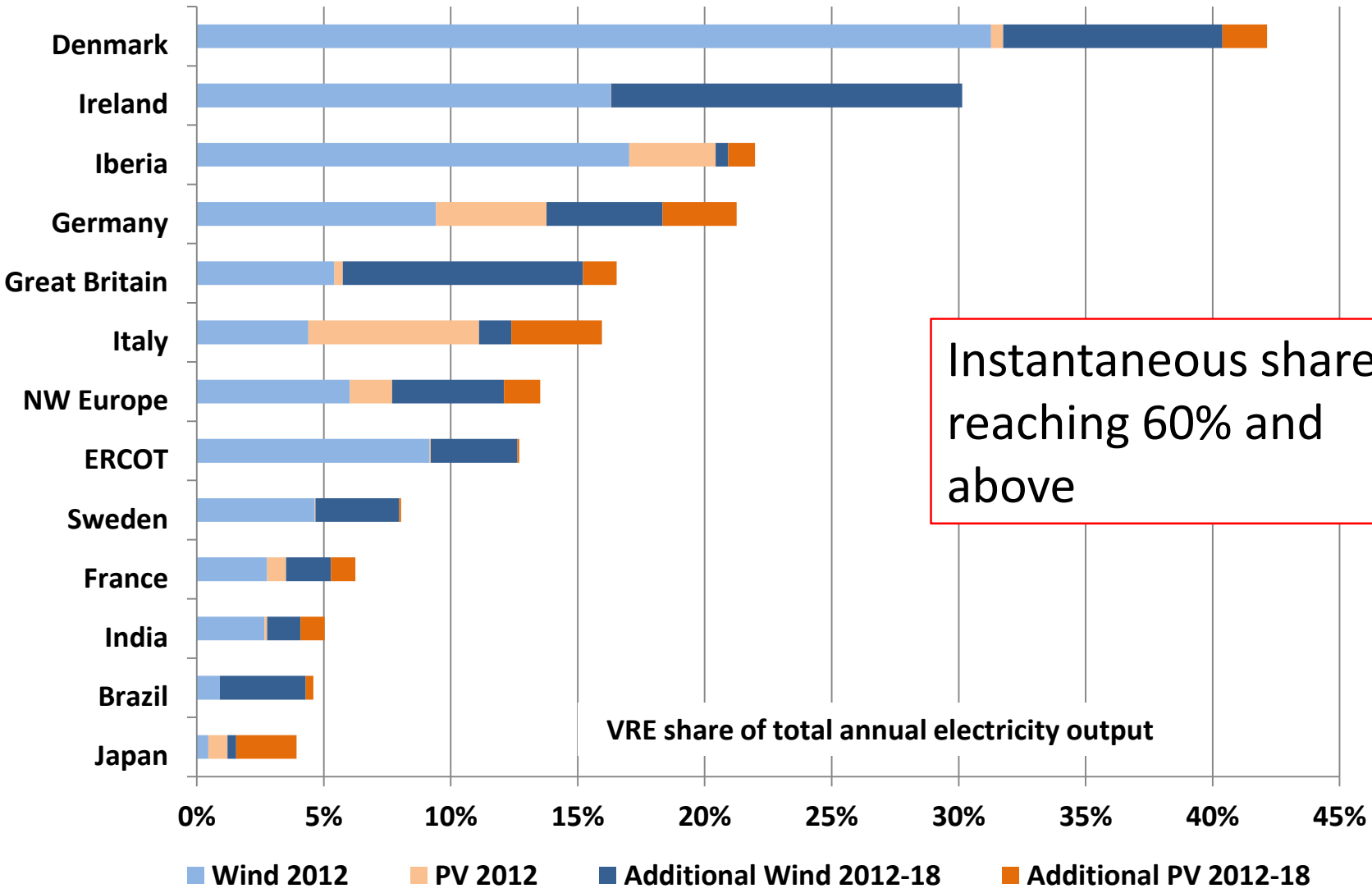
■ Generation 2DS 2050:

- Renewables: 65 - 79%
- Fossil fuels: 20 - 12%

Wind power would dominate in Europe



Current VRE shares and mid-term forecasts

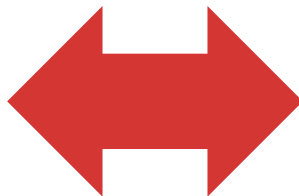


Instantaneous shares reaching 60% and above

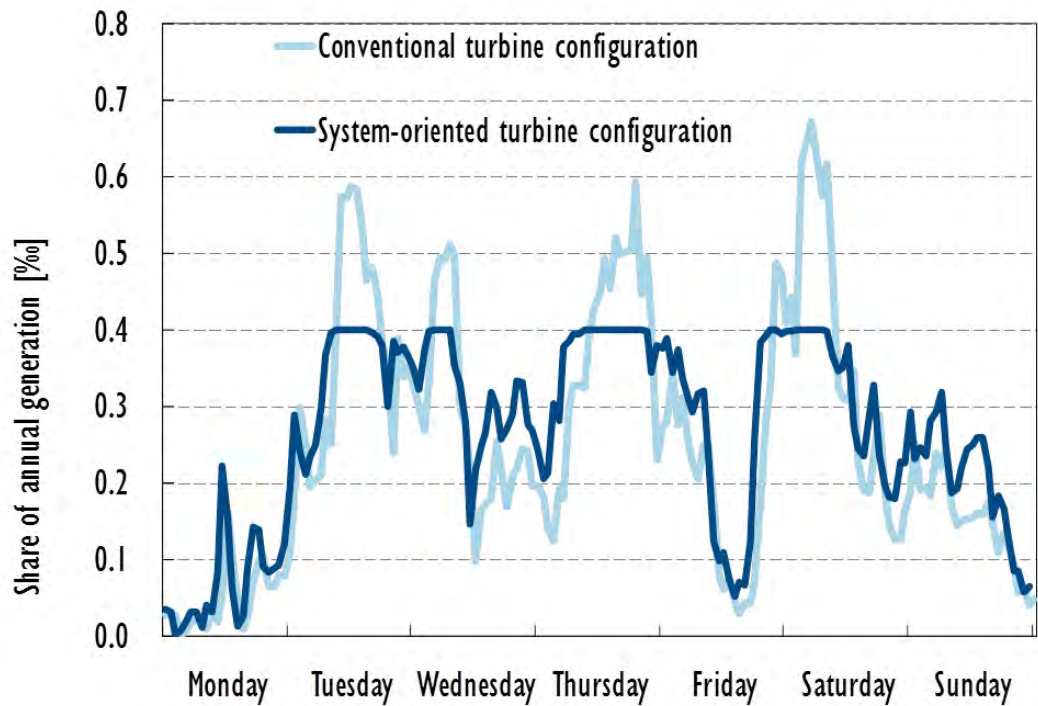
Interaction is key



System-friendly design



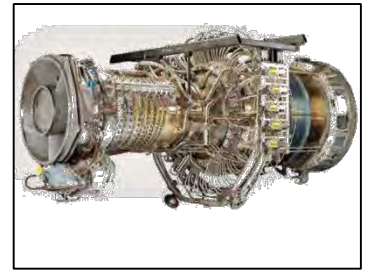
Flexibility of other power system components



Grids



Generation



Storage



Demand Side



Renewables becoming a cost-competitive generation option in more cases

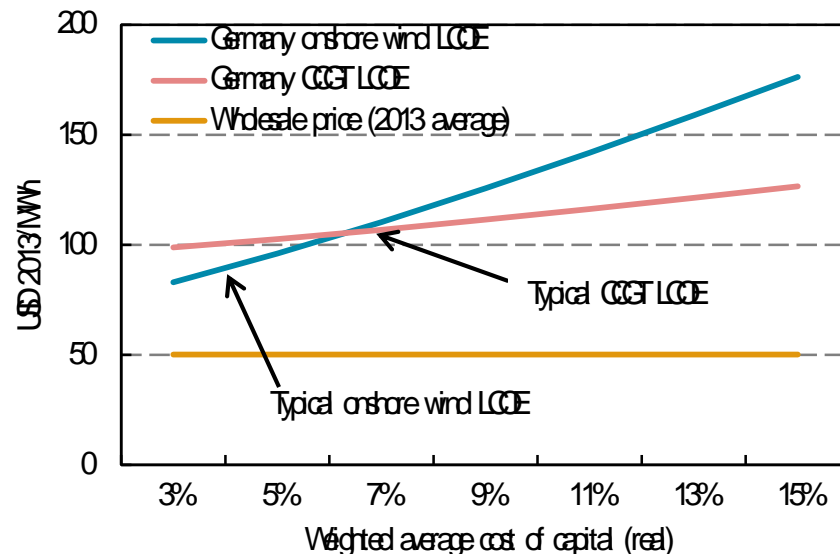


- In some dynamic markets with country-specific conditions and market frameworks, new onshore wind is the economically preferred option versus new fossil fuel plants (e.g. Brazil, Chile and South Africa)
 - But fossil fuel subsidies can distort this picture

- In some stable markets, onshore wind with good financing cheaper than new CCGT plants

- But market design based on wholesale pricing may not provide adequate remuneration

Germany LCOEs versus wholesale prices

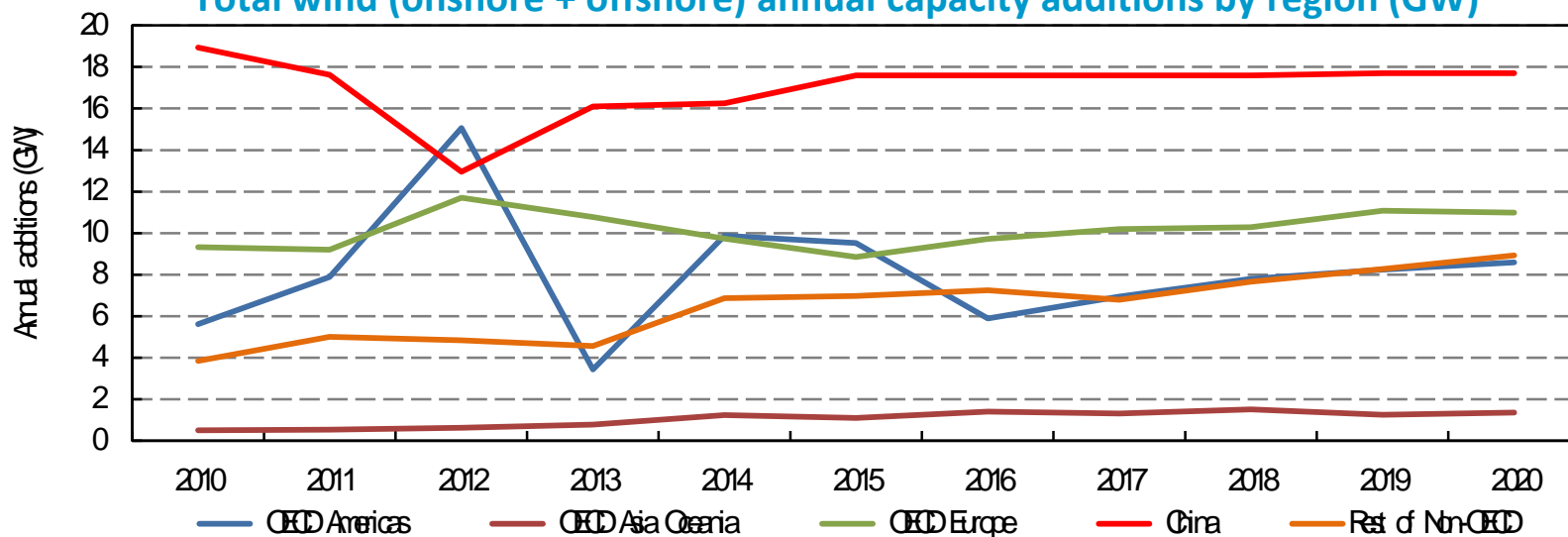


Notes: Onshore wind full load hours are assumed at 2000 and that for CCGT is 3500.
Source: IEA analysis with day-ahead average base-load wholesale prices for 2013 from Bloomberg LP.

Global RE capacity additions led by wind

- Still, onshore outlook less optimistic than in *MRMR 2013*
 - Policy uncertainties and grid integration challenges weigh upon outlook
- Offshore wind outlook also more pessimistic, with financing and integration challenges

Total wind (onshore + offshore) annual capacity additions by region (GW)

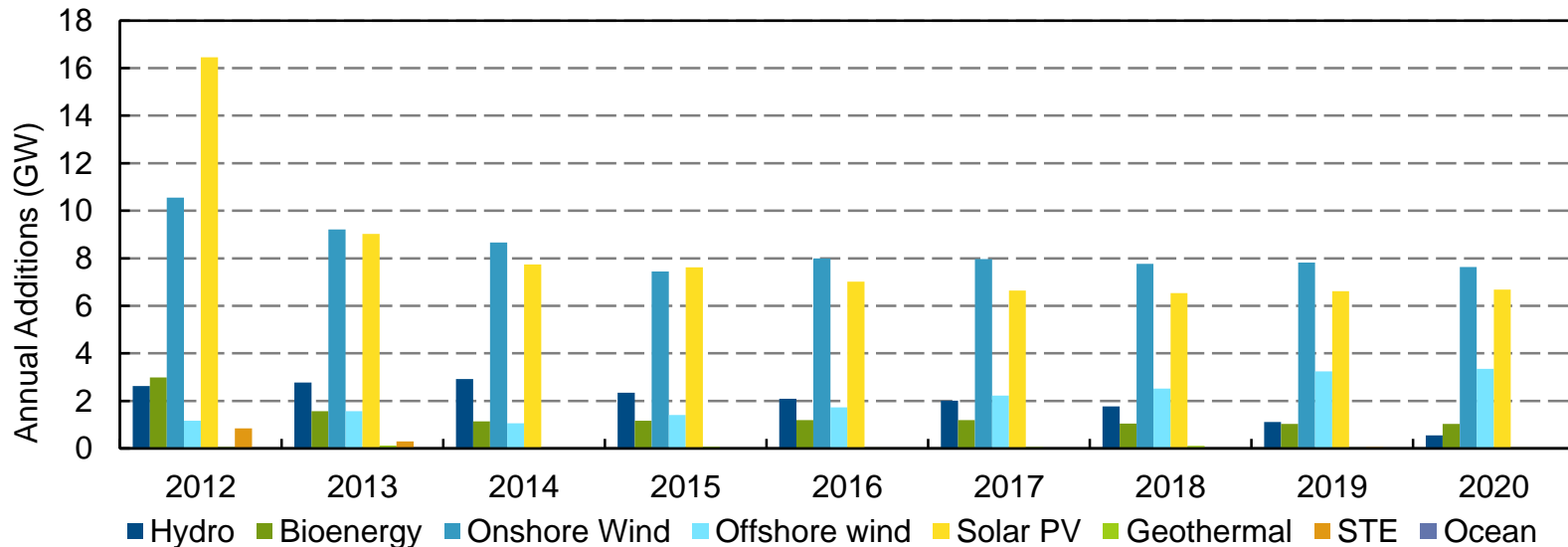


GW	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World Onshore	37.2	39.1	43.9	34.0	42.9	41.9	39.2	39.7	41.4	42.1	43.1
World Offshore	1.0	1.2	1.3	1.7	1.3	2.2	2.5	3.1	3.5	4.5	4.5

OECD Europe: Annual additions to stabilise at lower level due to policy uncertainty over 2030 targets



OECD Europe historical and projected renewable annual additions



- Onshore wind to lead the forecast with deployment in Germany, UK and Turkey
- Solar PV to grow mainly with residential and commercial deployment expected
- Offshore wind to expand moderately while bioenergy deployment to face challenges concerning feed stock sustainability and lack of policy framework.