

Pragmatism and Climate Policy

EES 3310/5310

Global Climate Change

Jonathan Gilligan

Class #38: Monday Nov. 26 2018

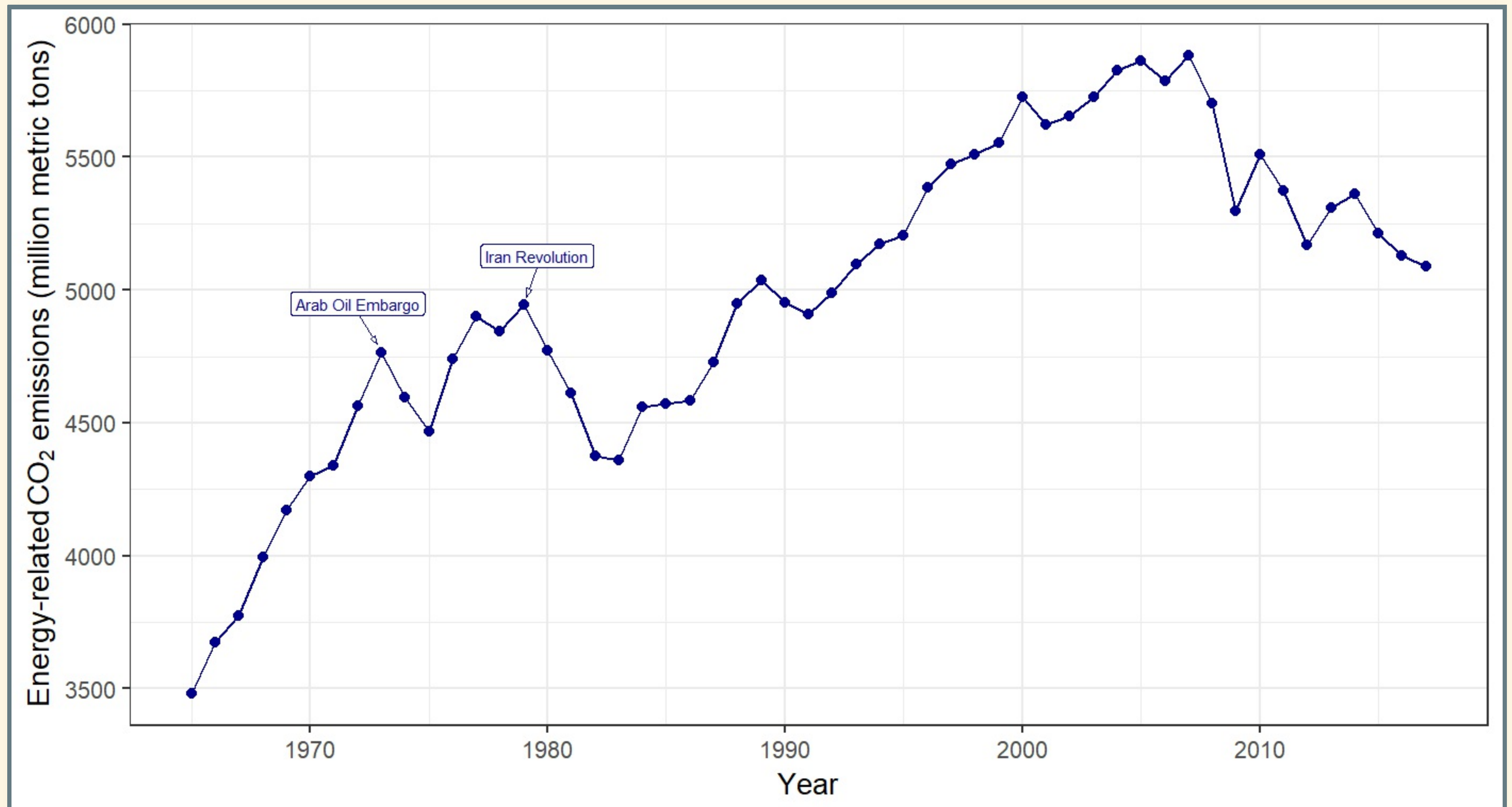


Challenges of Decarbonization

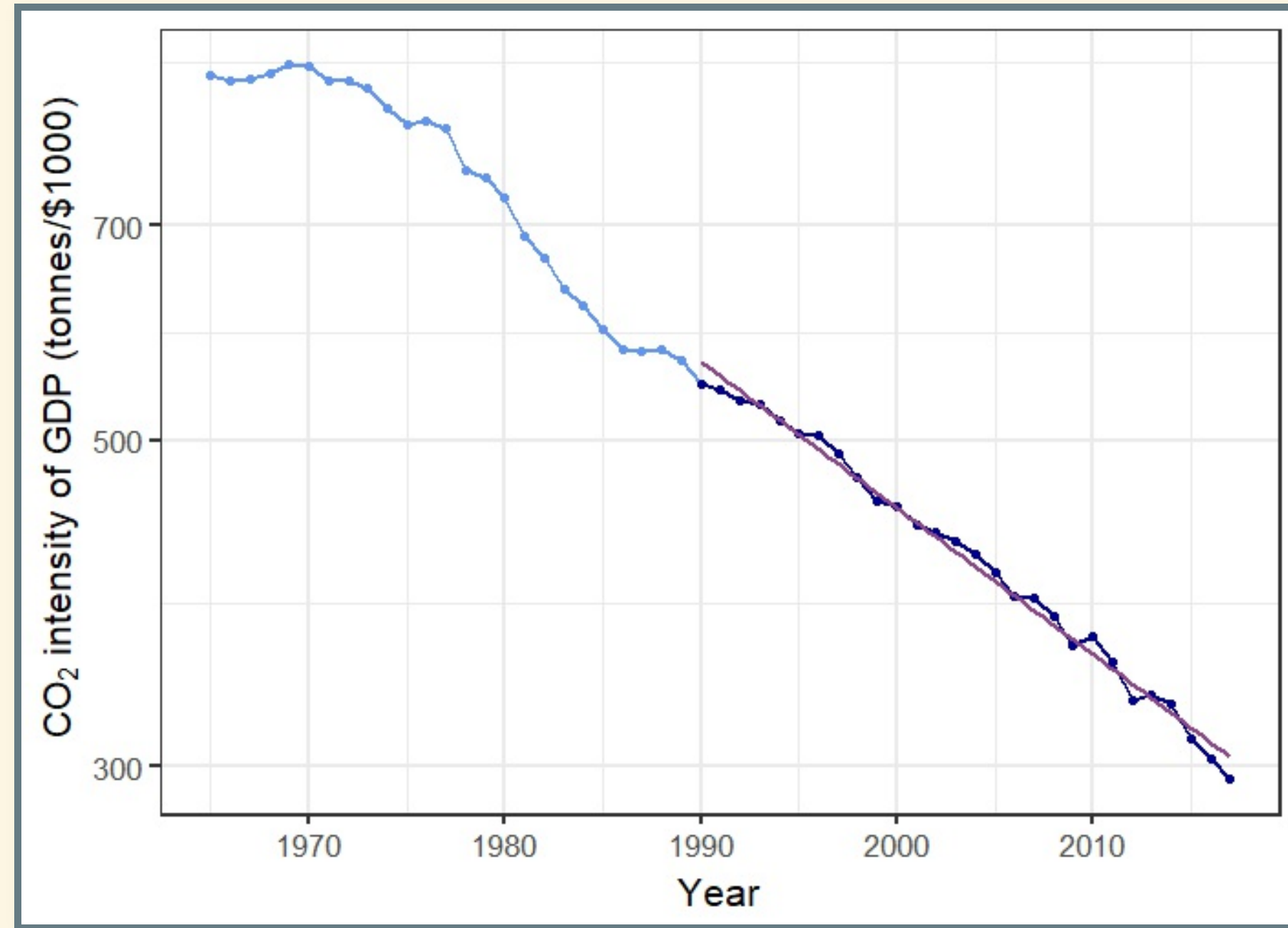
Challenges of Decarbonization

- How hard will it be to reduce CO₂ emissions?
 - Nordhaus:
 - What technology can replace fossil fuels?
 - What policies can stimulate innovation, investment, production, purchase of clean technology?
 - Pielke:
 - The biggest challenge is cost: $RE < C$
 - Make clean technology cheaper than fossil fuels and the problem is solved.

Perspective: US CO₂ Emissions

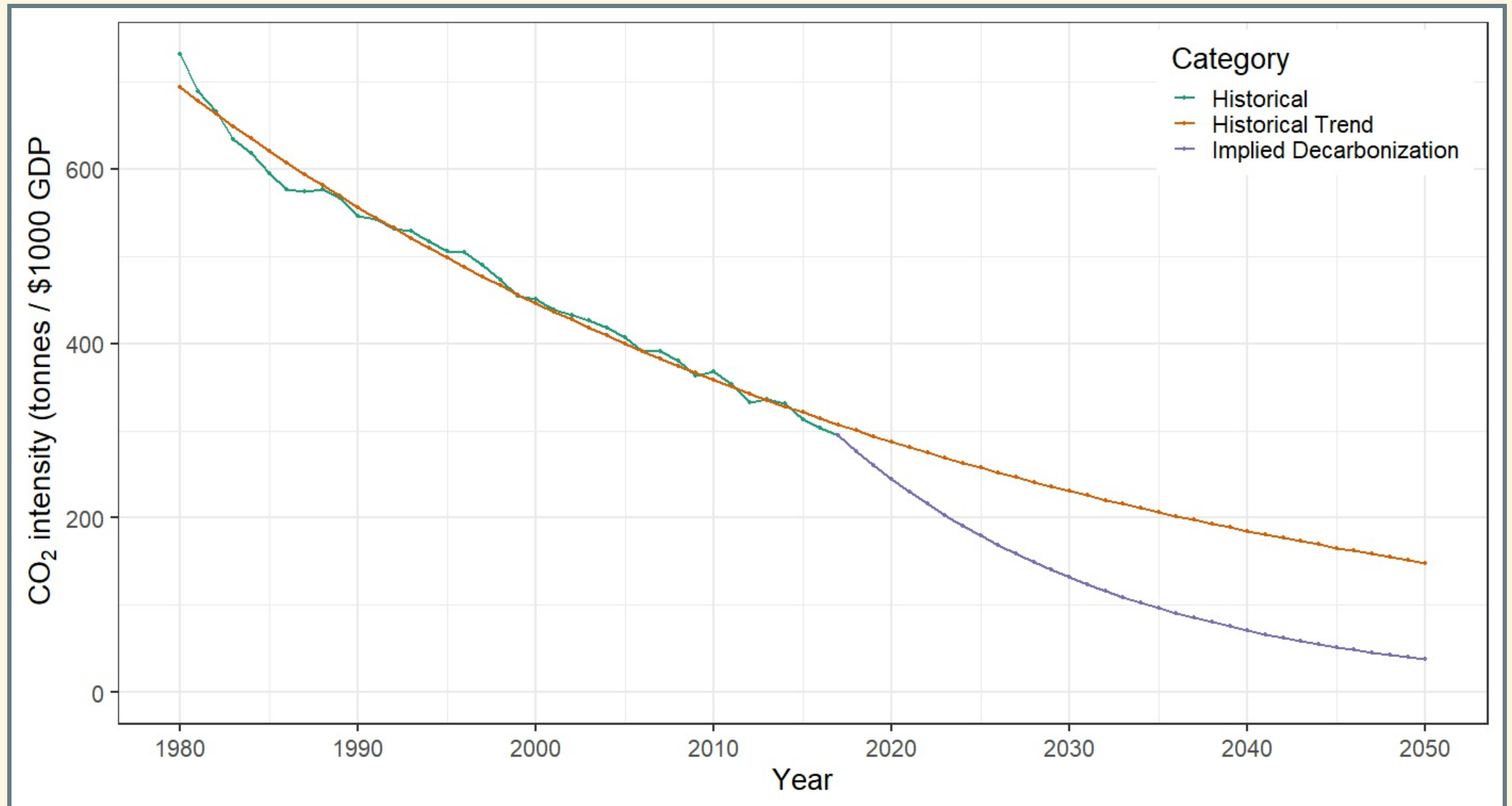


Rate of Decarbonization

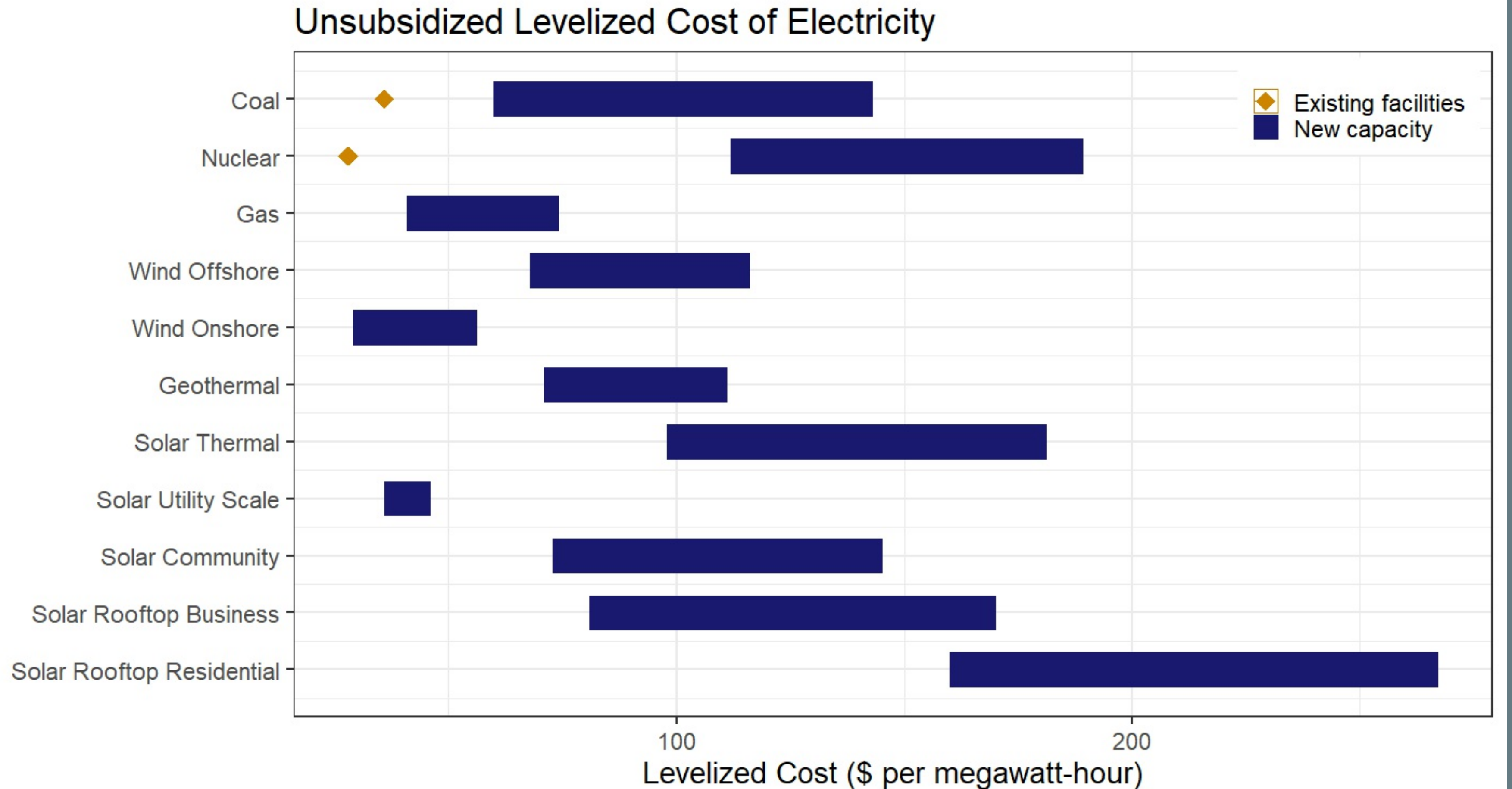


- 2009 policy goal: US emissions 83% less than 2005 by 2050
- *ef* must drop by 6.2% per year
- Actual rate has been about 2.2% per year

Implied Decarbonization



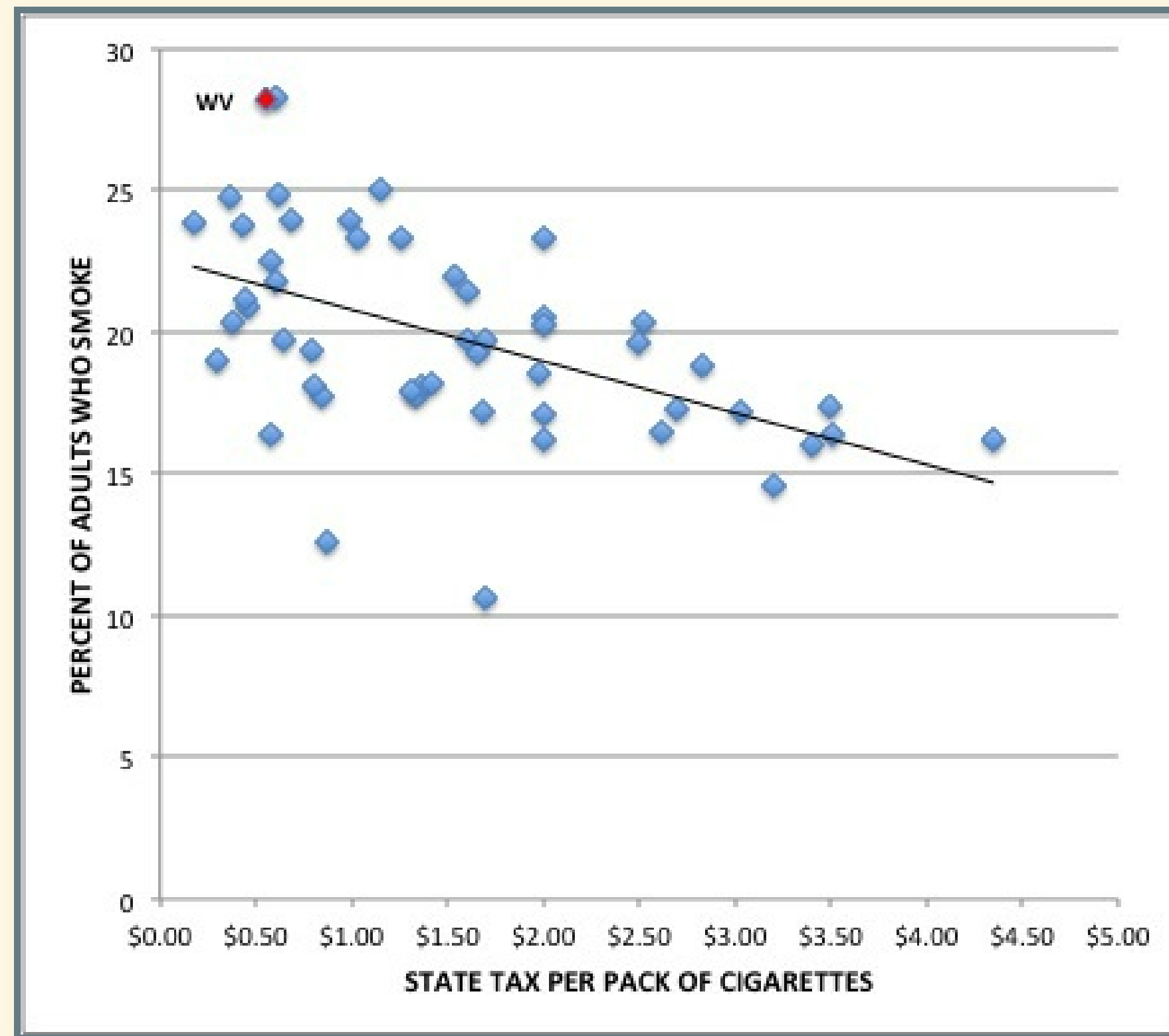
Cost of Decarbonization



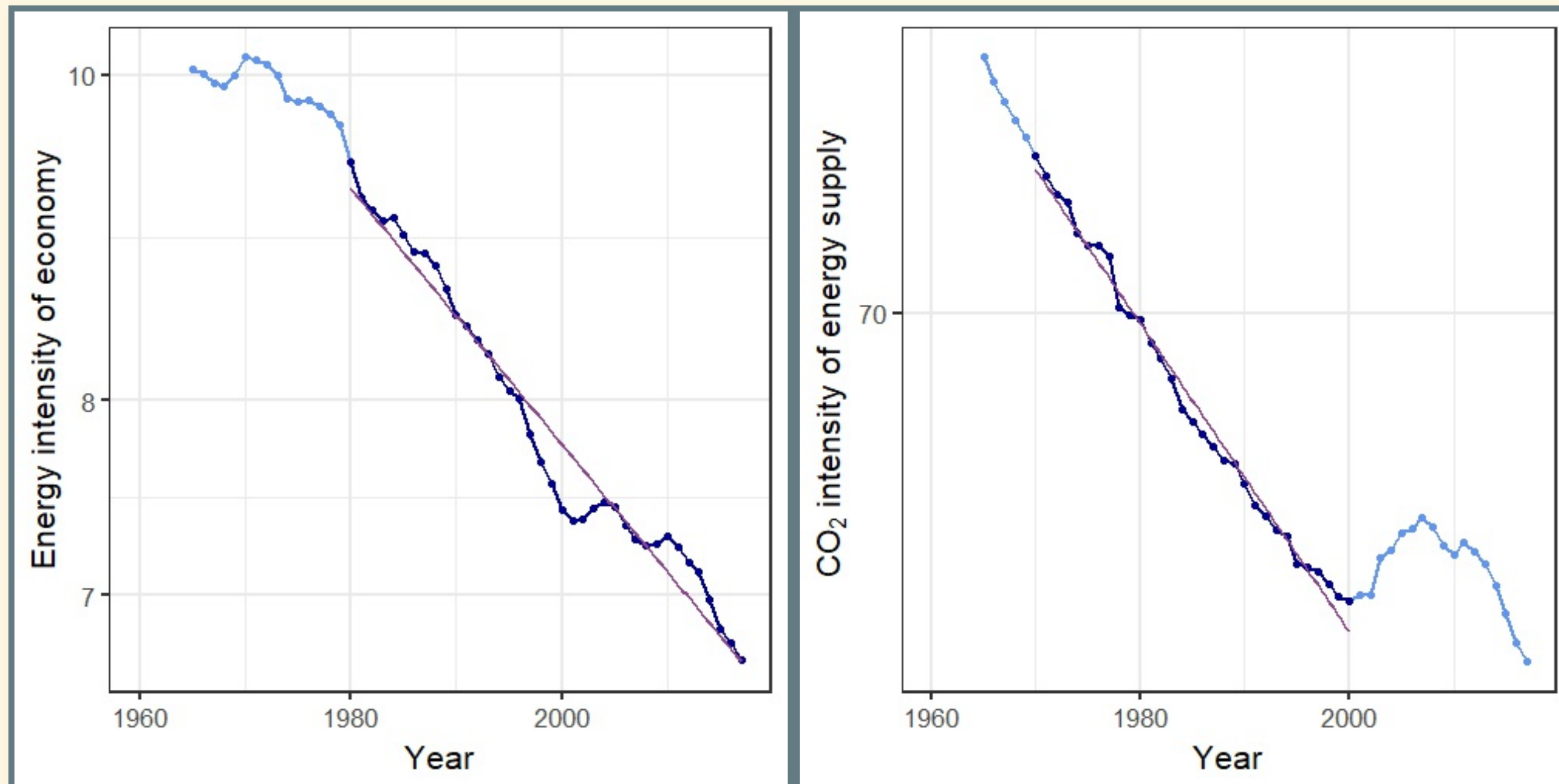
Pielke's Views

Tax on death?

- What do you think of Pielke's argument?



Challenge of decarbonizing



- Trend in e (1980–present): 0.9% per year.
- Trend in f (1970–2000): 0.5% per year.
 - Trend stopped in 2000, but rapid decrease since around 2008.
- So far: Decarbonization driven much more by efficiency than clean energy.
- Rebound: greater efficiency → more consumption.

Energy Poverty



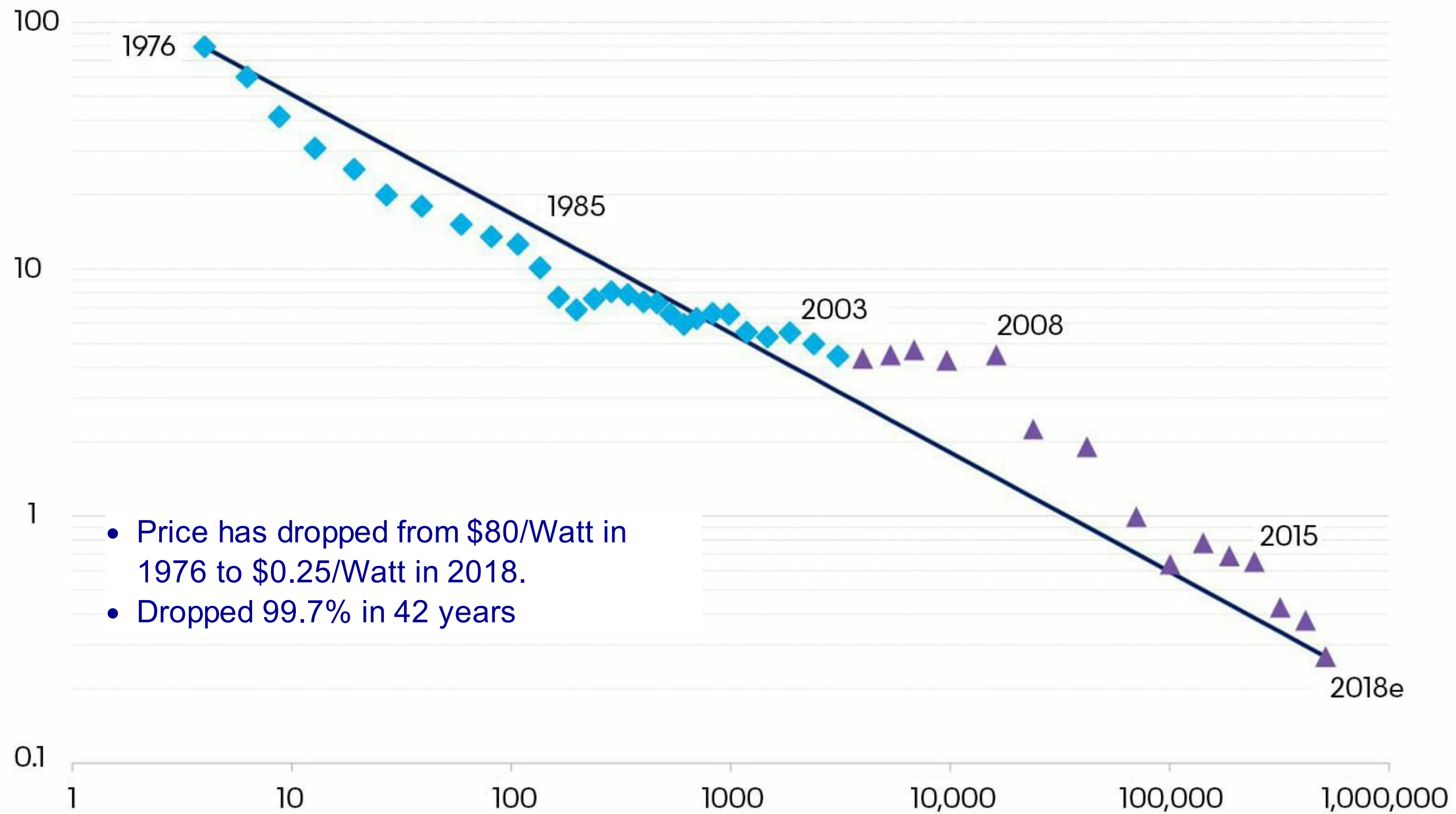
- 1.2 billion people (17% of planet) lack access to electricity
- 2.7 billion (38%) lack clean cooking facilities
- 95% in sub-Saharan Africa or developing Asia

Nordhaus's Perspective

Innovation

BNEF experience curve for crystalline-silicon PV module prices

Module price (\$/W, 2018 real)



◆ Historic prices (Maycock)

▲ Chinese c-Si module prices (BNEF)

— Experience curve at 28.5%

Source: Bloomberg NEF

Innovation Policy

- Knowing price of CO₂ will rise provides incentive to invest in R&D
- Valley of Death:
 - Technology looks promising in laboratory
 - Potential for big profits
 - Many years, lots of money to turn laboratory device into product
 - Product development might fail
 - Product might not sell
 - Competitors might copy product
 - Valley of death
 - Government support to cross valley of death

Pielke's Policy Proposal

Pielke's Policy Proposal:

- Competition within government
- Public-works model
- Demonstration projects
- Government as consumer of energy innovations
- \$5/ton carbon tax (\$0.04 per gallon gas)
 - invest in clean-energy R&D
- Monitor progress
- Develop “plan B” (geoengineering)

Obliquity

- Appeal to people who don't care about climate change
 - Cheaper energy
 - Reduce pollution (smog, etc.)
 - Reduce dependence on foreign oil