

Geopolitics of Energy Transitions

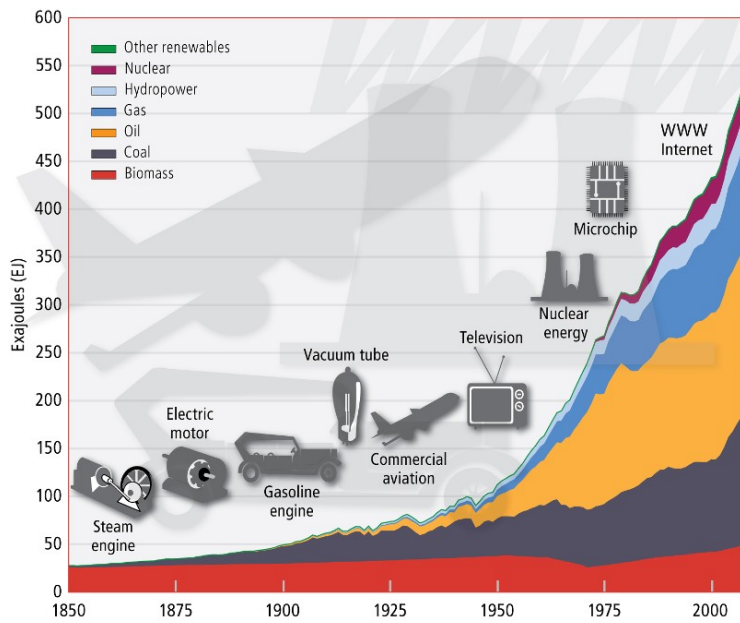
GTAP
June 23, 2021

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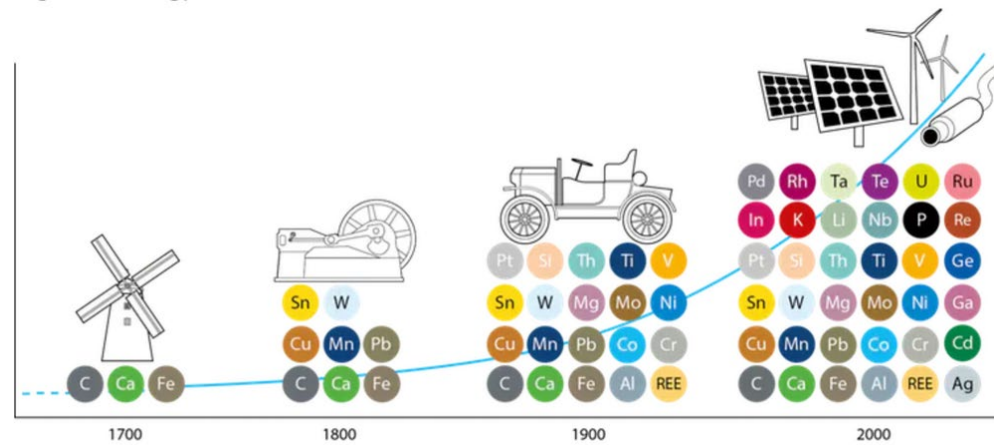
The Payne Institute *for* Public Policy



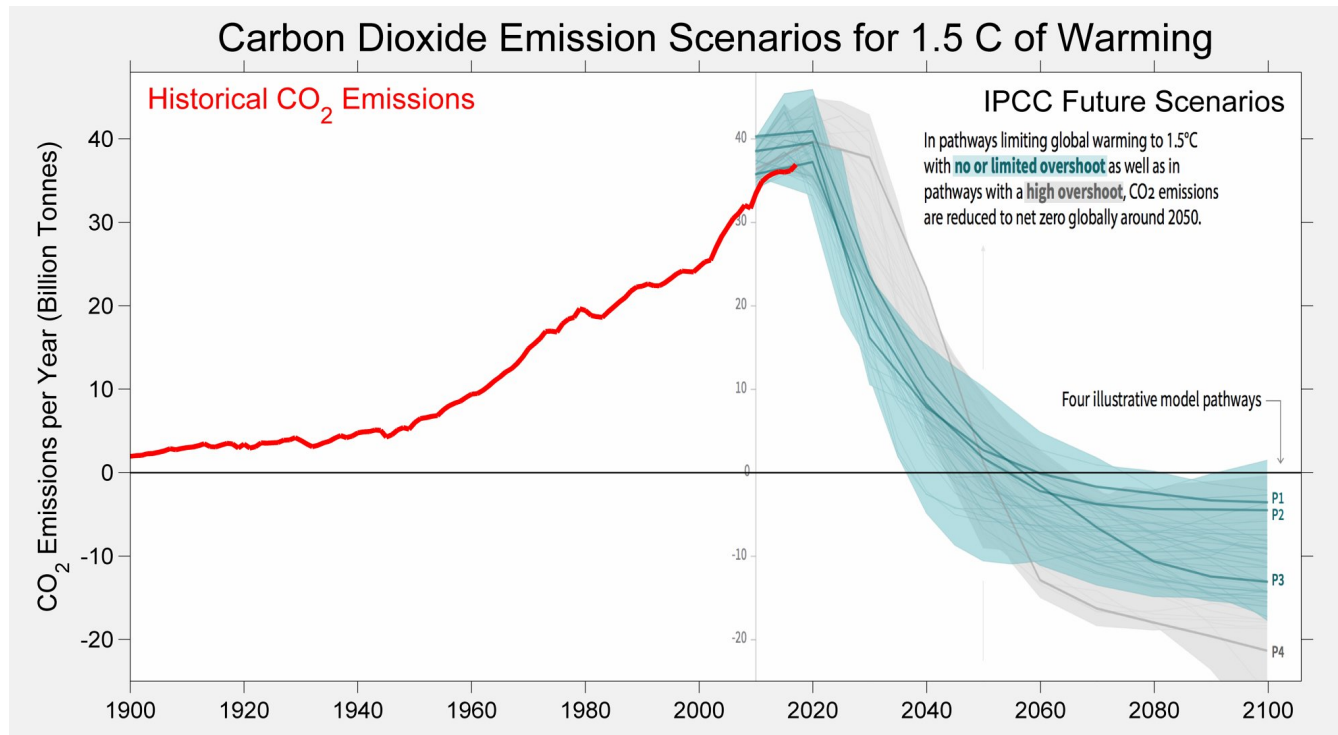
Of non-linear (upward) curves...



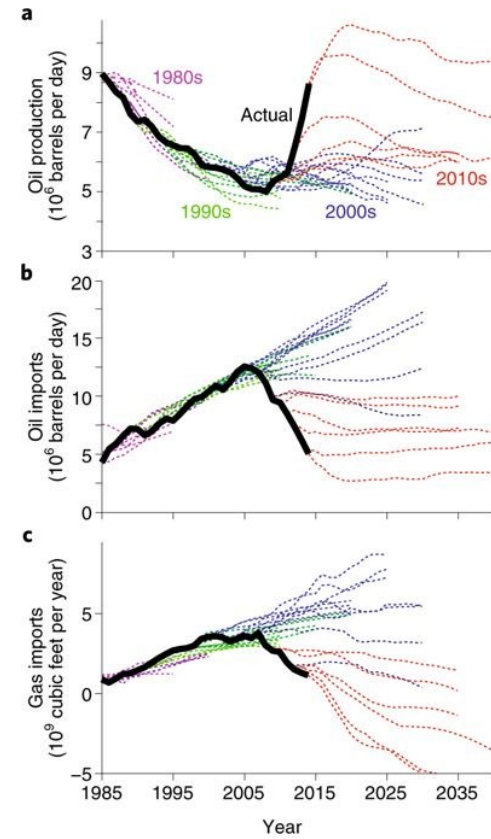
IIASA, Nakicenovi, Zepf, 2014c



...and downward

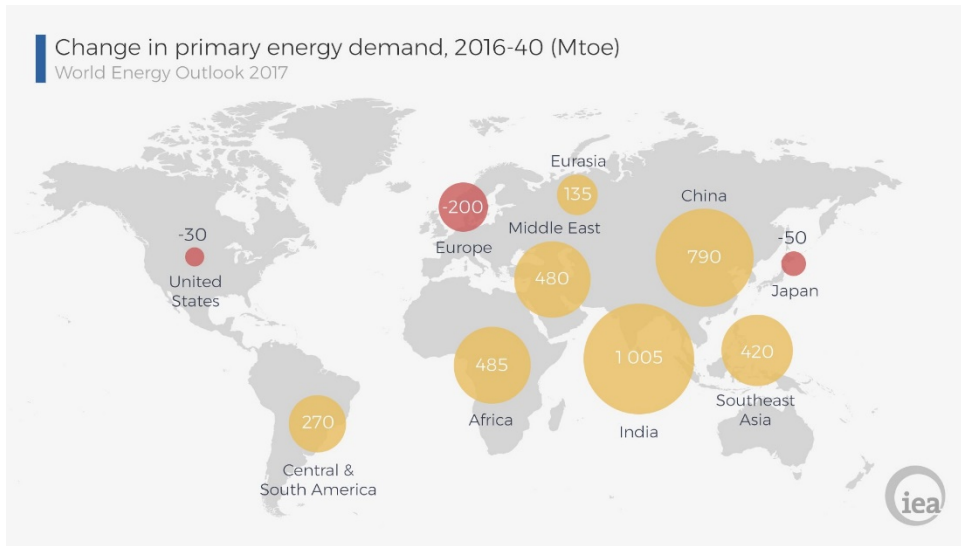


...and always wrong

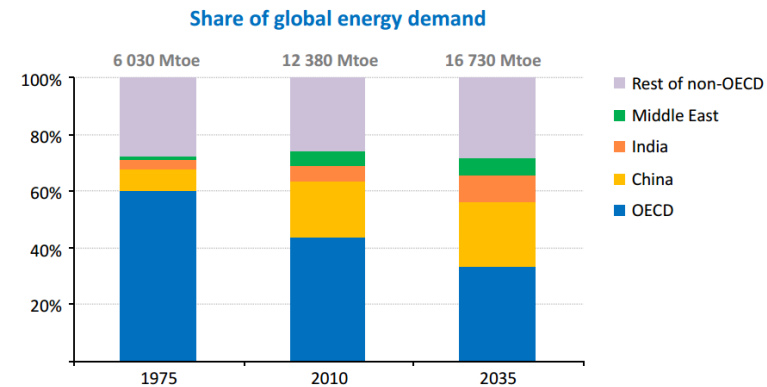


Davis, S. Nature, 2018

The energy transition is largely a developing country story



IEA WEO 2017

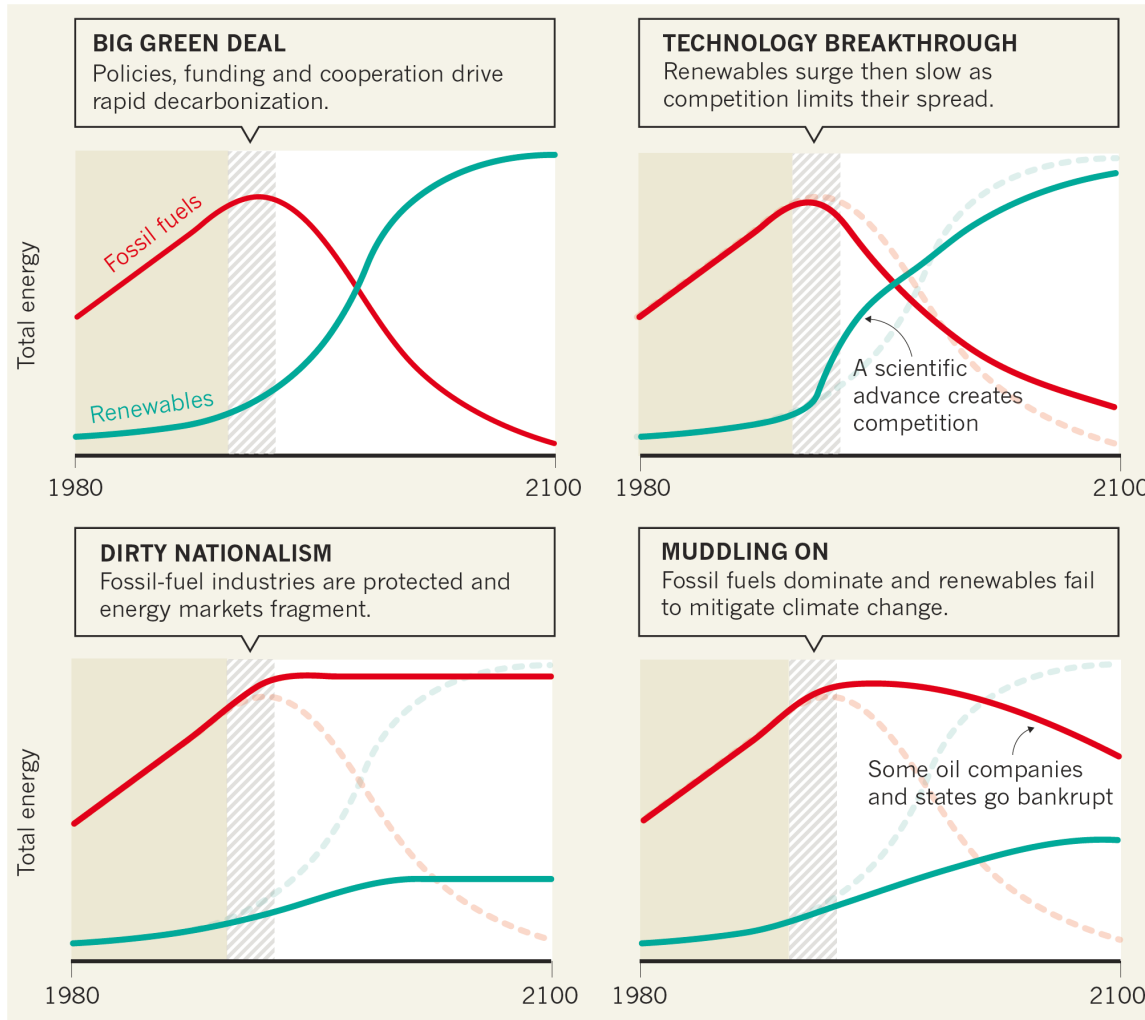


Geopolitical contours

While climate change impacts are being well-monitored, less so are other energy-related considerations:

1. **Natural Gas:** Accelerating trade through new international pipelines or liquefied natural gas
2. **Cybersecurity:** Growing importance with rise of interconnected systems
3. **Minerals Conflict:** over minerals due to changes in technology and deployment in large numbers
4. **Grids:** More regional interconnections in electricity grids from the Belt and Road to East Africa
5. **Inequality:** Energy poverty and demand for reliable & affordable energy services to billions of people and businesses
6. **Shared infrastructure:** or markets as a basis for peace/conflict
7. **Clean energy:** trade and manufacturing and innovation
8. **Companies changing:** strategy, including NOCs
9. **Not just technology** or hardware, software and just transitions
10. **Tied to other sectors,** especially water, food, housing, and transport

Global energy transition: four alternative futures

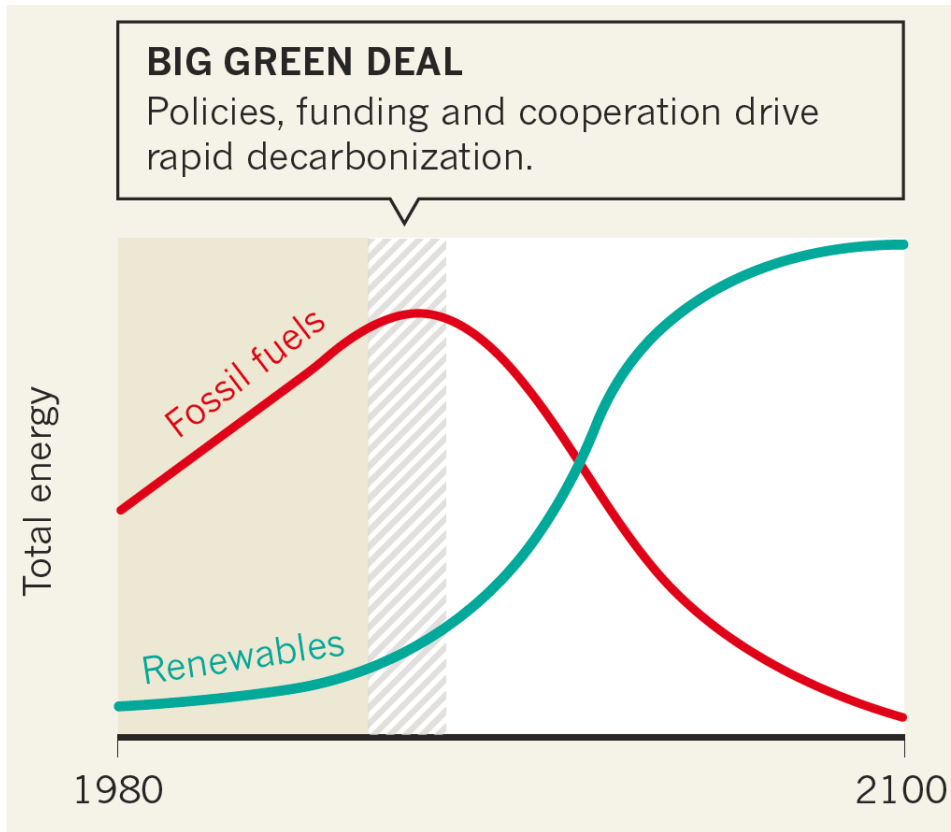


GET drivers:

- Policy
- National politics
- Technology
- Markets

Source: Goldthau, Bazilian et al, Nature 2019

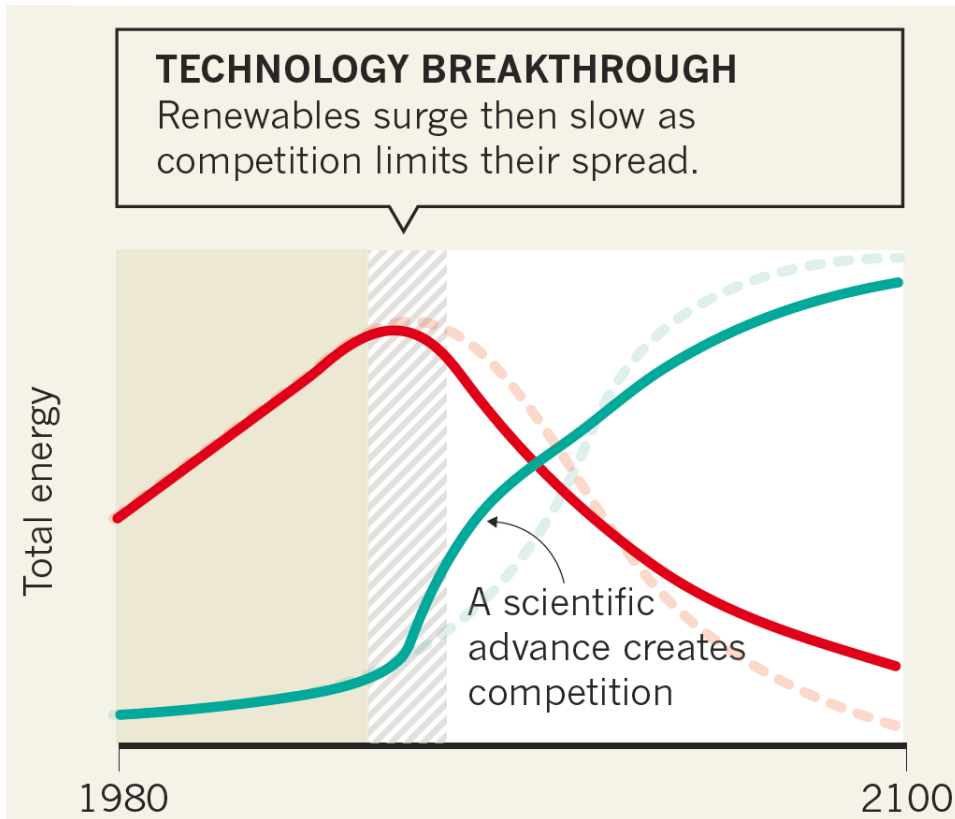
Big green deal



- Global consensus on CC action & strong international policy push
- Financial markets reallocate capital to low carbon firms
- Generous Green Climate Fund compensates petro-states
- Wave of green globalization follows
- All countries to share in the benefits of decarbonisation

→ **Low geopolitical friction; Just Transition/ SDGs achieved**

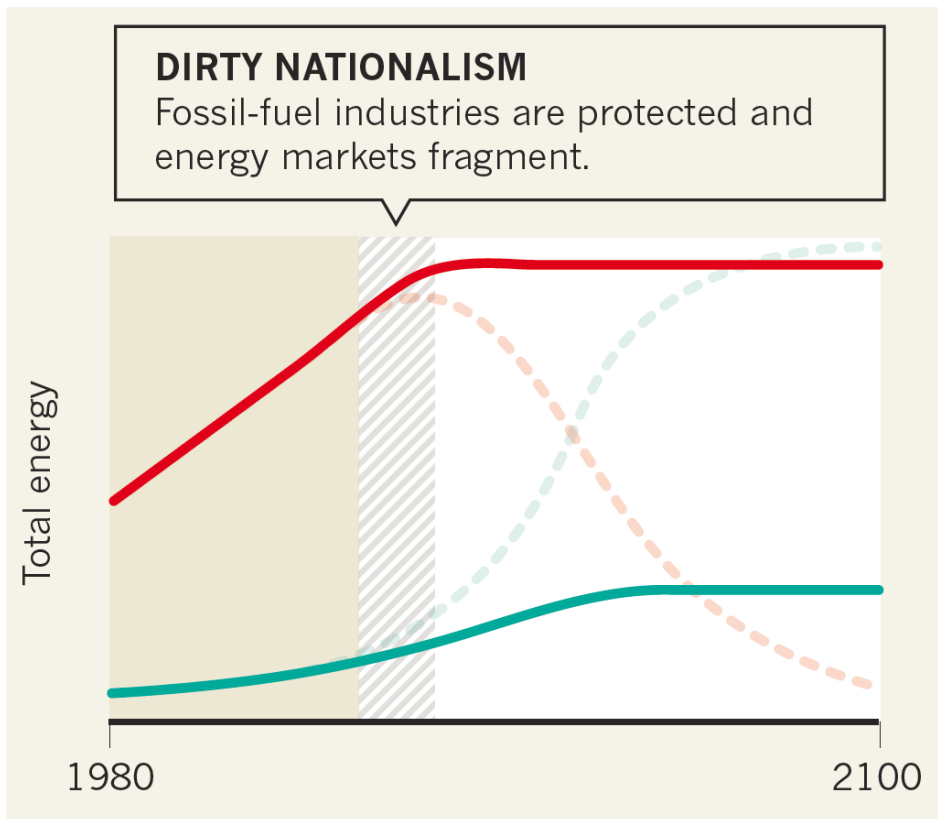
Technology breakthrough



- US and China take the lead
- Google & State Grid of China emerge as dominant players
- World fractures into 2 rivaling camps led by tech leaders
- Blocs control rare earth metals & LCT access for outsiders
- Renewables race helps climate mitigation but not all regions profit
- Developing nations excluded from advanced energy know-how

→ Oil producers falter; clean tech cold war; tensions due to uneven transition

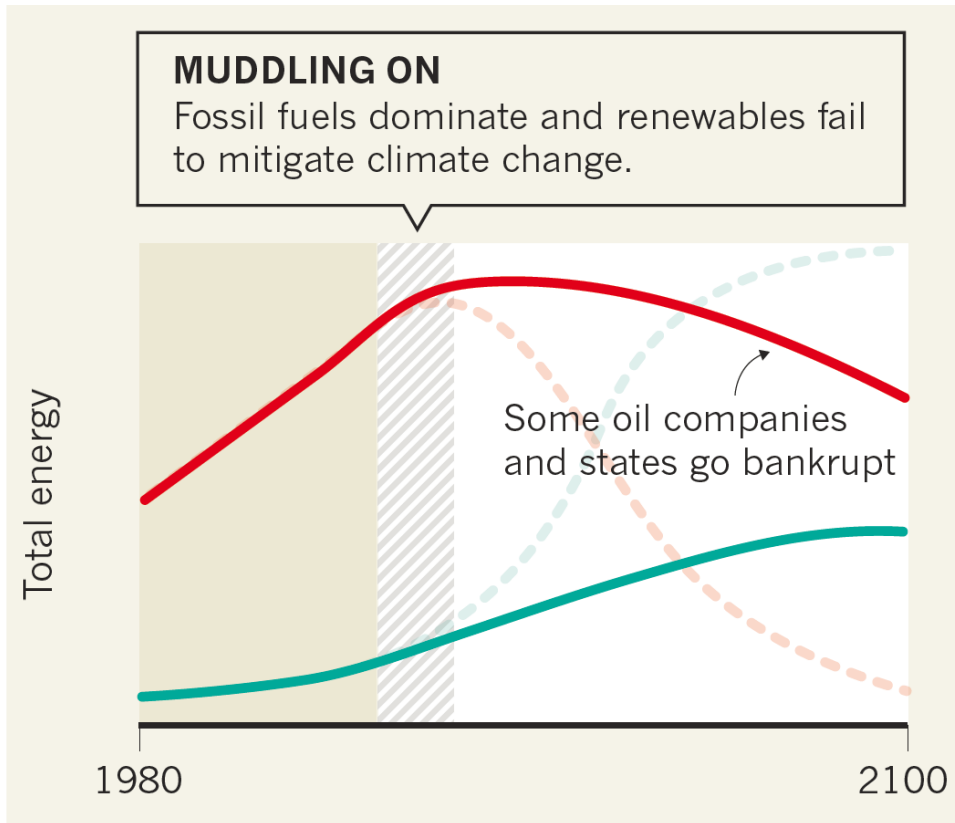
Dirty nationalism



- Elections bring populists to power
- Nation-first policies drive both domestic fossil fuels & renewables
- States ringfence their industries, zero sum logics return
- Protectionism limits RES economies of scale
- Fossil fuel producers panic & pump
- Power rivalries undermine multilateral institutions incl. UNFCCC & Paris Agreement

→ **Unmitigated CC as stress amplifier; conflict over water and other resources**

Muddling on



- Unit costs keep declining but fossil fuels remain dominant
- GET too slow to mitigate CC but too fast for FF industry to adapt
- Few producers compete on exports
- NOCs go bust or consolidate
- MENA producer countries and Russia see political turmoil
- Europe goes for like-minded partnerships, US on the sidelines
- Some regions fail to benefit from partnerships, energy inequality rises

→ **Global North-South imbalances reinforced; BAU results in 'energy clubs'**

Geopolitics of the global energy transition

Scenario	Key Drivers	Pace of Change	International Political Architecture	Carbon Consequences & SDGs
Big Green Deal	Concerted, multilateral policy drive	Fast and even	Multilateralism	Green globalization meets SDGs & Climate targets
Dirty Nationalism	Nation-first policies	Slow if not stalling	Zero-sum, anarchy	Unmitigated climate change acts as a stress amplifier (SDGs fail)
Tech Breakthrough	Disruptive advancement in energy technology	Fast but uneven	Regional hegemony	Successful climate change mitigation (but not all SDGs)
Muddling on	Falling costs, but slow progress	Slow	Clubs	Mitigation too slow to meet CC targets (SDGs compromised)

Key takeaways from scenarios

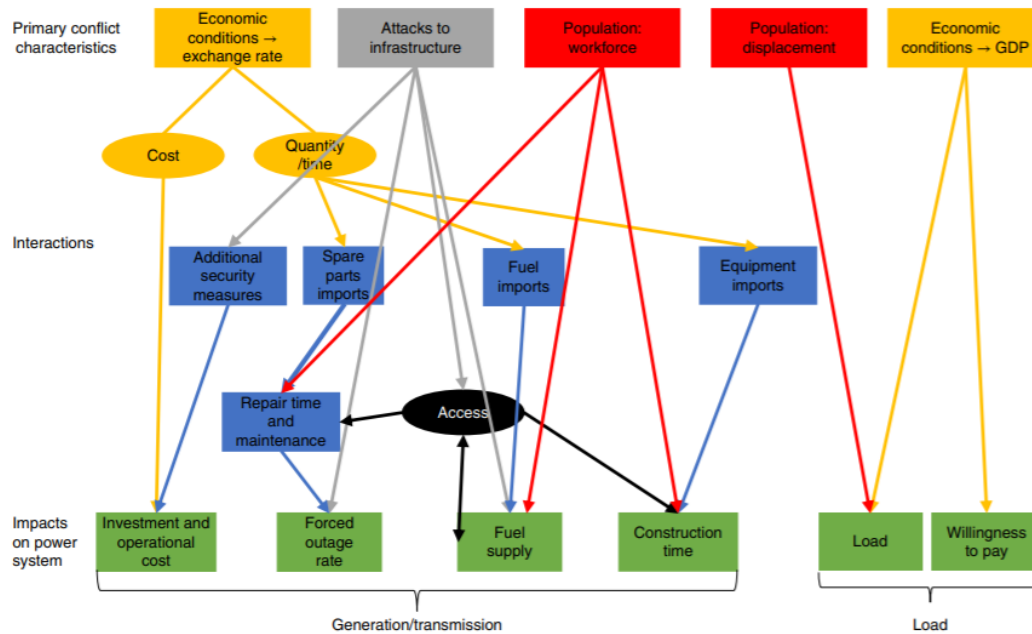
- A zero-carbon world does not do away with zero-sum games. It produces different ones.
- Global win-win is but one plausible outcome.
- The pace of change matters.
- Some pathways may not be politically palatable to all.

→ ***Acknowledge abating carbon creates losers & prepare for it***

→ ***Shift attention from goals to pathways***

→ ***Draw lessons from past and parallel experiences***

Modelling energy and conflict



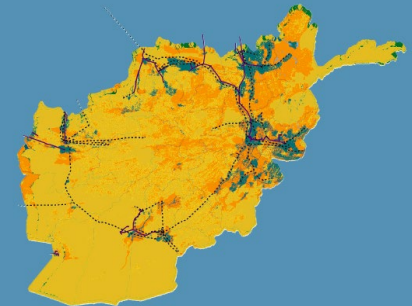


“In fragile and conflict-afflicted country settings, power system planning cannot ignore the inherent risks. . . . Such risks can, for example, manifest in projects being delayed, abandoned, or coming in at very high costs. Security issues can thus significantly hamper, or make infeasible, the delivery of power system master plans.”

—“*Considering Power System Planning in Fragile and Conflict States*”

Source: Morgan Bazilian and Debrajendra Chattopadhyay, “Considering Power System Planning in Fragile and Conflict States,” Cambridge Working Papers in Economics, 11/3/2015, p. 2.

AFGHANISTAN ENERGY STUDY



**A GIS APPROACH TO
PLANNING ELECTRIFICATION
IN AFGHANISTAN**

Alexandros Korkovelos, Morgan Bazilian, Dimitrios Mentis, and Mark Howells

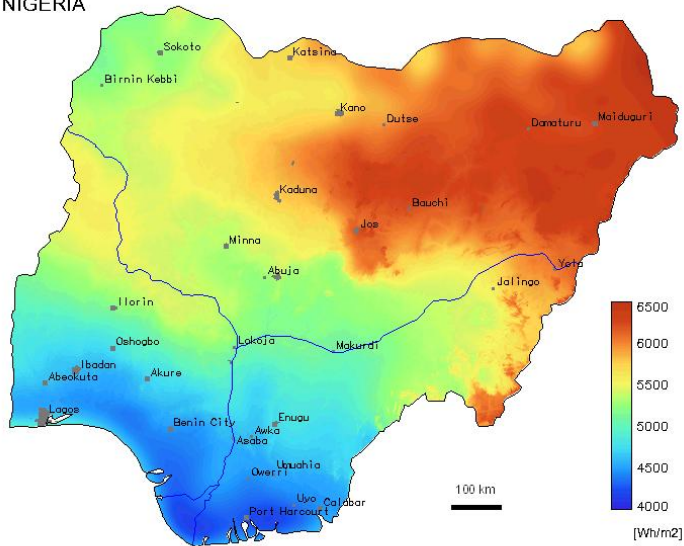


Nigeria - Solar

Yearly average of daily sums of global horizontal irradiation
(HelioClim-1/PVGIS data, period 1985-2004)



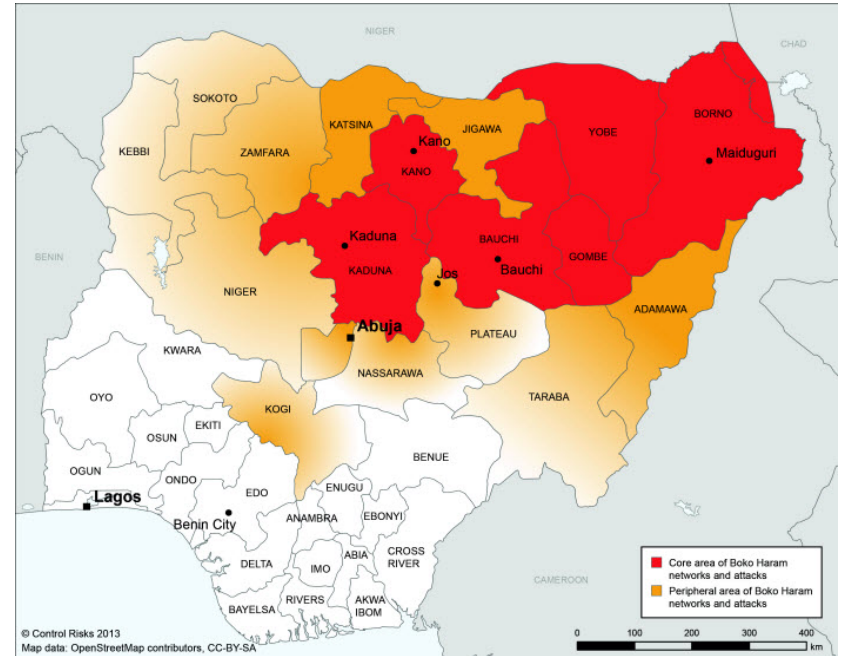
NIGERIA



PVGIS (c) European Communities 2002-2006
HelioClim-1 (c) Ecole des Mines de Paris/Armines 2001-2006

<http://re.jrc.ec.europa.eu/pvgis/>

Assumption

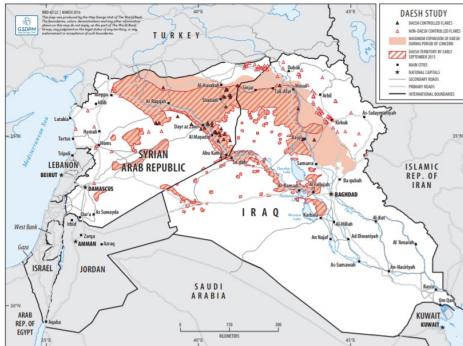


© Control Risks 2013
Map data: OpenStreetMap contributors, CC-BY-SA

Reality

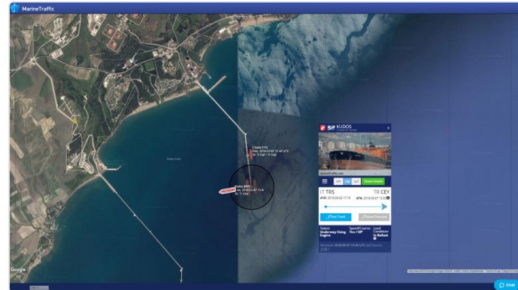
New ways to monitor geopolitics

Figure 1: Iraq and Syria Oil Production, Fields, and Daesh Control, March 2016

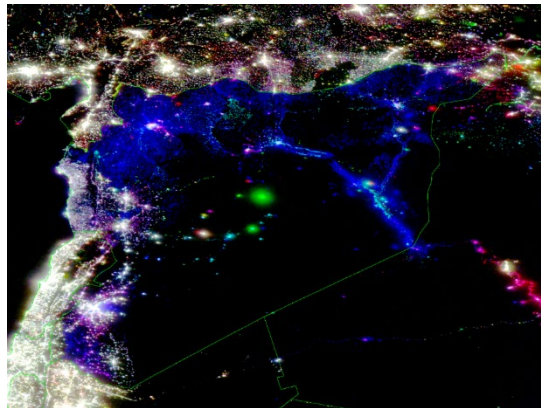


TankerTrackers.com @TankerTrackers · Mar 7

KUDOS has now arrived at the KRG berth in the port of Ceyhan, Turkey. She last departed Ceyhan on December 11th with 424K barrels to Croatia. Was only half full. #OOTT



World Bank, 2017; Tanktrackers on Twitter





The Payne Institute for Public Policy

