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India SMART UTILITY Week 2024

Session 13: Power Markets and Carbon Markets

Driving Decarbonization through Carbon Markets

Presented By

**ROHIT KUMAR, SECRETARY GENERAL,
CARBON MARKETS ASSOCIATION OF INDIA (CMAI)**

Supporting Ministries



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MINISTRY OF POWER
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About Association

- **CMAI is a Section 8 Company**, a not-for-profit making association. It is the only association in India, which is dedicated to working towards enabling India in its journey towards a net-zero future.
- We aim to ensure that all stakeholders in carbon offsets come together to formulate strategic steps that can empower the **country's stride to a net zero future**.
- Knowledge partner for **Ministry of Railway and State Water and Sanitation Mission, Ministry of Jal Shakti** for all Climate Change and Carbon Market consultations.
- Member of **CCUS, Green Hydrogen committee** in NITI Aayog
- Technical committee member for the development of **Green Credit Programme (GCP)**
- CMAI has been selected to serve on **Bureau Of Indian Standards' Subcommittee on Greenhouse Gas and Climate Change**.
- To **represent industry voice**, we have also submitted representations on Article 6, PA Carbon Credit Trading Scheme (CCTS), Green Credit Programme and Carbon Taxation.
- We have also **collaborated (MoU)** with the **AREAS, KUKVC, SEPC, IFGE, WEC India, and VCMI** – for capacity building at the State level and help in generating carbon finance.

VISION

Lead towards a Net-Zero and climate-resilient future



MISSION

To unite all the stakeholders in carbon offsets management to formulate strategic steps to empower the country for a Net-Zero future.

ROAD TO DECARBONIZATION FOR INDUSTRIES



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**Pathway To
Net Zero**

Climate Risk and
Impact Baseline

1

Net Zero Strategy
Development

2

Transparency, Assurance
And Reporting

4

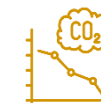
Organizational
Transformation

3

- Identifying and prioritizing climate risks and opportunities
- Understanding and evaluating the strategic sustainability issues for your business
- Measuring and managing sustainability performance
- Alignment of organization's operating model to net zero strategy



Define Net
Zero Target &
Decarbonization
Roadmap



Net Zero
Roadmap &
Track Emission
Reduction

Become Net-
Zero and Track
Achievements



Identifying top
Emission
Sources



Digitization of
Emission Data
& Sources



Inventorying
GHG Activity
Data

LADDERS TO ACHIEVE NET ZERO

Voluntary Carbon Markets (VCM)

Expected to grow to USD 10 Billion in 2030

Valued at USD 2 Billion in 2022

Average price in 2022 of a carbon credit in at all time high value of USD 7.37/ton CO₂e. However, the prices for RE carbon credit the lowest (between USD 2-4 per tonne CO₂ on an average)

PA Article 6

First Article 6 transaction operationalized in Dec 2023

Under Article 6.2, countries can authorize transfer of ITMOs under bilateral or multilateral agreements with other countries. This requires Corresponding Adjustment (CA) to avoid double counting towards NDC targets.

Article 6.4 aims to create a global carbon market overseen by a United Nations entity, however, those credits will unlikely be issued or traded from 2024 at the earliest, as no regulatory body nor a centralized registry are yet in place

CORSIA

CORSIA: first international compliance market by industry sector

126 countries to participate voluntarily in CORSIA's 1st phase (starting in 2024)

CORSIA Phase 1 will create demand of 60 - 160 million credits, likely to result in a significant price premium for eligible credits

In 2027, CORSIA will be mandatory covering over 90% of global emissions from the aviation sector



The current markets available in India		
S.No.	Market Mechanism	Compliance/ Voluntary
1.	Article 6.2 Paris Agreement- International cooperation	Compliance
2.	Article 6.4 Paris Agreement International Compliance Carbon Market will get enabled after COP approvals	Compliance
3.	Domestic Compliance Carbon Market - Carbon Credit Trading Scheme (CCTS)	Compliance
4.	Domestic Voluntary Carbon Market	Voluntary
5.	Green Credit Programme	Voluntary
6.	International Renewable Energy Certificates	Voluntary
7.	National Renewable Energy Certificates	Compliance
8.	Energy Saving PAT Scheme	Compliance
9.	CORSIA aligned International	Compliance
10.	Plastic Credits for National Market	Compliance
11.	Plastic Credits for International Market	Voluntary
12.	International Voluntary Carbon Market	Voluntary

Article 6.2

- Article 6.2 – Encourages sovereign trade among countries, through bilateral / multilateral cooperation to achieve NDC targets (ITMOs)
- Gol's under Article 6.2, notified 13 technological activities for trading of carbon credits under bilateral/ cooperative approaches

Article 6.4

- Article 6.4 – Encourages private / businesses participation in Carbon Offsets generation, either through Corresponding Adjustment (CA), counted towards NDCs (ITMOs) or without CA – 'mitigation contributions', similar to Voluntary Carbon Credits

National / Regional ETS

- Indian Carbon Market (ICM) is launched. ICM will spur mobilization of investments for transition to low-carbon pathways. It will help India in achieving the NDC goal of reducing Emissions Intensity of the GDP by 45 percent by 2030 against 2005 levels.
- Various National & Regional ETS' active around the globe, EU ETS, Korean ETS, and China ETS.
- Indian ETS focus is on Intensity / Per-capita emissions of outputs; Other major ETS are absolute emissions target driven.

Voluntary Carbon Market

- Driven by corporate actions towards carbon neutrality
- Accounted for corporate carbon footprint reductions commitments and ESG.
- Maintained by reputed international Voluntary Carbon Registries – VERRA, GS, GCC, Puro Earth etc.
- India is leader with approx 30% share in voluntary carbon market, globally, expected to reach \$250 billion by 2050 and have potential to drive \$75 billion FDI in India

Key Takeaways

1. Country Negotiations failed to adopt two key texts on compliance market modalities and international trade.
2. There is a lack of clarity regarding the next steps for advancing UN led carbon markets
3. The implications on much needed decarbonization and private participations will be severe.

Article 6, Paris Agreement updates from



Subject	Title	COP 28 Decision
Article 6.2	Bilateral Trading of ITMOs	Not Agreed
Article 6.4	Carbon Compliance Markets	Not Agreed
Article 6.8	Non Market Approaches	Agreed

Key Opportunities

1. The VCM with a renewed uniform integrity approach, has a greater space and crucial role to play.
2. VCM will gradually get recognition as countries' approved ITMOs
3. All independent market regulators coming together in a standardized approach to upside supply integrity of carbon offset, paving the way of carbon to transition from regulatory derivatives to a financial derivatives.

COLLABORATIONS FOR HIGH-END TECHNOLOGIES ENHANCING INTERNATIONAL COOPERATIONS

India is at a crucial juncture in terms of its goals and pledges and such high end technologies will require both **capacity building and financial assistance** from developed nations, hence Article 6.2 of PA will play a crucial role.

I. GHG Mitigation Activities:

1. Renewable energy with storage (only stored component)
2. Solar thermal power
3. Off- shore wind
4. Green Hydrogen
5. Compressed bio-gas
6. Emerging mobility solutions like fuel cells
7. High end technology for energy efficiency
8. Sustainable Aviation Fuel
9. Best available technologies for process improvement in hard to abate sectors
10. Tidal energy, Ocean Thermal Energy, Ocean Salt Gradient Energy, Ocean Wave Energy and Ocean Current Energy
11. High Voltage Direct Current Transmission in conjunction with the renewal energy projects

II. Alternate Materials:

12. Green Ammonia

III. Removal Activities:

13. Carbon Capture Utilization and Storage

To achieve a pledge towards NetZero by 2070, decarbonized India will be a widespread adoption. Even the small efforts towards the transition of Greener Economy while formulating roadmaps for these technologies is imperative and will help industries to grow towards climate neutral goal.

The international cooperation through Article 6.2 of Paris Agreement will enhance financial assistance and develop skills for these high end technologies

OTHER CARBON PROJECT OPPORTUNITIES



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Renewable energy

Biogas, Biomass/Biochar, Wind, Hydro, Solar, Geothermal, Others

01



Energy Efficiency

Energy efficiency, Fuel switching, Energy Efficiency - Industrial, Others

02



Household & Community

Clean water, lighting efficiency, Clean cookstoves, Biogas community, cookstove & water purification, Energy efficiency, Rural Solar

03



Waste disposal

Waste to energy, Waste gas avoidance, Waste gas recovery, recycling, Others

04



Transport

Public transportation, Shipping, Others

05



Agriculture

Sustainable agriculture, Live stock methane, Grass land / wetland management

06



Forestry & Land use

Urban Forestry, Soil Carbon, improved forest management, Avoided forest conversion, Agro forestry, Afforestation/ Re-forestation / Re-veg, REDD+all, Others

07



Blue Carbon

Mangrove preservation / Mangrove forestry

08

CASE STUDY FOR SOLAR PUMP (1/2)




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CMAI is closely working as a knowledge partner for State Water and Sanitation Mission to aggregate the projects and help in generating carbon credits for community based initiatives.

- Jal Jeevan Mission is envisioned to provide **safe and adequate drinking water** through individual household tap connections by 2024 to all **households in rural India**.
- In some places, the water is pumped up by the **energy generated by the solar Pump**.
- Solar based water supply projects were **initiated 1.5 years ago-** with **45% central, 45% state, and 10% community participation**.
- The total capacity of solar pump- based water distribution will be **more than 1 GW in UP**.
- The associated objectives are:
 - Creation of basic infrastructure for sustainable water supply in the area
 - Improvement in sanitation & health conditions
 - Improvement in the quality of water as well as life

 **State Water & Sanitation Mission**
Namami Gange and Rural Water Supply Department
Government of Uttar Pradesh
Kisan Bazar, Vibhuti Khand, Gomati Nagar, Lucknow - 226010

Ref No. 3618 / JJM / 2023-24 Date: 25 November, 2023


To,
Secretary General,
Carbon Markets Association of India (CMAI),
511A, World Trade Centre, New Delhi-110001

Sub:- [REDACTED] State Water and Sanitation Mission for identification and evaluation of carbon credit projects and explore opportunities to achieve the Net-Zero by 2070.

Dear Sir,

In reference to your letter No CMA/98/2510/2023 dated 25.10.2023. State Water and Sanitation Mission (SWSM), UP will be obliged to have your Non-Financial Assistance for identifying the future upcoming carbon/green credit projects related to Jal Jeevan Mission, Uttar Pradesh to achieve the goal of becoming carbon neutral emitter by 2030.

Thanking You,

Yours faithfully,

(Brijraj Singh Yadav)
Executive Director

CASE STUDY FOR SOLAR PUMP (2/2)



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- Tentative Credits generated by one Pump = 25
- Tentative Credits generated by 15091 pumps = 3,97,525 No's

Note: The credits are excluding the Project Emission

Total Capacity of Solar Pump STATIONS PROPOSED to be installed	1	GW
Plant Load Factor (PLF)	18	%
Electricity Generated by Solar Plant	180	MW
	1170	MWh (6.5hrs/day)
	427050	MWh/year
	397157	tCO ₂ /year
Total Number of Pumps	15901	No's

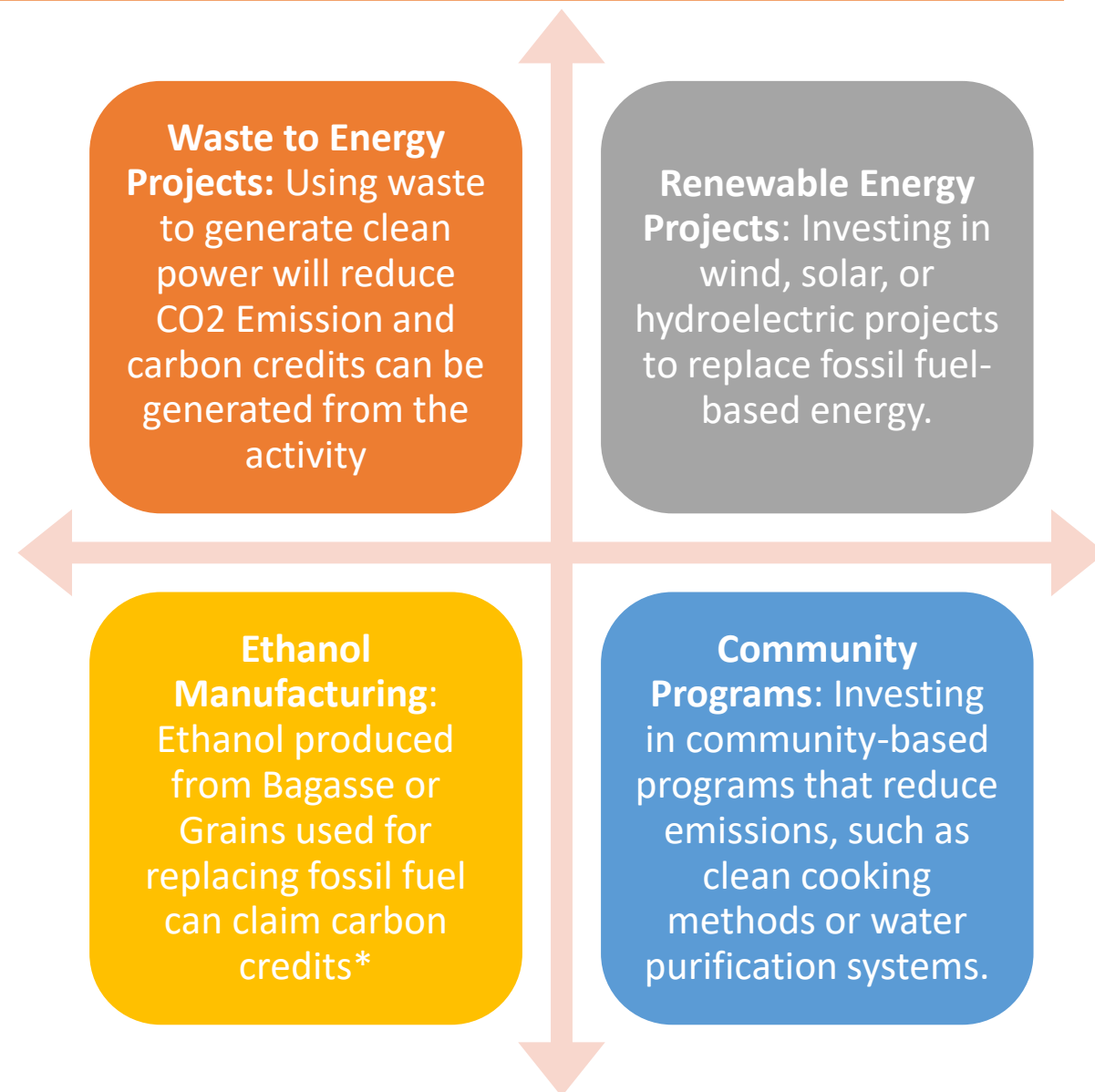
CASE STUDY FOR BIOMASS



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1. **Bio-Ethanol Manufacturing:** 5178 Credits can be generated annually from a 3000 TPD project.
2. **Land Fields to Electricity Generation-** Land fields to other uses like “electricity generation in a boiler which replaces coal” generate 0.9 credit /ton of biomass.
3. **Biomass Pellets-** Paddy Pallets used for burning instead of fossil fuel can generate 250-300 credits/tonne of Pellets
4. **CNG to Bio CNG-** For 3000 TPD bio CNG produced per day will generate 7210 CC
5. **Fuel Switch from Diesel to Bio-Diesel-** Total Biofuel Produced 3000 tons in a year will generate 9523 CC



- India requires an investment of **\$10.1 trillion** to achieve its net-zero emissions target by 2070, underscoring the necessity of mobilizing private capital alongside public funds to meet this ambitious goal.
 - The **Voluntary Market** can play crucial role to meet these requirements and should be promoted by GOI for trading of VCM credits.
 - The **Green Credit Programme** will play important role for the participation of individuals and entities. However, the demand creation, initial fund raising by GOI should be an important step for boosting demand in such initiatives.
- **The taxation on carbon credits should be exempted**, the export of carbon credits under the voluntary market scheme enables India to earn **added foreign exchange revenues** and contributes significantly to the **country's forex earnings every year**. This step **would reduce administrative burdens** on exporters, ensuring that the benefits of their efforts are realized more efficiently.
- The **inclusion of Nature-based Climate Mitigation Solutions** and **Community-based Clean Energy Projects** in the 'Activities finalised to be considered for trading of carbon credits under **Article 6.2**' as Notified by NDAIAPA on 17th February 2023.
- **Knowledge sharing and capacity building** of the industries to help them in their decarbonisation goal by suggesting sustainable practices for reducing GHG emissions and with the help of carbon offsetting projects as non-financial assistance is crucial

KEY TAKEAWAYS / RECOMMENDATIONS



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- Opportunity for India to be **more transparent** and **win the stakeholder confidence** for which **increasing the integrity of carbon credits plays crucial role**. The key proposed activities within the partnership are as followed-
 - **Enhancing the position of India to participate in international carbon markets**, benefit from technology transfer and access result-based climate finance to achieve the goals of the Paris Agreement;
 - **Enabling high-integrity and fair carbon finance flows** to India which contribute to national economic, social, climate, and biodiversity prosperity in the country;
 - **Facilitating access to market mechanisms and climate finance investment** opportunities at the national and sub-national level;
 - **Sharing and expanding networks across the public and private sector** to facilitate the scaling up of high-integrity carbon finance activities.

CMAI-VCMI also working on report for Driving Change Enhancing Carbon Markets in India

VCMI Voluntary Carbon Markets Integrity Initiative



THANK YOU

*For discussions/suggestions/queries email: **isuw@isuw.in**
visit: www.isuw.in*