

International Standards, Issuance and Verification Bodies

Post Project design phase, where the developer provides information about the project's anticipated emissions reductions, plans for quantifying and monitoring the delivery of climate and other social and environmental benefits, these bodies validate the plans and assumption for emission reductions in the projects and after the project has been implemented and monitored over a period of time, another audit process called "verification" assesses the delivery of greenhouse gas mitigation. Post this, tradeable offsets are handed out to the developers to be traded. Some international bodies that deal with issuance, verification and validation of such projects are:

VERRA | American standard registry | Gold Standard | ART

2. Proposed phase wise approach for creation of VCM in India

To overcome barriers of ESCerts market and to encourage voluntary entities to participate in meeting NDC commitments of India, it is proposed to initiate development of voluntary carbon market (VCM) in India. The key policy objective for introducing a VCM in India is to support achievement of the Indian Nationally Determined Contribution (NDC) under the Paris Agreement. Additional objective includes generation of demand for surplus ESCerts issued under the PAT program.

PAT program, which covers around 1073 designated consumers (consuming around 50% of primary energy) in 13 sectors, is proposed to be considered as the base over which voluntary carbon market can be developed. PAT is proposed since, the extensive policy development and implementation learnings of BEE has developed a fully functional mechanism acceptable to various stakeholders, with detailed rules for estimating DC specific targets, normalisation factor, issuance, trading, and other relevant regulations. Hence, it is suggested to keep the basic structure and underlying mechanism same, while updating policy and market rules to develop VCM in India.

Approach for development of VCM in India from existing PAT scheme is provided in figure below. The proposed implementation for the planned Voluntary Carbon Market (VCM) in India is spread over three phases, as mentioned below:

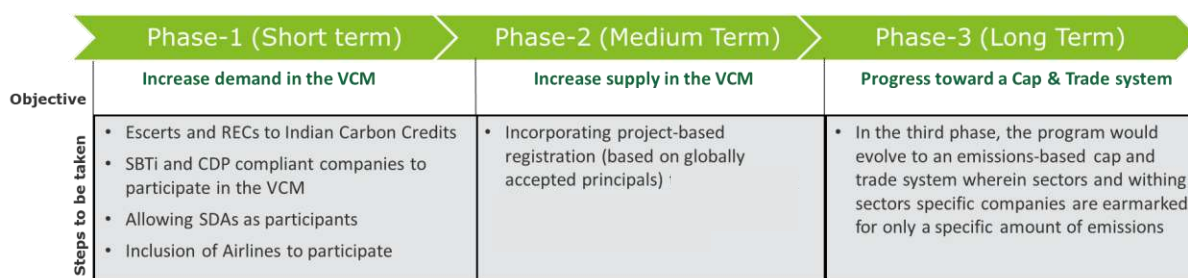


Figure 9: Proposed phase wise approach for India VCM

The details to be covered under each of the phases is mentioned in the following sections:

2.1 Phase-1: Increasing demand in the VCM

This phase focusses on increasing the demand in the existing ESCerts market, by focusing on making the instrument more fungible, adding more participant into the pool, and linking other markets in India with the proposed VCM. The overview of the phase-1 operations is shown below:

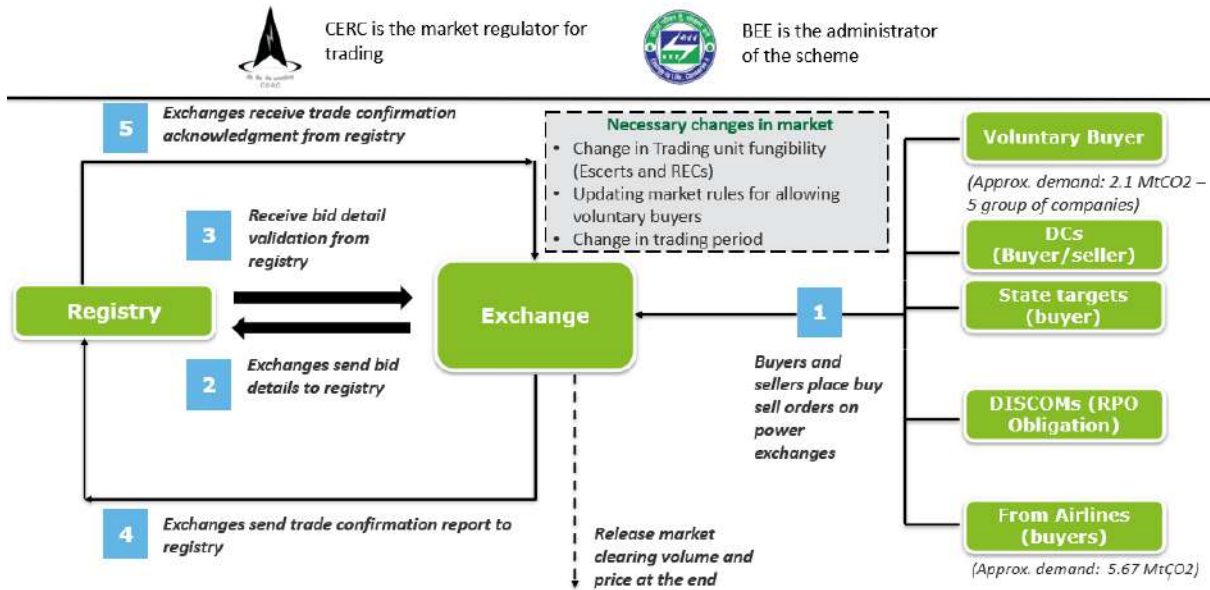


Figure 10: Phase-1 overview

- The demand would stem from 5 principle sources – Voluntary buyers, existing DCs part of the PAT Scheme, inclusion of State Designated Agencies (SDAs) to participate in the VCM, DISCOMs – who have RPO obligations and inclusion of the airlines sector as a whole.
- As mentioned previously, the voluntary buyers, in the form of corporate agencies in India, could be made a part of the VCM. With existing companies having ambitious targets under global initiatives like SBTi and more companies expected to join in the future, this segment can be a lucrative demand side pull in the envisaged market
- There has been an increasing concern across the globe regarding the growing emissions from the airlines industry. The Carbon Offsetting and Reduction Scheme for Aviation (CORSIA) is one such scheme developed by the International Civil Aviation Organization (ICAO) that requires airlines and other aircraft operators to offset any growth in CO₂ emissions above 2020 levels (while this is currently in the voluntary phase, it will become mandatory post 2026). In the Indian context, domestic flights by the Indian airlines led to 11.8 Million tons of CO₂ emissions, while their international flights led to 7.05 Million tons of CO₂ emissions in 2019 (~65% rise from 2012 levels). Thus, bringing in Airlines and Airport operators into the VCM would provide them with the avenue to comply with international regulations as well as act as a source of demand for emission reduction units⁶ (ERU) in the market
- State 's / City's desirous of raising their ranking on the index (or to gain competitive advantage vis-vis others) can chooses to encourage use measures for energy efficient procurement.
- With strict enforcement and increasing RPO compliance requirement, DISCOMs with RPO obligations may become a potential demand in proposed VCM
- For inclusion of such demand side participant, it is envisaged that three critical policy and/or market rule changes would be essential
 - Change in trading unit fungibility for both EScerts and RECs

⁶ ERU or emission reduction unit terms is used to represent trading unit for emission reduction equivalent to 1 metric tonne of CO₂ equivalent. The policy makers and market developers may choose appropriate name for this instrument, which developing fungibility rules.

- Updating of PAT market rules to allow voluntary players to be part of the buyer/seller pool
- Change in trading period

2.2 Phase-2: Increasing supply in the VCM

This phase focusses on increasing the supply in the VCM market post completion of phase-1 changes. The crucial supply side push would come from project level registration and their proper validation, verification and issuance of emission reduction units (ERU). The overview of the phase-2 operations is shown below:

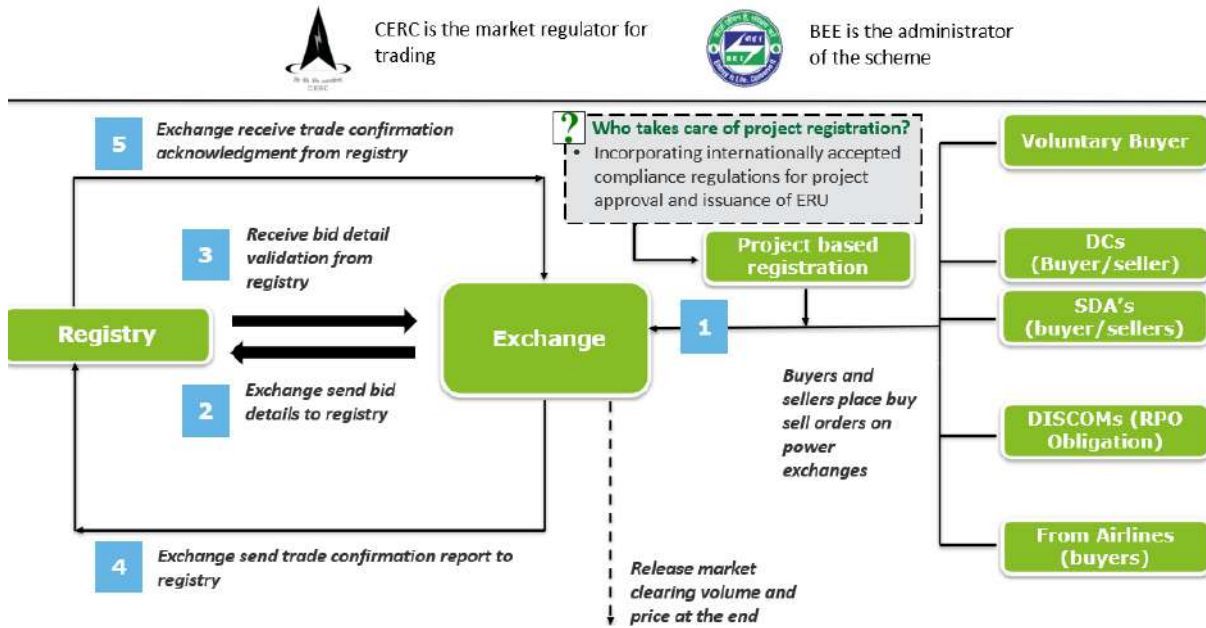


Figure 11:Phase-2 overview

Here, specific activities of participants are credited. I.e., a project-specific reference case is established for each activity. For emission reduction activities, this will be done in a simple manner applying a greenhouse gas intensity factor to the production in question. The intensity factor will be derived from performance benchmarks. For CCS the reference case will be zero sequestration. Once implemented,

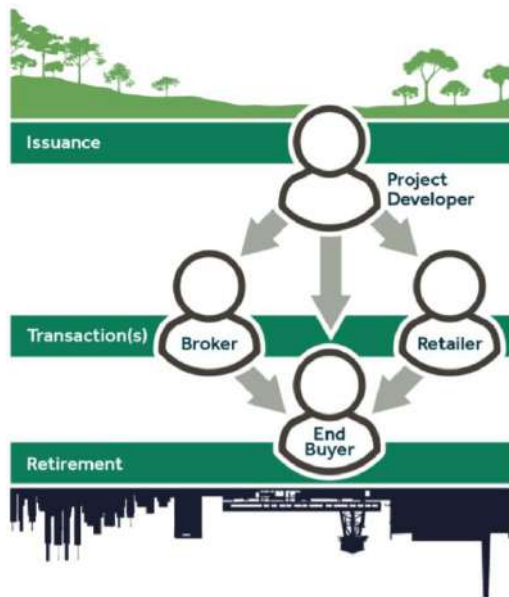
the performance of the activity will be monitored, and respective amounts of credits issued by the regulatory body.

In order to generate credit, a project developer must complete a rigorous process in order to ensure that real, quantifiable emissions reductions have been achieved. Although the process can vary, most follow a similar series of steps:



Producing a Carbon Credit

Once the project developer has decided on their project activities, they begin to work on a Project Idea Note. This first step focuses on early-stage preparations, like generating a project plan, assessing the project’s feasibility, impacts, and risks, and/or engaging with local stakeholders.



Next, the project developer makes more concrete plans in a Project Design Document. The developer provides information about the project’s anticipated emissions reductions, plans for quantifying and monitoring the delivery of climate and other social and environmental benefits, and a demonstration that the project’s activities exceed “business-as-usual” reductions and avoids emissions leakage.

These plans and assumptions are then “validated” by a third-party auditor. After the project has been implemented and monitored over a period, another audit process called “verification” assesses the delivery of greenhouse gas mitigation. Only after the project has successfully passed each of these steps can the project developer begin to issue tradeable credits.

Figure 12: Life cycle of a Carbon Credit

2.3 Phase-3: Moving to a Cap-and-Trade System

This phase focusses on moving to a cap and trade system wherein sectors and within sectors specific companies are earmarked for only a specific amount of emissions

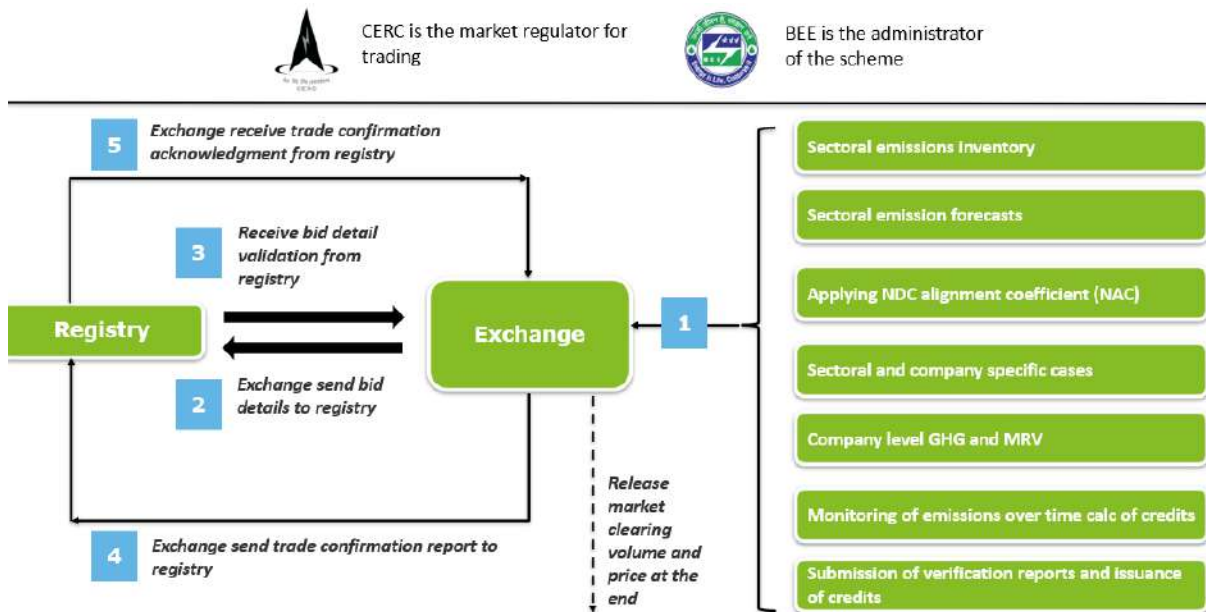


Figure 13: Phase-3 Overview

In this approach, an entity-specific GHG-emissions intensity factor is determined (e.g. t CO₂/MWh electricity output, or t CO₂/t aluminium) for the current situation. Then, the expected sectoral growth for the next years will be used to determine “business as usual (BAU) emissions” for the first crediting period of the scheme, as a preliminary reference. In order to achieve alignment with the Indian NDC, an NDC-alignment coefficient (NAC) will be introduced. E.g. if the Indian NDC specifies a reduction of 30% compared to business as usual (BAU), then the NAC should be 0.3. Alternatively, the alignment could be undertaken according to the competitiveness situation of each sector, or abatement costs/potentials. Crediting will be based on actual production volumes (ex-post-determination) to which the NAC will be applied.

In order to participate, each entity needs to set up a GHG emissions inventory and MRV scheme. This approach is comparatively easy to implement and maintain because a high number of different measures can be captured by only one parameter (t CO₂/unit of output). It would allow large companies to address their entire value chain with a comparatively simple, high-level approach. Such an approach has not yet been applied in any credit and offset scheme worldwide, thus would make the Indian scheme a first-of-its-kind. The proposed scheme in Phase 3 is similar in design as EU ETS, details about the same is provided in annexure 1.

3. Suggestions for how to resolve select ESCerts market barriers

In this section, suggestions on how to upgrade PAT to develop voluntary carbon market in India with regards to trading instrument, cycle duration, target type and participation of voluntary buyers has been discussed. Suggestions provided in subsequent paragraphs are indicative and non-exhaustive.

3.1 Fungibility between ESCerts and emission reduction units (ERUs) (Short term: 1 to 3 years)

Existing:

At present in PAT rules, after satisfying the correctness of verification report and check verification report (wherever applicable), Bureau of Energy Efficiency, recommends issuance of Energy Saving Certificates to DCs based on claim raised by Form A, as per following formula:

For thermal power plants

No. of energy saving certificates = (Heat rate notified for target year – Heat rate as achieved in the target year) X Production in baseline year

For other sectors

No. of energy saving certificates = (Specific energy consumption notified for target year – Specific energy consumption as achieved in the target year) X Production in baseline year

The value of one energy savings certificate is equal to one metric tonne of oil equivalent of energy consumed.

Proposed:

To make the unit of trading compatible for voluntary buyer/sellers, it is proposed to make ESCerts fungible with ERUs. The value of one ERU is equal to one metric tonne of CO₂ equivalent of emission.

Fungibility of ESCerts and ERUs may be developed by using appropriate conversion factors. Estimation of conversion factor for a specific DCs may be done using following formula

Emission Reduction Units (ERU) (Nos) = Conversion factor of specific DC X ESCerts (Nos.)

Conversion factor of a specific DCs (tonne of Co2 equivalent emission per mtoe) =

$$\frac{\text{Annual CO2 emissions by DCs in target year}}{[(\text{SEC target} - \text{SEC actual in target year}) \times \text{Production baseline year}]}$$

Annual CO2 emissions by DCs in target year=

{[Emission factor of fuel 1 (tonne of Co2 per tonne of fuel) X Quantity of fuel 1 consumed in target year (tonne)] + [Emission factor of fuel 2 (tonne of Co2 per tonne of fuel) X Quantity of fuel 2 used in target year(tonne)] + [Emission factor of electricity used (tonne of Co2 per million units) X Quantity of electricity used in target year(million units)] + [Emission factor of fuel N (tonne of Co2 per tonne of fuel) X Quantity consumed in target year (tonne)]

This approach estimates conversion factor at designed consumer level, so there will be sperate conversion factor for each DCs.

To further clarify conversion factor during and after trading period, it would be pragmatic to convert ESCerts to ERU well before the actual trading, so that, DCs have visibility on available tradable units and may plan accordingly. This can be done through communication of appropriate DC specific conversion factors to registry (POSOCO).

Applicability and potential way forward

- For DCs, already holding ESCerts, may be issued with such instruments, calculated by multiplying existing ESCerts with DC specific conversion factor. After issuance of equivalent emission reduction units (ERU), ESCerts held earlier will expire.
- For DCs, already provided compliance requirement for ESCerts, will be communicated compliance requirement in terms of emission reduction units (ERU). In case the DCs has already met part compliance through purchase or banking of ESCerts, balance compliance may be converted to emission reduction units (ERU).
- For future, the issuance to DCs may be done in form of such instruments only, by making appropriate changes in sector proforma and PAT forms.

Verification of emission factor for various fuels, may done during monitoring and verification studies using NABL reports (ultimate analysis for carbon content of fuel).

3.2 Yearly compliance, issuance, and trading (Short term: 1 to 3 years)

As per PAT rules, "cycle" is the period of three years available to a DC to achieve / exceed the energy consumption norms and standards. At present, issuance, and trading ESCerts happens only during limited duration of each PAT cycle and it is one of the barriers for proposed voluntary carbon market development. Some of the major limitations coupled with three-year cycle are listed below:

- Compliance occurs once in three year, therefore a number DCs, who are not part of a specific compliance cycle, may remain non active in trading sessions
- With limited participation, the value of market clearing volume (MCV) and market clearing price (MCP) may not reflect the actual market position
- Accounts of DCs registered with exchanges and registry, become dormant during non-trading years.

To overcome this challenge, it is proposed to change the cycle period from three years to one year. Almost all other carbon markets (example EU ETS) operates annually, which ensures regular trading of carbon instruments.

For conversion of three-year compliance cycle to one-year compliance, there are two approaches:

- Approach 1: Conversion of three-year compliance targets into yearly target for compliance and issuance, as per provisions provided in PAT rules 2012, clause 12, sub clause (2).
- Approach 2: Issuing of yearly compliance targets to DCs.

Formula of approach 1, as mentioned in PAT rules 2012 are provided below for reference:

- i. **Energy saving certificate to be issued after year 1** = $\{[\text{Specific energy consumption of baseline year} - (\text{specific energy consumption of baseline year} - \text{specific energy consumption of target year}) \div 3] - \text{specific energy consumption achieved in year 1}\} \times 80\% \times \text{production in baseline year}$
- ii. **Adjusted specific energy consumption after year 1** = $\text{specific energy consumption notified for target year} - (\text{energy saving certificate issued in year 1} \div \text{production in the baseline year})$
- iii. **Energy saving certificate to be issued after year 2** = $\{[\text{Specific energy consumption of baseline year} - (\text{specific energy consumption of baseline year} - \text{specific energy consumption adjusted after year 1}) \times 2 \div 3] - \text{specific energy consumption achieved in year 2}\} \times 80\% \times \text{production in baseline year}$
- iv. **Adjusted specific energy consumption after year 2** = $\text{specific energy consumption adjusted after year 1} - (\text{energy saving certificate issued in year 2} \div \text{production in the baseline year})$
- v. **Energy saving certificate to be issued in the target year** = $\{[\text{Specific energy consumption of baseline year} - (\text{specific energy consumption of baseline year} - \text{specific energy consumption adjusted after year 2})] - \text{specific energy consumption achieved in the target year}\} \times \text{production in baseline year}$