

THE SATURDAY ESSAY

Is Nuclear Power Part of the Climate Solution?

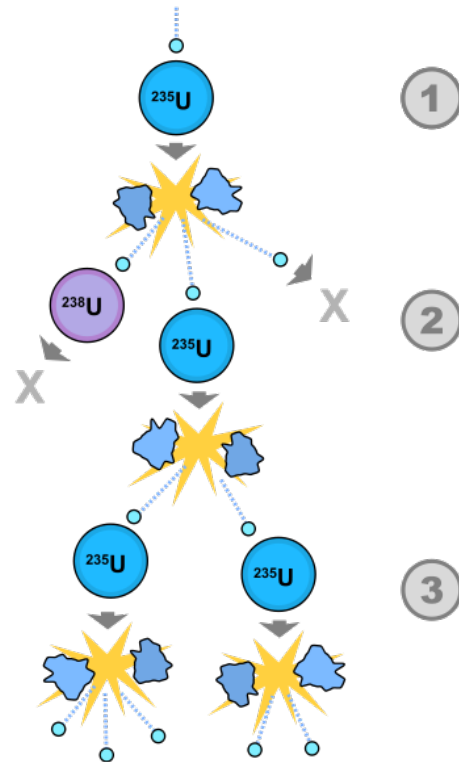
Investing in the next generation of nuclear reactors could give the world an important tool for reducing carbon emissions.



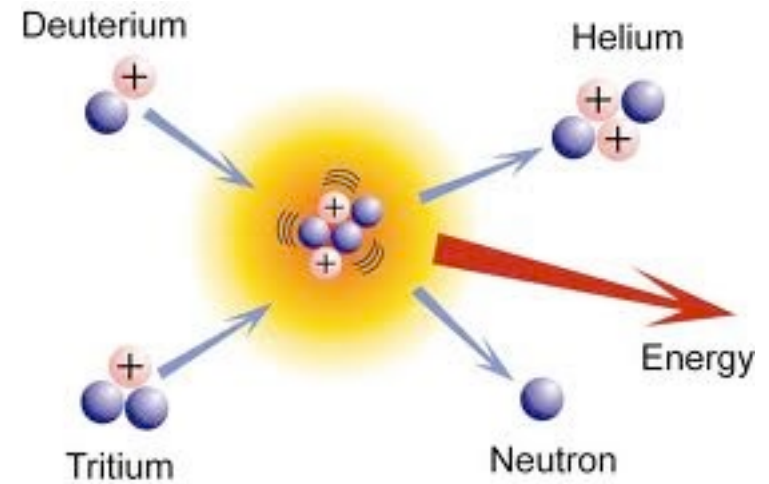
Fission v Fusion

$E = m \cdot c^2$ either way; fission “works”, fusion still with $Q < 1$ (!)

Split large atoms



Fuse small atoms



Fission “R&D play”, fusion “R”

Nuclear pros and cons

Long history of misperceptions

Pros

- + Low-CO₂
- + Dense
- + Stable

Cons

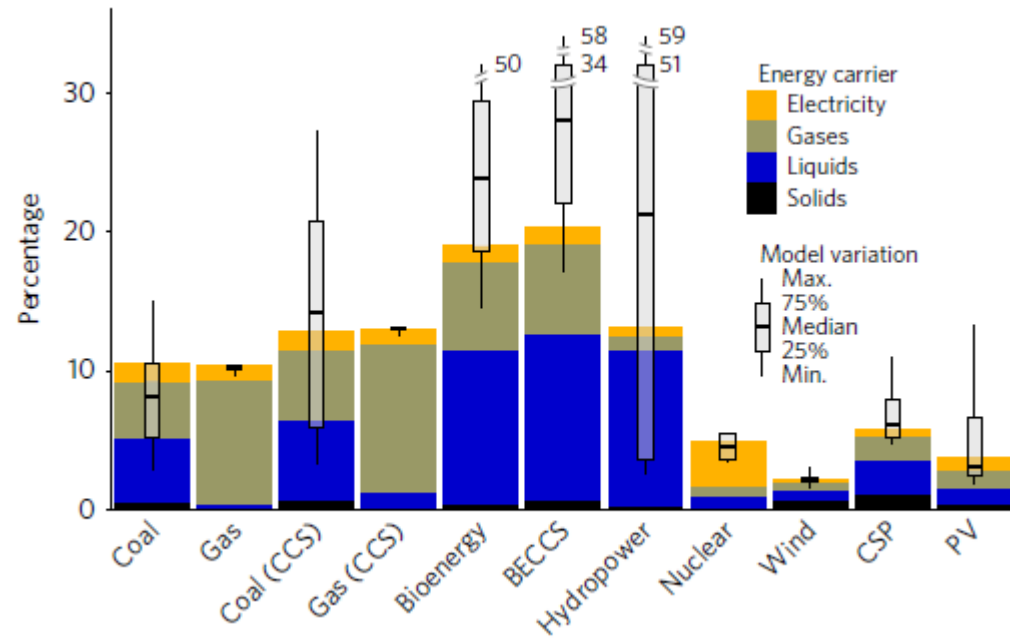
- Costs
- Risks (perceived and real)
- Perception

“Correct” framework:
Risk-risk tradeoffs

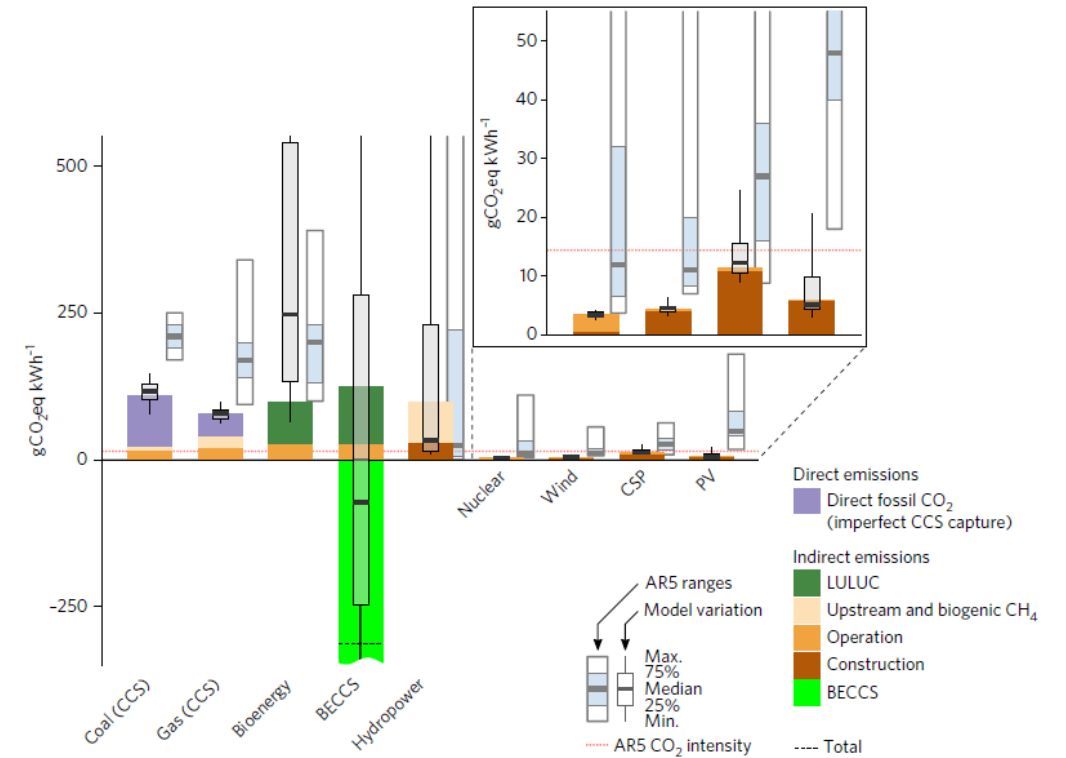
Nuclear low-CO₂

On par with solar & wind, (possibly) better than bioenergy (including with Carbon Capture & Storage, BECCS) & hydro

Low “embodied” energy



Low direct & indirect emissions



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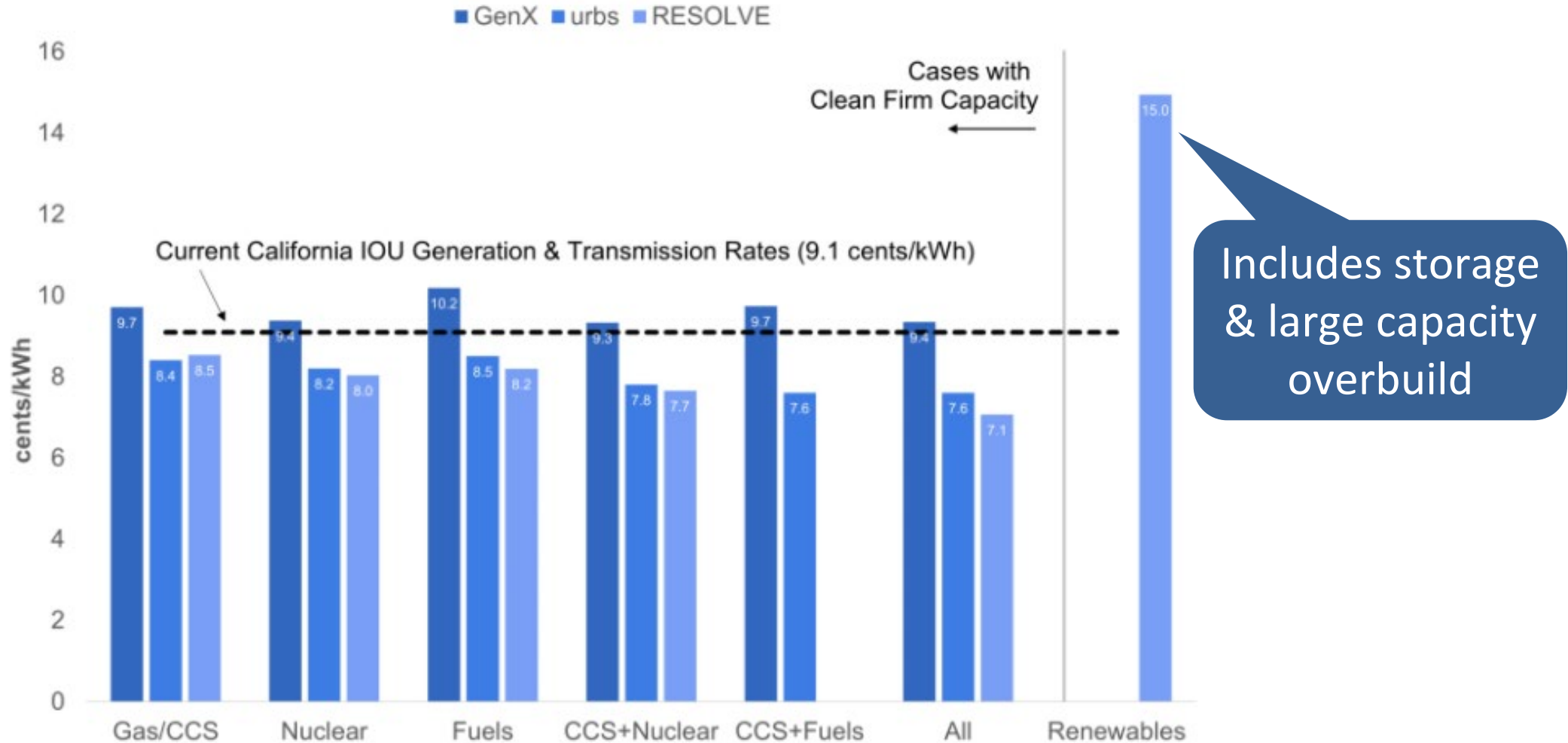
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“Clean” + “Firm” =
lower system costs

“Clean firm” capacity lowers system costs

LCOE wrong (or at least limited) lens



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- + *System costs*

Cons

- *Project costs (including SMRs)*
- Risks (perceived and real)
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“Correct” framework:
Risk-risk tradeoffs

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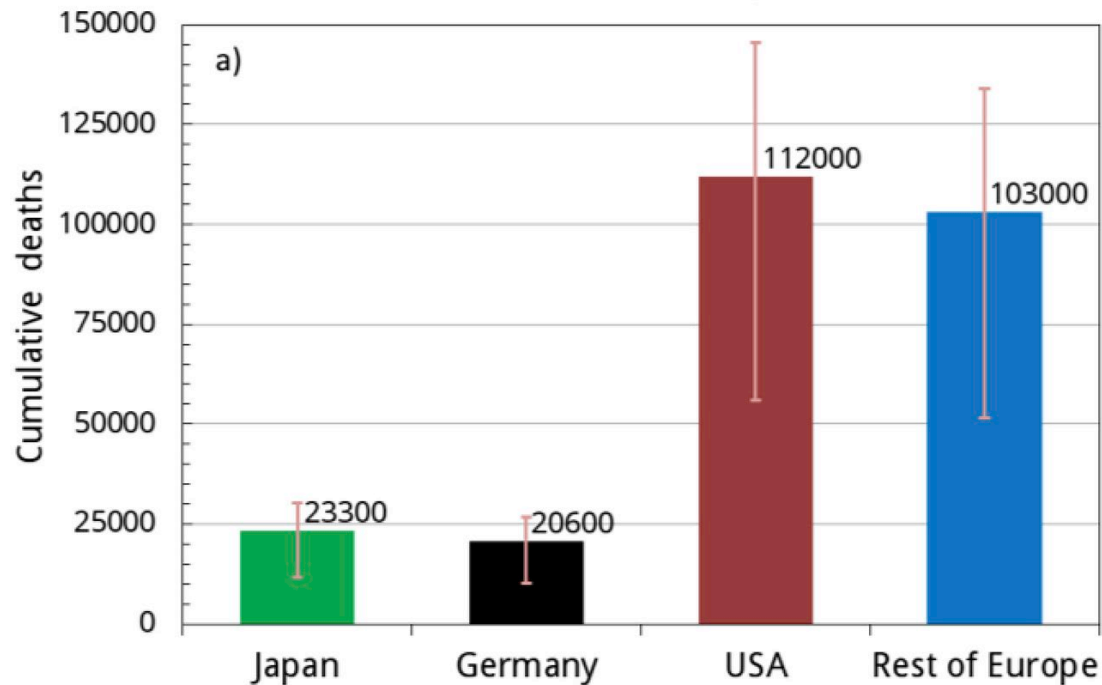
- *Project costs*
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Waste + accidents as “Pro” or “Con”?!

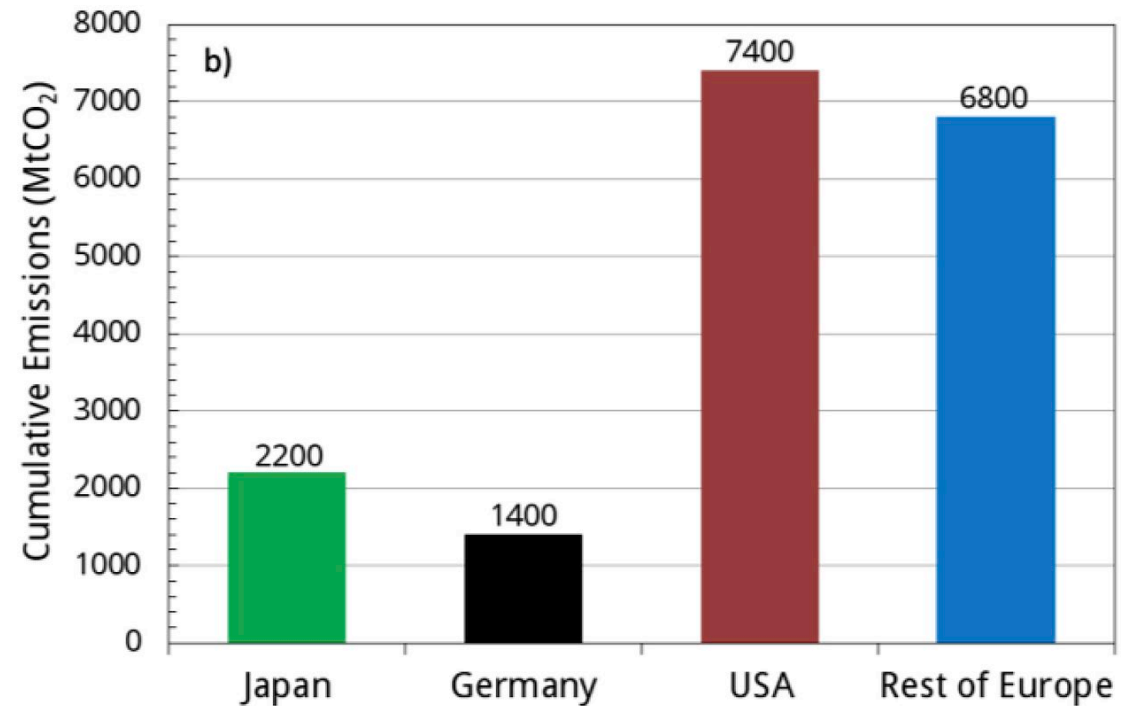
Nuclear lowers morbidity & mortality

“One death is a tragedy, a thousand a statistic”; negative impact of post-Fukushima reactions (through 2035)

Preventable mortality



Preventable CO₂



Response to Fukushima
“worse” than accident

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- **Perception**

Nuclear power and
“green moral hazard”


Nuclear

Green
Risky Climate

Fear of ~~Geoengineering~~ Is Really Anxiety About Cutting Carbon

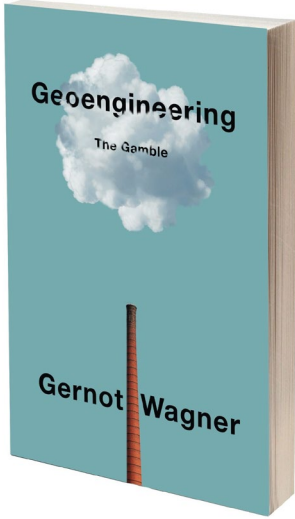
Research into unproven technofixes isn't a replacement for eliminating emissions, even if the debate over geoengineering is stuck on that concern.

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The geoengineering debate is caught in false choice between cutting emissions, like those from cars, and researching the dire possibility of resorting to technofixes such as reflecting back a portion of sunlight. *Photographer: Samuel Corum/Bloomberg*

By Gernot Wagner
June 25, 2021, 6:00 AM EDT



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Nuclear power as “Plan A+”,
as “R&D play” (e.g. SMRs)

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