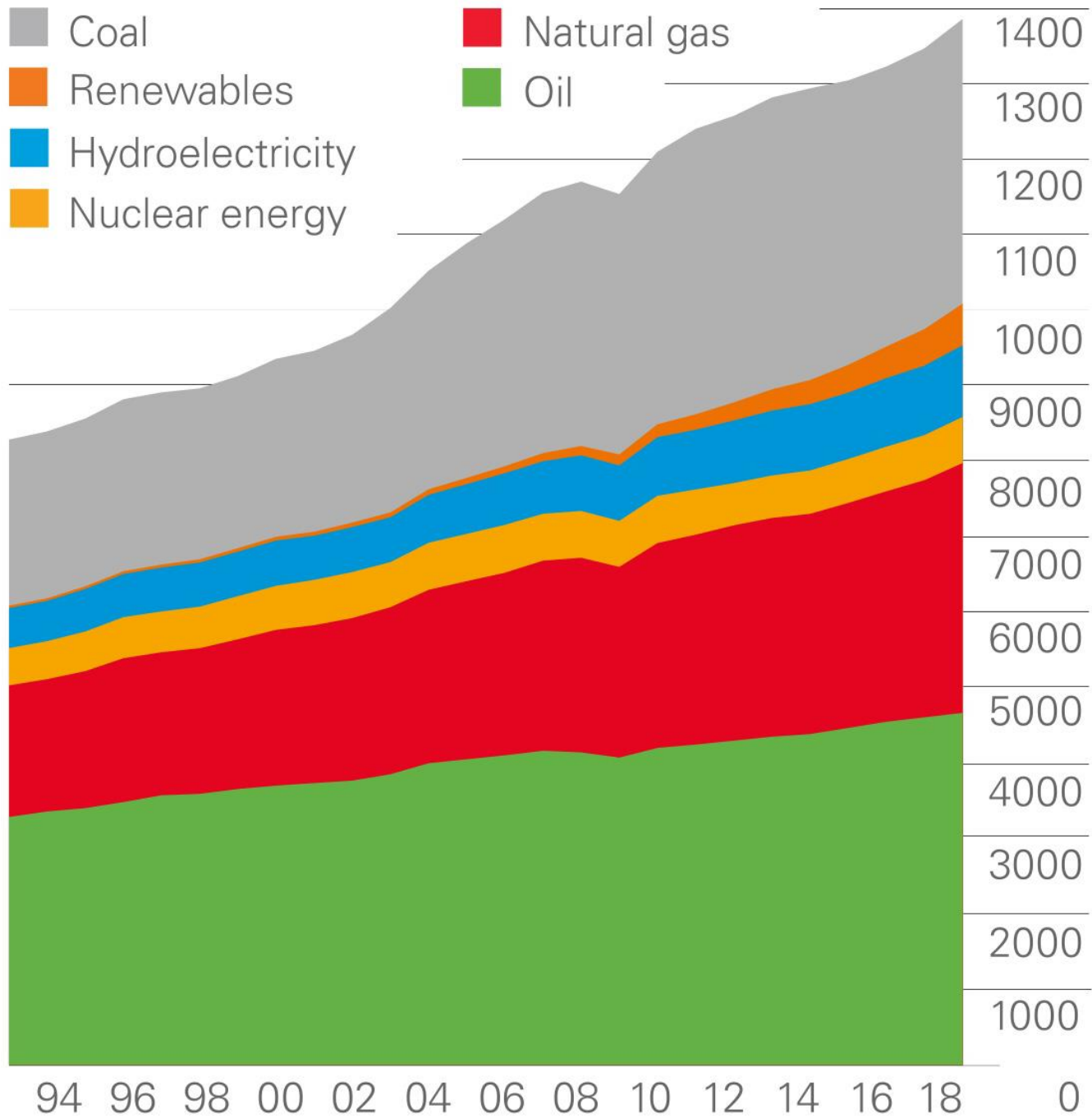


The changing global energy market

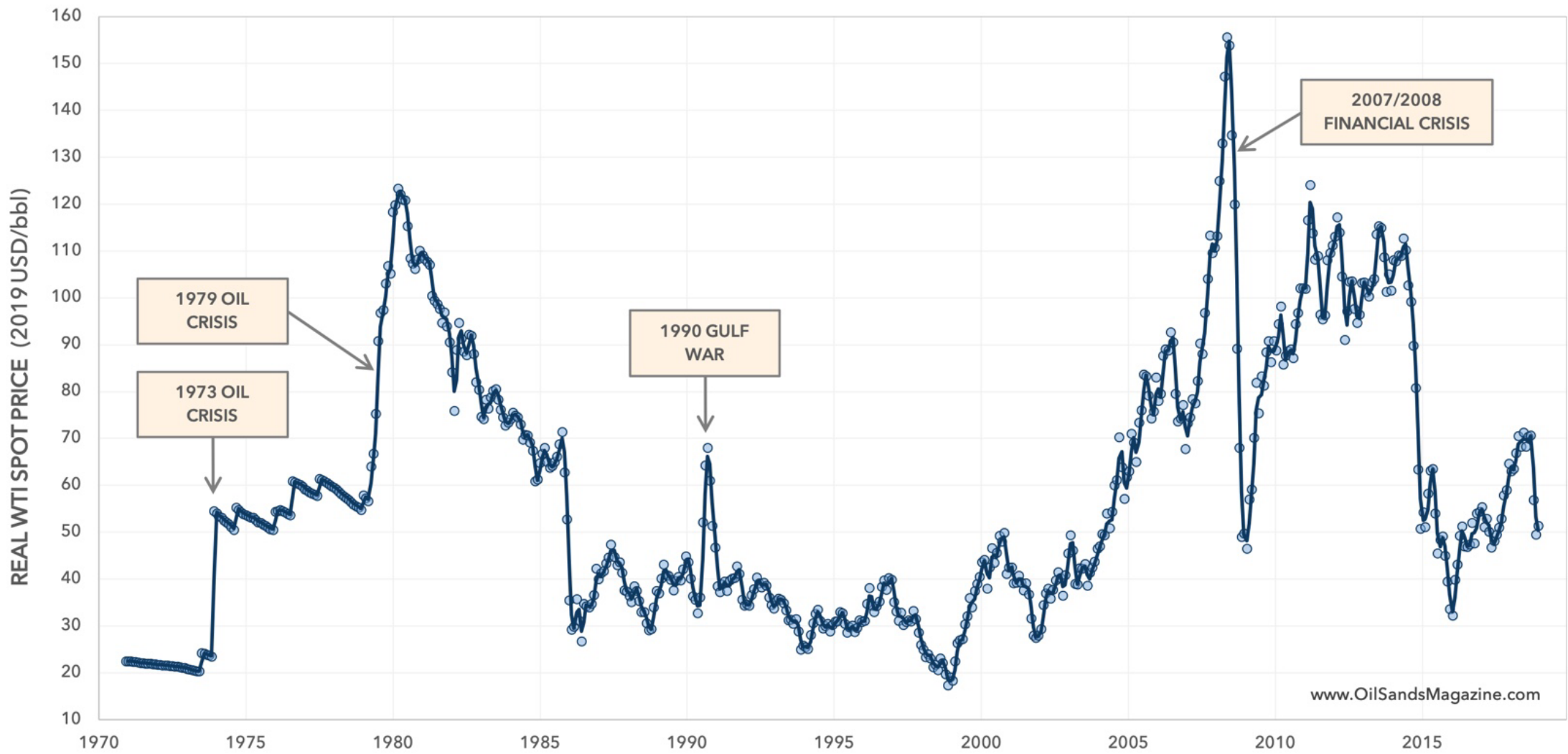
Nick Butler

Visiting Professor Kings College London

Cyprus Economic Society Energy Conference, Nicosia, 29 October 2019



Global Energy Demand by fuel. (mtoe)



LNG price by market

\$/MMBtu

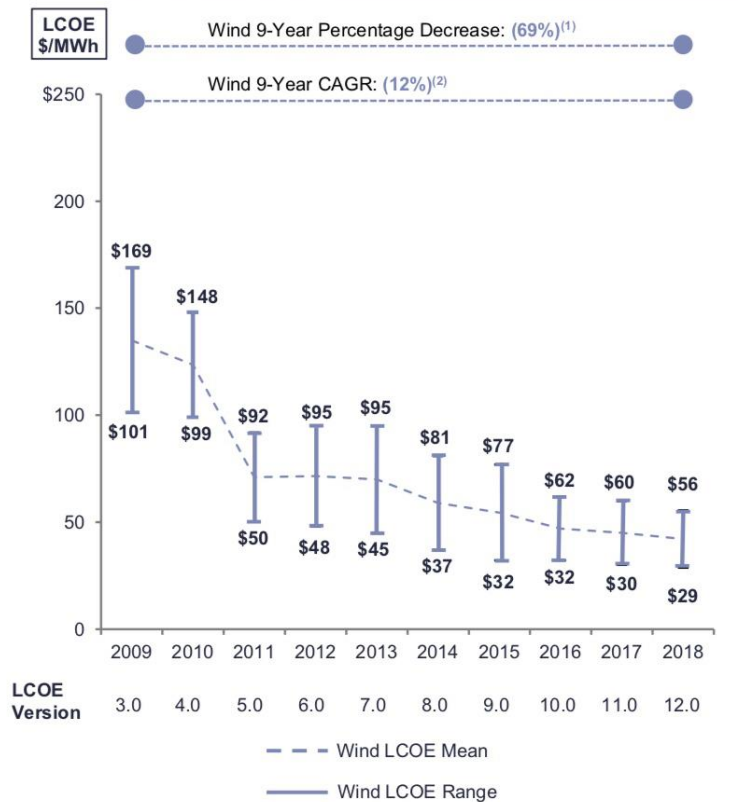
— JKM — TTF — Henry Hub — US FOB Index¹



Levelized Cost of Energy Comparison—Historical Alternative Energy LCOE Declines

In light of material declines in the pricing of system components (e.g., panels, inverters, turbines, etc.) and improvements in efficiency, among other factors, wind and utility-scale solar PV have seen dramatic historical LCOE declines; however, over the past several years the rate of such LCOE declines have started to flatten

Unsubsidized Wind LCOE



Unsubsidized Solar PV LCOE

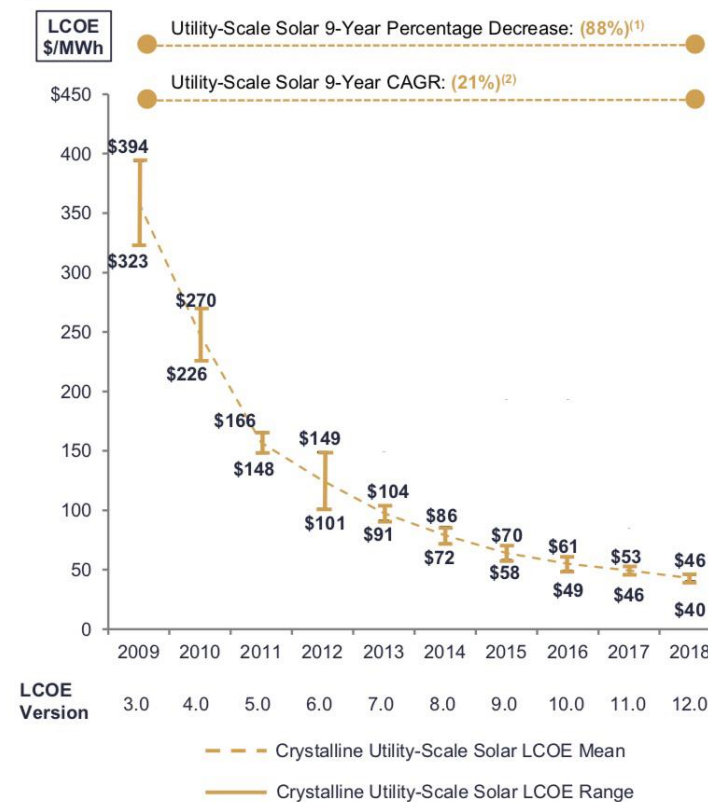
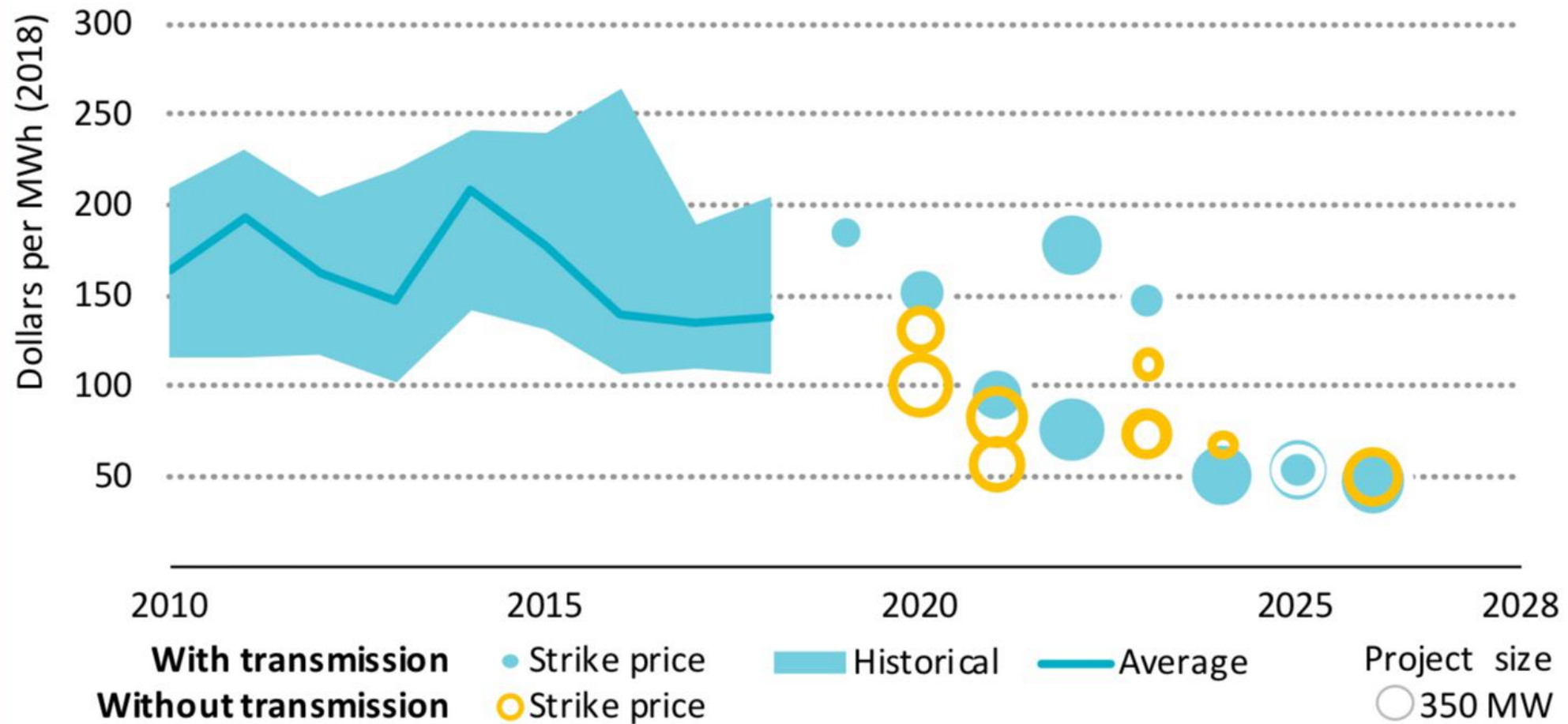


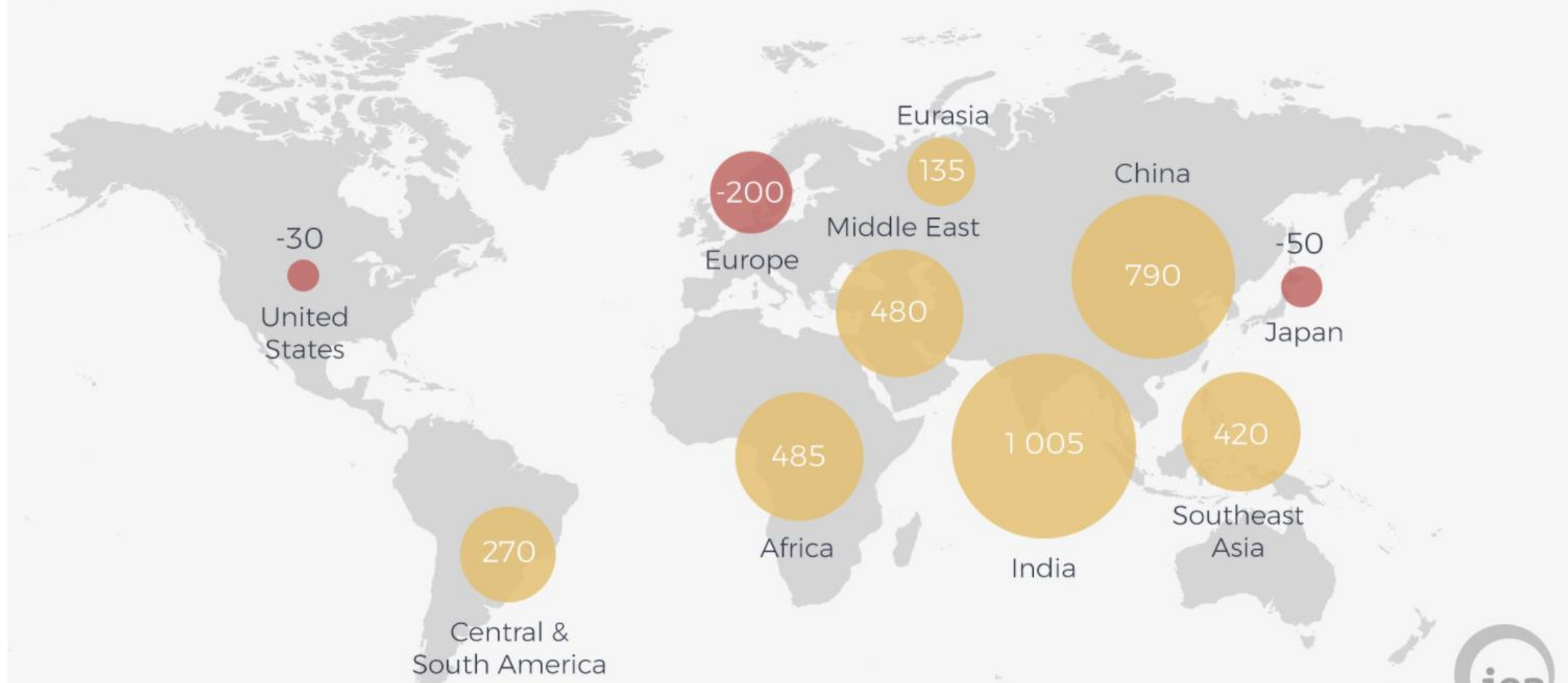
Figure 8 ▸ Historical LCOE of offshore wind and strike prices in recent auctions in Europe





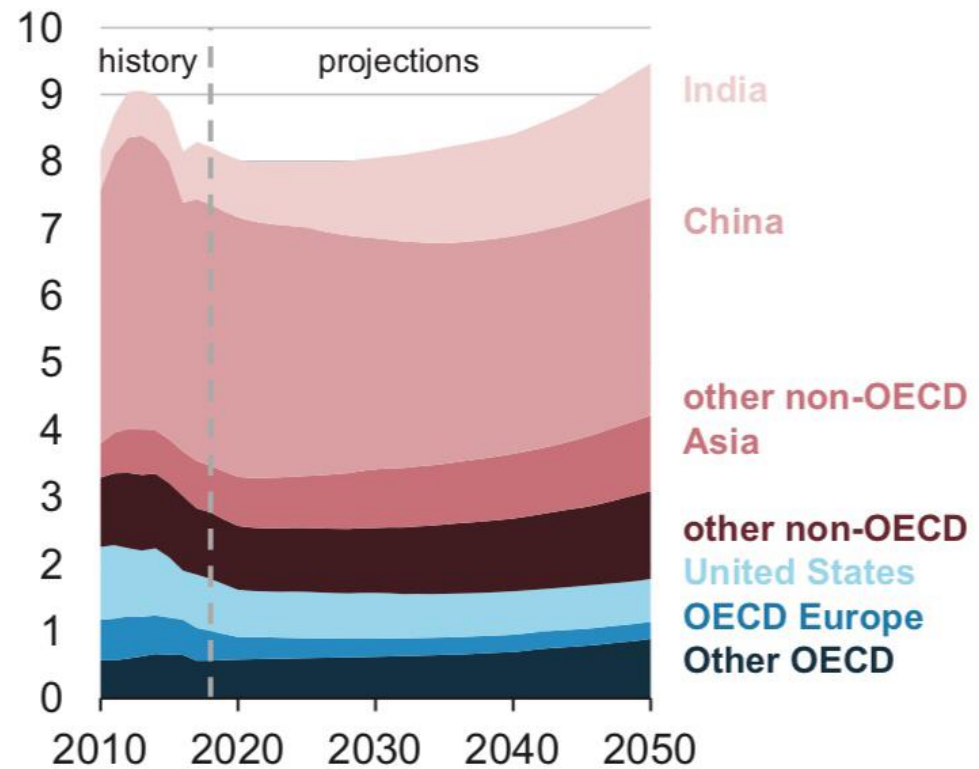
Change in primary energy demand, 2016-40 (Mtoe)

World Energy Outlook 2017



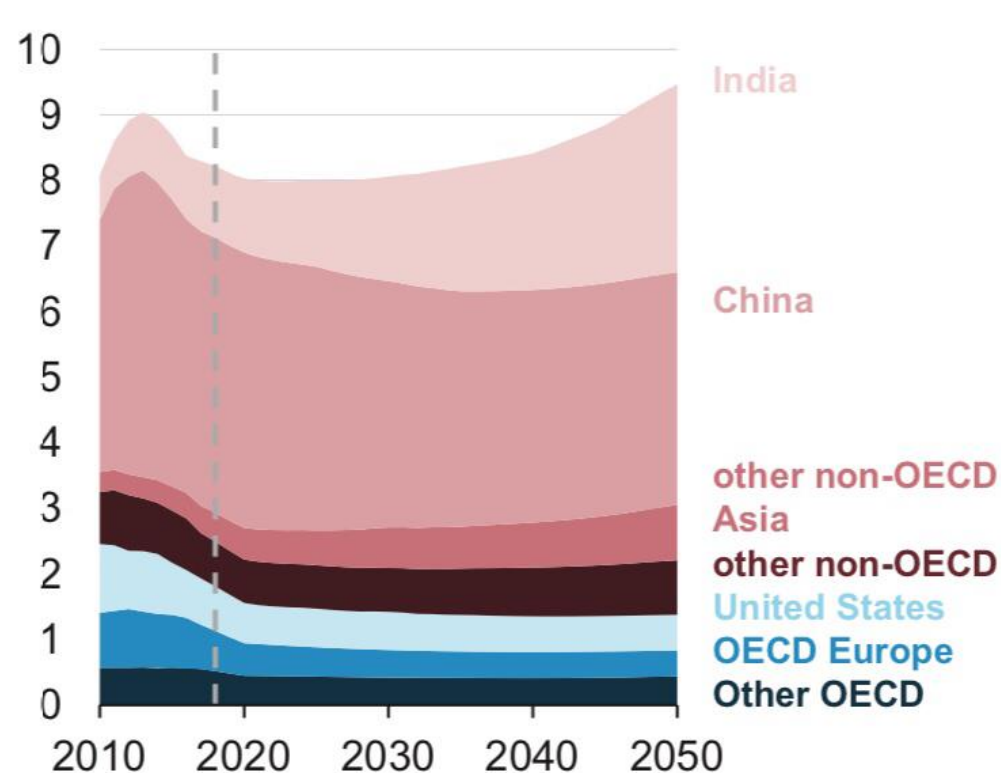
World coal production

billion short tons

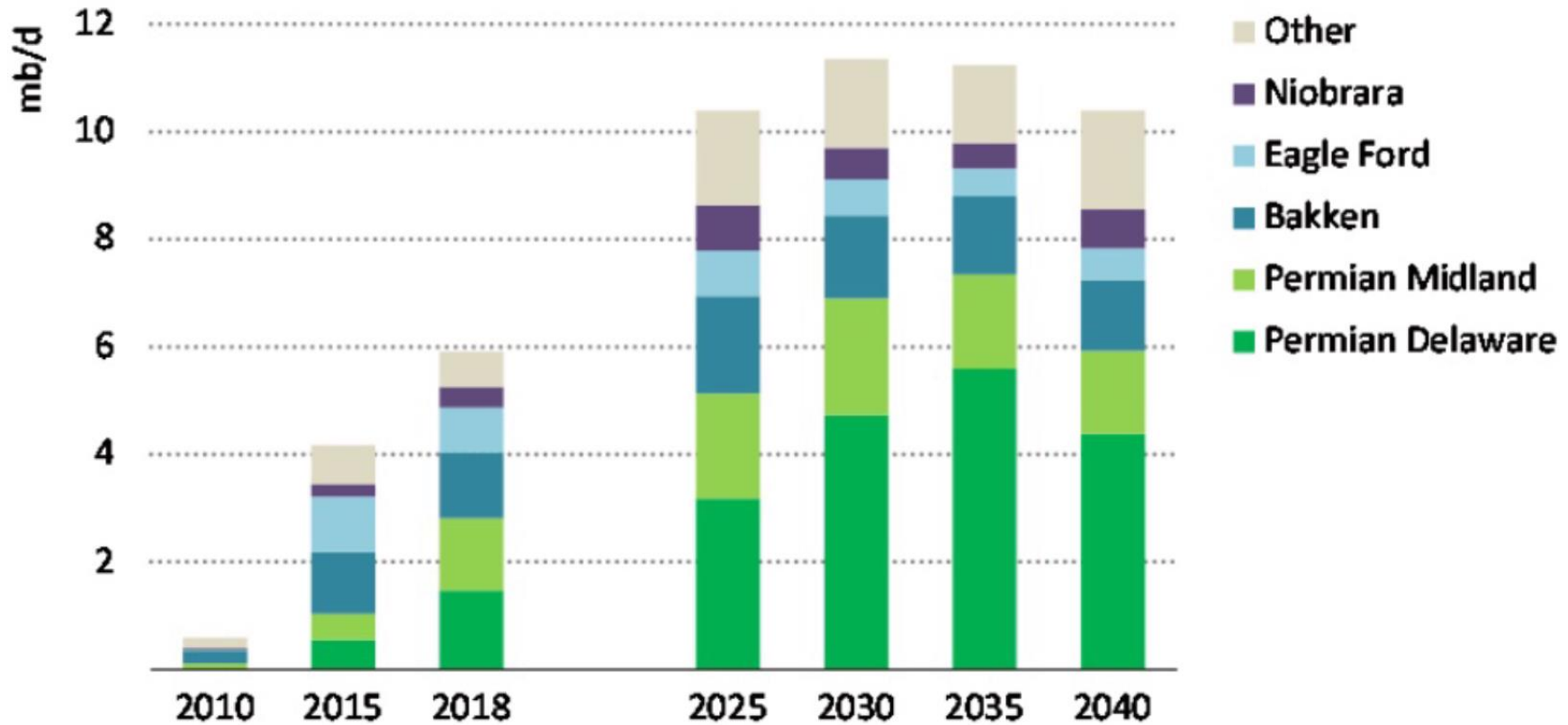


World coal consumption

billion short tons



US tight crude oil production in the Stated Policies Scenario



US tight crude oil reaches a plateau in the 2030s at close to 11.5 mb/d. Production from the Permian basin alone surpasses oil production from Iraq in the mid-2020s





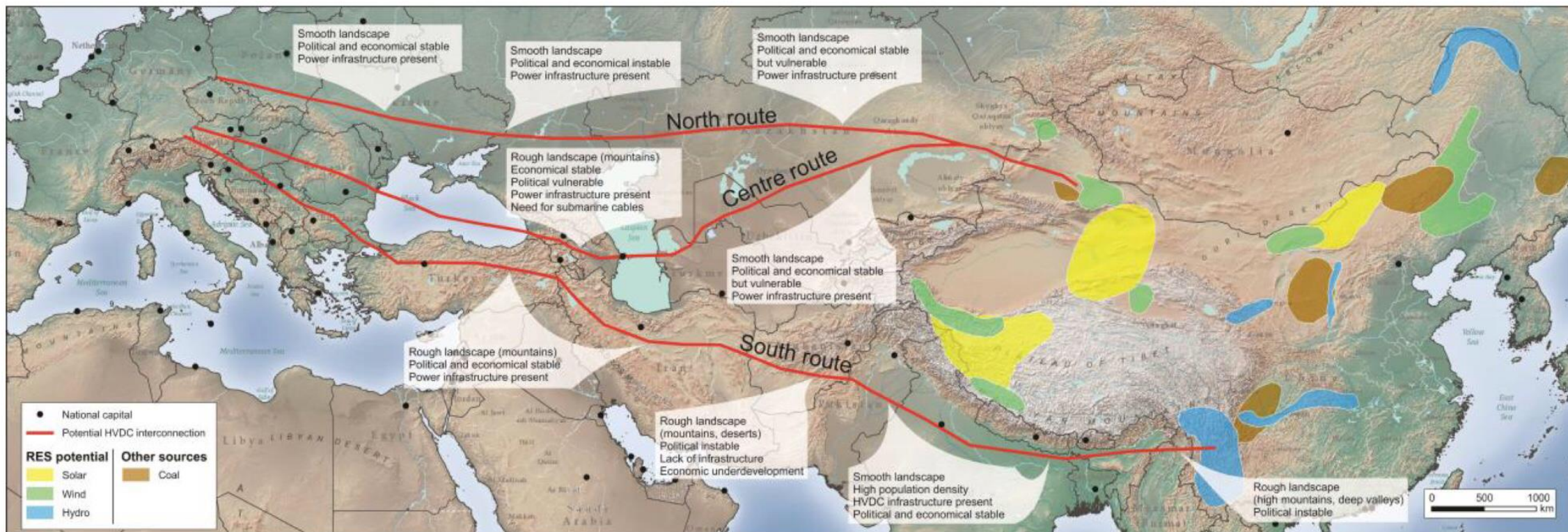
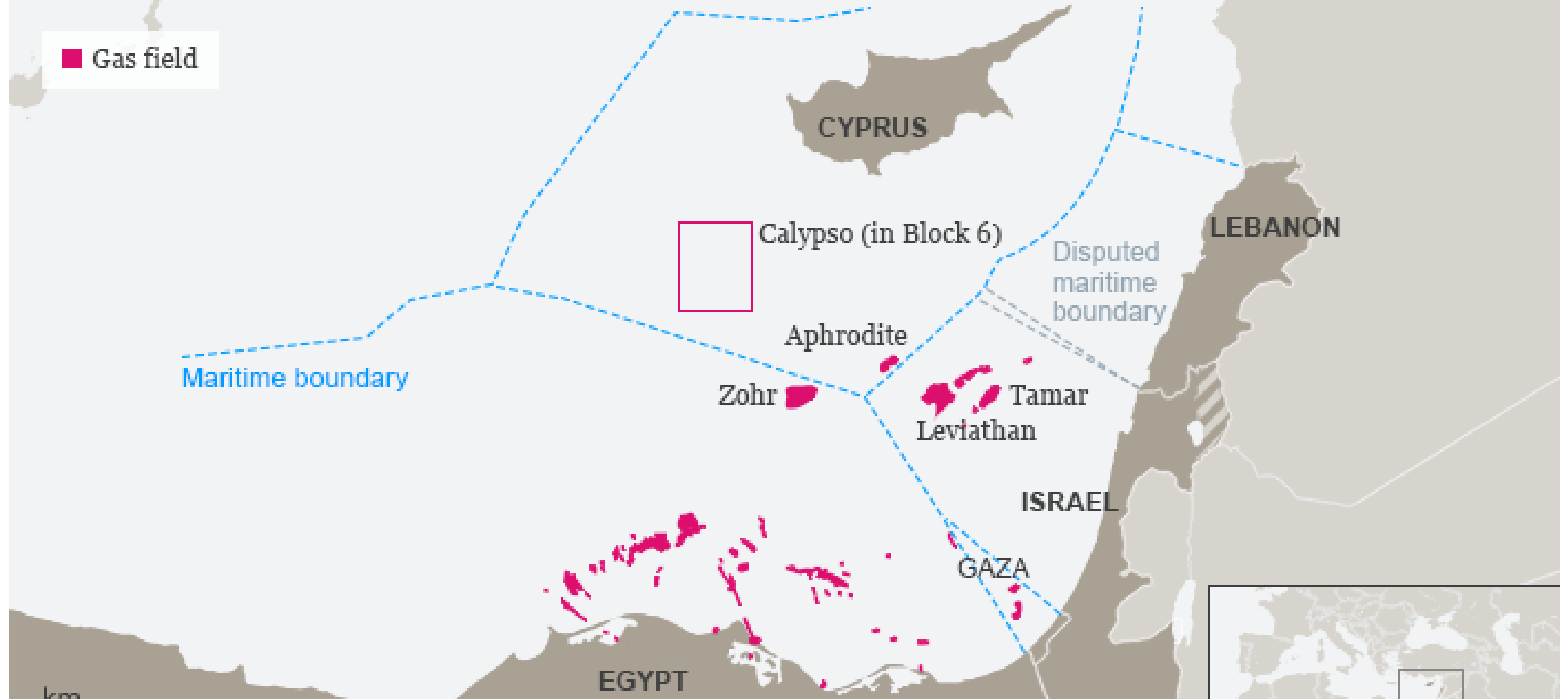


Fig. 48 – Scenarios for an HVDC power interconnection between China and Europe

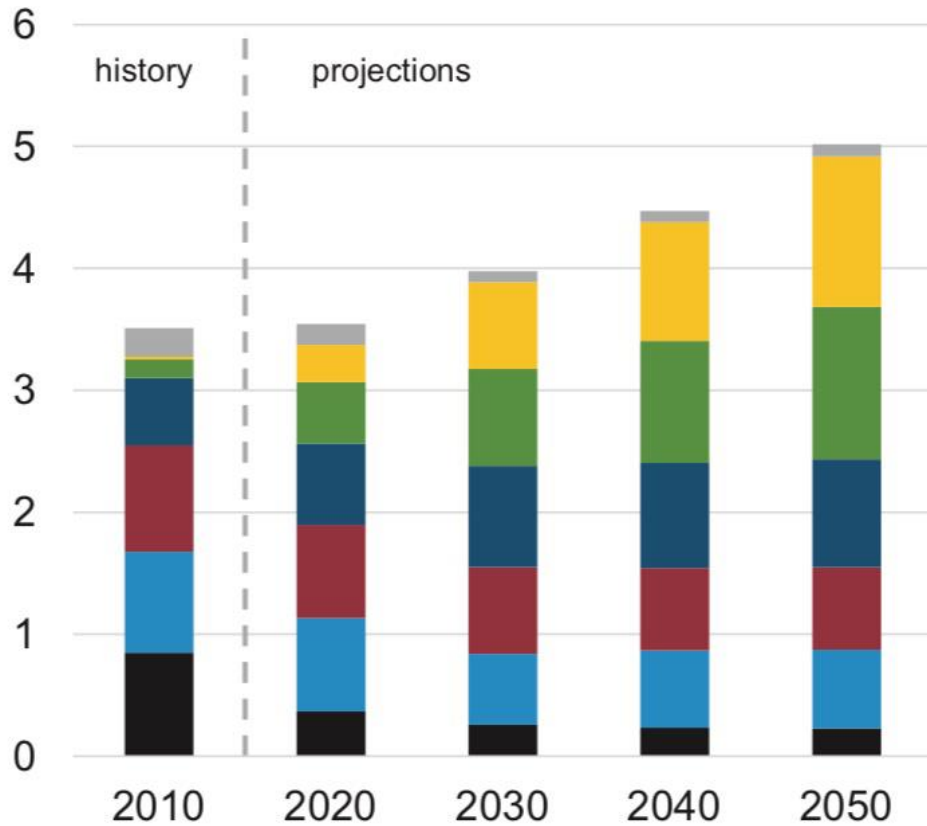
Data Centers and Renewable Energy



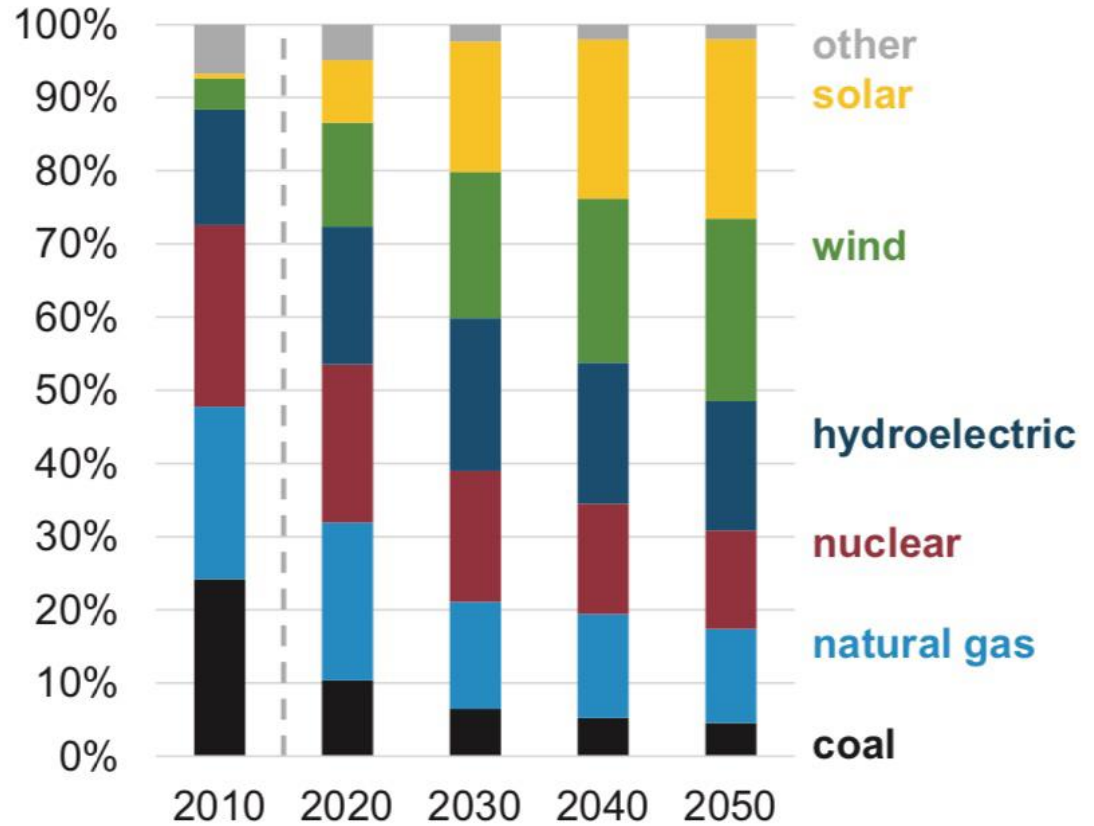
Overview of gas assets in the eastern Mediterranean Sea



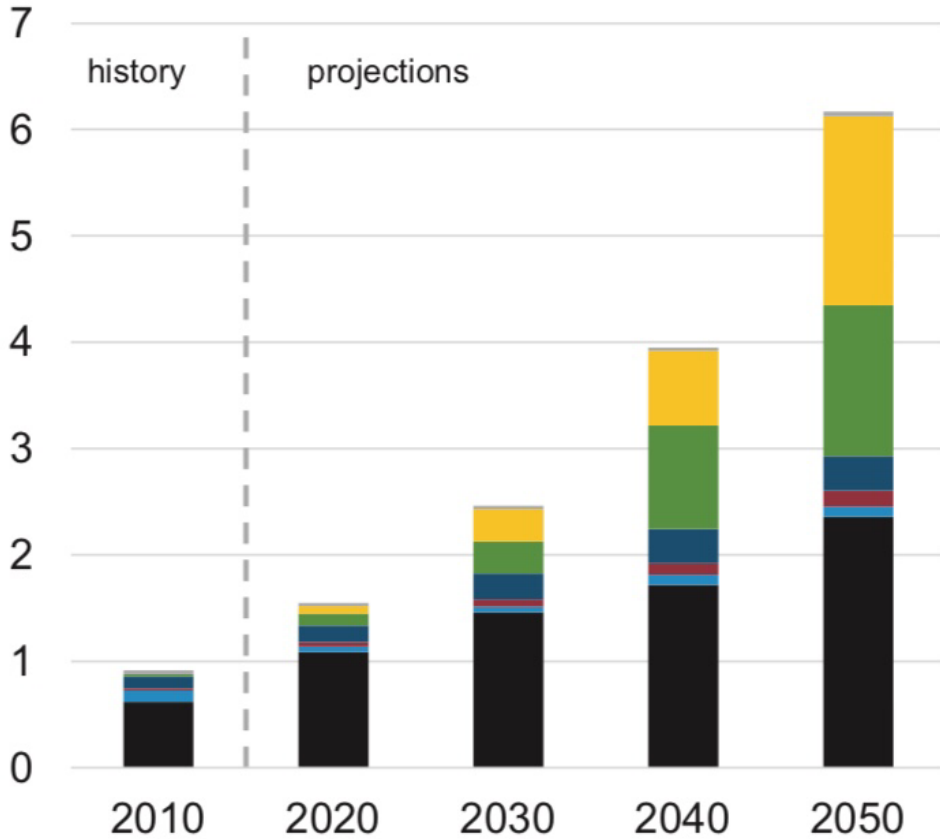
Net electricity generation by fuel, OECD Europe
trillion kilowatthours



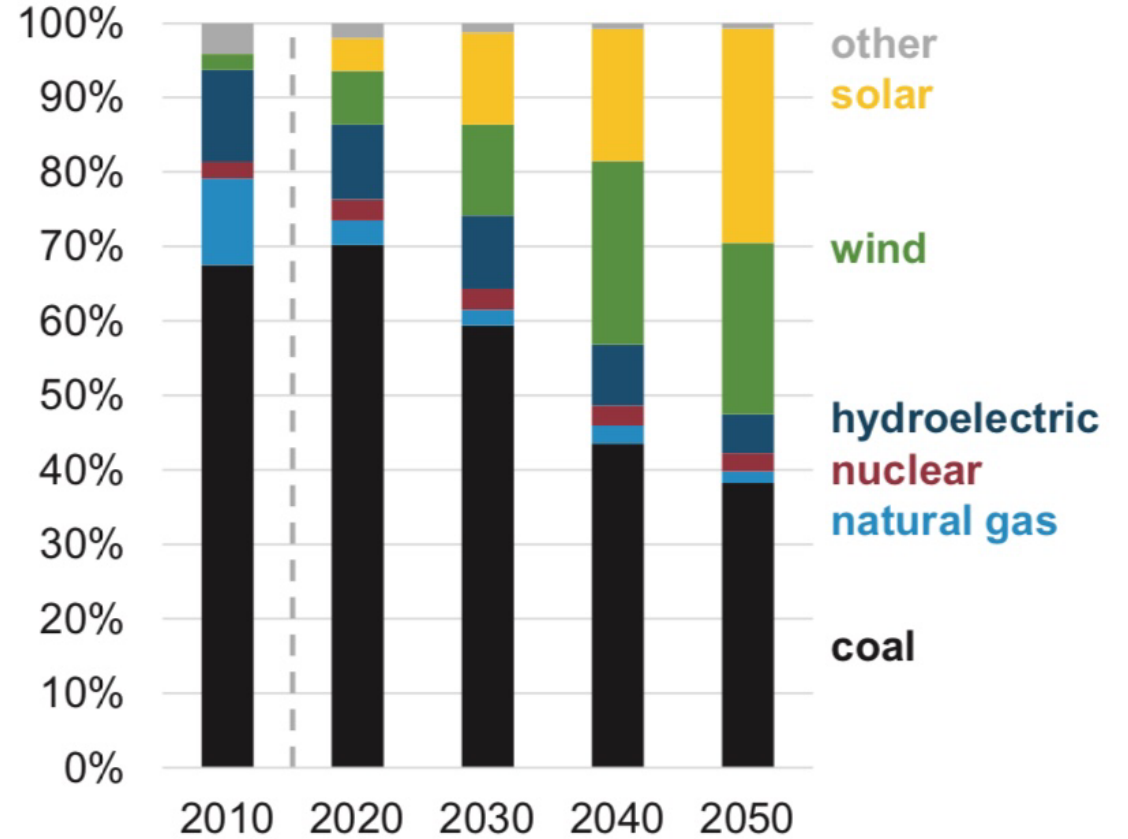
Share of net electricity generation, OECD Europe
percent

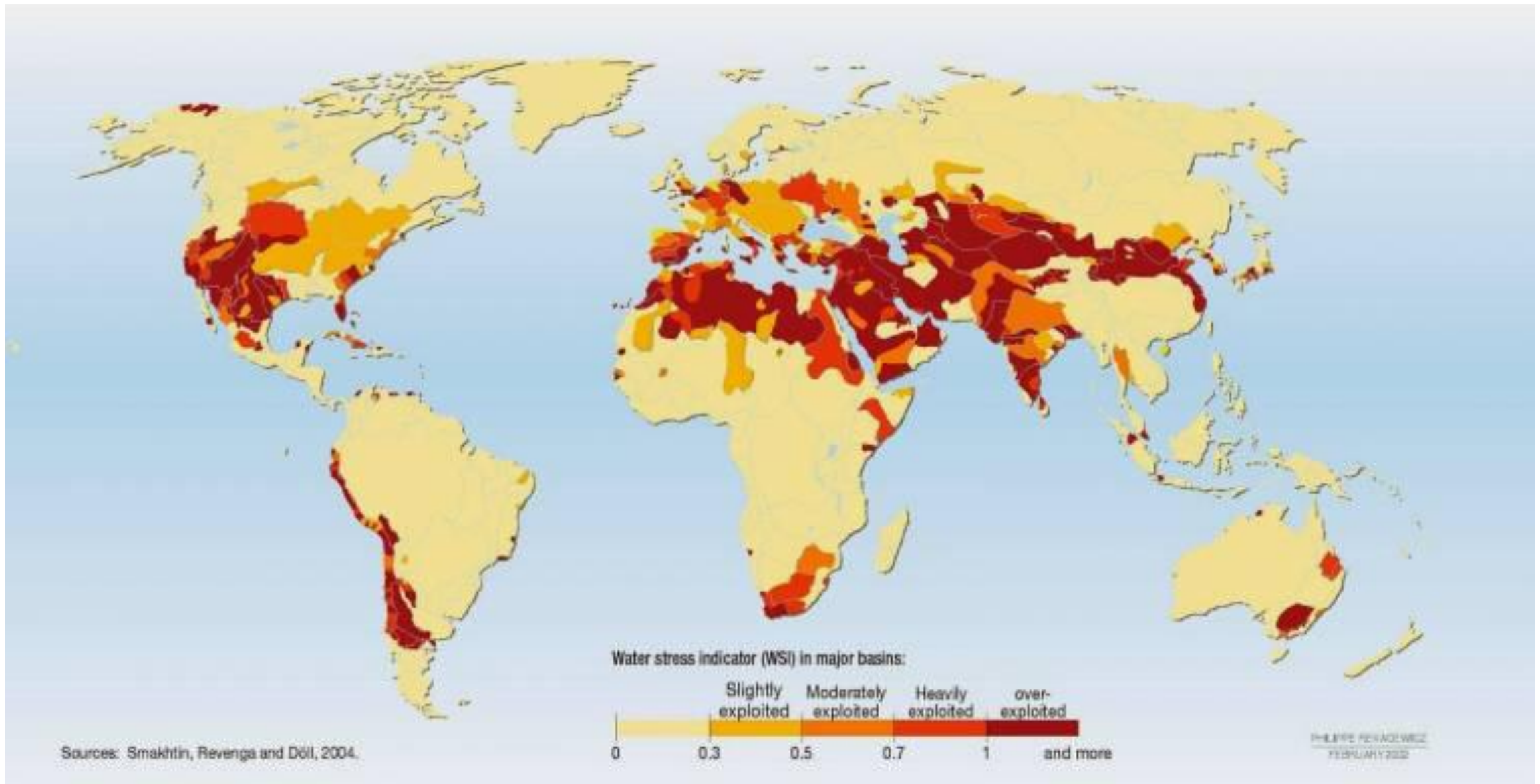


Net electricity generation by fuel, India
trillion kilowatthours



Share of net electricity generation, India
percent





Sources: Smakhtin, Revenga and Döll, 2004.

Water stress indicator (WSI) in major basins:

Slightly exploited Moderately exploited Heavily exploited over-exploited

0 0.3 0.5 0.7 1 and more

PHILIPPE PERNOUWÉZ
FEBRUARY 2022

