Challenges in Energy Policy

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Disclamer

- I don't know the future
- The ideas presented here continue to evolve, may change tomorrow. Because the energy transformation is changing.
- I certify that the information in this presentation is my personal opinion at the date of the presentation. My views are my own and cannot be attributed to any link, past or present. This is not an investment newsletter/presentation and no financial advice is given here, either express or implied. As updated analysis and developments warrant, my views can and will change in the future. Some of my comments are for entertainment purposes and should not be authenticated. The views in this presentation are directed towards global energy markets. They are not given as recommendations for Türkiye.

Energy Policy is about

- Where to go?
- How to go?
- Which tools to use?
- How to trade off?

A recent example: Impacts of ways

85% for cells and 80% for modules in 2022. For polysilicon, China accounted for less than 30% of the world's manufacturing capacity in 2010, with this share rising rapidly to over 85% in 2022.

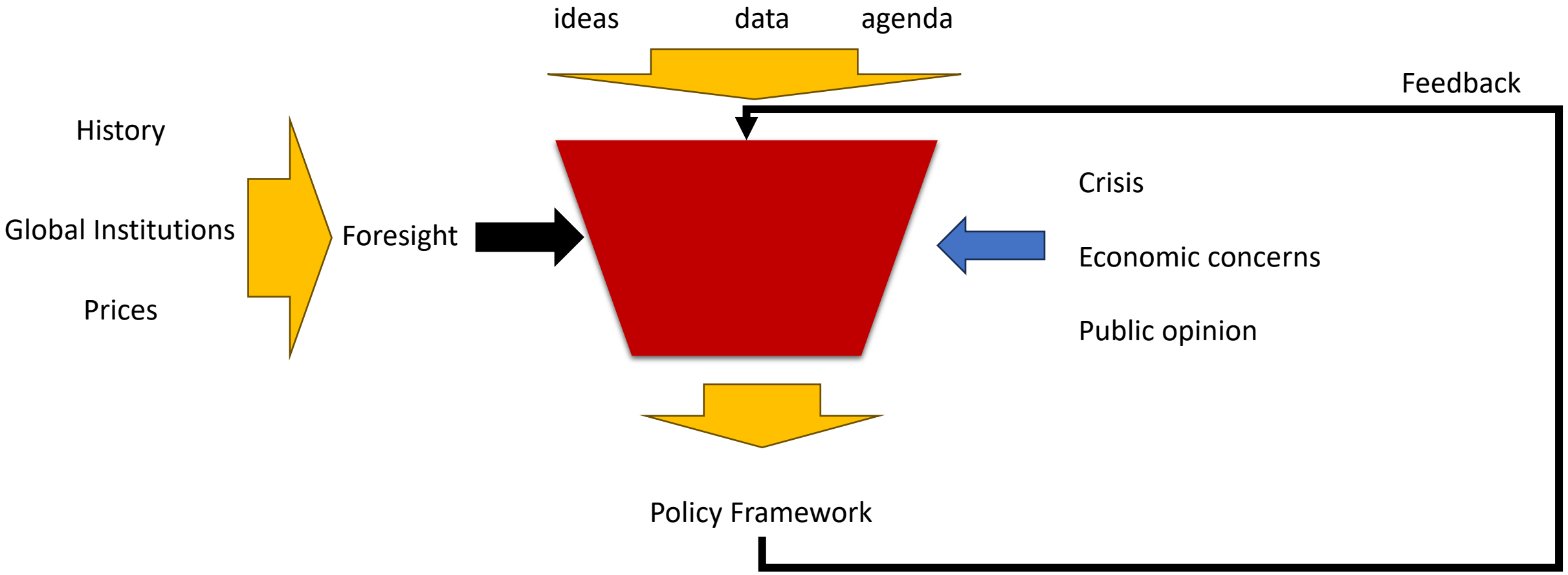
China is a major exporter of solar PV panels, as domestic manufacturing capacity for solar PV modules has exceeded domestic demand since the 2000s. This has been achieved through clear and sustained policy signals and deployment targets in its Five-Year Plans. Since 2010, installed capacity of solar PV has grown at a compound annual growth rate of over 65%, reaching 427 GW in 2022. This compares to a compound annual growth rate (CAGR) over the same period of 40% and installed capacity in 2022 of 140 GW in the United States, and just under 20% and 200 GW in Europe.

Solar PV installed capacity Growth rate(CAGR)

- China (67%)
  - Industry Strategy
- US(40%)
  - Economics&Market
- EU(<20%)
  - Regulation

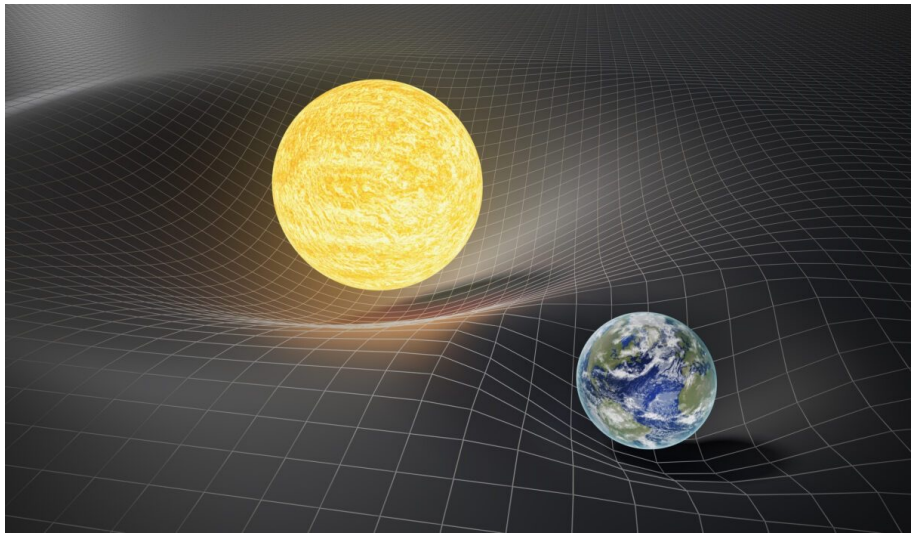
https://iea.blob.core.windows.net/assets/32e7d448-4f0b-4ae8-85c4-d72924bf8a4f/TheStateofCleanTechnologyManufacturing.pdf

How energy(≠ electricity) policy is formed



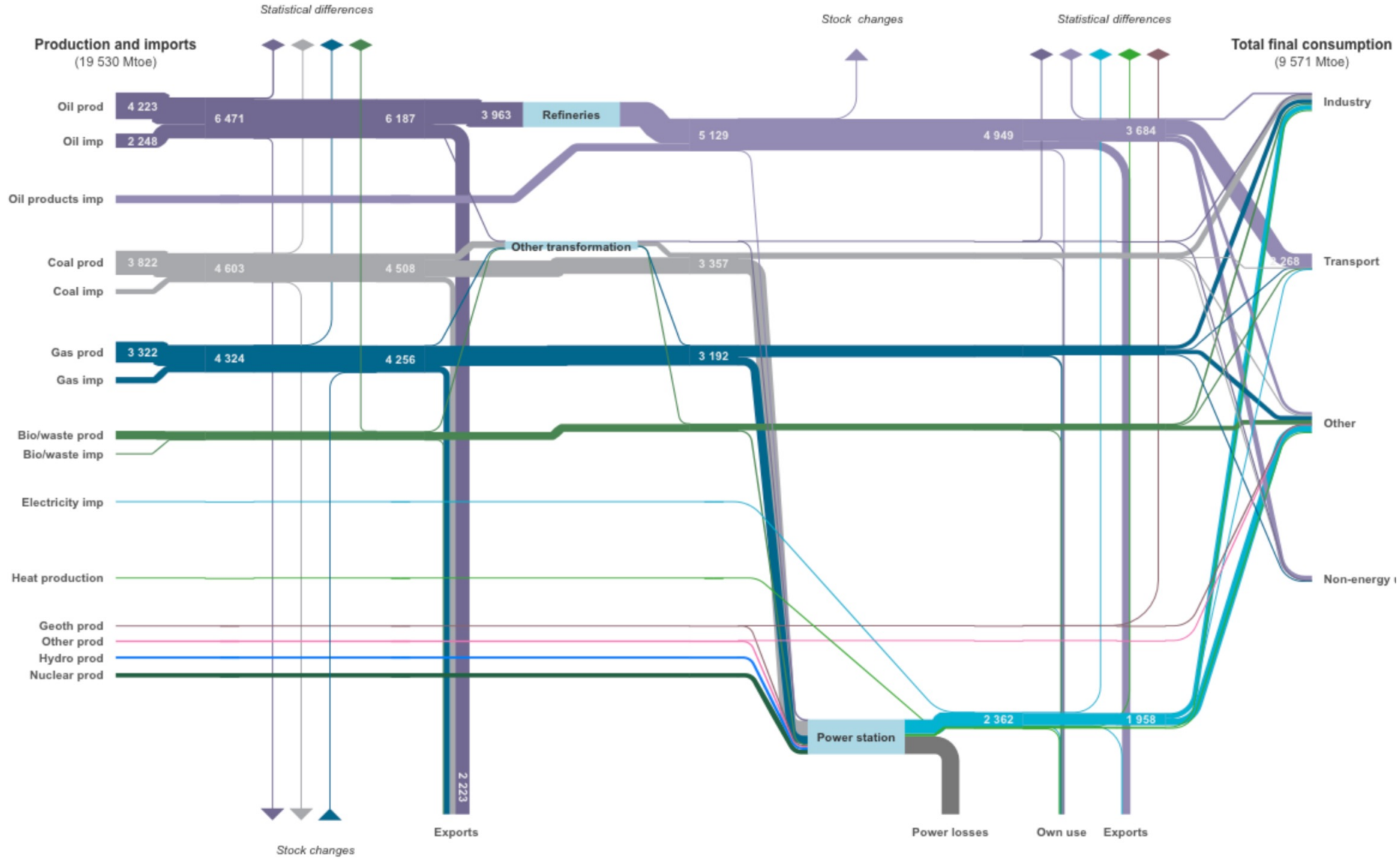
Energy? What is energy?

- Energy
  - Curvature of spacetime
  - Ability to change spacetime
  - Ability to do work
- What are energy services
  - Ability to change temporal and spatial relations
    - Transmission lines
    - Pipelines
    - Storage



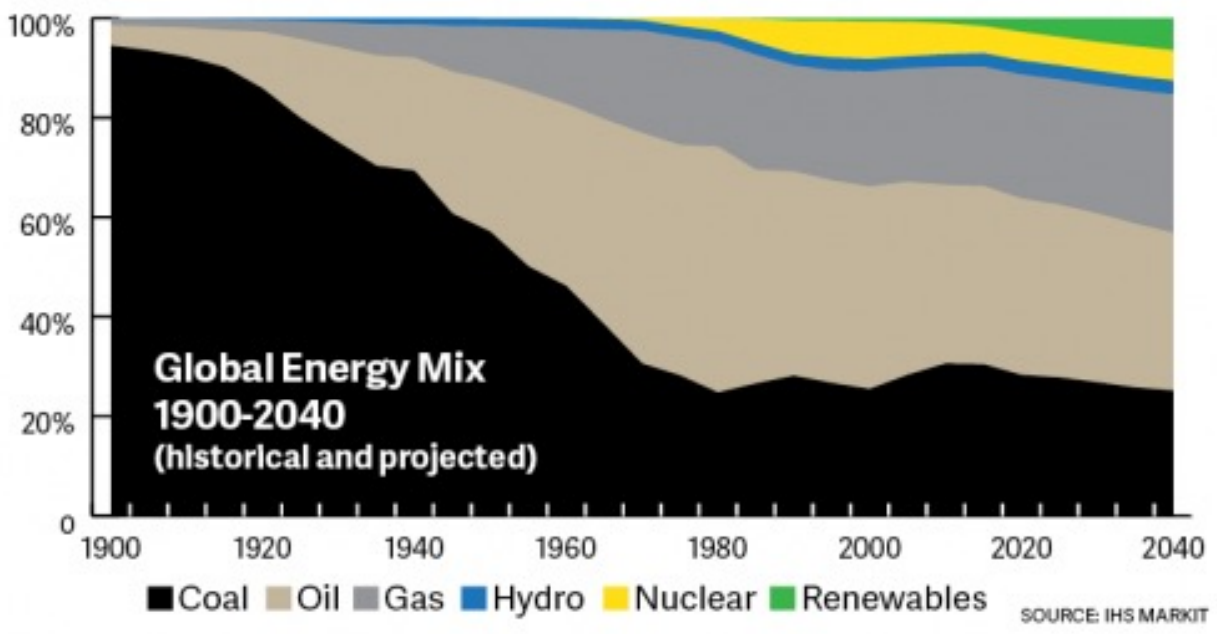
https://physics.stackexchange.com/questions/740401/is-energy-equal-to-the-curvature-of-spacetime

Energy is a flow

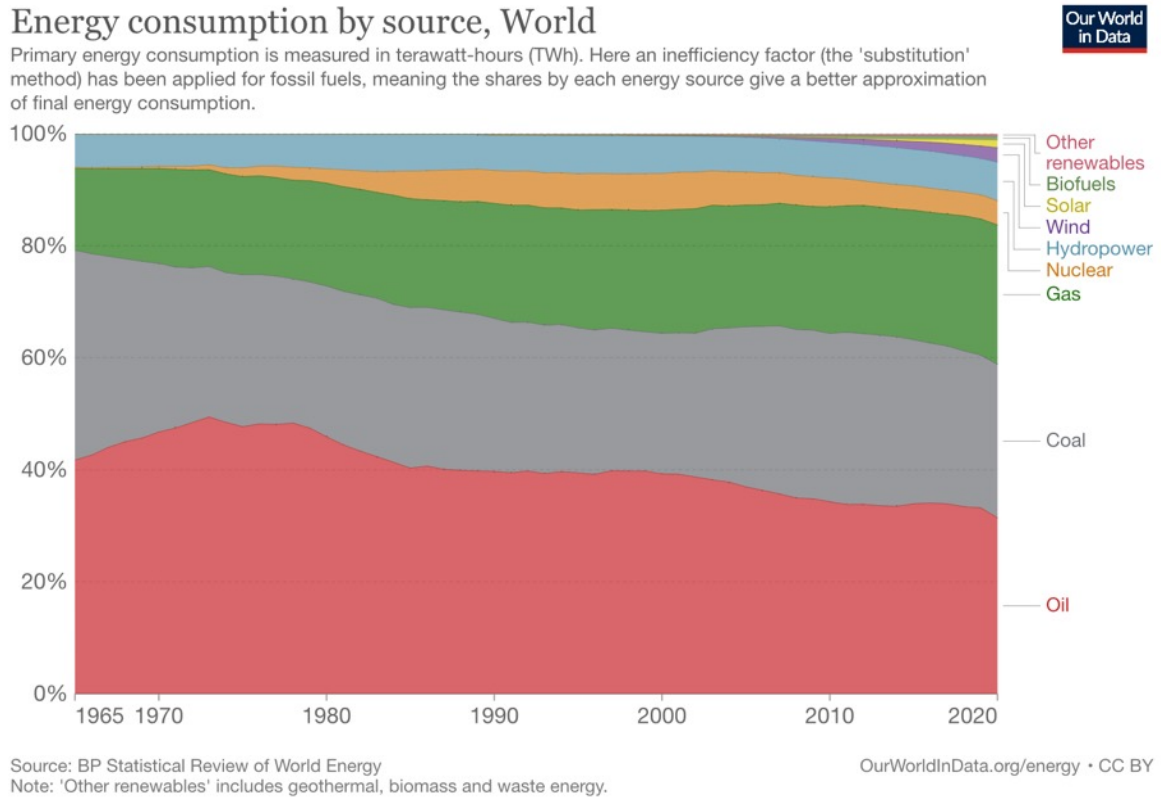


https://www.iea.org/sankey/

Energy Transition is happening, as always

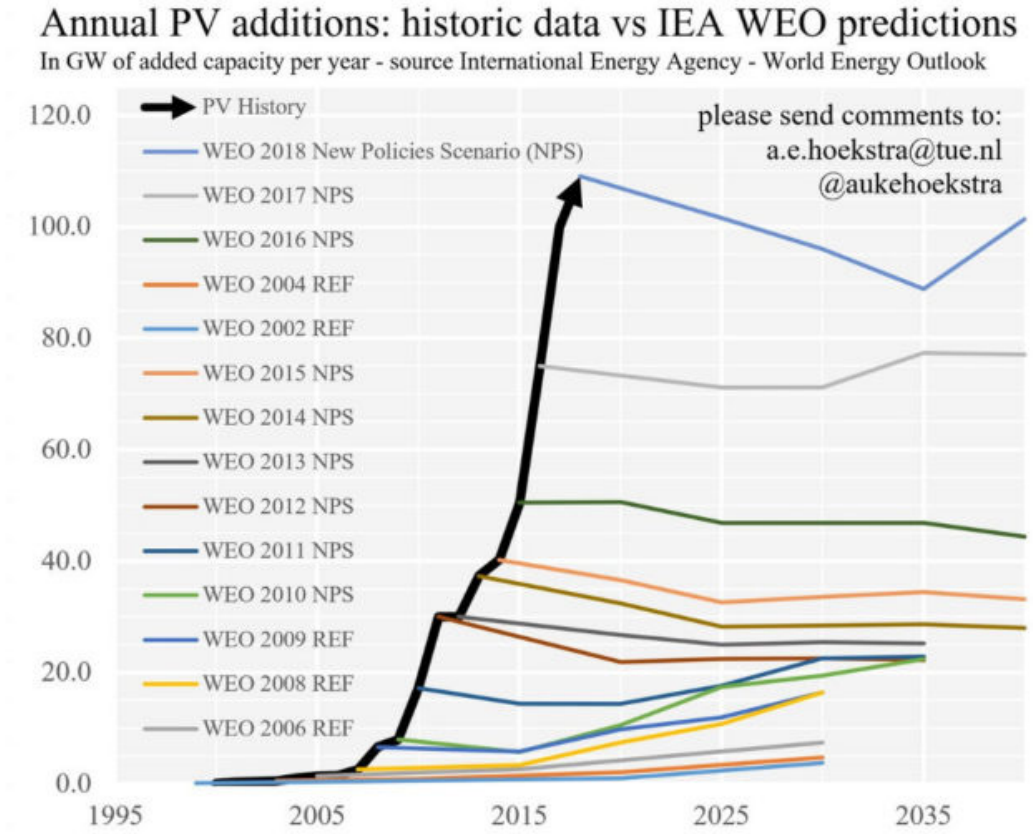


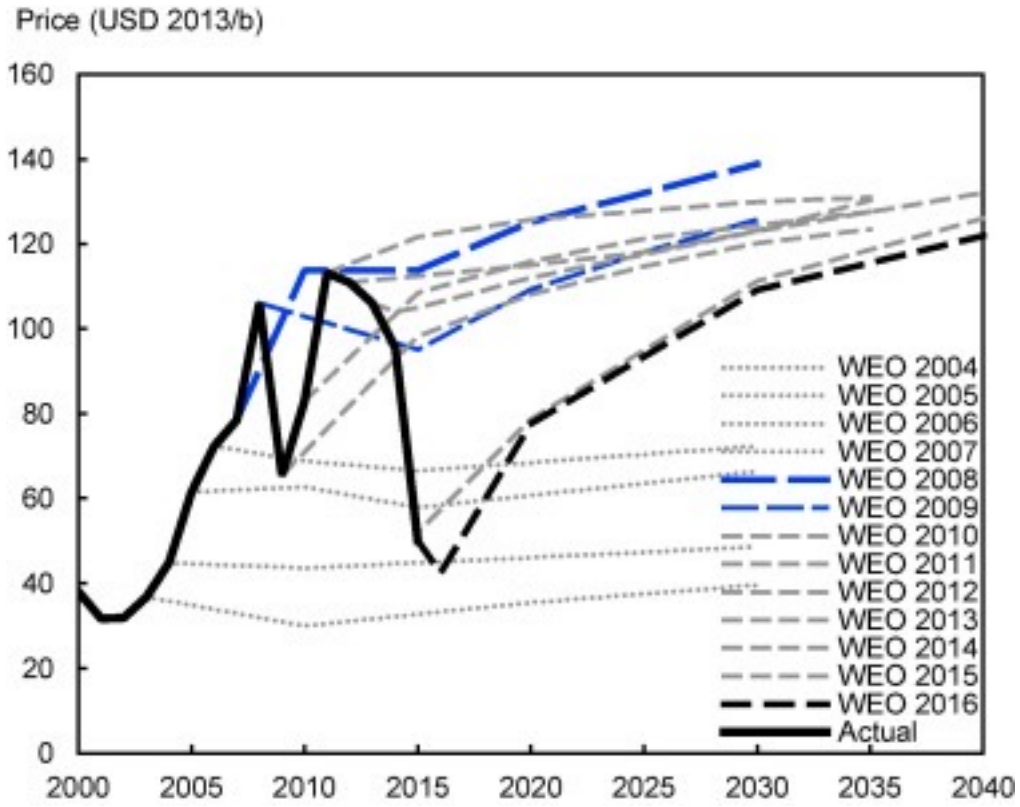
Long Term



Short Term

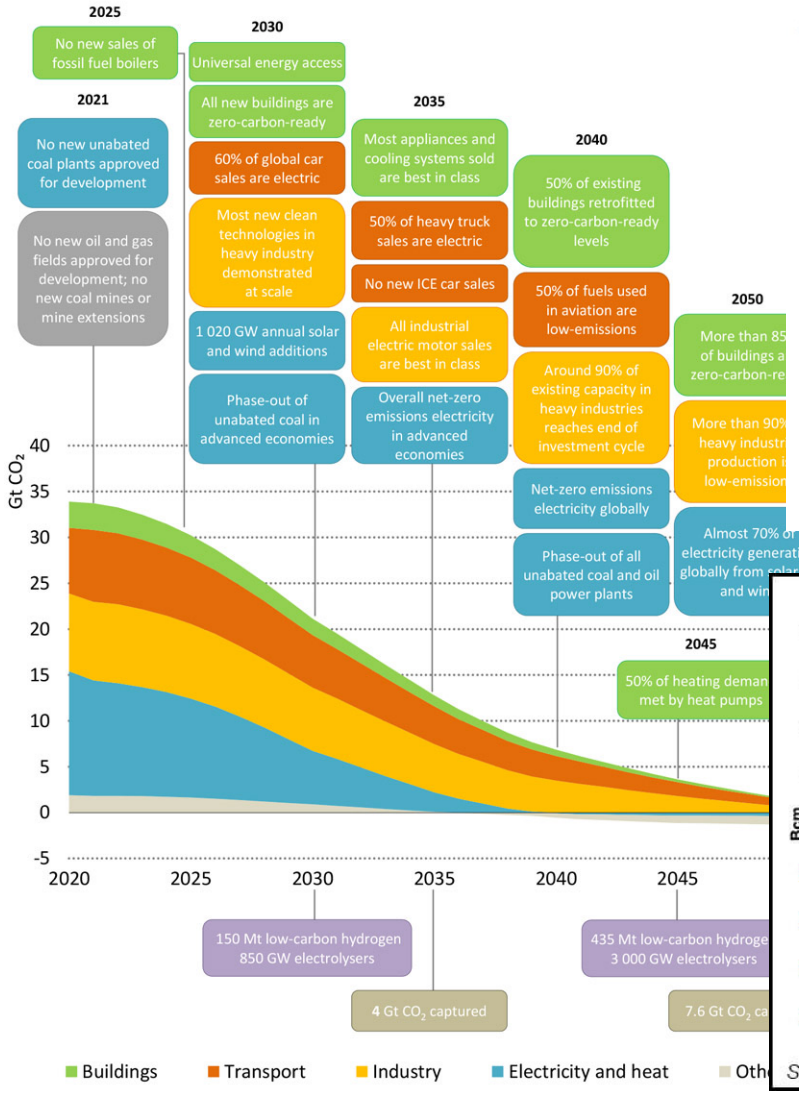
Perfect Foresight? Or perpetual updating

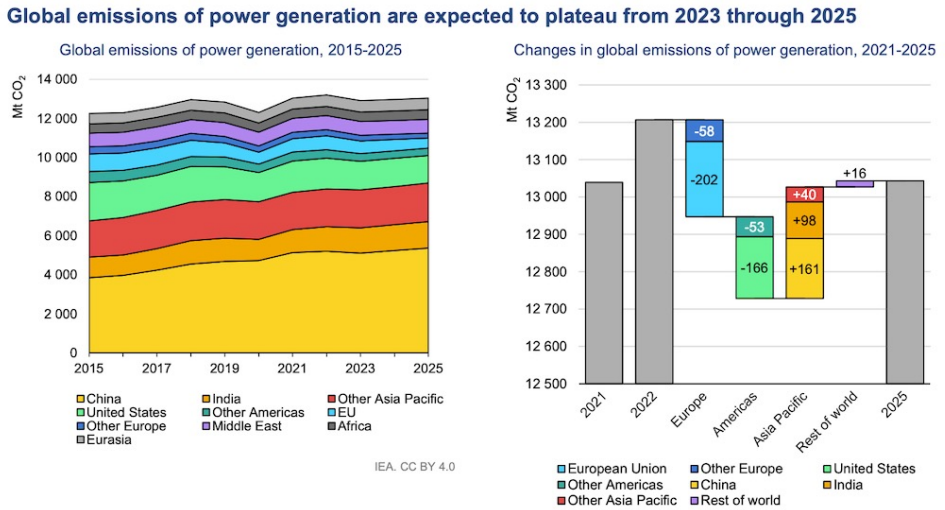


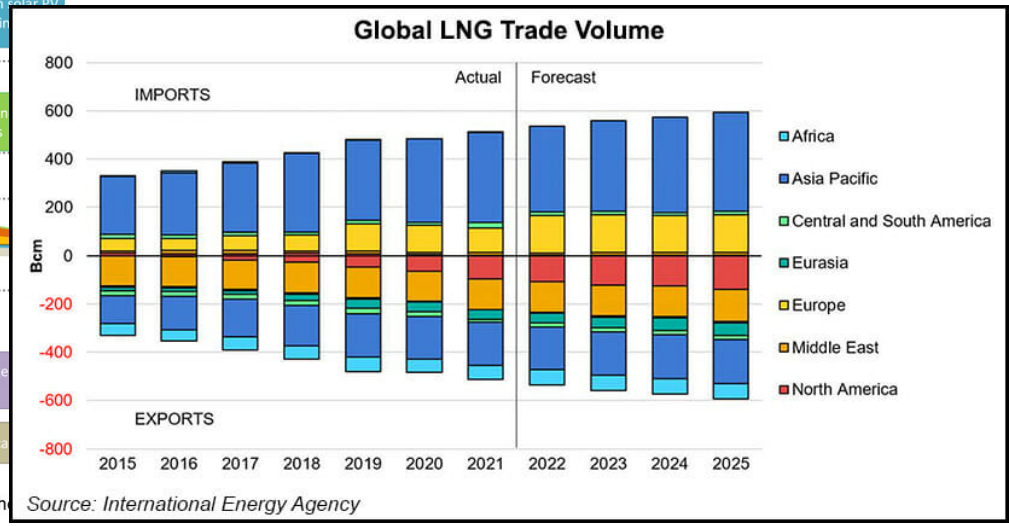


Why forecasts are important?

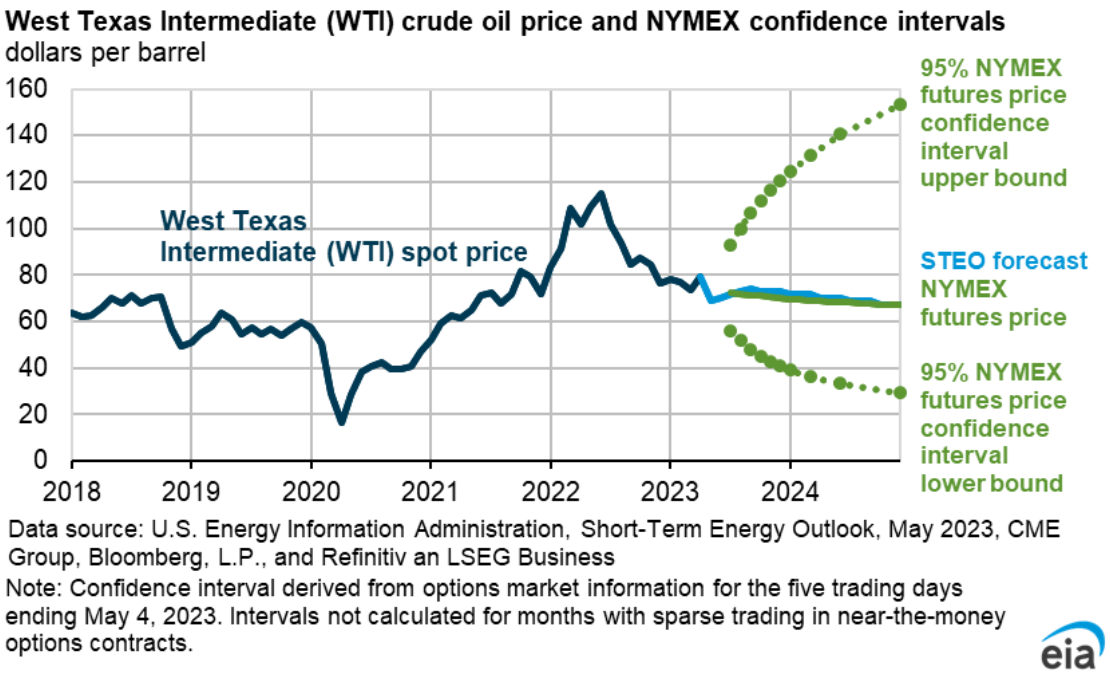
- “We are wired for stories”
- Storytelling and narratives
- Influence
- Images
- Catch phrases (easy to digest)

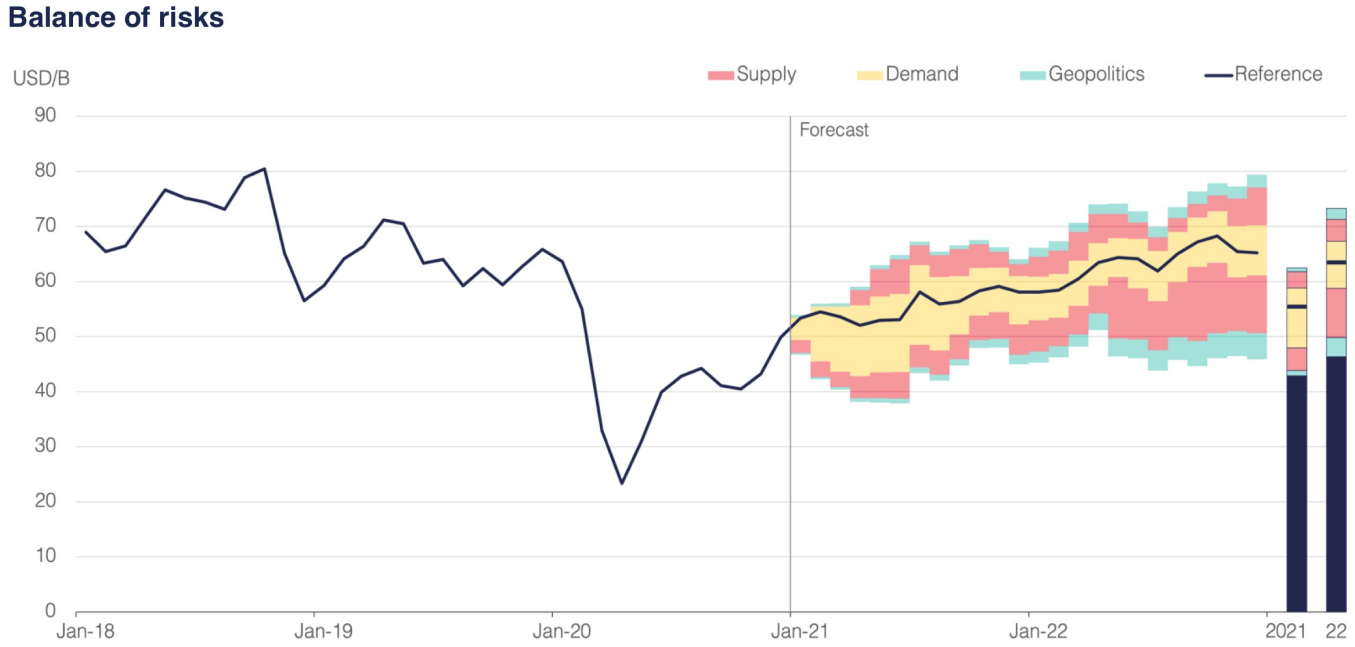






What is the way? A Probabilistic look

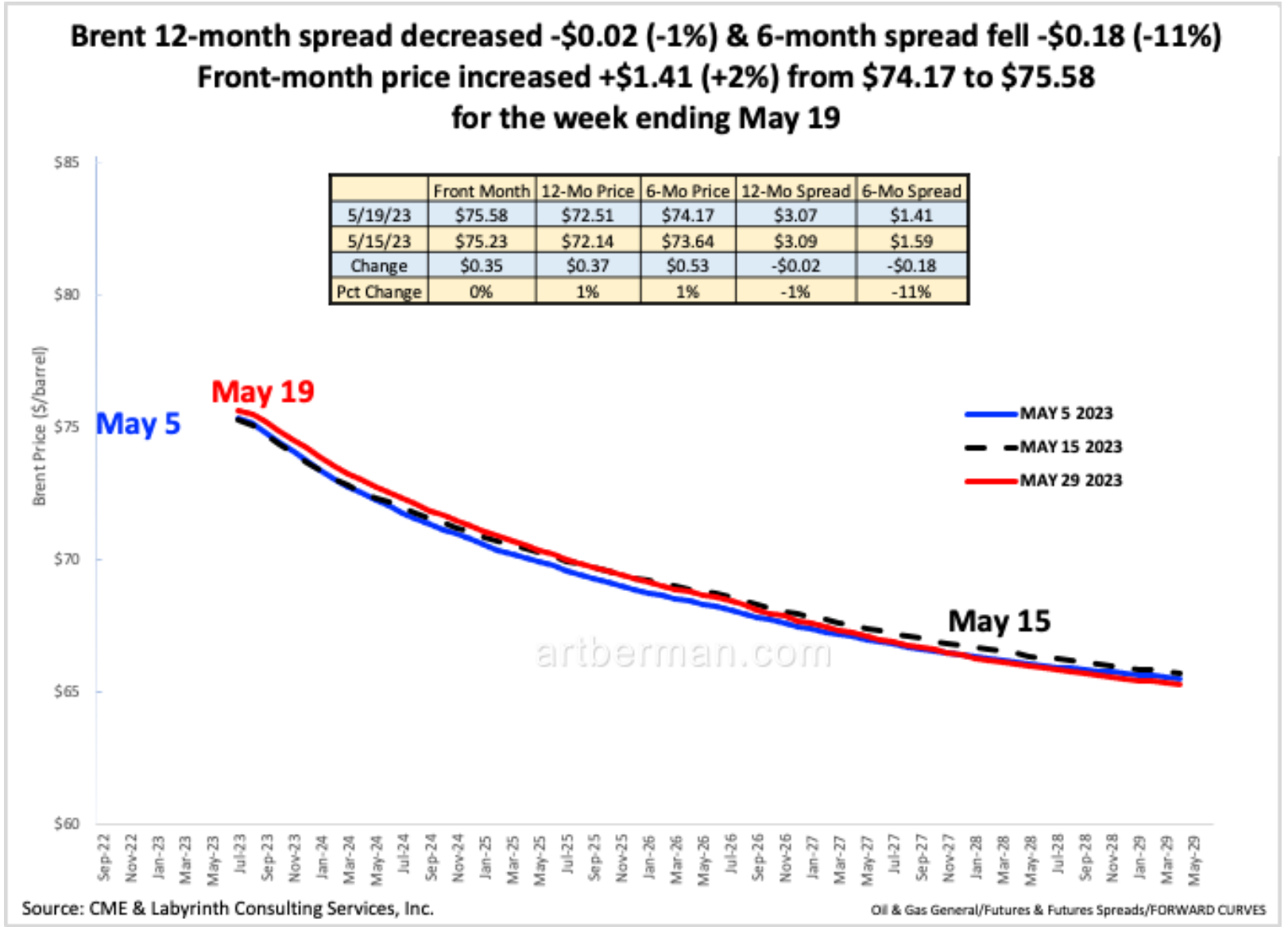




Notes: Brent price. Source: OIES

Price formation

- Future -> Physical or Physical -> Future



Price a compressed information

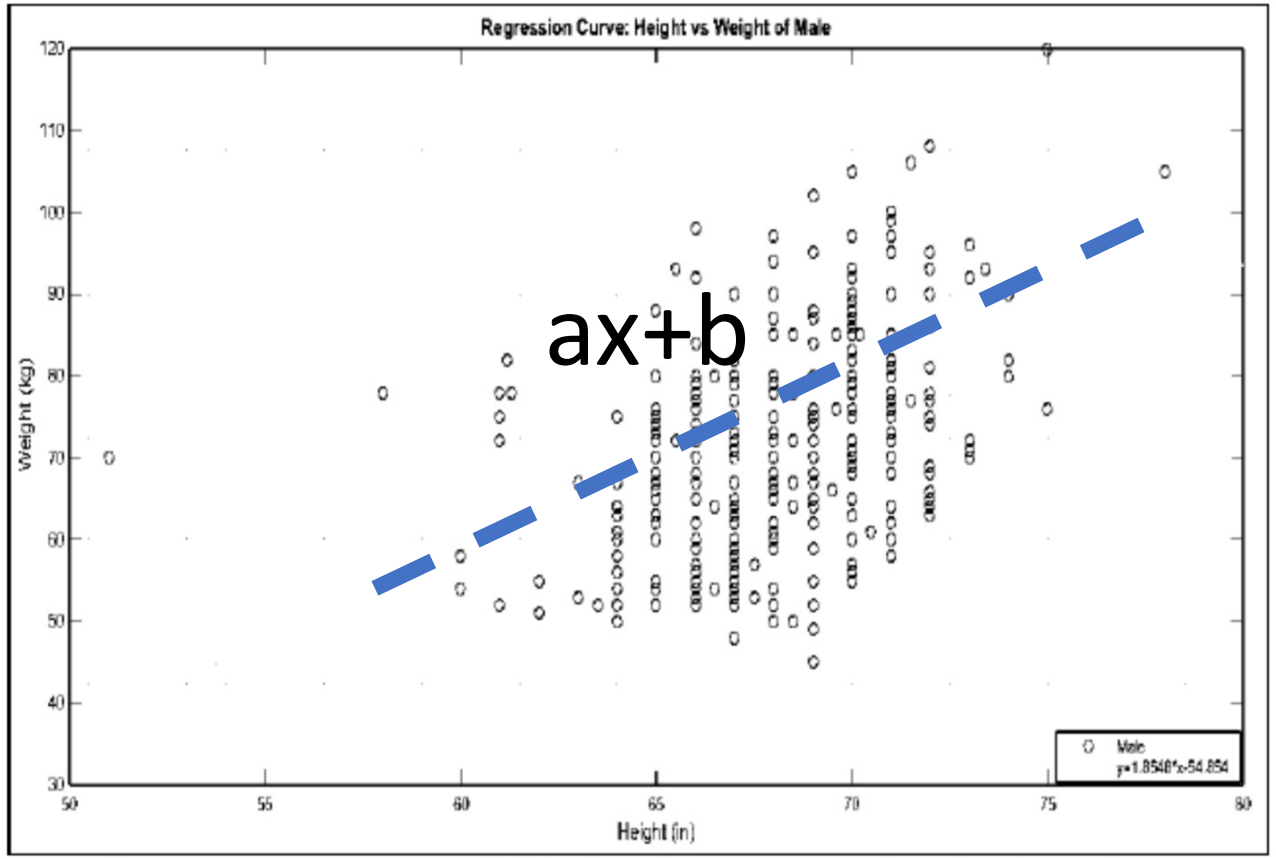


Figure 2. Regression model for height versus weight of male students

Instead of all the numbers, we simplified
It to ax+b , practically two numbers

a,b

Is it reality?
Is it right?
Is it true?

You need ideas but which ideas?

- Democratic way? Listen stakeholders
- Let’s take VAT to public polls? (Do you want VAT ? Yes/No)
- State capture
  - Most eligible?
    - (Toyota largest seller)
  - Most engineering talent?
    - (Hybrid cars)
  - Most technical knowledge?
    - (Engineering base)
  - Most experiencedd
    - (Who else?)

Car of the Future, 2014

Japan's Prime Minister drives Toyota's Car of the Future

On July 18, Japan's Prime Minister Shinzo Abe became one of the first people to experience Toyota's upcoming fuel cell sedan when he drove the vehicle at a hydrogen station in Kitakyushu, Japan. Giving his thoughts on the sedan, Prime Minister Abe noted that acceleration was particularly impressive, and commented that fuel cell vehicles are ... Continued

July 31, 2014

https://www.automotiveworld.com/news-releases/japans-prime-minister-drives-toyotas-car-future/

Energy Crisis

- Focuses public opinion on a certain subject and educates(?) them

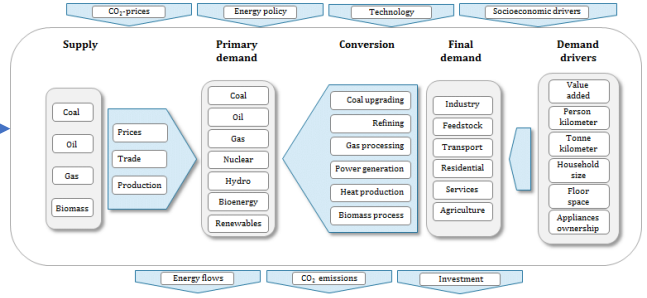
Net Zero Versions

- NZE 1.0 : Close all fossil fuels
- NZE 2.0 : Bridges, time constraints
- NZE 3.0 : Prioritize and scale
- NZE 4.0 : Optimize

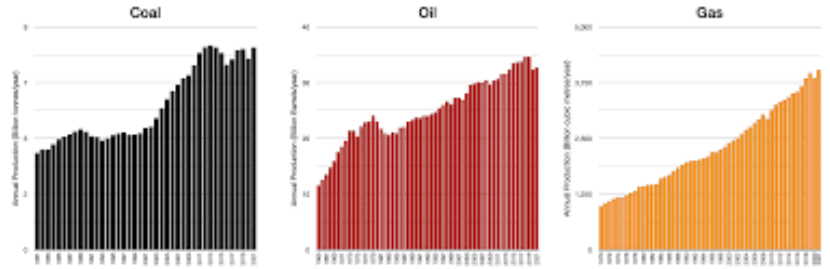
In a multiverse…Two futures

Data Futures

(Excel&Python guys)

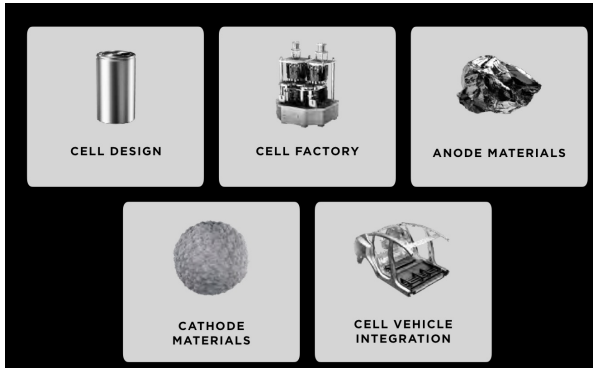


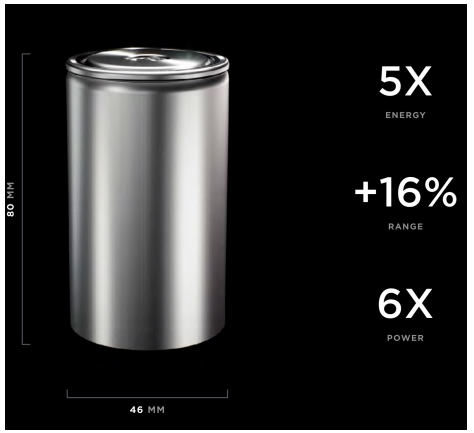
Storytelling with data



Engineering Futures

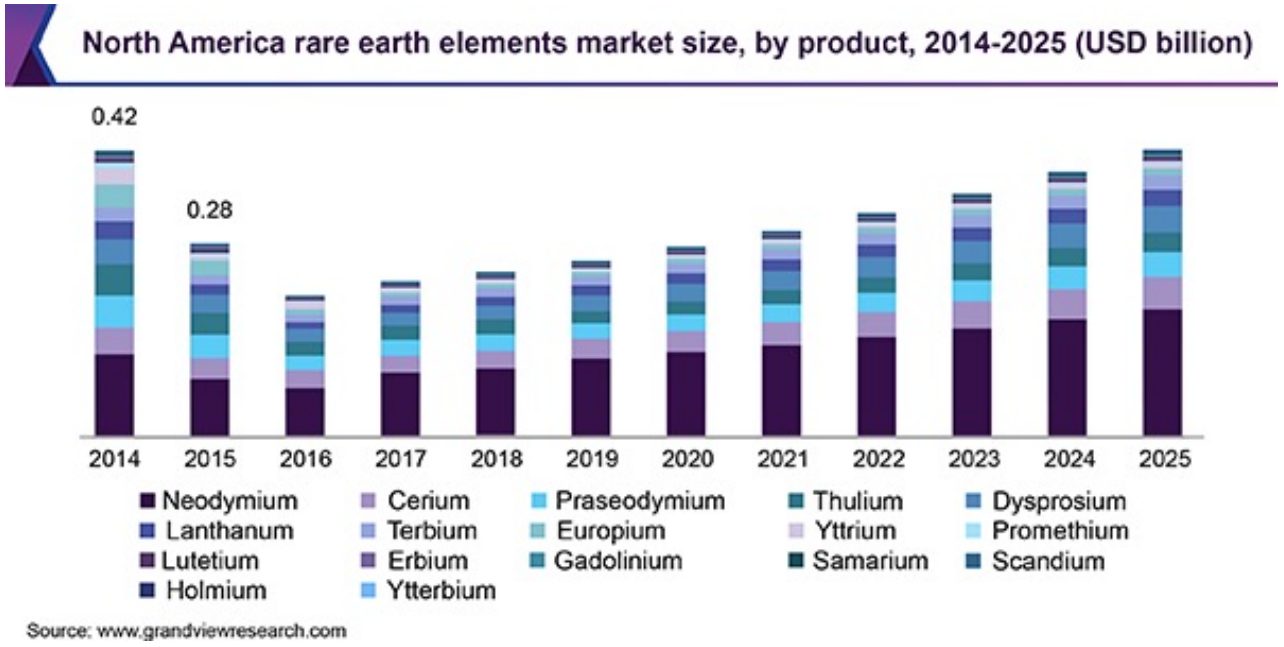
(Best engineer guys)

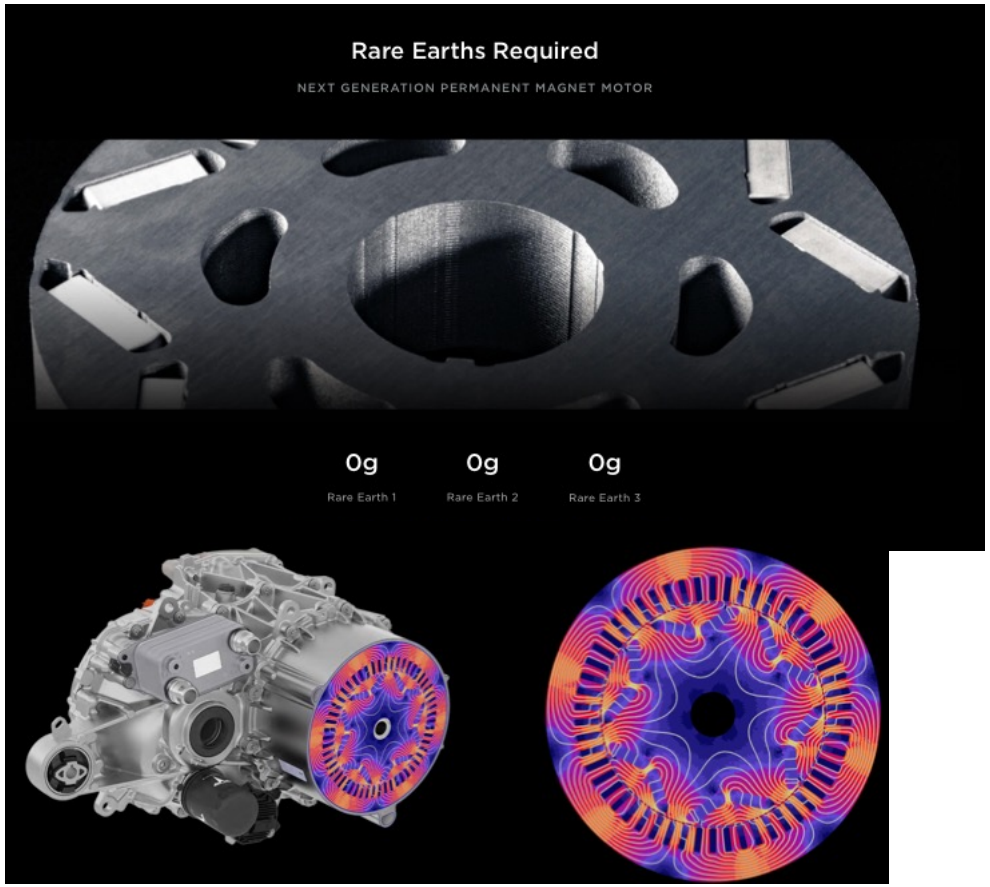




Techtelling with progress

Example : Rare Earth Needs





Data Futures

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Engineering Futures

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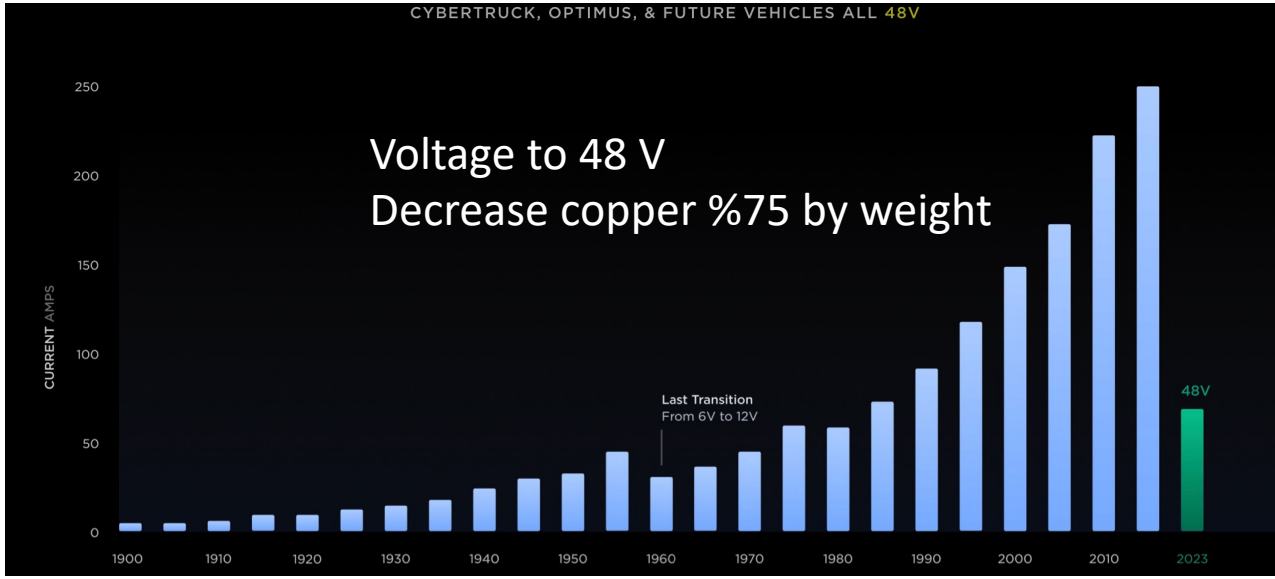
Example : Copper Needs



Data Futures

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Engineering Futures

(Best engineer guys)

What is a recipe?

- Energy policy is about
  - Commodities, services, future
- Should be a consensus (Climate Change?)
- Or visionary (Messmer Plan)
- Or industrial development (China, IRA, NZI)
- Or public (Energy poverty)
- Everyone has ideas, but are they informed ideas? or confirmation biases?

Simple recipe:

1. Gather data, ask for input, list alternatives, impact analysis
2. Keep improving, return to step 1

Conclusion

- No perfect foresight, a probabilistic game
- People are focused? But are they REALLY informed or learn through easy catch phrases
- Listen everyone, follow who? Your ideas? Democratic
- Data guys vs Engineers
- Public perception
- Who defines who?
  - Prices: Physical, Future
  - Leaders define zeitgeist or zeitgeist defines leaders?

Thanks

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