



Carbon Credits

For Prelims: [Carbon credits](#), [Carbon markets](#), [Hydrofluorocarbon](#), [Paris Agreement](#), [Kyoto Protocol](#), [Greenhouse gases](#), [Greenwashing](#)

For Mains: Carbon Markets and Their Effectiveness, Environmental Integrity and Greenwashing in Carbon Markets, Carbon Credit Market in India

Source: [IE](#)

Why in News?

A recent study in *Nature journal* reveals that **only 16%** of carbon credits result in **actual emissions reductions**, casting doubt on the effectiveness of carbon markets.

- As the 29th [Conference of the Parties to the United Nations Framework Convention on Climate Change \(COP29\)](#) prioritizes new carbon trading mechanisms, this study raises critical concerns about the reliability of emissions reduction claims.

What are the Key Highlights of the Study?

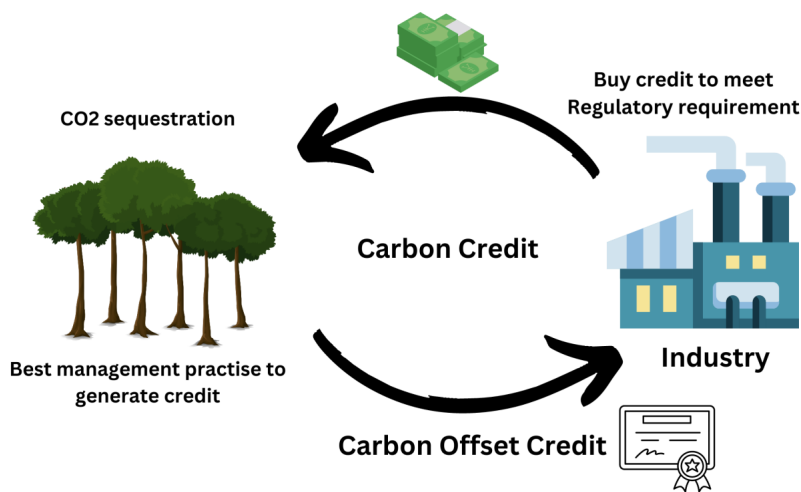
- Ineffectiveness of Carbon Credits:** The study analyzed projects generating **carbon credits** equivalent to one billion tonnes of Carbon dioxide (**CO₂**) under [Kyoto Protocol, 1997 mechanisms](#), and revealed that **only 16% of these credits corresponded to actual emissions reductions**.
- HFC-23 Abatement Success:** The most effective emissions reductions were observed in projects focused on the elimination of [Hydrofluorocarbon \(HFC\)-23](#), a **potent greenhouse gas**.
 - Around 68% of credits from these projects resulted in actual emissions cuts, making them the most successful among the projects reviewed.
- Challenges with Other Projects:** Avoided deforestation projects only resulted in a 25% effectiveness rate.
 - An "avoided deforestation project" is a conservation effort that **protects forests from being cleared**, preventing the release of CO₂ that would occur if the trees were cut down.
 - [Solar cooker deployment projects](#) showed even lower effectiveness, with just 11% of credits leading to emissions reductions.
- Flaws in Assessing Additionality:** The study found that many projects under the **Kyoto Protocol** failed the "**additionality**" rule, meaning emissions reductions could have occurred without the revenue from carbon credits.
 - Additionality** requires projects to **reduce emissions beyond what would have happened in a business-as-usual scenario**.
 - The study highlighted flaws in current assessments, with many Kyoto mechanisms issuing credits for non-additional reductions, undermining emission claims.
 - These issues emphasise the need for more robust carbon trade mechanisms under the [Paris Agreement, 2015](#) with progress expected at **COP29** in Baku.

- **Recommendations:** The study calls for **stricter eligibility criteria and improved standards and methodologies** to quantify emission reductions.
 - Projects with a **high likelihood of additionality should be prioritised.**
 - The study stresses the need for **robust carbon trading mechanisms** under the **Paris Agreement**, with safeguards to ensure credits reflect real emissions reductions.

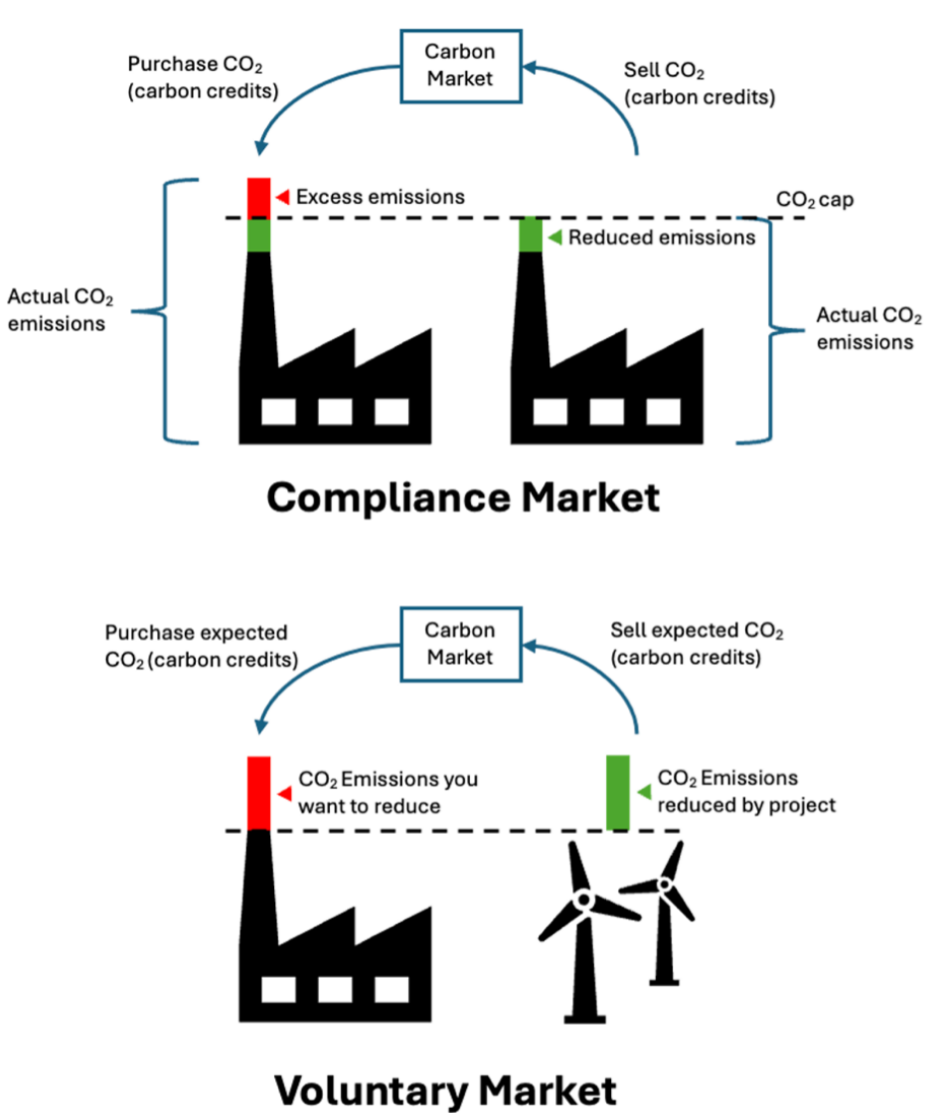
What are Carbon Credits?

- **About:** Carbon credits, or carbon offsets, refer to **carbon emissions reductions or removals**, measured in **tonnes of carbon dioxide equivalent (tCO₂e)**.
 - The concept of carbon credit, introduced in the **Kyoto Protocol, 1997** and reinforced by the **Paris Agreement, 2015** aims to reduce **greenhouse gases (GHG)** emissions through **carbon trading**.
 - Each carbon credit permits the emission of **one tonne of CO₂** or its equivalent.
 - These credits are generated by projects that **absorb or reduce carbon emissions** and are certified by international bodies like the **Verified Carbon Standard (VCS)** and the **Gold Standard**.

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- **Carbon Markets:** The carbon markets established under the **Paris Agreement** aim to create **more robust, reliable systems** for trading carbon credits and ensuring transparency in emissions reductions.
 - Under **Article 6 of the Paris Agreement**, countries can work together, **transferring carbon credits** from emission-reducing projects to help other countries meet their climate goals.
- **Types of Carbon Markets:**
 - **Compliance Markets:** Established through **national or regional emissions trading schemes (ETS)**, where participants are legally obligated to meet specific emission reduction targets.
 - These markets are driven by regulatory frameworks and impose penalties for non-compliance.
 - Participants include governments, industries, and businesses, all of whom must meet emissions limits set by the authorities.
 - **Voluntary Markets:** In voluntary carbon markets, there is no formal obligation to reduce emissions.
 - Participants, such as companies, cities, or regions, voluntarily engage in carbon trading to offset their emissions and meet sustainability goals, such as achieving climate neutrality or net-zero emissions.
 - This is often done as **part of corporate social responsibility (CSR)** initiatives or to gain a market advantage by showcasing environmental responsibility.



- **Benefits of Carbon Credits:** Projects that aim at forest protection or sustainable land management can preserve **critical habitats**, **animal and plant species**, and **promote ecosystem services**. Carbon credits can also play a **role in financing sustainable projects**.

THE CORE CARBON PRINCIPLES

A. GOVERNANCE

Effective governance
The carbon-crediting program shall have effective program governance to ensure transparency, accountability, continuous improvement and the overall quality of carbon credits.
Tracking
The carbon-crediting program shall operate or make use of a registry to uniquely identify, record and track mitigation activities and carbon credits issued to ensure credits can be identified securely and unambiguously.
Transparency
The carbon-crediting program shall provide comprehensive and transparent information on all credited mitigation activities. The information shall be publicly available in electronic format and shall be accessible to non-specialised audiences, to enable scrutiny of mitigation activities.
Robust independent third-party validation and verification
The carbon-crediting program shall have program-level requirements for robust independent third-party validation and verification of mitigation activities.

B. EMISSIONS IMPACT

Additionality
The greenhouse gas (GHG) emission reductions or removals from the mitigation activity shall be additional, i.e., they would not have occurred in the absence of the incentive created by carbon credit revenues.
Permanence
The GHG emission reductions or removals from the mitigation activity shall be permanent or, where there is a risk of reversal, there shall be measures in place to address those risks and compensate reversals.
Robust quantification of emission reductions and removals
The GHG emission reductions or removals from the mitigation activity shall be robustly quantified, based on conservative approaches, completeness and sound scientific methods.
No double counting
The GHG emission reductions or removals from the mitigation activity shall not be double counted, i.e., they shall only be counted once towards achieving mitigation targets or goals. Double counting covers double issuance, double claiming, and double use.

C. SUSTAINABLE DEVELOPMENT

Sustainable development benefits and safeguards
The carbon-crediting program shall have clear guidance, tools and compliance procedures to ensure mitigation activities conform with or go beyond widely established industry best practices on social and environmental safeguards while delivering positive sustainable development impacts.
Contribution to net zero transition
The mitigation activity shall avoid locking-in levels of GHG emissions, technologies or carbon-intensive practices that are incompatible with the objective of achieving net zero GHG emissions by mid-century.

What are the Concerns Regarding Carbon Credits?

- **Non-Adherence to Additionality:** Carbon credits should only be given for projects that achieve **emissions reductions beyond what would have happened naturally**. This concept is known as **additionality, a core principle of Carbon Credits**.
 - Due to lack of clear additionality rules, credits are given to projects that would have reduced the same amount of emissions anyway, making the **carbon market less effective**.
- **Greenwashing:** Some companies claim carbon credits as a way to appear environmentally responsible without making substantial changes to their operations, a practice known as **greenwashing**.
 - This undermines the **credibility of the carbon credit market** and can mislead consumers and investors about the actual environmental impact.
- **Market Transparency:** Lack of transparency in how carbon credits are generated and traded can raise doubts about the **legitimacy of the market**.
 - Lack of real-time tracking and independent audits weakens the system's integrity, leading to issues like **double-counting emissions reductions**.
- **Inequitable Access:** Developing countries may face barriers in accessing resources or **technology to participate** in carbon credit generation, limiting their ability to benefit from the market. This can perpetuate inequalities in the global climate effort.
- **Key Challenges Facing India's Carbon Credit Market:**
 - **Industry Readiness & Compliance Costs:** The high cost of monitoring and verification systems limits smaller projects in India, especially **Micro, Small and Medium Enterprises (MSMEs)**, which generate around **110 million tonnes** of CO₂ annually, hindering their participation in the carbon market.
 - **Regulatory and Oversight Mechanisms:** **India's carbon market**, while **still in its early stages**, requires strong enforcement and an alignment with both domestic and international standards to be effective.

India's Initiatives Related to Carbon Credit

- **Nationally Determined Contributions (NDCs):** India updated its **NDCs** in 2023 to include the establishment of a **domestic carbon market**.
- **Energy Conservation (Amendment) Act, 2022:** Provides the legal framework for the **Carbon Credit Trading Scheme (CCTS)**. It empowers the Indian government to establish a **domestic carbon market** and to authorise designated agencies to issue **carbon credit certificates (CCCs)**.
 - The CCTS is a unified **Indian Carbon Market (ICM)** established to reduce GHG emissions through the trading of carbon credit certificates.
- **Perform, Achieve and Trade (PAT) scheme**
- **Renewable Energy Certificates (REC)**
- **Green Credit Programme.**
- **Monitoring and Verification:** The **Bureau of Energy Efficiency (BEE)** and the **National Steering Committee for Indian Carbon Market (NSICM)** are responsible for ensuring the integrity of the carbon credits through rigorous monitoring, reporting, and verification processes.

Way Forward

- **Strengthen Additionality:** Implement stringent additionality criteria to ensure credits represent genuine emissions reductions.
 - Ensure transparency through real-time tracking and third-party verification.
- **Focus on Proven, High-Impact Projects:** Prioritise projects like HFC-23 abatement that have demonstrated high emissions reduction effectiveness. Avoid low-impact projects with poor success rates.
- **Establish Robust MRV Systems:** Invest in scalable monitoring, reporting, and verification (MRV) systems, especially for smaller projects. Collaborate with international standards like VCS or Gold

Standard to ensure credibility.

- **Align with International Standards:** Ensure compliance with Article 6 of the Paris Agreement and integrate global carbon market standards.
 - Provide financial and technical support to developing regions to participate effectively in carbon markets.

Drishti Mains Question:

Evaluate the concept of carbon markets. How do flaws in additionality impact the integrity of carbon credit systems?"

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims

Q. Consider the following statements (2023)

Statement—I: Carbon markets are likely to be one of the most widespread tools in the fight against climate change.

Statement—II: Carbon markets transfer resources from the private sector to the State.

Which one of the following is correct in respect of the above statements?

- (a) Both Statement—I and Statement—II are correct and Statement—II is the correct explanation for Statement—I
- (b) Both Statement—I and Statement—II are correct and Statement—II is not the correct explanation for Statement—I
- (c) Statement—I is correct but Statement—II is incorrect
- (d) Statement—I is incorrect but Statement—II is correct

Ans: B

Q. The concept of carbon credit originated from which one of the following? (2009)

- (a) Earth Summit, Rio de Janeiro
- (b) Kyoto Protocol
- (c) Montreal Protocol
- (d) G-8 Summit, Heiligendamm

Ans: B