Wind Finland 4. Oct 2023

How not to repeat the Swedish wind mistakes

Fredrik Bodecker, Managing Partner


LYMPIC
WINTE
GAM
LAKE
PLACI
198
Terinit

The four horsemen of the ~~Apocalypse~~ Swedish Wind buildout:

- Capture rates

- Poor grid planning

- Lack of system thinking

- Overconfidence in learning rates

Capture Rates

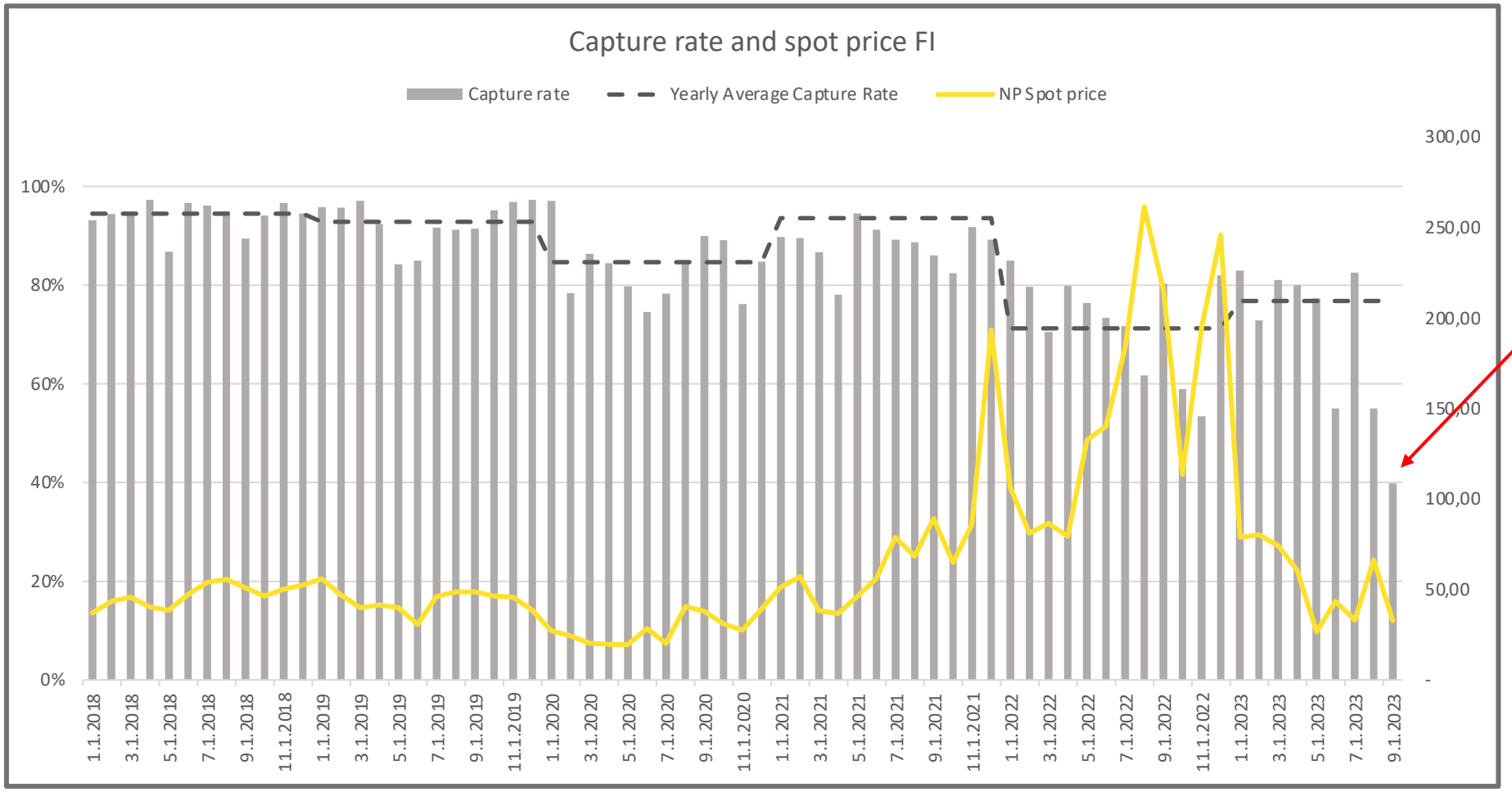
Cannibalization

SE2 change in capture rate and production

From 5 to 14 GW in four years—similar to Finland!

Capture rate development SE2

	Wind prod. (GWh)	Share of SE2 prod.	Captured price	Avr Spot price	Diff price	Capture rate
2017	**5 624,860**	**13%**	29,50	30,86	- 1,36	96%
2018	**5 859,252**	**15%**	42,21	44,20	- 1,99	96%
2019	**6 320,783**	**15%**	36,81	37,97	- 1,15	97%
2020	**10 572,492**	**20%**	12,63	14,37	- 1,74	88%
2021	**10 796,539**	**21%**	33,78	42,53	- 8,75	79%
2022	**13 941,806**	**26%**	36,83	61,95	- 25,13	59%
2023	8 486,959	30%	35,33	45,51	- 10,18	78%



Capture rate September: 40%!

“Summer is coming!”

MONTEL

Print Add to favorites

Solar drives European power prices below zero on Sunday

(Montel) Power prices in several European nations plunged below zero during some hours on Sunday – the fourth consecutive weekend with negative prices – amid robust solar output and low demand.

In Germany, Europe's biggest power market, prices dropped to as low as EUR -34.99/MWh in the hours between 11:00-17:00 CET.

Solar power generation reached 37.8 GW at 13:00 CET, when power prices were the lowest, while wind power generation contributed 8.6 GW, according to Montel Energy Quantified (EQ). Demand stood at only 48.2 GW at the same time.

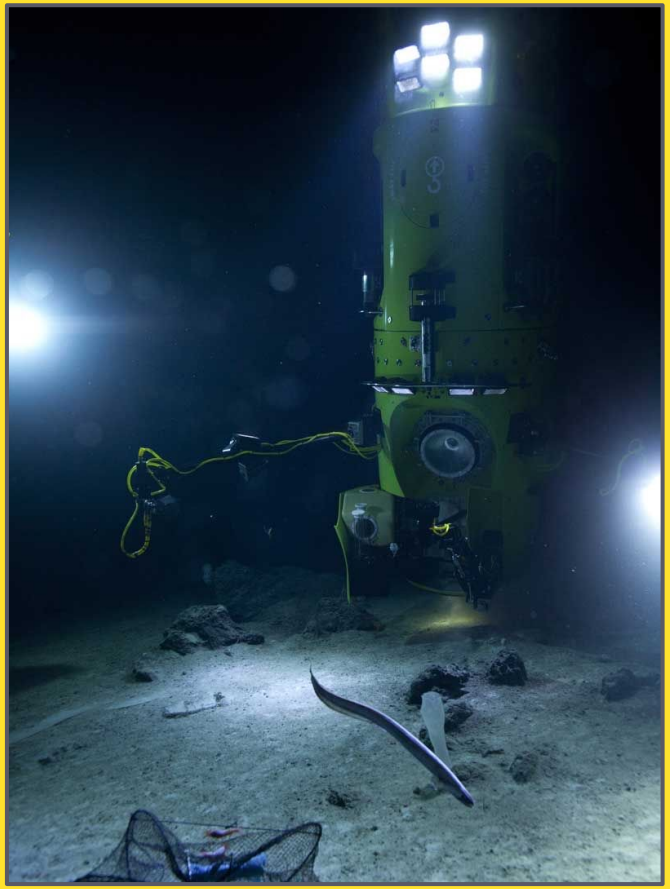
Elsewhere, the Netherlands saw the lowest hourly prices on Sunday, with prices dropping to as low as EUR -66.67/MWh. Prices in the Nordic region also sank below zero.

Analysts expect a greater frequency of hourly power prices falling below zero in some European nations due to a growing capacity of intermittent renewable energy, especially during periods of low demand, Montel reported last week.

Reporting by:
Christian Driessen
christian.driessen@montelnews.com
08:50, Monday, 12 June 2023

Editing by:
Jeff Coelho

Where will the Finnish power prices be in 2030 with another 30 GW renewables a windy sunny day?



James Cameron at the Mariana trench, 11 000 meters deep.

Decreasing capture rates

Battery hybrid parks

Saved by electrolyzers?
(=> no need for batteries)

“This is the way”

“Hydrogen is the way”

90+ GW electrolyzers in EU by 2030….

1. Where will all the power come from?

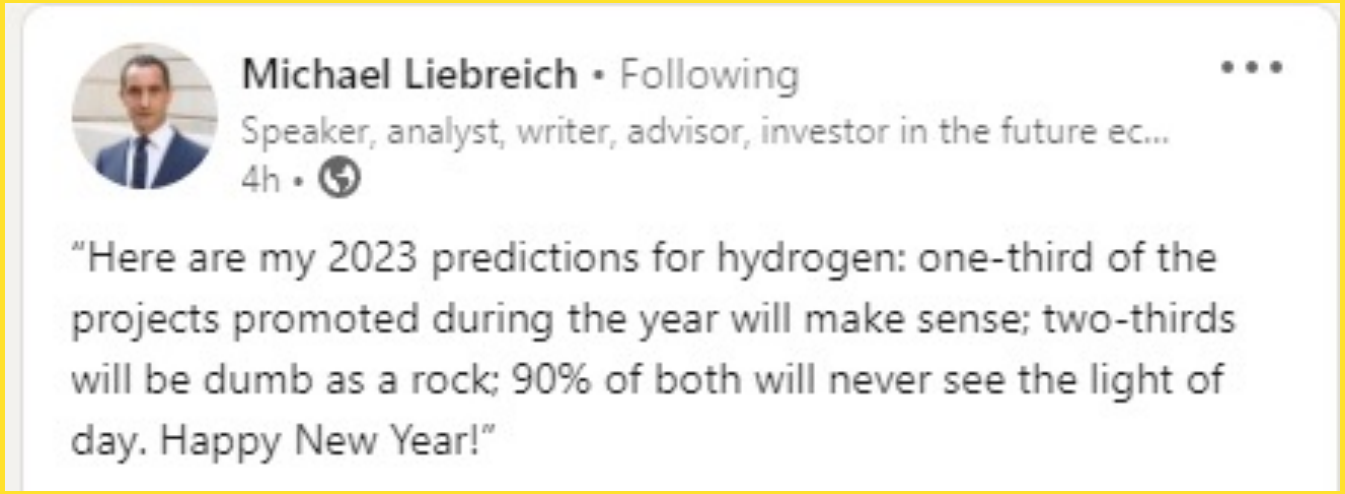
2. => Variable power from wind and solar no longer a problem! (Or?)

First comes low prices!

”The best cure for low prices is low prices”

We overestimate the learning curves for electrolyzers!

Lower volume
More BOP
More compressors, pipes, valves etc.



Large scale wind (and solar) power will come several years before the demand catches up

The laws of thermodynamics ⟷ The law of tax payer money

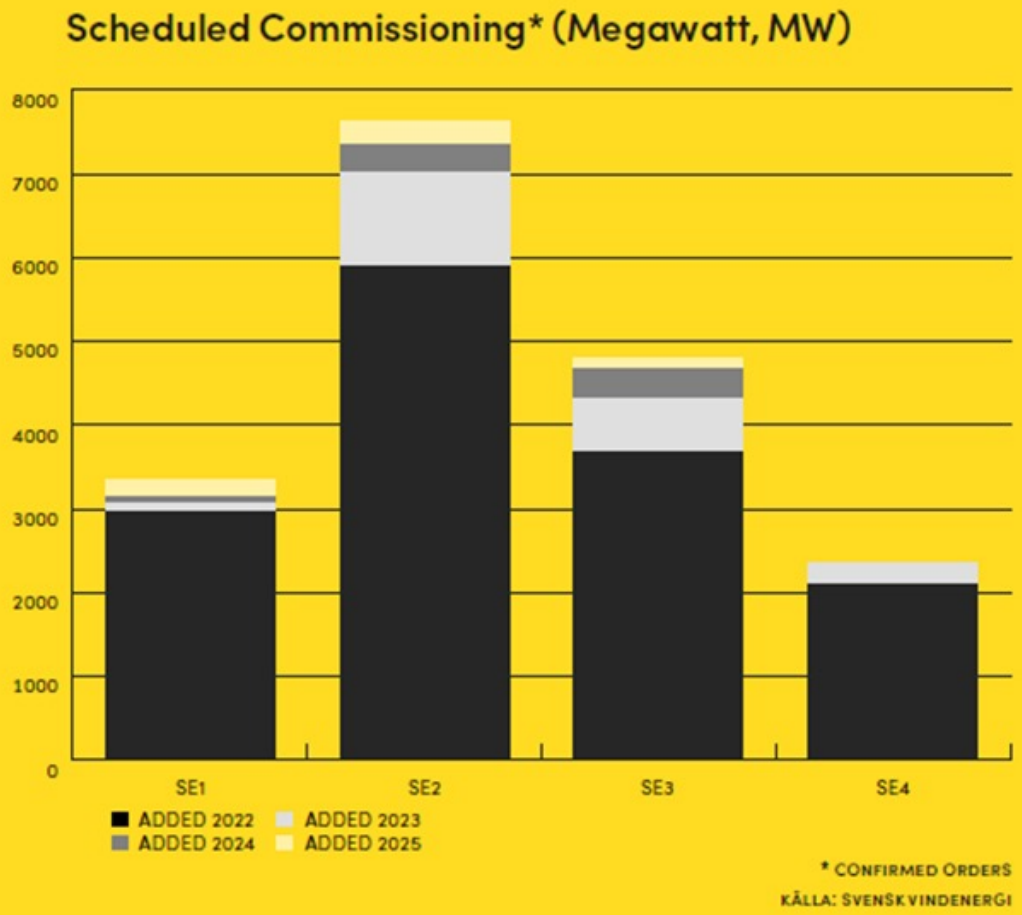
The electrolyzer hallelujah choir will be much slower than the renewables buildout

Poor Grid Planning

Fingrid offers Power2X projects a lot of opportunities

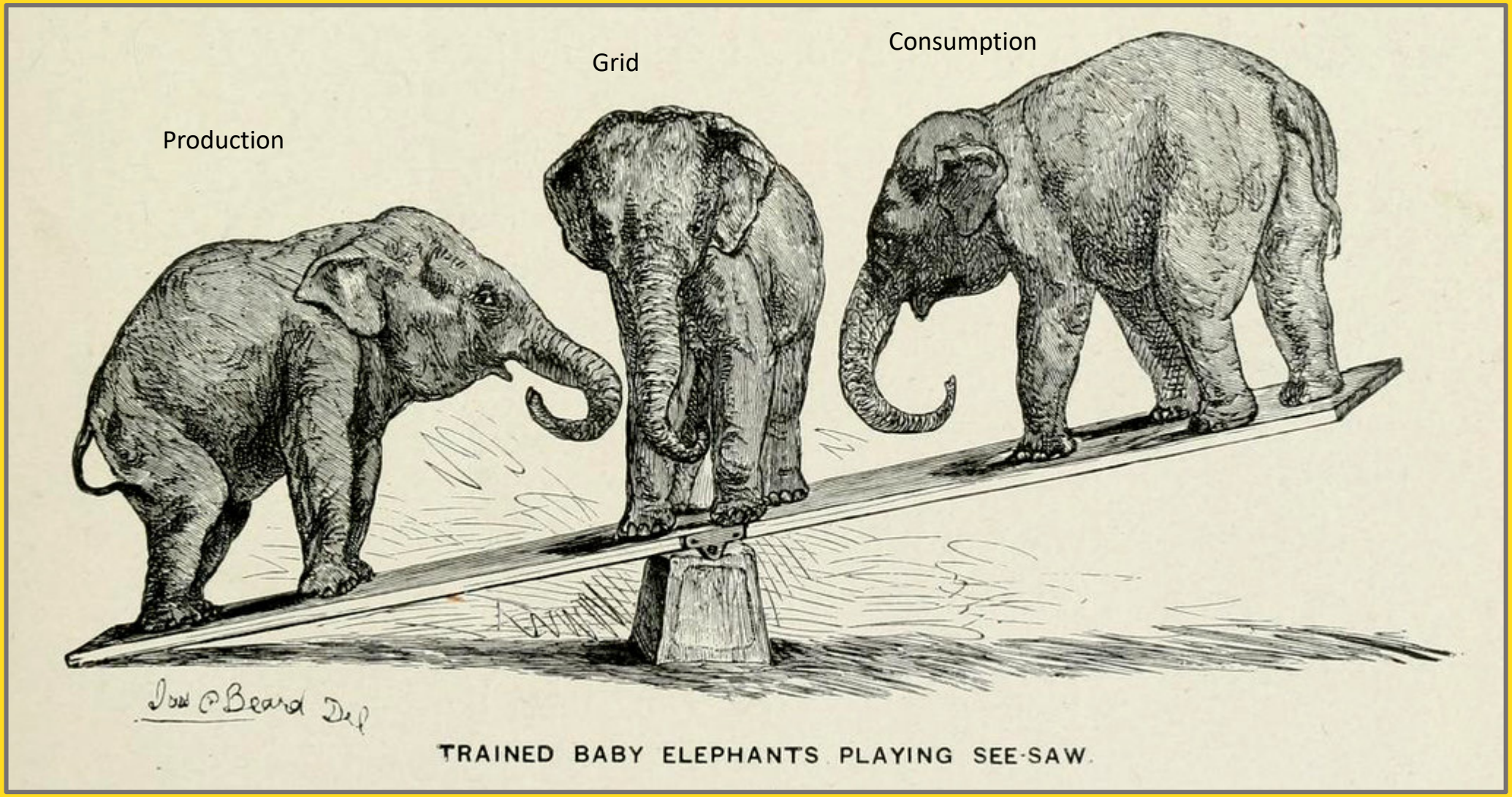
Svenska Kraftnät:

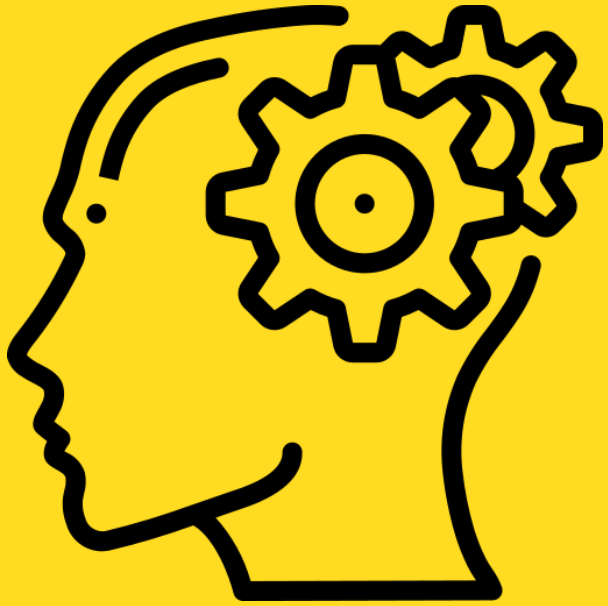

NOT HERE
THEN WHERE?


Scheduled Commissioning* (Megawatt, MW)
8000
7000
6000
5000
4000
3000
2000
1000
0
SE1
SE2
SE3
SE4
ADDED 2022
ADDED 2023
ADDED 2024
ADDED 2025
* CONFIRMED ORDERS
KÄLLA: SVENSK VINDENERGI

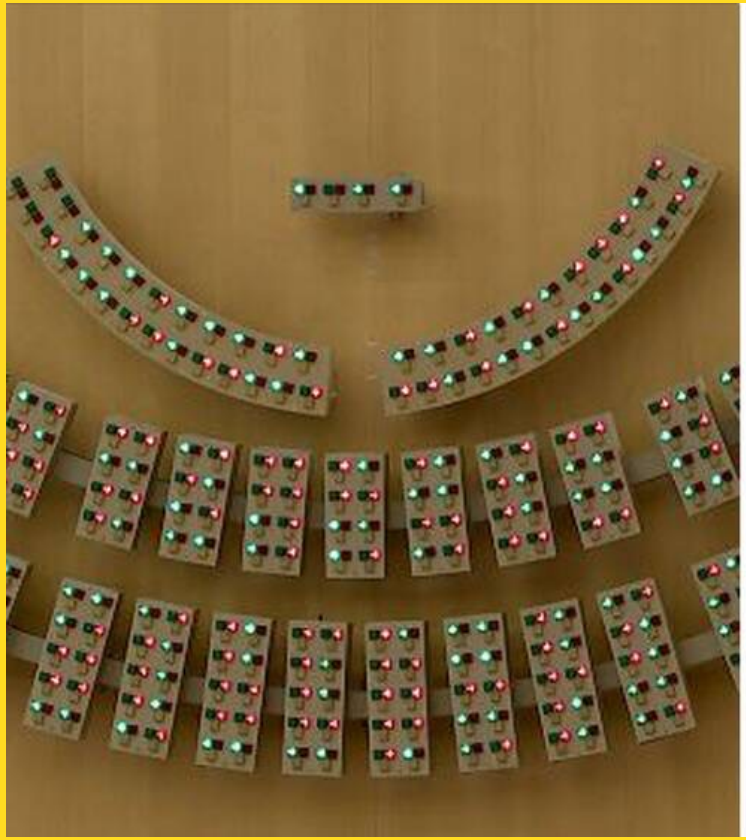
Not kicking the grid owners in the butt earlier

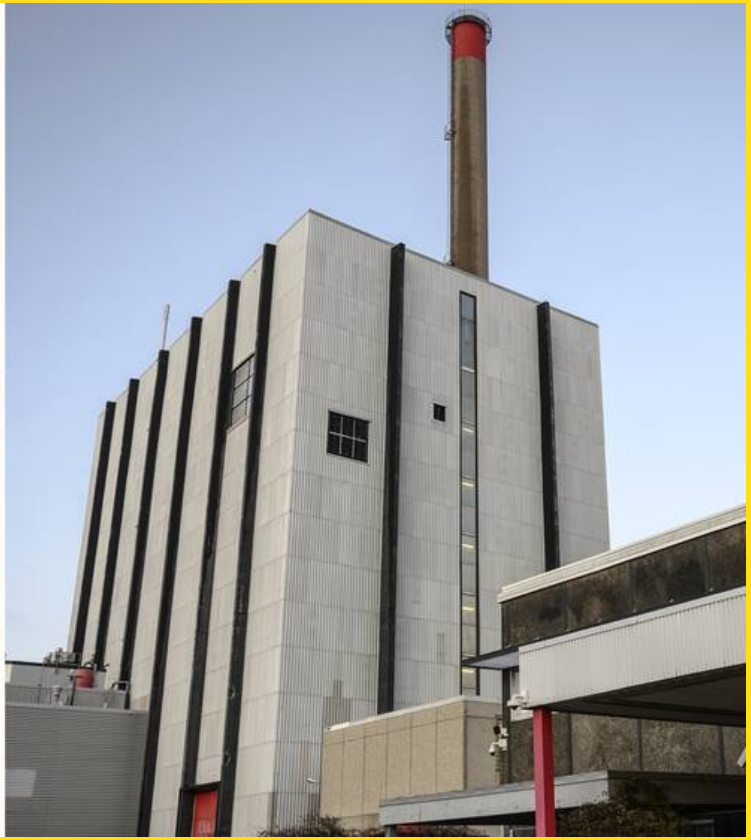
Balancing the power grid


Production
Grid
Consumption
Thos. Beard Del
TRAINED BABY ELEPHANTS PLAYING SEE-SAW.



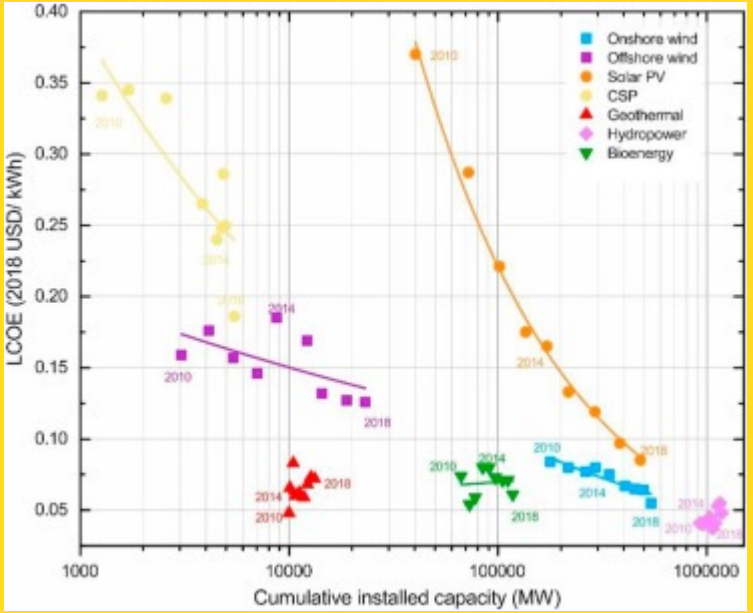
Lack of thinking about the whole power system





One vote

Overconfidence in Learning Rates



Is Wright's law broken for wind?

Experience curve effects learing rate
40% cost ivrease for new turbines
logistics around offshore wind

CfD auction round failure underscores Government's wrong thinking on subsidies

CfDs are a hedge, not a subsidy!*

The truth is that the Government needs to understand that the CfDs are a hedge and not a subsidy. And there is no reason to expect the strike price of a hedge to decline over time. However, if wholesale electricity prices fell to zero, then it would be both a hedge and a subsidy since price support would be required, to provide developers with a source of income, since selling electricity will not generate the returns needed to repay capital costs, and to provide certainty over income to ensure that income is sufficient over the life of the contract to provide an acceptable return on investment.

This means that the Government has to let go of its ambition to taper renewable subsidies to zero over time. And it needs to be honest with consumers that they are going to continue to pay these support costs forever, with the value of the support increasing as wholesale prices fall below the strike prices, something the Government expects will happen as renewable generation replaces conventional generation. Unless it faces up to this new power market reality, its plans for renewable generation, and in particular off-shore wind, will continue to stall.

Kathryn Porter, Watt-Logic

Electricity certificates)in context of temporary subsidy during learning)

Ending words…

For last, some culture…

Write a limerick about the FInnish power market

In Finland, so brisk and so stark,
The power flows light in the dark.
Nuclear thrives,
And wind power drives,
A dance of electrons, a spark.