



Option analysis and scoping for commercial capital to finance upgrades: Voluntary Carbon Offset Market Opportunity

April 2022



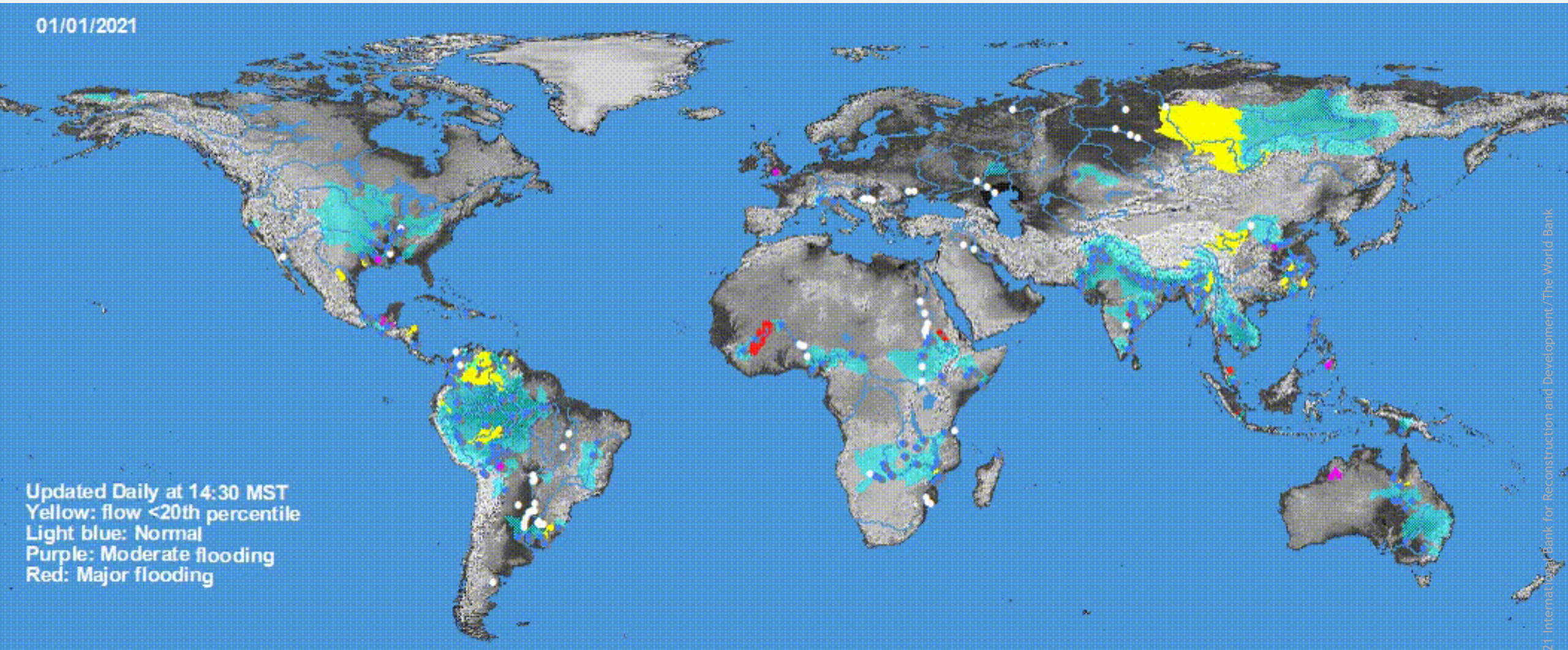


Why now

Key enablers

Climate change is the ‘biggest threat modern humans ever faced’

Since the start of 2021, the number of floods has been staggering globally



The climate crisis has severely impacted the physical environment, ecosystems & human societies



Severe floods caused by historic rainfall in 100 years raged through Western Europe in Jul 2021, leading to widespread damage & hundreds of death, with hundreds more missing



Massive heat dome over Western North America with prolonged & sweltering heat wave has caused extensive wildfires & damages to infra, businesses, crops & wildlife in Jul 2021



Catastrophic floods & landslides in Central Vietnam in 2020 that resulted in hundreds of fatalities & US\$1.52 billion in damage were unprecedented in its scale & severity



Intense bushfires that razed >18 million hectares of bush, forest & parks & destroyed thousands of homes across Australia in 2019-2020 were Australia's costliest natural disaster to date

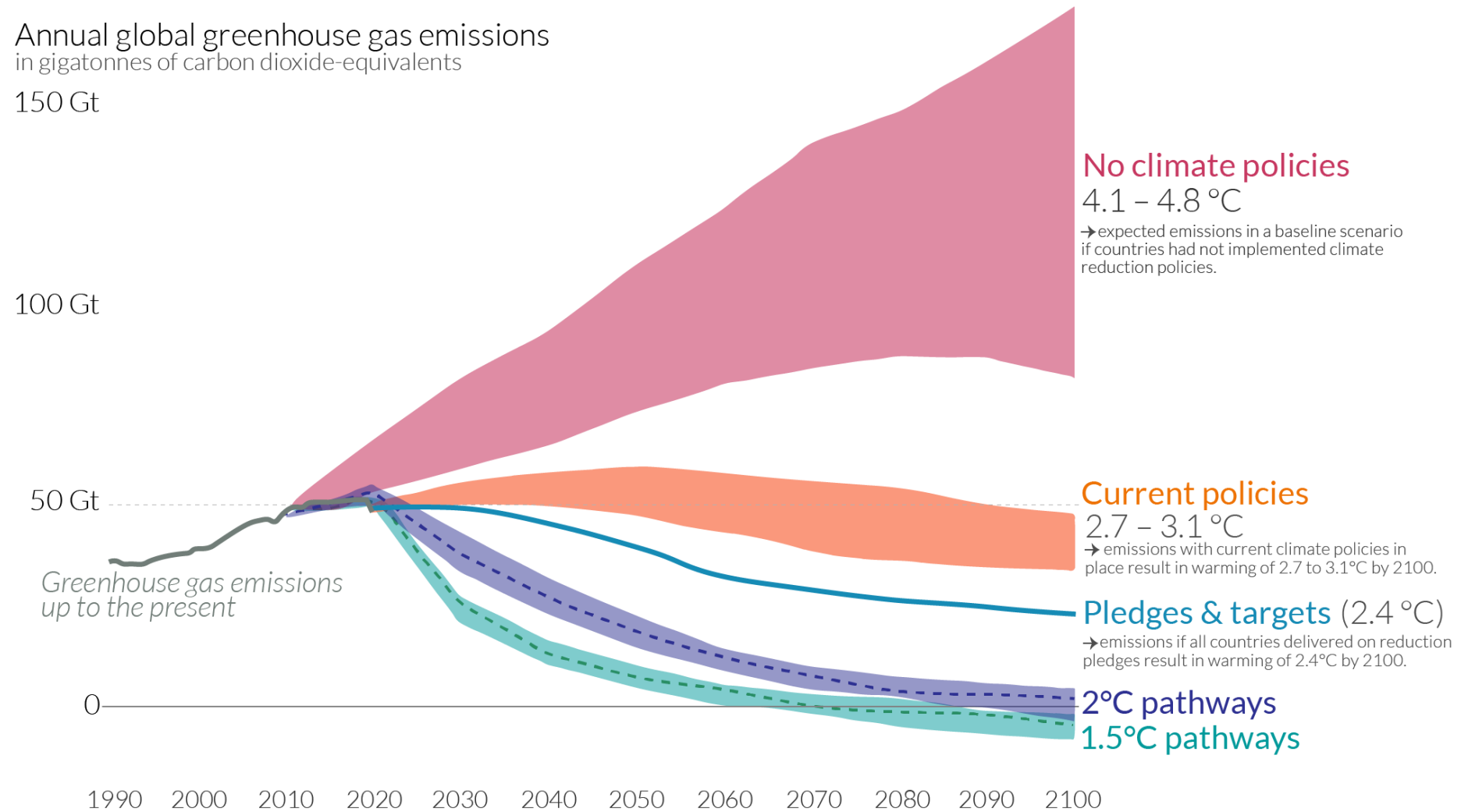
There is an increasing focus on taking action to tackle climate change & reduce GHG emissions from human activities globally

➤ Current climate policies will reduce emissions, but not quickly enough to reach intl targets

➤ If our goal is to limit warming to “well below 2°C” - as is outlined in the Paris Agreement - we are far off-track



Urgent, rapid & drastic reductions in GHG emissions are needed, before deadly & costly weather extremes get even worse



Source: Our World in Data 2020

The momentum for climate action is at a tipping point as green recovery & net zero targets are a top agenda of leaders



Governments & UN



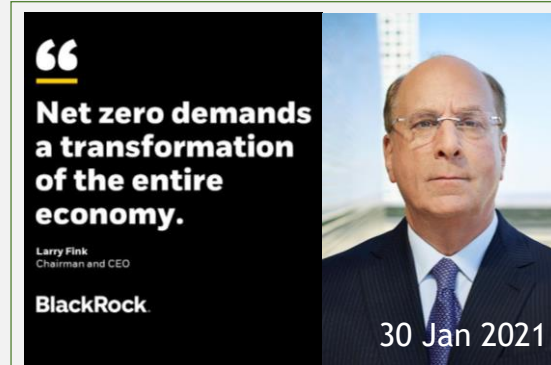
Corporates



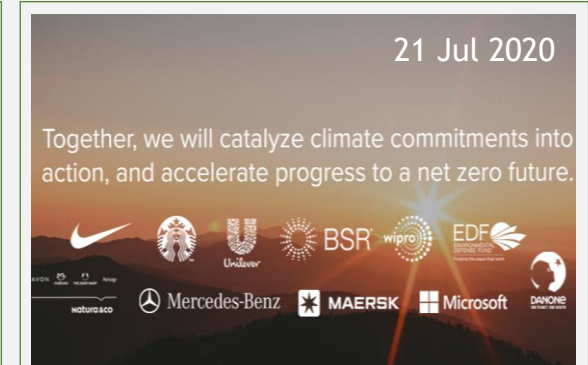
China pledges carbon neutrality by 2060 & tighter climate goal at UN



EU shifts to making 800 billion euros 'green' recovery plan work



BlackRock Larry Fink's 2021 Letters to CEOs



Transform to Net Zero initiative launched by 9 leading businesses incl. Microsoft, Unilever, Nike



Rapid growth of UNFCCC's Race to Zero shows that halving emissions by 2030 is the new normal



No new coal plants from 2023 in Indonesia in another bid to cut emissions

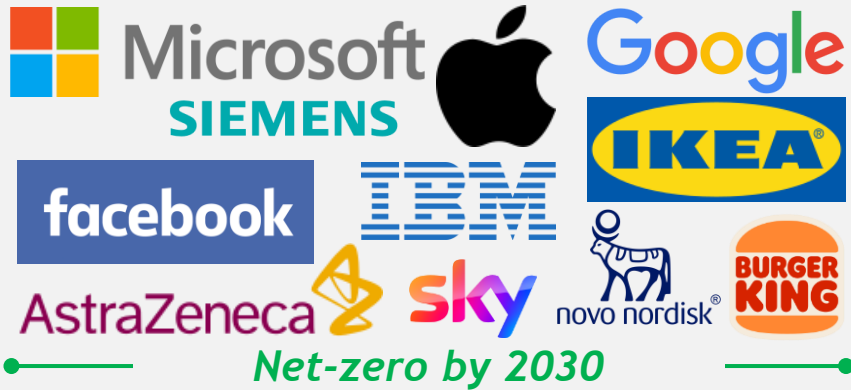


Amazon's Climate Pledge announces >100 signatories committed to achieving net-zero by 2040 or sooner



UK business chiefs call for retrofit scheme to hit home emissions target

A growing pool of corporates are taking the lead announcing & acting towards long-term emission reduction targets



Growing numbers of commitments & pressure to act

- 21% of the world's 2,000 largest companies representing sales of >US\$14 trillion have committed to net-zero targets
- Investors are increasingly incorporating ESG metrics into decision-making: 33% of global assets under management in funds that consider ESG metrics during investment process
- Green bond market grows significantly: 57% CAGR of global green bond market from 2015 to 2019. The global green bond market remains resilient despite COVID-19, with a record issuance of US\$280 billion in 2020, compared to US\$42 billion in 2015

Momentum is spread across buyers & sectors

- MNCs purchase 50% of all offset volumes; domestic companies/SMEs accounting for another 35%
- Fortune 500s in 17 of 19 sectors had made a sustainability commitment
- 2000+ organizations from 80+ industries in 78 countries have supported the Task Force on Climate-related Disclosures as of March 2021

Long-term trend expected to hold despite likely delays by Covid-19

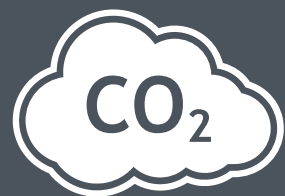
- 87% of the public want corporations to integrate environmental considerations into products/ services & operations
- 40% of millennials state that sustainability is a consideration in their job choice

Source: 'Taking stock: A global assessment of net zero targets' report; Goldman Sachs; BCG



Why now

Key enablers



Market overview



Two types of carbon markets co-exist



Compliance Markets



Voluntary Market

* focus of our programs

Buyers	Companies required by regulatory bodies to purchase carbon credits (allowance & offsets - up to a set volume limit) equal to their emissions	Companies & individuals committing to smaller carbon footprints using carbon offsets
Mandated by	Country/region-specific or industry-specific regulatory bodies	Companies themselves, in a credibility & reputation-driven environment
Target miss penalty	Financial penalty applied by regulatory bodies	No penalty/ internally-defined/ backlash from customers or investors
Fragmentation	Geographic & industry fragmentation	Global non-regulated OTC market

Source: Ecosystem Marketplace; European Commission; World Bank; BCG

1

Carbon allowance

2

Carbon offset

* focus of our programs

Definition

Each certificate/ permit represents the legal right to emit 1 ton of CO₂ or GHG equivalent

1 ton of CO₂ or GHG equivalent emission avoided as result of a voluntary project, to offset emission produced elsewhere

Issuer

Regulatory bodies (i.e., EU ETS)

Emission reduction project developers

Transaction market

Compliance markets

Compliance & voluntary markets

Transaction method

Allocated or auctioned off to companies by regulators based on an emission target. Companies can also sell excess allowances or purchase more to cover overages through ETSs¹

Purchased or traded by companies on similar emission trading systems or over the counter

Registries

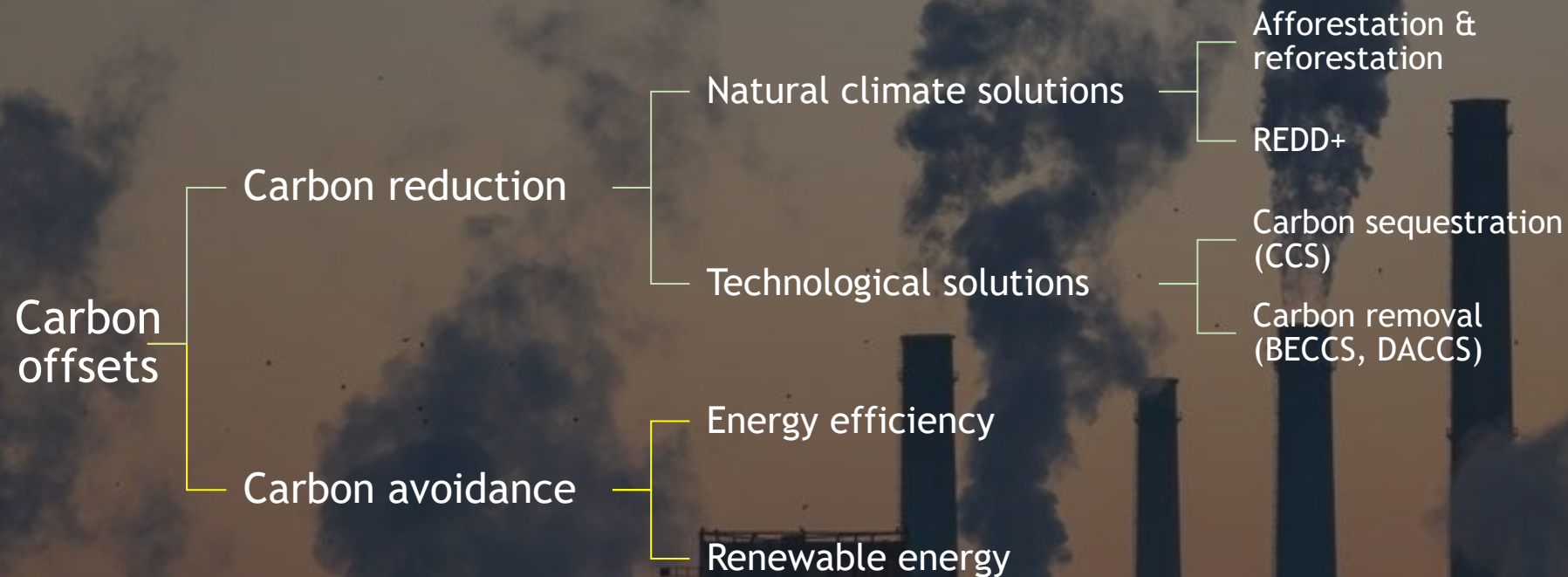
Member states

- VERRs²: Verra, Gold Standard, etc.
- CERs³: CDM (Clean Development Mechanism) & JI (Joint Implementation)

Two types of unit transacted in the market

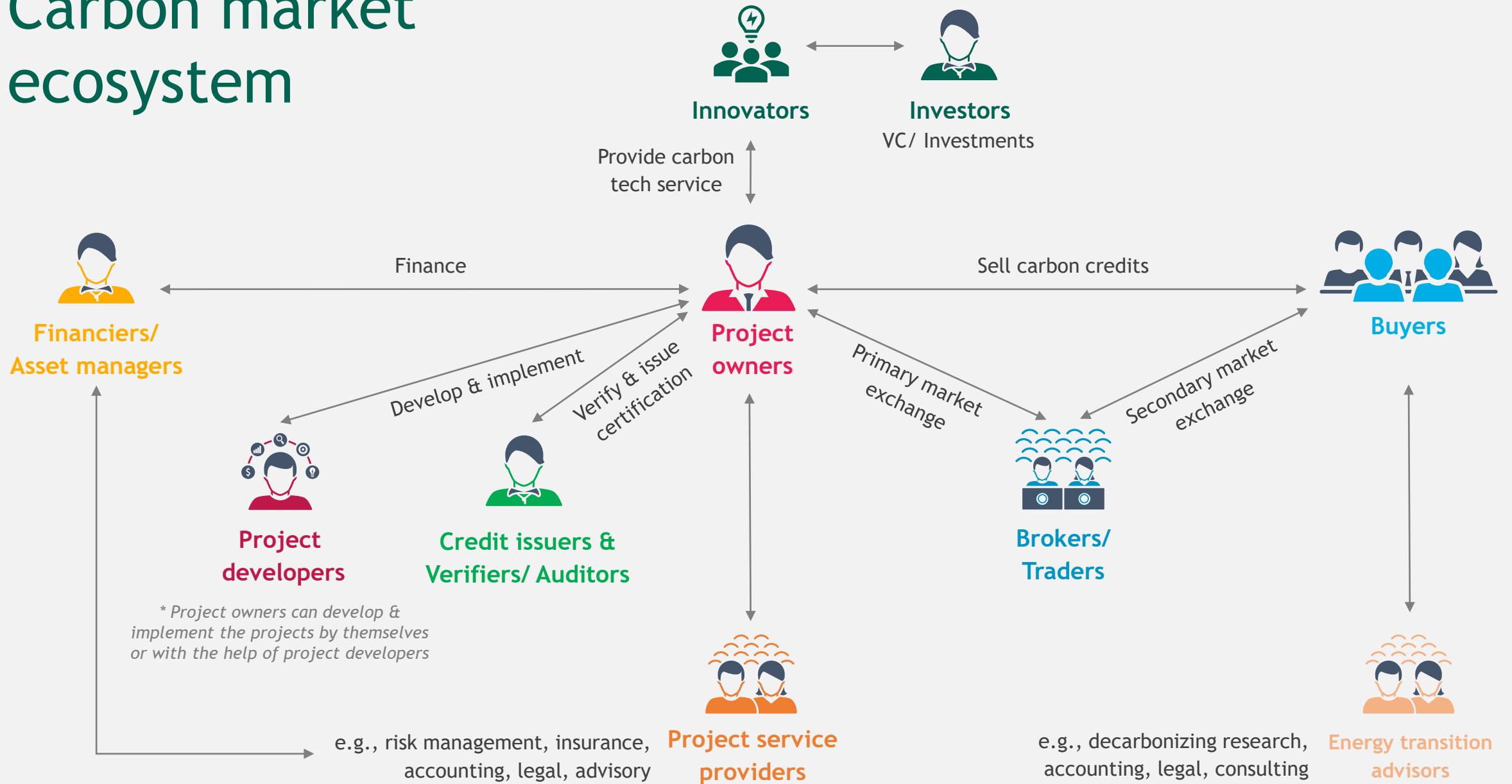
1. Emission trading system; 2. Voluntary Emission Reductions outside the Kyoto protocol; 3. Certified Emission Reductions under the Kyoto protocol

Different categories & sub-categories of carbon offsets exist in the market



A diverse portfolio of offset types is needed to help scale up carbon credit supply, including both carbon reduction & carbon avoidance solutions

Carbon market ecosystem



Corporates have increasingly focused on 3 main types of activities to reduce its carbon footprint



Increase energy efficiency of operations



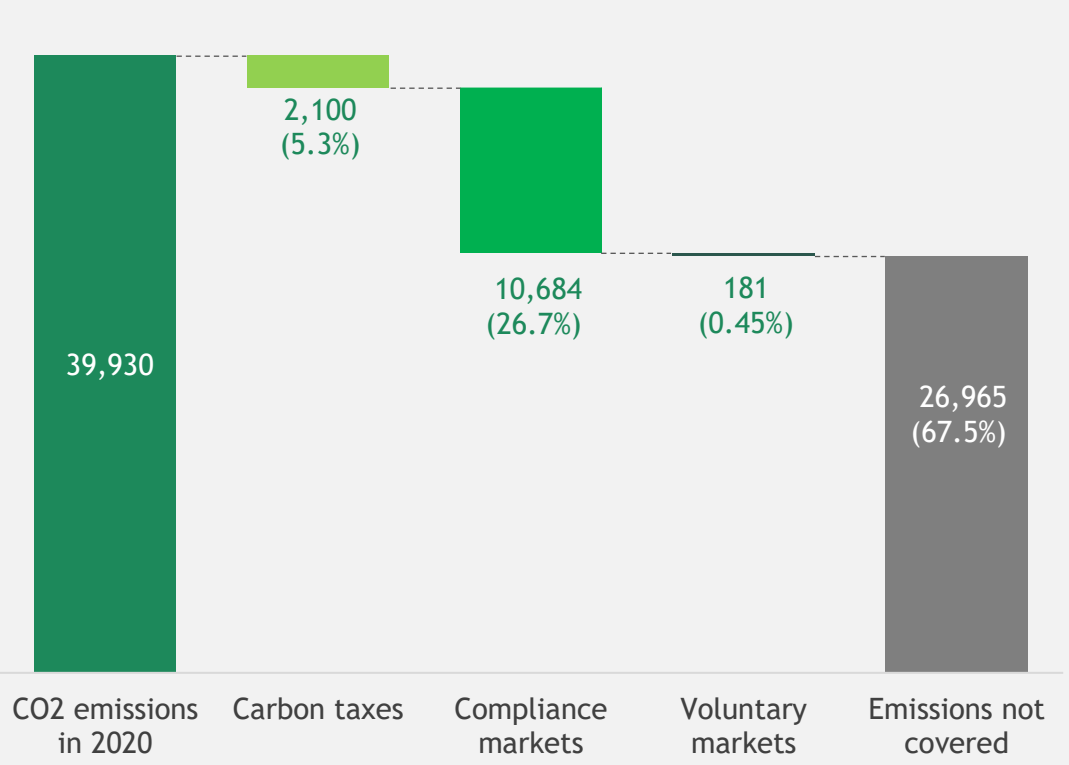
Shift to renewable energy



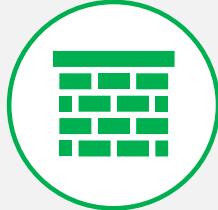
Purchase carbon offsets

core element of corporate net-zero carbon plans, which has heated up compliance & voluntary markets for carbon trading

Compliance markets, albeit currently much larger than voluntary market, are less attractive as an entry point



\$0.7-1.4T opportunity waiting
Carbon markets today barely scratch the surface of the opportunity



Offset limits

Most compliance markets allow only small portion of targets to be allocated to offsets



Fragmented initiatives

Compliance markets exist on provincial, national & regional levels with different standards; i.e., 31 ETS systems globally, each with their own requirements



More difficult to enter & innovate

Compliance markets tend to have high entry requirements & lower appetite for new methodologies

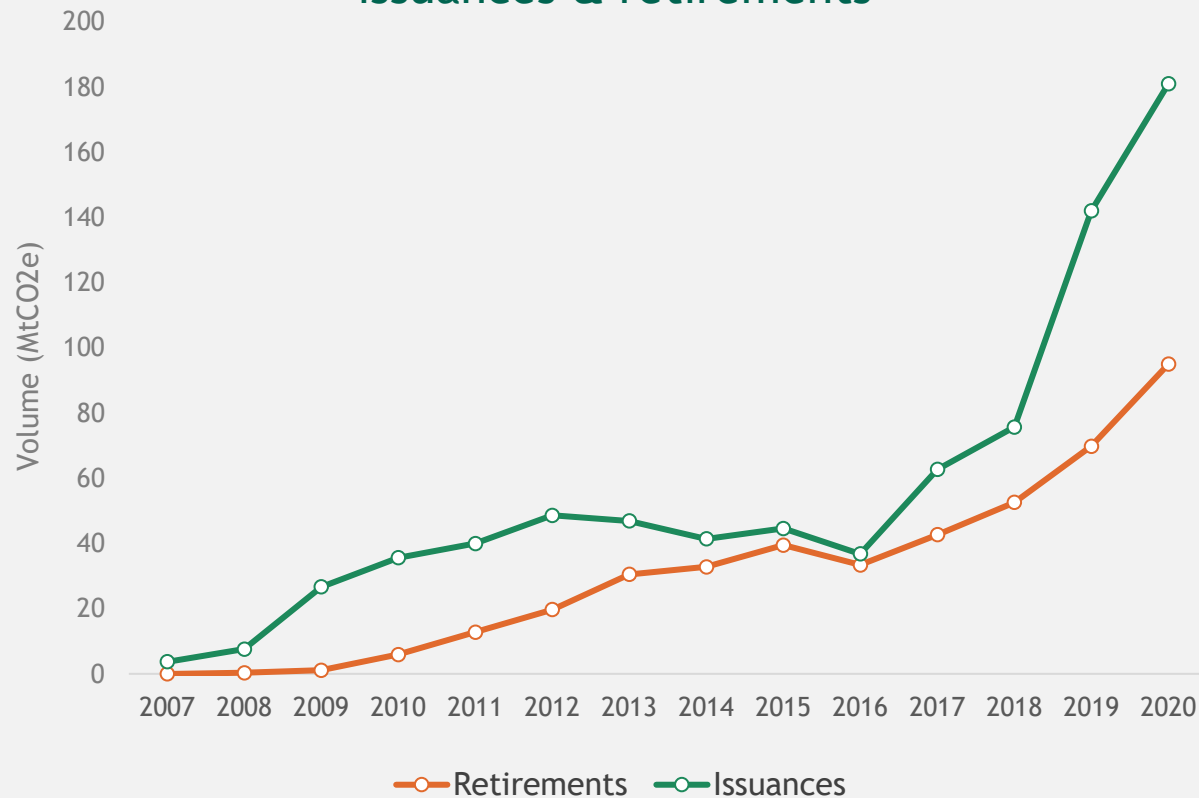


Voluntary market is a more logical entry point

Source: WB, Statista, TVSCM, Refinitiv

Voluntary market is an inflection point & has grown dramatically over the past few years

Market size by voluntary carbon offset issuances & retirements



The volume of traded voluntary carbon offsets is expected to set another record in 2021, after experiencing **80% increase from 2019 to 2020**. This growth has been driven by **growing corporate commitments & point-of-sale offerings of voluntary carbon credits**

Voluntary markets have channeled **US\$6.7B** into emission reduction activities in the past 20 years



- In 2020, voluntary market generated **\$473M in revenue**, highest annual value since 2012
- By August 2021, market transactions exceeded **US\$748M**, making this year likely the highest annual value ever tracked, **potentially exceeding US\$1B**

Global demand for voluntary carbon credits expected to continue to grow



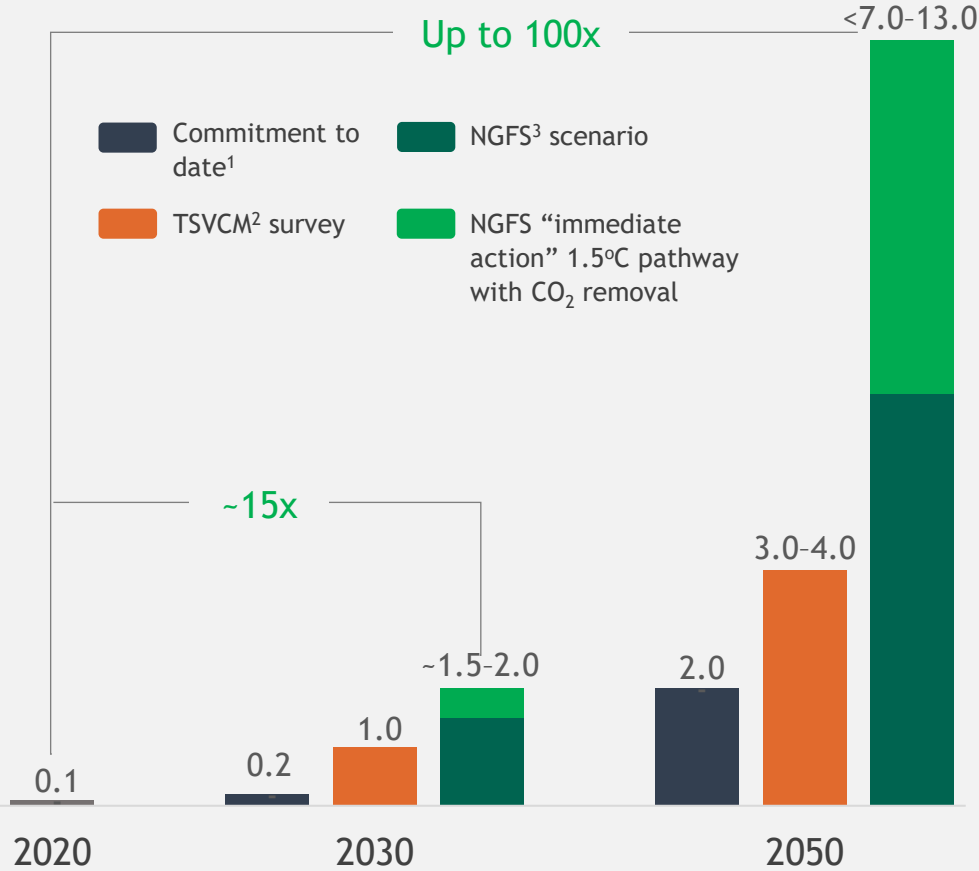
Global demand for voluntary carbon credits could **increase 15x or more by 2030 & up to 100x by 2050**



Depending on different price scenarios & their underlying drivers, the market for carbon credits could be **worth upward of \$50 billion in 2030**

1. Reflect demand established by climate commitments of >700 large companies. They are lower bounds because they do not account for the likely growth in commitments & do not represent all companies worldwide
 2. TSVCM = Taskforce on Scaling Voluntary Carbon Markets
 3. NGFS = Network for Greening the Financial System. These amount reflect demand based on CO₂ removal & sequestration requirements under the NGFS's 1.5°C & 2.0°C scenarios.

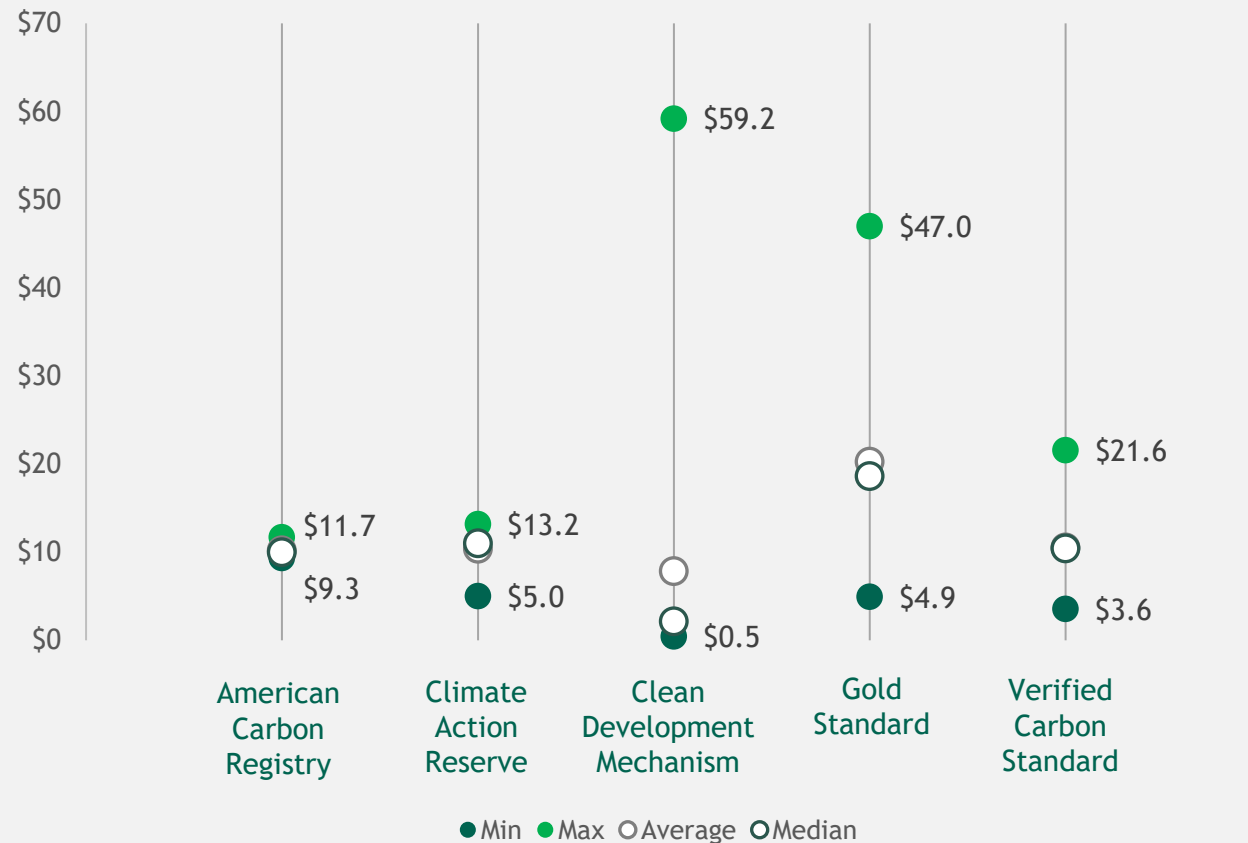
Source: NGFS; TSVCM; McKinsey



Voluntary demand scenarios for carbon credits, gigatons per year

Carbon prices were low for years & varied significantly across offset projects

Price ranges per tCO₂e on selected registries, 2018

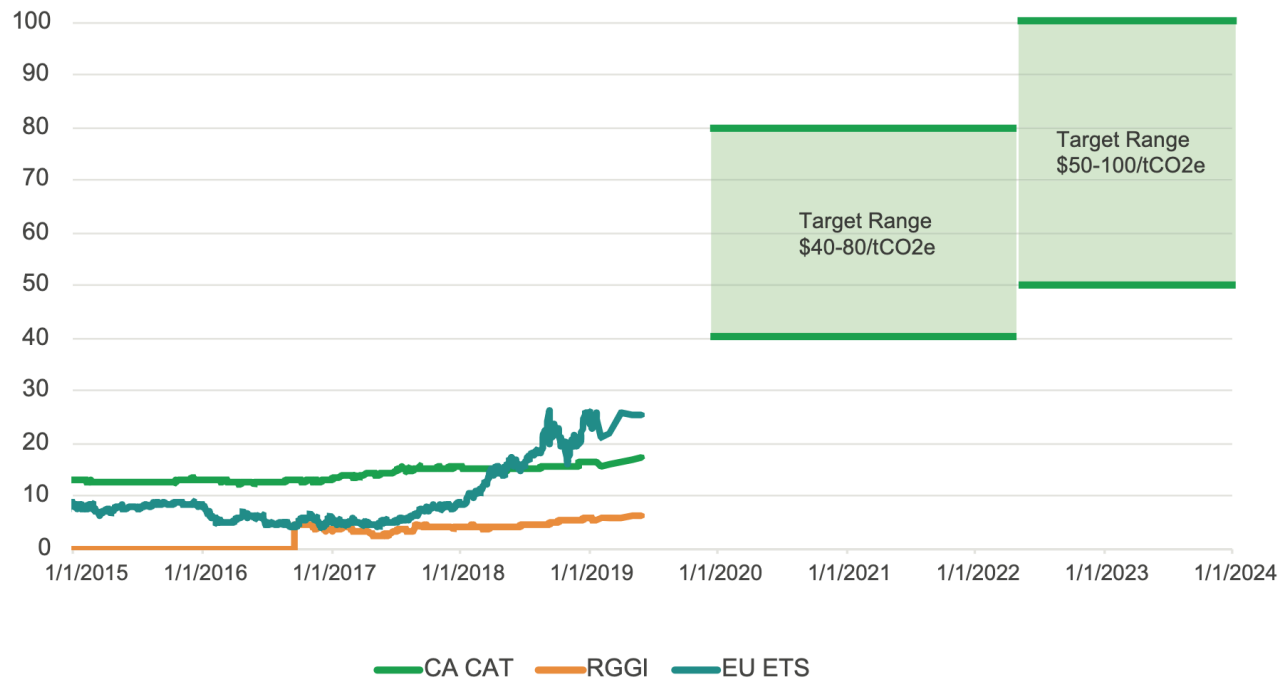


- Market price driven by supply/ demand dynamics, internal carbon market policy mechanisms that support price & limit supply, & various macroeconomic & geopolitical forces such as energy production mix & climate risk
- The **low prices** at ~US\$6-7 a ton for years were **caused by surplus of supply due to vintage carbon credits, financial crisis & lack of regulatory climate action**
- The **current surplus of carbon offset credits could be quickly eroded, with demand expected to increase substantially** over the next decade as companies seek to deliver on their net zero emissions pledges

However, carbon price expected to rise due to demand growth for higher-cost emission removal projects & limited availability of eligible quality carbon credits

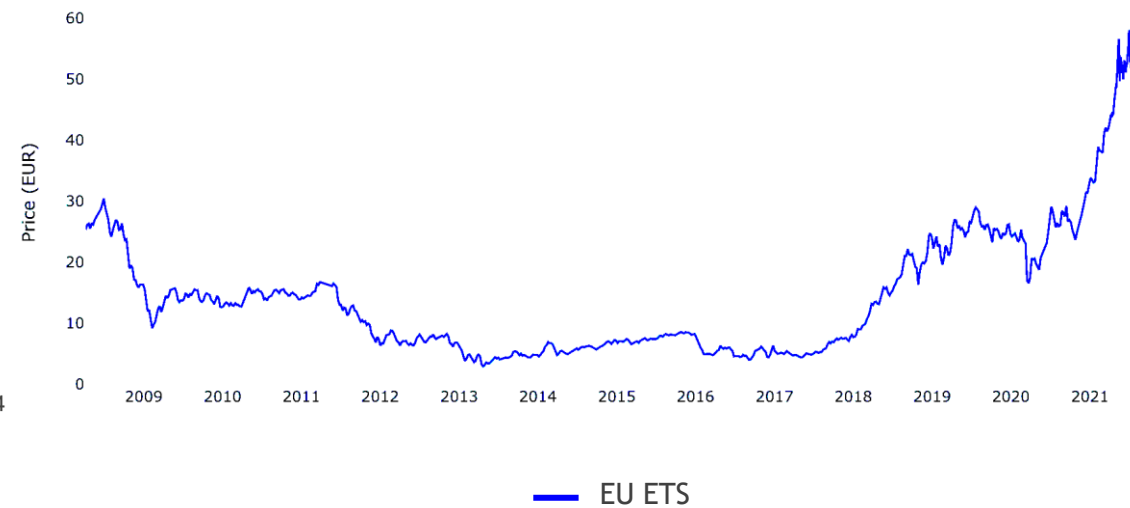
Carbon prices of US\$40-80/tCO₂ by 2020 & \$50-100/tCO₂ by 2030 needed to cost-effectively reduce emissions in line with the Paris Agreement's goals

Gradual increase in carbon prices since the inception of the Paris Agreement



EU ETS price has soared to all-time high in 2021, more than doubling from levels before Covid-19, reaching target range & projected to be on track to reach €90 towards 2030

The surge in price, along with the EU's climate package to cut GHG emissions by at least 55% by 2030, has made carbon one of the world's hottest commodities



A growing number of companies are setting high internal carbon prices, signifying their commitment to low-carbon investments

Internal carbon price: internal fee of tax charged for each business unit based on its emissions. Fees are collected in a central fund, **reinvested into projects focused on energy efficiency, renewable energy, or carbon offsets**

Median internal carbon price disclosed by companies in 2020 was US\$25 per MtCO₂e

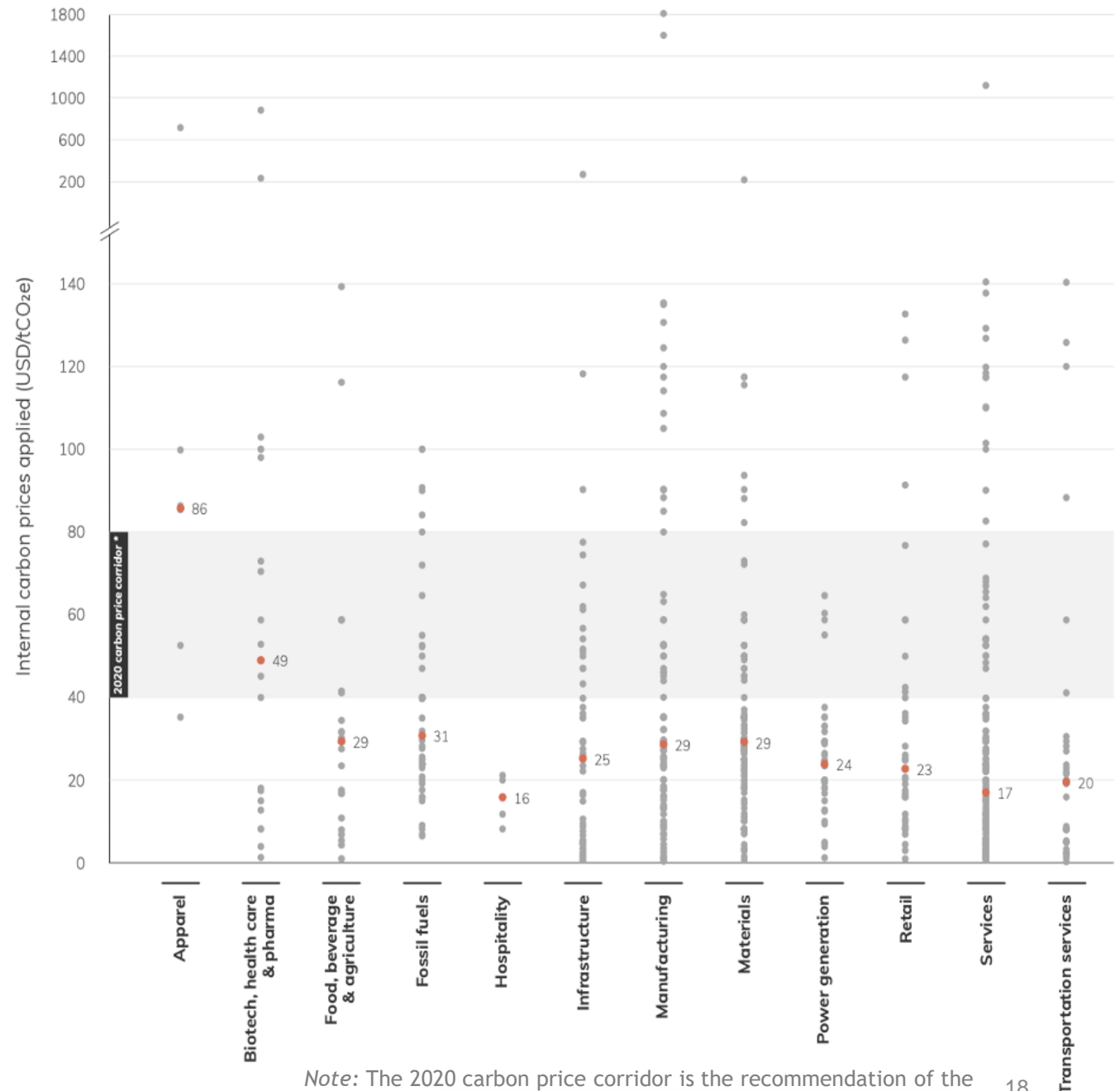


80% increase in the number of companies planning or using an internal carbon price in just 5 years: >2,000 companies representing US\$27 trillion of market capitalization now disclosing current or planned used of internal carbon pricing



The leading driver of internal carbon pricing uptake is the desire to drive low-carbon investments, with companies viewing **carbon pricing as an effective approach to prioritizing investment opportunities & catalyzing green financial flows**


Source: WB; CDP; BCG





Other trends, beyond offsets, are further propelling & facilitating carbon market growth with new technologies & services




Increasing investments in low-carbon technology

 **Microsoft** \$1B investment in carbon reduction, capture & removal technologies

 **Breakthrough Energy VENTURES** >\$2B fund in new net-zero technologies

 **amazon** \$2B VC fund to advance technologies that will cut GHG emissions

 **DANONE** €2B in climate smart innovations in 2020-2022



Emerging carbon consciousness & more products for individual offsetting



FMCGs introduce carbon footprint labels on products



Major logistic corporations offer carbon neutral shipping options



Airlines offer carbon offset programs for customers



Growing demand for carbon related services

Carbon-related services market is growing

- Green financing: global green bond market remains resilient despite unprecedented challenges for the global economy & financial markets due to COVID-19, with a record issuance of \$280B in 2020, compared to \$42B in 2015
- Growing ancillary services such as research, accounting, legal, consulting, advisory (risk management & insurance)



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