

Adding Economics to Energy Engineering

What will Happen? Who will win?

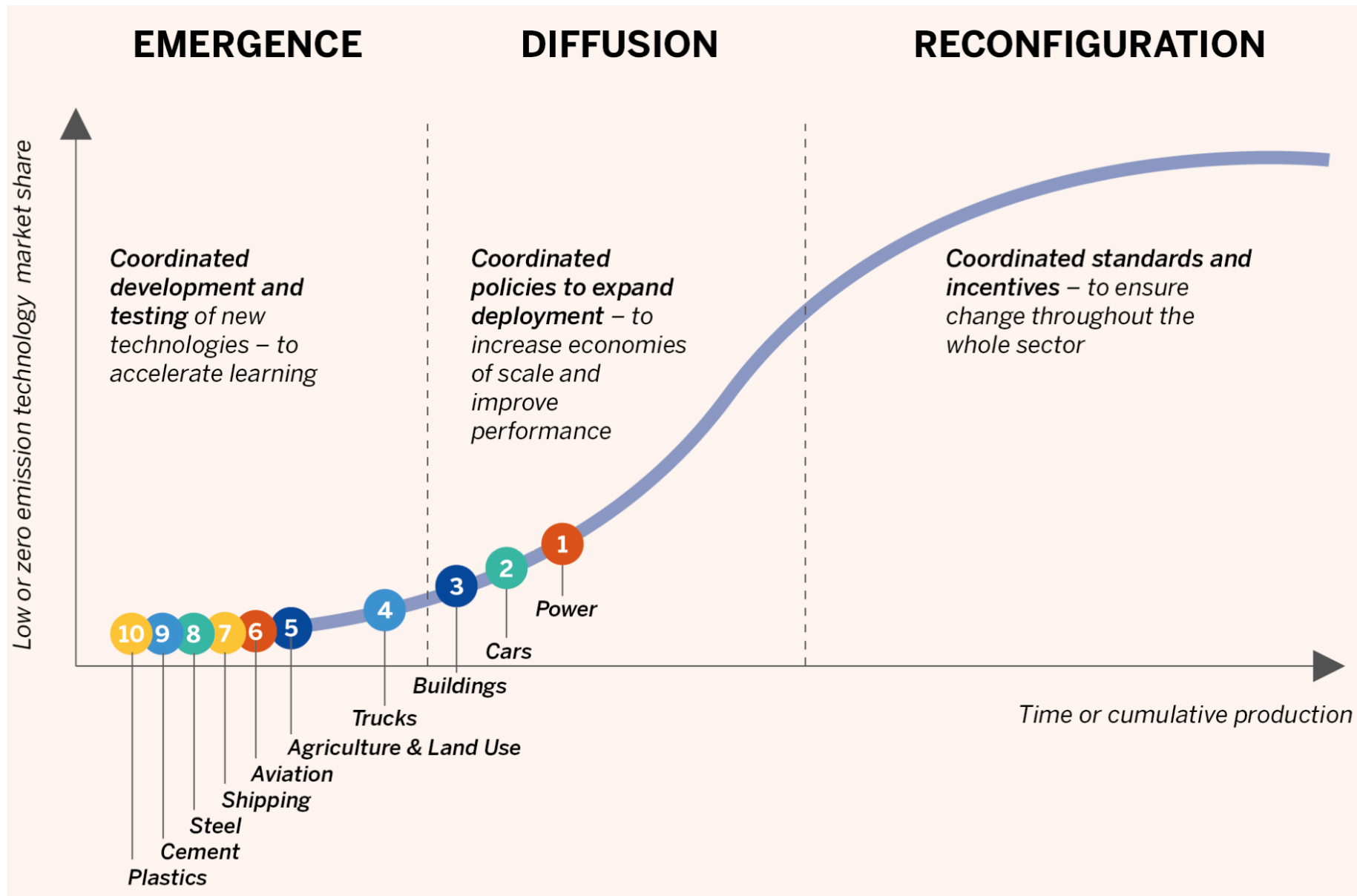
David G. Victor

30 January 2023

Four Messages Today

1. Real Policy Action likely to be highly fragmented
2. Decarbonization is capital intensive, which rewards firms and governments that can send credible signals
3. Global markets are good news for innovation and deployment of new technology
4. Metrics for Progress are wrong, and lead to pessimism

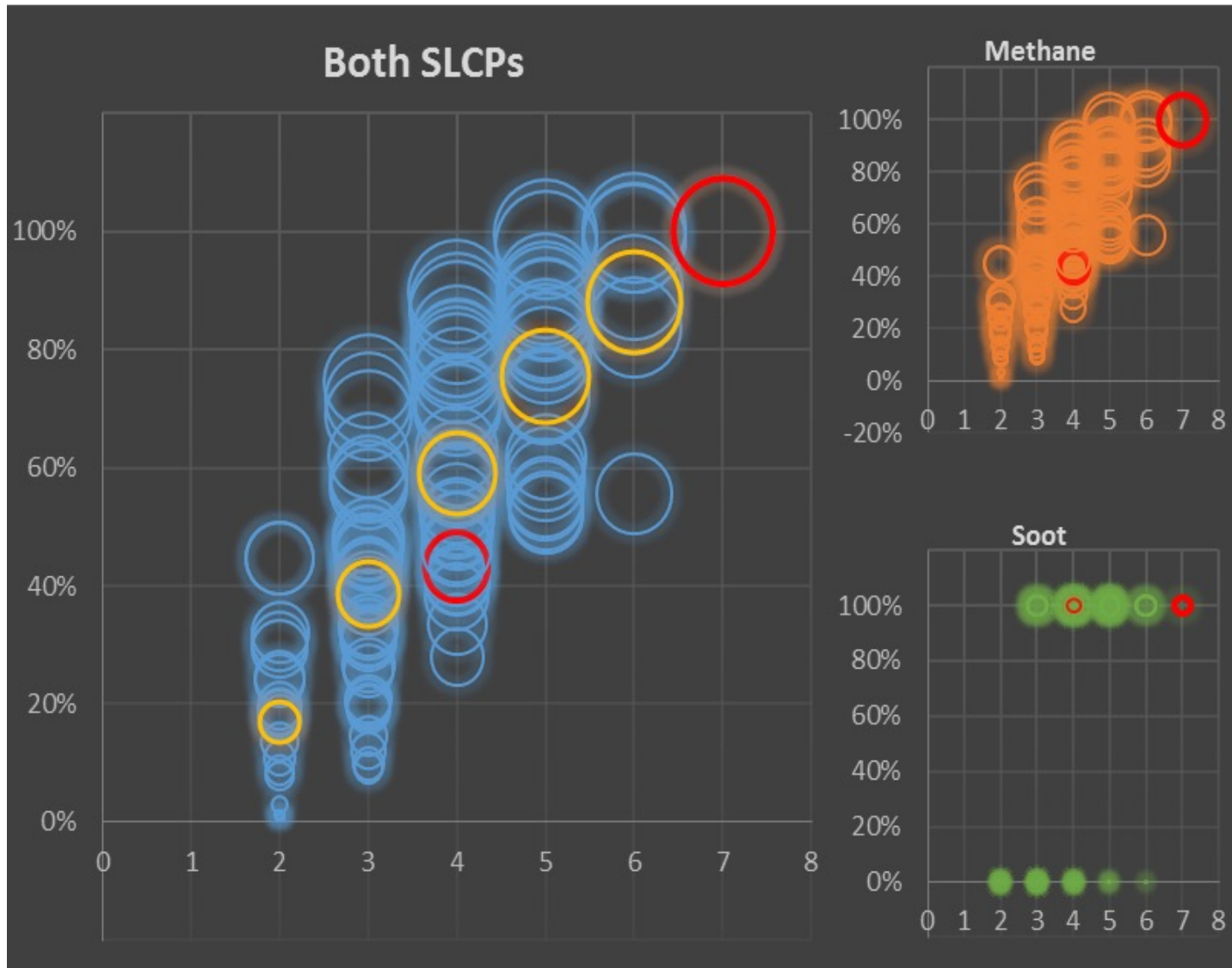
1. Fragmented Policy Action



Source: Victor, Geels, Sharpe, 2019, *Accelerating the Low Carbon Transition*.
Energy Transitions Commission

The Potential for Small Clubs of Methane and Soot Emitters:

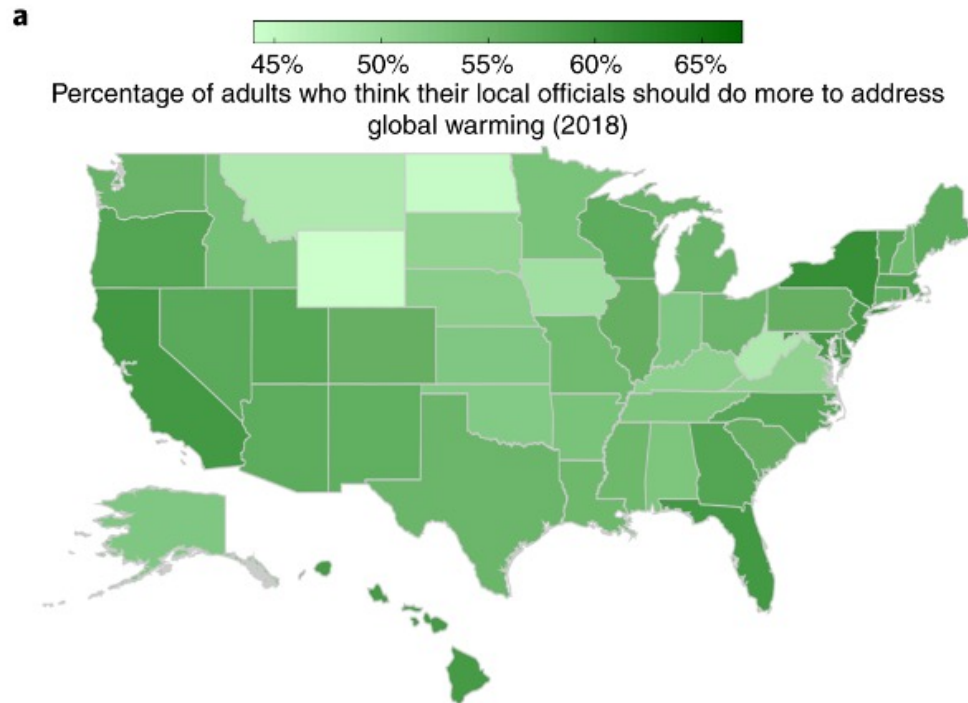
Gains from Cooperation as a Function of Club Size



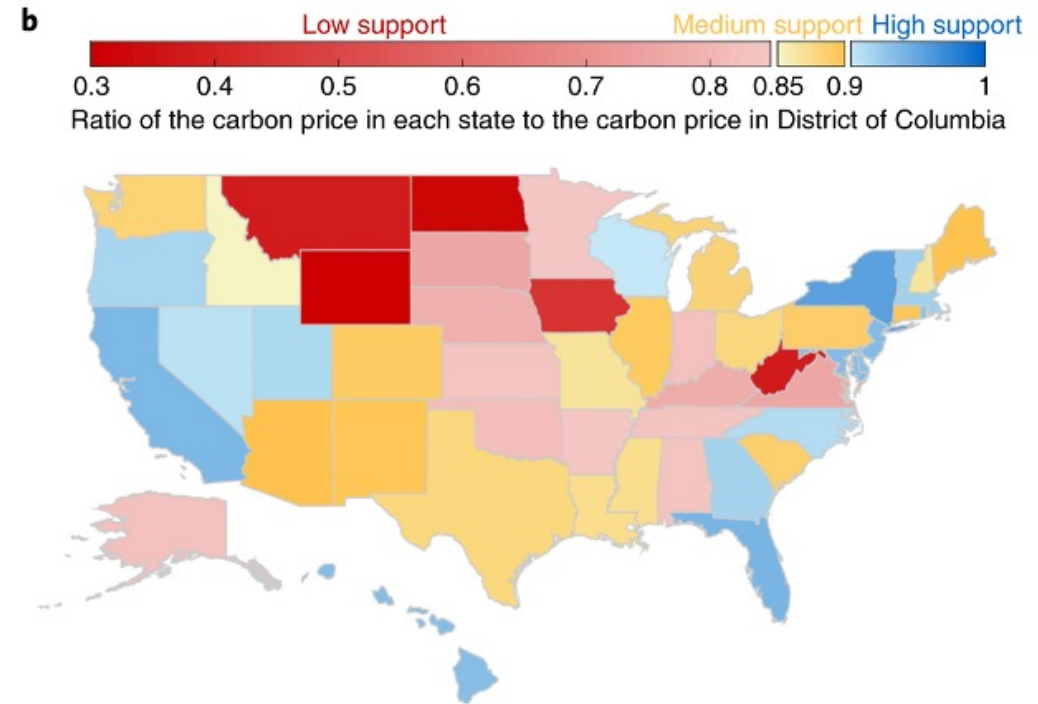
Source: Aakre et al.,
*Nature Climate
Change* (2017)

Variable Geography: Public Support & Policy Action

Public Support



Policy Stringency



Peng, Iyer, Binsted, Marlon, Clarke, Edmonds & Victor,
Nature Climate Change (2021)

HOOVER INSTITUTION PRESS

Publications from the Hoover Institution

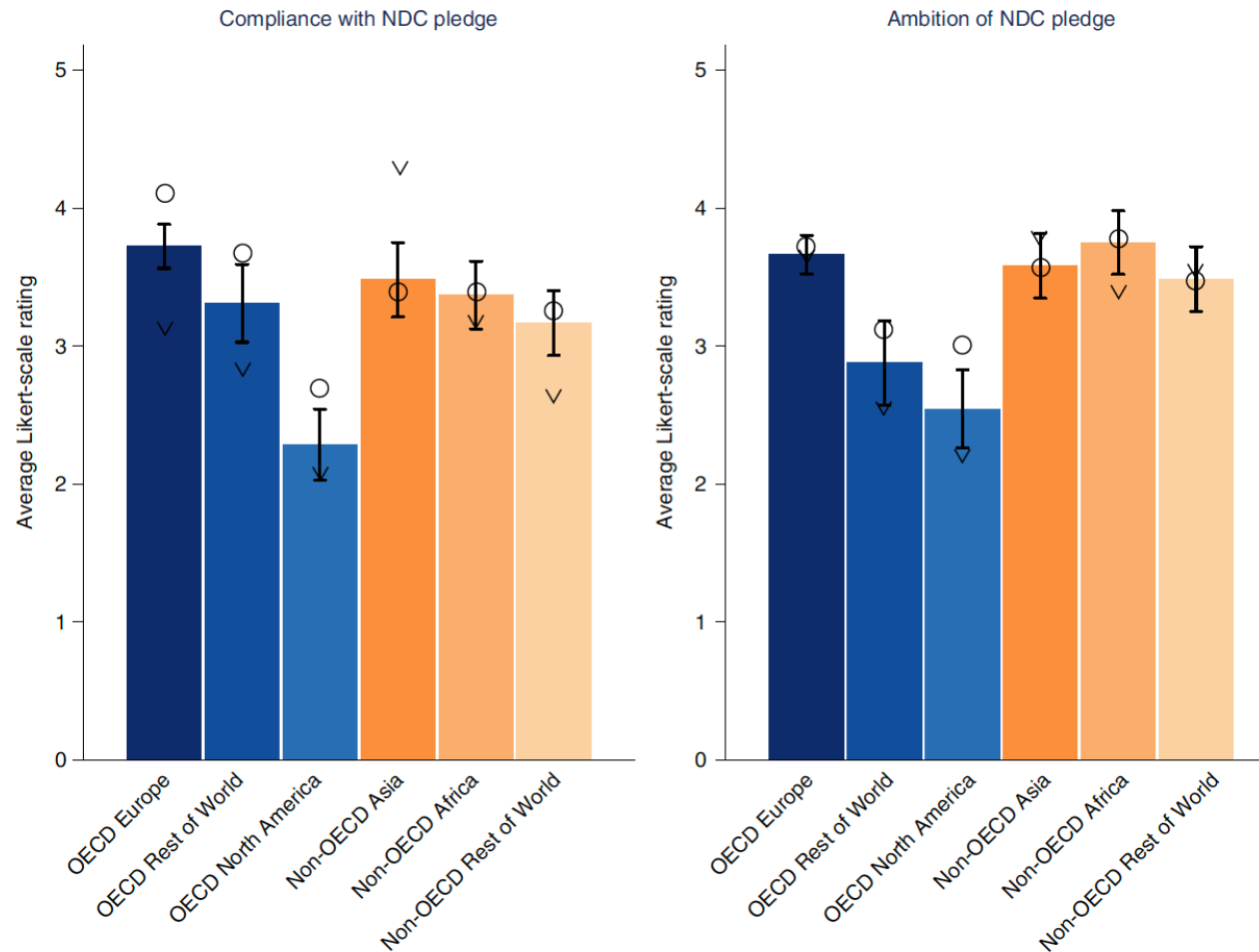
ESSAYS

Transformation of the American Electric Grid: The Unmet Agenda

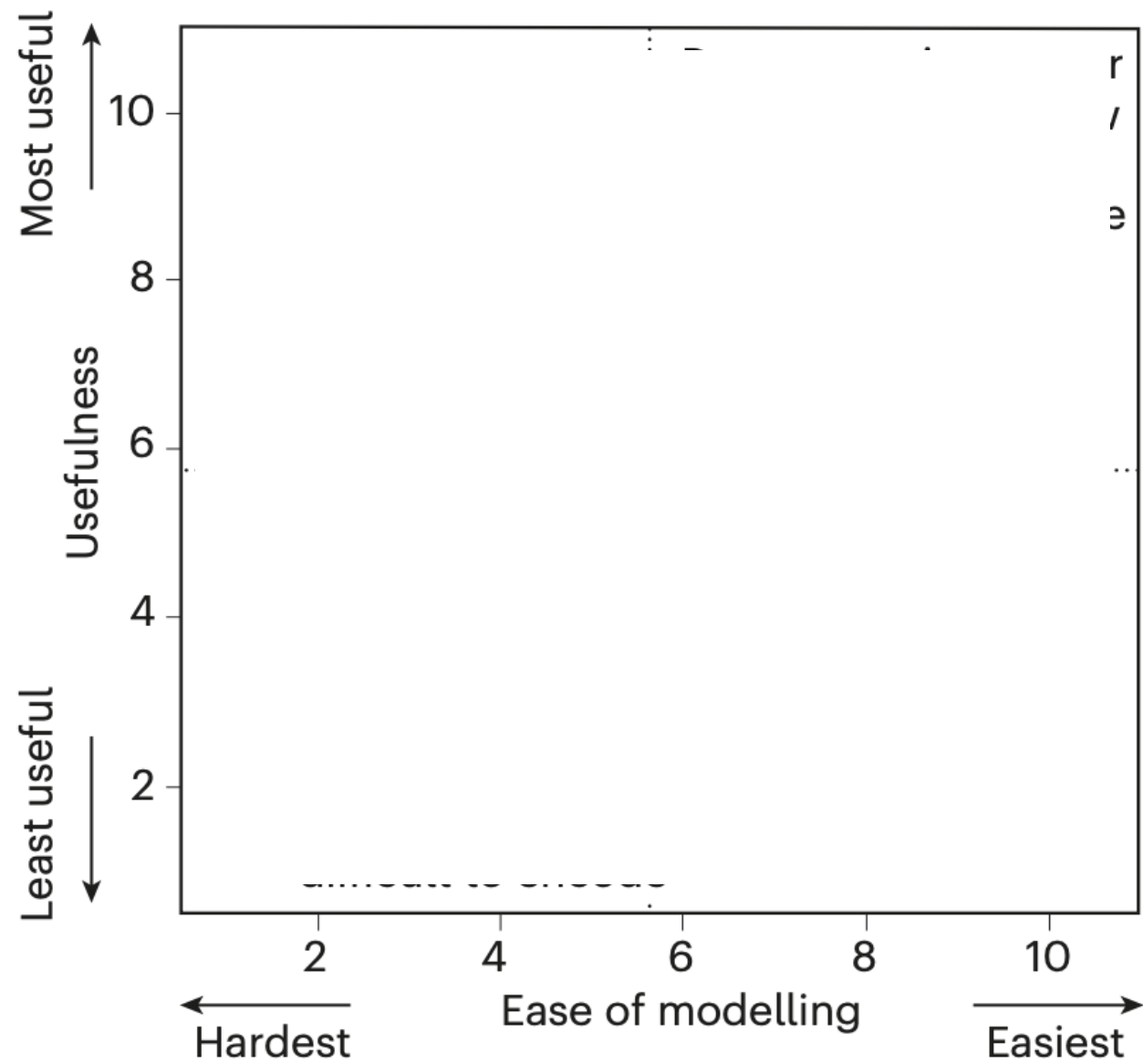


2. Decarbonization is Capital Intensive

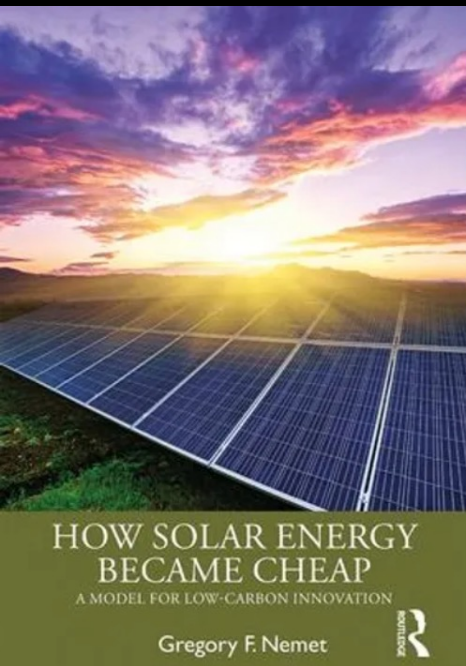
A Key Policy Challenge: Credibility



Source: Victor et al, *Nature Climate Change* (Sept 2022)



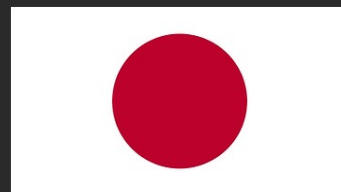
3. Global Markets are Good for Driving Down Costs and Expanding Deployment



HOW SOLAR BECAME CHEAP



Technology Push



Niche Markets



Demand Pull



Scale Up

1960

1970

1980

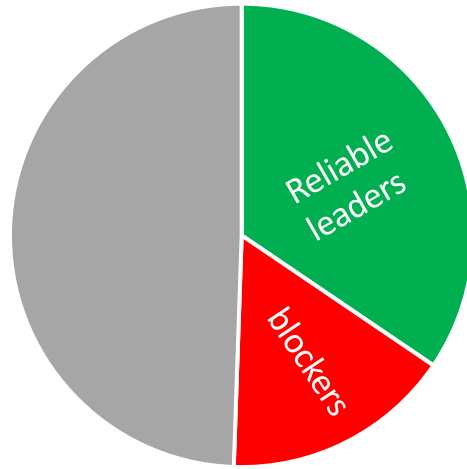
1990

2000

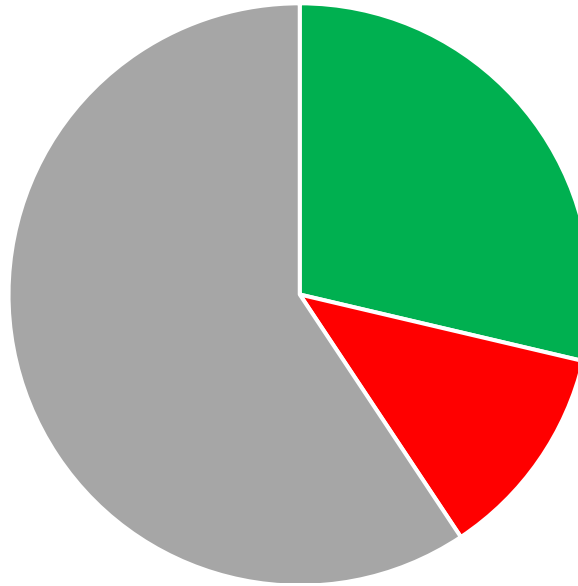
2010

2020

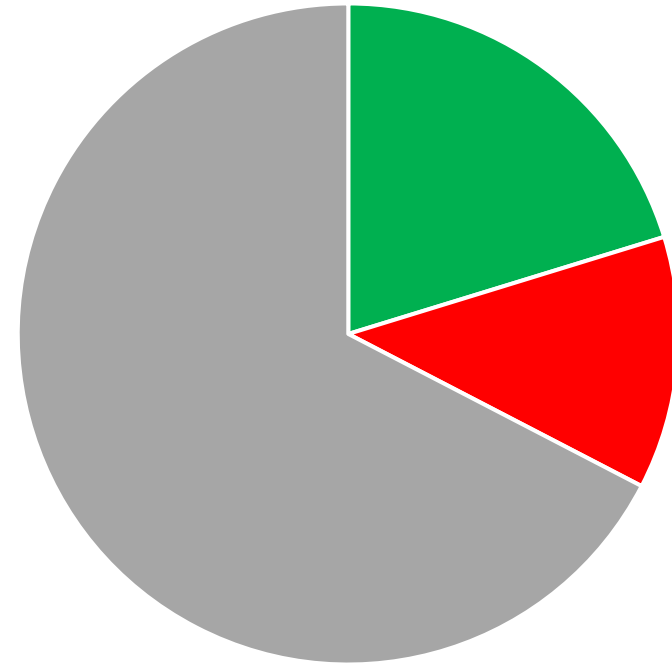
International Leadership on Climate Change



1990
(start of UNFCCC)
22 Gt CO₂



2005
(many base years)
29 Gt CO₂

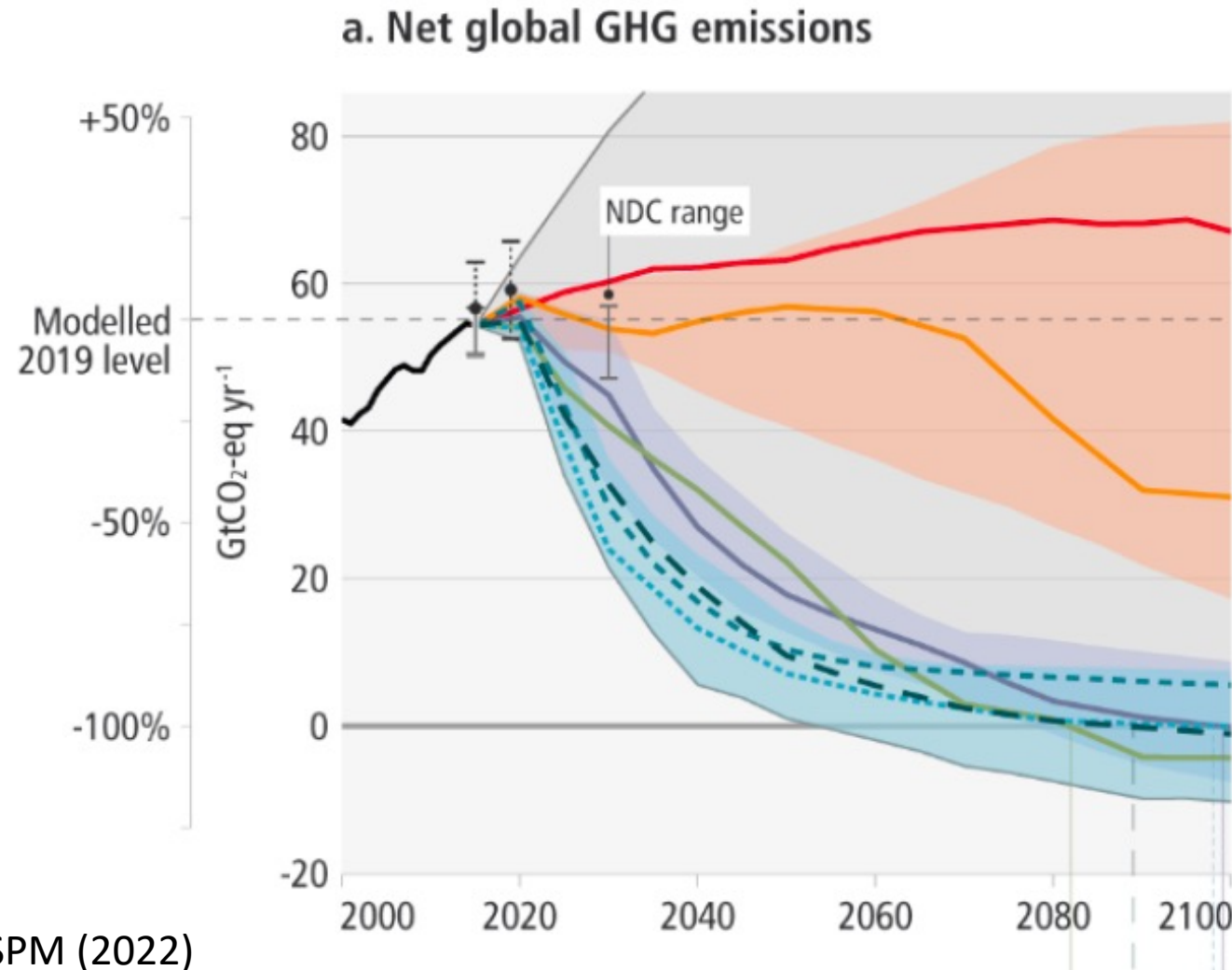


2018
(today)
37 Gt CO₂

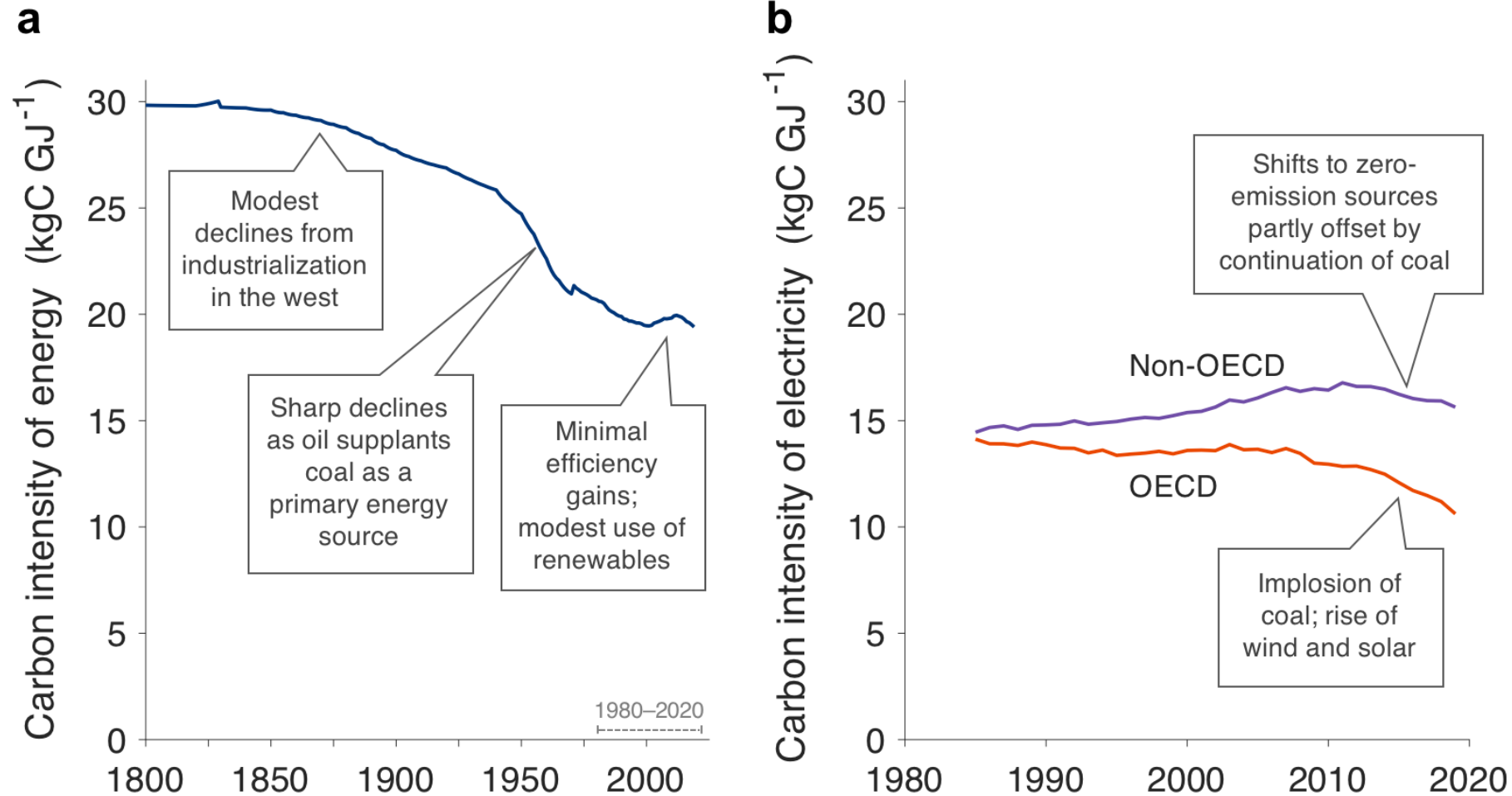
Sources: Victor, *The New York Times* (2019);
Jones & Victor, Brookings (2018)

4. It Doesn't Look Like it, but
We are Making Progress

How to Stop Global Warming: 2°C (purple), 1.5°C (blue), and current (red line)



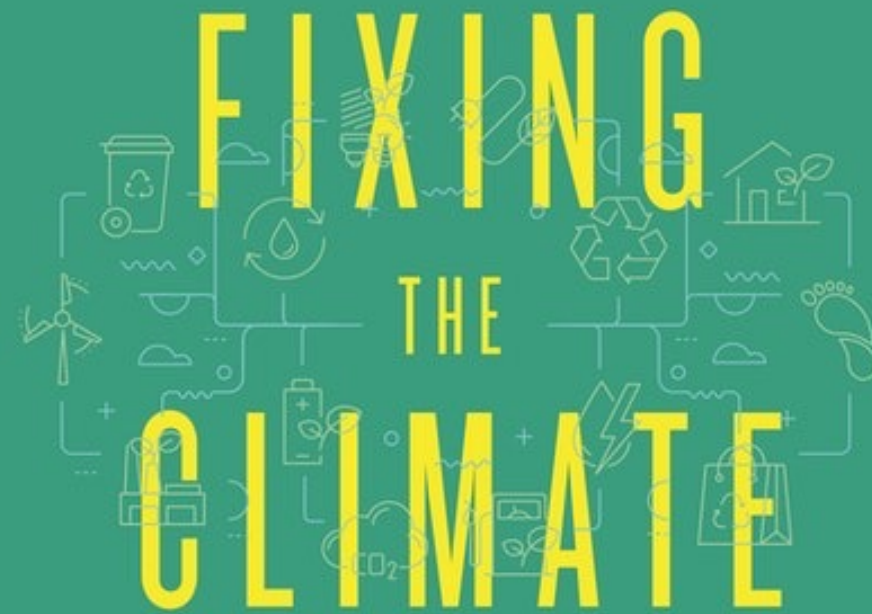
The Global Energy Transition is Moving Slowly



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FIXING THE CLIMATE



Strategies
for an
Uncertain World



CHARLES F. SABEL &
DAVID G. VICTOR



FOREIGN AFFAIRS

The New Way to Fight Climate Change

Small-Scale Cooperation Can Succeed Where Global
Diplomacy Has Failed

BY ARUNABHA GHOSH, ARTUR RUNGE-METZGER, DAVID G. VICTOR, AND JI ZOU

November 4, 2022



Thank You