Rising Interest in Carbon Credits: A Compelling Investment Opportunity?

aranca

Executive Summary

01

Dual role of carbon credits in addressing emission concerns

- Carbon credits incentivize positive actions for addressing climate change.
- They facilitate decarbonization by helping projects focused on avoiding/reducing emissions attract funding.
- There are 2 types of carbon credits: voluntary emission reduction (VER) and certified emission reduction (CER).

02

Why is demand for carbon credits witnessing a pickup?

- The Paris Agreement, signed by 196 countries, is binding on the signatories to collectively limit global warming to below 2°C, preferably to 1.5°C, from pre-industrial levels.
- Several major carbon emitting nations and companies have announced their plans to achieve net zero emissions in the next 30-50 years.
- However, emission reduction based on current technologies is expensive; moreover, for some industries certain sources of emissions cannot be ruled out completely.

03

Segmentation of global carbon credit markets based on regulatory norms

- Carbon markets globally are primarily divided into compliance carbon markets (CCMs) and voluntary carbon markets (VCMs).
- CCMs are regulated and offer standardized products, while VCMs are unregulated, with participation discretionary for buyers/sellers.
- CCMs are more mature and larger of the two markets; however, governance and infrastructure in VCMs is being developed to boost growth.

04

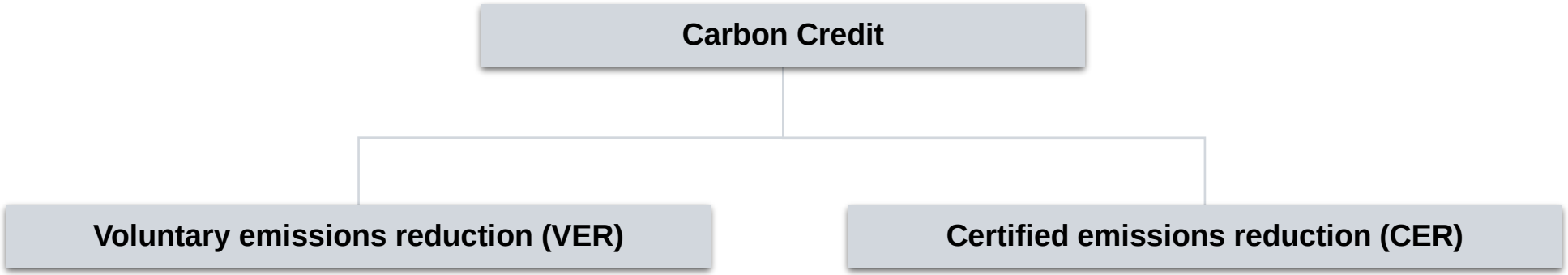
Outlook for the Carbon Credit Asset Class

- CCMs currently have a market value of USD 100bn. Although VCMs are not yet investable as an asset class, there is potential to outpace the market value of CCMs.
- Carbon credit asset class (EUA futures) have outperformed most other major asset classes, including bitcoin (cryptocurrencies), gold (commodities) and even S&P500 and Nasdaq Composite (US equities).
- McKinsey estimates VCMs could surpass USD 50bn by 2030, with the annual global demand in VCMs expected to reach 1.5–2 $GtCO_2e$ by 2030 and 7–13 $GtCO_2e$ by 2050.

Dual role of carbon credits in addressing emission concerns

- A carbon credit is a tradable certificate that represents one metric ton equivalent of greenhouse gas (GHG) emission that is either avoided/restricted from entering the atmosphere or removed via an emission-reduction project.
- Carbon credits contribute to climate change in two ways. They facilitate decarbonization and speed up the transition to a low-carbon environment. Moreover, they help attract funding for projects focused on delivering negative emissions, i.e., reducing carbon dioxide from the atmosphere and neutralizing residual emissions.
- There are two types of carbon credits:
  - Voluntary emissions reduction (VER) – These are verified outside the Kyoto Protocol. Under VER credits, private companies and individuals can purchase carbon offsets on a voluntary basis. They trade on VCMs.
  - Certified emissions reduction (CER) – These are issued by the Clean Development Mechanism (CDM) Executive Board and verified by a Designated Operational Entity (DOE) under the rules of the Kyoto Protocol. These are traded on CCMs, regulated by the CDM, Joint Implementation (JI) and the EU Emissions Trading System (ETS).

Types of Carbon Credits

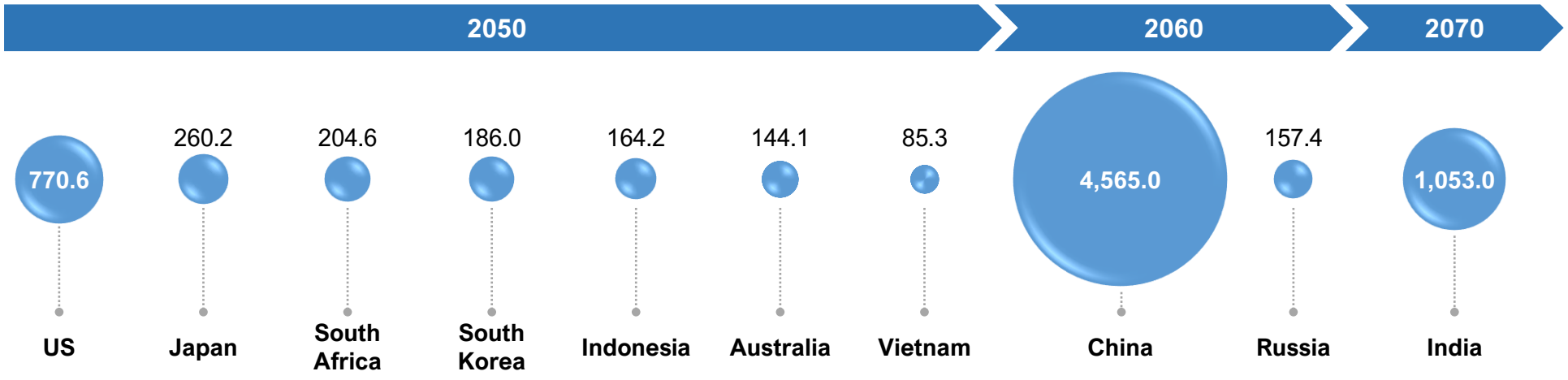


Source: *United Nations Framework Convention on Climate Change (UNFCCC)*

Why is demand for carbon credits witnessing a pickup?

- The Paris Agreement was adopted by 196 parties or member nations or regions to the UN Framework Convention on Climate Change (UNFCCC) at COP 21 in Paris in 2015. It is a legally binding international treaty on climate change with the goal to limit global warming to below 2°C, preferably to 1.5°C, compared to pre-industrial levels.
- At the COP 26 in Glasgow in 2021, countries reaffirmed their commitment under the Paris Agreement to limit the increase in the global average temperature. Moreover, the signatories reiterated the need to phase out coal and fossil fuel subsidies.
- According to a report published by NewClimate Institute in 2020, to achieve the 1.5°C target, GHG emissions globally need to be cut down by 50% by 2030 and reduced to net zero by 2050.
- Several major carbon emitting nations have announced their plans to turn net zero in the next 30-50 years.
- As per the United Nations, new nationally determined contributions (NDCs) and other pledges made in the run up to COP 26 would reduce emissions by 4.8 gigaton CO_2 equivalent ($GtCO_2e$) by 2030. However, annual global emissions need to fall by 12.5 $GtCO_2e$ by 2030 to be on track with the 2°C target, and by 27 $GtCO_2e$ by 2030 for the 1.5°C target.

China and India, largest contributors to coal power emissions have net zero targets of 2060 and 2070



Emission ($MtCO_2e$)

Rest of world: 1,288.6 | **Global total: 8,879.0**

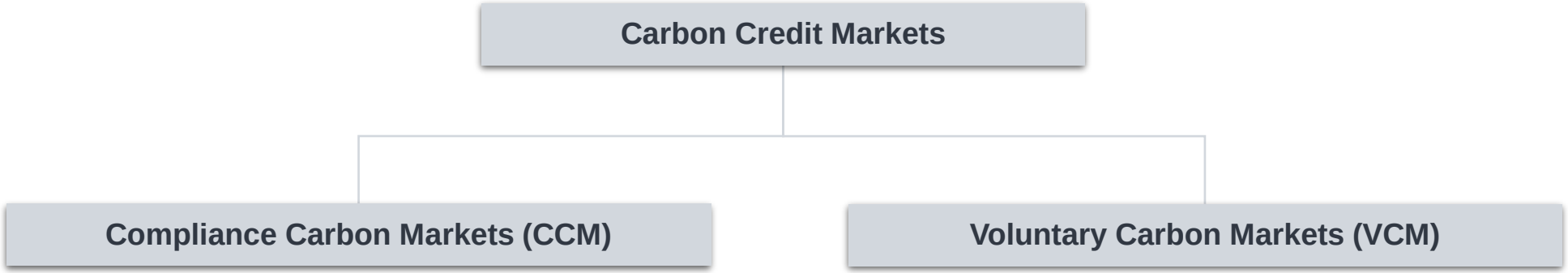
Source: *S&P Global Platts*

aranca

Segmentation of global carbon markets based on regulatory norms

- There are primarily two types of carbon credit markets:
  - Compliance carbon markets (CCMs): In this type of carbon market, national, regional, or international regimes mandatorily trade and regulate carbon allowances.
  - Voluntary carbon markets (VCMs): VCMs, unlike CCMs, are not centralized or regulated; plus, participation in the market is discretionary for companies or governments aiming to reduce emissions.
- CCMs are more mature and larger of the two markets, with a value of more than USD 100bn and an annual trading turnover of more than USD 250bn. VCMs are a fraction in value compared to CCMs currently but are witnessing increased demand from end buyers.
- Governance and infrastructure are being developed to boost growth in VCMs, with focus on standardization of products.
- Moreover, VCMs have a highly fluid market mechanism, with pricing depending on voluntary supply and demand. As a result, VCMs are considerably less susceptible to regulations and policies.

Types of Carbon Credit Markets

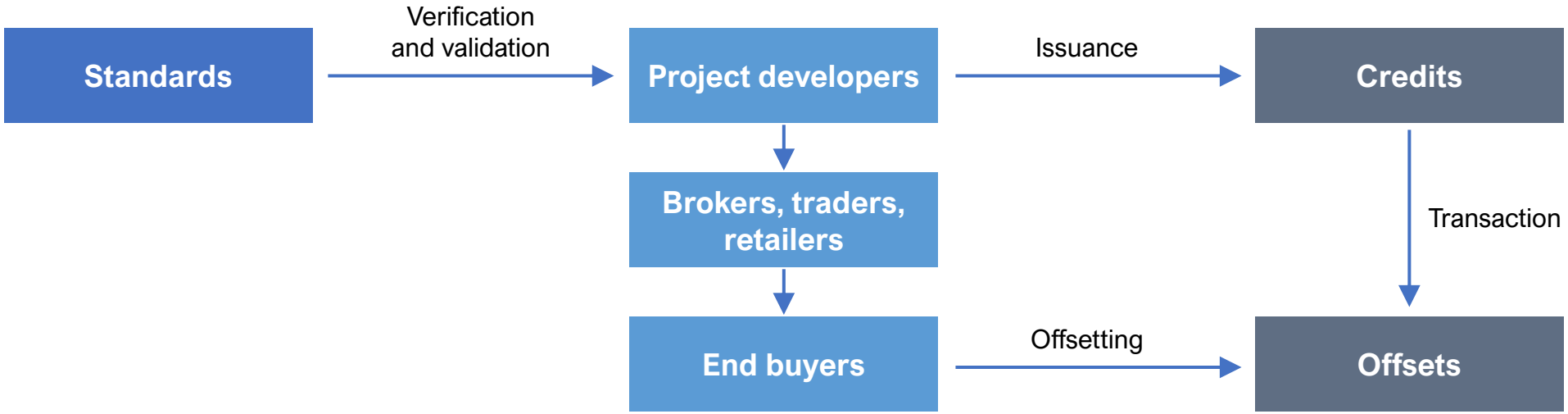


Source: *McKinsey & Co.*

Voluntary Carbon Markets Overview

- VCMs work on the market-based approach. They supervise emissions by giving individuals, companies or governments the option to buy credits for reducing their own emissions by financing projects that avoid/reduce/remove emissions from other sources. Key components of VCMs include the following:
- **Project developers:** They initiate projects working on alternative energy that avoid emissions altogether or those that reduce emission of GHGs into the atmosphere.
- **End buyers:** These are companies or consumers with commitment to partly or fully offset GHG emissions that purchase credits in private, over the counter, or on an exchange in accordance with the Article 6 of the Paris Agreement.
- **Retail traders:** They purchase credits directly from the supplier, bundle it into portfolios, and sell to the end buyers for commission.
- **Brokers:** They buy credits from a retail trader and market them to an end buyer for commission. They link supply and demand in the VCC market.
- **Standards:** Standards are organizations, usually NGOs, which are tasked to certify projects depending on how far they abide by their stated objectives to reduce emissions.

Key components of a Voluntary Carbon Market

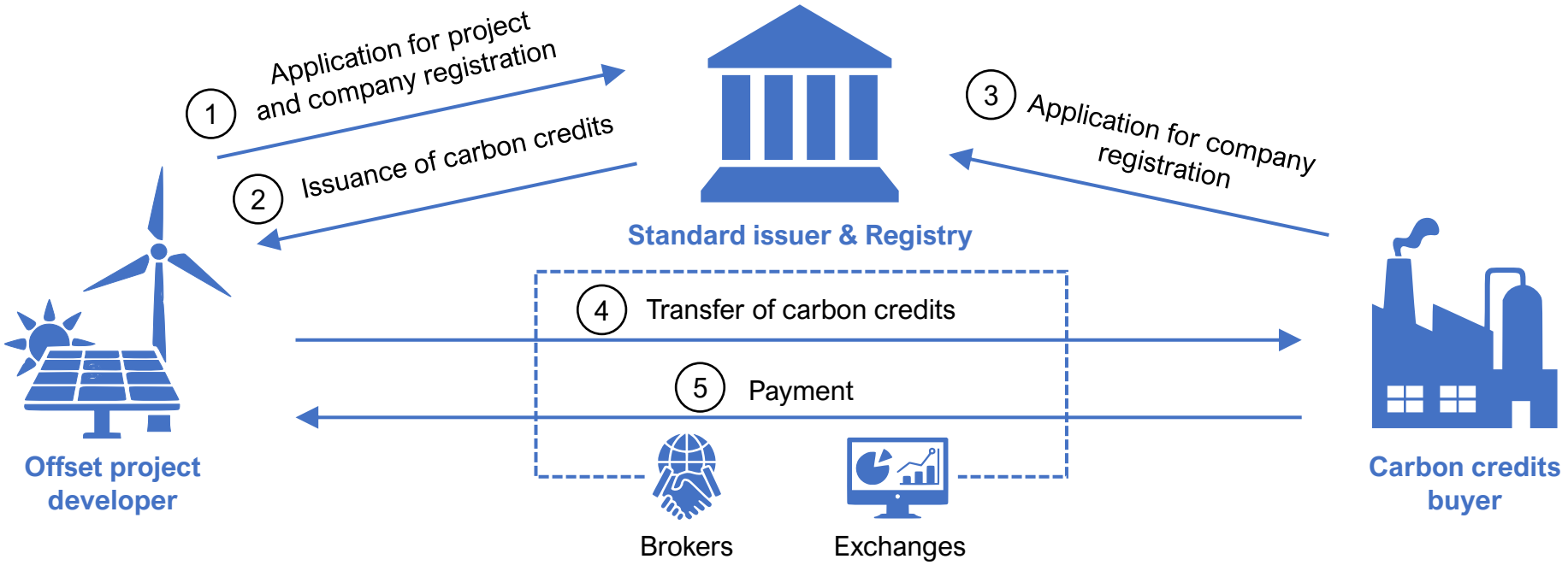


Source: *S&P Global Platts*

How do Voluntary Carbon Credit Market function?

- Project developers initiate projects which focus on avoiding/removing the emission of GHGs. The projects are required to adhere to a set of criteria for verification by third-party registries or standards such as the Gold Standard and CDM.
- Each credit issued to a project developer has a specific vintage, which is the year in which it was issued, and a specific delivery date, which is when the credit will be available on the market.
- The prices of credits are mainly determined by the levels of supply and demand in the market. Due to the differences in supply and demand in different countries, prices of credits vary. Current rules of trading permit international transfer of credits.
- Each issued credit can be used to compensate for the emission of one ton of CO_2 or equivalent gases. When a credit is used for this purpose, it becomes an offset. It is moved to a register for retired credits, or retirements, and is no longer tradable.

Voluntary markets for exchange of carbon credits work similar to the commodities market



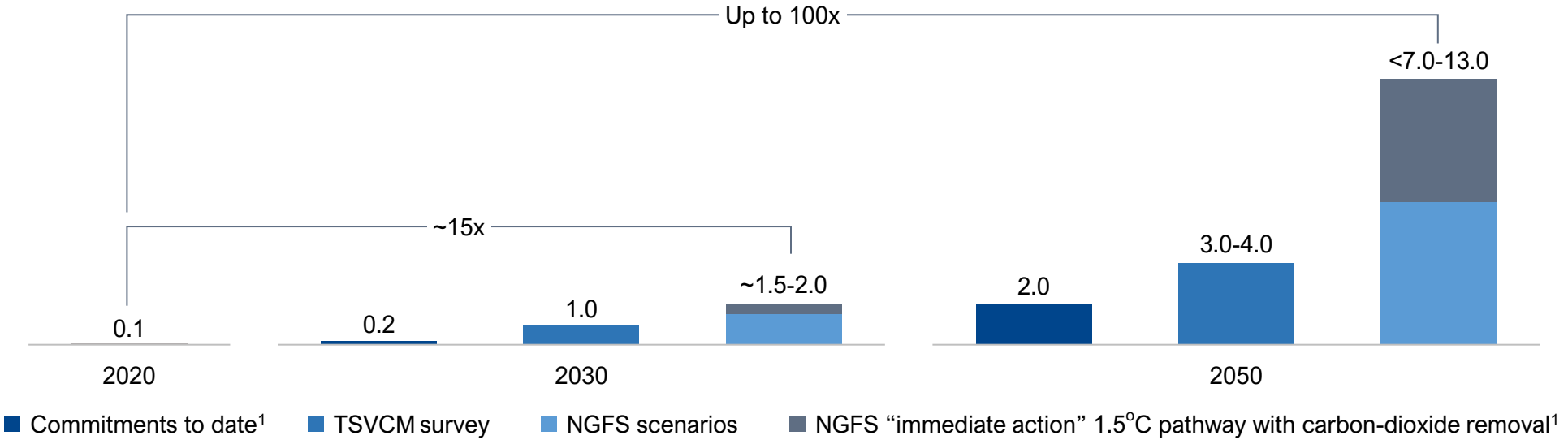
Source: *EY - "Voluntary Carbon Market: Challenges and Promises of the Green Transition Tool"*

Voluntary Carbon Markets expected to record sharp surge in demand by 2050

- According to a report published by NewClimate Institute in 2020, nearly 1,565 companies representing over USD 12.5tn in revenue have set a net zero target.
- For some companies, it is expensive to reduce emissions using existing technologies. Moreover, for some industries such as cement, iron and steel certain sources of emission cannot be eliminated.
- Therefore, negative emissions are needed to reach a net zero state and achieve the 1.5°C goal. One way to address the emissions issue for such companies is to purchase carbon credits. This has led to strong growth in the voluntary market for carbon credits.
- According to estimates by The Taskforce on Scaling Voluntary Carbon Markets (TSVCM), the annual global demand for voluntary carbon credits is expected to reach 1.5–2 $GtCO_2e$ by 2030 and 7–13 $GtCO_2e$ by 2050. Moreover, the value of VCM is estimated to surpass USD 50bn by 2030.

Global demand for VCM likely to rise 15x in 2030 and 100x in 2050

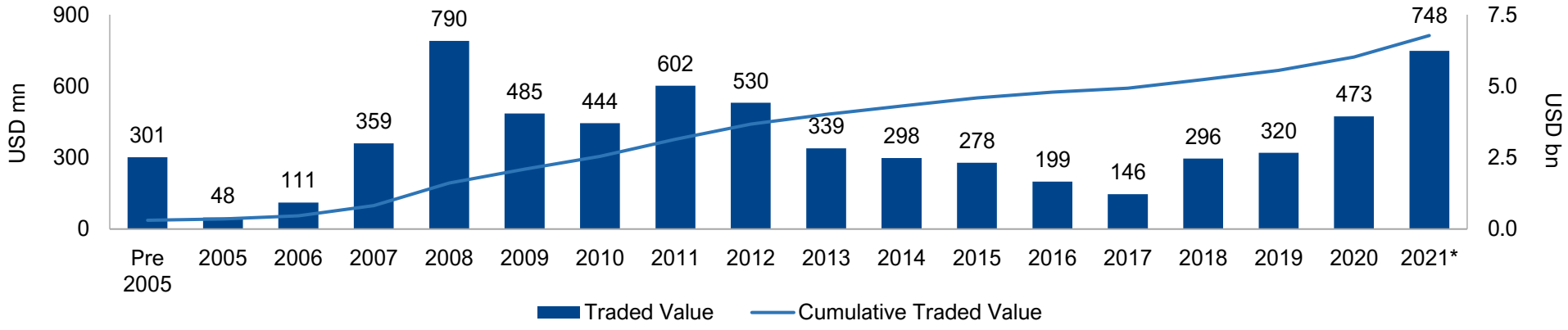
Unit = $GtCO_2e$



Source: *McKinsey & Co; NGFS-Network for Greening the Financial System;1-upper bound assuming all emission removal are supported by voluntary credits*

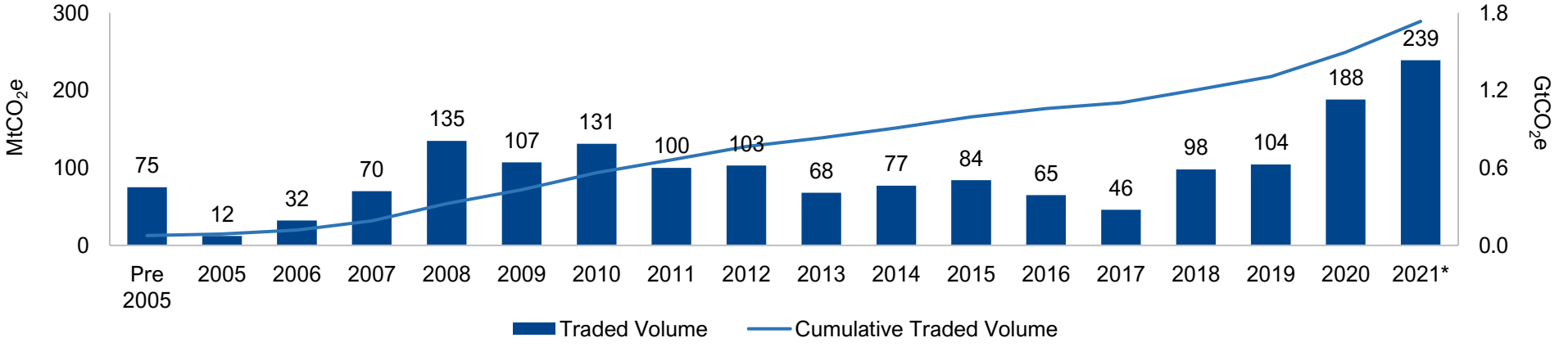
Upswing in VCMs in the last few years (1/2)

Total traded value in VCMs reached USD 473mn in 2020, up ~10x compared to USD 48mn in 2005



Source: *Ecosystem Marketplace Insights Report – State of the Voluntary Carbon Markets 2021; * till 31st Aug 2021*

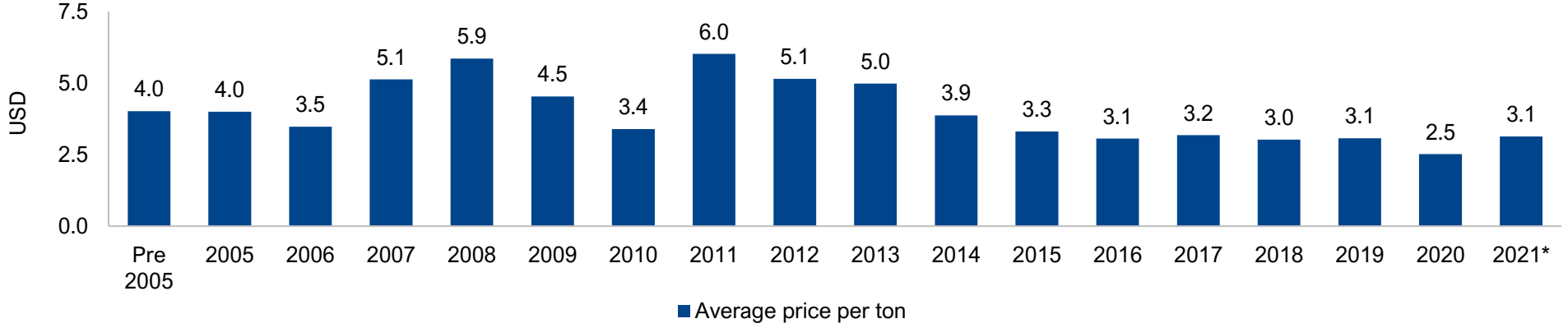
Total traded volume in the VCMs grew to 188 $MtCO_2e$ in 2020, up ~16x from 12 $MtCO_2e$ in 2005



Source: *Ecosystem Marketplace Insights Report – State of the Voluntary Carbon Markets 2021; * till 31st Aug 2021*

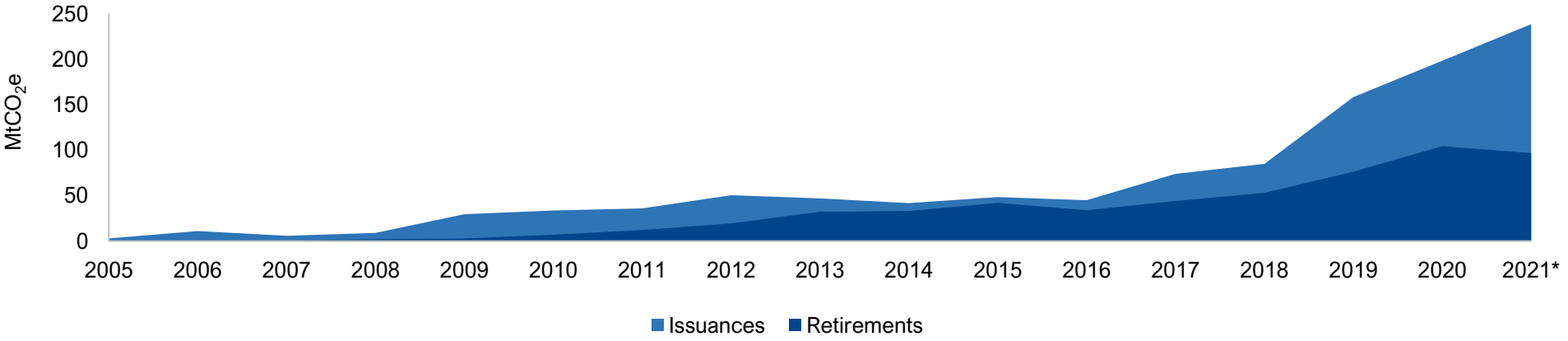
VCMs have seen an upswing in the last few years (2/2)

Average contract size declined from USD 4.0 per ton in 2005 to USD 2.5 per ton in 2020 due to the sharp rise in traded volume



Source: *Ecosystem Marketplace Insights Report – State of the Voluntary Carbon Markets 2021; * till 31st Aug 2021*

VCC issuances leaped to 198.3 $MtCO_2e$ in 2020 sharply outpacing retirements which reached 104.4 $MtCO_2e$ during the year



Source: *Ecosystem Marketplace Insights Report – State of the Voluntary Carbon Markets 2021; * till 31st Aug 2021*

How can investors benefit from carbon credit related assets/securities?

- Institutional investors could play a vital role in both CCMs and VCMs due to the large capital they can raise and allocate. They could provide the required supply and demand and help boost liquidity and market depth.
- CCMs have stabilized over the years and are becoming easier for institutional investors to understand. New emissions-trading systems (ETS) are now being set up, and recent reforms in existing trading systems have created a more predictable framework.
- Though, VCMs are not yet investable as an asset class, they have the potential to outpace the market value of CCMs. On the other hand, CCMs are already investable in some markets, wherein retail and institutional investors can trade through carbon allowances.
- One such instrument is the European Union Allowance (EUA) Futures, with EUA (unit of compliance under the European Union Emission Trading Scheme (EU ETS) and official allowance for the EU region under the Kyoto protocols) as the underlying and the holder of such futures is obliged to make or take delivery of EUAs.
- According to McKinsey & Co., a portfolio with a 5% allocation to carbon allowances against a reference portfolio comprising 60/40 equities/bonds allocation could result in 50-70 bps improvement in risk-adjusted returns in scenarios involving immediate or delayed climate action.
- The above portfolio also improves volatility of the reference portfolio by 10-20 bps in a similar scenario. Moreover, as per McKinsey & Co., a carbon-allowance allocation of approximately 0.5-1.1% was sufficient under climate transitions.

Addition of carbon allowance instruments to the portfolio improves the risk-adjusted returns of the portfolio

About 5% allocation to carbon allowance would likely enhance risk-adjusted returns in scenarios marred by climate risks

Performance for a 60/40 (equity/bond) portfolio on 5% allocation to carbon allowance	
Annualized return (%)	**4.11**
Annualized volatility (%)	**9.76**
Risk-adjusted return (%)	**0.42**

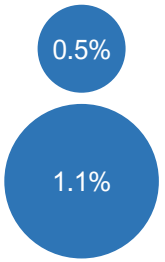
To maintain the same level of portfolio performance, allocating 0.5-1.1% of carbon allowance in the two scenarios below could mitigate a negative impact on returns

Immediate transition

Climate policies are introduced immediately and gradually become more stringent

Delayed transition

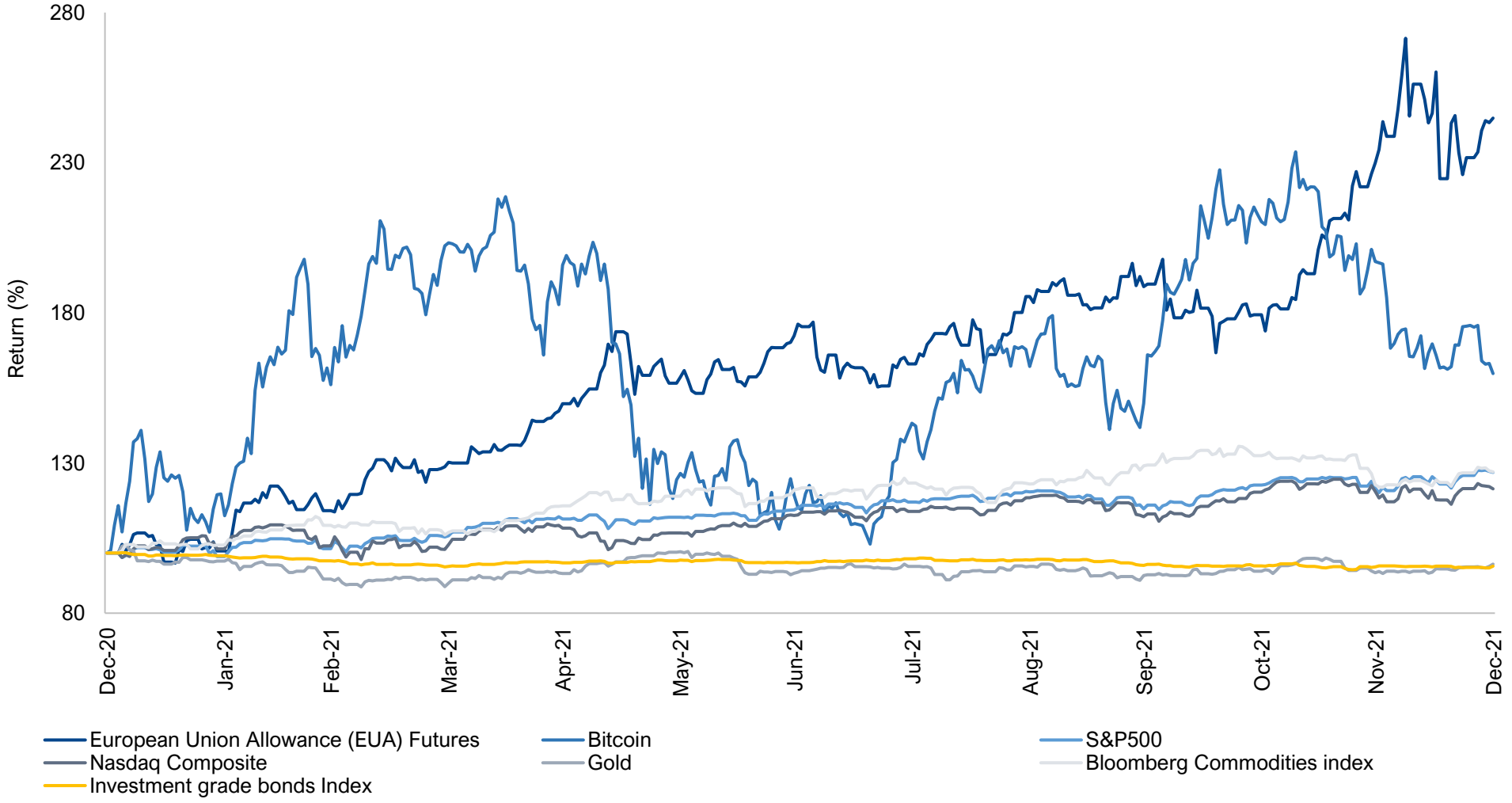
Climate policies are not introduced until 2030, resulting in a higher level of carbon emissions until 2030 than in the “immediate transition” scenario



Source: *McKinsey & Co.*

2021 Performance of the Carbon Credit Asset Class (EUA Futures) Vs Other Asset Classes

Carbon credit futures (EUA Futures) outperformed bitcoin, gold, S&P500 and several other major asset class indices in 2021



Source: *Bloomberg*

Outlook for the carbon credit asset class

- The need to restrict global warming to 1.5°C compared to pre-industrial levels would require companies and respective nations to undertake projects that would either avoid emissions completely or reduce these, or purchase carbon credits in their bid to comply with the permissible emission goals under the Paris Climate Agreement and achieve net zero targets.
- According to McKinsey, VCMs could range from USD5–180 billion by 2030, assuming a price range of USD5–90 per ton of CO_2 and 1–2 $GtCO_2$ demand or 15x growth from demand in 2030. Meanwhile, the price of EUA already averaged USD90 (~EUR80) per ton of CO_2 in December 2021.
- EUA futures (carbon credit asset class) outperformed other asset classes during 2021, including bitcoin (cryptocurrencies), gold (commodities) and even S&P500 and Nasdaq Composite (US equities).
- Emission limits are expected to become more stringent. This, coupled with developments in secondary market liquidity due to improvement in market infrastructure, price transparency and quality standards, could boost demand in carbon credit markets. As a result, prices of credits could surpass the earlier estimates set for 2030 and 2050, providing investors an opportunity to capitalize on a market still in its infancy.
- According to McKinsey, if each of the world's 100 largest institutional investors, with discretionary AUM of USD 19tn in 2020, allocates 1% to carbon allowances, the total value of investments in CCM would reach USD 190bn, nearly double of USD 100bn in 2020.
- According to IEA's Net Zero by 2050: A Roadmap for the Global Energy Sector report, investments totaling USD 5tn globally per year, or 4.5% of the global GDP, are required by 2030, with the pace continuing until 2050, to achieve the net zero emission target.
- The International Renewable Energy Agency (IRENA) forecasts necessary investments of USD 5.7tn per year until 2030, while Bloomberg New Energy Finance (BNEF) estimates the average investment requirement at USD 3.1tn and USD 5.8tn per year until 2050. This could pave the way for further inflow of investments in the global carbon credit market or carbon pricing market.

500+
Strong, professional team across multi-disciplinary domains

2500+
Global clients

120+
Sectors and sub-sectors researched by our analysts

80+
Countries where we have delivered projects

ABOUT ARANCA

Business Research & Advisory
CXOs in Strategy, SBUs, Sales, Marketing, CI/MI, Innovation

Valuation & Financial Advisory
CFOs in Startups, PE/VC Firms, Corporate M&A Teams, Mid-market Companies

Technology | IP Research & Advisory
R&D, Tech Scouting, Open Innovation, IP Teams, Product Development

Investment Research & Analytics
Brokerage, Hedge Funds, IRPs, I-Banks, AMCs, Investor Relations

Connect with our Team

Yash Shah

Analyst, Investment Research

+91.22.3937.9999

yasha.shah@aranca.com

Santosh Astalkar

Analyst, Investment Research

+91.22.3937.9999

santosh.astalkar@aranca.com

Decide Fearlessly

From startups to the Fortune 500, private equity and global financial firms, Aranca is the trusted research and advisory partner for over 2500 companies

www.aranca.com

aranca