

# Cross-Fora Collaboration

## EGNRET 60 Meeting

24-25 April 2024 – Kaohsiung, Chinese Taipei

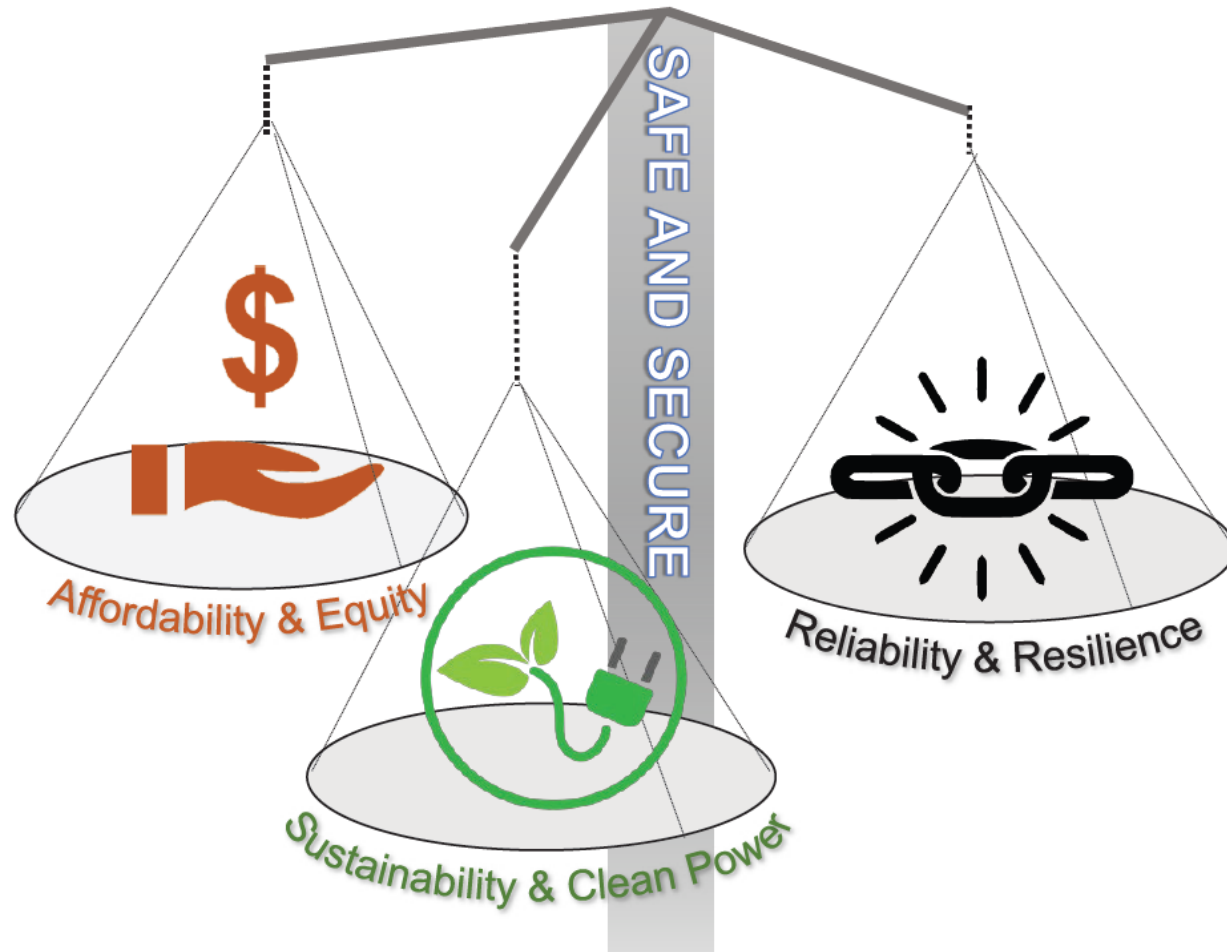
Mr. Glen Sweetnam, EGEDA Chair



# Outline

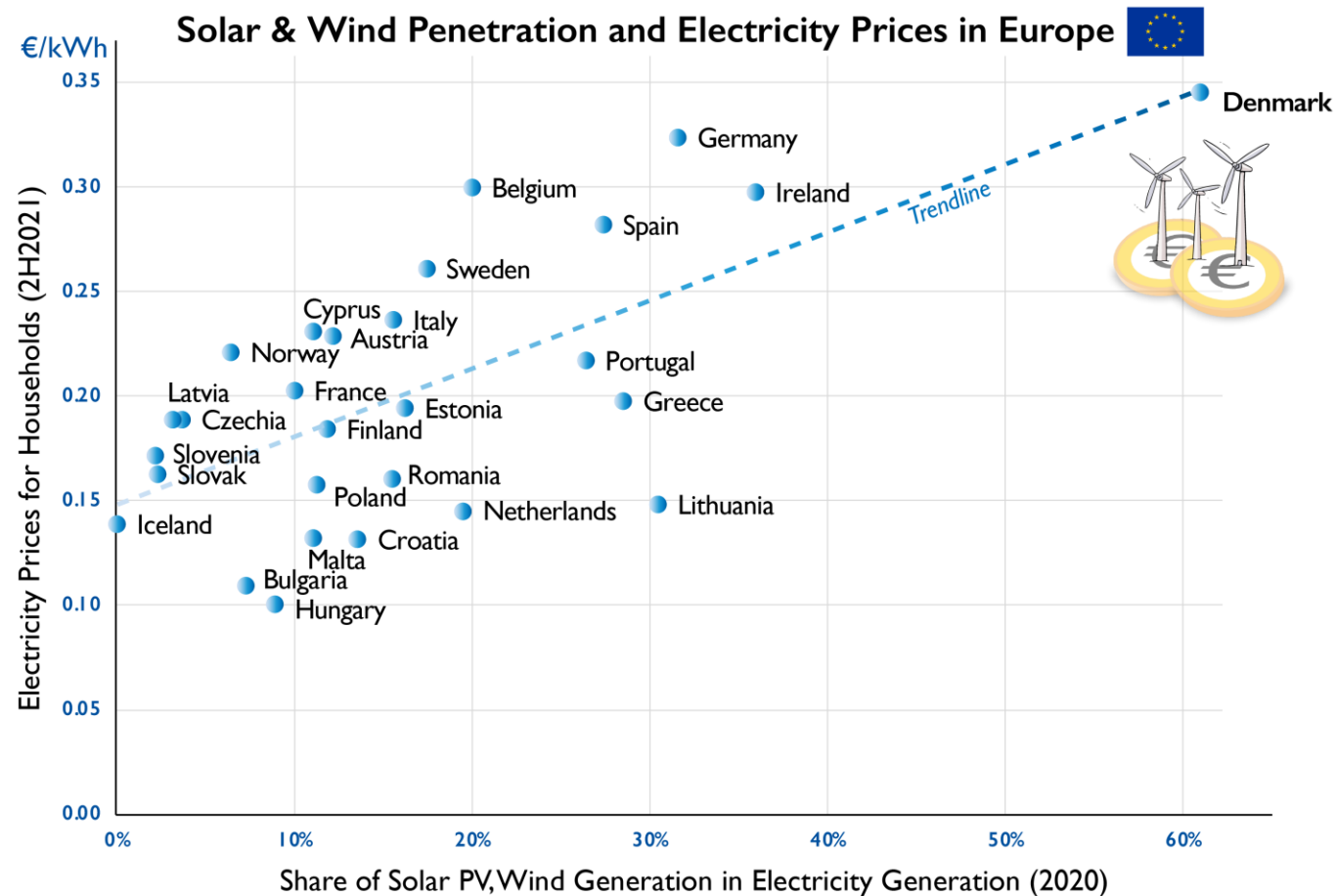
- The energy trilemma
- Adoption of new technologies

# The energy trilemma



Source: National Academies, *The Future of Electric Power in the United States* (2021)

# Integration costs more than offset declining wind and solar prices



Data sources: Eurostat, IEA World Energy Statistics

- Although the cost of wind and solar has declined, the costs of creating grid reliability while using variable renewable sources appear to raise total system costs

# Half of U.S. faced elevated risk of power shortages last winter

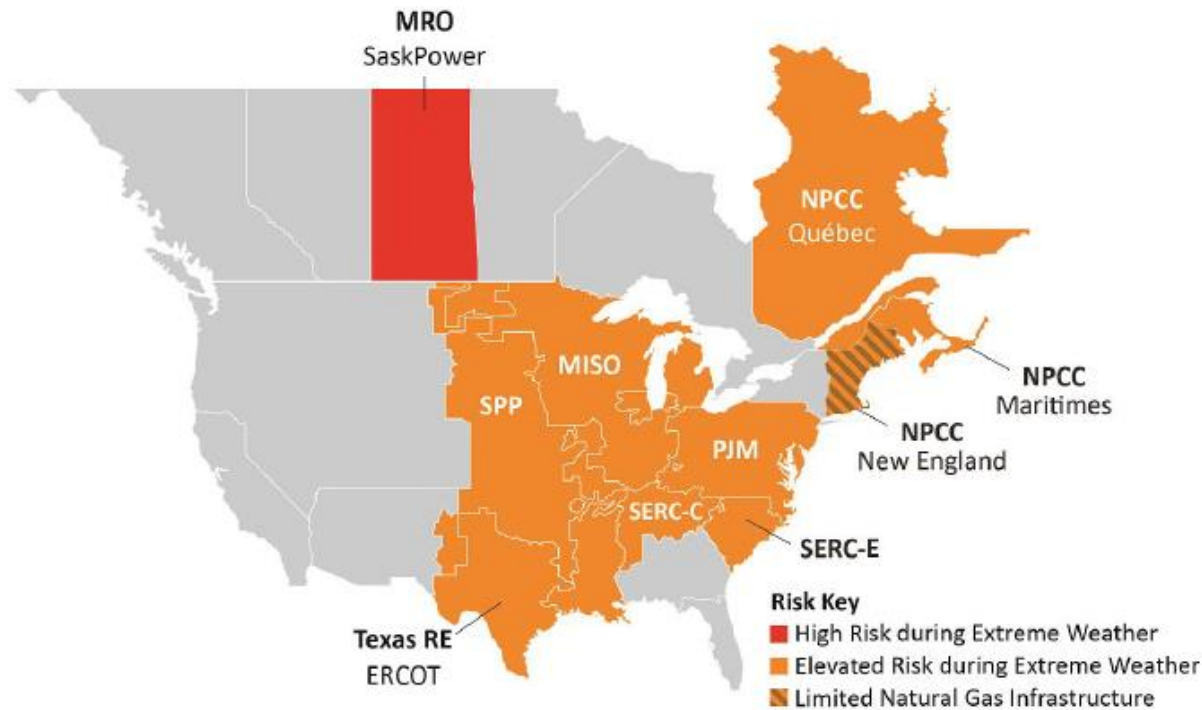
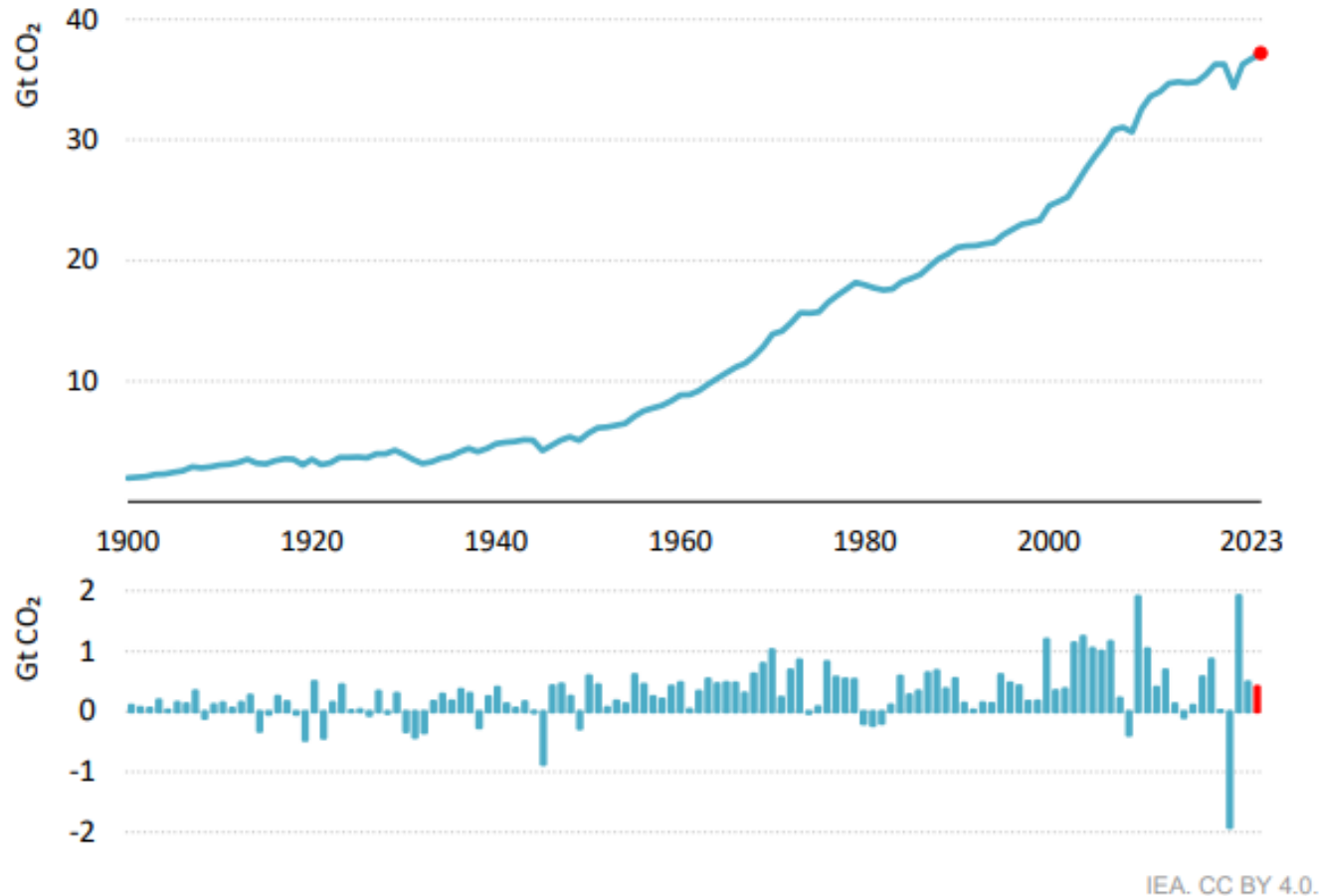


Figure 1: Winter Reliability Risk Area Summary

Seasonal Risk Assessment Summary	
<b>High</b>	Potential for insufficient operating reserves in normal peak conditions
<b>Elevated</b>	Potential for insufficient operating reserves in above-normal conditions
<b>Low</b>	Sufficient operating reserves expected

- A large portion of the North American bulk power system is at risk of insufficient electricity supplies during peak winter conditions.
- During cold events over 20% of generating capacity can be forced off-line at the same time that demand peaks due to electric heating systems.

# IEA estimates that global CO<sub>2</sub> emissions grew 1.1% in 2023



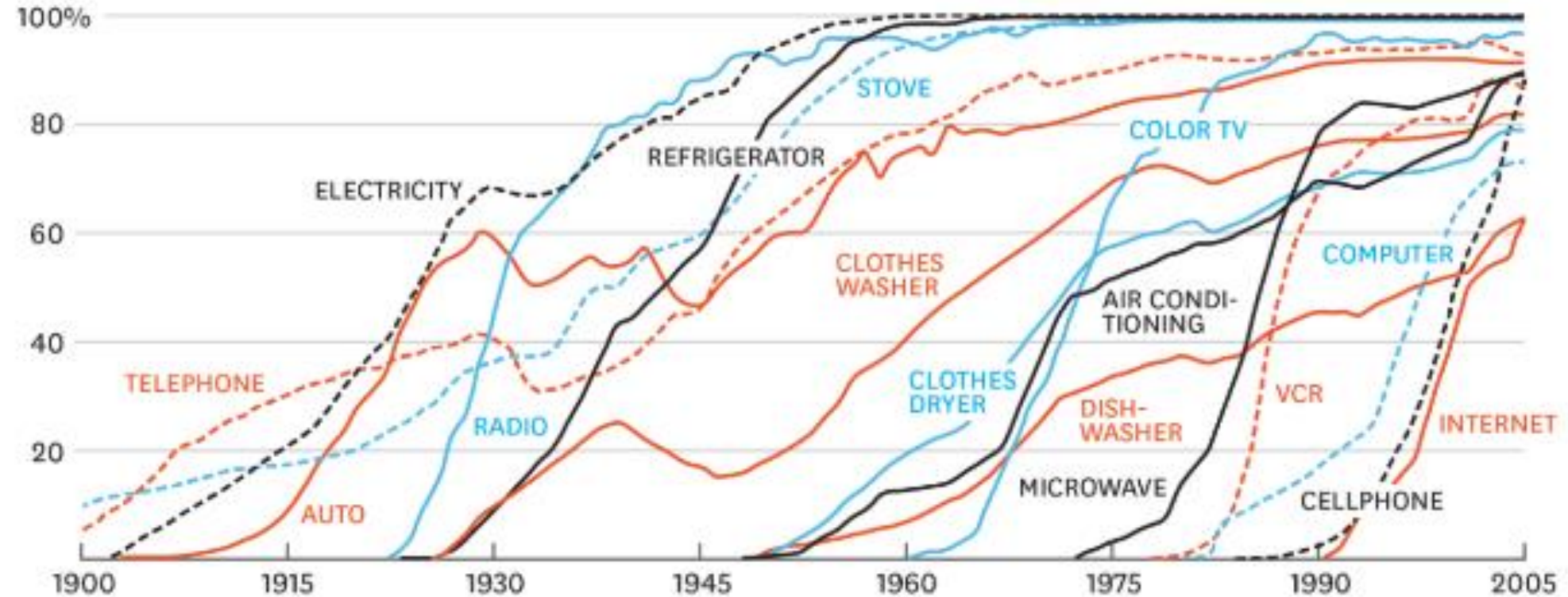
Even though CO<sub>2</sub> emissions from advanced economies have declined approximately 20% since 2005, global emissions continue to rise.

Source: CO<sub>2</sub> Emissions in 2023, IEA

# What characteristics enable rapid adoption of new technologies?

## CONSUMPTION SPREADS FASTER TODAY

PERCENT OF U.S. HOUSEHOLDS

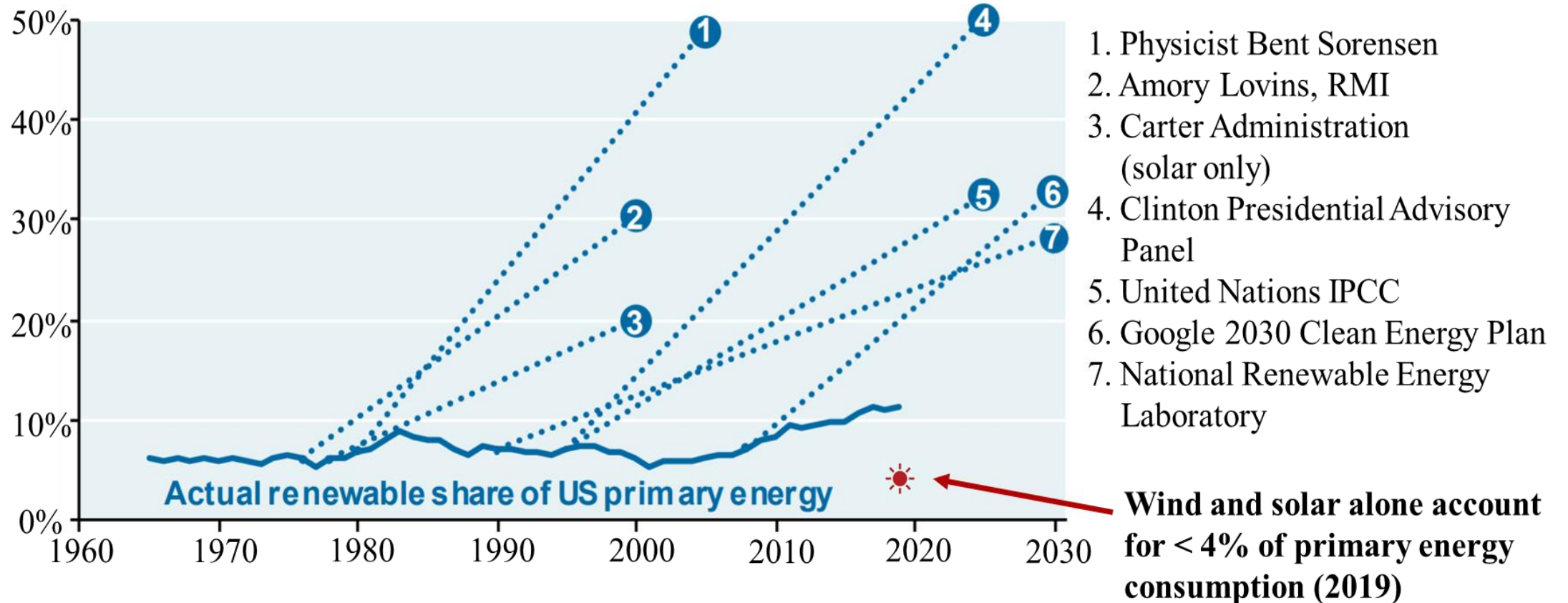


SOURCE NICHOLAS FELTON, THE NEW YORK TIMES

HBR.ORG

# The “Energy Transition” is not new

Renewable energy share of total U.S. primary energy consumption  
Lines start when forecasts were made and end in last year of forecast



Note: Renewables include wind, solar, hydropower, geothermal, biomass, wood and waste.

Source: EIA, listed authors, Vaclav Smil, J.P. Morgan Asset Management Inc. 2019.



# What characteristics enable rapid adoption of new technologies?

- Substantially different or less expensive than alternatives
- Low capital costs
- No or limited new infrastructure required
- Software as opposed to hardware

# Summary

- Various pathways for APEC economies
- In person discussion among experts
- Forum that encourages sharing of real-world experiences

**Thank you.**

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