

Driving Energy Transition: A Case for New Business

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Dear Audience: Who are you ?

1. Energy industry professional
2. Professional – other industry / consumer segments
3. Enthusiastic citizen interested in climate change
4. Enthusiastic citizen interested in Innovation
5. Just showed up

Agenda

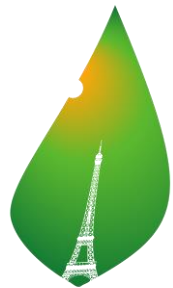
1. Paris Agreement & an Energy Outlook
2. Drivers of Energy Transition
3. Climate-change enabling Finance and the link to New Business



1

Paris Agreement & Energy Outlook

How does humanity intend to fight climate change?



PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

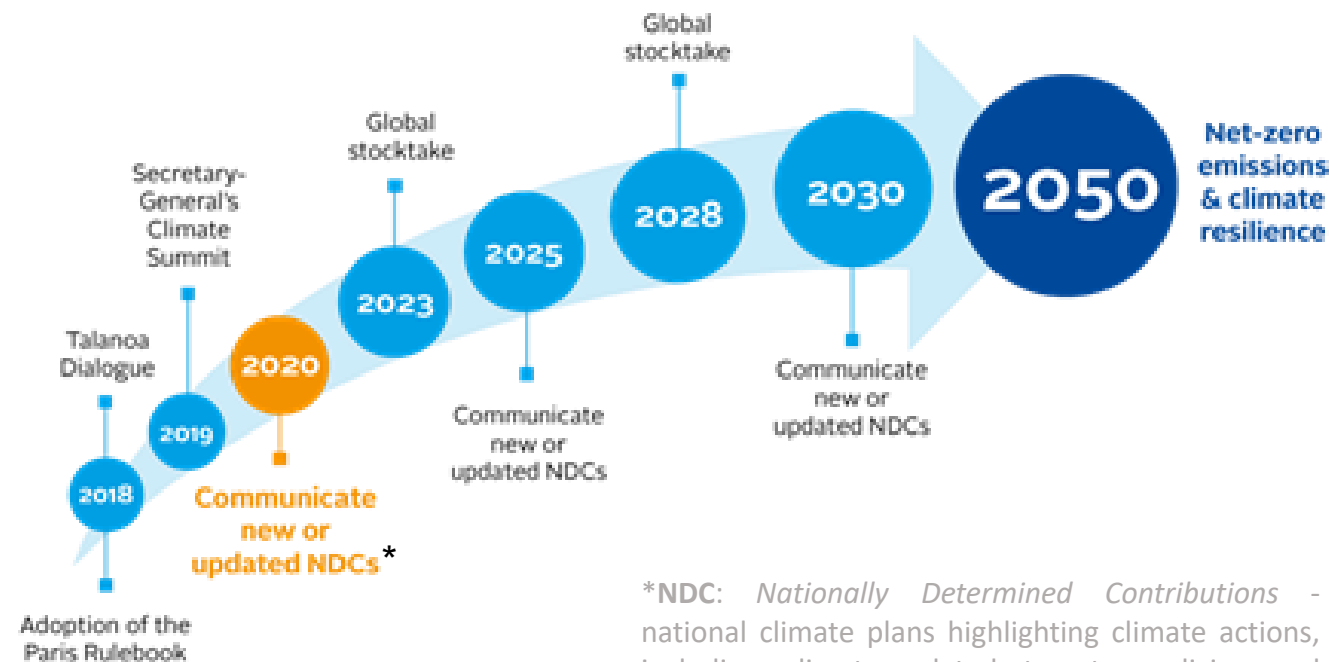
Paris Agreement

Is the first-ever universal, legally binding global climate change agreement, adopted at the Paris climate conference (COP21) in December 2015.

As of November 2020, all 196 members of the UNFCCC have signed the agreement and 188 remain party to it.



AMBITION MECHANISM IN THE PARIS AGREEMENT



*NDC: *Nationally Determined Contributions* - national climate plans highlighting climate actions, including climate related targets, policies and measures governments aims to implement

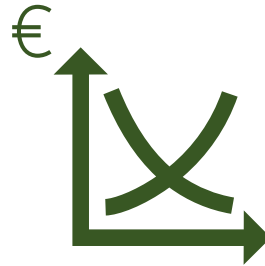
Source: unfccc.int/publications/ndc-enhancement-by-2020

How do we achieve and measure progress ?

THREE MAIN OBJECTIVES



Adaption to climate change,
foster **climate resilience** &
lower greenhouse gas emissions



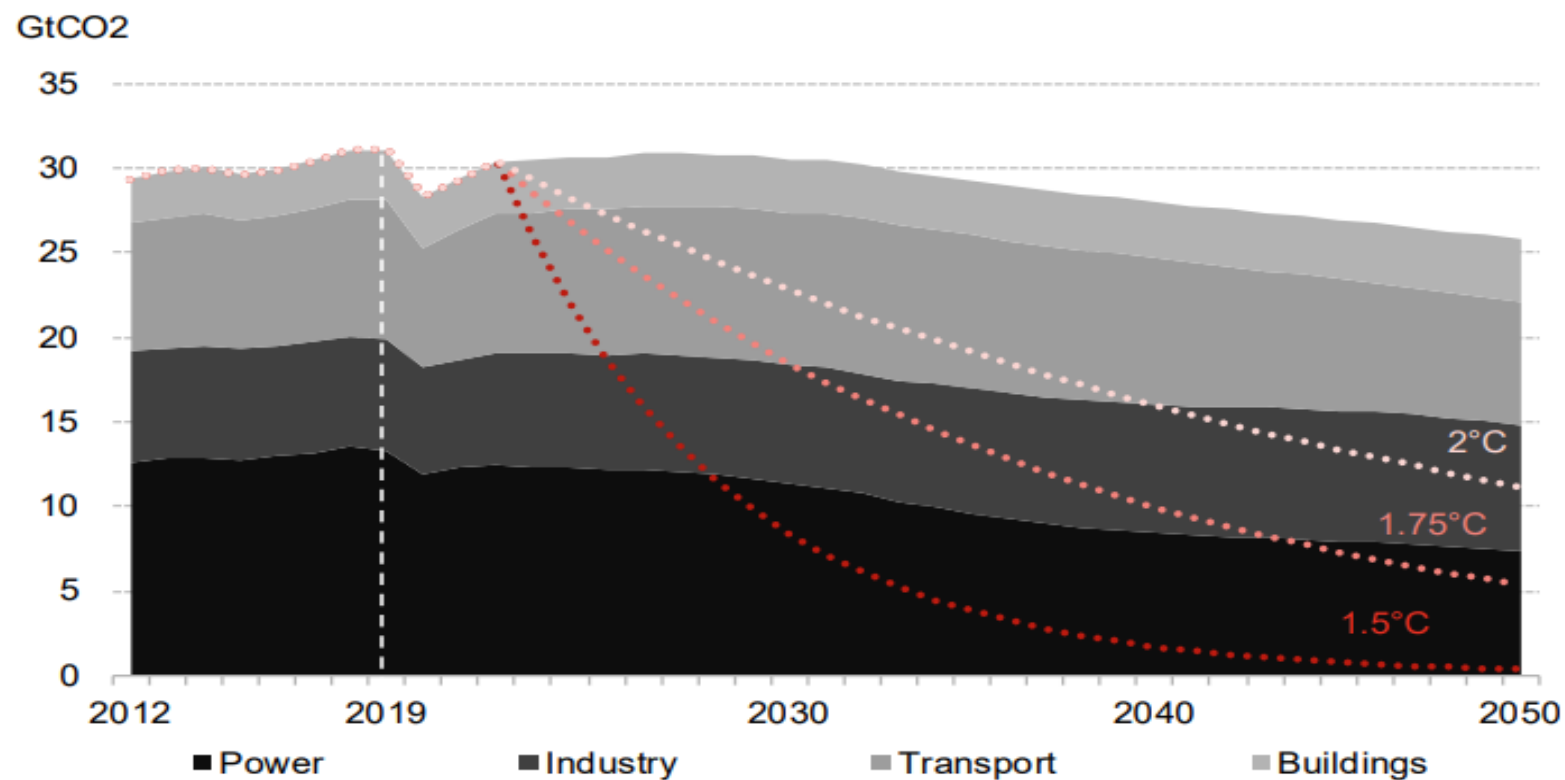
Finance flows consistent with low-
carbon, climate-resilient pathways



Limit the **global temperature**
increase to well below 2 °C

How do we achieve a 1.5° world ?

Energy emissions in the NEO Economic Transition Scenario, and climate pathways



Source: BloombergNEF

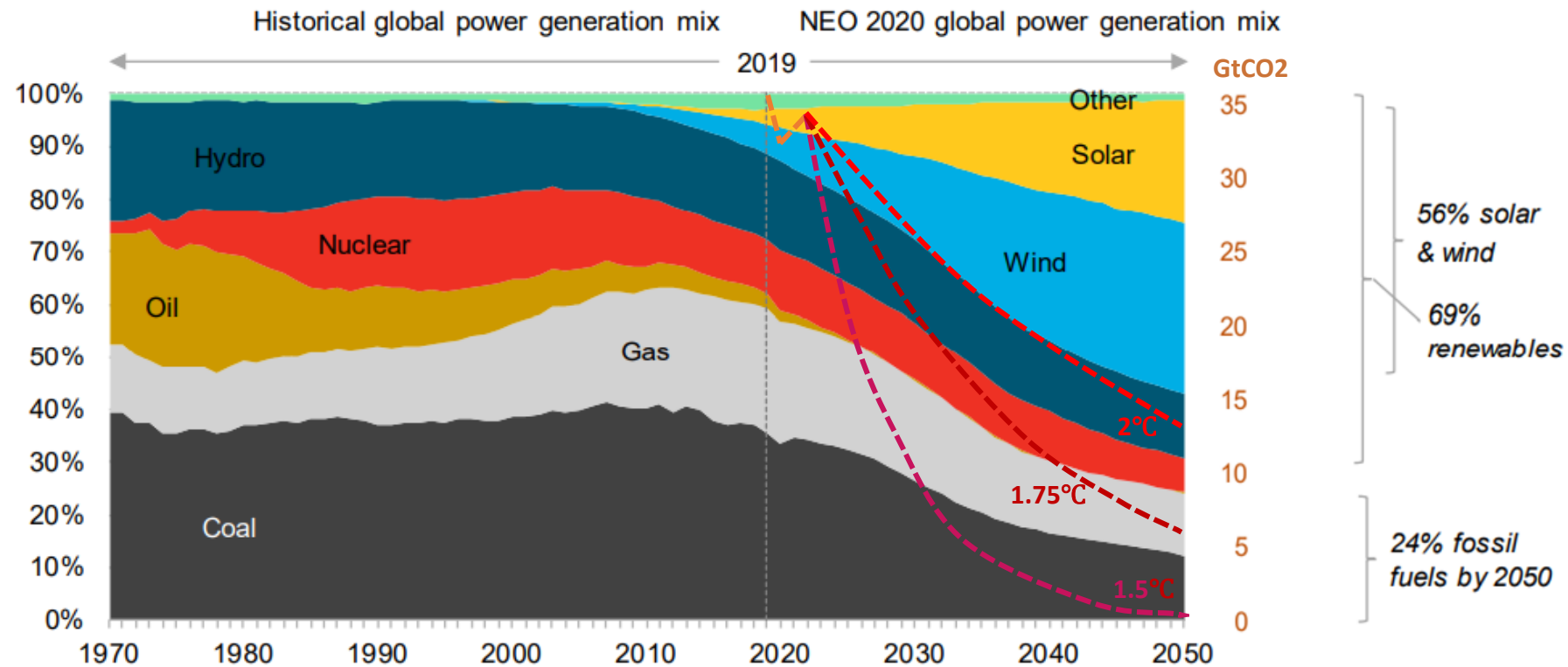
POLL 2

In the year 2050, what do you think the dominant technology for power generation will be:

1. Gas
2. Nuclear
3. Hydro
4. Wind
5. Solar

What will the future energy mix look like ? Can we change it fast enough ?

Wind and PV grow to 56% of electricity generation worldwide in 2050



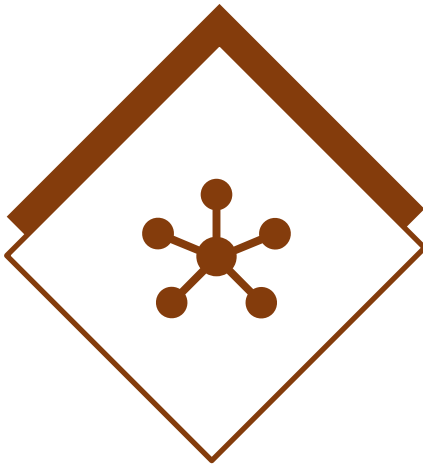
Source: BloombergNEF



2

Drivers of Energy Transition

What are the key drivers of the Energy Transition and the Opportunities they provide us?



Decentralization
*Customer Choice &
Flexibility*



Decarbonization
*Virtuous cycle from falling
Cost of Renewables*

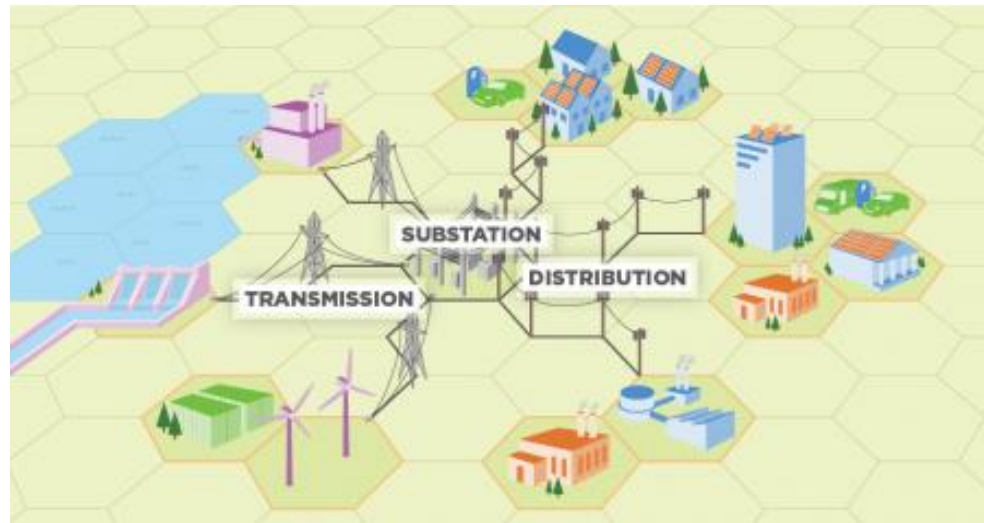


Digitalization
*Automated Control of
complex energy systems*

Your electricity Bill: Do you understand it completely ?

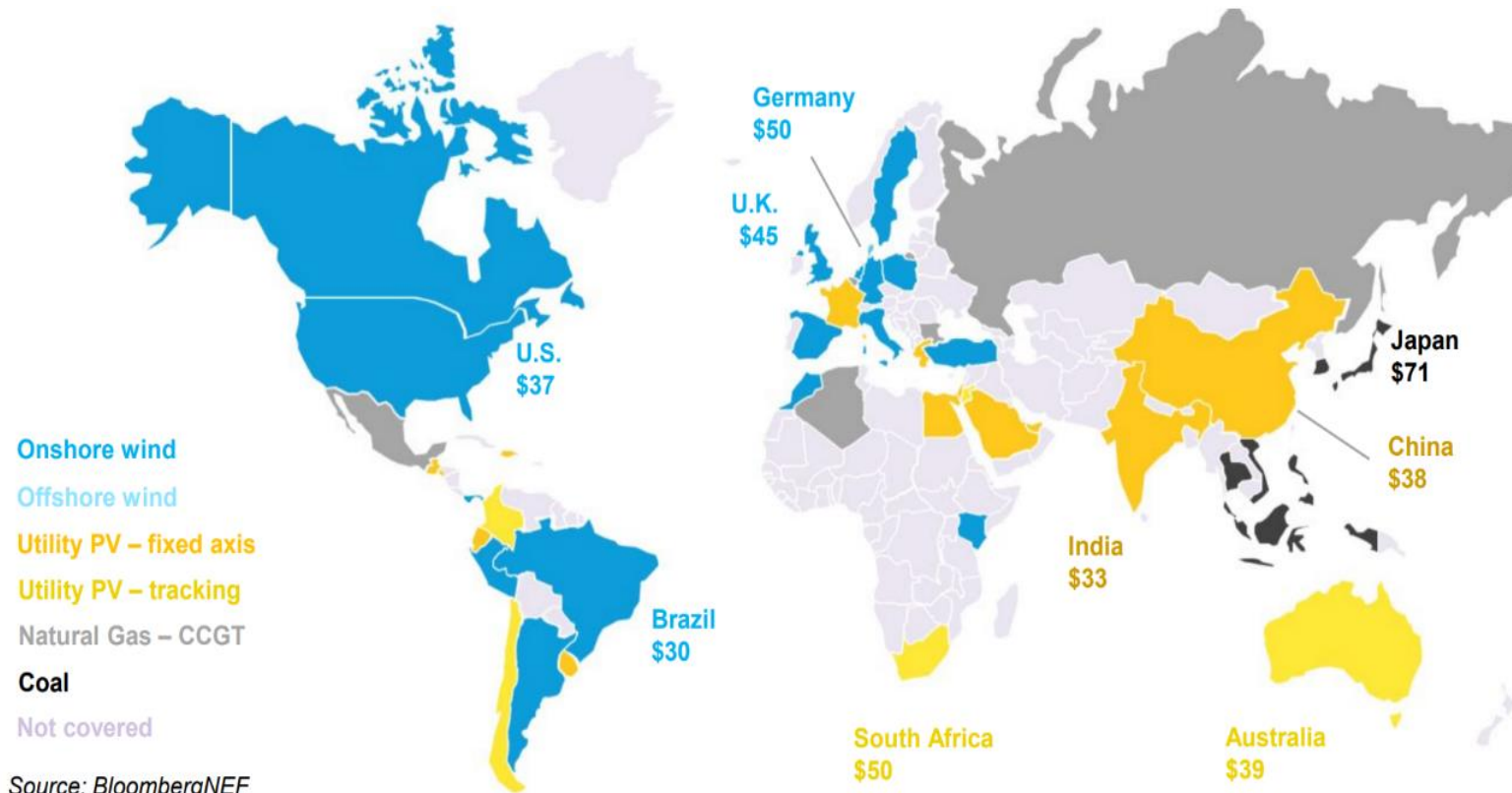
1. Yes
2. No
3. I think I do, but I am sure I'm wrong...

I. Decentralization leads to Customer choice & Flexibility

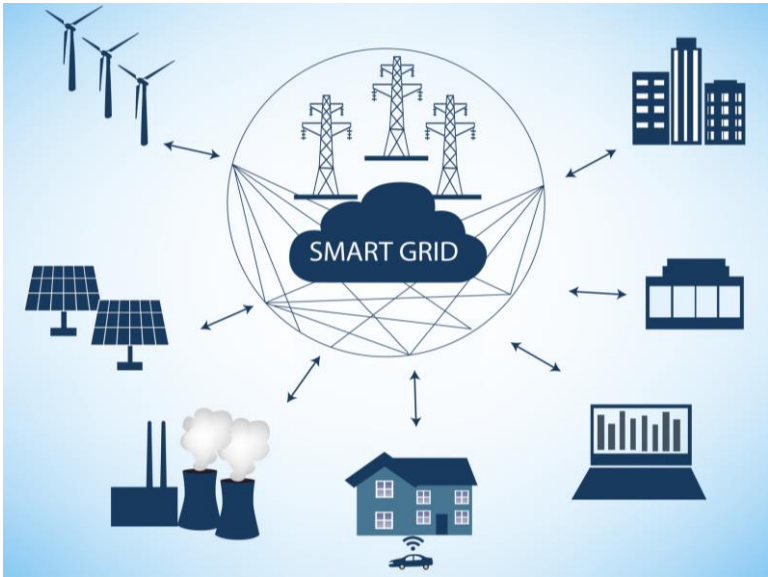
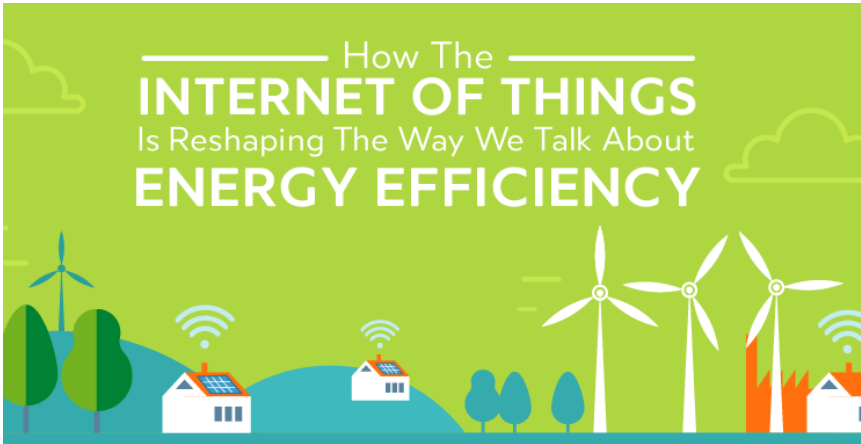


II. Decarbonization aided by falling cost of Renewables

Renewables are now the cheapest new electricity in countries making up just under $\frac{3}{4}$ of world GDP (\$/MWh)



III. Digitalization facilitates automated control of complex energy systems





3

Climate-change enabling Finance and the Link to New Business

Revisiting the Paris Objectives...

THREE MAIN OBJECTIVES



Adaption to climate change,
foster **climate resilience** &
lower greenhouse gas emissions



Finance flows consistent with low-
carbon, climate-resilient pathways



Limit the **global temperature**
increase to well below 2 °C

Designing smarter finance flows



Centralized
Power Systems

Business Model
Innovation

“D3”
Power Systems



Capital Outlays



MASSIVE



LIGHT



Project Timelines



LONG
(Years)



SHORT
(Months)



Contract Pricing



COST+



COMPETITIVELY
-PRICED



Entry Barrier



HIGH

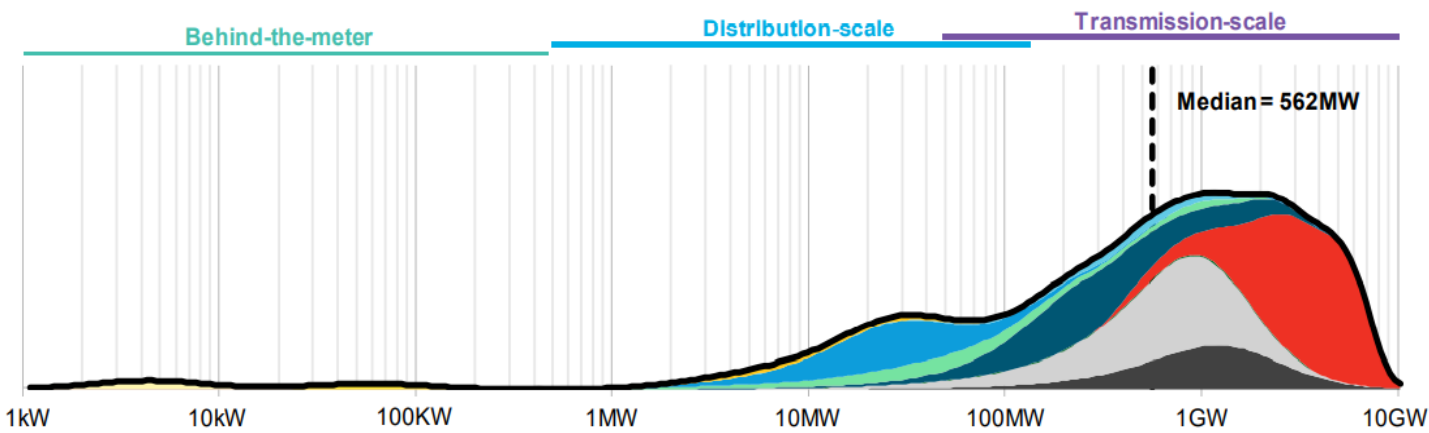


LOW

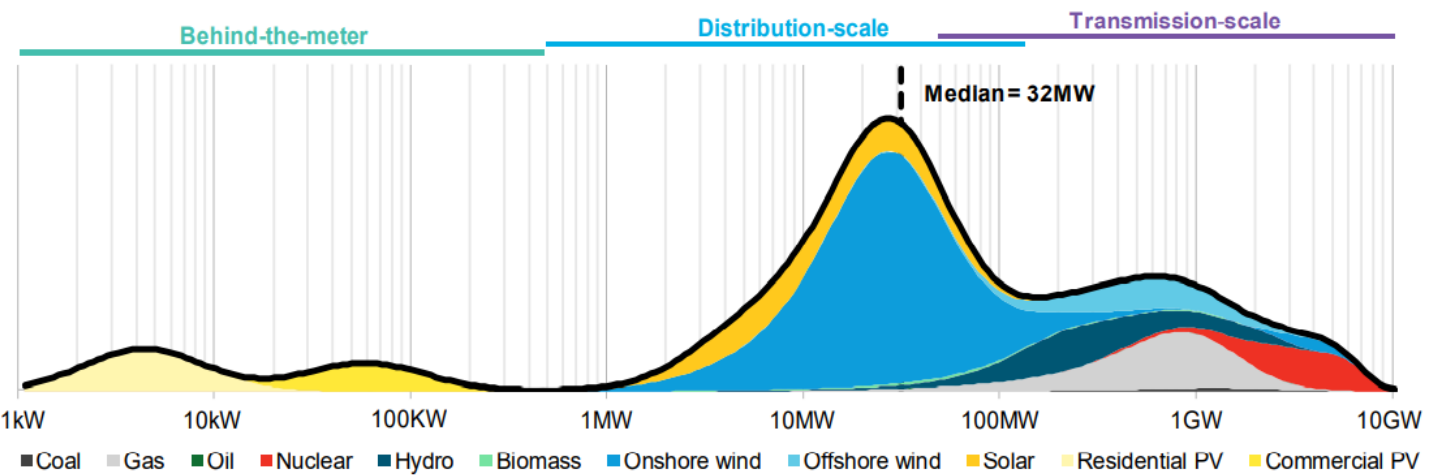
Where should we invest smarter?

Scale of generation, Europe

2020



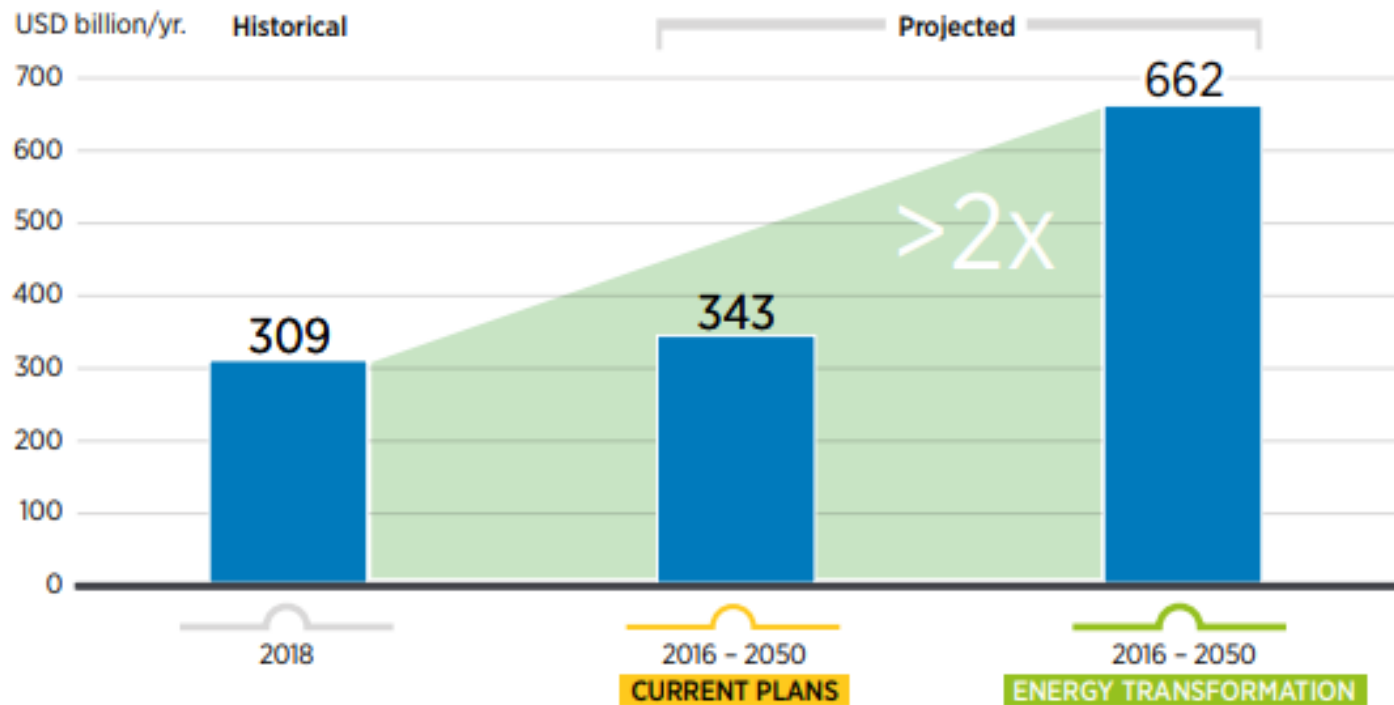
2050



Source: BloombergNEF Note: the area under the charts represents total generation. The purple dotted line represent the median.

What is the quantum of these finance flows ?

The global energy transformation would require investment of nearly USD 22.5 trillion in new renewable installed capacity through 2050



So why do we need New Business – Key Principles



**Formulate an
Affordable Loss**



**Hypothesize, Test, Fail
and Formulate**



Collaborate & Partner

Case Study – Formulate an Affordable Loss

Mobile storage solution for inland shipping



Case Study – Hypothesize, Test, Fail and Formulate

V2G solution for a car manufacturer



Case Study – Collaborate & Partner

Installation & Management of a storage solution for a steel manufacturing client to ensure continuity of supply for blast furnaces

