

Energy Technology and Governance

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Recent developments in the UK – Energy Bill

- Licensing of Carbon Dioxide and Storage
- Carbon Dioxide Capture, Storage, etc and Hydrogen Production
- Decommissioning of Carbon Storage Installations
- New Technology
 - Low-carbon heat schemes
 - Hydrogen grid conversion trials
- Fusion energy
- Independent System Operator and Planner
- Governance of Gas and Electricity Codes
- Market Reform and Consumer Protection
- Heat Networks
- Energy Smart Appliances and Load Control

Energy Technology and Governance in a Time of Crisis

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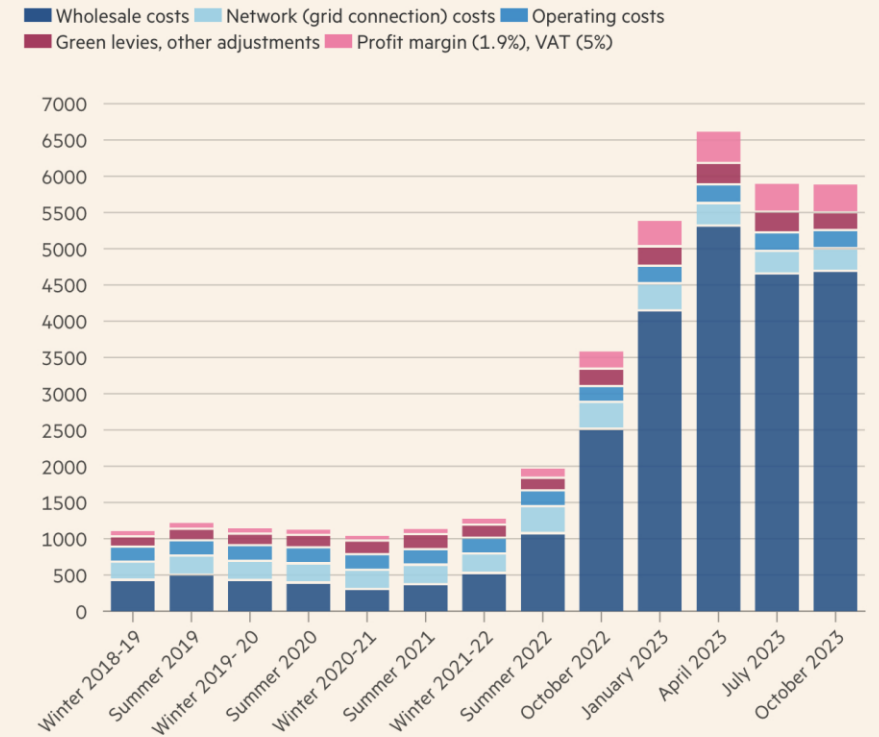
Energy Crisis

NYMEX Dutch TTF natural gas front-month price (€ per megawatt hour)



Source: Refinitiv
© FT

Default tariff price cap - Ofgem actual and Cornwall Insight forecasts (£ per annum)*



FINANCIAL TIMES

Source: Cornwall Insight, Ofgem • * Direct debit, national average. Typical domestic consumption values = 2,900 kWh for electricity, 12,000 kWh for gas

It wasn't meant to be like this!

- Energy Charter Treaty 1994
 - [Market-based solution](#) to energy security across Eurasia and beyond
 - Encourage [investment](#), including in new technologies
 - Acknowledgement also of need for greater [energy efficiency](#)

Initial assessments of the market approach were positive

- “The effect is a connected set of commodity markets where competition is the rule and **economics work**”
- “**energy security** has moved off the title page and **is at best a footnote** to today’s and tomorrow’s global security issues”
- John Mitchell, *The New Economy of Oil*, Earthscan, 2000

But the warnings were always present

- Failure to negotiate the Transit Protocol
- Non-ratification of the ECT by the Duma
- Russia-Ukraine disputes 2005-6, 2007-8, 2008-9, 2013-14, 2015
- Russia's termination of provisional application of the ECT

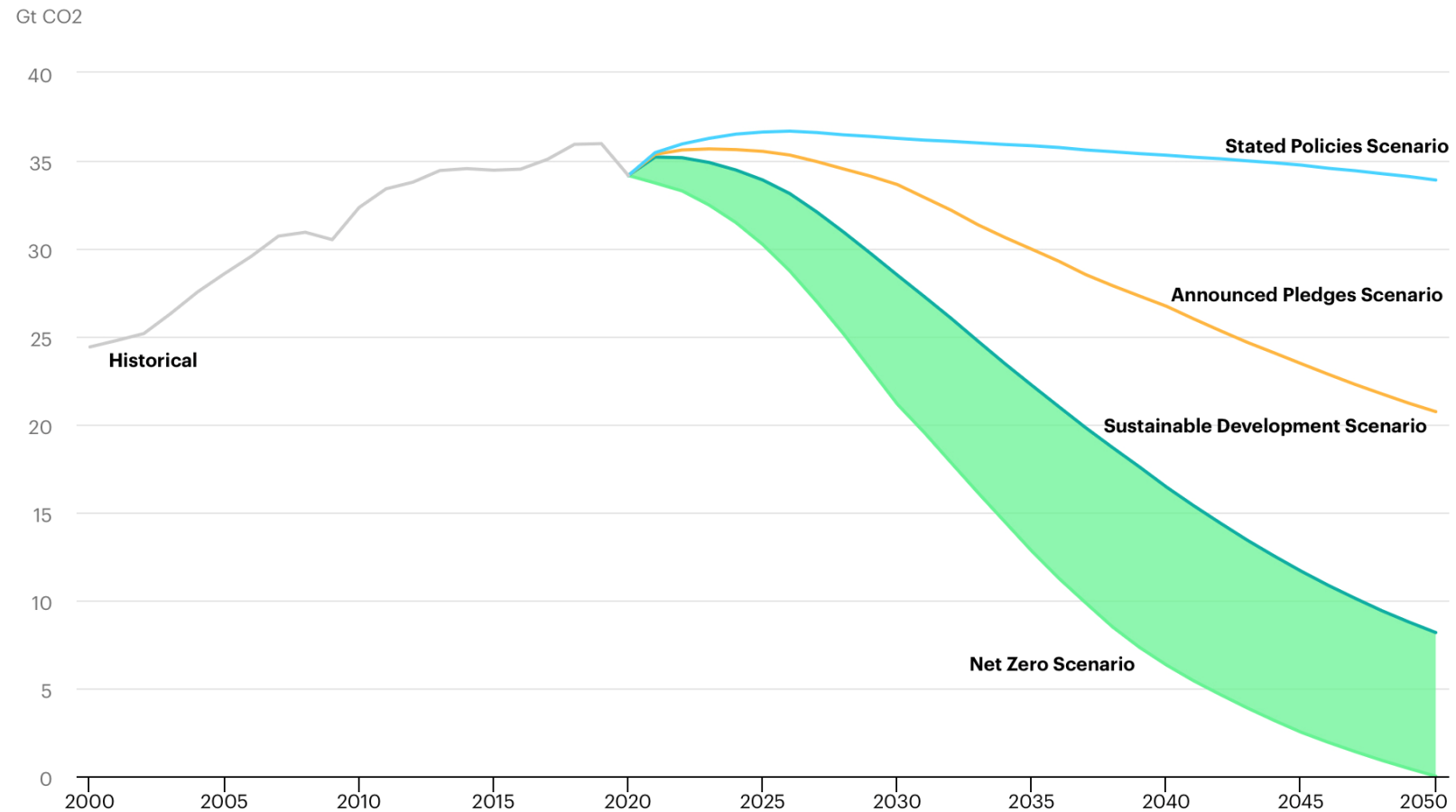
The Persistence of Geopolitics in Energy

- Who **has** energy resources?
- Who **needs** them?
- What **political consequences** flow from the answers to the first two questions?

- Among others, serious questions attend decisions around the **Nordstream** pipelines...

Don't forget the Climate Crisis...

IEA World Energy Outlook 2021 Scenarios
CO₂ emissions



Nor the Challenge of Energy Equity...

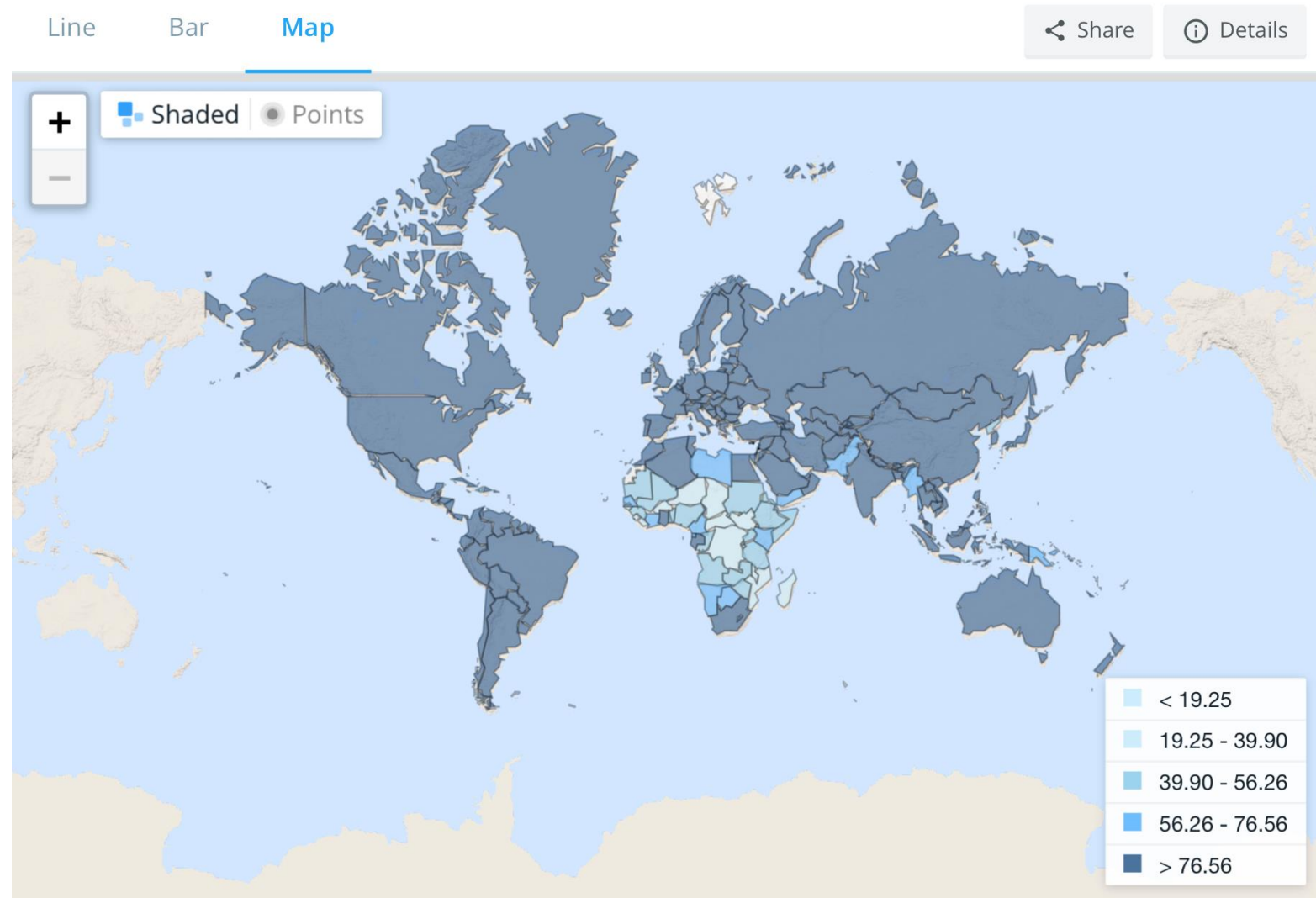
Percentage of population with access to electricity 2020

Having access says nothing about being able to afford energy

770 million without electricity

2 billion in energy poverty – BEFORE the current crisis...

Sources: Word Bank, IEA



Balancing the 'Energy Trilemma'

Energy Security

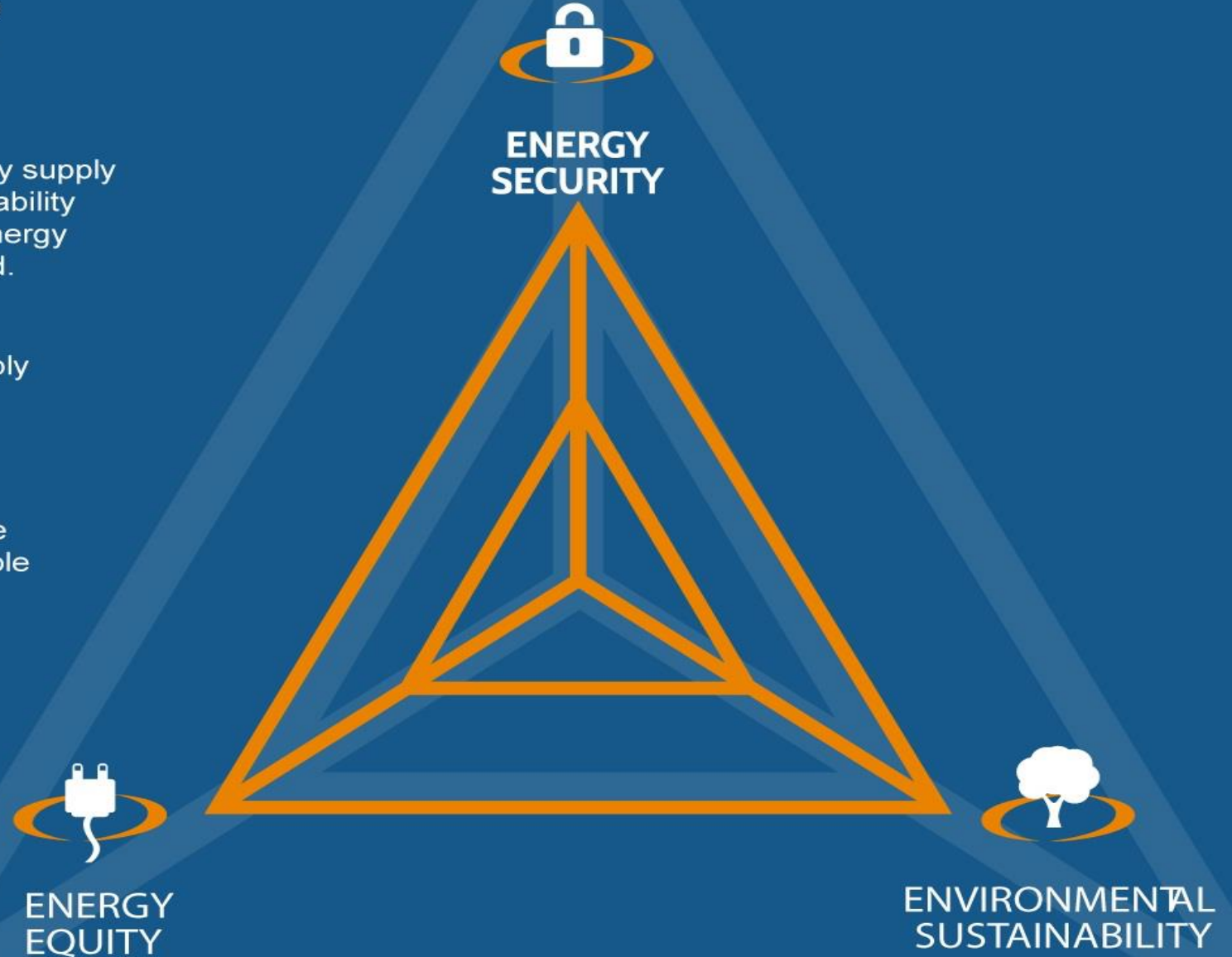
The effective management of primary energy supply from domestic and external sources, the reliability of energy infrastructure, and the ability of energy providers to meet current and future demand.

Energy Equity

Accessibility and affordability of energy supply across the population.

Environmental Sustainability

Encompasses the achievement of supply and demand side energy efficiencies and the development of energy supply from renewable and other low-carbon sources.



Source: World Energy Council

It's going to get worse

- For example:
 - Melting permafrost leading to methane and nitrous oxide release – [acceleration](#) of global warming
 - Ocean acidification leading to dead zones and [increased](#) nitrous oxide release
 - [Impact](#) on food chains
 - [Impact](#) on habitability of regions
 - ...

The false dawn of net zero

- Even if we get to net zero by 2050, we would still need to **remove** huge amounts of accumulated CO₂ from the atmosphere to stave off damaging warming
- Dealing with carbon is going to become a very significant **challenge** and thus a very significant industry

Urgent requirements

- Technologies
 - Existing and new
- Investment
 - on an unprecedented scale
- Certainty and stability
 - to encourage investment...

Characteristics of required governance responses

- Problems are global, so responses need to be **cooperative** and **coordinated**
- Problems are urgent, so responses need to be **timely** and **sustained**
- Problems are physical, so responses need to be **informed by science**

Trends in governance

- Ongoing **strains** in cooperative arrangements
- Discernible rise in **nationalism**, **populism**, even **fascism**
- The “tragedy of the horizons” (Carney) – **mismatch** in time horizons of politics, finance, and science
- Rise in **anti-science** rhetoric and misinformation on social media and even at the highest level of politics
- The concept of the rule of law is **barely discernible** in many countries and has in recent years been **assaulted** even in leading democracies

Net effect

- What we **need** is at risk of being **cancelled out** by what we are **doing** in terms of traditional politics and governance arrangements
- An **extreme** and **pessimistic** viewpoint?
- I genuinely don't think so
- Something's got to give...

Some radical suggestions being discussed (UK)

- Significant expansion of upstream oil and gas licensing
 - Subsidies for consumers repayable through additional tax over decades
 - Additional windfall tax for upstream oil and gas (on top of one existing and one new windfall tax)
 - Nationalisation of downstream energy companies
 - Fundamental questioning of regulated markets model
-
- But this is all focused on immediate energy security and energy equity concerns...
 - What about the medium and long term?

Governance Scenario 1 – Fracture

- Current and emerging tensions **shake apart** such coordination as exists
- Politics becomes increasingly **nationalistic** and **inward looking**
- Governance in respect of the energy trilemma and necessary technological development is **attenuated**

Governance Scenario 2 – War economy

- The realisation of the multidimensional emergency we face gives rise to a **fundamental redirection of the economy** analogous to, but far in excess of, what was observable in the Second World War
- Traditional politics and governance arrangements appear **ill-adapted** to such a shift
- **National governments?**
 - Business-as-usual political bickering gives way to focused “all the talents” arrangements
- **Transnational technocracies?**
 - Increased influence of expert groupings

Conclusions

- I think scenario 1 is **already underway**
- I think scenario 2 (in some form) **will happen...**
- ...but likely **too late**