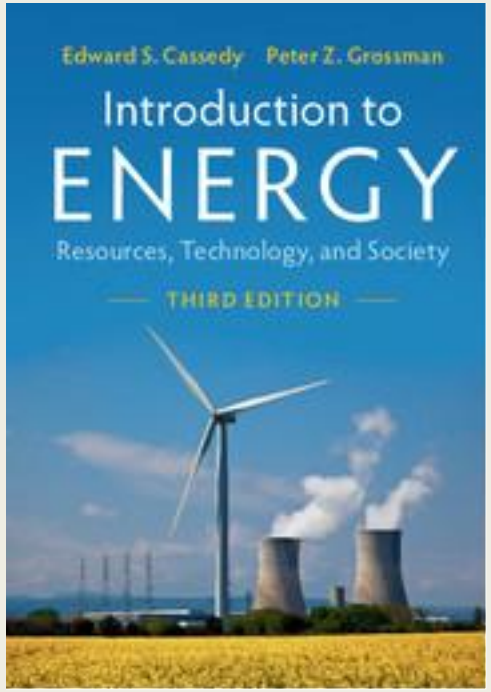
PUNCTUATIONS, INSTITUTIONS, AND THE DIVERSITY OF NUCLEAR POWER POLICIES IN EUROPE



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Central question:

- Energy-related shocks/crises have affected nuclear power policies in countries across Europe
  - *But the same shocks have not impacted policies the same way*
  - *How to explain and understand these differences*
  - *What does this mean for the future of nuclear power in Europe*

Underlying question: Do we need more nuclear power?

- Pro: Hansen et al
  - *Only non-carbon baseload (except some hydro)*
    - Safe and getting (inherently) safer
- Con: Jacobson et al.
  - *Inherently too expensive (US especially!); too dangerous*
- My view is closer to Hansen's
  - *Will EU countries accept MORE nuclear power?*
    - How? Why not?

Initial framing

- Much of nuclear policy has been Shock/crisis driven
- Punctuated Equilibrium Theory (PET)
  - *Policy typically changes little-incrementalism (Lindblom)*
    - Analog of speciation (Eldridge/Gould)
  - *But events could lead to sudden and dramatic policy change,* ***Punctuations,*** *from Shocks*
    - Could lead to, but…

Attention

- The shock would thrust the issue into prominence
- Attention would increase
  - *Policy entrepreneurs would be motivated by the increased attention to move policy in a new direction*

But would that mean significant policy change?

- Maybe…
- Would depend on how well the attention was sustained
- Which would depend on whether the shock morphed into something like a crisis
  - *Or at least was kept alive by subsequent events*

Feedback

- Positive and the likelihood of policy change grows
- Negative, incrementalism resumes
  - *In some sense whether it does or not depends on factors outside of the shock*

Catching fire

- A shock leads to a change when
  - *It ”catches fire”--???*
  - *Is near a “tipping point”*
    - E.g. wide discussion of energy problems pre-1973 embargo
      - *US book “The Energy Crisis” 1972*
  - *Path dependency*
  - *Serendipity?*

The argument

- Policy change depends on how the shocks are processed by existing institutions, history and culture
  - *More important than demographics, levels of technology, geography, etc.*
    - History
      - *Path dependency can top the latest news*
    - Political institutions
    - Culture
      - *Can block acceptance of new technologies, **or** lead to their adoption*

Three cases

- Three European countries
  - *France, Germany and Sweden*
- Three shocks, the same shocks at the same time
- Three impacts on nuclear policies

The 1973-4 oil crisis

- Stimulated nuclear power development especially in France and Germany
  - *Same rationale to lessen dependence on oil*
  - *Sweden also had the same policy goal although already some antinuclear sentiment and ties between antinuclear groups and the Center Party*
    - Planned more nuclear plants but emphasized renewables

Three Mile Island

- No significant policy impact in Germany or France (a short term dip in public support)
- In Sweden led to a national referendum on nuclear power
  - *Which had an antinuclear result*
  - *Later legislation called for the end of nuclear power by 2010*

Chernobyl

- Germany: Led to the rise of the Green Party and to a phase out plan after the Greens entered government (years later)
  - *Antinuclear policies adopted by the Social Democrats*
  - *Slow but persistent feedbacks*
    - Path dependency
- Sweden: Reinforced referendum result
- France: No lasting impact

Comparative institutions, history, culture

- Examples:
- Political systems
  - *Though all a form of representative democracy, all had major differences*
- History
  - *Germany's place on the front lines of the Cold War*
- Culture
  - *French regard for experts; Sweden's egalitarianism*

Current state

- Germany moving toward a nuclear-free electric system by 2022
- Sweden phase out not likely until the 2040s (if then)
- France: pledge to cut nuclear role but from 75% to around 50%

Implications for the future

- Nuclear power can/should play a role in decarbonization
  - *Must overcome path dependencies*
  - *Face political and cultural obstacles*
    - Especially in Germany where each new accident reinforces antinuclear sentiment
      - *Witness Fukushima*
- (Apparently) inherent safety (AP1000, ESBWR) not likely to be sufficient for Germany or the EU generally
  - *No traction for records of safety and performance (e.g. South Korea)*
  - *And the probability of accidents is non-zero*
- Pronuclear: Needs a record of success—over time—perhaps of SMRs
  - *Learning effects, changing need, incomplete decarbonization with renewables*
  - *Subsidies at least in the short run*
  - *Pronuclear change is possible in some of the countries of Europe—France*
  - *New Shock*
    - E.g. persistent power failures

Further work and contact

- Current attitudes to nuclear power
- Interest in SMRs, other advanced technologies
- Deeper look at history and culture
- To see the paper or other work:
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