

Virtual Roundtable

Effective Carbon Emissions Trading & Markets-Pricing Mechanisms in the Asia-Pacific Region

12 July 2022

ROUNDTABLE REPORT

Key Recommendations & Discussion Points

Carbon markets, both voluntary and compliance, have a large part to play in mitigating emissions and transitioning to a more sustainable future. Participants in this roundtable agreed on a myriad of approaches. Education was seen as a crucial precursor in reducing and mitigating emissions to achieve Net Zero. Carbon markets should be utilized as a critical and proven mechanism for unlocking liquidity and channelling finance to not only climate projects, but also social and sustainable ones. Interoperability between voluntary and compliance markets between and within international, regional, national, and subnational levels were recommended components in carbon markets to avoid fragmentation. However, some noted concerns over sovereignty when linking to external markets.

Policy at all levels plays an important role. While the market is growing fast, digitalization and standardization could help achieve transparency, harmonization, and accountability. Although Article Six of the Paris Agreement is not in place yet, there are high expectations of the role that it can play in relation to carbon markets and each economies' Nationally Determined Contribution (**NDC**). An ecosystem of developers, auditors, standards, technology developers, exchanges, and investors must enable carbon services and training to be efficient to serve the demand of these carbon credits. A new market policy, called a carbon reward, is proposed. It requires that central banks support a "carbon currency" that can bridge the finance gap for the Paris goal, however the concept has yet to be assessed by nation states.

Welcome Remarks

The Asia-Pacific region was, in 2020, the largest carbon emitting region in the world accounting for 48% of global CO₂ emissions. Three quarters of those emissions were generated by developing economies, while developed economies have higher per capita emissions¹.

Most APEC member economies have committed to the Paris Agreement with some setting targets for achieving carbon neutrality. Members are currently using a variety of tools to manage emissions; efficient carbon markets are one of these tools. Both compliance markets and voluntary carbon markets have a huge potential for not only decarbonizing the economy but also promoting sustainable transition through carbon pricing.

The majority of carbon emissions are currently not covered by regulated carbon pricing schemes, demonstrating the need for scaling up and the enhancement of emissions trading systems through increased geographic and sector coverage. This expansion and other proactive measures will add momentum towards decarbonization.

The development of carbon markets is at an early stage and there are many issues that still need to be studied both on the compliance and the voluntary side, for example, on clear price signals, type of emissions trading and in

implementing carbon border adjustment mechanisms.

To make greater contribution to the global campaign against climate change, economists in the Asia-Pacific region should take concrete actions to explore solutions for emission reduction. Carbon emissions trading schemes could prove to be a powerful and promising tool for putting a price on carbon, giving firms the incentive to cut their emissions and improve cooperation and coordination between different carbon markets in the Asia-Pacific area. While developing these markets, it is important to adhere to the principle of common but differentiated responsibilities, addressing the existing lack of consistent and effective carbon accounting systems, and implement an efficient international coordination on carbon governance. To surmount these challenges, low carbon technologies must be fully utilized as innovation in technology is important for Asia Pacific. On the other hand, Article 6 of the Paris Agreement should be used as a blueprint for Asia-Pacific economies to design and implement their domestic carbon markets. Lastly, APEC member economies should engage in constructive dialogue on carbon markets to promote stronger regional and global cooperation.

¹ APEC Stocktake of Carbon Pricing Initiatives published in February 2022. Available at: https://www.apec.org/docs/default-source/publications/2022/2/apec-stocktake-of-carbon-pricing-initiatives/222_ec_apec-stocktake-

[of-carbon-pricing-initiatives.pdf?sfvrsn=fbedfd62_2](https://www.apec.org/docs/default-source/publications/2022/2/apec-stocktake-of-carbon-pricing-initiatives.pdf?sfvrsn=fbedfd62_2)

SESSION 1: Panel Discussion

Carbon Markets in the Era of Paris

There has been a surge of interest in the voluntary carbon market generated in part by national and corporate net zero commitments, the greening of the financial system, and new market participants entering the market hoping to contribute to decarbonization efforts while profiting in the process. This creates a huge potential. The United Nations Framework Convention on Climate Change (**UNFCCC**) regional collaboration centre established in Bangkok, together with other regional UNFCCC centres were set up to originally support the Clean Development Mechanism (**CDM**) and lately Article 6 of the Paris Agreement, its pending rule book and subsequent engagement with the private sector which has been moving on to the voluntary carbon market. Inside the UNFCCC there are still doubts about double counting, transparency, permanence, and the intention pushing developers to voluntary carbon markets. Developers want to understand carbon markets to utilize them to reach carbon neutral emissions.

From the perspective of a carbon credit marketplace and exchange based in Singapore, carbon markets are an important instrument for enterprises who have deep carbon footprints and want to reduce them incorporating carbon

credits as part of a holistic transition strategy. Without carbon credits, even the best efforts to try and decarbonize will not get the world to its 1.5-degree pathway. The generation of carbon credits is a critical and proven mechanism for unlocking liquidity and channelling finance to projects that would have otherwise not have gotten off the ground. Many of the main questions around carbon credits relate to quality, trust and pricing, as well as solutions to improve efficiency in validation and distribution. Marketplaces are well positioned to deliver price discovery, both to be able to justify future capital expenditure, but also to be able to manage risks for pathways towards Net Zero. There are several kinds of customers using carbon credits in different ways, including enterprises who want to report credibly what they are doing as part of a wider sustainability or ESG reporting exercise. On the other hand, there are companies that are helping their clients hedge or manage their risk exposure of their own emissions footprints in the future. For all this, education is required, and marketplaces are a way of learning and educating. As such, a network² within the Asia-Pacific region was created, to provide products and tools, encouraging listed companies to make a disclosure on their carbon footprint be it a disclosure of scope one, two and three, and

² In reference to the Sustainable & Green Exchange (STAGE) an online portal providing information, access and transparency on a wide range of sustainable, green and social investment products.

More information via the link:
https://www.hkex.com.hk/Join-Our-Market/Sustainable-Finance/HKEX-STAGE?sc_lang=en

provide them with tools to offset what they have disclosed.

Policy will play an important role and a macro policy could help to simulate behaviour. A coherent policy objective and regulations to support it, whether it is at the macro level or at the micro level, will help to shape the market in the future. Finally, policy can catalyse or accelerate growth while enhancing connectivity and interoperability. Policy can also help the interaction of voluntary and compliance carbon markets including those covering different jurisdictions such as local, regional, or international markets.

The leading greenhouse gas crediting program in the voluntary carbon market is also generating additional sustainable development benefits on social and other non-climate aspects. Greenhouse gas crediting programs have also changed their strategy and now crediting renewable energy is only available in least developed countries. Companies are increasingly pressured to combat climate change and the voluntary carbon markets provide instruments to do that. The key role of the crediting organizations should be to complement the activities or the emerging policies that governments are starting to put into place to address climate change. The market is growing very fast, and the standard is transitioning to digitalization and automation. The digitalization process will help increase transparency towards better integrity and quality. Governance is also important to continuously look at the latest scientific evidence, evolving best practice and

technological developments to ensure effective emissions reduction and removal.

One useful global policy on carbon markets comes as part of the Paris Agreement. Article Six is an article under the Paris Agreement that allows countries to voluntarily cooperate with each other to achieve their emission reduction targets under their NDCs. Article 6.2 is a direct cooperation between countries, and bilaterally agreed standards. Article 6.4 is the mechanism that follows and replaces the CDM. Article 6.8 covers non-market elements and non-market mechanisms. However, countries have already started with pilots and introducing such bilateral cooperation regardless of the outcome of the Paris negotiation.

An ecosystem of developers, auditors, standards, technology developers, exchanges, and investors must enable carbon services and training to be efficient to serve the demand of carbon credits. There are a lot of these collaborations in nascent stages. Doing some trades is equally important to give corporations some trading experience and a flavour of the market, while building capacity at the same time. Transparency is vital to build confidence around the marketplace.

For some there will be a limit to carbon markets because what needs to drive climate action is real internal reductions through the policies that companies can implement to abate climate change. The voluntary market can help but there will be less scope for voluntary action going forward towards net zero and it is predicted that the carbon markets will only see growth for the next 10 or maybe 20 years.

SESSION 2: Panel Discussion

Emissions Trading Systems: Best Practices, Setup & Interconnectivity

This session delved into the setup of Emissions Trading Systems (**ETS**), its rapid development in the Asia-Pacific region, and the increasing number of systems especially in countries such as China, Vietnam, and Indonesia.

The Asia-Pacific region contributes approximately to half of global carbon emissions. Voluntary markets are a useful instrument as a transaction mechanism into pricing through an ETS. Voluntary markets will be a mainstay in some sectors and some countries where it is difficult to implement an ETS, but voluntary markets are limited by the nature of the demand, which is voluntary and not mandatory.

Voluntary markets are very complex, and the higher the quality, the more complex they are. Raising the quality of carbon markets is seen in markets globally. A compliance market could be simpler, they could cap the emissions contributing to the abatement of the global emissions reduction goal. No additional requirements are sought and there is no risk of leakages. Moving to compliance markets would seem the easiest path for developing countries. Additionally, a compliance market could provide a solid basis for trading under Article Six, giving countries confidence to achieve their NDC and trade beyond that.

For a compliance market to function well, the legal foundation should be addressed in the form of a bill to set up long term goals of the reductions and the basic components of the ETS system like allowance allocation, the scope of the market, the flexibility of the mechanism, and the compliance piloting among others. Second, it must have a clear and long-term path. In China for example ETSs have intensity caps, different from what happens in EU countries that have absolute caps. An intensity cap is suitable for the current stage of development, but it does not suit well for the long-term carbon neutrality goals. For developing countries choosing between intensity cap or absolute cap is something very important and must be decided beforehand dependent on their NDCs. In a second stage, intensity targets on ETS should be changed to absolute targets. Third, is the creation of a mechanism to ensure the quality of the emission reduction. The quality assurance mechanism in place in many countries, especially in developing countries may not be robust enough. Borrowing and learning from other experiences or countries could help avoid this. The fourth step would be the trading system. If there are insufficient market players in a compliance market, it will be hard to achieve an equilibrium between supply and demand. Although market speculation is unavoidable, it is necessary to minimize such activities as it relates to the carbon market.

Countries can learn a lot from each other's experiences, both in cases of success and failure. The development of ETS in the region have taken at least 10 years and time is running out. One of the things to learn is the importance of early engagement. Engaging with key stakeholders, educating them, and identifying early problems in the process, could help markets to start well. Political will is basic and could be one of the greatest barriers to having a stable, effective system. Markets are in constant change and, while it is desirable to have the best and most effective market from the beginning, it is prudent that carbon markets are implemented quickly as climate change is time sensitive and it is expected that markets grow more robust naturally over time.

Although it would be an interesting idea to have a regional carbon market in Asia is important to avoid following examples like the European Union's **(EU)** ETS. The EU ETS was built on strong political institutions and the structure of the European Union, which binds countries together. They also had huge resource transfers between countries to make a harmonized emissions trading system rules acceptable to countries of varying markets within Europe. Although this may not work for the Asia-Pacific region, there is a lot of gains to be made from trade and having a harmonized market in Asia, without being fully linked. The use of standardized monitoring protocols, taxonomies, standards, the use of free allocation, or run actions could give confidence to the market and could encourage learning from each other creating a lot of opportunities for countries. Richer countries within Asia can

support developing countries who have a lot of opportunities in emissions reductions. This could accelerate the reductions from a global point of view, and it could not only be a financial transfer, but the buyer country could also help with technology and provide some political support.

China launched its first pilot ETS in 2011 and more recently the first Chinese national carbon trading scheme was launched in 2021. The transition of a pilot carbon market to a national carbon market took them a decade. The key reason behind this long transition was the absence of a stable environment of policies. A second lesson was the lack of education in trading and compliance experience of the covered entities by the national market. The third lesson was that all the trading infrastructure needed to be in place before the carbon market was started.

Regarding carbon prices stability there are two approaches. One is the direct management approach, implemented in California to control prices. It requires a reasonably large auction of units which in an early system is difficult to achieve. It is essentially putting a price floor in the auction meaning the price cannot fall below a certain level. On the other hand, if price goes too high, more allowances could be released into the market. This approach cannot avoid fundamental problems like the ones seen recently in Europe that are forcing prices to be extremely high without breaking caps. If a region is not willing to face the sort of prices that would keep the emissions down during a period, no mechanism is going to be able to control that. This example was seen in Europe

when entities in compliance cannot use Russian gas. Apart from those extreme examples what is needed is price stability that depend on policy. Another price approach was proven successful in several places, includes having clear governance structures and semi-independent advice of government. Much like a reserve bank managing the monetary supply, rather than a series of politically driven decisions. Gradually, it develops trust because of transparent decision-making processes. These processes are made based on consistent guidelines and clear modelling, allowing market participants to predict what is going to happen in the market. This avoids speculative movements, and it reduces risks of volatility. A lot of the volatility has been driven by anticipation of changes in rules. Other possibility is having regular options, allowing price discovery on what future prices are going to be like. This makes market manipulation much harder which has been of great concern in quite a few markets. Nonetheless, price stability has a strong relationship with political situation.

Something important is the difference between speculation and market manipulation. Although speculation can help liquidity and a healthy support of prices, there is a fine line to whether

it is transformed into market manipulation and these fine lines are different in each market and in each region or country.

Non-profit organizations can play a variety of roles, in training, in sharing ideas from other markets, in facilitating the engagement processes to help design an effective market, in pressuring for transparency of information, in helping to make the system better.

The "opt in" is a very effective and quick way for small economies to participate in a big or larger carbon market. An example of this was the invitation of the Schengen ETS to Hong Kong coal power plants or oil field plants to join their carbon market. The opt in method is a good way to expand the coverage of the market and involve more covered entities to reduce the emissions and share same burdens and benefits of the carbon market. The downside of the opt in approach is losing control over the price, their future settings, their free allocation, and their cap. An option to avoid the downside is to have an agreement to maintain certain sovereignty and the ability to make some of the choices for themselves. An example of this was New Zealand who joined Australia ETS and copied a lot of the legislature and rules of their cap and trade while maintaining its sovereignty.

SESSION 3: Panel Discussion

Innovations in Carbon Markets

This session explores several aspects of climate finance and innovation, whether that be technological, financial, or even innovations in coordination on climate change and carbon finance. Innovations on carbon currencies and in policy among others could help overcome challenges and unlock opportunities.

Carbon Reward Policy

The first of these innovations revises the conceptual model for the market failure in carbon and offers a potential breakthrough in carbon pricing with a new taxonomy based on the "carbon pricing matrix" (see Figure 1). This

matrix identifies a possible new policy, called a "carbon reward"³. The carbon reward has scalability, and it can also address social and environmental co-benefits. It is intended to interface with central banks for scalability, and it is based on the new instrument called a "carbon currency" (**XCC**). The carbon pricing matrix is a relational diagram that identifies four fundamental ways to price carbon. See below.

The diagram identifies taxes, cap and trade, subsidies, and the new carbon reward. It also identifies voluntary pricing. Below the matrix is another row, which represents carbon credits. Carbon credits are often used for offsetting emissions, but they are not part of the matrix because they are a supply-demand instrument and are not an originating price signal. Article

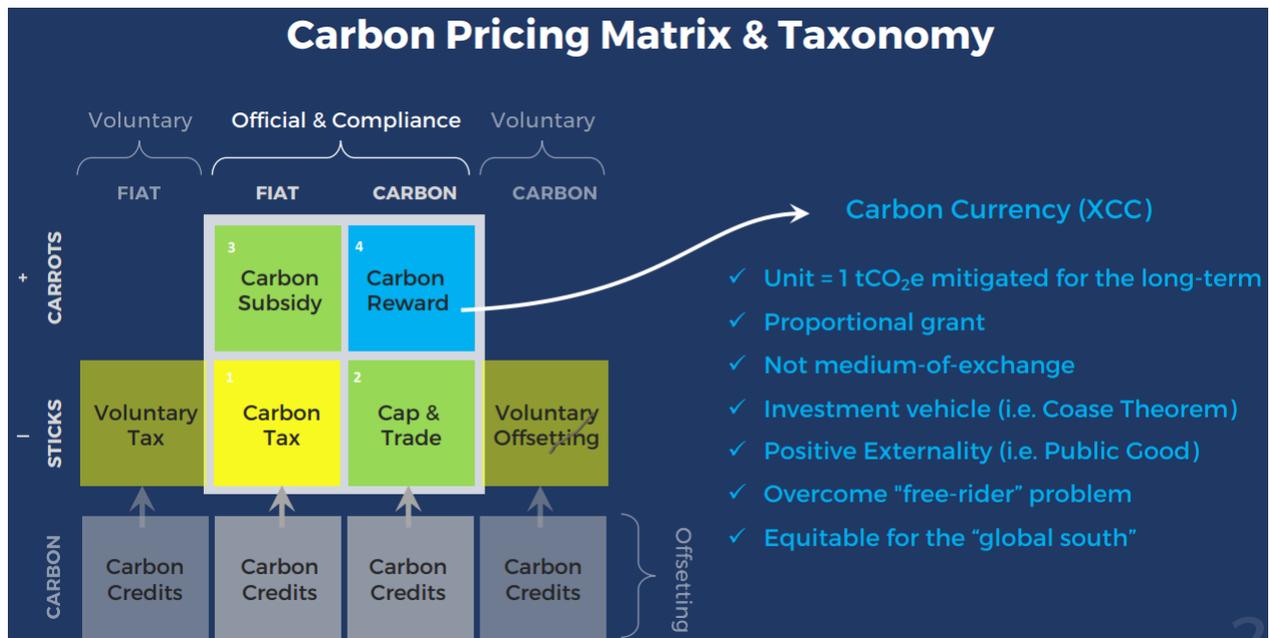


Diagram 1: The carbon pricing matrix and associated taxonomy (copyright: Delton Chen, 2022)

³ Website; for more information:
<https://globalcarbonreward.org/>

Six of the Paris Agreement deals with offsetting and ETS and trading, but the carbon reward is different. The carbon reward does not create any carbon credits and does not enable offsetting because all of the carbon is retired, and the carbon currency (XCC) is traded as an asset. The unit-of-account is one tonne of CO₂ mitigated for the long term. The XCC is not a medium-of-exchange, so it will not compete with national currencies. The XCC will be issued as a proportional grant for carbon mitigation, and it will have a floor price that will be guaranteed by central banks. With a rising floor price, the XCC may be traded as an investment vehicle. Theoretically, the XCC has scope to overcome the free rider problem in international negotiations, and it could alleviate the global north-south inequality problem. The idea is to offer a carbon reward with a long-term predictable price, expressed as an exchange rate with national currencies (e.g., XCC/SGD). Its price would have a lower bound, called the "XCC floor price", and so it will have price certainty: pulling in private investment, depending on how fast it is rising in value. The

carbon reward policy could provide an answer to the approximately \$100 trillion needed this century to remove carbon from the atmosphere. The plan is to back the XCC with new monetary policy for central banks, called a "public finance guarantee". The XCC can also be used to finance conventional mitigation. The carbon reward policy includes three major rules: (Rule 1) a rule for incentivising cleaner energy, (Rule 2) a rule for incentivising cleaner business, and (Rule 3) a rule for incentivising carbon removals. Rules 1 & 2 have quite interesting features, including a different way of handling additionality. One option is for providers to retire their fossil fuels reserves and related assets to receive the carbon currency (XCC), but they will also be expected to use their XCC to provide cleaner energy alternatives. The XCC offers a new way of overcoming the carbon lock-in problem and the free-rider problem that hinders progress on the Paris Agreement.

Diagram 2 shows how the XCC could be created and then issued to an awardee, after which

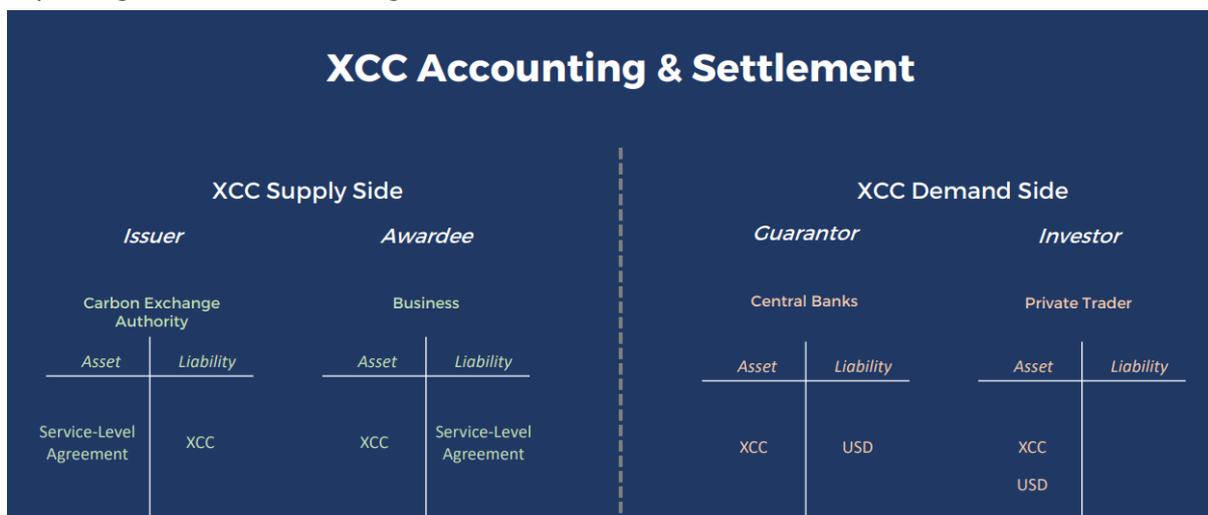


Diagram 2: The XCC accounting and settlement approach for creating an international carbon reward market with the help of the U.S. central bank (copyright Delton Chen, 2022)

time it may be purchased by investors and central banks who will hold it as an asset. On the left, the diagram shows the XCC being issued by the Carbon Exchange Authority (**CEA**). The awardee must sign a service-level agreement (**SLA**) as its liability, and then the CEA may take the SLA as its asset and create the XCC. Central banks will accumulate the XCC on their balance sheets to ensure that the value of the XCC does not fall below the agreed XCC floor-price.

The idea of an SLA could be the answer to closely monitor mitigation projects. The introduction of long-term SLAs could be used to ensure that forest carbon is properly accounted for. The SLAs could be used to set specific baselines for energy companies and businesses, based on carbon intensity of their activities. Fuel energy intensive companies could enter SLAs where they must increase the clean energy supply and must retire their proven reserves while being paid in carbon currency. Other rules can be introduced to incentivise community and ecological co-benefits.

Carbon Markets

The second innovation considers the boundaries of an ETS that can be used to promote innovation and speed up the process of developing innovative approaches. Setting up the “system boundaries” of a carbon market that is politically feasible will encourage the broadest range of both internal trading and innovation in each region. It also requires setting up a rigorous and reliable system of monitoring, reporting and verification to ensure

the credibility of the credits and offsets that are generated. This may require, tracking carbon coming into the system. That is the effort to ensuring the widest number of players attempt to fulfil their responsibilities by reducing or removing emissions rather than simply trading credits. The utilization of rigorous monitoring, reporting and verification protocols to encourage clear, transparent, and simple processes is important to engage the largest number of participants in the market with the lowest transaction cost.

It is important to engage central banking authorities to encourage investment. Particularly in sustainable infrastructure to create pathways for recognizing the value of rigorously developed and financially sustainable infrastructure projects and the financial instruments that they generate, to be recognized as liquid assets and accepted for application by commercial banks and other financial institutions. Finally, to encourage collaboration between public sector agents that have a responsibility for managing the economy emissions controls, and private institutional investors who have adequate capital under management to promote investments in the sustainable infrastructure projects that will be needed to fulfil the Paris targets and the SDGs. This combination of measures can create an environment that promotes both financial and technical innovation in the achievement of the goals of giving emissions trading systems and the NDCs.

Carbon Justice

The third innovation is to consider carbon justice. The principle of common but differentiated responsibilities has been proposed, as the stress of the contribution of an economy in addressing climate change should be measured by whether it has made efforts compulsory to raise national conditions and development.

ETS markets really cover a very small portion of the overall global emissions. There is a significant proportion of emissions today that are not part of the compliance markets, and this is where voluntary markets can play a critical role in addition to the expansion in the scope of the compliance market. Carbon markets should be looked at in an integrated manner across both the compliance and voluntary markets. There must be interoperability across both markets and a more dynamic inter linkage between the two.

Mandatory disclosures of emission footprint can really derive significant activity in carbon markets. The eligibility of offsets and the carbon accounting framework is meant to be another critical factor. There is a whole debate around avoidance versus removal, global consistency on standards around the treatment of these two different types of credits and offsets is needed. There is lack of institutional investors participating in these markets at any scale.

Integrating both carbon offsets and traditional financial instruments could drive volume and traction to these markets. A tokenized form of carbon credits can be integrated within retail

products, for example, so that retail consumers that today do not participate in these markets can be a demand driver. As an example, integration of carbon offsets within the credit card platform so when a consumer buys a car or makes a purchase, he can understand the carbon footprint and have the ability of offsetting. There are a significant number of applications around tokenization of carbon credits, distributed ledger technology, and smart contracts all running through blockchain. There are opportunities to apply blockchain technology to track emissions reductions, particularly those that are applied to offsets that are not necessarily permanent, but which may be vulnerable to either leakage or other forms of displacement. This could also lower transaction costs. Linking the monitoring, reporting and verification protocols that are introduced in a country to the national development priorities of that country will allow them to see how the development investments regarding carbon reductions are evolving.

One of China's key tasks is to make the carbon emission accounting of their enterprises in the power industry covered as accurate as possible to avoid carbon financial risks. One of these risks is disclosure. Information disclosure in carbon markets is not significant and, compared with traditional financial markets, the adverse selection and moral hazards are more likely to occur.

Some final recommendations are, mandatory free disclosures, stability of carbon accounting, clarity and stability around national policies and standards around the treatment of carbon offsets, including removals, their role in a

science-based transition pathways and last, market structure and financial regulatory framework to mobilize institutional investor

capital. Lastly, there is a need of finance, speed, and scale to have a global price signal that would be predictable into the future.

Concluding Remarks

There is general agreement that we are running out of time to tackle climate change and that while functioning carbon markets are a critical tool in this fight, there remains a huge amount of work to be done to achieve functioning carbon markets. Emissions trading systems in Asia-Pacific are at an early stage and are evolving gradually but too slowly, and whereas voluntary carbon markets have an important role to play to accelerate the process. Addressing these issues urgently and efficiently should be our collective priority and for this collaboration is key.

In respect of compliance markets, member economies can learn from the experience of other members, including from China's experience developing its ETS, and from the experience with ETS internationally which underscore the importance of a clear and stable carbon market policy, education and capacity building for stakeholders and then effective trading infrastructure. Additionally, the importance of a robust and liquid ETS, price discovery and a forward curve for risk management - essential features that are already familiar to carbon markets practitioners and policymakers in Asia-Pacific who have developed capital markets. It is also important

to promote both demand and supply to have a liquid market and infrastructure that fits the specific conditions of each market and to be aware of the challenges of dealing with volatility, speculation, and market manipulation. In respect of voluntary markets, APEC economies can learn from each other about how best to support the development of voluntary carbon markets within their jurisdictions and regionally. In all cases, quality and clarity of data, transparency, policy, and regulatory frameworks will be key.

Innovation in financial services including the use of distributed ledger technology is transforming markets already. There is no path to Net Zero carbon that does not embrace innovation, which is why developing solutions involving blockchain, artificial intelligence and other technologies should be encouraged and adopted wherever appropriate.

There is still a lot of work that needs to be done, especially how to bring all these multiple efforts in many different institutions together, to ensure coherence and achieve synergy and efficiency. APEC can provide a platform for collaboration among key stakeholders to help the APEC member economies move forward.

Sustainable Finance Development Network

The Sustainable Finance Development Network (SFDN) was set up within the Asia-Pacific Financial Forum (APFF) as recommended by the APEC Business Advisory Council (ABAC) in 2020. It serves as an international platform for private-public sector collaboration, accelerating the convergence of sustainable finance policies among APEC economies and strengthening the region as they develop a common global sustainability framework. This is done primarily through activities supporting the APEC Finance Ministers' Process and assisting ABAC in developing its high-level recommendations to the Finance Ministers. The United Nations Development Programme (UNDP) Financial Centres for Sustainability (FC4S) provides the secretariat for the network.

APEC Business Advisory Council

The APEC Business Advisory Council (ABAC) was created by the APEC Economic Leaders in November 1995 to provide advice on the implementation of the Osaka Action Agenda and on other specific business sector priorities, and to respond when the various APEC fora request information about business-related issues or to provide the business perspective on specific areas of cooperation. ABAC comprises of up to three members of the private sector from each economy.