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India's Carbon Credit Trading Scheme: Beyond Compliance Towards Competitiveness and Market Confidence



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The world has come a long way from recognising the need for conscious business decisions having minimal impact on the environment. Infact, global governments, industries, and investors are creating ways to enable business decisions while managing carbon footprints as high emitters are being viewed to pose real financial and operational risks.

India is also not left behind in this realisation and hence, over time the Government has taken strong policy decisions to embark the country on path of green businesses and transition. The country has come a long way from 2004 when for the first time India submitted its first National Communication (NATCOM-I) on Climate Change to UNFCCC. Since then, India has been an active contributor to the global combat against climate change and despite of being an emerging economy having the need for its own energy security, has taken some very notable decisions including determination of Nationally Determined Contribution (NDCs) while making them measurable and aligning them to global needs of reducing carbon footprint.

In its string of actions, India has taken yet another significant step with the launch of the country's very own Carbon Credit Trading Scheme (CCTS) in 2023 through the Energy Conservation (Amendment) Act of 2022. Although the main purpose of this scheme is to reduce emissions, its effects will go further than regulating emissions. Over time, this scheme will have implications for how businesses will invest, innovate, and compete within a low carbon economy.

India has come a long way with first step in 2004 when India submitted its first national communication on climate change to UNFCCC and since then the steps have only grown firmer with India showing its commitment in COP 15, Paris Agreement in COP 21 and most recently updated NDCs.

What is CCTS?

The Carbon Credit Trading Scheme (CCTS) is a market-based policy instrument which is aimed to accelerate the transition towards a low-carbon economy by assigning an economic value to greenhouse gas (GHG) emission reductions. Under the scheme, industries and enterprises are assigned emission reduction or intensity targets by a regulatory authority and the entities that achieve reductions beyond their prescribed targets, they earn positive points in the form of carbon credits. These carbon credits then can be traded with organizations that are unable to meet their obligations. This creates a financial incentive for emission reduction while allowing the overall cap to be met cost-effectively.

Why this scheme is being viewed as an important enabler and a way of pricing the emissions while moving towards a net zero economy? To put it simply, where on one hand the scheme mobilizes business investment in clean technologies, it also channels financial resources towards climate-friendly projects without relying solely on public funding. This has advantage for all stakeholders. Nationally, it supports India's climate commitments, including its NDCs and the goal of achieving net-zero emissions by 2070 by fostering innovation, attracting climate finance, and promoting sustainable industrial growth. For businesses, the scheme rewards efficiency by encouraging companies to invest in cleaner technologies, or process improvements so that their carbon savings can be monetised improving both competitiveness and balance sheets. For society, carbon markets drive faster adoption of clean energy, reduce air pollution and create green employment particularly for vulnerable communities near industrial zones.

The Carbon Credit Trading Scheme (CCTS) is a market-based policy instrument which is aimed to accelerate the transition towards a low-carbon economy by assigning an economic value to greenhouse gas (GHG) emission reductions. On one hand the scheme mobilizes business investment in clean technologies, while having advantage for all stakeholders – government, business and society.

India's Journey Towards a Carbon Market

The introduction of CCTS is not the first step for India in adopting a Carbon Market. This system has been formed over many years through policy trial and error and from experience building up the institution prior to climate change and carbon trading initiatives - 'Perform, Achieve and Trade' (PAT) scheme. Introduced by the Bureau of Energy Efficiency (BEE) in 2012 allowed for the reduction of emissions by heavy energy-based industries through energy

efficiency improvements by creating specific reduction targets and developing a system to sell and trade Energy Saving Certificates (ESCs). The implementation of the PAT led to certificates surplus as efficiency improvement could be anything causing difficulty in price equilibrium of ESCs. Also, ESCs rewarded improvements in energy efficiency rather than reductions in overall greenhouse gas emissions which may still increase if production expands. For a country like India, ESCs had very limited applicability as everything had to be scaled to production. These key limitations led to the development of CCTS.

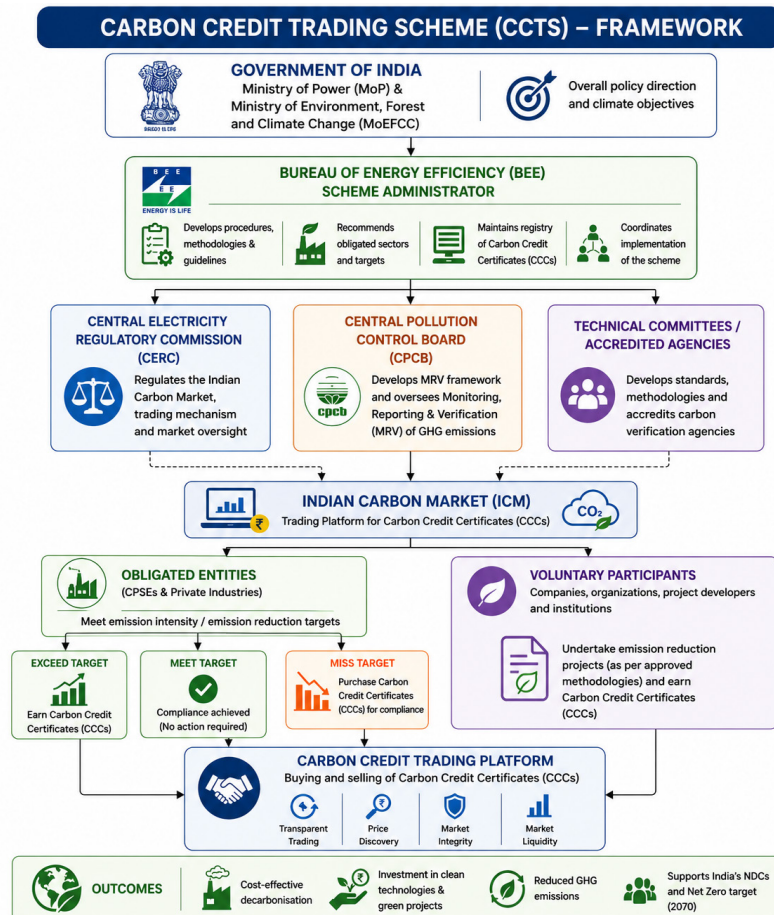
Unlike PAT, CCTS measures and rewards actual greenhouse gas (GHG) emission reductions. Further, setting cap or intensity targets and linking them to carbon reductions creates a more robust demand for carbon credits thereby enabling supply and demand equilibrium. Further, since CCTS is measurable, it is more widely accepted in global climate finance and carbon markets than ESCs. CCTS also directly supports corporate decarbonisation pathways, ESG reporting, science-based targets, and long-term net-zero strategies.

CCTS builds upon the experience gained through the Bureau of Energy Efficiency's Perform, Achieve and Trade (PAT) scheme launched in 2012. While PAT successfully promoted energy efficiency through Energy Saving Certificates (ESCs), it faced challenges such as certificate surplus, weak price discovery, and a focus on energy efficiency rather than actual greenhouse gas (GHG) emission reductions. The CCTS addresses these limitations.

India's market for CCTS today and its global relevance

Today, the Carbon Credit Trading Scheme forms the backbone of India's emerging carbon market framework. It has been made applicable in nine sectors initially - Cement, Aluminium, Chlor-Alkali, Fertilizers, Paper and Pulp, Iron and Steel, Refineries, Textiles, and Petrochemicals. It forms part of a broader framework that encompasses both a mandatory compliance mechanism, and a voluntary offset mechanism. Under the overall policy and climate objective guidance of Ministry of Power and Ministry of Environment, Forest and Climate Change (MoEFCC), the CCTS platform aims to develop an Indian Carbon Market where industries can buy and sell credits thereby encouraging lower emissions and more greener technologies.

CCTS introduced for 9 sectors as mandatory, rest voluntary as of present - Cement, Aluminium, Chlor-Alkali, Fertilizers, Paper and Pulp, Iron and Steel, Refineries, Textiles, and Petrochemicals



Well, trading of CCTS in the Indian Carbon Markets is all the more needed as carbon markets are a global phenomenon. According to recent analyses, global carbon markets have crossed the US\$100 billion mark, indicating their growing role in climate and economic policy and has strong presence in major economies such as the European Union, United Kingdom, China, New Zealand and South Korea. Carbon Markets are also emerging in Japan, Vietnam, Thailand, Brazil and Indonesia. Hence, with India's own carbon market, a greater linkage between export competitiveness, supply chain participation and investor expectations could be established.

CCTS and its impact on stock markets

While the CCTS is mainly being viewed as a tool to shape environmental and industrial policies, it also has broad reaching impacts across the stock market. This is because, in present times, investors are increasingly looking at how companies are transitioning towards a carbon neutral economy while also analysing the risk policies and strategies of the companies towards climate risks. CCTS compliance and trading will indicate better preparedness of the company towards future climate regulations thereby *strengthening investor confidence and enhancing market valuation*.

Since, CCTS is leading to establishment of a carbon market where the CCTS can be traded actively, it will create *opportunity for additional revenue stream* for companies having met their emission targets.

Further, participation in the *CCTS strengthens a company's Environmental, Social and Governance (ESG)* credentials thereby making it more lucrative for domestic and international institutional investors.

Since, CCTS is a rewarding mechanism, there would be a constant lookout for improvising on *efficiency and innovation*. This would lead to enhanced investment in energy efficiency, renewable energy, green hydrogen, and cleaner technologies which would enable meeting carbon emission targets. Over time, *this constant innovation will reduce operating costs thereby improving margins and long-term financial performance*.

Hence, we can say that where CCTS is to strengthen India's resolve for a greener economy, in the process it would also encourages companies to become more competitive, innovative, sustainable, and resilient, thereby improvising there operational and financial performance which would enable them to improvise their stock valuations.

Hence, aim of CCTS is not to have immediate returns but rather change the way businesses make future investment decisions and how competitive they are in their sectors.

CCTS is mainly being viewed as a tool to shape environmental and industrial policies, it also has broad reaching impacts across the stock market:

- *Strengthening investor confidence*
- *Enhancing market valuation.*
- *Additional revenue stream*
- *Attract domestic and international institutional investors*
- *Innovation at economies of scale over time*

Carbon Market for Indian Public Sector

While CCTS is relevant for all corporate sector but it has a greater significance for the Public Sector Enterprises (PSEs). PSEs in India largely operate in carbon-intensive sectors such as power generation, oil and gas, coal, steel, mining, fertilizers, heavy engineering, and transportation and given their hard to abate inherent nature, account for a substantial share of the country's industrial energy consumption and emissions. Further, due to their scale, technological capabilities, and influence on supply chains, PSEs have a multiplier effect on the broader economy. Hence, it has been time and again acknowledged that they are central to India's decarbonisation journey.

For PSEs, the CCTS offers an opportunity to modernize operations, improve resource efficiency, and generate financial returns from sustainability initiatives. Investments in renewable energy, energy efficiency, green hydrogen, carbon capture technologies, circular economy practices, and digital energy management can reduce compliance costs while creating valuable carbon credits. Beyond commercial benefits, CPSEs have a strategic national responsibility. With socio-economic agenda, PSEs are expected to lead by example in implementing national priorities, including climate action and sustainable development. Hence, their active participation in the CCTS can demonstrate the commercial viability of low-carbon technologies, encourage wider industry adoption, stimulate innovation, and support the development of India's domestic carbon market while enhancing investor confidence, attracting climate finance, and reinforcing India's credibility in global climate negotiations.

CCTS provides PSEs with an opportunity to modernize operations, improve resource efficiency, and generate financial returns through carbon credits while investing in clean technologies. Beyond commercial gains, PSEs have a strategic responsibility to lead India's climate action by demonstrating the viability of low-carbon technologies, promoting wider industry adoption, attracting climate finance, strengthening investor confidence, and supporting the development of a robust domestic carbon market.

The first mover advantage

One of the most important messages emerging from the CCTS is that early action matters. According to publicly available reports on CCTS, the initial emissions-intensity reduction targets are relatively modest. However, these early targets are foundational and are likely to become more stringent over time as India progresses towards its climate goals. More importantly, it is important to look at the potential cost of inaction. Various market modelling suggests that companies that fail to decarbonize could face significant compliance costs under future carbon pricing scenarios. In the iron and steel sector, for example, a representative company could face potential financial implications exceeding INR 3,000 crore by 2030. In aluminium, the figure exceeds INR 1,100 crore, while refineries could face costs of approximately INR 272–278 crore. Even sectors traditionally viewed as less emissions-intensive, such as textiles and paper, could experience growing financial exposure if emissions remain unchecked. These figures should not be viewed as predictions. Rather, they illustrate an important principle: delaying decarbonization may become increasingly expensive.

For PSEs these are particularly relevant. Many of the sectors currently covered under CCTS including refineries and petrochemicals have a significant PSE presence. However, even enterprises outside the scheme's initial compliance framework should view CCTS as a signal of the direction in which industrial policy is evolving.

CCTS underscores the importance of early decarbonisation. While the initial emission-intensity targets are modest, they are expected to become more stringent as India advances towards its climate goals. Delaying action could expose companies to significant future compliance costs under carbon pricing, particularly in carbon-intensive sectors such as steel, aluminium, and refining.

Hence, it is important to have the first mover advantage and develop systems aligning to CCTS and encash on the clear opportunities to enhance energy efficiency while reducing an organization's carbon footprint.

The Road Ahead

Today, CCTS is an emerging area having hurdles of lack of awareness, accuracy of data, institutional participants, dedicated regulator for monitoring, reporting and verification of data and participants but its potential and need cannot be challenged. The broader message is clear: carbon readiness is becoming a critical aspect of business readiness; developing inventories of GHG emissions, establishing data management systems for GHG emissions, increasing energy efficiency in operations, and embedding decarbonisation into the long-term business strategy of the enterprise – these are strategic priorities for the enterprise and not of a domain.

The initial targets may appear modest, but they establish the foundations of a much larger transition. The real significance of CCTS lies not only in the carbon credits it creates, but in the signals it sends. It signals that emissions will increasingly matter in business decisions. It signals that operational efficiency and carbon efficiency are becoming closely linked. And it signals that preparedness for a low-carbon economy may become an important determinant of long-term competitiveness. Hence, for businesses and PSEs alike, the question is no longer whether decarbonization will influence future operations. The more relevant question is how quickly organizations can adapt.

Those that begin preparing today through stronger emissions management, strategic investments and credible transition planning are likely to be better positioned for the opportunities and challenges that lie ahead.

*The Carbon Credit Trading Scheme rewards early decarbonisation, strengthens competitiveness, and secures a sustainable future. **Act Early. Decarbonise Today. Lead Tomorrow.***

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