Solar in the Age of Deep Decarbonization

May 2024

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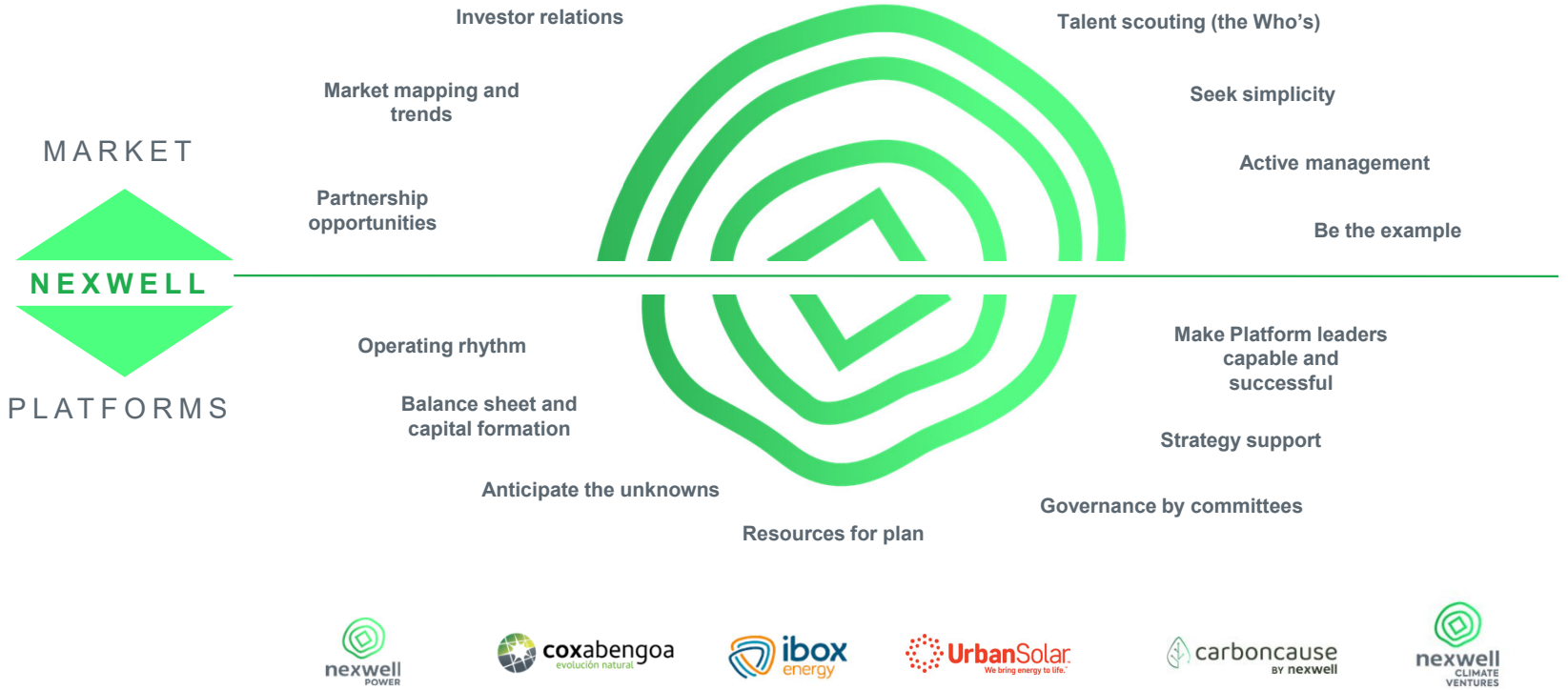
EXECUTIVE SUMMARY

Nexwell is an Investment Holding Company. The company aims for a world where climate change is no longer a critical issue by owning, institutionalizing and scaling strategic investments in subsidiary companies in the renewable energy and decarbonization space. The crossroads of the energy transition landscape, the data driven energy demand surge and the need for a carbon free ecosystem, provide Nexwell the opportunity to be a relevant growth investor in this revolution helping make the world a better place for generations to come. Our goal is to reach more than 1 billion tons of CO2 avoided or sequestered by the next decade.

1 The 1 billion tons of CO2 avoided or sequestered goal as used in this presentation means lifetime avoided or sequestered CO2e emissions, net of emissions incurred to produce, use and decommission an asset during its entire lifecycle, as estimated when a project is placed into service, with actual emissions impact replacing estimates during the operational period while projects are owned by Nexwell

EXECUTIVE SUMMARY

Nexwell is actively engaging with the market to remain constantly updated on emerging trends to provide effective strategic support to our platforms, ensuring they stay ahead in a rapidly evolving landscape



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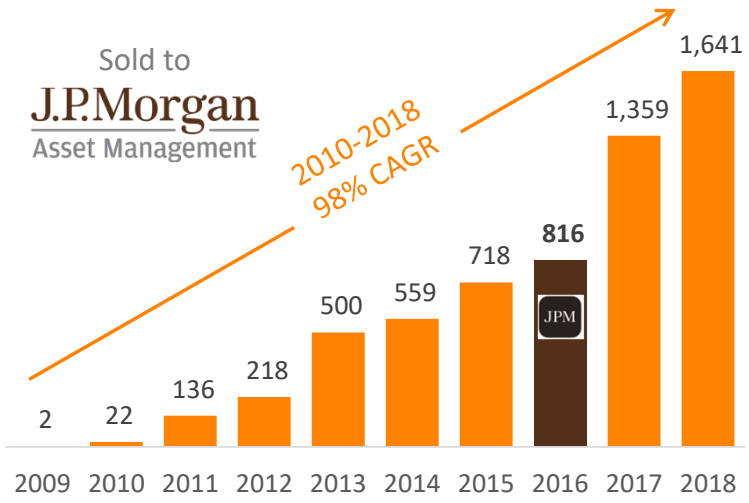
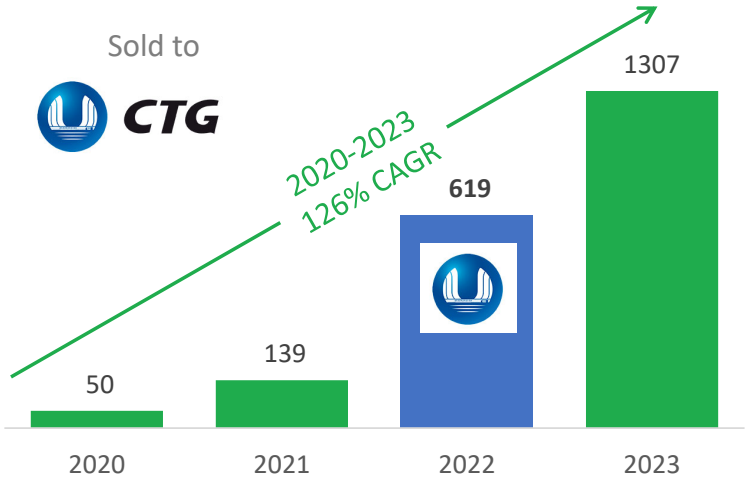
TRACK RECORD

Nexwell's founders have a proven track-record and more than 150 years of collective experience in the power sector that has repeatedly delivered 100% CAGR over the past 15 years across two founder led startups.

Sonnedix Controlled Capacity (MW)[1]



Nexwell Power Controlled Capacity (MW)[1]



[1] *Controlled capacity for Sonnedix includes development projects and for Nexwell Power includes operating, under construction and optioned or under development capacity*

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OUR ROLE TO PLAY

Nexwell Foundation

As Nexwell, we believe we can do more. Since inception, the Nexwell Foundation receives funding as a percentage of the profits of the businesses we own and operate. As Nexwell scales its platforms, we will embed more ways to provide profit sharing for the foundation, which is needed to fund initiatives where traditional capital is either shy or limited

Our Foundation is dedicated to serving the public good, not profit. Any revenue generated will be reinvested to further this mission. We provide direct grants and acquire ownership stakes in new technology companies, projects, and initiatives that align with our purpose of benefiting our plant and our global society. The Foundation is funded by a profit-sharing participation in selected Nexwell investments.

The Nexwell Foundation seeks to:

- Provide seed funding for early-stage ideas or technologies lacking substantial private or governmental support, prioritizing those with potential for attracting additional funding and maximizing impact.
- Focus on high-impact solutions and companies capable of exponential decarbonization impact when scaled.
- Design funding structures to enable ongoing engagement, learning, and impact toward achieving a net-zero world.
- Require funded initiatives to consistently measure and report decarbonization progress for accountability.
- Assess proposals based on funding significance, future carbon impact potential, and educational value.

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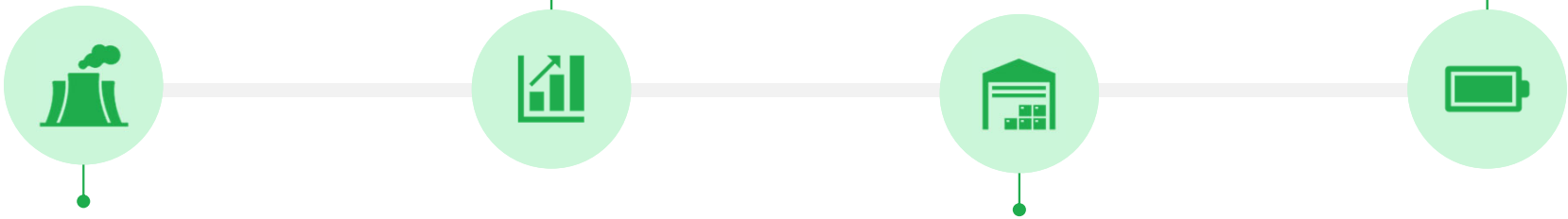
INVESTMENT LANDSCAPE

In Energy, at least four trends are converging

The urgency for decarbonization is supported by regulatory tailwinds that are spurring record high energy transition investments. Such regulation and investments, coupled with anticipated surge in electricity demand while battery and other renewable technology costs continue to decrease, create the perfect runway for Nexwell's plan



Urgent need for decarbonization

Total CO_2 concentration in the atmosphere continues to rise, emphasizing the need for decarbonization and supportive regulations

Strong energy transition momentum

Renewables and new technologies can be seen in the market, as energy transition investments reached a record high $1.8tn in 2023

Electricity demand on the rise

A surge in electricity demand driven by expansions in data center buildout, increased use of AI and electrification of the grid, resulting in an even stronger need for new solutions and decarbonization play

Storage costs coming down

Storage's essential climate role entered a $300B growth phase (progress occurring 10x faster than 5 years ago but still 1/100th of the capacity required) while costs continue on their downward trend

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THE OPPORTUNITY

5 years ago

Investments

We see $13.3 trillion invested in new power generation assets over the 32 years to 2050.

As demand grows, so too does the grid, with distribution and transmission expansion needing an estimated $11.4 trillion to 2050.

Bloomberg NEF

This investment total funds 15,145GW of new power plants between 2019 and 2050, of which 80% is zero carbon.

A further 1,666 GW of non-generating, flexible capacity, such as batteries and demand response, are installed as well.

Total expected investment in Energy Transition investment for the next 32 years ~ 25 trillion.

Source: Bloomberg New Energy Outlook 2019

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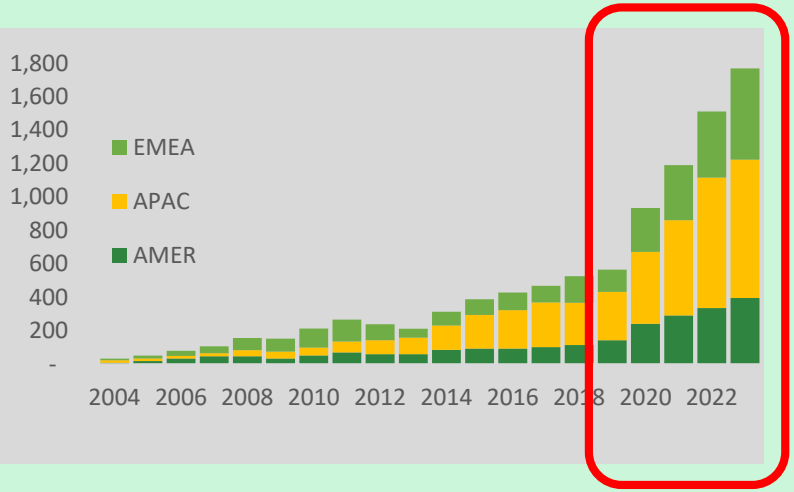
THE OPPORTUNITY

What happened:

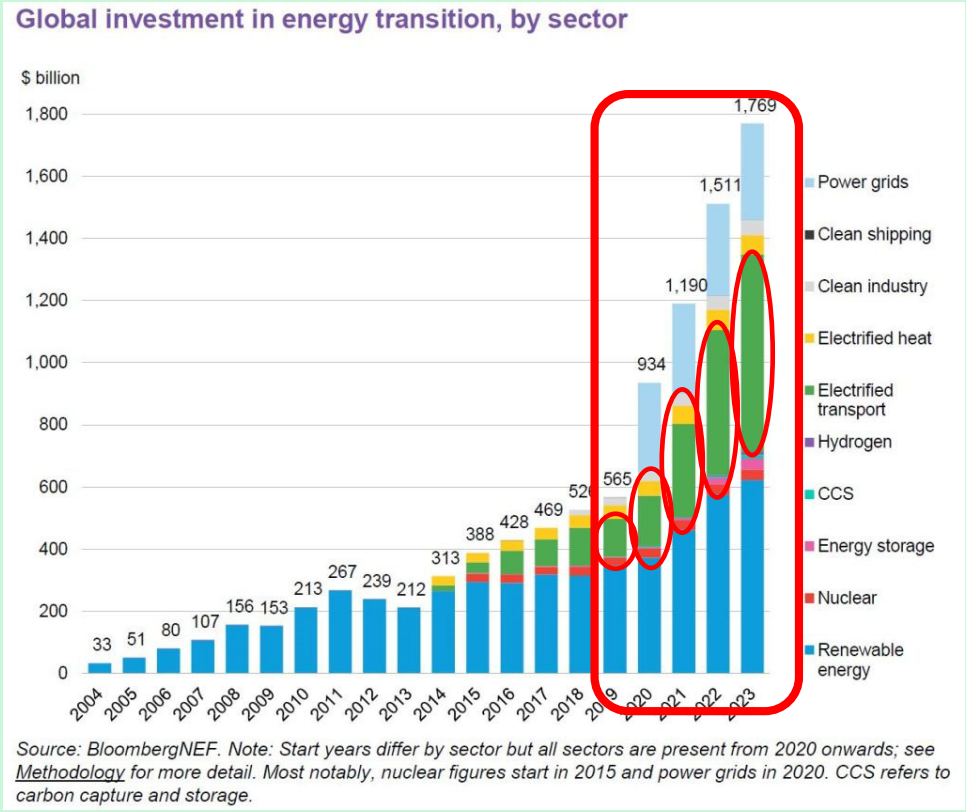
Investments



$6 trillion

spent in the last 5 years alone

Bloomberg NEF



Source: BloombergNEF. Note: Start years differ by sector but all sectors are present from 2020 onwards; see Methodology for more detail. Most notably, nuclear figures start in 2015 and power grids in 2020. CCS refers to carbon capture and storage.

Source: Bloomberg New Energy Outlook 2023

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THE OPPORTUNITY

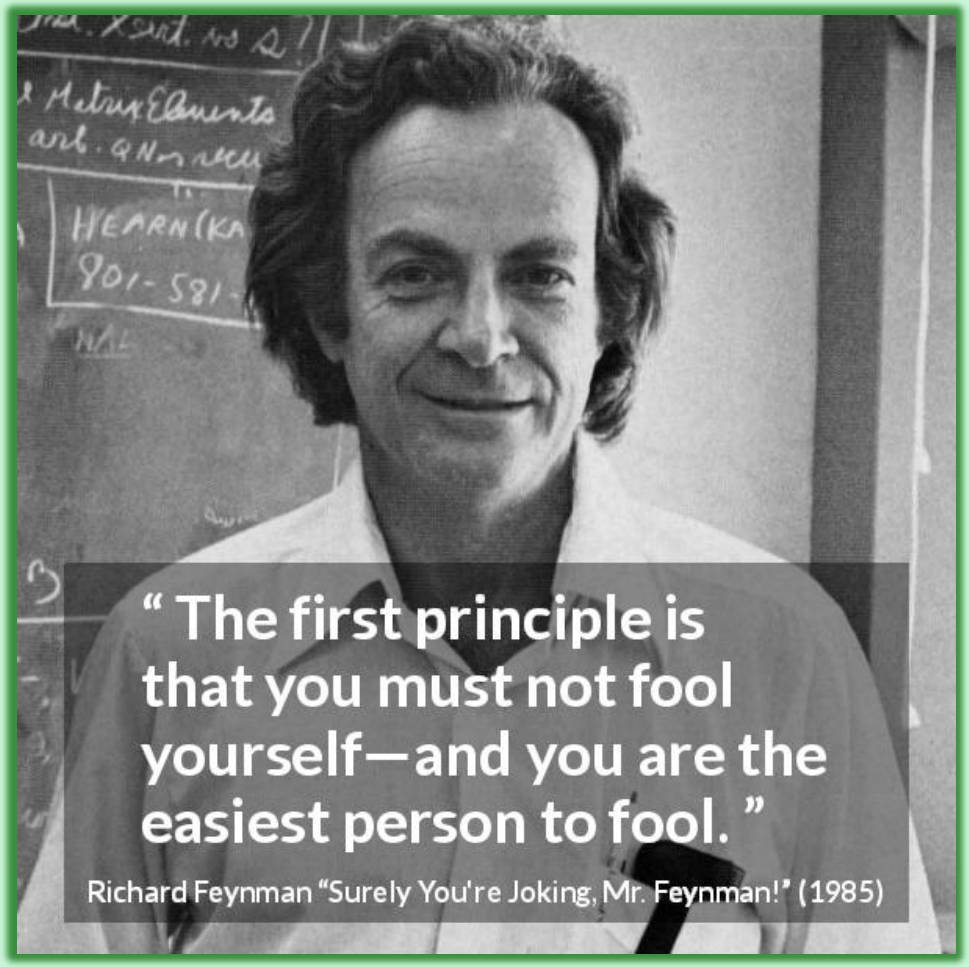
Simple Math

5 years ago, BNEF was not including EV electrification in the Energy Transition story, on average that lifted investment by 33% over the last 5 years

Hence $25 trillion, including EVs, would have added another ~12.5 trillion to their forecast.

Simple math, $37.5 trillion over 32 years is approximately **$1.2 trillion p.a. on average**.

2023 alone was $1.8 trillion

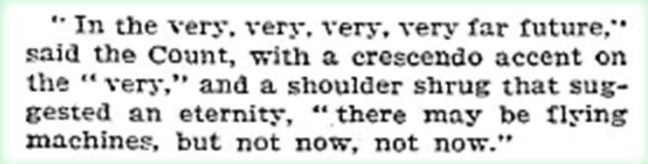


THE OPPORTUNITY

Understanding Exponential Growth

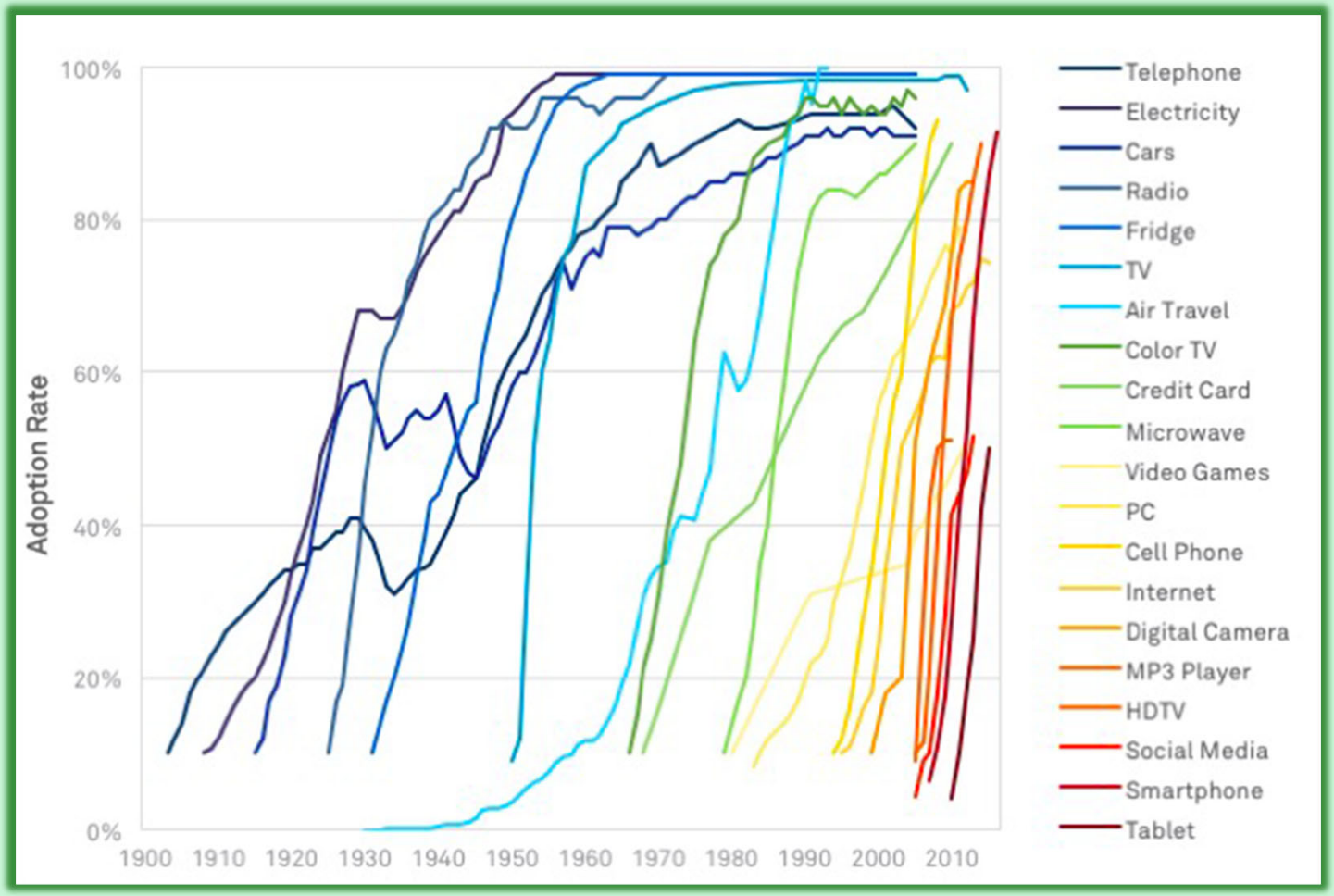
"There is no chance that the iPhone is going to get any significant market share. No chance…" — Steve Ballmer, CEO Microsoft, 2007.

One year after the Wright Brother's first took to the skies:



"In the very, very, very, very far future," said the Count, with a crescendo accent on the "very," and a shoulder shrug that suggested an eternity, "there may be flying machines, but not now, not now."

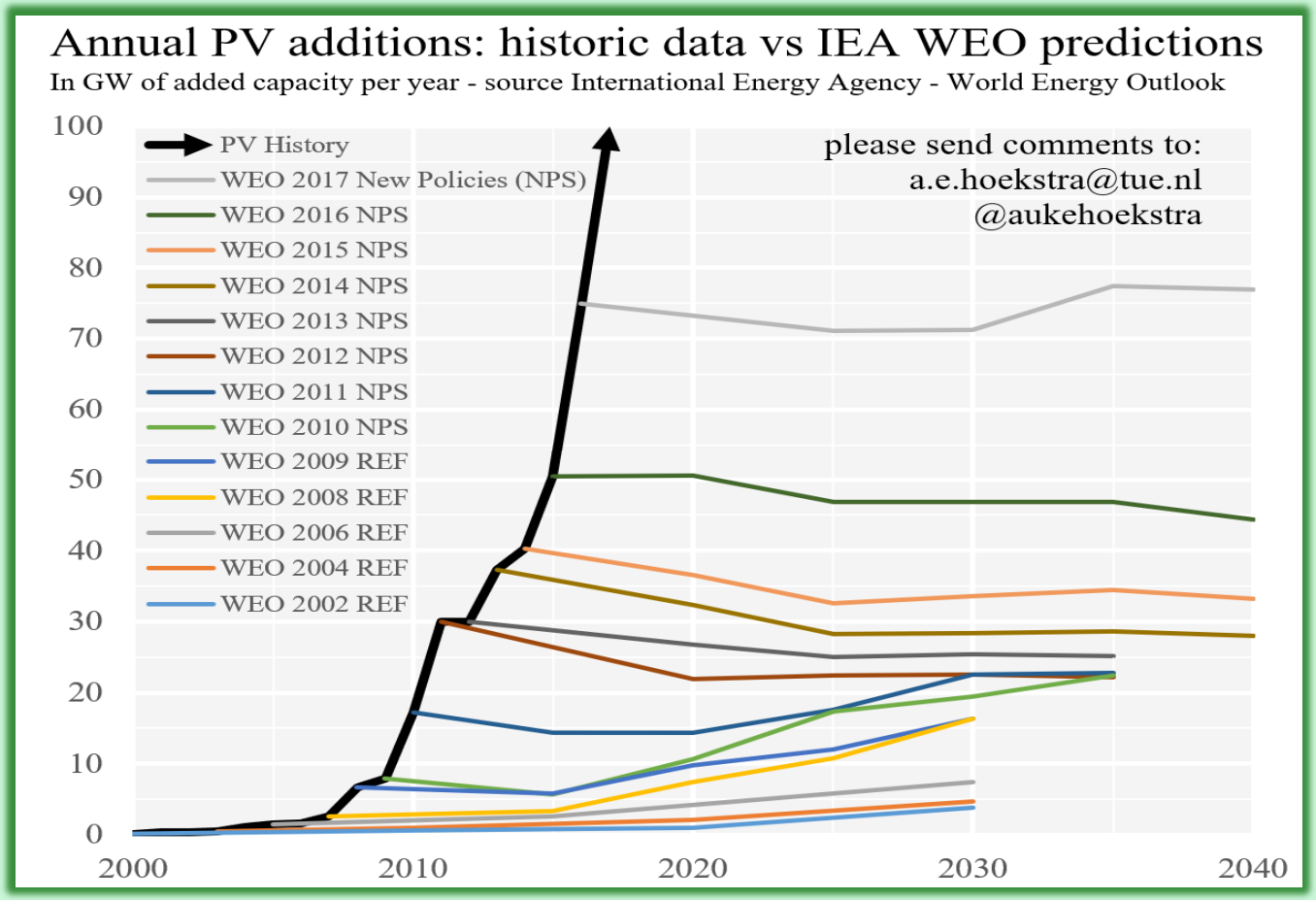
"The question, is not whether something works now but whether it could work — whether you know how to change it. Saying: 'it doesn't work, today' has no value, but saying: 'yes, but everything didn't work once' also has no value. Rather, do you have a roadmap? Do you know what to do next?"



Quote and Photo Sources: medium.com/@gtabidze/things-ive-learned-from-tony-seba-about-technology-disruption-40fe6ba83746
Chart Source: Asymco

THE OPPORTUNITY

Annual PV Solar Module deployment – Historical Projections



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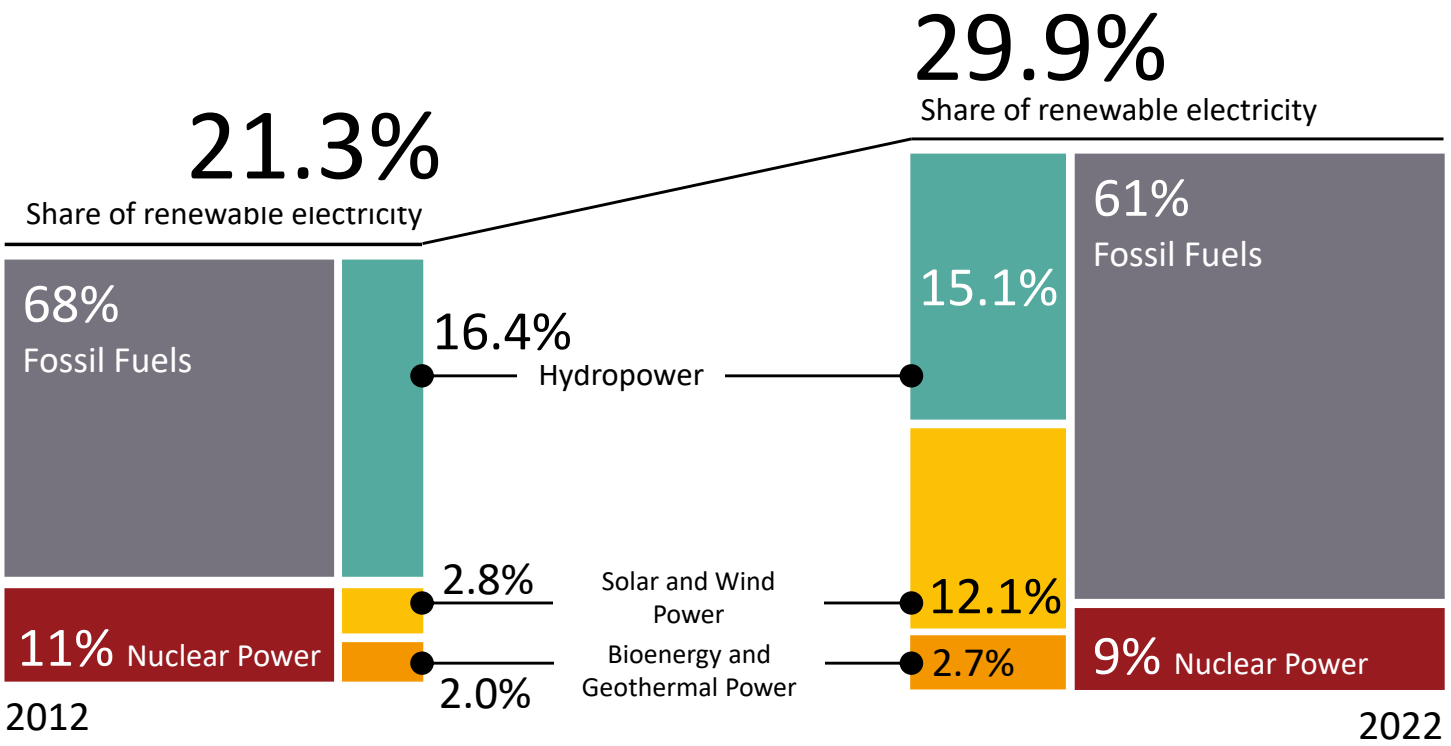
STRONG MARKET TAILWINDS

Strong energy transition investment momentum...

With renewable energy growing at just over 3.4% p.a., it is important to note that the bulk of that growth stems from solar and wind, capturing 93% of all renewable growth with a 15.8% CAGR during that same 10-year period. And while this growth has displaced a lot of fossil fuels, the available opportunity for decarbonization remains substantial.



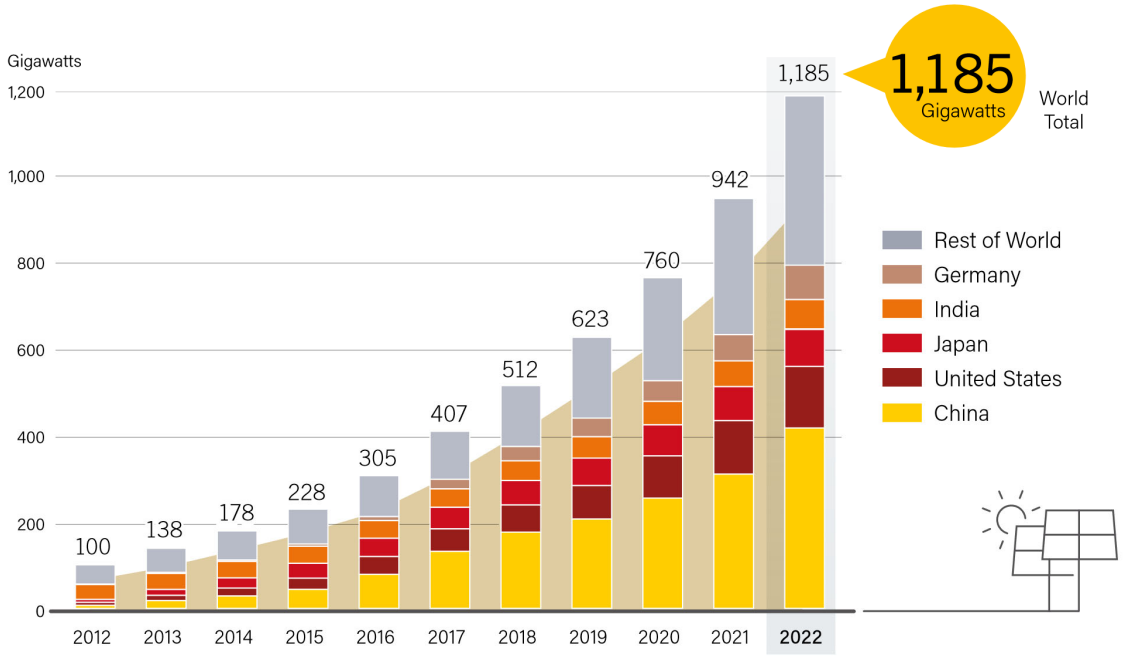
Source: REN21

STRONG MARKET TAILWINDS

Strong energy transition investment momentum...

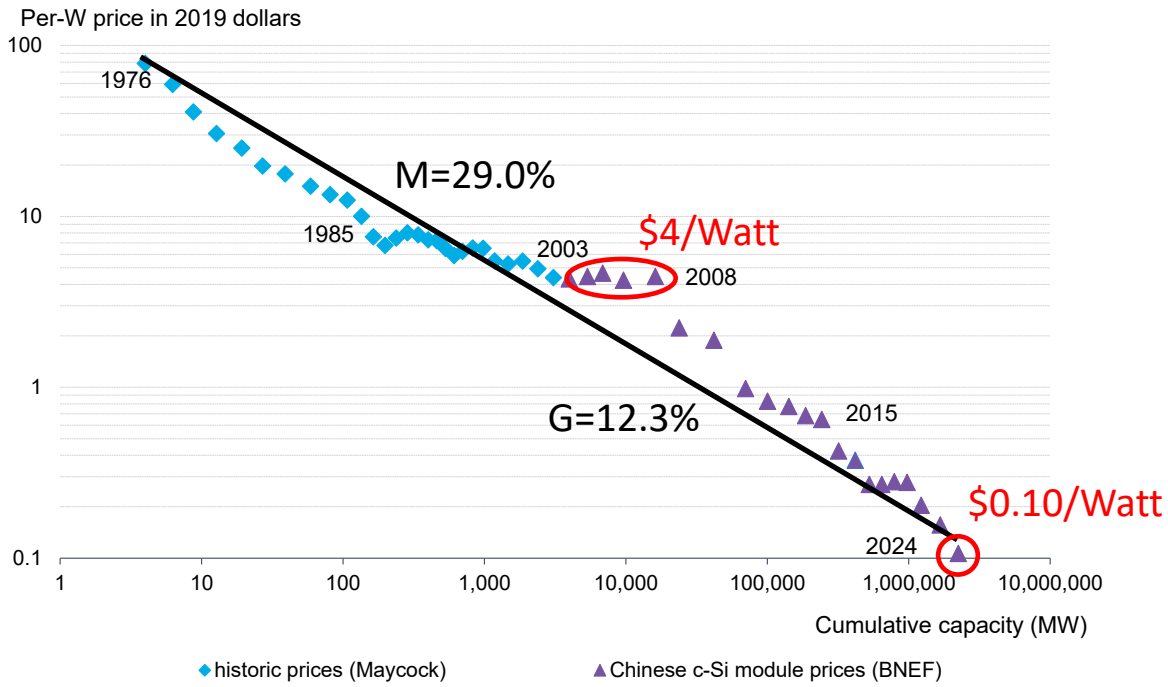
Digging deeper, we can see that solar capacity grew by 28% p.a. in the 2012 – 2022 timeframe, roughly **doubling every 3 years in that time period**. In case anybody is curious, as a function of total global energy supply, solar grew by 26.5% CAGR in the same time period, yet only able to supply 4.5% of the world's energy needs in 2022.

FIGURE 25.
Solar PV Global Capacity, by Country and Region, 2012-2022



Source: REN21

"Each year, NEO compares the costs of competing energy technologies through a levelized cost of energy analysis"



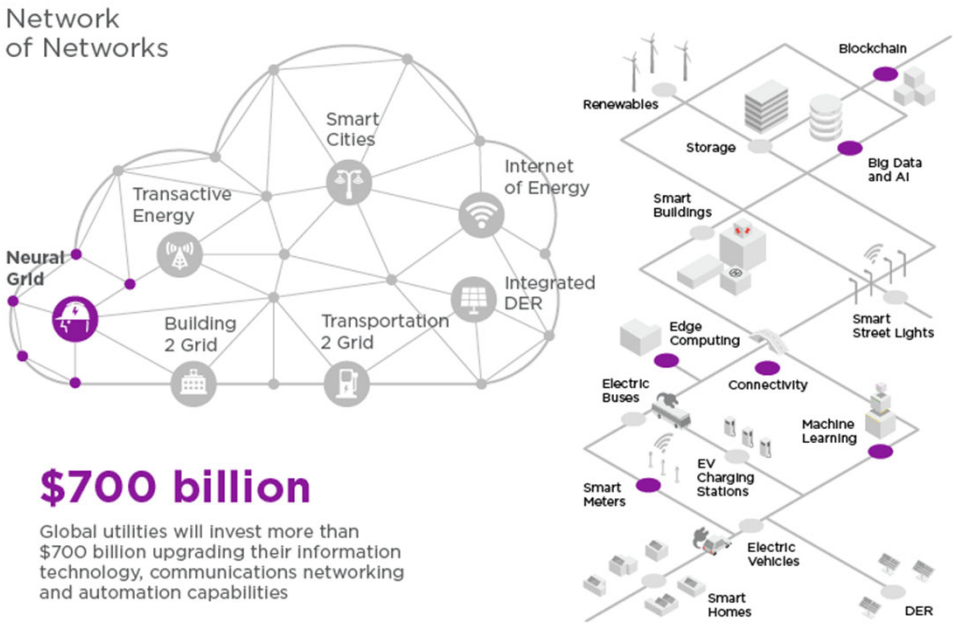
Data points one normally would extract from this:

- Learning is 29% per doubling of volume
- Price drop per year is 12.3% p.a.

Additional questions you could ask or data points to observe:

- What and how is this data used?
- Anything about this chart seem odd to you?
- What else could be happening?

NEW INDUSTRIES ARE BORN



$700 billion

Global utilities will invest more than $700 billion upgrading their information technology, communications networking and automation capabilities

Source: www.navigant.com/insights/energy/2018/energy-cloud-4

LET'S HAVE A PLAN

"Everyone has a plan until they are punched in mouth"
Mike Tyson

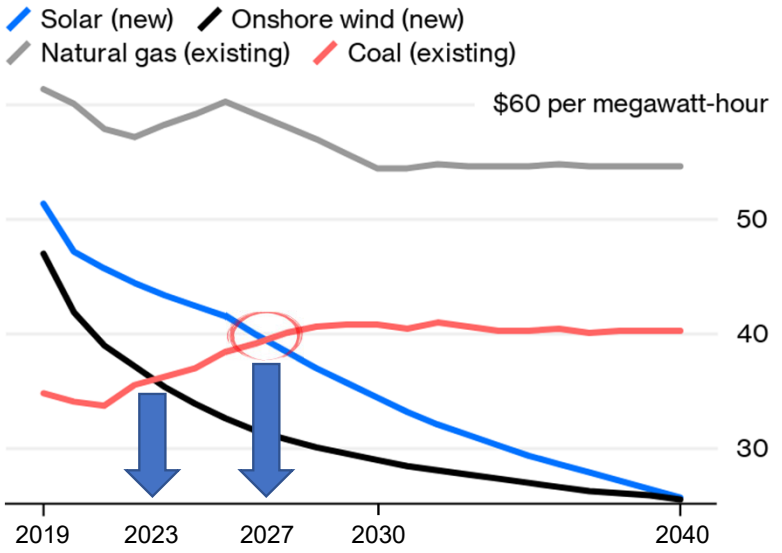
https://pbs.twimg.com/media/GDRNS5VW4AAhKxH?format=jpg&name=medium

LET'S HAVE A PLAN

2018 BNEF Report: LCOE Renewables vs SAMPLE MARKETS Marginal Cost of Gas/Coal Plants

The Coal Chase

New solar and wind projects undercut existing gas-fired power in China already, but have some years to go before they compete with already-built coal plants

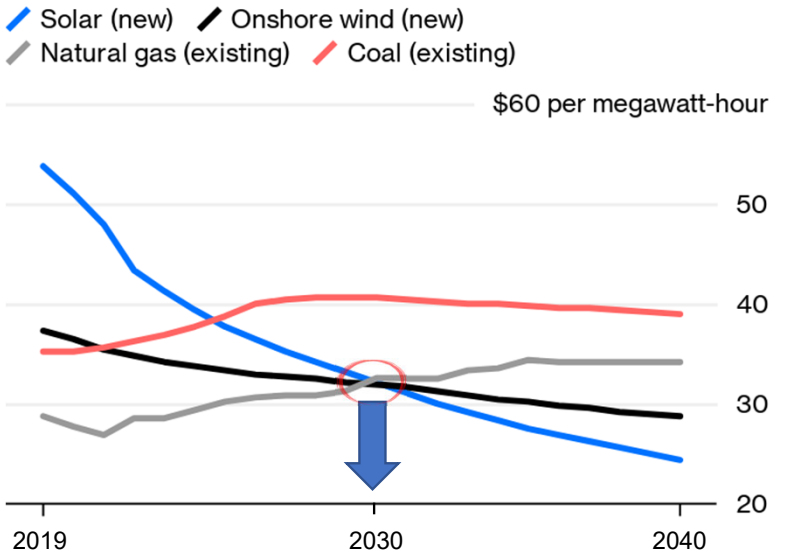


Note: Solar and wind data are estimated levelized cost of electricity (i.e. all-in project costs) whereas natural gas and coal data are marginal costs of generation. All data are mid-point scenarios.
Source: BloombergNEF

BloombergOpinion

Vapor Trailing

In the U.S., a large fleet of relatively young gas-fired plants and cheap shale gas keep that fuel competitive with new renewable projects until the 2030s



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Source: BloombergNEF

BloombergOpinion

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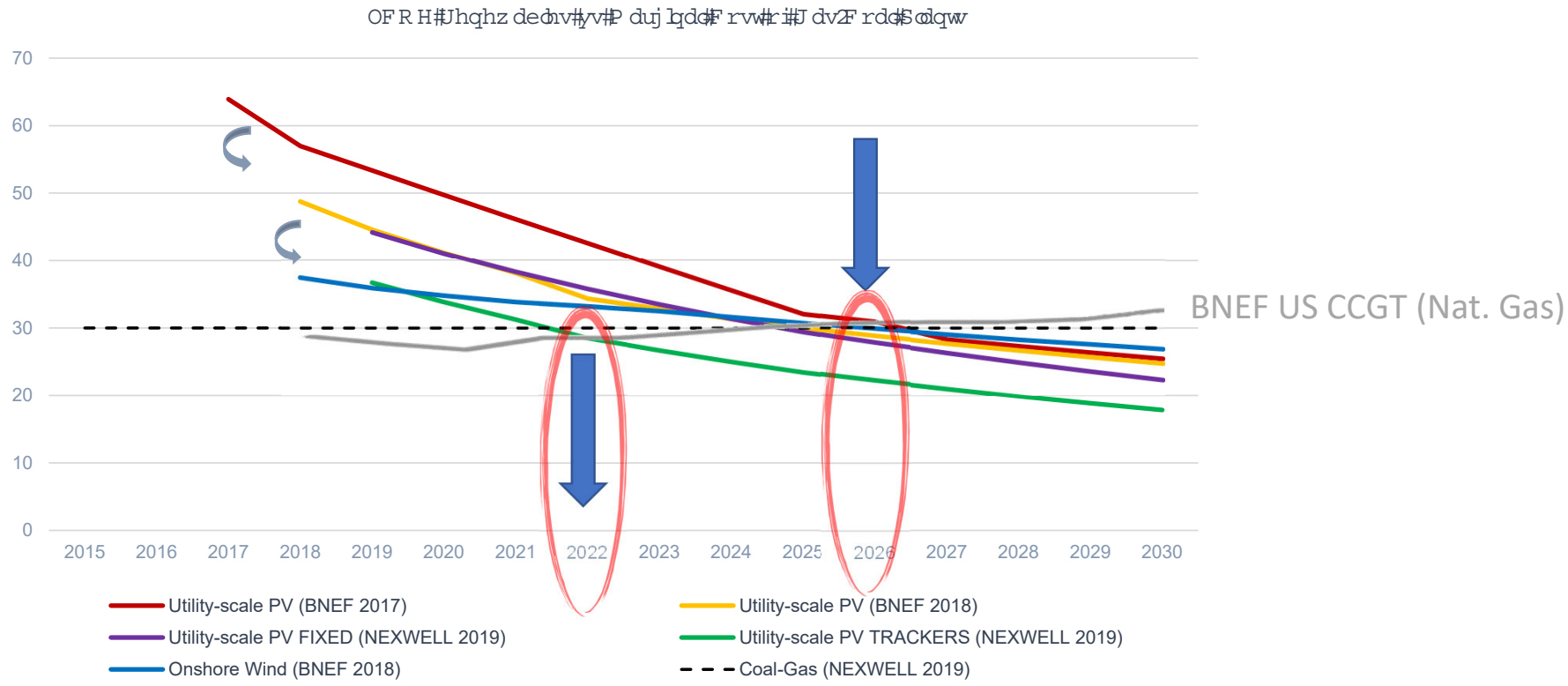
LET'S DO OUR HOMEWORK

The chart below was adjusted in 2018 for certain inconsistencies found in publically available PV forecasts. With those adjustments, fully loaded Solar Energy was outcompeting natural gas on a marginal cost basis a lot quicker than others were predicting (see prior slide)



BNEF US CCGT (Nat. Gas)

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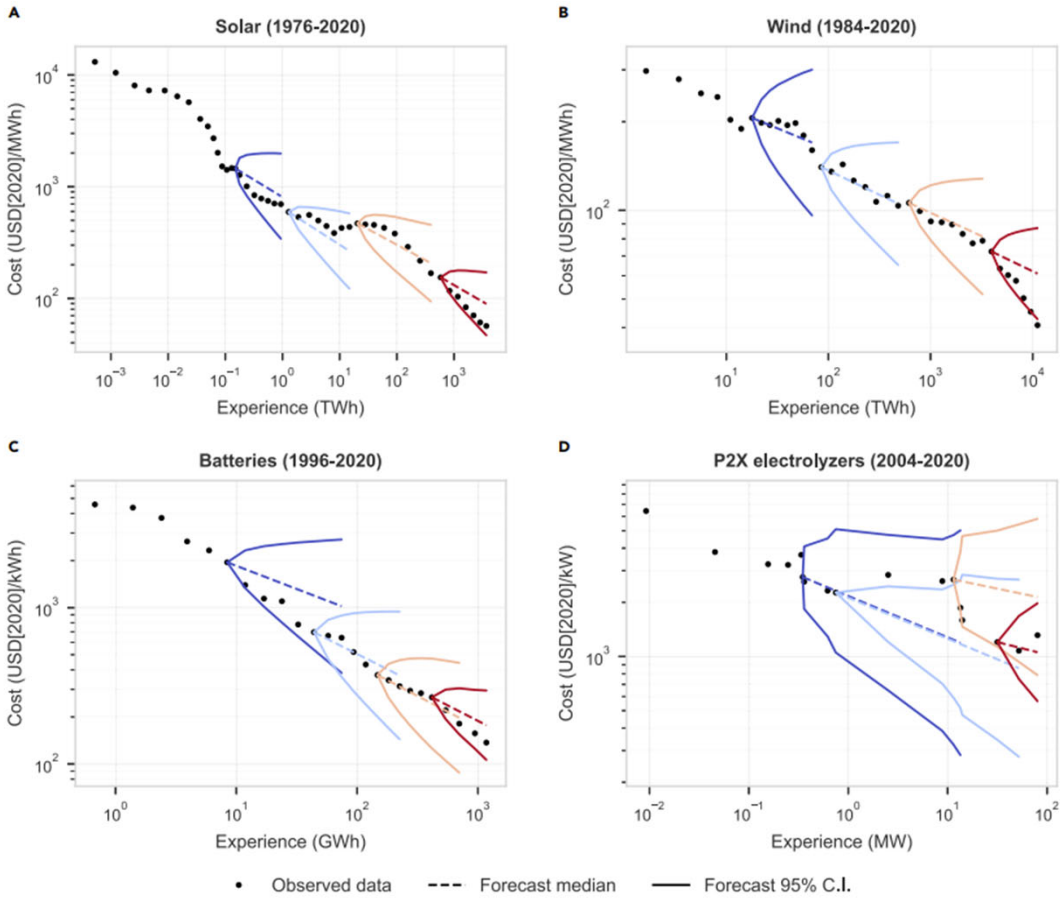
OTHER SYMBIOTIC INDUSTRIES

Rapid reducing energy transition capex across multiple technologies is unlocking new innovative low-carbon energy solutions, accelerating the energy transition across several complementary vectors

To meet the growing demand and ensure energy stability, improvements in grid infrastructure and new energy storage solutions are needed to enable more investments to meet the energy transition goals

The growth is supported by EU´s National energy and climate plans (NECPs), where Europe is planning to commit to a target of [605GW] (currently 240GW) of solar PV and [200 GW] (currently 60GW) of Storage by 2030[1]



[1] Directorate general of Energy of the European Commission (March 2023)

[2] Way et al., Empirically grounded technology forecasts and the energy transition, Joule (2022), https://doi.org/ 10.1016/j.joule.2022.08.009

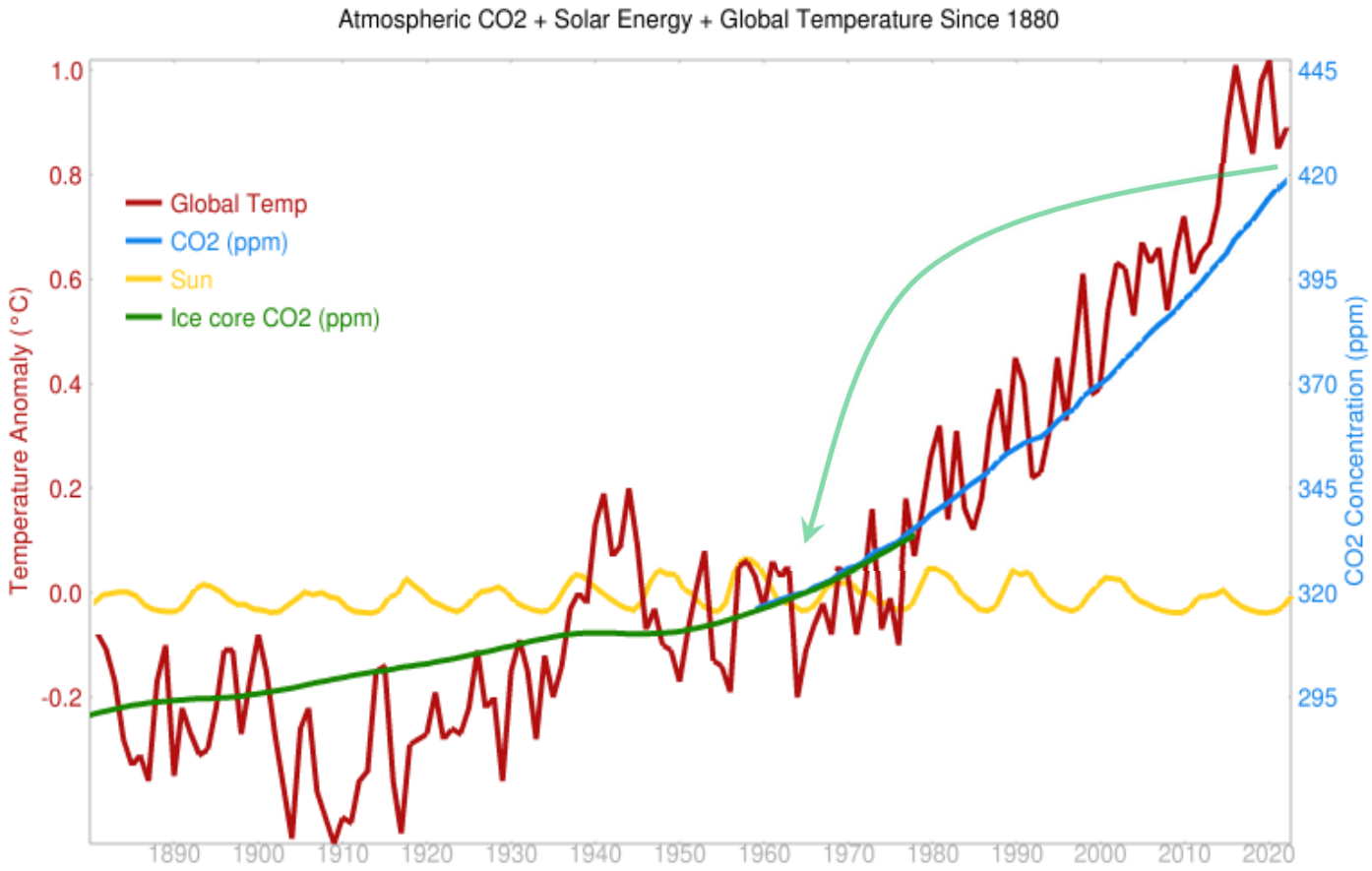
THIS IS ALREADY HAPPENING

https://www.greystar.com/blog/fighting-back-against-air-pollution

CONCLUSION

So why are we here…?

We need to bring atmospheric CO2 levels back to at least 320ppm, which is where we were in the mid 1960's. To do that we need to withdraw at least 800 billion tons of CO2 from the atmosphere, and no amount of renewable offsets and electrification of everything will get us there in the absence of Carbon Capture and sequestration.



THANK YOU