

Midcentury deep decarbonization: rethinking the role of climate finance

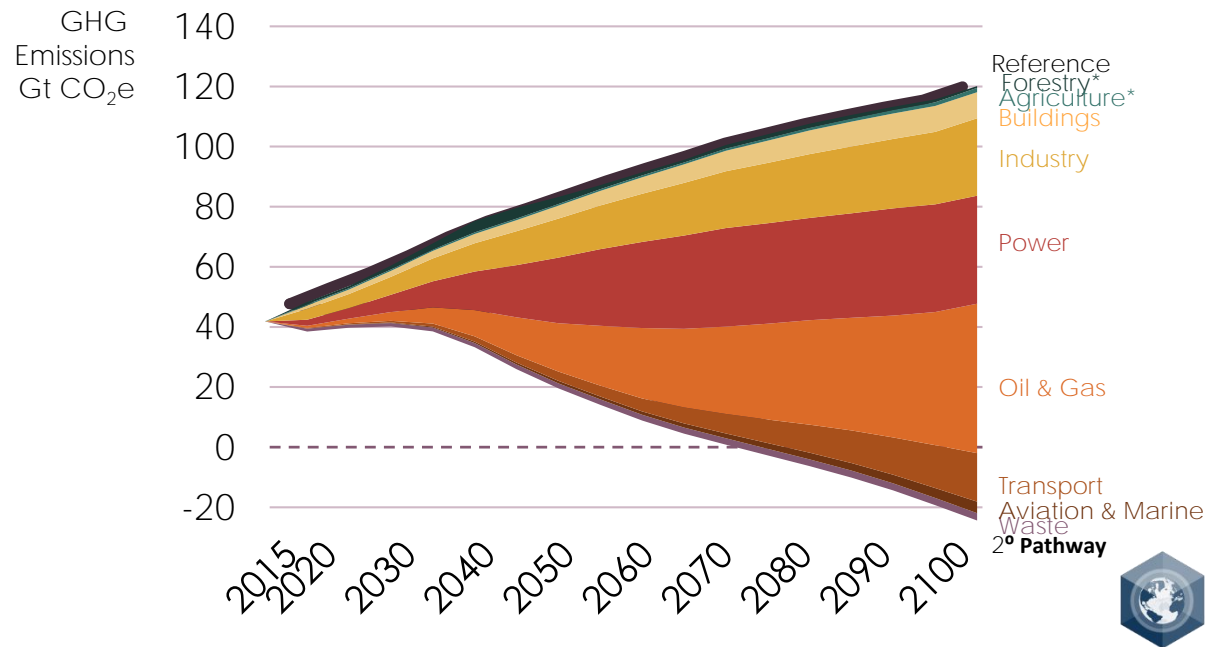
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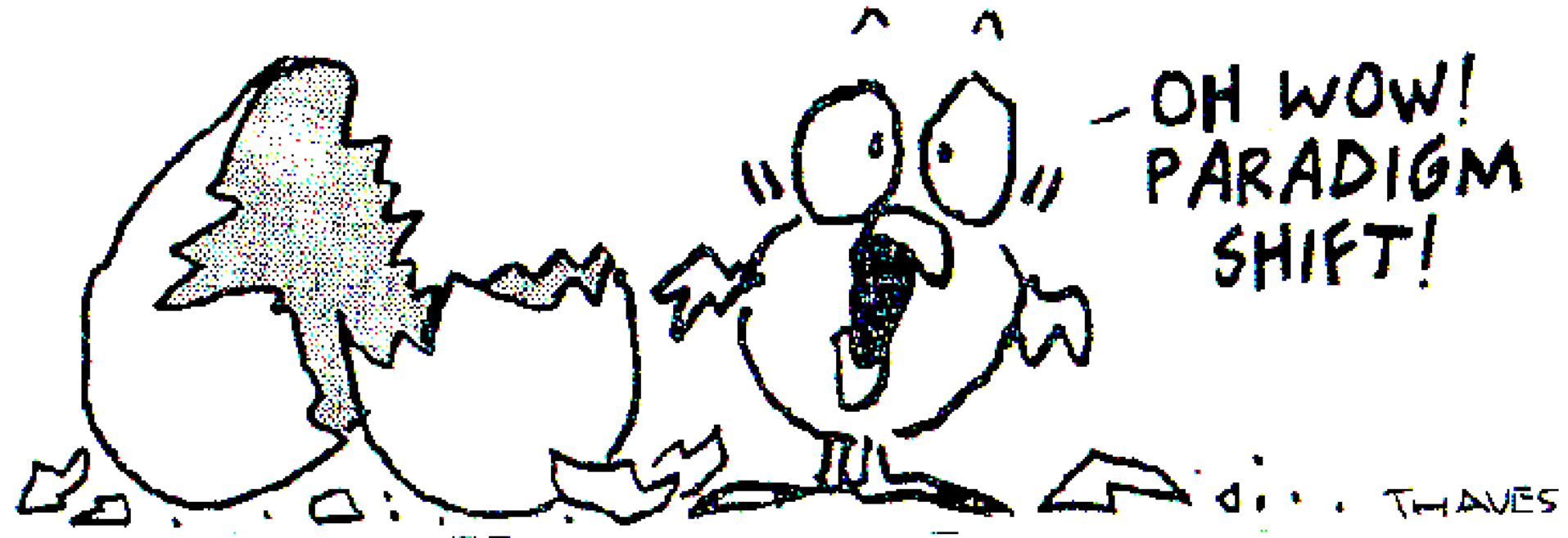
Turning to the 2050 deep decarbonization agenda

- “Well below 2°C” target requires peak in carbon emissions by 2020, steep decline through 2050, and close to net-zero emissions after 2050.
- Nearer term incremental efforts are insufficient. Need step-changes, systemic shifts.
- 2050 road map is becoming clearer, but investment implications less understood.



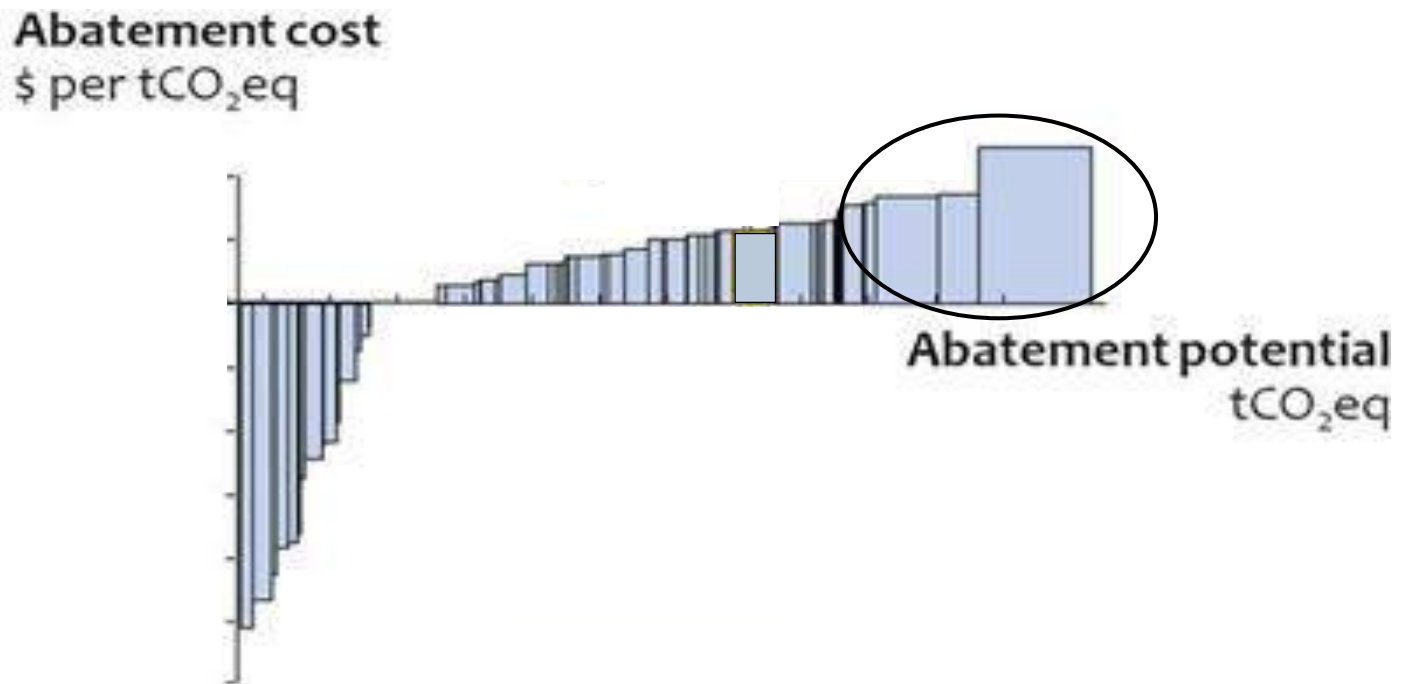
How does a focus on 2050 change
how we spend money today?

Paradigms that guide how we spend climate finance may need to be modified to meet 2050 abatement goals



Issue #1: Need to rethink our focus on lowest-cost, near term marginal abatement opportunities

- Abatement needs to happen across all sectors: can't delay investment in sectors with high costs
- Prioritize sectors most expensive and difficult to decarbonize, *even if cheaper options exist*
- Counters traditional climate economics rooted in MACC



Why prioritize high-cost abatement?

1. Timing: a slow and steady transition will be cheaper than late and abrupt transition (rapid shifts lead to “adjustment costs”)
2. **Investment in “long-lived abatement capital”**: value of abatement investment comes from avoided emissions now and also locking-in abatement capital for the future
3. Cost reductions through learning by doing

Issue #2: Current frameworks to guide investment to new markets don't tell us where to invest to reach market tipping points

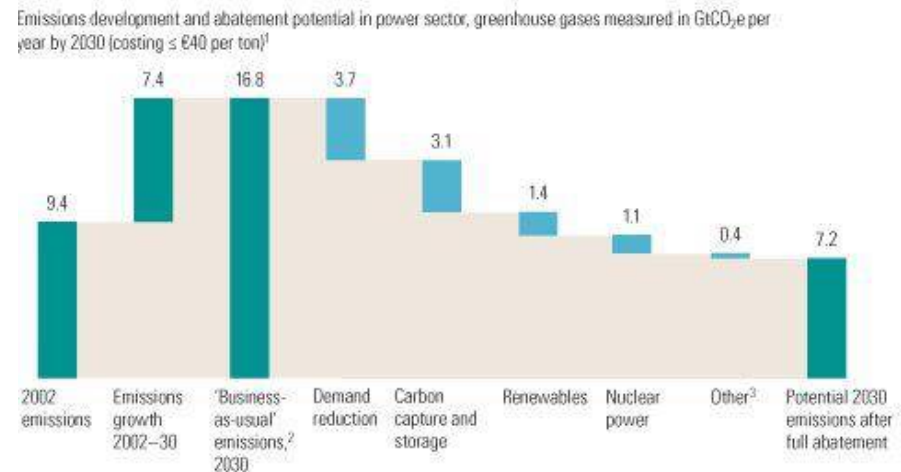
Dominant criteria for ODA

Climate justice



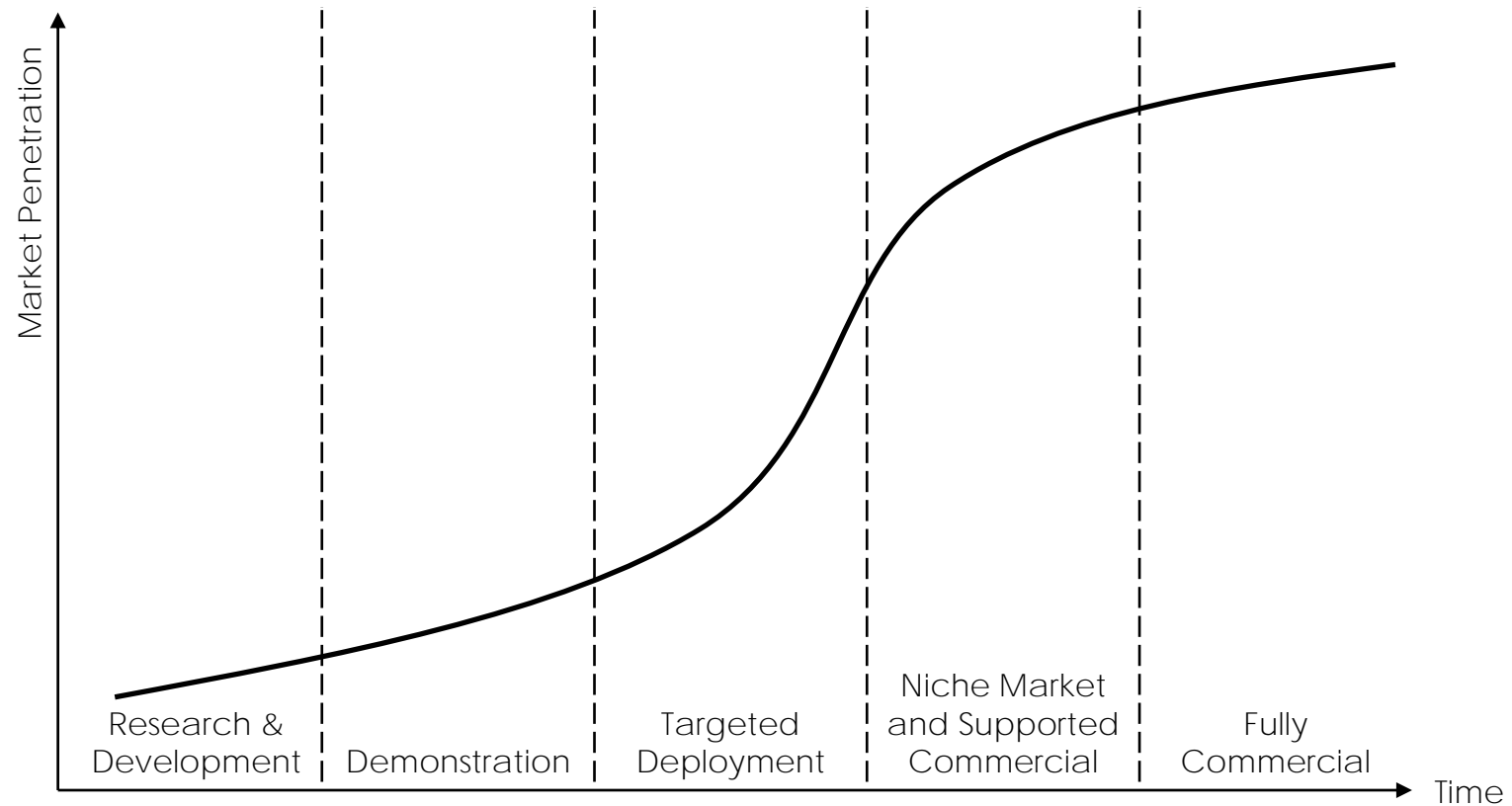
VS

Abatement potential



Neither tell us where we need to invest to create market tipping points that will lead to full decarbonization.

Issue #3: We don't know where to prioritize investment along the technology development curve, nor where different financial actors best fit along this curve



Issue #4: The way we're currently measuring progress may not be enough to guide us

Investing in the Clean Trillion:

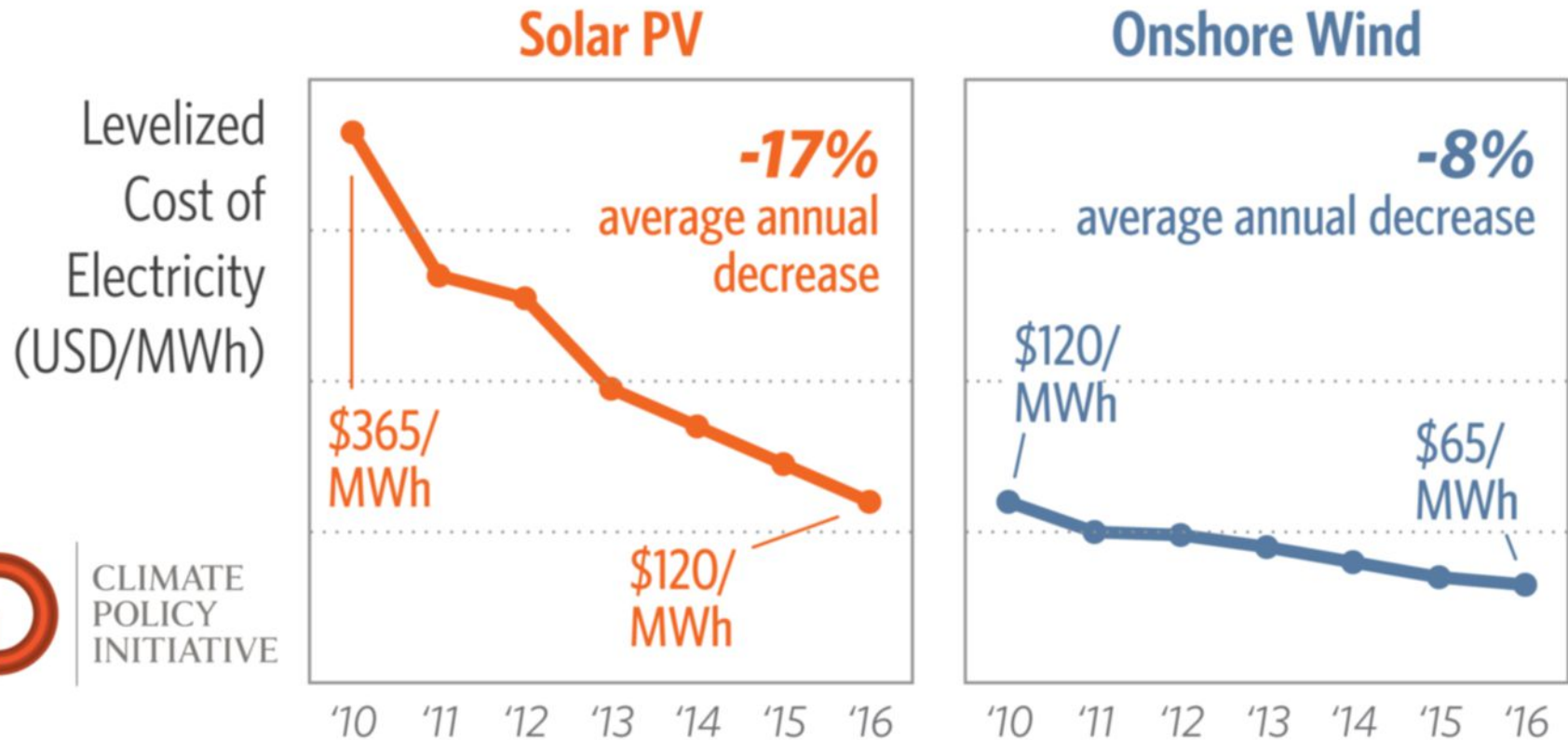
CLOSING THE CLEAN ENERGY INVESTMENT GAP



United Nations Framework
Convention on Climate Change

Aggregate volumetric goals implicitly lead to a focus on mobilization as opposed to effective investment. These numbers won't tell us about the type, source, or target of finance needed for 2050 decarbonization.

Issue #4 (cont'd): Aggregate volumetric measurements don't account for technology cost reductions



Issue #4 (cont'd): Aggregate volumetric measurements doesn't tell us what's on the other side of the ledger



Shift from a focus on the *quantity* of finance to *quality and effectiveness* of finance, with 2050 in mind.

Climate Investment Research Collaborative on Long-term Effectiveness (CIRCLE)



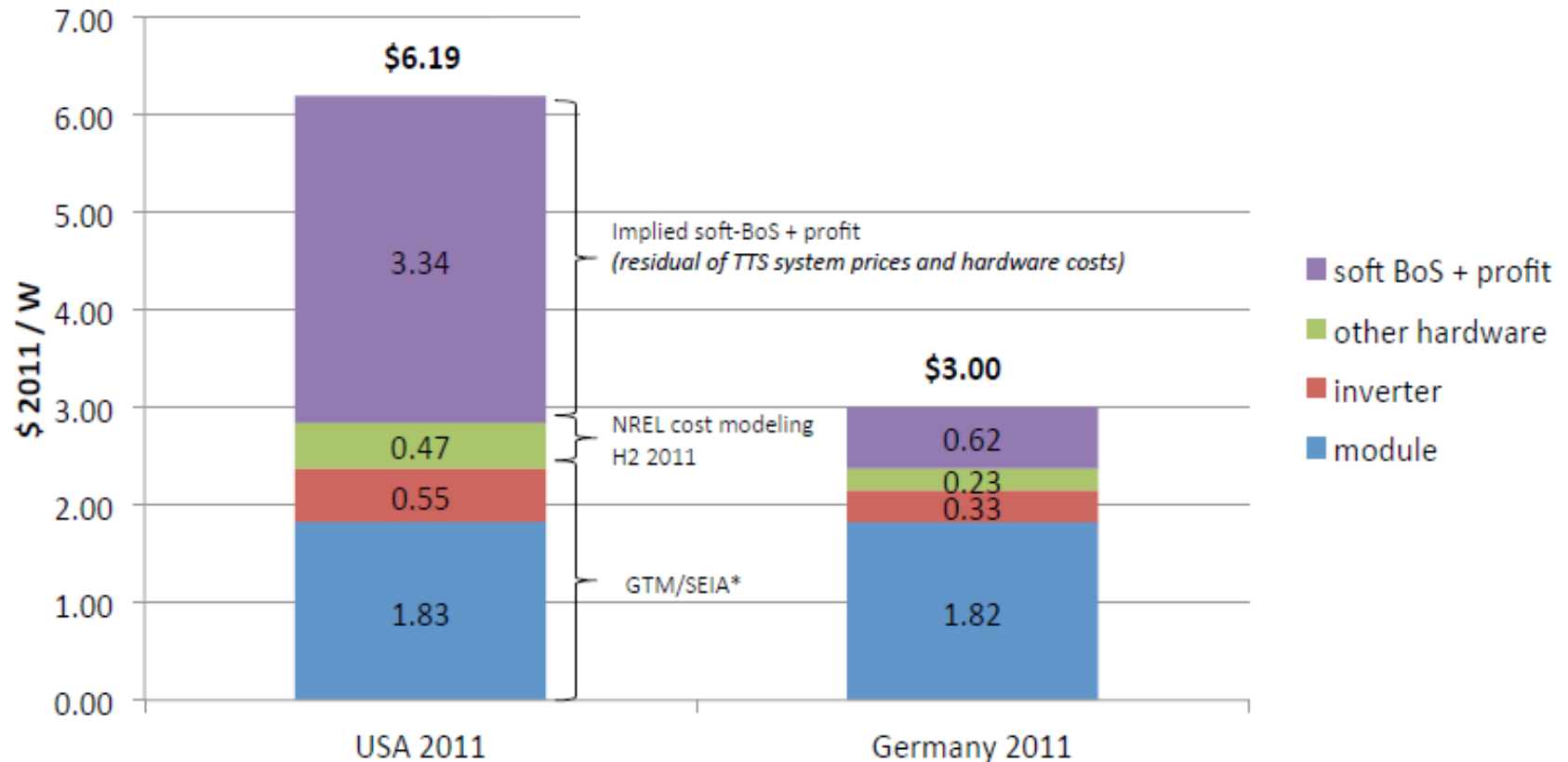
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- A new research initiative that explores the role of finance in addressing longer-term decarbonization goals.
- Working to understand what *types* of finance are needed, taking on which *risks*, for which *technologies*, in which *geographies*, and at what stage along the technology development curve?
- Intended to spark collaboration with other researchers to illuminate these issues.

Some of the topics CIRCLE seeks to address

Use a more detailed levelized cost analysis, across technologies and markets, to better target investment in order to shift market dynamics towards decarbonization

Illustration of LCOE cost breakdown: US vs Germany residential solar PV (2011)



Source: LBNL (2013)

What is the role of domestic investment in accelerating investment across borders?

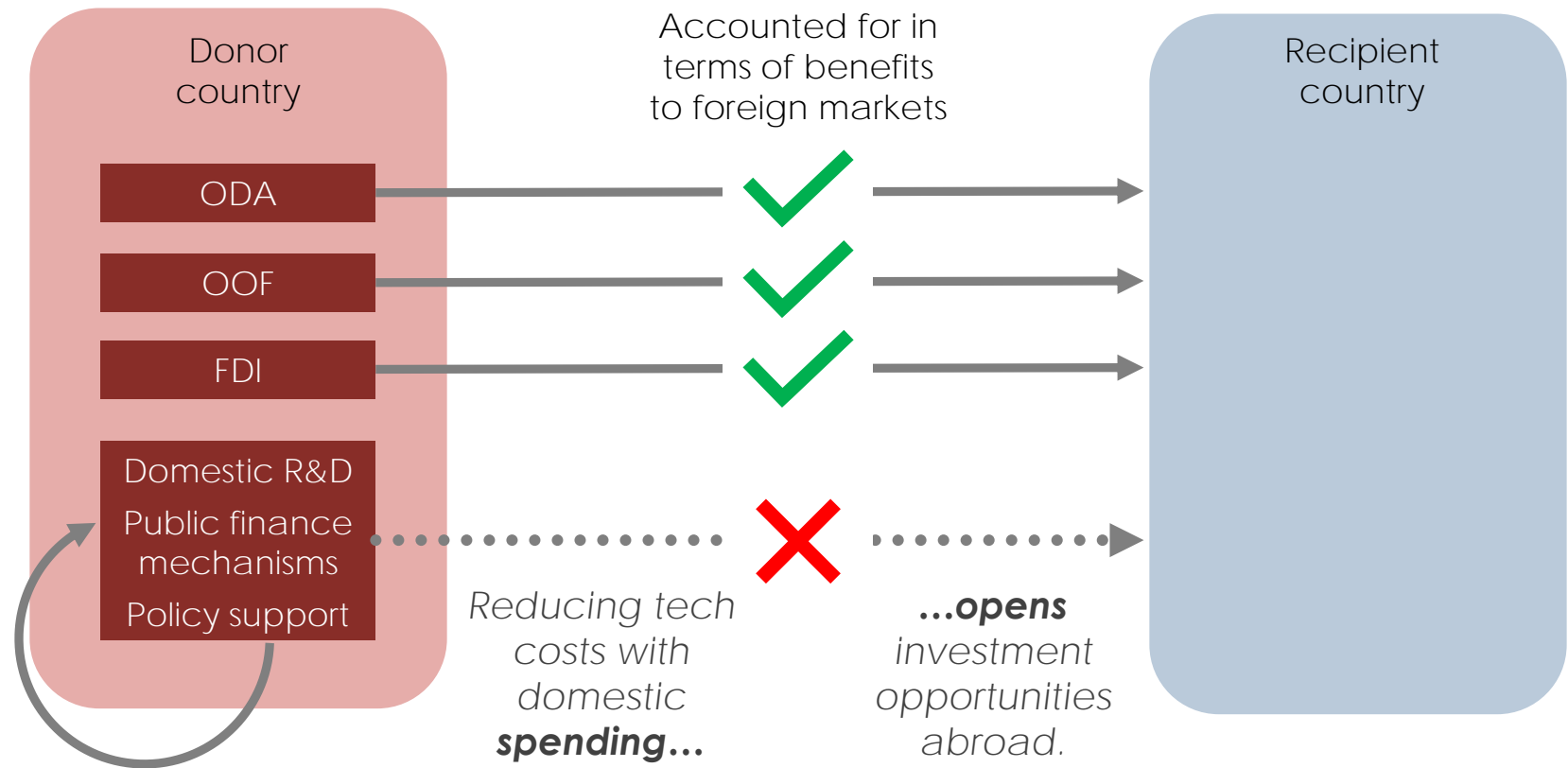
- Investment in clean tech innovation in developed countries leads to adoption of clean technologies in developing countries.
- Makes case for accounting for domestic finance & policy interventions as important levers to accelerate low-carbon investment in developing countries.



The path to solar PV in India



Framework for how addressing low-carbon development needs might better integrate domestic investments



Map technologies against structures and sources of capital needed to drive down costs in each geography toward full deployment



Status against 2°C scenario targets to 2025

- On track, but sustained deployment & policies required
- Improvement, but more efforts needed
- Not on track

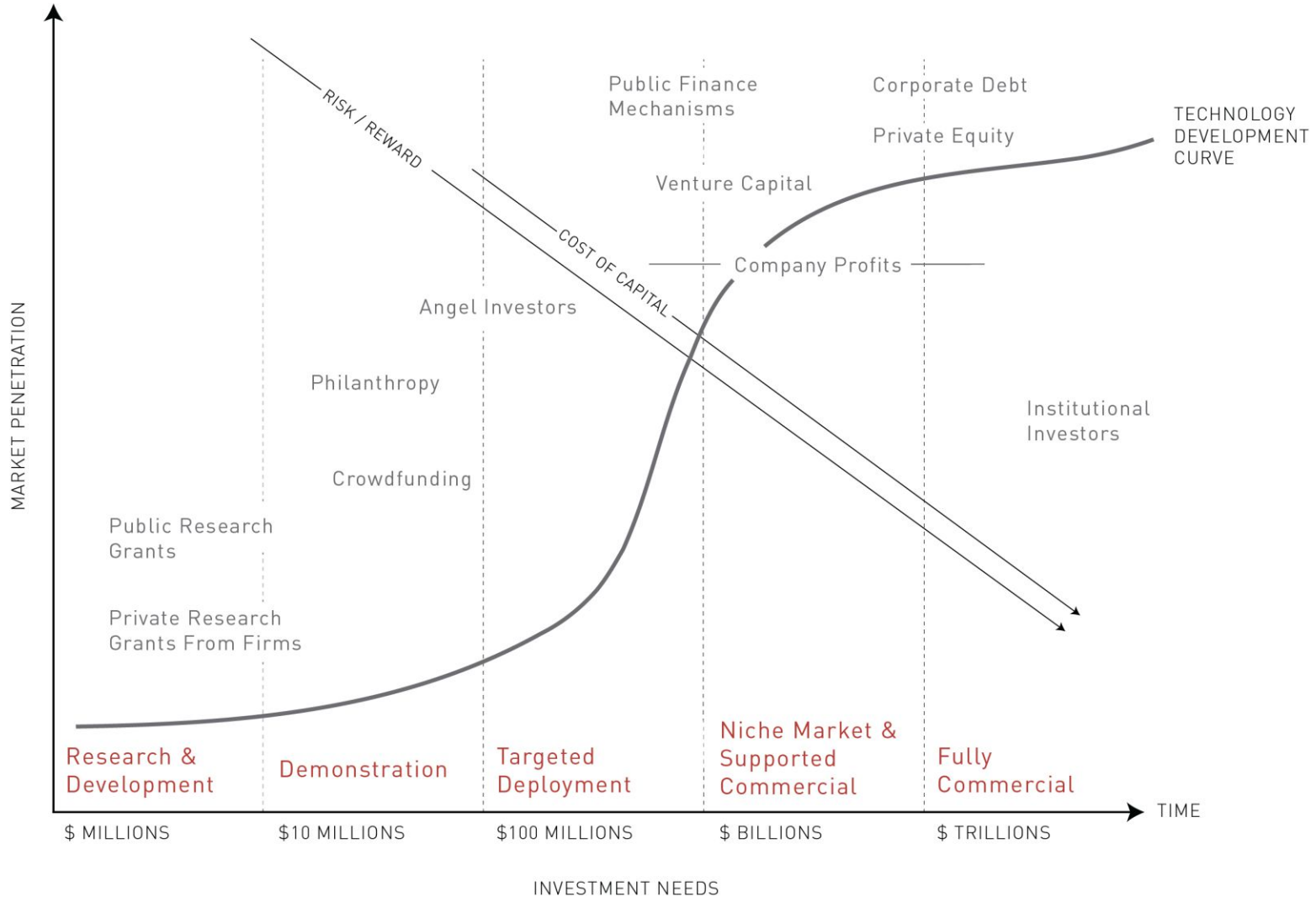
Recent trends

- ↗ Positive developments
- ~ Limited developments
- ↘ Negative developments

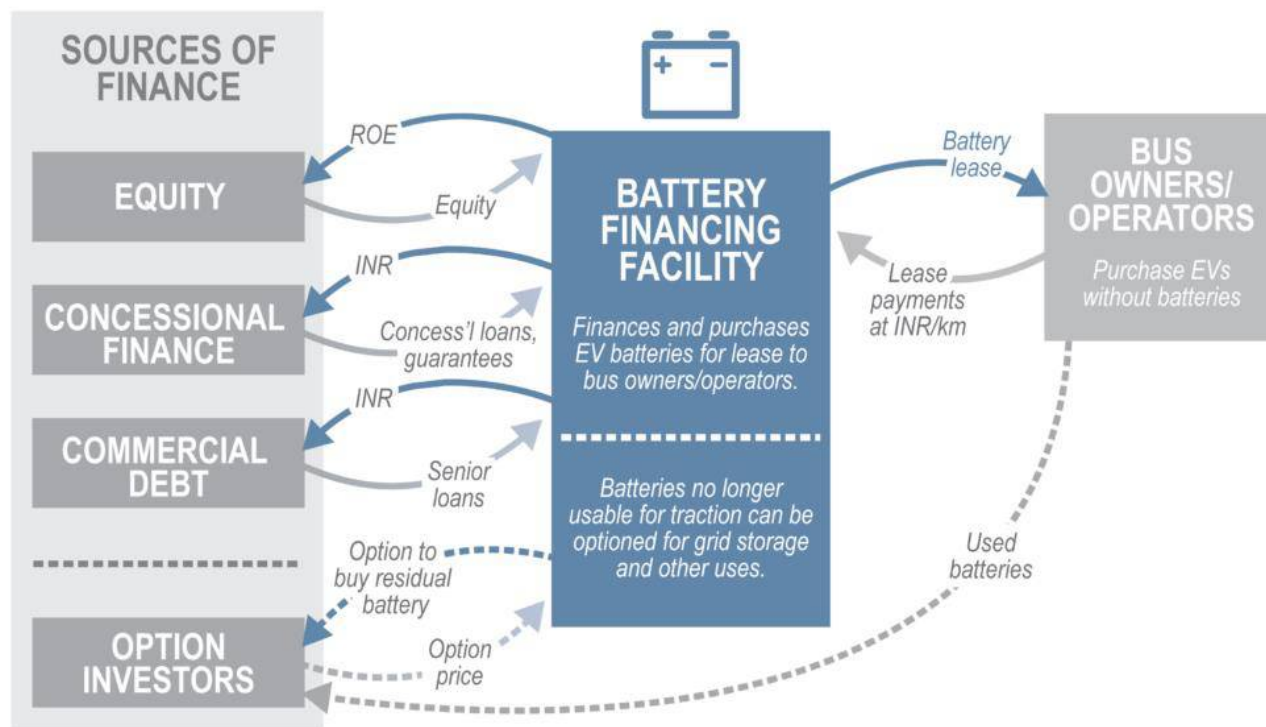
Source: IEA Clean Energy Progress tracker

A new framework to pinpoint where finance is going / most needed along the tech development curve

A focus on long-term goals requires us to think through which types of financial actors are best suited to invest at different points along the technology development curve



What financial structuring innovations are needed to support investments?



Next steps for CIRCLE

- Discuss with you today
- Get feedback on research topics
- Reach out and garner interest from other researchers
- Begin to address research questions
- Considering other titles, including to have sharper focus on mitigation:
 - *The Mitigation Investment Research Agenda to Catalyze Long-term Effectiveness (MIRACLE)* (because we will need one).

Thank you!



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Discussion questions

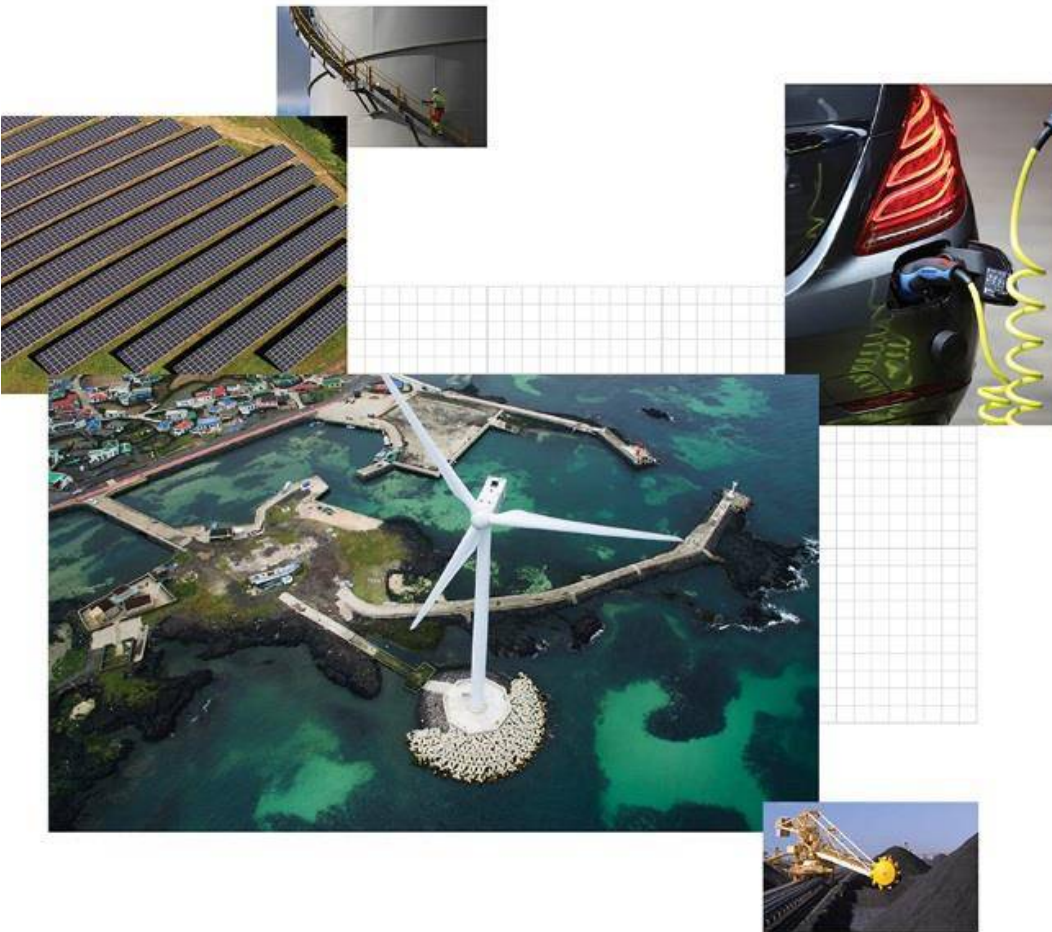
- How does a midcentury deep decarbonization target change how we think about the source, structure and target of climate investments?
- When do high-cost-per-ton abatement opportunities make sense? For which capital sources?
- What sources, structures, policies and approaches will allow us to commercialize available low-carbon innovations more rapidly? What has worked? What is the role of public investment?
- How might a focus on driving innovations down cost curves affect our geographic priorities for climate investment? What are the roles of domestic vs. overseas finance in enabling low-carbon development?

Bloomberg
New Energy Finance

New Energy Outlook 2017

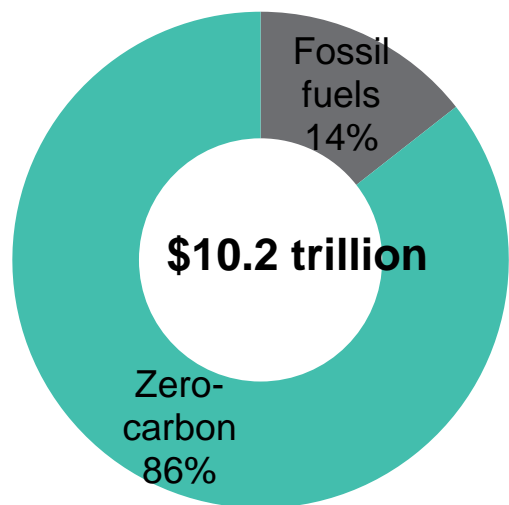
#NEO2017

Bloomberg New Energy Finance's
annual long-term economic forecast
of the world's power sector.



Solar and wind attract 73% of new investment in power generating capacity

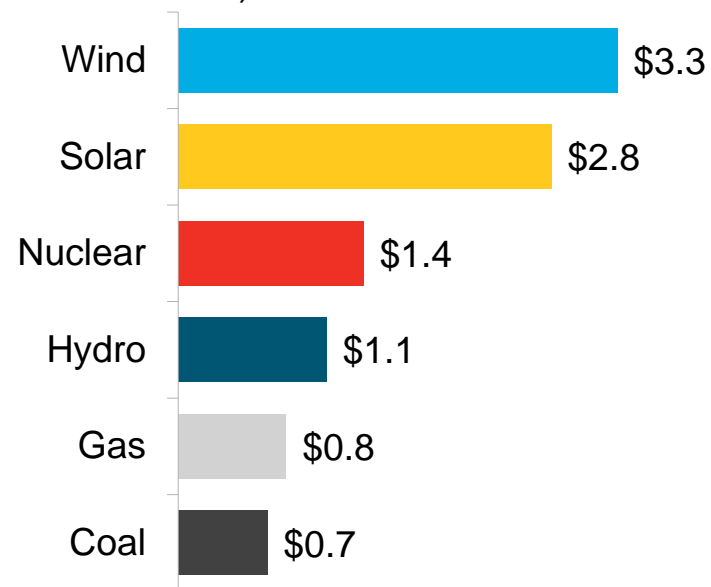
Investment, by technology, 2017-2040



Source: Bloomberg New Energy Finance
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Investment, by technology, 2017-2040

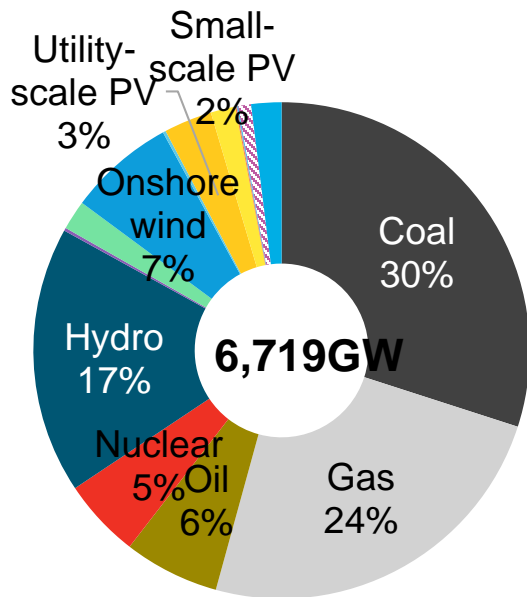
(\$ trillion - 2016 real)



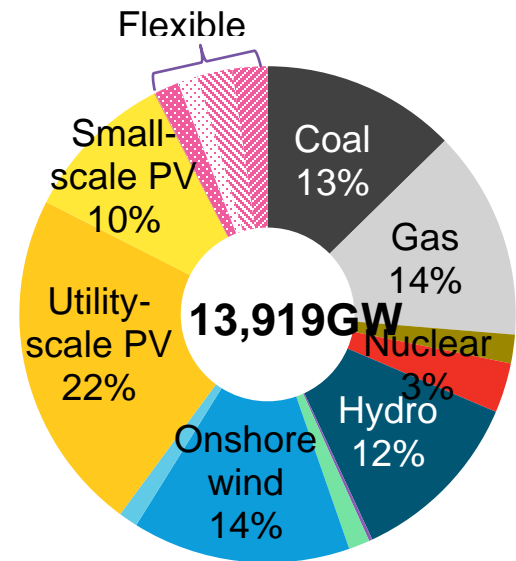
Source: Bloomberg New Energy Finance

Solar and wind dominate the future of electricity

Global cumulative installed capacity: 2016



Global cumulative installed capacity: 2040



Source: Bloomberg New Energy Finance
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