



**Asia-Pacific
Economic Cooperation**

2022/CTI/WKSP8/005

State of Carbon Pricing

Submitted by: World Bank Group



**APEC Capacity Building Initiative on Carbon
Pricing and Carbon Markets Workshop
21 September 2022**



APEC Workshop on Carbon Pricing Policies and Carbon Markets

Hari Gadde

Sr Climate Change Specialist, Climate Change
Group

The World Bank

21 Sept 2022. Singapore



State of Carbon Pricing

Types of Explicit Carbon Pricing Instruments

CARBON TAX

Puts an explicit price on each ton of GHG emitted

CAP-AND-TRADE

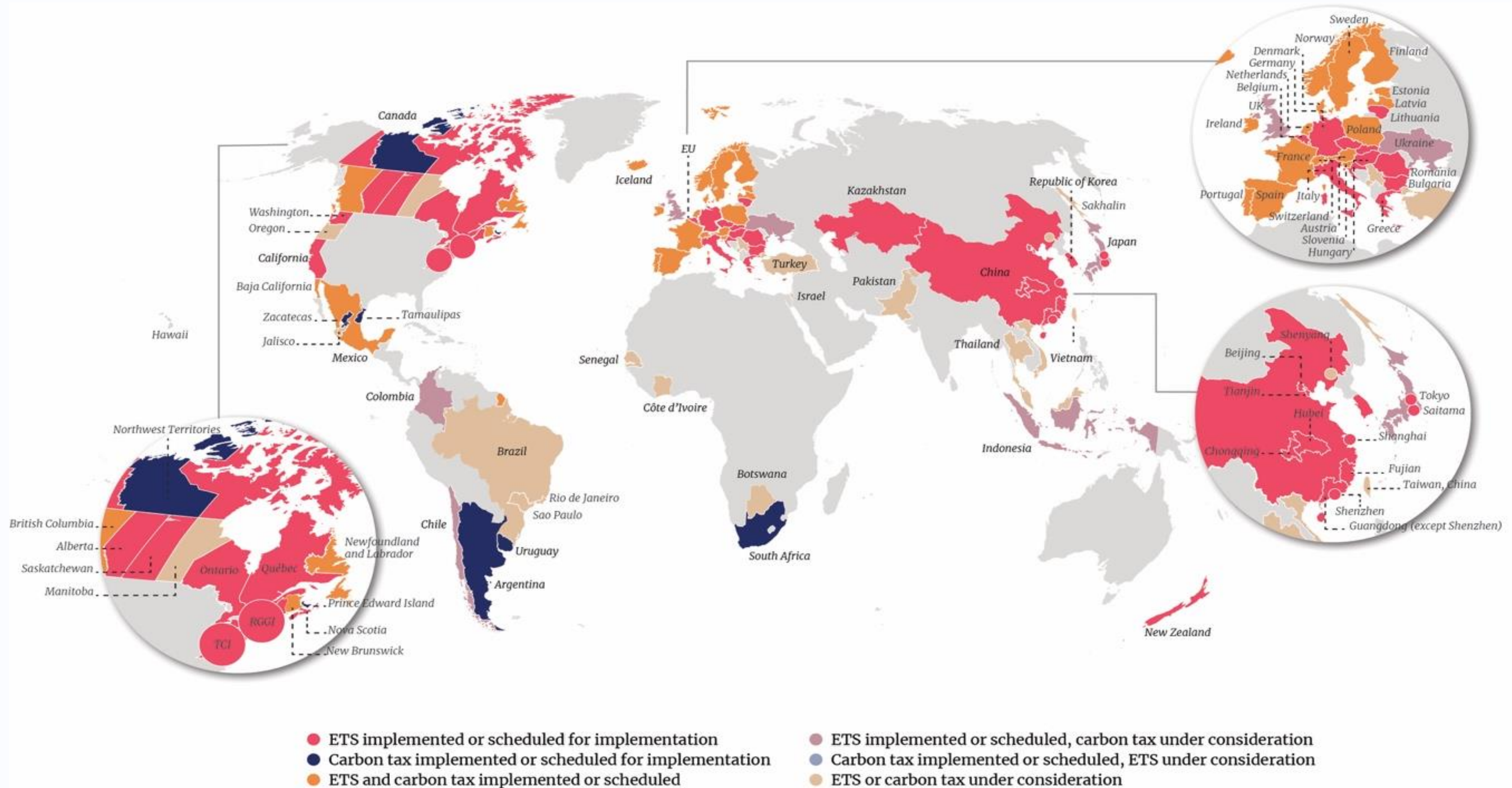
Sets a cap on the total amount of allowed GHG emissions. Covered entities can buy or sell allowances.

CREDITING MECHANISM

Tradeable emission reduction / removal units are issued. For domestic and international markets

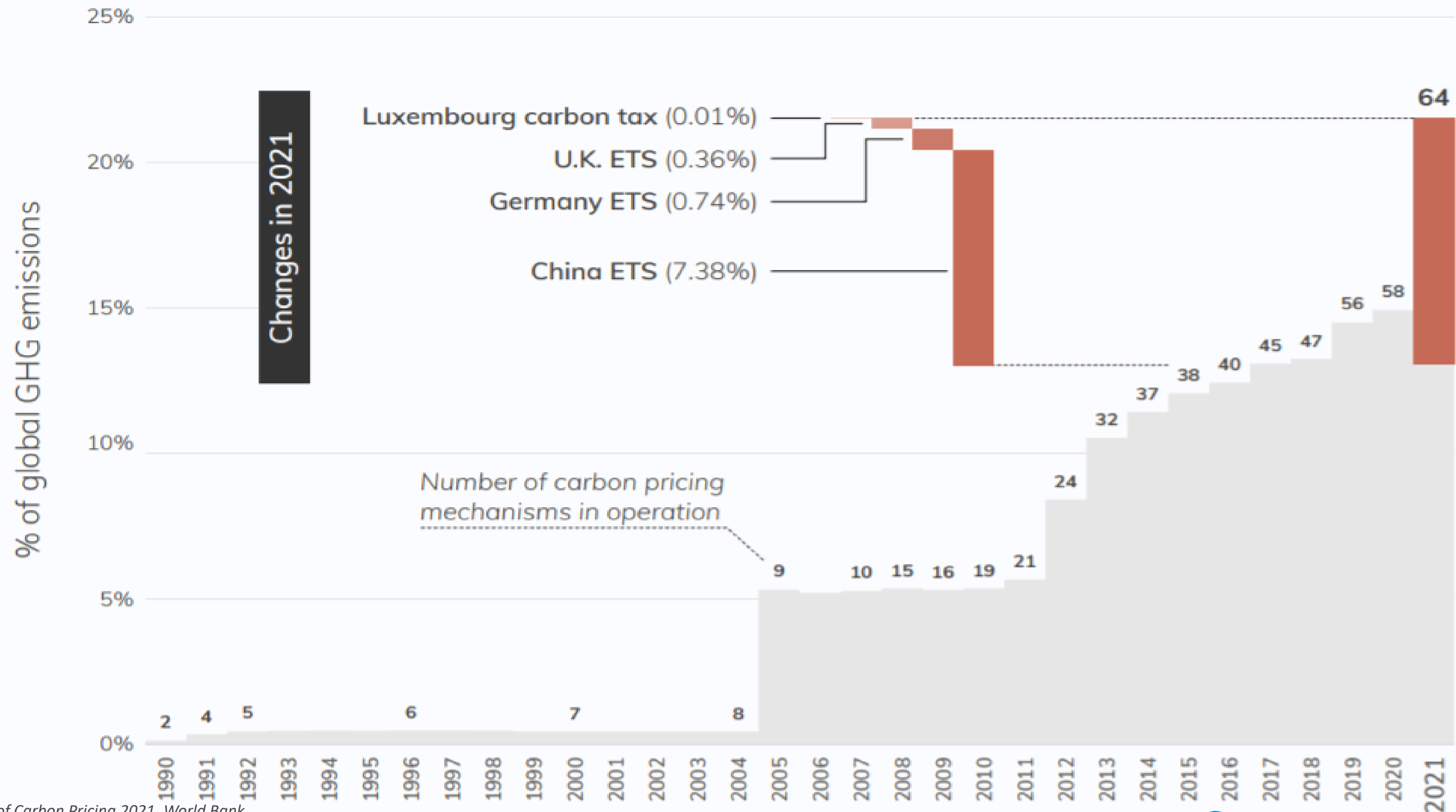
	CARBON TAX	CAP-AND-TRADE	CREDITING MECHANISM
PROS	<ul style="list-style-type: none"> Administratively simple, can rely on existing tax infrastructure Stable price signal Relatively efficient revenue source that enables policymakers to reduce more distortive taxes 	<ul style="list-style-type: none"> Provide more temporal price flexibility for regulated entities Certainty on emission levels 	<ul style="list-style-type: none"> Incentivize mitigation in sectors or regions not covered by carbon tax or cap-and-trade Could become critical to meet net-zero targets
CONS	<ul style="list-style-type: none"> Limited flexibility for firms to manage compliance costs in the short-term Less certainty of emission levels 	<ul style="list-style-type: none"> Administratively complex Less certainty of price levels as carbon price is determined by the market 	<ul style="list-style-type: none"> Ineffective in the absence of a source of demand (e.g., from tax or cap-and-trade) Administratively complex

As of April 2022, there are 68 CPIs operating with three more scheduled for implementation.



Source: State and Trends of Carbon Pricing 2022, World Bank

About 64% of global emissions being covered by carbon pricing regimes



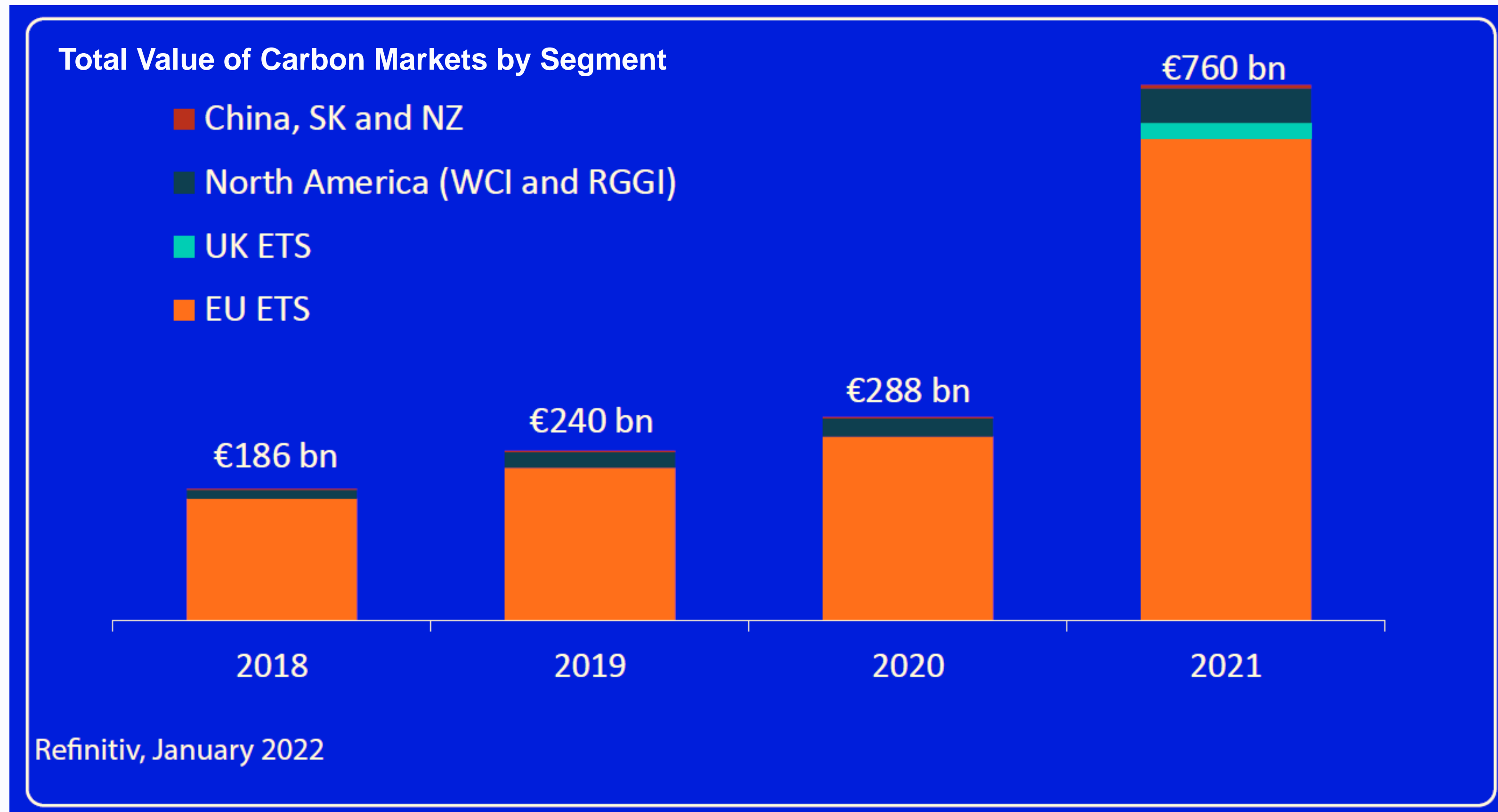
Source: State and Trends of Carbon Pricing 2021, World Bank

ETS compliance mechanisms have shown increasing price trends in recent years



Source: ICAP

Driven by EU- ETS surging prices with a rise in volume led to record high turnover of €760 billion in 2021, a 164% increase from 2020



Source: Refinitiv



International Carbon Market Trends – prices, volumes

Voluntary carbon markets are estimated to have reached US\$2 billion in traded value in 2021

- As of December 2021, the value of VCM had already reached **US\$1.98** billion at an average price of US\$4.00
- The S&P Platts assessment for CORSIA eligible credits closed 2021 at \$8/tCO₂e. For nature-based credits, the S&P CNC assessment reached an all-time high of US\$14.55/mtCO₂e on December 3, 2021.

Figure 1. Voluntary Carbon Market Size by Value of Traded Carbon Credits, pre-2005 to 31 Dec. 2021



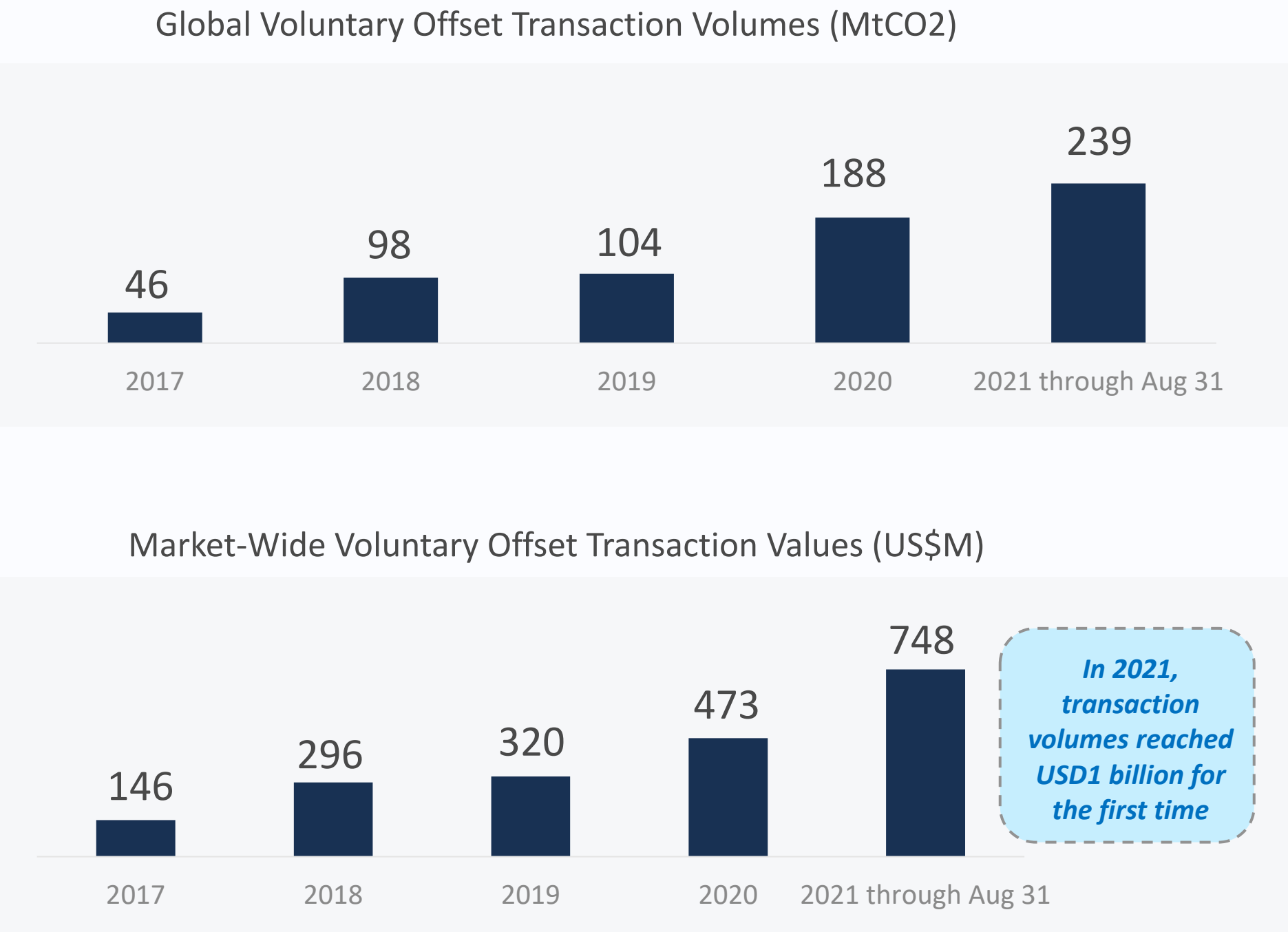
Voluntary Carbon Markets:

Volume, Price and Growth for 2020-2021

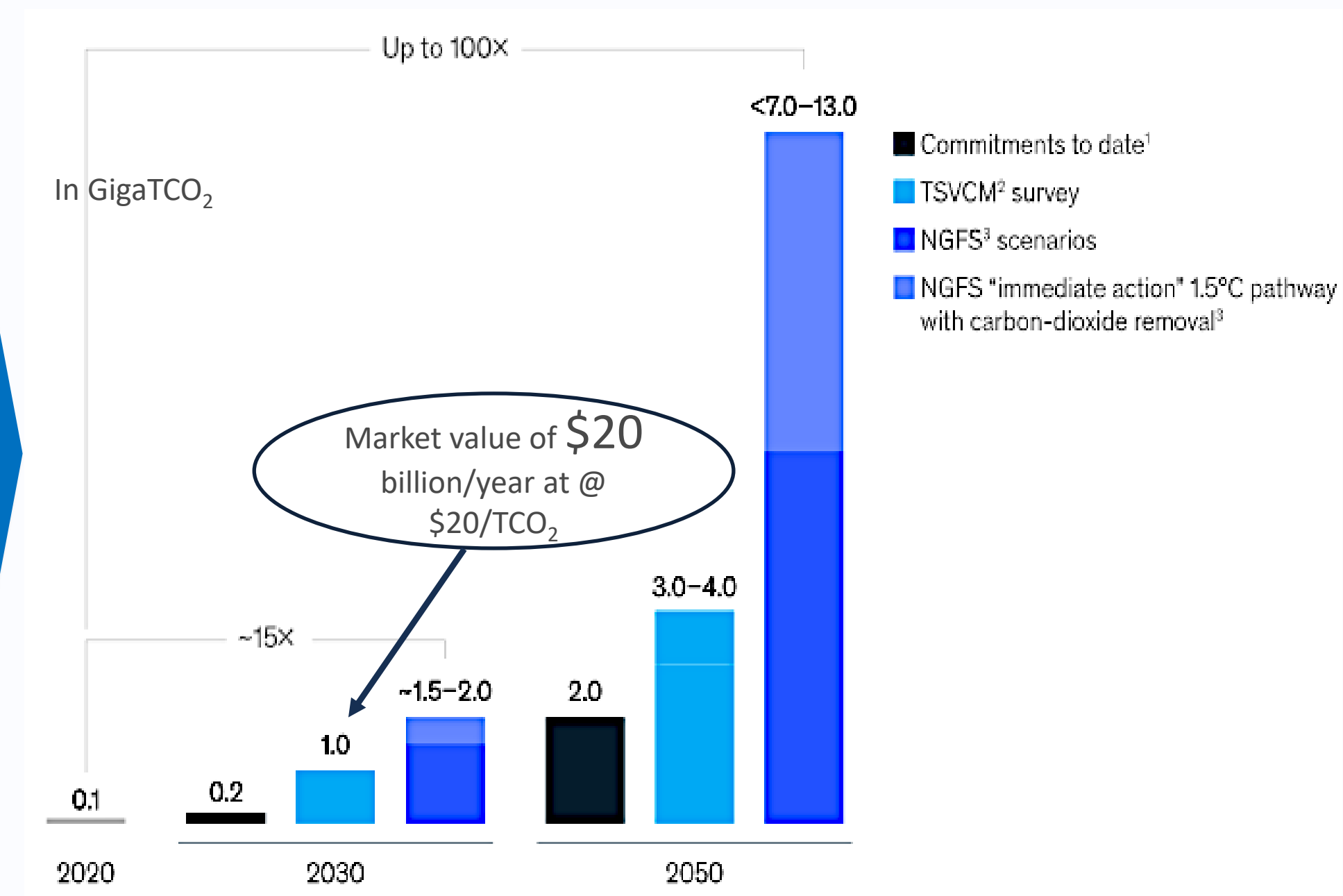
	2020			2021		
	VOLUME (MtCO2e)	PRICE (USD)	VALUE (USD)	VOLUME (MtCO2e)	PRICE (USD)	VALUE (USD)
FORESTRY AND LAND USE	57.8M	\$5.40	\$315.4M	227.7M	\$5.80	\$1,327.5M
RENEWABLE ENERGY	93.8M	\$1.08	\$101.5M	211.4M	\$2.26	\$479.1M
CHEMICAL PROCESSES / INDUSTRIAL MANUFACTURING	1.8M	\$2.15	\$3.9M	17.3M	\$3.12	\$53.9M
WASTE DISPOSAL	8.5M	\$2.69	\$22.8M	11.4M	\$3.62	\$41.2M
ENERGY EFFICIENCY / FUEL SWITCHING	30.9M	\$0.98	\$30.4M	10.9M	\$1.99	\$21.9M
HOUSEHOLD / COMMUNITY DEVICES	8.3M	\$4.34	\$36.2M	8.0M	\$5.36	\$43.3M
TRANSPORTATION	1.1M	\$0.64	\$0.7M	5.4M	\$1.16	\$6.3M
AGRICULTURE	0.5M	\$10.38	\$4.7M	1.0M	\$8.81	\$8.7M

Within VCM, growth has been recorded in terms of volume and values; market expected to continue growing

VCM has been growing in terms of volumes & values

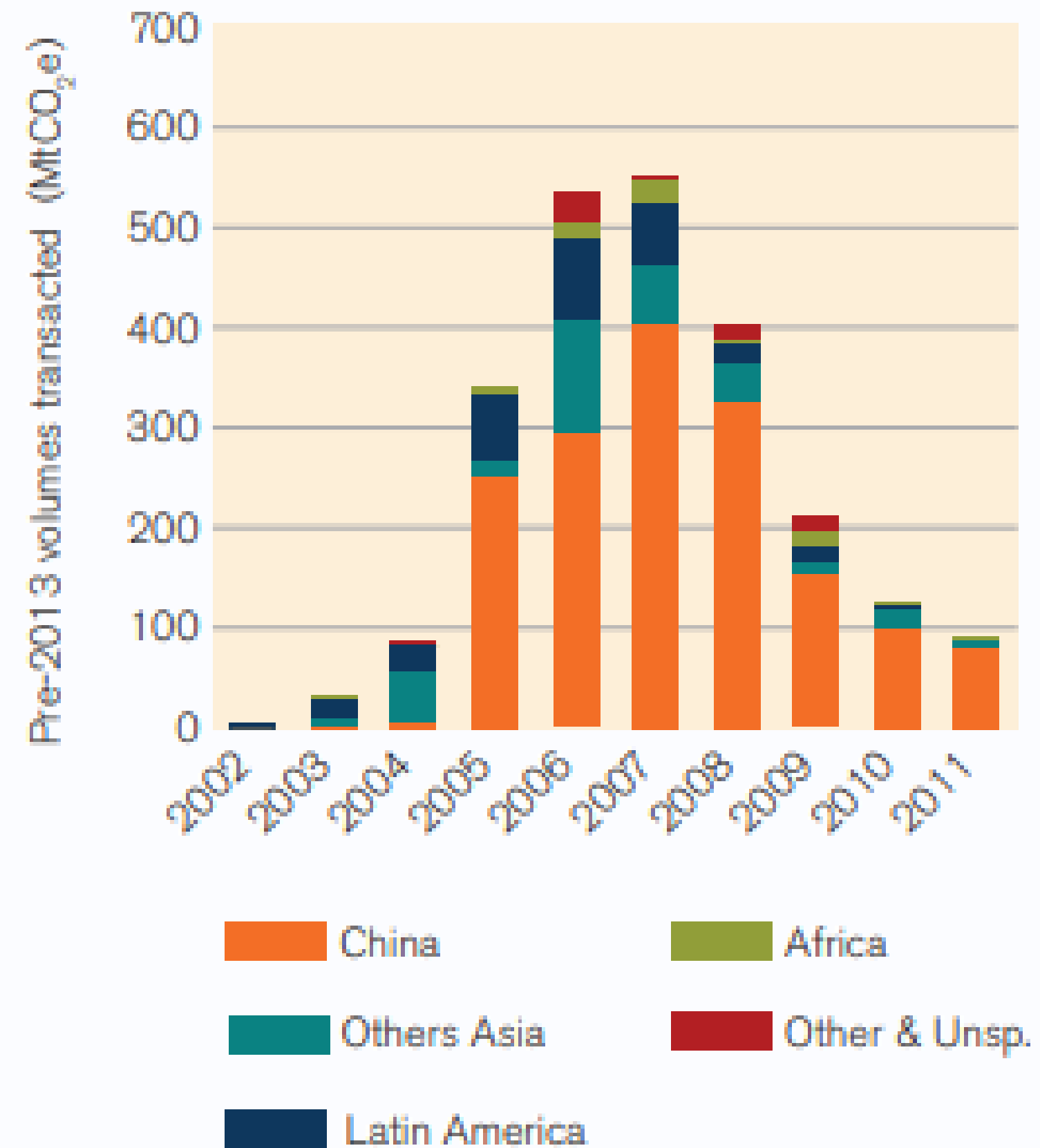
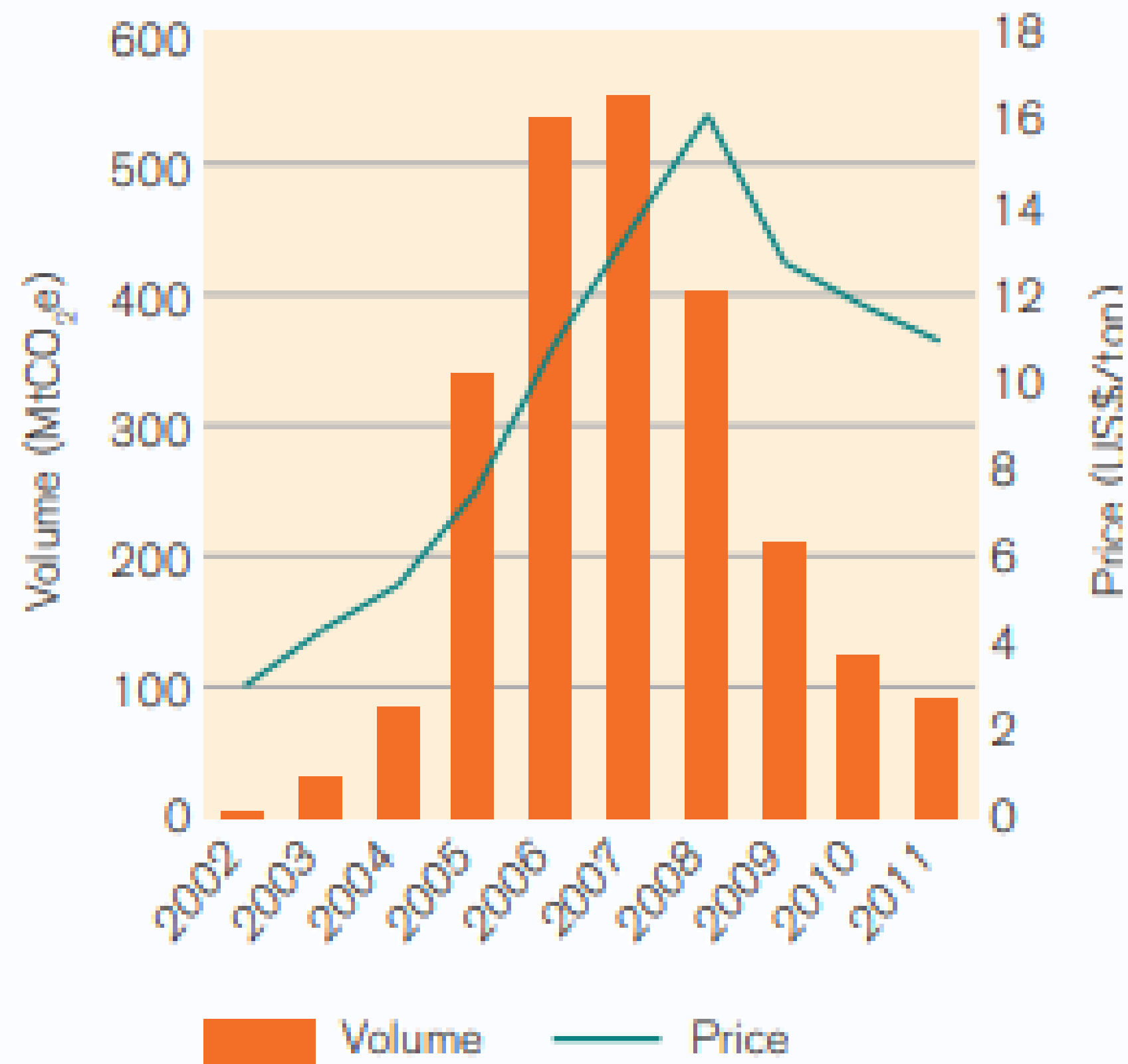


This trajectory is expected to continue moving forward



Source: Ecosystem Marketplace 2020; Trove Research, UCL; Liebreich Associates, Mckinsey Sustainability.

Based on experience of the Kyoto Protocol, carbon market demands can grow very rapidly (US\$30+ billion market between 2005-10)



Source: State and Trends of Carbon Markets, 2012

International Carbon Markets and Emission Reduction (“Carbon”) Credits (ERCs)

Result-based finance
Financier/ buyer pays for verified outcome (say, verified tCO₂e) or Emission Reduction Credits following agreed methodology and MRV (which can be based on a carbon standard)

Example: World Bank carbon funds like FCPF, TCAF, CERF

Voluntary Carbon Markets

- Corporates use VCM to “pledge and comply”, i.e., demonstrate achievement of their Voluntary Commitments e.g., net zero goals.
- Market for Emission Reduction (“Carbon”) Credits (ERCs) with or without seller Authorization (“Corresponding Adjustment”), depending on use and applicable independent standard.

Carbon Credit WITHOUT Authorization “Claimed”

Carbon Credit WITH Authorization “Counted”

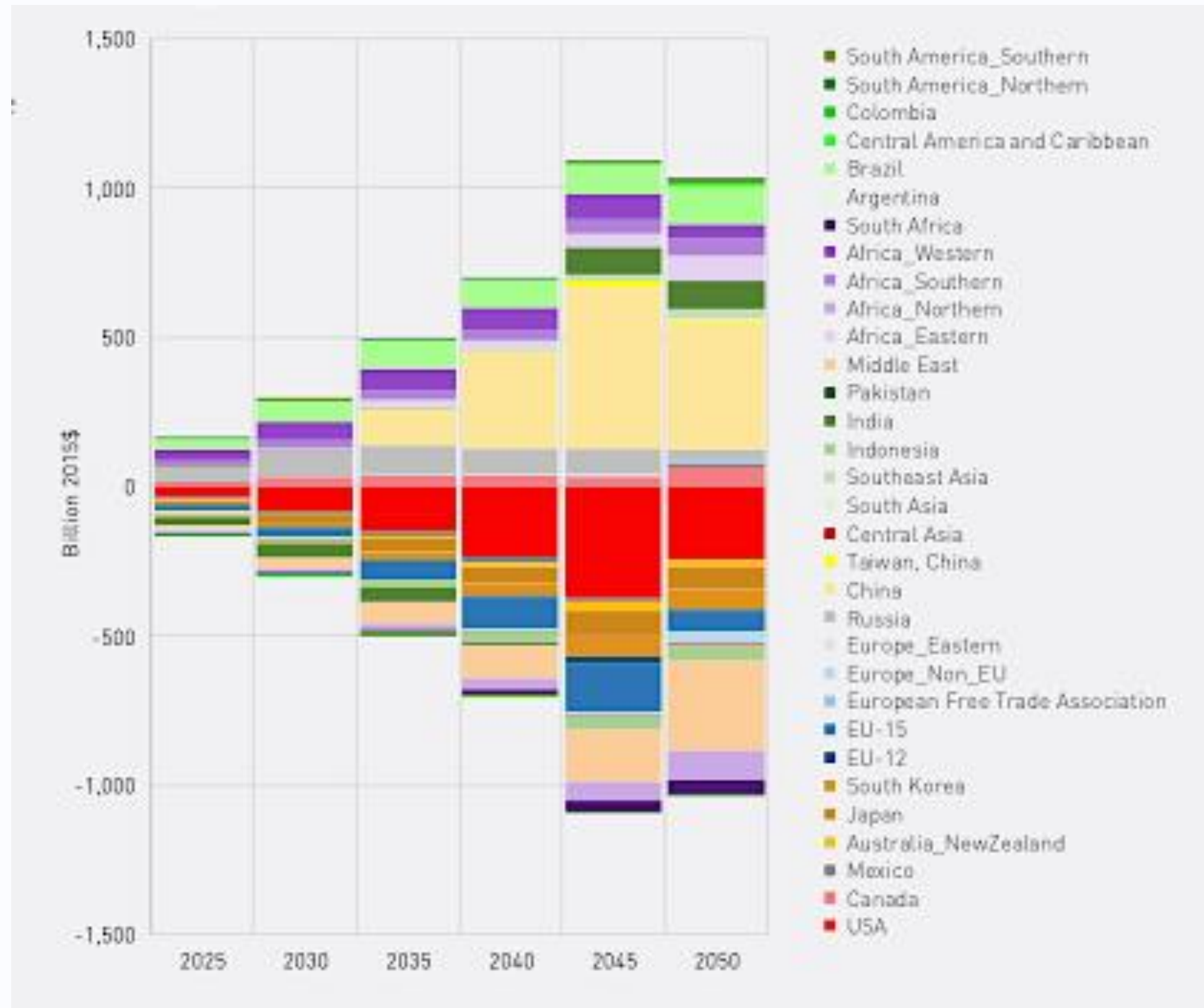
Compliance Carbon Market

- Used to achieve compliance with NDC through Article 6 or another compliance requirement (e.g. CORSIA, Emission Trading System like Korea)
- Only ERCs with Authorization (and associated Corresponding Adjustment) can be traded

Only Carbon Credits with Authorization for Corresponding Adjustment (called Internationally Transferred Mitigation Outcomes or ITMOs under the Paris Agreement) can be traded

Carbon markets in 2030 will be dominated by the International Compliance Markets

Financial Flows (Staggered Net-Zero with Cooperative Implementation)



Compliance markets linked to the Paris Agreement can result in cost savings of the order of **US\$300 billion/ year** in 2030 and can reduce additional **5 GtCO₂/year** in greenhouse gas emission and about **58%** of the NDCs plan to use Article 6

Source: PNNL, University of Maryland, IETA

Key macro trends in the global carbon markets and role of WBG

Voluntary carbon markets are growing faster than compliance markets

- Growth of voluntary markets far supersedes compliance markets in recent years; they have funneled more than **US\$5bn over the last 20 years**
- In 2021, the volume of voluntary market credits reached its maximum since 2010 and touched nearly **US\$2 billion in (2021)** for the first time
- Demand is growing so fast that market is expected to be **supply constrained** in the coming years but can touch **US\$30-50 billion a year by 2030**
- The demand for carbon credits from **Nature-based Solutions (NbS)** projects is the growing faster

Paris Agreement will grow compliance markets which are catalyzed by the voluntary markets

- Article 6 can help parties meet their NDC goals in a faster and cheaper way with **US\$300 billion/year** savings;
- 55 parties' NDC confirm their interest of utilizing international market mechanisms and there is an increasing number of Article 6 pilots
- It is estimated that **airlines** will need to offset **~0.5 – 3.0 billion tons of CO₂** from 2021—2035 to comply with CORSIA
- Both schemes can help reduce market fragmentation

Global emissions are rising, and carbon markets are not growing fast enough.

WBG – though scale-up of climate financing – can accelerate climate action and WBG carbon funds (CERF, EnTF) can catalyze a further growth in the supply- constrained carbon markets

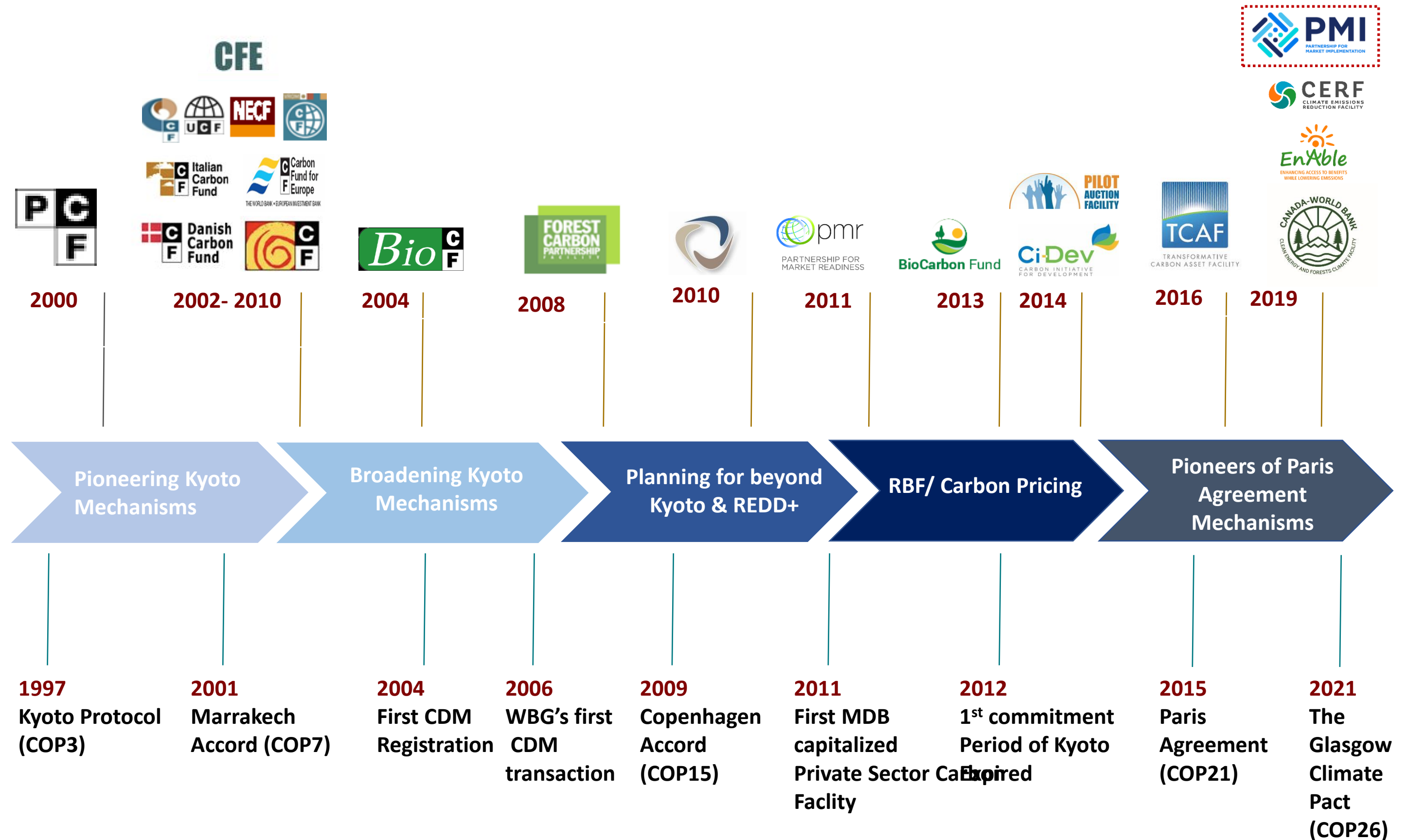
Capacity building, developing carbon market infrastructure (e.g. Climate Warehouse) and expanding finance (climate finance and PCM) would be critical to creating carbon market at scale



World Bank Carbon Markets Capacity Building and Carbon Funds

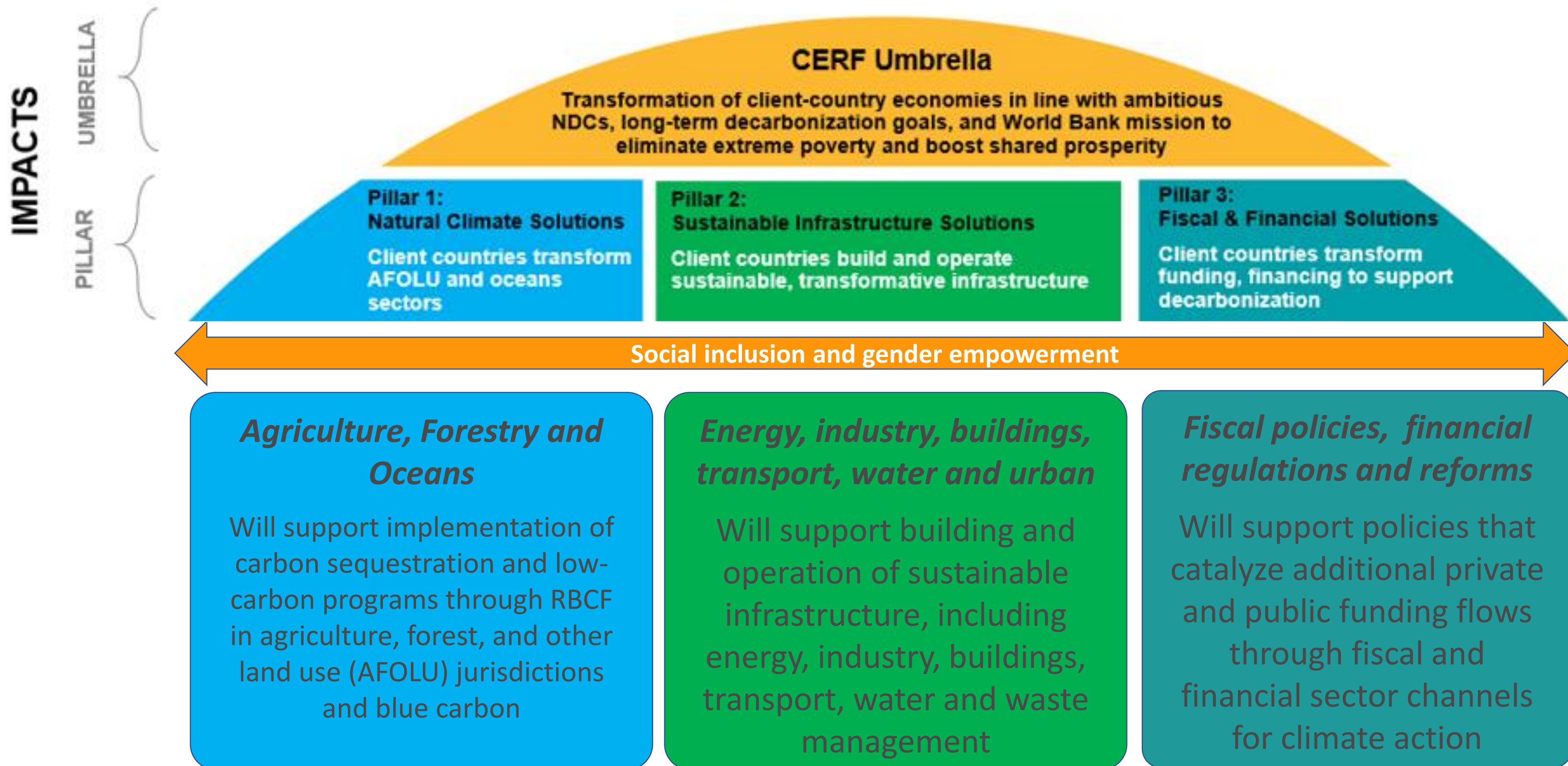
WORLD BANK HAS 25 YEARS OF EXPERIENCE WITH CARBON FUNDS

- First carbon fund (Prototype Carbon Fund) launched in **1999** with **\$180M**
- More than **50 professionals** providing expertise in access to climate finance, carbon accounting methodologies, policy analysis, MRV systems, project development, and other areas of expertise
- **Around \$4.4B in active funds currently under management** (\$5.1B with closed funds included)
- More than **US\$1.6B already disbursed for Emissions Reduction (ER) payments**
- More than **210M tCO₂e** avoided so far



Climate Emissions Reduction Facility (CERF)

Initial capitalization of **US\$1-3 billion** by November 2022; **US\$5 billion** by 2025



Capacity Building Support for Carbon Pricing through the Partnership for Market Implementation Facility (PMIF)



PMI ongoing activities

Implementation Support Program	
Implementation (9)	Readiness (8)
Chile	Bangladesh
<u>China</u>	Botswana
Colombia	Guinea
<u>Indonesia</u>	<u>Malaysia</u>
Kazakhstan	Montenegro
Mexico	Pakistan
Ukraine	Panama
<u>Vietnam</u>	Senegal
Turkey	
Technical Work Program (FY2022)	
Carbon Pricing in the Power Sector	
Political Economy of Carbon Pricing	

Regional Program (7+ parties)	
Latin America	Sub-Saharan Africa
Brazil	Ghana
Costa Rica	Rwanda
Ecuador	Uganda
Peru	Kenya (TBC)
	Nigeria (TBC)



Partnership
Knowledge Partners
Roster of Experts
PMI Knowledge Forum

Outreach Program (Until June 2022)
Workshop on Economy Support Program and Just Transition
Workshop on Design and Implementation of Carbon Pricing Instruments

Timeline/Next steps:

- Parties under preparation of a full-funding proposal (Q3 and Q4 of FY 2022)
- Review/assessment process and approval of the final proposal (Q4 of FY 2022 ~ Q1 of FY 2023)
- Program grant execution (around 3 years, subject to the scope of work)

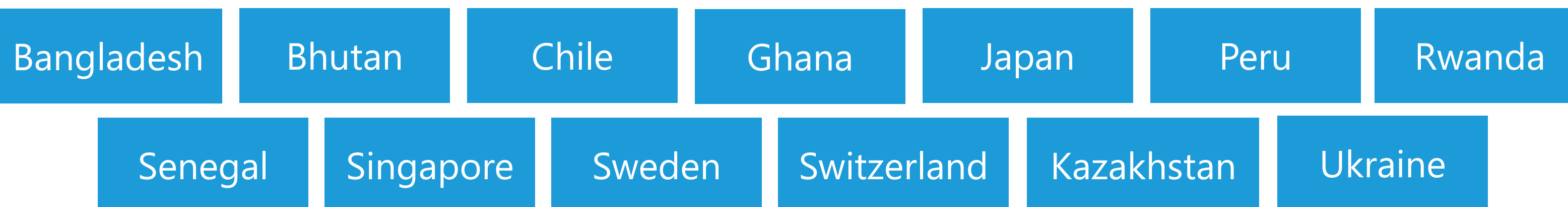
Climate Market Club: developing template policies and guidelines for Art 6

A group of governments agree on the guidelines for piloting generation, transfer, and use of mitigation outcomes

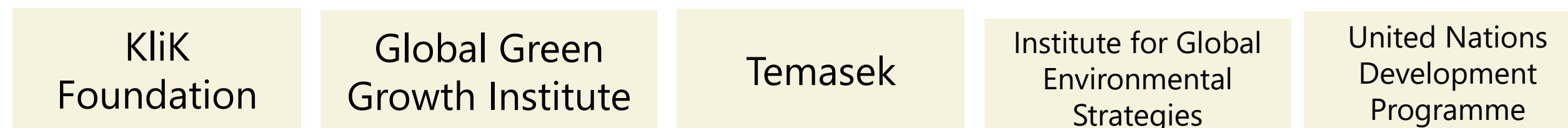
Principles

- Develop a set of common modalities, procedures and guidelines for piloting Article 6.2;
- Follow the rules and guidance that emerge from the Paris Rulebook for Article 6; and
- Collaboratively build capacity and share knowledge from piloting.

Government Members



Other Members



Secretariat





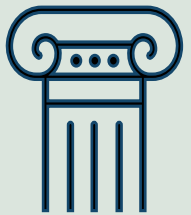
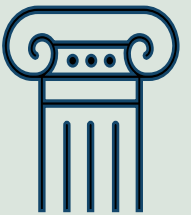
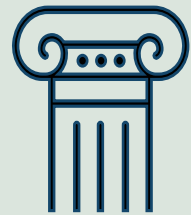
Carbon Market Infrastructure



The value proposition of the Climate Warehouse

A market infrastructure to connect climate markets

The growing carbon market is being challenged to address the environmental integrity



SUPPLY SIDE

MARKET

BUY-SIDE

A DEFINITIVE GLOBAL THRESHOLD STANDARD FOR HIGH-QUALITY CARBON CREDITS

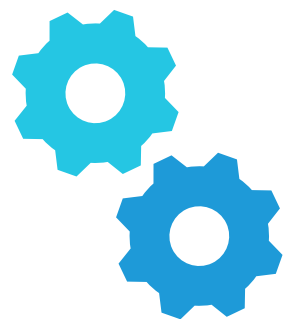
A MARKET BASED ON RIGOROUS STANDARDS AND MARKET INFRASTRUCTURE

ACCEPTED STANDARDS FOR USING CREDITS AS PART OF A CREDIBLE NET-ZERO PATHWAY



the integrity council
for the voluntary carbon market

VCMI Voluntary Carbon Markets Integrity Initiative



What is the value proposition?

A decentralized IT approach to connect climate markets

Climate Warehouse



An open-shared meta data layer

1



A common data taxonomy that enables reconciliation of data from registries. It facilitates a peer-to-peer connection among decentralized registries with the aim to link, aggregate and harmonize the underlying data

2



Provide visibility into corresponding adjustment procedures and the lifecycle of carbon offsets from issuances to retirement, which will safeguard against double counting and ease reporting requirements.

3



Surface publicly-available information on MOs and record and track status changes to provide information on how MOs are used.

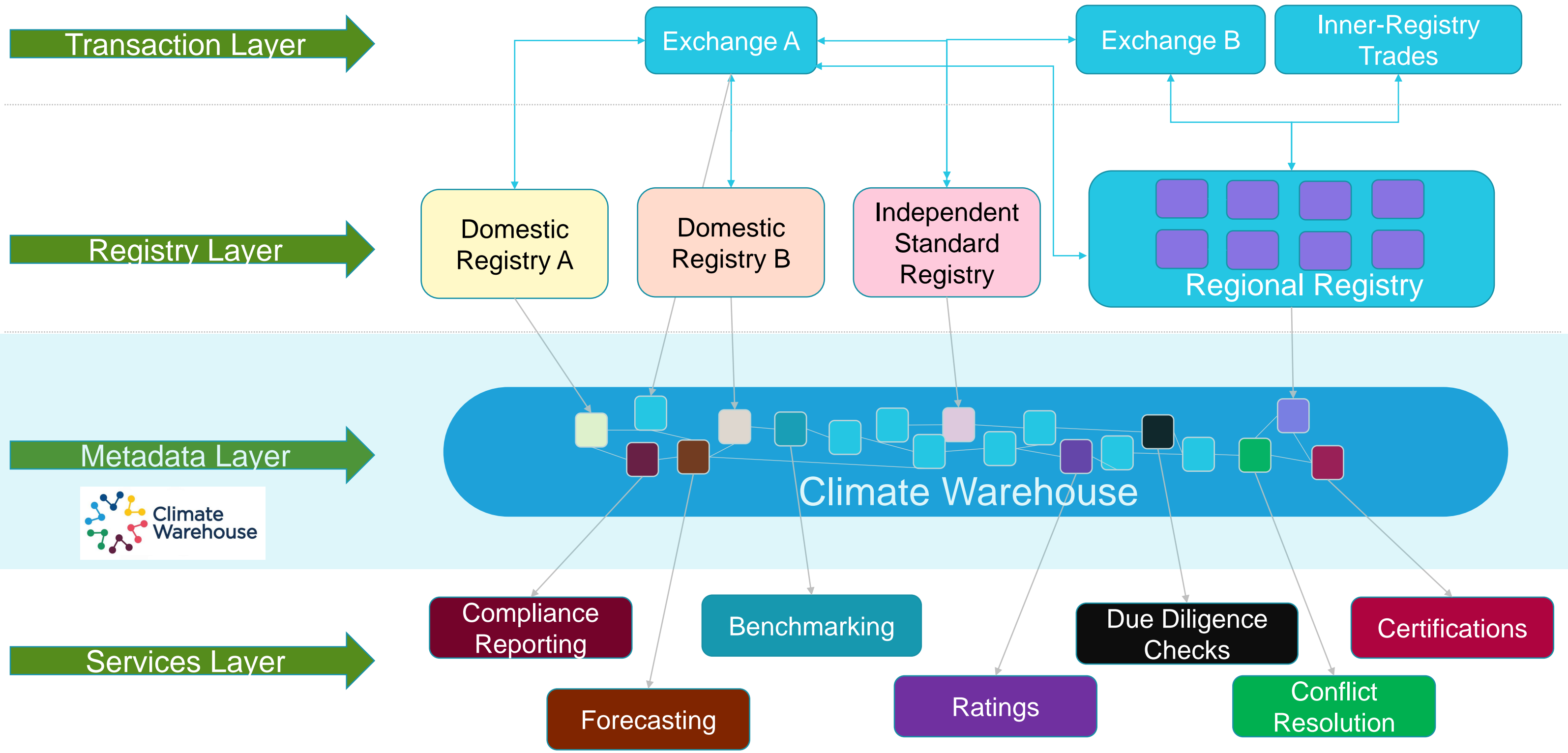
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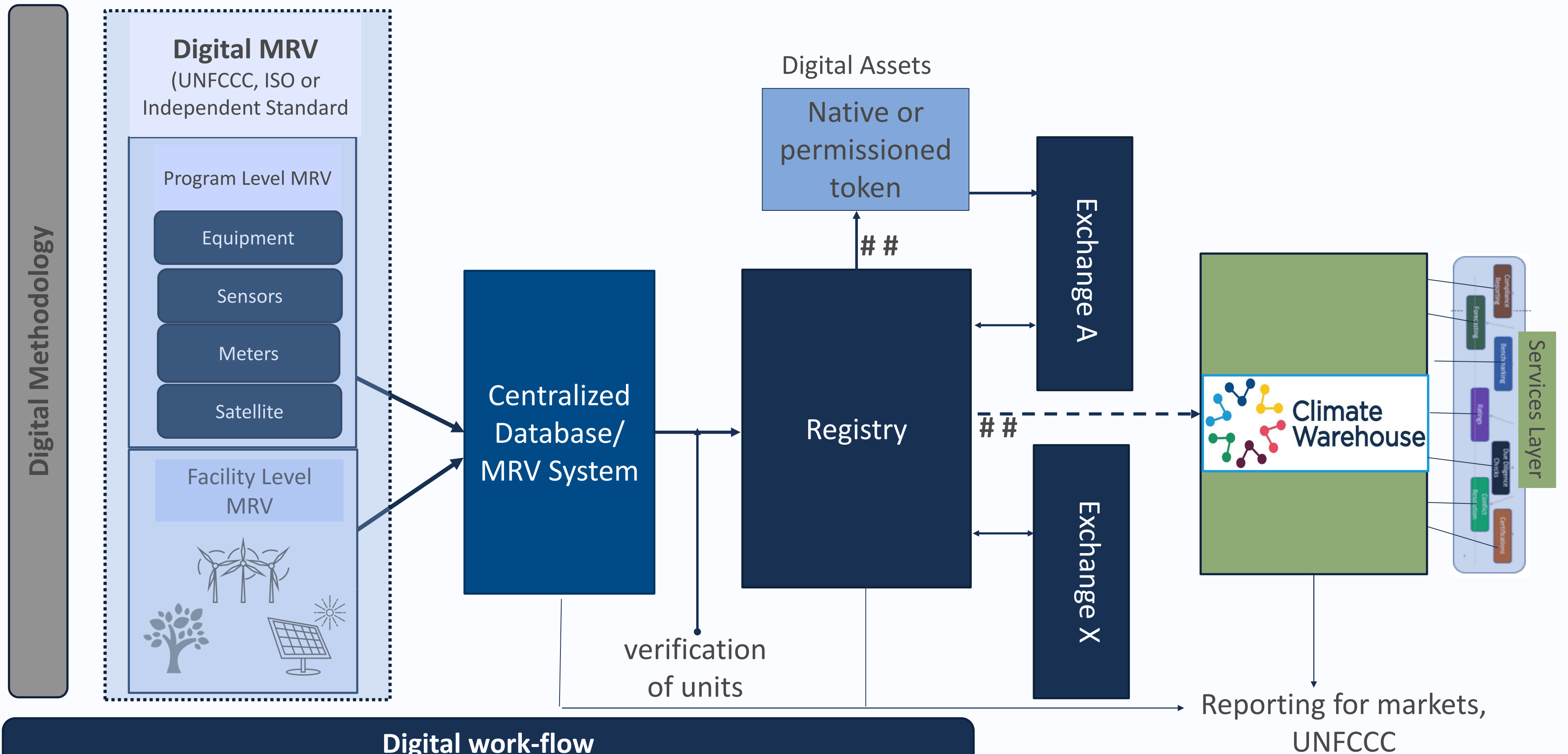
Enhance transparency and trust among market participants and enable tracking of MOs and reduce double counting risk. The Climate Warehouse would not hold assets or directly facilitate.

Building a public good data layer

- Designed as an open shared infrastructure layer
- Common taxonomy of data facilitates communication between entities
- Registry service providers and parties share data to the Warehouse
- Public and private sector market players can host a node and build out the service layer



Climate Warehouse anchors an end-to-end- digital ecosystem for carbon markets



Digital work-flow
project preparation from document development, approval, validation to registration in applicable standards

Find us at: www.theclimatewarehouse.org

Resources: [Partnership for Market Implementation \(pmiclimete.org\)](http://pmiclimete.org)
[Climate Finance at the World Bank](#)
[Climate Change activities at the World Bank](#)