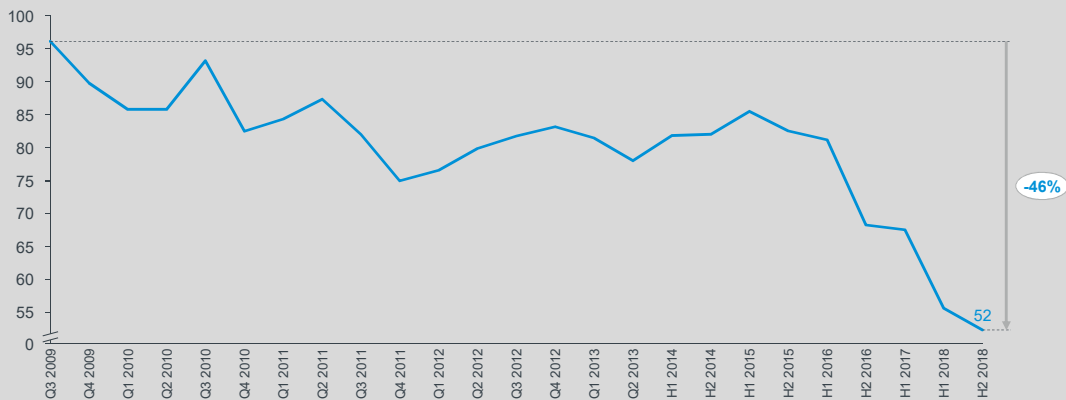




## We need to have a different conversation

Historic evolution of global levelised cost of energy for onshore wind  
2009-2018, \$/MWh, nominal



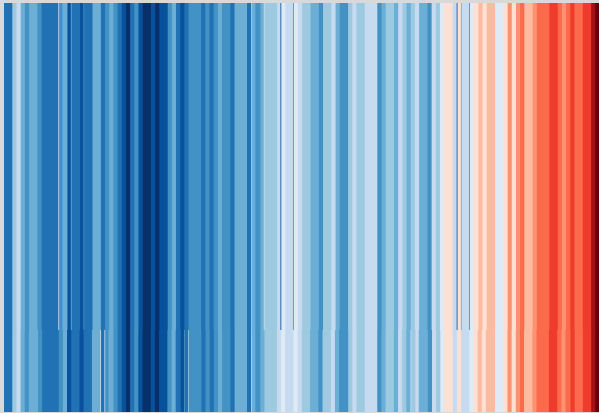
2 | Source: BNEF 2H 2018 LCOE Global Update

Classification: Public

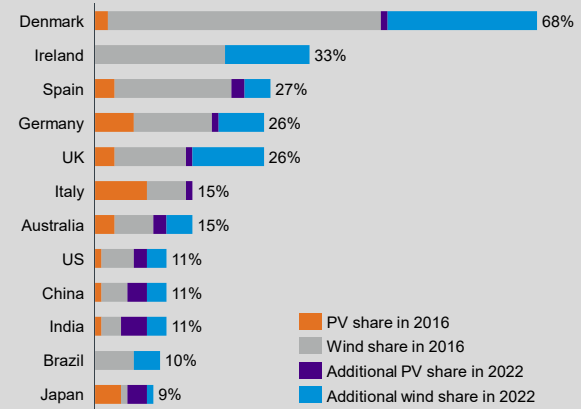


## Increasing CO2 emissions and increasing shares of renewables

**Annual global temperatures**  
1850 to 2018



**Variable renewable energy in annual electricity generation**  
2016-2022, percentage of total generation



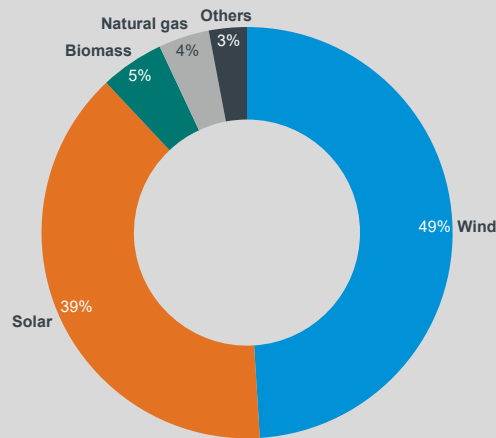
3 | Source: Climate Lab Book 2018, IEA 2018

Classification: Public



## In 2018, 49% of new power capacity in EU came from wind

**Share of new installed capacity in the EU-28**  
2018, %



4 | Source: WindEurope 2019

Classification: Public



## What we need to do...



1

**Market design:**  
*Create system flexibility*



2

**Electrification:**  
*Transport, industry and buildings*

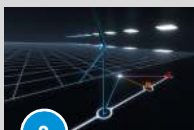


3

**Innovation leadership:**  
*Tomorrow's baseload?*



## The electricity industry needs to show innovation leadership



3

**Vestas' innovation efforts towards the future power system**



### Digitalisation

*Advanced analytics with the potential to solve many of the challenges around variability*



### Forecasting

*Advanced data solutions (weather, power) that helps make wind even more predictable*



### Storage

*Battery storage and other solutions for wind energy to support the further integration of renewables*

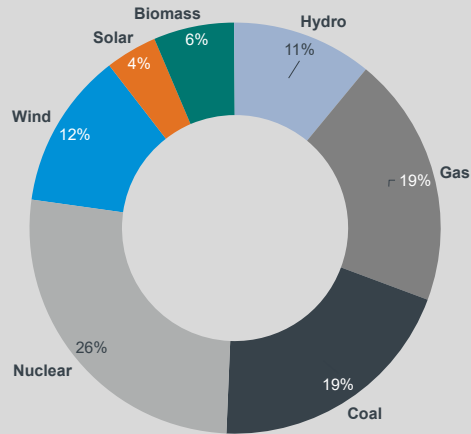


### Hybrids

*Combining renewable solutions with increased capacity able to adapt to grid integration challenges*

# It's the end of the beginning

European generation by energy source  
2018, estimates %



7 | Source: Agora Energiewende 2018

Classification: Public



Thank you

