

Renewables: The Politics of a Global Energy Transition

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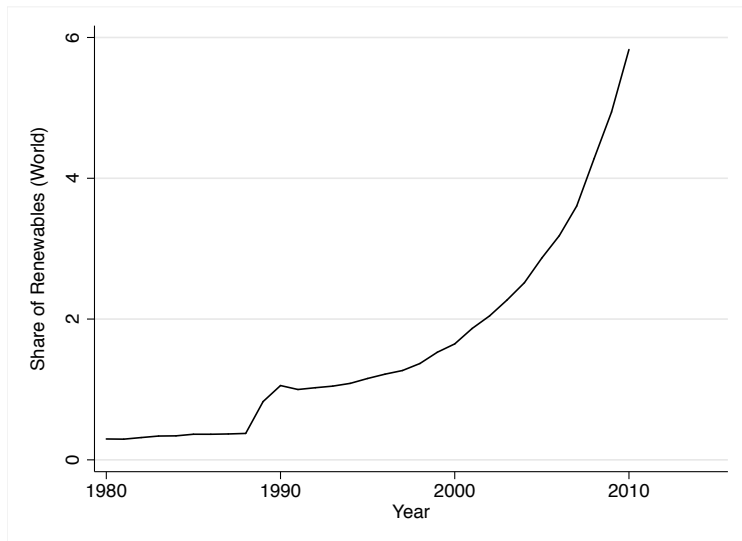
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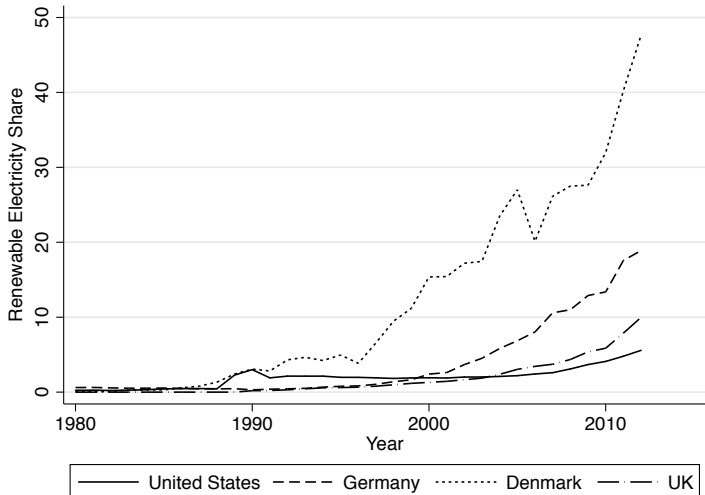
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Renewable Energy Pessimism

“Other renewables ... are expected to be the fastest growing primary energy sources. Despite this rapid growth, the share of renewables climbs to only 3% by 2020 from the current 2%. Power generation in the OECD countries accounts for most of this increase.”

— *World Energy Outlook 2000*

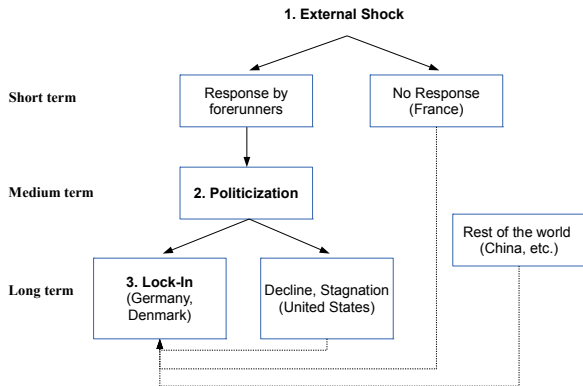




Motivation

- Climate negotiations: gridlock
- Overcoming carbon lock-in
- Promoting sustainable energy technologies
- Domestic-international interactions

Theory



1. International Shocks

Sudden change in the relative costs and benefits of traditional energy sources

- Carbon lock-in (Unruh 2000)
- Oil crises (1973, 1978), nuclear crises (1979, 1986)
- Window of opportunity for experimental renewable energy policy
- No political opposition due to limited stakes
- Response depends on domestic pre-conditions:
 - ▶ Denmark, United States, Germany
 - ▶ France, Finland, United Kingdom

2. Politicization

The process whereby the arguments in favor of renewable energy policies become contested and renewables became the object of a divide between opponents and supporters.

- Sustain pro-renewable consensus?
- Contesting renewables due to rising costs and challenge to establish interests
- Supporters and opponents of renewables in conflict
- Outcome depends on domestic conditions:
 - ▶ Denmark, Germany
 - ▶ United States

Determinants of Opposition

- 1 Waning of initial shock, effectiveness of initial policy (+)
- 2 Partisan shifts to the right, weak green parties (+)
- 3 Politically influential heavy industry, fossil fuel producers (+)
- 4 Public concern about nuclear power and climate change (-)
- 5 Politically influential clean technology industry, environmental groups (-)

3. Lock-In

- Rapid spread of renewable energy across boundaries:
 - ▶ Investment
 - ▶ Policy

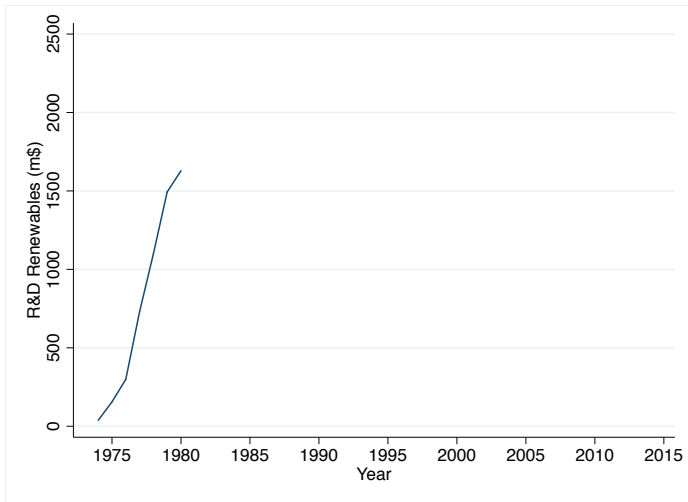
- Diversity of countries:
 - ▶ Portugal, Spain
 - ▶ United States, United Kingdom
 - ▶ China, India, Brazil
 - ▶ Kenya, Thailand

Renewables in the United States: Early Years

“The energy crisis has not yet overwhelmed us, but it will if we do not act quickly ... Because we are now running out of gas and oil, we must prepare quickly for a third change, to strict conservation and to the use of coal and permanent renewable energy sources, like solar power.”

— President Jimmy Carter, 1977-04-18

Renewables the United States: Early Years



Renewables in the United States: Politicization

Year	Issue	Vote Gap
1973	Creation of Energy R&D Administration (yes)	-8
1974	Increase spending for solar demonstration project (yes)	5
1976	Amendment to remove funding for solar (no)	31
1979	Motion to increase funding for wind energy (yes)	9
1980	Amendment to increase funding for solar energy (yes)	17
1981	Amendment to increase funding for solar R&D (yes)	67
1983	Disapprove Reagan deletion of money for solar (yes)	55
1984	Amendment to move money from nuclear to solar (yes)	37
1992	Motion to kill effort to require alternative fuels (no)	40
1994	Motion to table shift from nuclear to renewables (no)	51
1996	Amendment to restore money for renewables (yes)	40
2002	Amendment to require 20% renewables by 2020 (yes)	37
2007	Renewable Fuels, Consumer Protection Act of 2007 (yes)	44

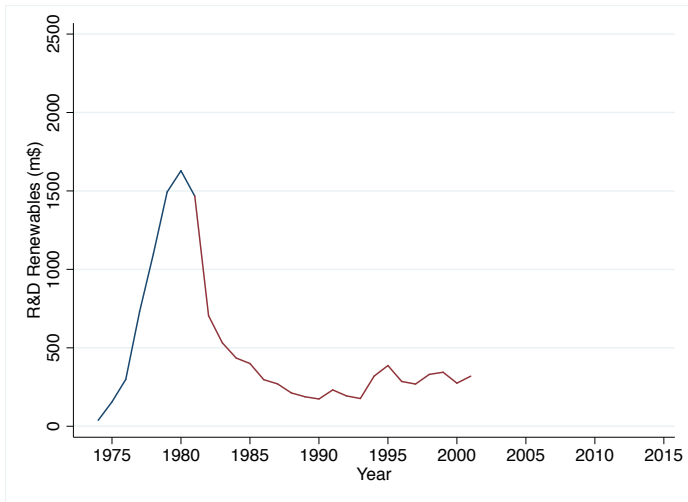
Renewables in the United States: Politicization

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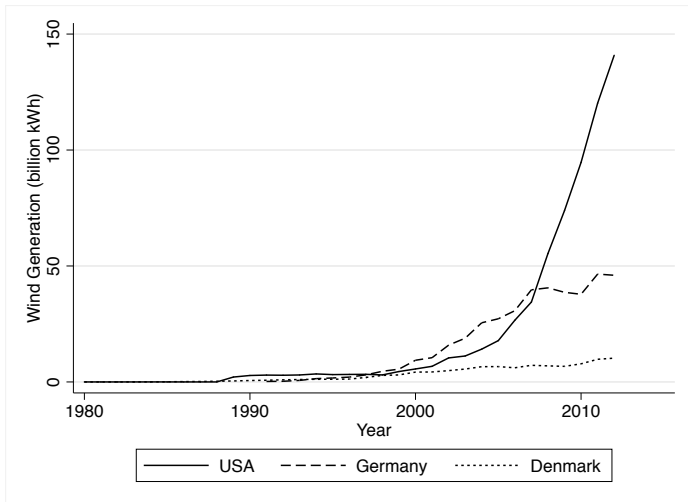
Renewables in the United States: Politicization

- Reagan's conservative energy policy, nuclear notwithstanding
- Beginning 1989, strong heavy industry and fossil fuel lobby
- Weak clean technology lobby (access and resources)
- Lackluster public opinion, especially in regard to climate change

Renewables the United States: Early Years

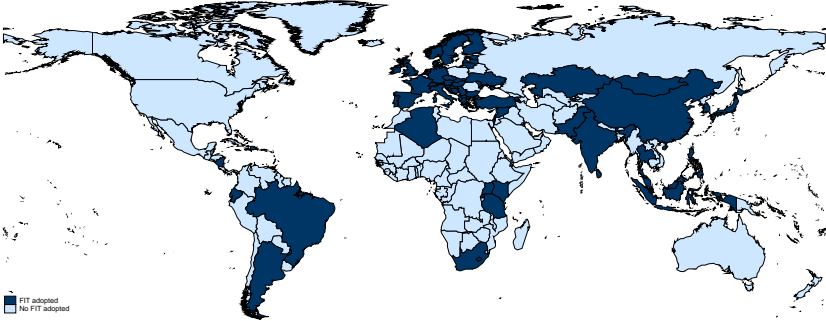


Renewables in the United States: Toward Lock-In?



Global Spread of Renewable Energy Policy

Adoption of FIT across the World



Renewable Energy for China

- 2016: 25% of electricity generation capacity in renewables
 - ▶ 5% solar, wind
 - ▶ Wind alone more important than nuclear now
- World's leading solar panel manufacturer, major wind turbine producer
- Key challenges: cost and grid penetration
 - ▶ Technical performance of solar, wind installations still below OECD countries
 - ▶ Intermittency: need grid improvement, agile policy and regulation
 - ▶ Policy should shift from rapid expansion to cost containment, quality control
 - ▶ On production side, gradual subsidy reduction beneficial

Renewable Energy for India

- 2014: 16% of electricity generation capacity in renewables
 - ▶ 5% solar, wind
 - ▶ Wind alone more important than nuclear now
- Target: 175 GW of renewable power capacity by 2022
- Key challenges: finances and grid penetration
 - ▶ Financing for renewables remains a serious challenge
 - ▶ Intermittency: need grid improvement, agile policy and regulation
 - ▶ Uncertainties concerning taxation, import duties

Conclusion

- A political history of renewable energy
- Understanding sustainable energy transitions
- Improving national policy and promoting international cooperation