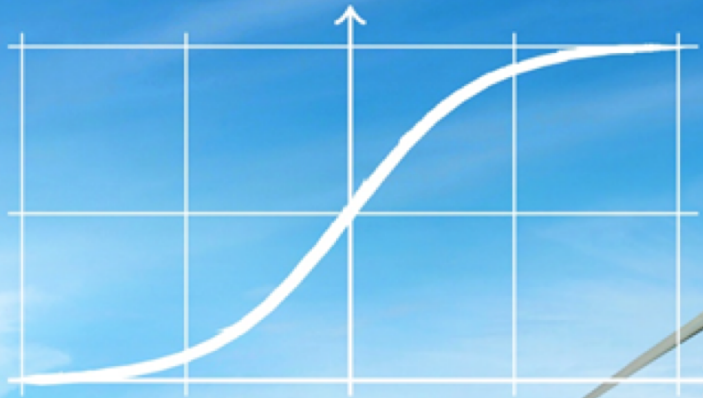


# ENERGY TRANSITION OUTLOOK 2050

## 2018

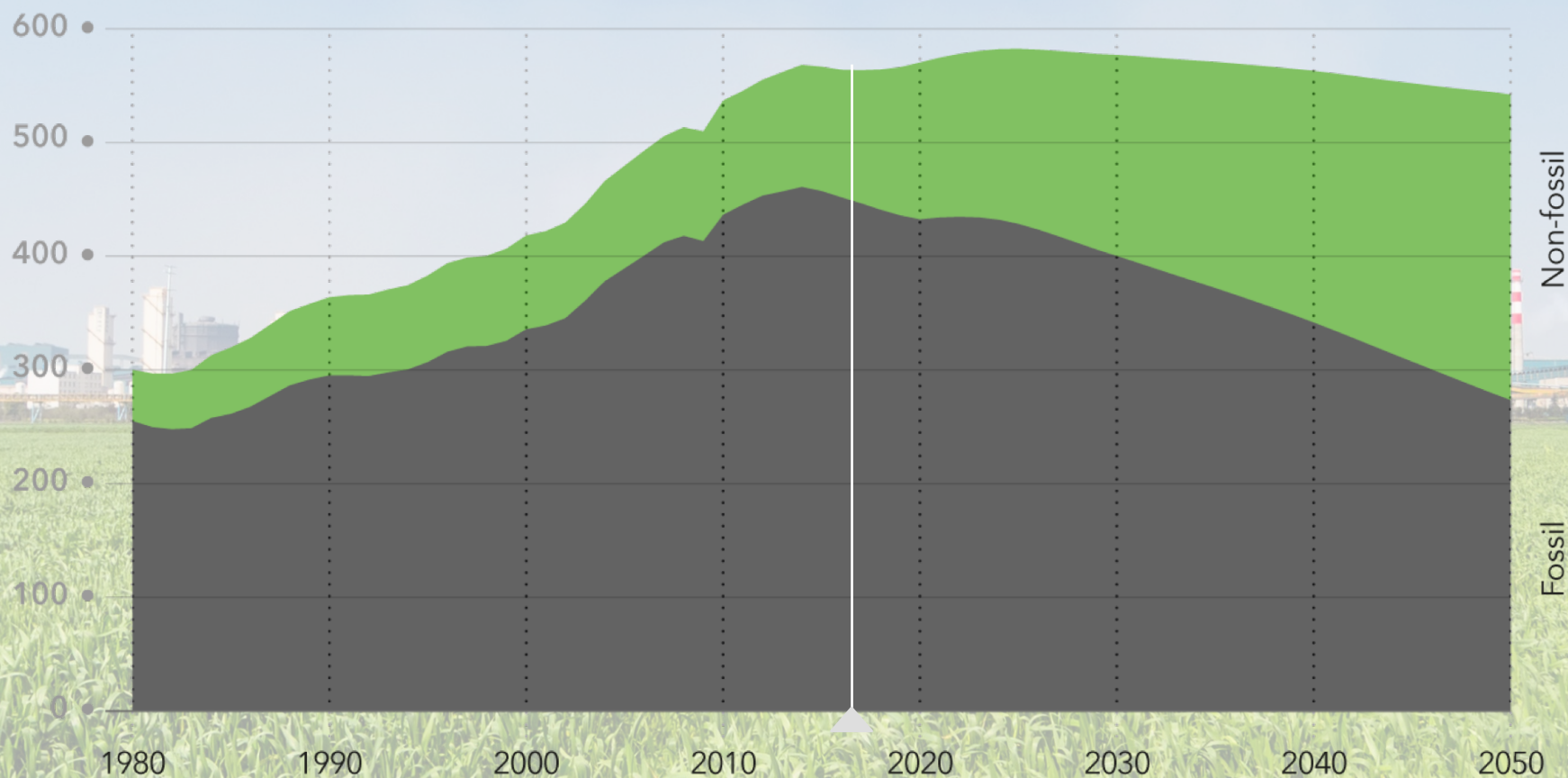


$$S(x) = \frac{1}{1+e^{-x}} = \frac{e^x}{e^x+1}$$

Liv A. Hovem  
CEO, DNV GL – Oil & Gas

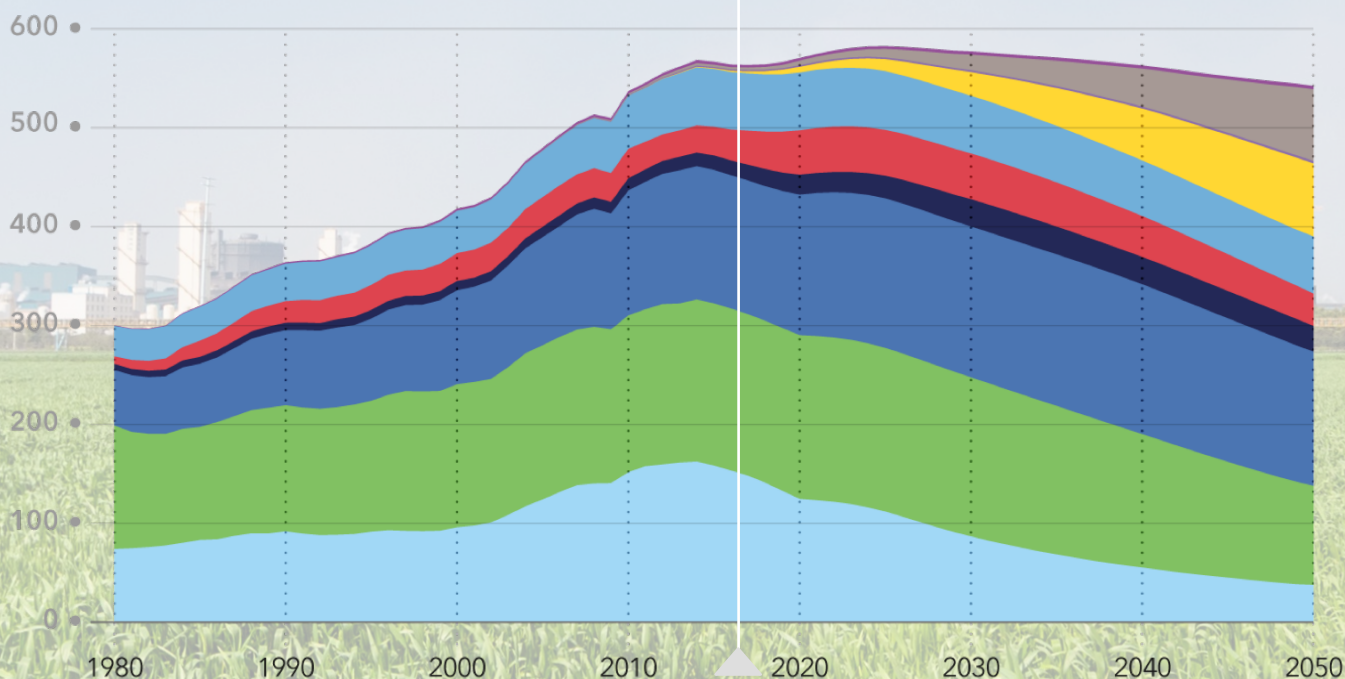
# Forecast world primary energy supply

Units: EJ/yr



# Forecast world primary energy supply by source

Units: EJ/yr



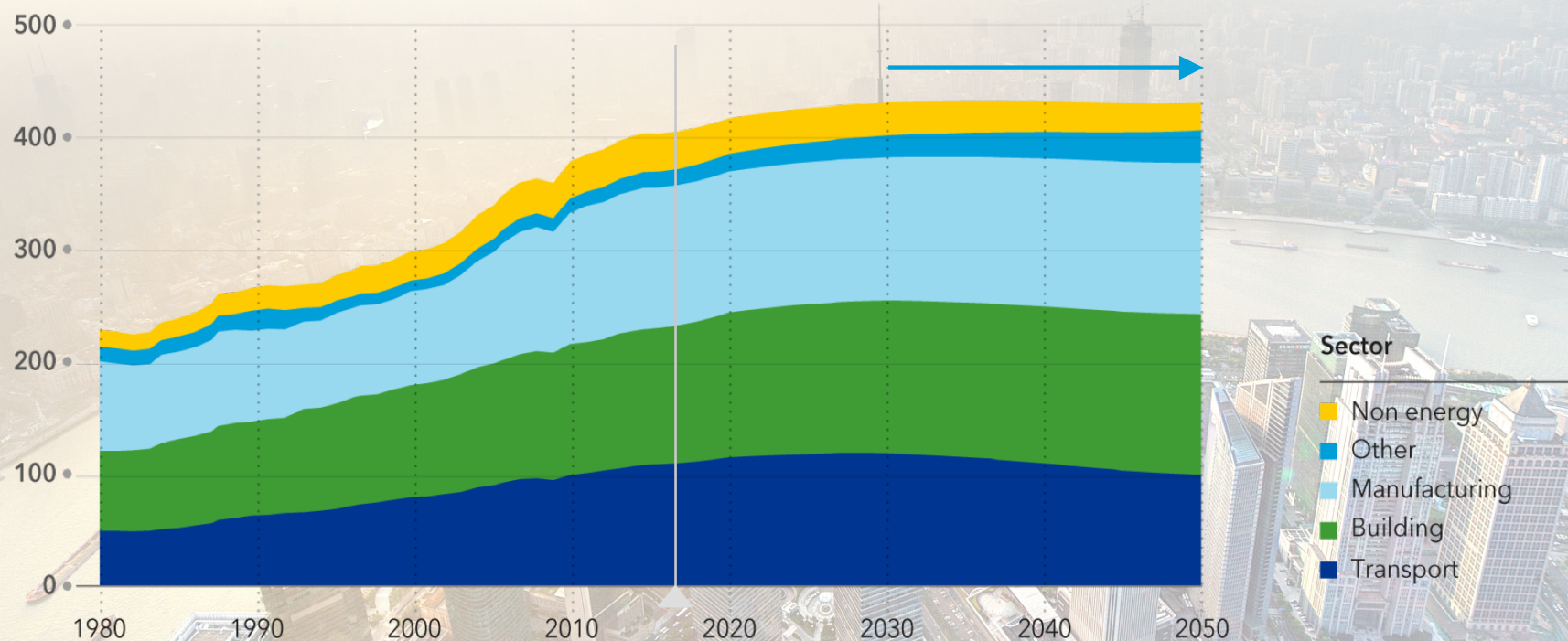
Energy source

- Geothermal
- Wind
- Solar thermal
- Solar PV
- Biomass
- Nuclear
- Hydro
- Gas
- Oil
- Coal



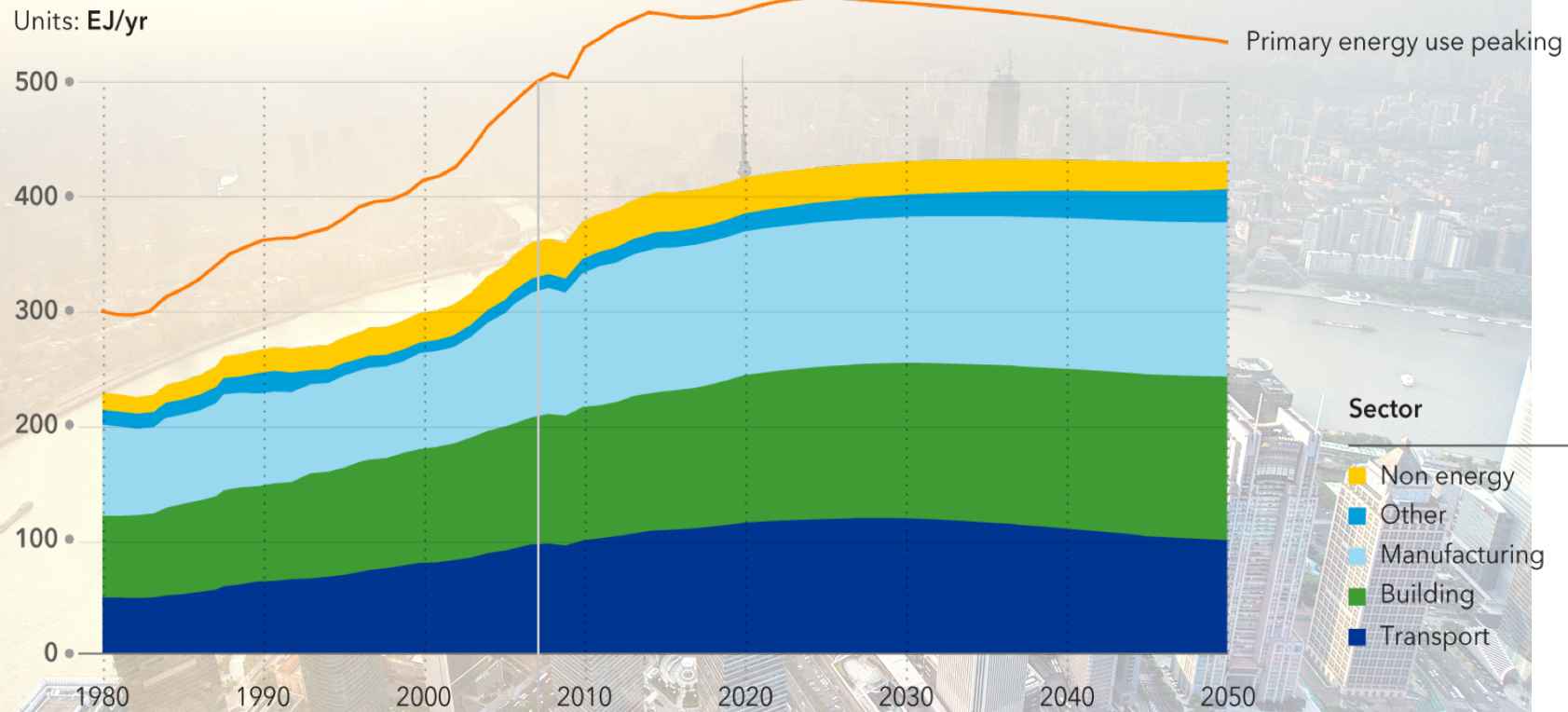
# World final energy demand by sector

Units: EJ/yr





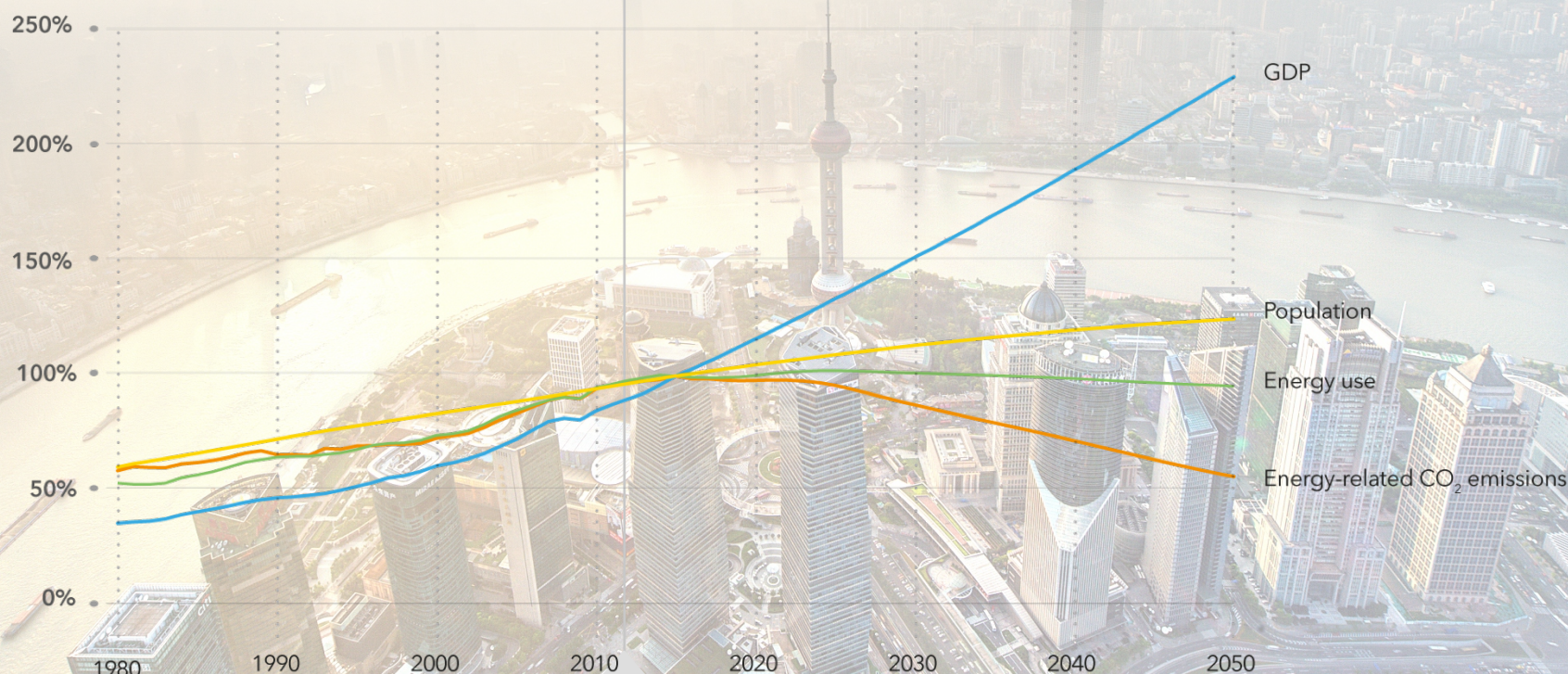
# World final energy demand by sector





# Economic growth vs. energy efficiency growth

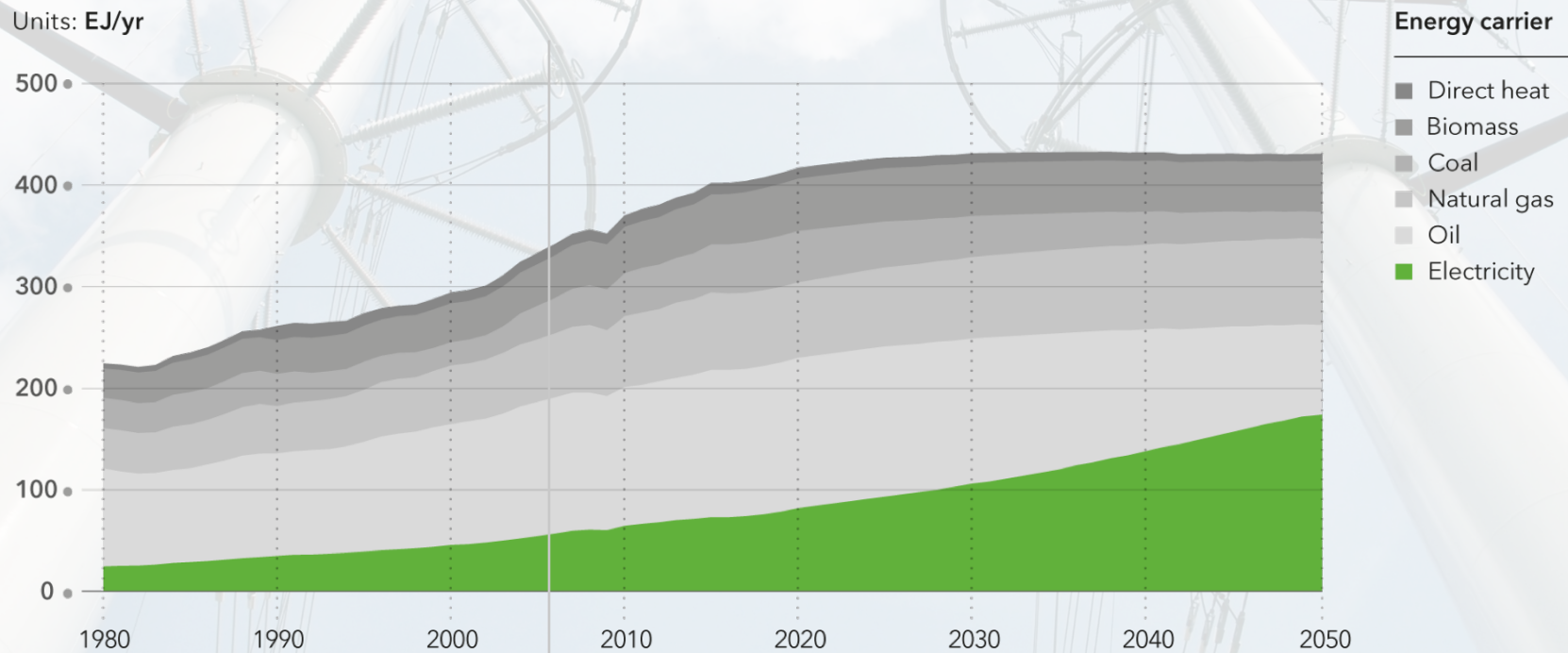
Units: Percentage of 2015 level





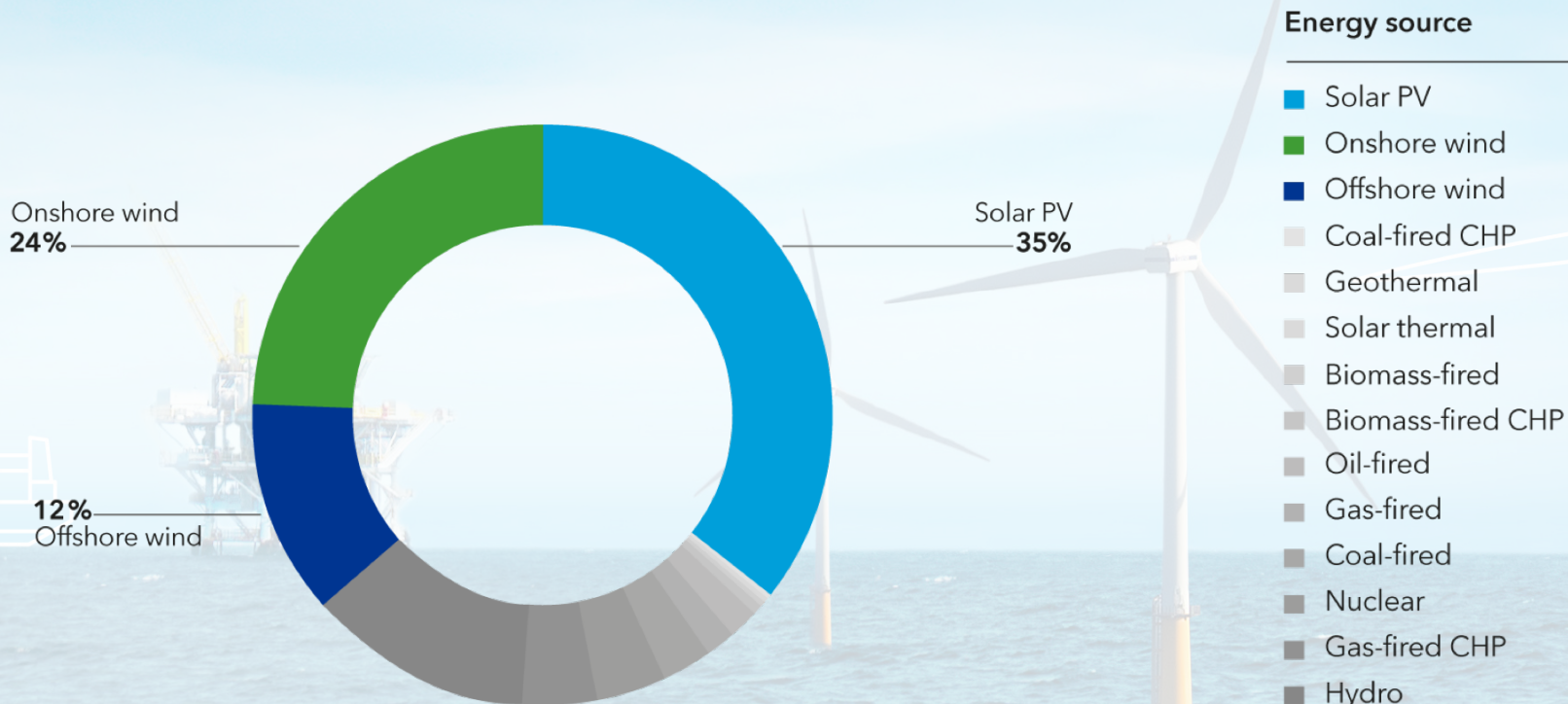


# World final energy demand by energy carrier





# Global electricity production in 2050





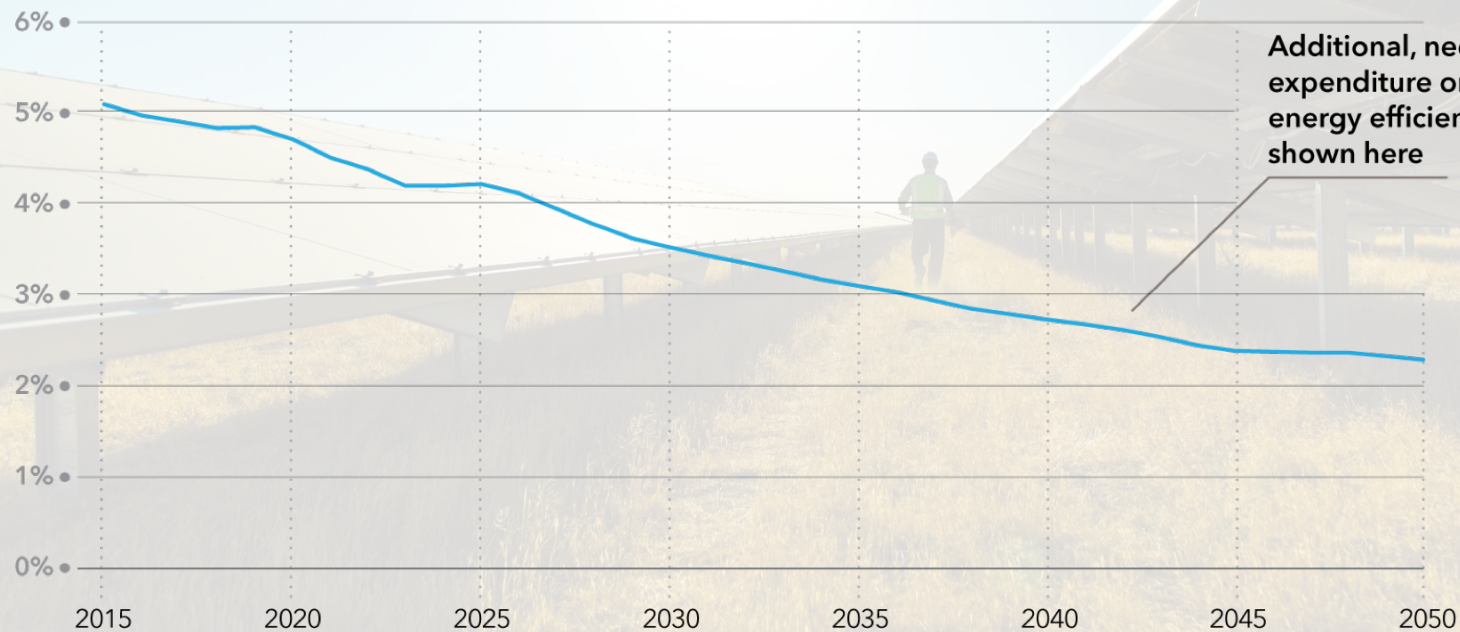






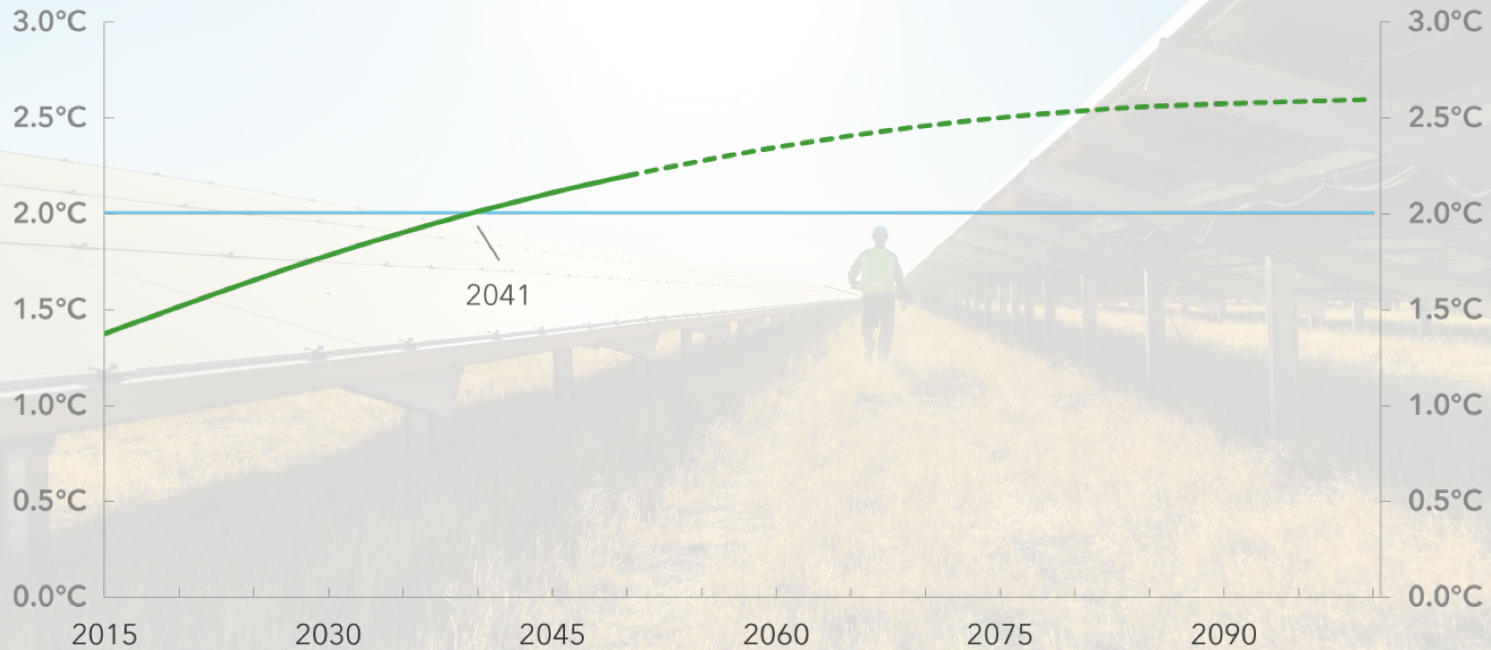
# Global energy expenditure as a fraction of Global GDP

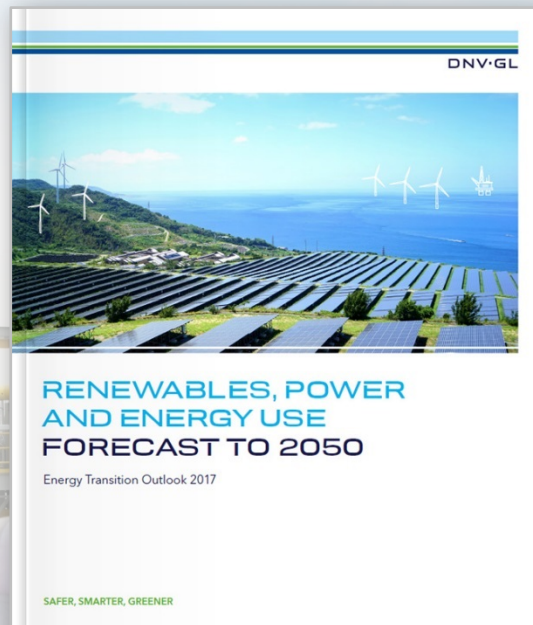
Units: Percentages





# Global warming and carbon budget







# ENERGY TRANSITION OUTLOOK 2017

A global and regional forecast  
of the energy transition to 2050

$$S(x) = \frac{1}{1+e^{-x}} = \frac{e^x}{e^x + 1}$$

