

Orderly Green Transition to Net Zero (NZ): Needs Urgent Massive Investment into Developing Countries

Luiz Awazu PEREIRA DA SILVA (*)

Opening remarks at UNFCCC event on Paris Alignment

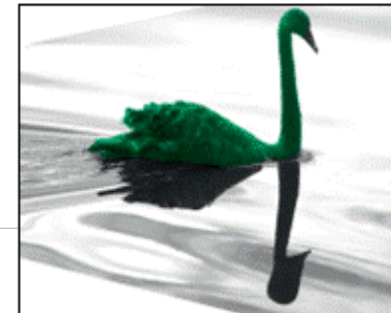
Geneva 3 October 2023

() Former Deputy General Manager Bank for International Settlements*

Good News and Bad News:

Greater Awareness on Climate Change (CC) related risks or “Green Swans” Insufficient timely, comprehensive action for structural change to reach Net Zero

- **IPCC reports warnings;** at BIS Green Swan called for CBs to act → new type of systemic global risk, irreversible, non-linear, not “tail of a distribution” like the Black Swans of the GFC → affects price & financial stability → global existential threat
- **Limited carbon budget** remaining before tipping points → urgent to act now. Coordination + multiple agents but no “silver bullet”. Multi-faceted policies identified requiring:
 - Governments (carbon pricing, carbon markets, investment in R&D, new green technologies, carbon capture, etc)
 - Private Sector (scale-up new technologies into investments, financing transition to NZ)
 - Regulation, green taxonomies, local, regional and global cross-countries coordination)
- **Mitigation strategies available:** decarbonize critical sectors (transport, etc) with clean energy (green electricity) AND invest massively on structural transformation of countries primary energy matrix (fossil → renewables)



The green swan

Central banking and financial stability
in the age of climate change

Patrick BOLTON - Morgan DESPRES - Luiz Awazu PEREIRA DA SILVA
Frédéric SAMAMA - Romain SVARTZMAN

January 2020

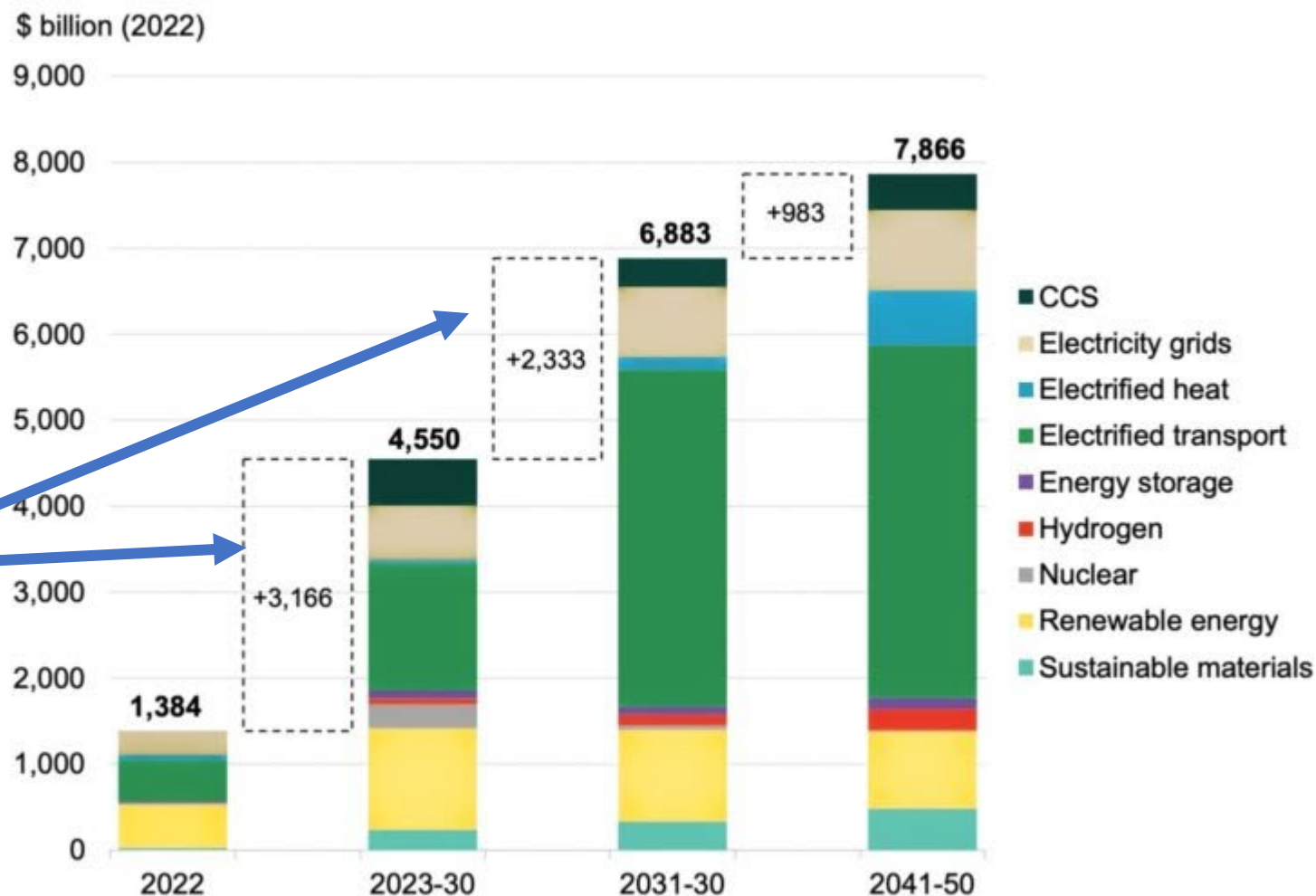
Link:

[The green swan - Central banking and financial stability in the age of climate change \(bis.org\)](https://www.bis.org/publ/green/green_swan.htm)

For strategy to work, need large Investments in Energy Transition to reach Net Zero

2022 energy transition and grid investment versus required annual investment in 2023-30, 2031-40, and 2041-50 in NEO 2022 Net Zero Scenario

- US\$1.1-1.3 trillion was invested globally in the green energy transition in 2022
- **But it's not enough.** To meet global net-zero targets, investment needs to triple to US\$4.55 trillion every year until 2030 → see gaps
- How to fill these gaps & finance this effort urgently is key; with limited room for manoeuvre (taxes, debt + inflation)

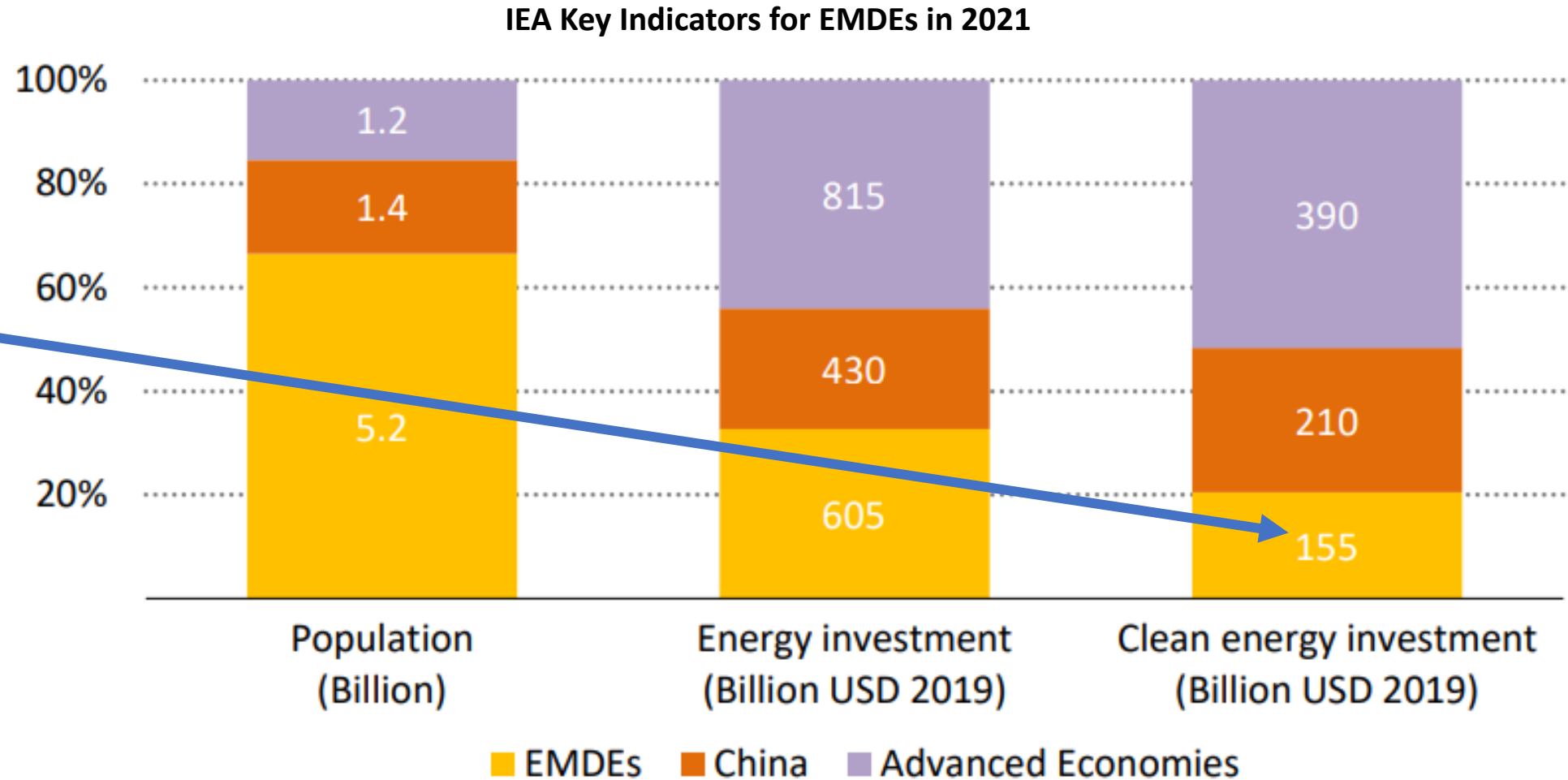


Source: BloombergNEF

Note: future values are from the New Energy Outlook 2022, except electrified transport, which is from the Electric Vehicle Outlook 2021 Net-Zero Scenario. The Net-Zero Scenario target global net zero by 2050 in line with 1.77 degrees Celsius of warming. Investment includes electricity grids

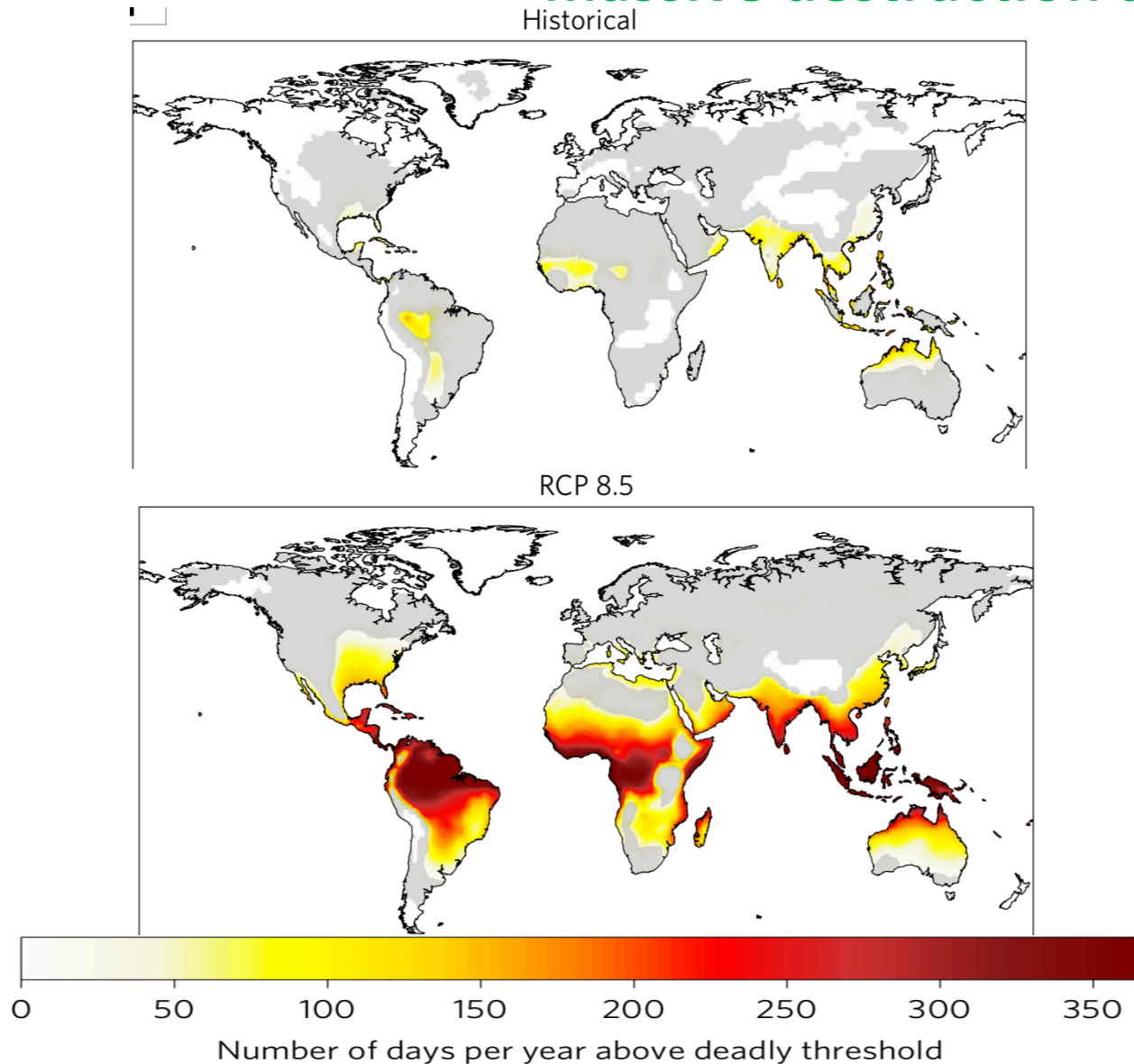
Not enough clean energy investment where it counts: developing world

- Emerging market and developing economies account for 2/3 of world's population but only 20% of global clean energy investment
- So green financing mobilization and direction needs to go the developing countries using all existing and new mechanisms



Source: IEA World Energy Investment 2021 Special Report

Poor countries most affected: GHG emissions impact temperatures on where poor countries are → higher costs for agriculture, higher inflation → potential massive destruction and migration



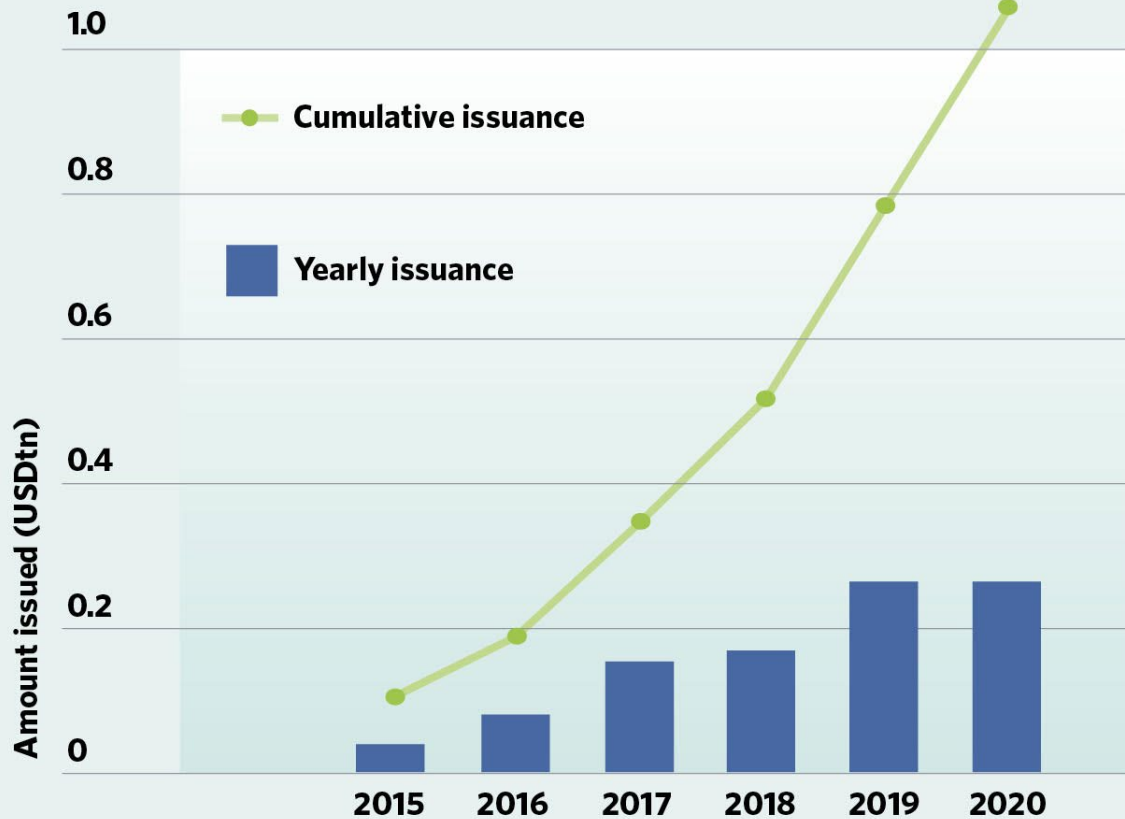
- Number of days in the 2000s, with deadly temperatures for human life (yellow spots):
 - 13.2% of the planet's land area where 30.6% of the population resides...
 - was exposed to 20 or more days when temperatures and humidity surpassed the threshold beyond which such conditions become deadly.
- Number of days in 25-50 years, with deadly temperatures (yellow & red spots) for human life: by the end of the century, in a BAU scenario, entire regions of the world would be inhabitable.

- Source: Mora et al, "Global Risk of Deadly Heat", *Nature Climate Change*, vol 7, issue 7, June 2017
- Groundswell, Preparing for internal climate migration, World Bank Group, 2018
- Internal displacement monitoring centre database 2017

Some financial good news: some developing countries are making progress with Green bond issuances & Green premium

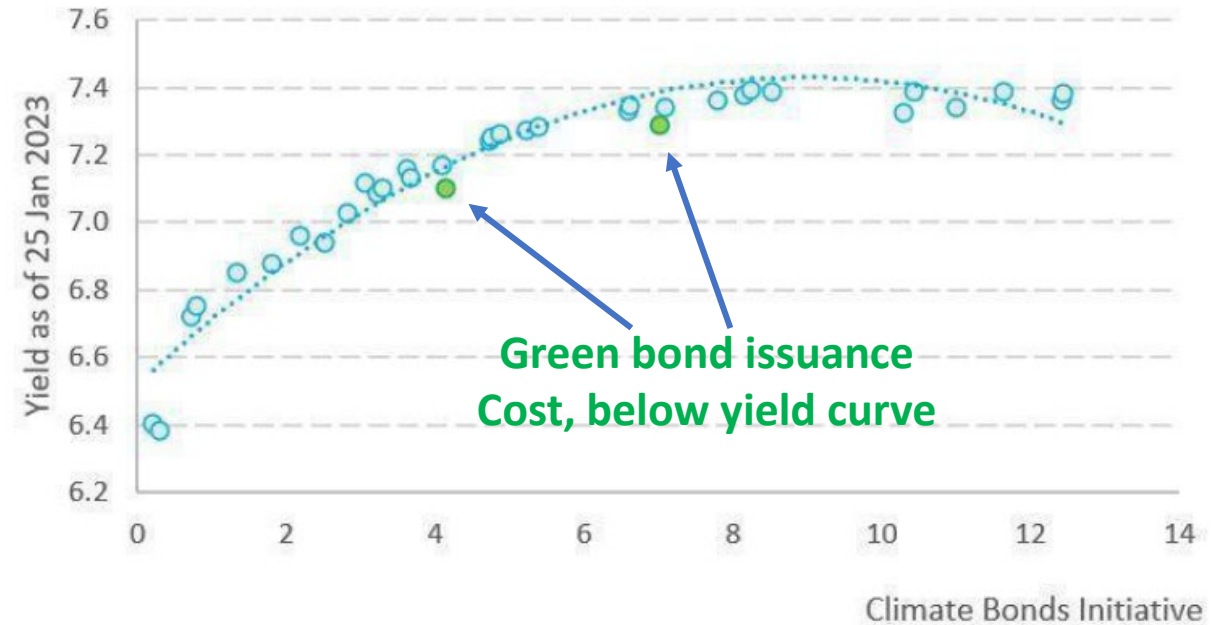
Green Issuance 2015 - 2020

Climate Bonds INITIATIVE



© Climate Bonds Initiative 2021

INDIA 2028 & 2033 - greenium



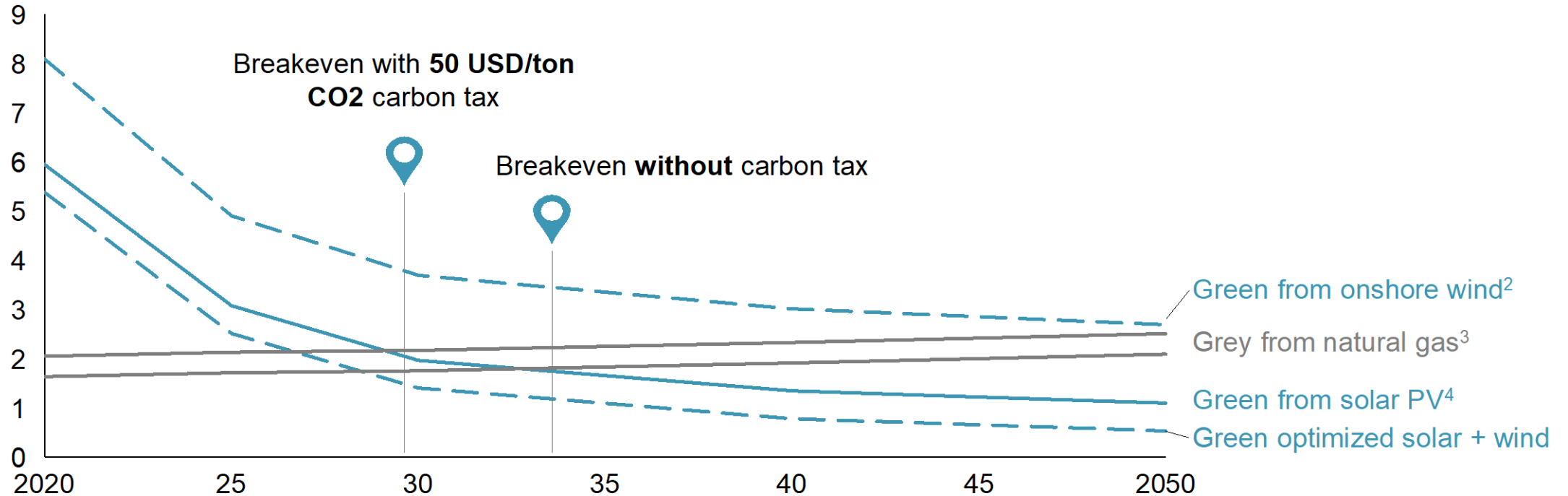
Climate Bonds Initiative

Some technological good news: some developing countries using lower costs of new green technologies (green Hydrogen) ex of Chile

5. Green H2 in Chile could become competitive vs grey H2 by 2030

Hydrogen production cost¹, USD / kg

Preliminary



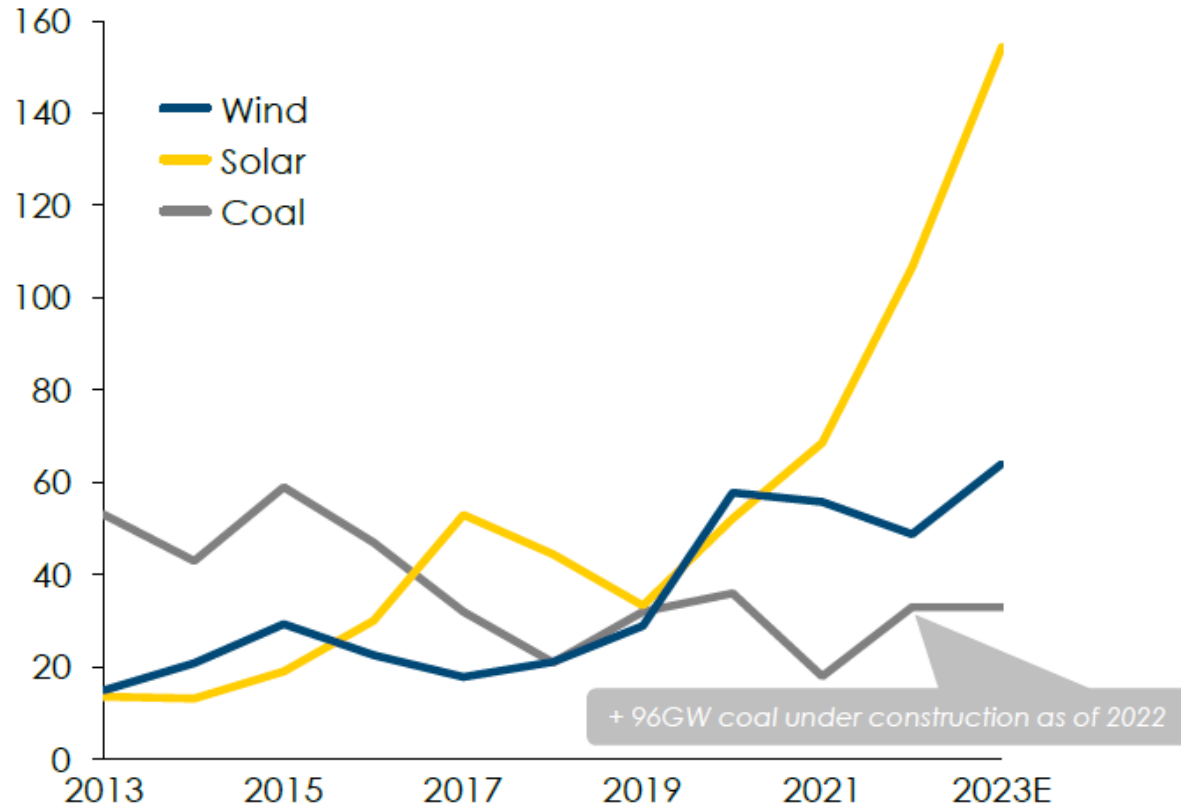
1. Based on 7% WACC
2. Based on onshore wind located in the South with 24% load factor and LCOE decreasing from 59 USD/MWh in 2020 to 46 USD/MWh in 2050
3. Based on steam methane reforming (SMR) and natural gas prices increasing from 8.13 USD/Mmbtu in 2020 to 11.22 USD/Mmbtu in 2050. High case includes 50 USD/ton CO2 carbon tax
4. Based on solar PV located in the North with 28% load factor and LCOE decreasing from 31 USD/MWh in 2020 to 12 USD/MWh in 2050

Some structural transformation good news:

New green energy supply growing ex of China but not yet matching demand growth

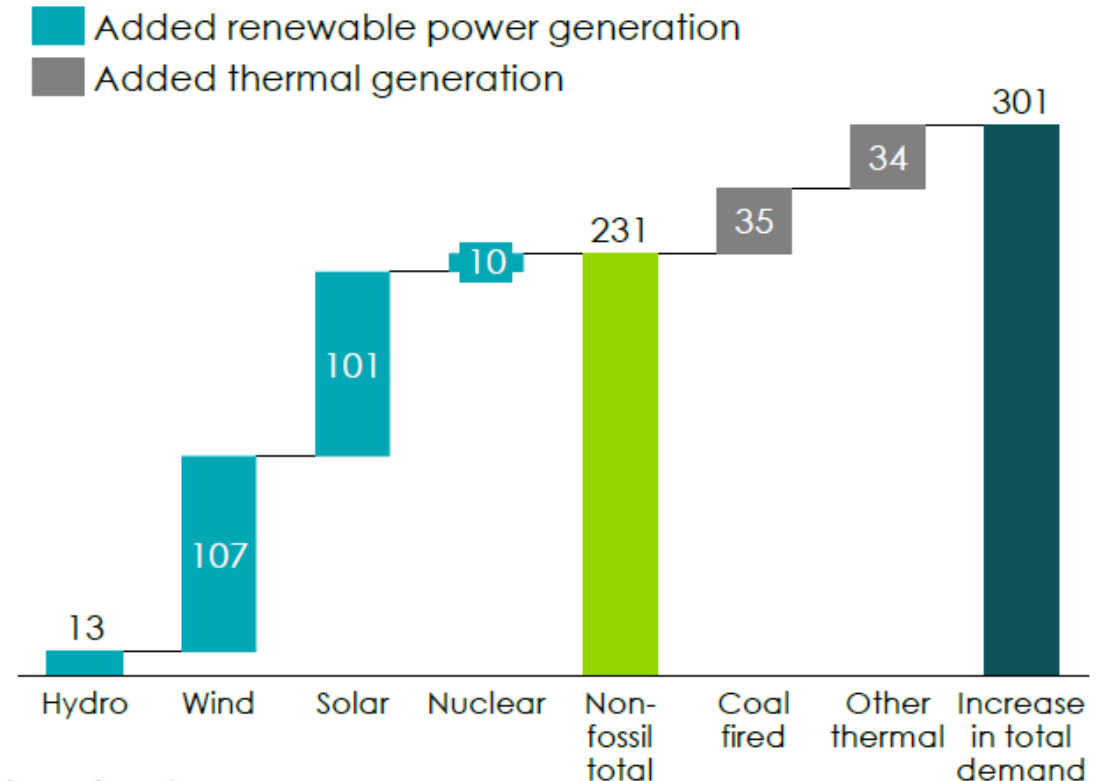
Renewables capacity additions are scaling but 27GW new coal capacity added in 2022

GW



New clean energy generation between 2021-2022 not enough to meet growing demand

TWh



Source: BNEF (2023), Interactive data tool – generation; Energy Foundation China (2023), Coal Tracker

The role / challenge of green finance in the transition:

make possible more capital to developing countries → prevent adoption by EMEs of Advanced Economies' old models → foster an “expansionary” transition

- **Public & private agents and finance** need to play similar role of engineering, banks in 17-19th centuries to build and finance structural change from agrarian societies to Industrial revolution.
- CC represents significant reallocation of resources; not a simple, albeit very large, traditional “shock” (eg. Oil in 70-80s); more a **Schumpeterian creative-destruction change for whole global capital stock** and production/consumption processes.
- Finance can play the role of an **accelerator of change** to facilitate such reallocation in the real economy to reach NZ and mitigate risks that today prevent capital flows to flows to developing countries.
 - **Pledges to fund NZ transition in poor and other developing countries need to be upheld** (Paris \$100b fund, especially because **CC has severe distributional consequences** (poor countries and poor HH in rich countries))
 - **Concessional Green Finance** for low income countries (SDRs, ODA, etc)
 - **Blended Green Finance** with more resources for MDBs like World Bank, regional development banks, to absorb part of risks, develop new projects (more capital needed, new method for pooling risks)
 - **New innovative Green Finance** for insurance of physical risks (1.5C portfolios, new indices, etc) for investors.
- **Adaption strategies** and investment efforts will also have to be considered and funded

Thank You!