

In India, it is estimated that circular economy may provide opportunities worth \$218 billion per year by 2030. According to NITI Aayog CEO Amitabh Kant, fast increasing human population will raise the total global mineral and material demand from 50 billion tonnes in 2014 to 130 billion tonnes in 2050. For sustainable development, resource efficiency and circularity is imperative.

Produce, consume and discard needs rejuvenation. Resource efficiency and waste management will need to be the key drivers of a green strategy, because it is now the only viable path, capable of creating growth, new enterprises, and a clean environment.



CARBON MARKET

UMESH SAHDEV

India has let the world know its disquiet and approach towards Climate Change by Hon. PM of India announcing India's Climate Change commitments at the Glasgow COP26.

Under the 'Panchamrit' strategy – the Five Elixirs for Climate Change mitigation commitment announced, are:

- Achieve Non-Fossil/Renewable Energy capacity of 500GW by 2030.
- 50% of its energy demands to be met through renewable sources by 2030.
- Reduce Total Projected Carbon emissions by 1 billion tons till 2030.
- Reduce Carbon Intensity of its Economy by 45% by 2030.
- Achieve 'Net-Zero' by 2070.

India's expedition
to 2070 Net
Zero – Case for
Carbon Pricing &
Emissions Trading
Instruments

This is the first time that India has taken any climate targets in terms of absolute emissions, that brackets India as a responsible nation with the mandating developed countries of the world.

It's a very bold and laudable step by a country that has only been responsible for 4% of global emissions but with huge need to grow its economy needing low-cost energy.

The rationale behind these bold commitments has been India's perceived vulnerability for loss of GDP growth due to Climate change effects and to share the commercial benefits from global net zero transition. Transition of the global economy to net zero emissions is history's biggest commercial opportunity. And India would benefit with active participation through suitable investments to reap advantages in technologies of the new economy across the entire value chain of renewable energy, electric mobility, hydrogen transport, e-diesel, sustainable industry and agriculture, smart and green cities.

SOLUTIONS TO FACILITATE NET ZERO- A FIT CASE FOR CARBON PRICING INSTRUMENTS

As for the implementation of India's commitments, the year 2070 may seem a long way off, but actions have to begin now. Major transformations will be needed in many spheres, including identifying prime drivers and major hurdles for this transition.

Designing appropriate national policies will be the prime initiative and requirement to support achievement of such goals. Global experiences have shown that an effective Market mechanism is one of the most cost effective and self-sustaining components of suite of policies designed to achieve climate change goals.

It is proposed to government through appropriate policy interventions, to develop such market mechanism on a national level as soon as possible.

This proposed policy intervention would require development of **Carbon Pricing** instruments in India. Carbon pricing can take the form of Carbon Tax or Crediting, or a Carbon Emission Trading scheme =- a cap-and-trade system that depends on government allotments or permits.

- Carbon pricing is the instrument that captures the external costs of greenhouse gas (GHG) emissions that public has to pay such as damage to crops, health care costs from heat waves and droughts, and loss of property from flooding and sea level rise—and ties them to their sources through a price, in the form of a price on the carbon dioxide (CO₂) emitted.

- A price on carbon helps shift the burden for the damage from GHG emissions back to those who are responsible for it and who can avoid it. A carbon price provides an economic signal to emitters and allows them to decide to either transform their activities and lower their emissions or continue emitting and paying for their emissions.

These are increasingly popular market mechanisms that harnesses market forces to address climate change by creating financial incentives for companies to lower their emissions by switching to more efficient processes or cleaner fuels.

In this way, the overall environmental goal is achieved in the most flexible and least-cost way to society. Placing an adequate price on GHG emissions is of fundamental relevance to internalize the external cost of climate change in the broadest possible range of economic decision making and in setting economic incentives for clean development.

Carbon pricing is a valuable instrument in the policy toolkit to promote clean energy transition. It can help to mobilize the financial investments required to stimulate clean technology and market innovation, fueling new, low-carbon drivers of economic growth, investments in low-carbon technological innovations, foster multilateral co-operation and create

synergies between energy and climate policies.

CARBON PRICING- OPTIONS

The main routes for carbon pricing are emissions trading, crediting and carbon taxes. The choice of approach will be important for government looking to create a carbon price indicator to drive emissions abatement within a sector or multiple sectors of the economy (e.g. industrial, commercial, residential, agriculture, transport). Emissions trading options, Crediting and carbon taxes can each be cost-effective and efficient ways to realize emissions reductions.

EMISSION TRADING SCHEME (ETS)

- Emissions trading involves tradeable units that are used to represent emissions or emissions savings. It can take the form of a cap-and-trade ETS or a crediting mechanism. In an ETS, emissions are capped at predetermined level and the market establishes an emission price necessary to meet that cap.
- In an ETS, the main policy lever available to regulators is control of the volume of emission allowances. This is formulated as a cap and translated into emission allowances that are released to the market either for free or at a charge. Mandated participants are required to

acquire emission allowances equal to their determined emissions over a compliance period and surrender these back to the system administrator

determined by demand/supply balance.

CARBON TAX:

- A carbon tax allows regulators control over the price of carbon emissions; however, it shall have less direct control over the emissions reductions that are actually achieved. It creates a fiscal liability for the emission of GHG, and taxed entities may either incur the liability or reduce it by investing in abatement measures.
- In the same way as for emissions trading, regulated entities are incentivized to abate emissions where it is cheaper than the carbon price, but not where it is more expensive.
- A carbon tax creates a stable price signal for investment in emissions abatement, in so far as the tax rate is known and can be relied upon not to change.

- Crediting may occur at the project or the programme level or involve the development of sectoral or policy-based approaches
- It's an important mechanism to enable financial and technology transfer and can be an effective tool to stimulate the growth of the low-carbon economy.
- Actors may purchase credits either for compliance (targets within the system) or voluntary purposes.
- For carbon taxes the key difference is that the price of emissions is set by policy makers rather than by a market mechanism. The price level determines the level of economically viable abatement and the emissions result that is achieved.

CREDITING MECHANISM

- In crediting mechanisms, emission reductions relative to a baseline or target are credited, which can be for specific projects, sector performance, or the result of policies. The price of credits is

PARAMETERS AFFECTING SELECTION OF RIGHT INSTRUMENT

Following parameters need to be factored in to decide the right instrument for our country:

- **Stakeholders Adaptability** ease of use and understanding of the stakeholders for each one of the instruments.
- **Infrastructure and adaptability**

to existing infrastructure. While Carbon tax can be much easily programmed to utilize existing infrastructure, Emission Trading needs market infrastructure.

- **Monitoring and reporting.** ETSs and carbon taxes require the establishment of robust systems for the monitoring and reporting of emissions, and use of emission reduction credits to ensure compliance.
- **Verification:** Both instruments create the requirement for high-quality confirmation of determined emissions, such as third-party verification. This may require access to a pool of suitably qualified and experienced independent and accredited verifiers.
- **Priority Sectors** that need to be targeted and Priority development objectives for our country will also drive policy decision.

WAY FORWARD—CREATING INDIAN EMISSIONS TRADING SCHEME

Considering the various variables, existing market infrastructure of India' matured commodity trading markets like NCDEX (as Futures contract), which is already trading Carbon Credits, are well set to adapt to any similar system if started in India. Under Kyoto Protocol, India's carbon trading market bagged the second highest transacted volumes

in the world by generating 30 million carbon credits in recent past.

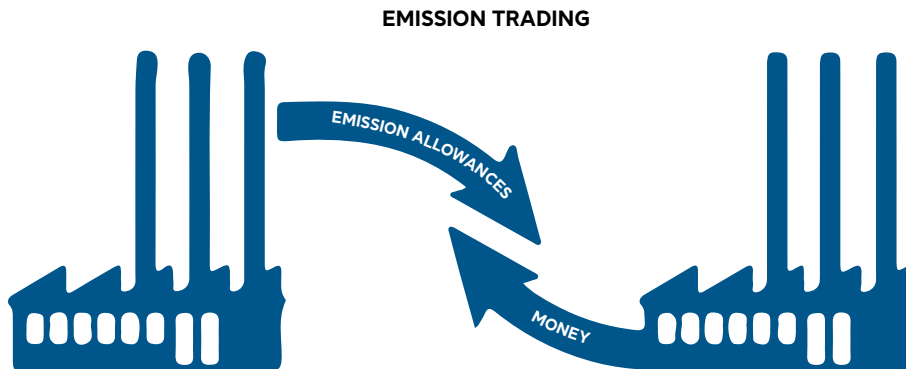
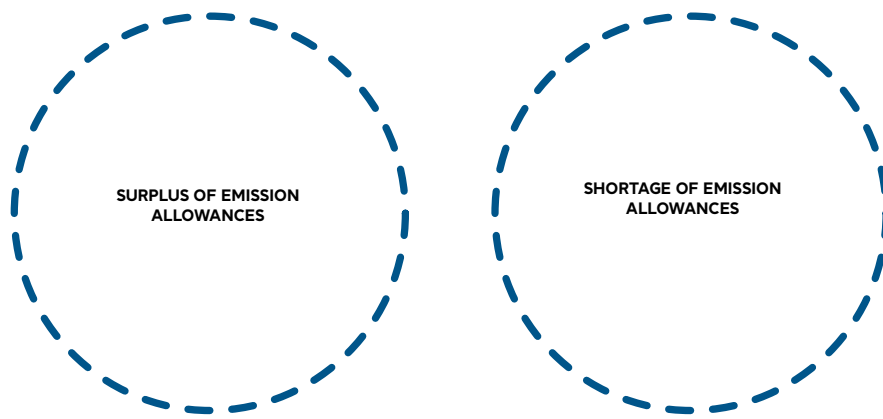
As such we propose that the best approach for our country to achieve rapid decarbonisation would be to start **INDIAN EMISSIONS TRADING SCHEME (Indian ETS)**, as key financial instrument to benefits investment flow in technology and to stakeholders.

The EU ETS has distinctly shown that EU ETS has been the cornerstone of the EU's policy to combat climate change and its key tool for reducing greenhouse gas emissions cost-effectively. It is the world's first major carbon market and remains the biggest one so far.

Emissions trading systems create incentives to reduce emissions where these are most cost-effective. Various global jurisdictions have shown increasing interest in emissions trading systems as a policy instrument to achieve climate change mitigation goals

Emissions trading, also known as 'cap and trade', is a cost-effective way of reducing greenhouse gas emissions. To incentivize firms to reduce their emissions, government sets a cap on the maximum level of emissions and creates permits, or allowances, for each unit of emissions allowed under the cap.

Given below is brief introduction and key aspects of an ETS for the kind consideration of the government.



BENEFITS OF NATIONAL EMISSIONS TRADING SCHEME

- Through ETS it's possible to achieve Climate Change mitigation objectives in terms of emission reductions at the lowest cost.
- ETS would incentivize Technology Innovation for lowest cost technology and processes to enable businesses to be more sustainable.
- ETS could be a more effective and potent tool to combat economic fluctuations.
- EU ETS has shown that Cap and Trade is better policy choice to combat climate change.
- With world-wide spread of Emission Trading schemes large opportunities would be presented to the stakeholders for further benefits.

KEY COMPONENTS OF GHG CAP & EMISSIONS TRADING SCHEME:

The cap is a limit on the total GHG emissions for obligated participants covered by the system over a given period. Emissions allowances are created that represent, normally, one ton of carbondioxide (tCO₂) or ton of carbondioxide equivalent (tCO₂e).

CAP & TRADE

A cap-and-trade programme can work in a number of ways, but as the basics, government issues a limited number of annual permits that allow companies to emit a certain amount of carbon dioxide. The total amount permitted thus becomes the 'cap' on emissions. Companies are taxed if they produce a higher level of emissions than their permits allow. Companies that reduce their emissions can sell, or 'trade,' unused permits to other companies.

KEY ELEMENTS OF EMISSION TRADING SCHEME

The enabling structure for an Emissions Trading Scheme consists of three main elements.

- **System design or Framework**
Functional rules that govern what it will cover and how it will function. These further include:
 - Coverage
 - Target and Cap
 - Allocation Methodology
 - MRV – Monitoring, Reporting and Verification
 - Compliance and Enforcement
 - Flexible Measures
- **Institutional infrastructure**
It covers the implementation systems and regulatory oversight arrangements.
 - Registry
 - Trading Platform
 - Market Oversight

- Regulation and Enforcement

- **Legal basis for the system.**
 - Emission Trading System Legal Foundation.

Thus, an ETS is structured with certain key elements, such as sector and GHG coverage; the cap; allocation of allowances; the monitoring, reporting, and verification (MRV) regime; compliance and enforcement regulations, and flexible measures that support participants or non-participants in managing costs and improving the robustness of the system in the case of unforeseen events such as economic downturns.

INDIA' EXISTING INFRASTRUCTURE FOR EASE OF IMPLEMENTATION:

India has existing well-developed complementary infrastructure including fully developed latest technology within the country to implement ETS at quite minimal additional infrastructure inputs. It, however, requires detailed framework for allocation methodology, implementation, compliance enforcement and legal aspects.

Government can consider various relevant aspects to decide to plan and implement an Indian Emission Trading Scheme for the entire Industry to achieve required Climate Change and Net Zero by our targeted 2070.

While government may take time

for planning, and implementing comprehensive Indian ETS, it is suggested that a pilot ETS for Hydrogen Offset Trading Scheme be started under National Hydrogen Missions at the earliest. It's due to the fact that low carbon hydrogen industry is just getting started and as such would be easier to initiate the scheme as hydrogen-based Carbon Offset base line identification would be easier to define at this time.

HYDROGEN OFFSET TRADING SCHEME

A consensus is fast emerging that hydrogen will play a key role as an energy vector and will be a pillar in the ongoing energy transition to fulfil our commitments to climate change mitigation. Hydrogen is uniquely clean. It promises to accelerate transformative changes across many sectors, help decarbonize industrial processes & economic sectors, where reducing carbon emissions is both urgent and hard to achieve. Fertilizers, oil-refining, heavy industry like steel and heavy-duty transport are some hard sectors that likely will need hydrogen to decarbonize. Transport mobility is one of the major applications of low carbon hydrogen to reduce emissions.

Hence, it is critical for India to take steps to harness the hype of hydrogen to achieve our COP26 Net zero commitment. Through initiation of its National Hydrogen Mission, India has shown its intent and resolve to develop and utilize low carbon hydrogen as

one of the major components of its transiting energy mix for a sustainable and successful tomorrow.

Key to developing low carbon Hydrogen as part of India' net zero transition will require effective cost reducing technologies, hydrogen distribution infrastructure and large investments. For good measure it requires strong well-devised regulatory direction and government's financial support, and thus Hydrogen Offset Trading Scheme will be in the right direction for the benefit of developing holistic Hydrogen Ecosystem.

