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CCUS: A HOPE FOR INDIA TO TACKLE THE IMPACT OF CARBON BORDER ADJUSTMENT MECHANISM IMPLEMENTATION

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INTRODUCTION

'Carbon emissions', the heat trappers are a major contributor to the greenhouse effect causing a rise in the earth's temperature and hence climate change. These are also responsible for causing air pollution which affects the respiratory health of the living beings.

Climate change further creates problems such as extreme weather, forest fires, food supply disruptions etc. Today, the entire world is concerned about reducing the carbon emissions in order to deal with climate change and its devastating effects. One of the ways can be eradicating the use of fossil fuels completely. But it would take around 40 to 50 years for a developing country like India to do so. Therefore, another way of reducing carbon emissions can be Carbon Capture, Utilization and Storage (CCUS). This is a very promising technique and seen as an effective method of dealing with carbon emissions produced by the industries.

WHAT IS CARBON, CAPTURE, UTILISATION AND STORAGE(CCUS)?

CCUS involves the capture of CO2 generally from large point sources such as industries that use either fossil fuel or biomass as fuel. The captured CO2 can be utilized on site or can be transported through pipelines, trucks, ships or rails to be used for various applications. The captured CO2 can also be injected into deep geological forms such as depleted oil or gas reservoir or saline aquifers. In this way, the CO2 released by the industries can help in enhanced oil recovery (EOR) as well.

The main idea of CCUS is to either store or to utilize the CO2 produced by the industries so as to reduce carbon emissions and prevent them from entering the atmosphere.

CARBON BORDER ADJUSTMENT MECHANISM(CBAM)

CBAM is a carbon tariff imposed on imported carbon intensive goods to the European Union. It is the EU's tool to put a fair price on the carbon emitted during the production of carbon intensive goods that enter the EU.

In simple words, if a carbon intensive good produced in a country with less stringent carbon policies is exported to a country with more

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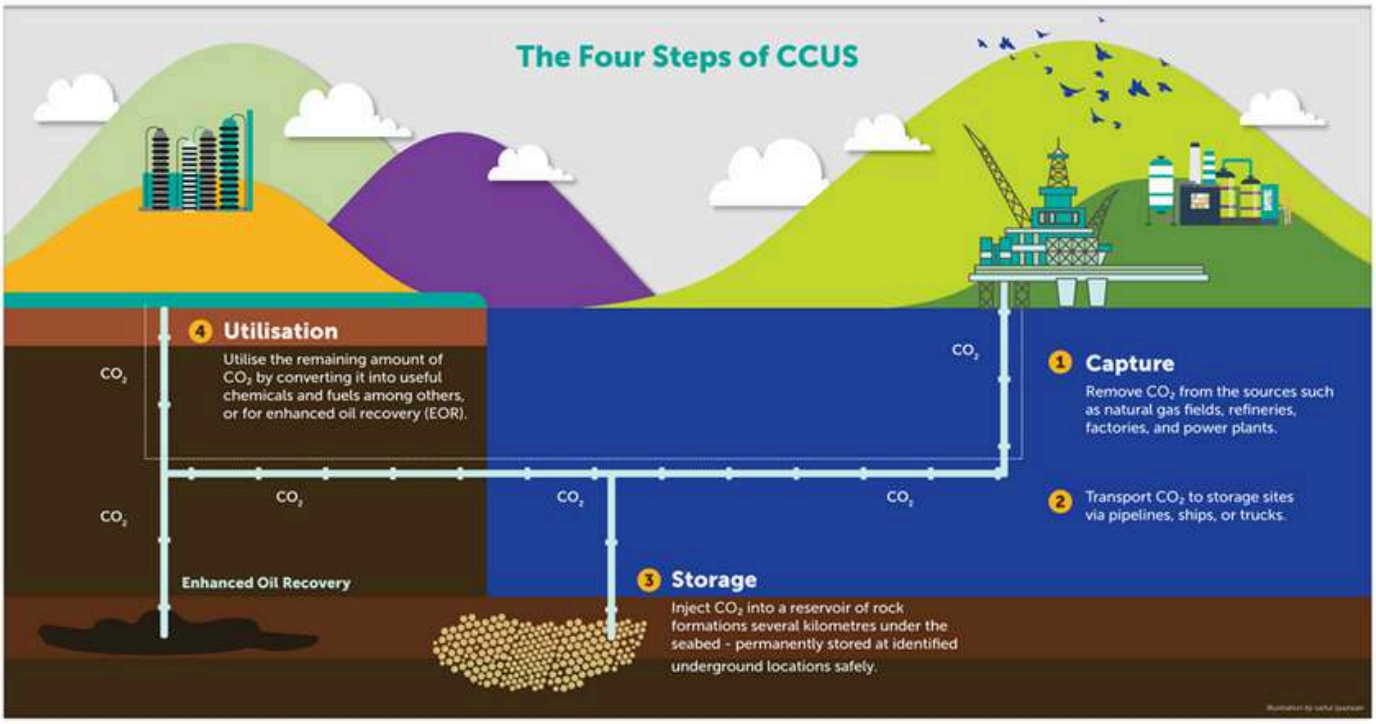

Source: Getting to know CCUS at PETRONAS | PETRONAS FLOW

stringent environmental or carbon policies then the importer has to pay a carbon tax to the EU. The importer has to declare the carbon embedded in the imports and has to surrender the corresponding number of certificates each year. However, if the importer is able to prove that a particular amount of tax has already been paid during the production of the imported goods then that amount can be deducted.

This will help in reducing carbon emissions as the countries would avoid paying tax unnecessarily and will opt for goods embedded with less carbon emissions. Hence, the carbon intensive goods will be preferred less which will ultimately affect the business and such producers will try to adopt measures and technologies to minimize their carbon emissions.

CBAM will ensure that the carbon price of the imported good is equivalent to the carbon price of domestic production. It is a policy to reduce global carbon emissions and ensure fair trade environment by encouraging other countries to have stricter environmental regulations.

Another important aim of CBAM is to prevent carbon leakage, hence, discouraging companies to relocate to the countries with weaker environmental policies.

ROLE OF CCUS IN INDIA FOR CARBON BORDER ADJUSTMENT MECHANISM

India being a large exporter of iron, steel and aluminium to the EU is likely to face a great impact of CBAM implementation on its exports to the EU. India is highly dependent on coal for energy, resulting in more carbon emissions during the manufacturing of the goods. The Carbon Border Adjustment Mechanism will prevent countries from purchasing goods from India which will be embedded with large amount of carbon emissions. They will rather choose to buy from such companies that would have emitted less carbon during the manufacturing of the products which will ultimately save the importer from paying tax to the EU. This is going to affect the Indian trade which will be of huge loss to the country as the demand of the product will decrease due to more carbon emissions as compared to others. Shifting to renewable energy sources and completely phasing out coal is quite impossible for India in such a short span hence, CCUS can be a key for Indian industrialists to reduce carbon emissions during the production.

Capturing the carbon emitted during the goods production to utilize or store it in deep geological forms will help prevent the emitted carbon from going into the atmosphere and hence the

product will be embedded with less carbon which will be preferred by the countries and will aid India to maintain its trade in the international market.

UTILIZATION APPLICATIONS OF CAPTURED CO2

Industries: Captured CO2 can be used in industries to produce synthetic fuels and these fuels can replace conventional fossil fuels which will reduce emissions. This CO2 can also be used in the making of cement, concrete and other construction material reducing their carbon impact.

Chemicals and materials: CO2 can be used to make methanol. It can also be used for making sustainable materials like polymers, conversion of CO, catalytic hydrogeneration of CO2, hydrogen rich syngas, synthesis of olefins and aromatic compounds, and other value-added goods.

Agriculture and food: Can help improve crop growth in greenhouses. In the food industry it can be used to carbonate beverages and extend shelf life.

Algae and biofuels: CO2 can help microalgae to grow which can further be converted into biofuels or animal feed which can reduce reliance on traditional fuels.

Oil recovery: CO2 can aid in enhanced oil recovery, increasing oil production while storing CO2 underground. However, the pros and cons of this approach need careful consideration.

CONCLUSION

Amid changes in global mitigation strategies like the Carbon Border Adjustment Tax in the EU to prevent 'carbon leakage', industries must shift away from the traditional approach to become less carbon-intensive and remain competitive in European markets. Despite the urgency of climate change mitigation actions and the ambitious climate commitments made by various nations, it is expected that more initiatives similar to the EU's Carbon Border Adjustment Tax will arise. As a result, industries are acknowledging the importance of CCUS, but additional stakeholders are required to facilitate the adoption of CCUS technology in India.