Carbon Cashed In! Making Sence of the World's Hottest Commodity

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About the Organizer

Mizuho India Japan Study Centre (MIJSC) is a Centre of Excellence at the Indian Institute of Management Bangalore, established in 2017, dedicated to promoting deeper economic, cultural, and strategic ties between India and Japan. Chaired by a career diplomat Amb. Jaideep Sarkar and led operationally by an Industry Veteran Mr. Saideep Rathnam, MIJSC's mission is to foster mutual understanding and build expertise in areas such as manufacturing, corporate governance, start-ups, innovation, and cultural exchange. Through collaborative research projects, executive education programs, student and faculty exchanges, and regular webinars and seminars, the Centre serves as a dynamic hub for knowledge-sharing and capacity building in India–Japan relations.

About the Initiative

The Webinars and Seminars Initiative is a dynamic platform that brings together global experts, practitioners and policy-makers to share insights on pressing challenges and opportunities. Its core themes include Science, Technology & Sustainability; People, Art & Culture; Innovation, Entrepreneurship & Society; and Leadership, Management & Business Culture.

A special focus of this series is to deepen India–Japan ties, fostering bilateral dialogue through joint sessions, case-study exchanges and collaborative research. By leveraging each country's strengths—India's vibrant startup ecosystem and Japan's cutting-edge technologies—the initiative aims to catalyze new partnerships, policy alignment and capacity building across both nations.

About the Speaker

Dr. Sayuri Shirai is a leading advisor to the Asian Development Bank Institute's sustainability programs, overseeing the ADBI-ADB Climate Finance Dialogue An initiative that fosters collaboration and information exchange on climate-related disclosures and financial policies among Asia's financial supervisors. Her leadership has been instrumental in shaping policy actions that mobilize climate finance, strengthen regulatory frameworks, and ensure financial stability in the face of climate risksShe is As a distinguished professor at Keio University, she teaches international finance, turning her classroom into an incubator for the next generation of leaders in economics and sustainability.

Dr. Shirai's research spans central bank digital currency, ESG investment, and global financial innovation.

She is also a Professor at Keio University's Faculty of Policy Management and teaches Macroeconomics and International Finance.

Her influence extends far beyond academia: she served as a Policy Board member at the Bank of Japan, an economist at the International Monetary Fund, and has advised numerous corporations on sustainability and finance, making her a true trailblazer in her field.

Dr. Shirai is also a frequent commentator, appearing in major news forums such as Bloomberg, CNBC, BBC, and The New York Times.

About the Moderator

Saideep Rathnam is the Chief Operating Officer of Mizuho India Japan Study Centre, bringing a wealth of 47 years of industry and academic experience to the Centre. An alum of IIM Bangalore, from Hindustan Aeronautics Ltd. to British Aerospace, UK he has spent over 2 decades in the aeronautics industry and over 18 years in the automotive sector in various capacities including president of manufacturing excellence at Anand Automotive Ltd. He is also a Certified Chartered Management Accountant [CMA], UK. He wears many hats and has chaired Anand University, helping companies in the fields of management of change and innovation. Recently, he drove the Visionary Leaders for Manufacturing (VLFM) program as a Senior Advisory Committee Member of CII.

Context Setting

Saideep:
Let me take a few minutes to set the context for today's webinar. As you know, the title is both timely and compelling: *"Carbon Cashed In: Making Sense of the World's Hottest Commodity."*

In the evolving landscape of global climate policy, carbon markets and climate finance have become pivotal tools for driving emission reductions and promoting sustainable development. Recent developments point to growing international momentum, particularly in Asia—including South Asia, Southeast Asia, and China.

In a landmark move last year, India and Japan announced the establishment of a Joint Crediting Mechanism (JCM) under Article 6.2 of the Paris Agreement. This initiative is expected to enable bilateral carbon credit transfers supported by technology sharing, financing, and capacity building.

Japan, a longstanding leader in sustainability, has made significant advances in this area—often outpacing even some Western countries. Notably, Japan launched its first

exchange-based carbon credit market as early as October 2023. This market enhances transparency and incentivizes domestic emissions reductions.

These actions represent a broader shift toward structured, cooperative market mechanisms and underline the strategic importance of regional partnerships in achieving global climate goals. No single nation can address climate change alone; collaboration is essential.

Today, we look forward to learning more about the state of carbon markets globally, with a special focus on Asia. Dr. Shirai will also share her insights on how India can effectively participate in and benefit from carbon credit markets.

With that, I am pleased to hand it over to our esteemed speaker, Dr. Sayuri Shirai.

Speaker's Presentation

Dr. Sayuri Shirai:

Let me begin by introducing today's topic, which focuses on the carbon market—more specifically, the voluntary carbon market.

First, why is the carbon market so important? We begin with an understanding of greenhouse gas (GHG) emissions, which are measured in metric tons of carbon dioxide equivalent. While there are seven major types of greenhouse gases, their impact is commonly aggregated and expressed in terms of carbon dioxide equivalent to simplify reporting and comparison.

In Asia—including East, South, and Southeast Asia—total GHG emissions continue to rise. This growth contributes significantly to global warming and the increasing frequency of natural hazards. If we examine the global distribution of emissions, China is the largest emitter, accounting for 31% of total global emissions, followed by the United States at 14%, India at 7%, and Russia and Japan at 3% each. India, therefore, holds a critical position in addressing global emissions.

One key reason for Asia's high emissions is the region's substantial reliance on coal-fired electricity. As illustrated in the data, countries like India, China, Japan, Indonesia, and Vietnam remain heavily dependent on coal power, which is among the most carbon-intensive energy sources. Reducing coal dependency and promoting clean energy innovations are therefore essential steps in addressing regional emissions.

From a corporate perspective, transforming industrial production is vital. Currently, sectors such as manufacturing and agriculture emit significant amounts of greenhouse gases. Companies must transition toward less emission-intensive production processes.

In response to growing climate accountability, large publicly listed companies—including those in India—are increasingly required to disclose their annual GHG emissions. These

disclosures typically include emissions from factory operations, transportation, and other business activities, reported as “gross GHG emissions.”

However, achieving significant reductions in GHG emissions remains technologically and financially challenging. As a result, companies can offset their emissions by purchasing carbon credits from third-party projects. These projects, which reduce GHG emissions through verified methodologies, can generate credits that companies buy to compensate for their own emissions—resulting in what is termed “net GHG emissions.”

While it is important that companies reduce emissions at the source, the voluntary purchase of carbon credits allows for broader global impact. Since the atmosphere is a global commons, it does not matter where the emission reductions occur. If a company supports a credible emissions-reducing project, it contributes meaningfully to overall global mitigation efforts. This is the foundation of the carbon credit mechanism and the reason carbon markets play a critical role in climate action.

Today, I will focus on how these carbon credits are transacted within carbon markets, particularly the voluntary carbon market.

There are three primary types of carbon markets, each serving different regulatory and operational frameworks.

1. Compliance Market (Emission Trading System): The first is known as the compliance market, or the Emission Trading System (ETS). This market originated in the European Union in 2005 and has a well-established history. India is also preparing to introduce its own compliance market, with regulatory groundwork reportedly laid out in July 2024.

In a compliance market, participation is mandated by government regulation. The government identifies emission-intensive industries—such as electricity generation, petrochemicals, and cement production—and calculates the total greenhouse gas (GHG) emissions generated by facilities within those sectors. A national cap on total emissions is then set, and emission allowances are distributed to companies based on their operational profiles.

For instance, suppose I am the CEO of a fertilizer company in India. The government would allocate my company a specific amount of emission allowances for the year. If I successfully reduce emissions below my allocated limit, I will have surplus allowances. Conversely, if another fertilizer company exceeds its allocated emissions despite making some efforts, it would face a shortfall. In such a scenario, the two companies can trade allowances—one selling its surplus, the other buying to cover its excess. This trading mechanism forms the core of a compliance-based carbon market or ETS, which India is expected to implement soon.

2. Joint Crediting Mechanism (Under Article 6 of the Paris Agreement): The second type is associated with the Joint Crediting Mechanism (JCM), which operates

under the framework of Article 6 of the Paris Agreement. Article 6 allows for international cooperation through market-based mechanisms to achieve nationally determined contributions (NDCs) for emission reductions.

This mechanism typically involves government-to-government collaboration. For example, the Japanese government might finance a carbon reduction project in India, such as reforestation. This initiative could include funding, technological support, and implementation efforts by both countries. If the project successfully reduces GHG emissions, the resulting carbon credits are shared between the participating nations. While private entities may also be involved in execution, the foundation of JCM lies in bilateral or multilateral agreements between national governments. This is a key component of structured international climate cooperation.

3. Voluntary Carbon Market: The third category—and the one I will focus on in more detail—is the voluntary carbon market, which holds significant potential. Unlike compliance markets, voluntary carbon markets are driven by private-sector initiatives.

In this model, carbon credits are issued by private entities that develop projects capable of reducing or removing GHG emissions. These projects may include renewable energy installations, forest conservation, or methane capture, among others. Companies seeking to offset their emissions voluntarily can purchase these credits to compensate for their environmental impact.

While the voluntary market operates independently of government mandates, there is growing interest from governments—such as those in ASEAN countries, China, and Japan—in improving the integrity and transparency of this market. Their involvement often aims to set standards, enhance verification processes, and increase investor confidence. However, the foundational principle remains private-sector leadership and participation.

Having introduced the three major types of carbon markets, I would now like to focus specifically on the **voluntary carbon market**, which I believe holds considerable potential for future growth.

As of 2024, the global revenue from voluntary carbon credit transactions remains under USD 5 billion. However, projections indicate significant expansion, with market size expected to reach approximately USD 24 billion by 2030. This anticipated growth stems from multiple converging trends, though key challenges remain regarding the promotion of **credibility, transparency, and standardization** within the market.

Why Is the Voluntary Carbon Market Expected to Grow?

There are three primary drivers underpinning the expected expansion of the voluntary carbon market:

1. Net-Zero Commitments by Governments and Corporations

Across Asia—including countries like Japan, India, and others—governments have committed to achieving net-zero emissions by 2050, 2060, or 2070. To meet these national targets, corporations will play a critical role, as industrial and commercial sectors are major sources of greenhouse gas (GHG) emissions.

Consequently, companies are increasingly adopting their own net-zero goals, aligned with national climate strategies. However, many firms face technical and financial challenges in completely eliminating emissions from their operations. In such cases, voluntary carbon credits provide a mechanism to **offset residual emissions**, enabling companies to achieve net-zero targets more feasibly.

2. Attracting Foreign Capital and Supporting Innovation For developing and emerging economies, the voluntary carbon market represents a **valuable tool to attract foreign capital and technological innovation**. These nations often require financial support, technical expertise, and capacity building to implement low-carbon solutions effectively.

Despite being privately driven, voluntary carbon markets are increasingly supported by national governments in Asia, including those in ASEAN countries, China, and Japan. Many governments are intervening in these markets to enhance quality assurance and reduce the risks of greenwashing.

Notably, several Asian stock exchanges now **list voluntary carbon credits**, alongside compliance-based Article 6 credits under the UN framework. This institutional integration signals growing recognition of the voluntary market's potential as a channel for sustainable finance and cross-border collaboration.

3. International Aviation and the CORSIA Framework A third significant driver is the international aviation sector's participation in the **Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)**. This initiative, coordinated by the International Civil Aviation Organization (ICAO), requires member airlines to cap and reduce emissions from international flights.

Airlines are expected to employ a combination of strategies—including the adoption of sustainable aviation fuels and electrification technologies—to reduce emissions. However, these measures alone are insufficient. Under CORSIA, airlines are therefore permitted to **purchase voluntary carbon credits** to offset remaining emissions, further increasing demand for high-quality carbon credits.

How to Calculate Carbon Credits

Carbon credits are calculated by comparing the greenhouse gas (GHG) emissions of a carbon reduction or removal project to a baseline scenario—essentially a business-as-usual case where the project does not exist. The difference in emissions between the baseline and the project scenario represents the quantity of GHGs reduced or removed. This reduction is quantified using scientifically established methodologies and formulas.

The resulting amount of avoided or removed emissions is certified as carbon credits, which can then be purchased by entities—both domestic and international—to offset their own emissions.

Types of Carbon Projects and Credits

Carbon credits can be categorized based on the type of intervention: **technological** or **nature-based**, and by the nature of impact: **avoidance** or **removal**.

1. Technology-Based and Avoidance

These projects prevent emissions from entering the atmosphere. For example, replacing coal-fired power plants with renewable energy sources like solar or wind reduces GHG emissions that would otherwise have occurred.

2. Technology-Based and Removal

These projects remove already-emitted carbon from the atmosphere using technologies such as **Direct Air Capture (DAC)**, which captures atmospheric CO_2 and stores it underground. Another example is **Carbon Capture and Storage (CCS)** at industrial sites, where CO_2 is captured before it can be released.

3. Nature-Based and Avoidance

Agricultural and land-use changes that prevent emissions fall under this category. Examples include sustainable farming practices and improved land management to reduce fertilizer use and methane emissions.

4. Nature-Based and Removal

These projects actively remove CO_2 from the atmosphere by enhancing natural carbon sinks. Activities include **reforestation** and **afforestation**, where forests are planted or restored to absorb CO_2.

Supply of Carbon Credits

Both companies and individuals can develop carbon projects under these categories. To generate and issue carbon credits, the following steps are involved:

1. **Project Development**: A developer designs a carbon project according to recognized methodologies.
2. **Selection of Standards**: The developer selects a carbon credit standard which provides rules for measurement and verification. Notable global standards include:
    - **Verra (VCS)** – US-based
    - **Gold Standard** – Supported by WWF

- **American Carbon Registry (ACR)**
- **Climate Action Reserve (CAR)**

3. **Validation and Verification**: An independent third party (validator/verifier) assesses the project to ensure it meets the selected standard's requirements and correctly quantifies emission reductions or removals.
4. **Issuance of Carbon Credits**: Upon successful validation and verification, carbon credits are issued via a registry operated by the selected standard.

Trading and Retirement of Carbon Credits

Once issued, carbon credits can be purchased directly or via carbon exchanges. For example, a Japanese company aiming to meet net-zero goals may purchase credits from an Indian project. If carbon credits are listed on stock exchanges, it enhances market transparency and accessibility.

After purchase, the carbon credits must be **retired** in the registry to avoid double counting. Retirement indicates that the credit has been used for offsetting and cannot be reused or resold. Ensuring transparency and avoiding fraud is critical, and technologies such as **blockchain** may play a role in securing the integrity of the system.

Risks Associated with Mitigation Projects

While carbon credit systems present an innovative tool for addressing climate change, they are not without significant risks and challenges. One of the foremost concerns is **quality assurance**. With the proliferation of carbon projects worldwide and the presence of multiple standards—both internationally recognized and country-specific—it becomes essential to ensure the integrity and accuracy of the carbon credits issued.

In recent years, controversies have emerged, particularly involving nature-based projects. For example, in 2022, investigations revealed that some carbon credits significantly overstated the actual amount of emissions reduced or removed, deviating from scientific estimates. These discrepancies often arise due to flawed baseline scenarios or imprecise calculation methods. Thus, the methodology used in estimating carbon reductions must be robust and transparent.

Another major issue is **double counting**, where the same carbon credit is claimed by multiple entities. This has occurred even under frameworks managed by international organizations. To maintain credibility in the carbon market, mechanisms must be established to detect and eliminate such overlaps.

Permanence is another risk. For instance, if a carbon capture or direct air capture (DAC) project successfully stores CO_2 underground today, there is no absolute guarantee that the carbon will remain sequestered decades into the future. Potential leakages threaten

the long-term viability of such projects. Continuous monitoring and periodic reassessment are crucial to ensure permanence.

Additionally, **social and environmental impacts** cannot be overlooked. Carbon projects should not come at the expense of local communities. Projects that affect water usage, land rights, or economic activities must incorporate inclusive planning and ensure that they contribute positively to local development. The social co-benefits of these initiatives are as important as their environmental outcomes.

Though the carbon market may seem straightforward in concept, building a transparent, accountable, and high-integrity system requires addressing these layered and complex risks.

Measures to Mitigate Carbon Credit Risks

Efforts are underway globally to address the risks and strengthen the credibility of carbon markets. One notable initiative is the **Integrity Council for the Voluntary Carbon Market (ICVCM)**. This independent, private-sector-led body has developed the **Core Carbon Principles**—a set of ten foundational guidelines aimed at ensuring the quality and environmental integrity of carbon credits.

If a carbon standard adheres to these principles, it is likely to produce higher-quality credits. Leading standards such as Verra, Gold Standard, ACR, and Climate Action Reserve have begun aligning with these principles, and credits endorsed by ICVCM are now considered more trustworthy in the marketplace. Countries developing their own standards, such as India, are encouraged to incorporate these principles to enhance credibility.

On the demand side, the **Voluntary Carbon Market Integrity Initiative (VCMI)** provides another layer of accountability. While ICVCM focuses on the supply side (i.e., the generation of carbon credits), VCMI addresses how companies use carbon credits. It emphasizes that firms must first take internal action to reduce their own emissions before relying on offsets. This discourages companies from using credits as an easy way out of their climate responsibilities.

Digital solutions are also playing a growing role in strengthening carbon markets. Blockchain and digital ledgers can improve traceability, prevent data manipulation, and reduce instances of double counting. The rise of **carbon credit rating agencies** further supports market transparency by independently assessing the quality of credits based on standardized metrics.

Moreover, **insurance mechanisms** have emerged as a way to hedge against project failure. For instance, if a company purchases credits from a project that later fails to deliver the promised emissions reductions, insurance can compensate for the loss. This development indicates a maturing industry and provides a safety net for buyers.

Altogether, the carbon market is rapidly evolving, and countries like India are well-positioned to leverage these innovations to build robust and credible systems for carbon mitigation.

Findings from the ADBI Survey on Asian Financial Regulators and Carbon Markets

In February 2023, the Asian Development Bank Institute (ADBI) conducted a survey to assess the awareness and policy actions of financial regulators in Asia concerning voluntary carbon markets. The survey engaged twelve financial regulatory agencies from across the region and explored their current practices, disclosure requirements, and regulatory approaches related to carbon credits.

One key area of inquiry was whether regulators are requiring corporations to disclose information about their carbon credit use. Notably, 64% of the regulators indicated that they ask companies to disclose whether the carbon credits they purchase are **technology-based or nature-based**. This suggests a growing recognition of the need for transparency in how credits are sourced and categorized.

Furthermore, 36% of the regulators reported requiring companies to disclose whether the carbon credits they utilize align with the **Core Carbon Principles** developed by the **Integrity Council for the Voluntary Carbon Market (ICVCM)**. This indicates an emerging, though still limited, effort to benchmark corporate practices against globally recognized quality standards.

The survey also asked whether regulators currently mandate, or are planning to mandate, compliance with the ICVCM's principles. While a majority—82%—had not yet made a decision on this matter, 18% of the respondents confirmed that they **already require** compliance with the ICVCM standards. This is a promising development, indicating early regulatory commitment in a few jurisdictions.

Another important dimension explored was the **digitization of market infrastructure**. When asked about electronic access to voluntary carbon markets, 27% of the regulators stated they had already implemented some form of electronic system. These systems are crucial for ensuring efficiency, traceability, and oversight within the carbon trading process.

To understand how regulators are addressing quality assurance, the survey asked what measures are being taken to enhance the credibility of voluntary carbon credits. Several regulators reported issuing **national guidelines for carbon offset projects**, despite such markets typically being private-sector led. These guidelines serve as a useful tool for both issuers and buyers to understand the expectations around carbon credit quality.

Moreover, some countries are actively developing **domestic voluntary carbon credit systems**, incorporating specific eligibility and quality requirements. In certain cases, regulators have **adopted internationally recognized standards** such as those from

Verra or the **Gold Standard**, to streamline implementation and ensure quality assurance. However, it was also acknowledged that these global standards may not fully accommodate the unique characteristics or potential of carbon projects in countries like India or within Southeast Asia and China. Therefore, while global standards offer a useful starting point, the development of **country-specific frameworks** may be necessary to capture the full range of viable carbon credit projects.

Finally, regulators were asked about their strategies for preventing **double counting**, a persistent concern in voluntary carbon markets. Several countries are establishing **government-backed national registries**, often managed by national stock exchanges. In some cases, these domestic registries are being **linked to international registries**, such as those operated by Verra and the Gold Standard, to enhance integrity and consistency.

Overall, the findings reveal a landscape of **growing regulatory awareness and gradual institutional development** in support of voluntary carbon markets across Asia. While not all regulators are currently active in this space, the direction is clear: countries are increasingly recognizing the importance of high-quality carbon credits and are taking steps—through disclosure requirements, registry development, adoption of global standards, and quality assurance guidelines—to support robust carbon markets.

This survey was part of a broader initiative launched by ADBI in November 2023. Additional findings, policy-oriented papers, and further resources are available on the ADBI website, including a comprehensive review on the evolving role of carbon markets in Asia.

Saideep:
Thank you, that was very informative. You were able to quickly outline the global scenario and share your own research findings on the impact and process validity. We really appreciate it. I just wanted to ask you one thing, if I may.

Discussion Session led by the Moderator

Question: How effective are carbon markets in delivering real climate benefits?

Shirai's Answer:
It all started with the EU in 2005. The EU has the most established Emissions Trading System (ETS). Now, California also has a very good ETS system as a compliance market. I didn't explain in my presentation how the voluntary carbon market relates to compliance markets, so let me clarify. India is planning to introduce an ETS soon, and here's how it works:

Typically, when an emission trading system is introduced, companies within regulated industries have to transact allowances among themselves. However, around 5% of their required reductions can be purchased from the voluntary carbon market. This is a global

standard. So, the idea is that while companies should do their best to reduce emissions on their own, they can also trade allowances with others or buy credits from the voluntary market.

Looking at California's system, they allow companies to purchase up to 5% of eligible carbon credits from voluntary projects, such as reforestation, but these projects must meet certain certifications. By linking the voluntary market with compliance markets, you can develop a more robust system. California's model is a great example. This is why it's crucial to think about compliance markets when considering voluntary carbon markets, as they are interconnected.

Voluntary carbon markets are huge, and California has many voluntary carbon projects to meet that 5% cap. So, to develop a successful voluntary carbon market, it is important to also develop a compliance market. I've mentioned four main standards, two of which are US-California based, stemming from their system. While voluntary carbon markets are very active, mainly driven by these standards, there are also others. These markets are growing everywhere, including in Latin America, Indonesia, and Asia—I'm sure India is also involved.

Question:
What is the real impact of carbon credits?

Shirai's Answer:

I forgot to address the impact. It's difficult to measure because there have been some scandals. Carbon credits are calculated based on specific methodologies, but if the underlying assumptions are incorrect, the actual impact may be much smaller than expected. There have been issues in the past because of this, which is why we need to develop high-quality credits.

One way to improve the system is by adopting blockchain technology, which makes things clearer. Additionally, we can use AI and satellite imagery. For example, if you're running a reforestation project, AI combined with satellite images can calculate how much carbon is being sequestered and allow for continuous monitoring. This technology makes a huge difference compared to the past when people had to go to the sites to conduct checks, which were often insufficient.

Some large American tech companies, which I won't name, have been very active in this space. They've bought land in the US, started reforestation projects, and used AI and satellite technology to monitor and calculate carbon sequestration. They then use these projects to offset their own emissions.

This is becoming more common. However, because of past scandals and quality concerns, I want to emphasize that India, with its advanced technology and skills, has the potential to create a high-quality market if the right technologies are applied.

Right, exactly.

Question:
How can we avoid greenwashing?

Shirai's Answer:

Greenwashing is still prevalent everywhere. In terms of disclosure, there's corporate disclosure related to greenhouse gas (GHG) emissions, and the standard for this is the International Sustainability Standards Board (ISSB). The ISSB has created a global disclosure standard, and I'm pretty sure India is also showing commitment to this. Just two days ago, we jointly organized a capacity-building workshop with ISSB, where many people from India participated.

The starting point is that companies must disclose what they're doing and how much they emit, based on standardized global disclosure standards. This allows investors to compare companies and helps companies compare themselves to each other. When the ISSB standard asks companies to disclose their GHG emission reduction targets, they must distinguish between gross and net emissions. If they use net targets, companies must clearly state how much carbon they are offsetting, the carbon credits they are purchasing, and whether these credits are trustworthy or not. Disclosure is crucial for transparency.

Another example is green bonds. Many countries issue green bonds, but how do we define what qualifies as "green"? After a company issues a green bond and receives funding, the company is supposed to invest that money into green projects, like renewable energy. However, the real impact of these projects can sometimes be unclear. This is where technology comes into play. Blockchain technology can provide real-time data on how much emissions have been reduced by a carbon project. It makes the impact more transparent and verifiable. Technology, like blockchain, is key to improving the quality and transparency of carbon markets and reducing the chances of data manipulation.

Question:
Is the carbon market's impact limited only to corporations, or does it also affect local livelihoods?

Shirai's Answer:

Imagine if there were no voluntary carbon market. All that would be left would be the UN-based Article 6 carbon credits or compliance markets, but these are not sufficient on their own. If we develop credits for the voluntary carbon market, the buyers will be companies worldwide, and financial investors can create carbon market-related derivatives and other financial assets. Many people can benefit from this.

Without a carbon market, developers would not have access to the necessary funding to start projects. The money simply wouldn't come in. If I say the developers can profit, I mean that they will have access to the capital they need to initiate projects. So, you're right—while governments can regulate the sector through statutory measures, it is the voluntary carbon market system (VCMS) that can truly drive transformation.

In the past, government involvement was minimal, and the voluntary carbon market was mostly a private sector initiative. However, now many Asian countries have realized that this is a way to bring in capital—not just from private companies abroad, but also through partnerships with companies from countries like Japan. For example, a Japanese or foreign company can come to India and collaborate with local developers on carbon offset projects. The developers don't necessarily need to be based in India; the projects can be done together.

Question's from the Audience

Audience's Question:

What is the quality of carbon credits when it comes to short-term and permanent measures? Should there be a distinction between credits from projects involving temporary mitigation, like forest development, and those involving more permanent mitigation?

Shirai's Answer:

Yes, that's why I mentioned the concept of reversibility. If a project is completed and credits are issued, but something like a wildfire happens and the forest is destroyed, then no credits should be given. If carbon credits have already been issued but have not been canceled, the credits may need to be reduced. For example, if the credits were based on an expectation that was not met, they should be adjusted accordingly. This is why monitoring is crucial.

Technology-based projects, such as those that store carbon underground, can also face issues like leakage. This highlights the importance of continuous monitoring to ensure the integrity of the carbon credits.

Question 2:

What role do subsurface carbon storage projects play in accelerating climate goals? Where has the technology gone, and is it practically being done or is it still evolving?

Shirai's Answer:

This technology is called CCS (Carbon Capture and Storage) or CCU (Carbon Capture and Utilization). It's different from DSE (Direct Air Capture), as CCS captures carbon before it enters the atmosphere, whereas DSE removes carbon directly from the air. For

CCS, once the carbon dioxide is captured, it has to be stored underground. Some countries, especially those with gas or coal mining operations, find it easier and more cost-effective to inject captured carbon dioxide into old mining wells, which is what the U.S. has been doing. This method, while still costly, is more affordable than other options.

However, if a new underground site has to be found and developed for carbon storage, it becomes much more expensive. Japan, for example, has experimented with CCS in Hokkaido, but since Japan doesn't have many mining wells, it's not as cost-effective. Japan is exploring agreements with other Asian countries, which might help transfer this technology and make it more feasible.

Audience Question:

Can you shed more light on J-credits and their relevance to India?

Shirai's Answer:

J-credits are a carbon credit system operated by the Japanese government. It's a good system, but it differs from the ICBCM (International Carbon and Business Carbon Market) in terms of principles and processes. Because of this, J-credits are not always accepted internationally, such as by carbon markets in other countries. For India, the more relevant mechanism is JCM (Joint Crediting Mechanism), which is aligned with Article 6 of the UN's Paris Agreement. JCM is internationally accepted and involves collaboration between the Japanese and Indian governments on projects. So for India, it would be beneficial to focus on JCM as it aligns with global standards and provides more opportunities for joint projects.

Audience Question:

Regarding individuals, particularly homeowners: If construction involves significant carbon emissions, can individuals receive a certificate for reducing their carbon footprint, or is it only applicable to corporations?

Shirai's Answer:

In the U.S., some wealthy individuals buy carbon credits generated from projects in places like California as a way to contribute to offsetting their emissions. While it might be more of a contribution than a formal certification, it shows that individuals can participate in carbon credit markets.

For individuals in India, a different approach might be possible. If India develops a greenhouse gas (GHG) emissions framework based on companies, individuals could be incentivized based on the carbon footprint of the products they purchase. For example, consumers could buy products with low carbon footprints, and there could be a system to reward those consumers, maybe through points or some other incentive.

Saideep's Response:

So you're suggesting that the government could incentivize individuals directly. While stock exchanges deal with carbon credits at a higher level, individuals could be rewarded for buying low-carbon products based on their carbon footprints.

Shirai's Response:

Yes, that's exactly it. The government could incentivize individuals through a system that rewards them for purchasing products with low carbon footprints. This doesn't necessarily have to involve carbon credits but could still create a positive impact on reducing emissions at the individual consumer level.

Saideep:
Thank you, Shirai, for such an insightful and engaging conversation. You've certainly shed a lot of light on the complexities and nuances of carbon markets, emissions, and how technology is playing a key role in shaping the future of sustainability. It's clear that there's still a lot of work to be done, but the opportunities are immense.

Thank you once again, Shirai, and to everyone who joined us today. We appreciate your time, your questions, and your commitment to understanding these pressing global challenges. Let's keep this conversation going in our respective communities and work towards a greener, more sustainable future.