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CURRENT AFFAIRS

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Date – 9 August 2023

CARBON CAPTURE AND STORAGE (CCS): MITIGATING EMISSIONS FOR CLIMATE CHANGE

This article covers "Daily Current Affairs" and the topic details "Carbon Capture and Storage (CCS)". The topic "Carbon Capture and Storage (CCS)" has relevance in the Environment section of the UPSC CSE exam.

For Prelims:

About Carbon Capture and Storage?

For Mains:

GS 3: Environment

Applications of Captured CO2?

Challenges in CCS Implementation?

Enhancing CCS Implementation?

Why in the news:

Carbon capture technology is essential for mitigating emissions from sectors such as cement and chemicals. However, its current predominant application is in extracting additional oil from underground reserves.

Carbon Capture and Storage (CCS):

Carbon Capture and Storage (CCS) is a crucial process designed to combat carbon dioxide (CO2) emissions arising from industrial activities and fossil fuel combustion, especially in power generation. The primary objective of CCS is to prevent substantial amounts of CO2 from entering the atmosphere, thereby curbing global warming and climate change.

Approaches to CCS:

CCS consists of two primary methods:

- **Point-Source CCS:** This approach involves capturing CO2 directly at its source, such as industrial smokestacks.
- **Direct Air Capture (DAC)**: DAC aims to remove CO2 already present in the atmosphere.

Mechanisms of Point-Source CCS:

The process of CCS comprises several key steps:

- **Capture:** CO2 is isolated from other gases produced during industrial processes.
- **Compression and Transportation:** Captured CO2 is compressed and transported through pipelines.
- **Injection:** The CO2 is injected deep into rock formations underground, remaining stored for extended periods.

Diverse Applications of Captured CO2:

CCS has various applications, including:

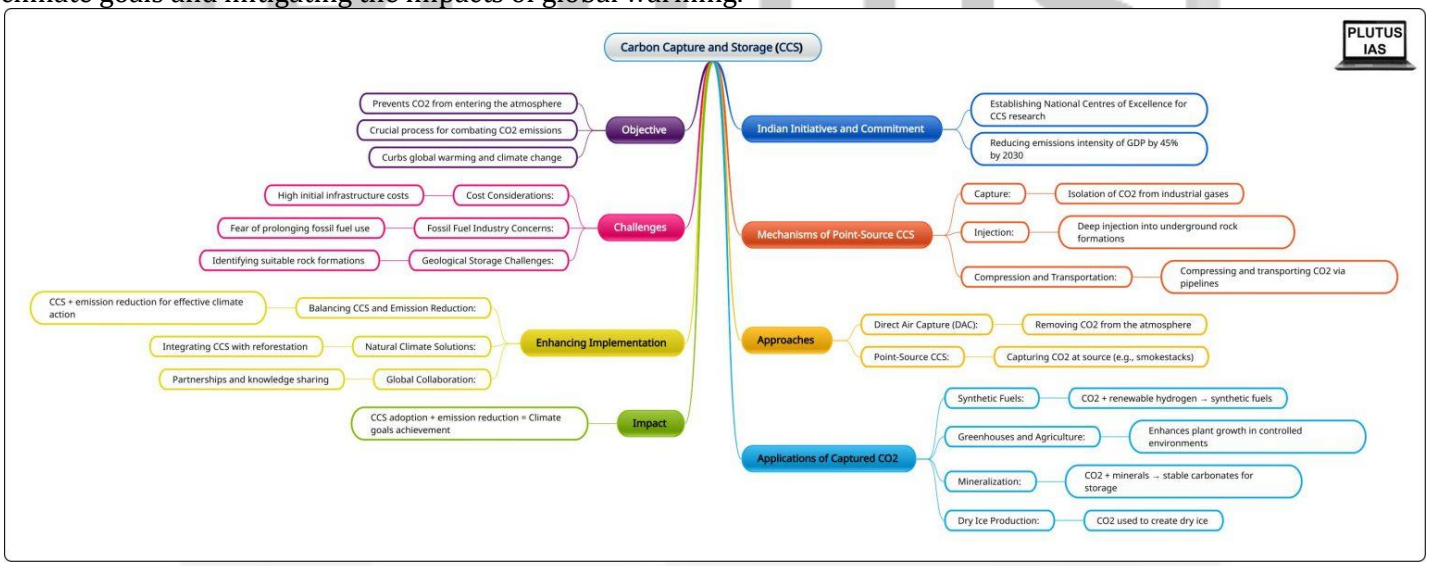
- **Mineralization:** CO2 can be combined with minerals to create stable carbonates for long-term storage.
- **Synthetic Fuels:** CO2 can be combined with renewable hydrogen to produce synthetic fuels.
- **Greenhouses and Agriculture:** Captured CO2 enhances plant growth in greenhouses and indoor farms.
- **Dry Ice Production:** CO2 can be used to produce dry ice for various purposes.

Indian Initiatives:
India is establishing two National Centres of Excellence in Carbon Capture and Utilization to advance CCS research and technology.

Challenges in CCS Implementation:
- **Cost Considerations:** CCS projects entail significant initial costs for infrastructure setup.
- **Geological Storage Challenges:** Identifying suitable rock formations for CO2 storage and preventing leakage is complex.
- **Fossil Fuel Industry Concerns:** Some fear CCS might prolong the use of fossil fuels, hindering the transition to cleaner energy sources.

Enhancing CCS Implementation:
- **Natural Climate Solutions Integration:** Combining CCS with natural solutions like reforestation can boost effectiveness.
- **Global Collaboration:** International partnerships and knowledge sharing accelerate CCS development.
- **Balancing CCS and Emission Reduction:** CCS aligns with the Paris Agreement but must accompany emission reduction efforts to combat climate change effectively.

India's Commitment: In line with its Nationally Determined Contribution, India aims to reduce the emissions intensity of its GDP by 45% by 2030.
By adopting CCS alongside emission reduction strategies, the world can take a significant step toward achieving climate goals and mitigating the impacts of global warming.



SOURCE:
https://indianexpress.com/article/explained/explained-climate/can-we-capture-carbon-and-store-it-8821800/

Q.1 Which of the following is/are advantages of zero tillage in agriculture?
1. Sowing wheat without burning the residue of the previous crop is possible.
2. Direct planting of paddy seeds in wet soil without the need for a nursery of rice saplings is possible.
3. Carbon sequestration in the soil is feasible.

Select the correct answer:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 3 only
(d) 1, 2 and 3
Answer: (d)

Q.2 Which of the following options could serve as potential sites for carbon sequestration ?
1. Abandoned coal seams
2. Exhausted oil and gas reservoirs
3. Underground deep saline formations

Select the correct answer:
(a) 1 and 2 only
(b) 2 and 3 only
(c) 3 only
(d) 1, 2 and 3
Answer: (d)

Q.3 "Discuss the significance and challenges of implementing Carbon Capture and Storage (CCS) technology. Also, examine the ethical and environmental considerations associated with the utilization of CCS technology, and suggest strategies to strike a balance between CCS adoption and the imperative of transitioning to cleaner energy sources."

Rishabh

AMRIT BHARAT STATION SCHEME (ABSS)

This article covers "Daily Current Affairs" and the topic details "Amrit Bharat Station Scheme (ABSS)". The topic "Amrit Bharat Station Scheme (ABSS)" has relevance in the "Governance" section of the UPSC CSE exam.

For Prelims:
What is the Amrit Bharat Station Scheme (ABSS)? Its objectives?
For Mains:
GS2: Government Schemes
GS3: Infrastructure– Railways

Why in the news?
Recently, Prime Minister Narendra Modi inaugurated the start of efforts to revitalize 13 railway stations within the State as part of the Amrit Bharat Station Scheme (ABSS).

Amrit Bharat Station Scheme
The Ministry of Railways has introduced the "Amrit Bharat Station" scheme, a policy for modernising railway stations with a long-term vision. The scheme aims to develop stations continuously by implementing Master Plans based on their needs and usage.

Broad Objectives:
- Prepare Master Plans for railway stations and implement them in phases to enhance facilities beyond Minimum Essential Amenities (MEA) and create Roof Plazas and city centers in the long run.
- Address stakeholders' needs and station usage studies based on available funds and priorities.
- Introduce new amenities and upgrade existing ones.
- Focus on stations where feasibility studies for Roof Plazas have been conducted but not yet constructed, prioritizing Master Plan phasing and relocation of structures and utilities.

Significance:
- Railways – A Crucial Component of National Transportation: India Railways plays a vital role in the country's transportation infrastructure.

- Ensuring Safety and Efficiency through Modernization: To ensure safety and efficiency for both passengers and freight transportation, regular modernization with the latest technologies and amenities is crucial.
- Government's Vision for 'Naya Bharat' – Transforming Railway Stations: The government is actively working to transform railway stations nationwide, aligning them with its vision of a 'Naya Bharat' or New India.

Key Features-

- **Enhanced Amenities**
  - Improvement of station access and circulating areas.
  - Upgrading waiting halls, toilets, lifts/escalators for better passenger experience.
  - Ensuring cleanliness and hygiene at stations.
  - Providing free Wi-Fi for passengers' convenience.
- **Promotion of Local Products**
  - Incorporating kiosks under the 'One Station One Product' initiative to showcase local products.
- **Passenger Convenience and Comfort**
  - Installation of better passenger information systems for improved communication.
  - Establishment of Executive Lounges for premium passenger services.
  - Designated spaces for business meetings within the station premises.
- **Integration and Accessibility**
  - Focusing on landscaping to create a pleasant environment.
  - Integrating the station with both sides of the city for seamless connectivity.
  - Promoting multimodal integration for efficient transportation options.
- **Facilities for Divyangjans**
  - Special facilities and amenities for Divyangjans to ensure inclusivity and accessibility.
- **Sustainability and Eco-Friendly Measures**
  - Emphasizing sustainable and eco-friendly solutions for environmental preservation.
  - Introduction of ballastless tracks for better performance and maintenance.

Additional Information:

One Station One Product (OSOP) Scheme

The Ministry of Railways has introduced the 'One Station One Product' (OSOP) scheme across Indian Railways with the objective of promoting the 'Vocal for Local' vision of the Government of India. The scheme aims to provide a market for local and indigenous products while creating additional income opportunities for marginalized sections of society.

Key Objectives:

- Promote the 'Vocal for Local' vision.
- Provide a market for local/indigenous products.
- Generate additional income opportunities for marginalized sections.

OSOP Outlets at Railway Stations:

- As part of the scheme, railway stations allocate OSOP outlets to exhibit, sell, and prominently feature indigenous and local products.
- These outlets are designed through the National Design Institute to ensure uniformity.

Product Categories:

The 'One Station One Product' scheme offers a diverse range of locally crafted and indigenous products, including:

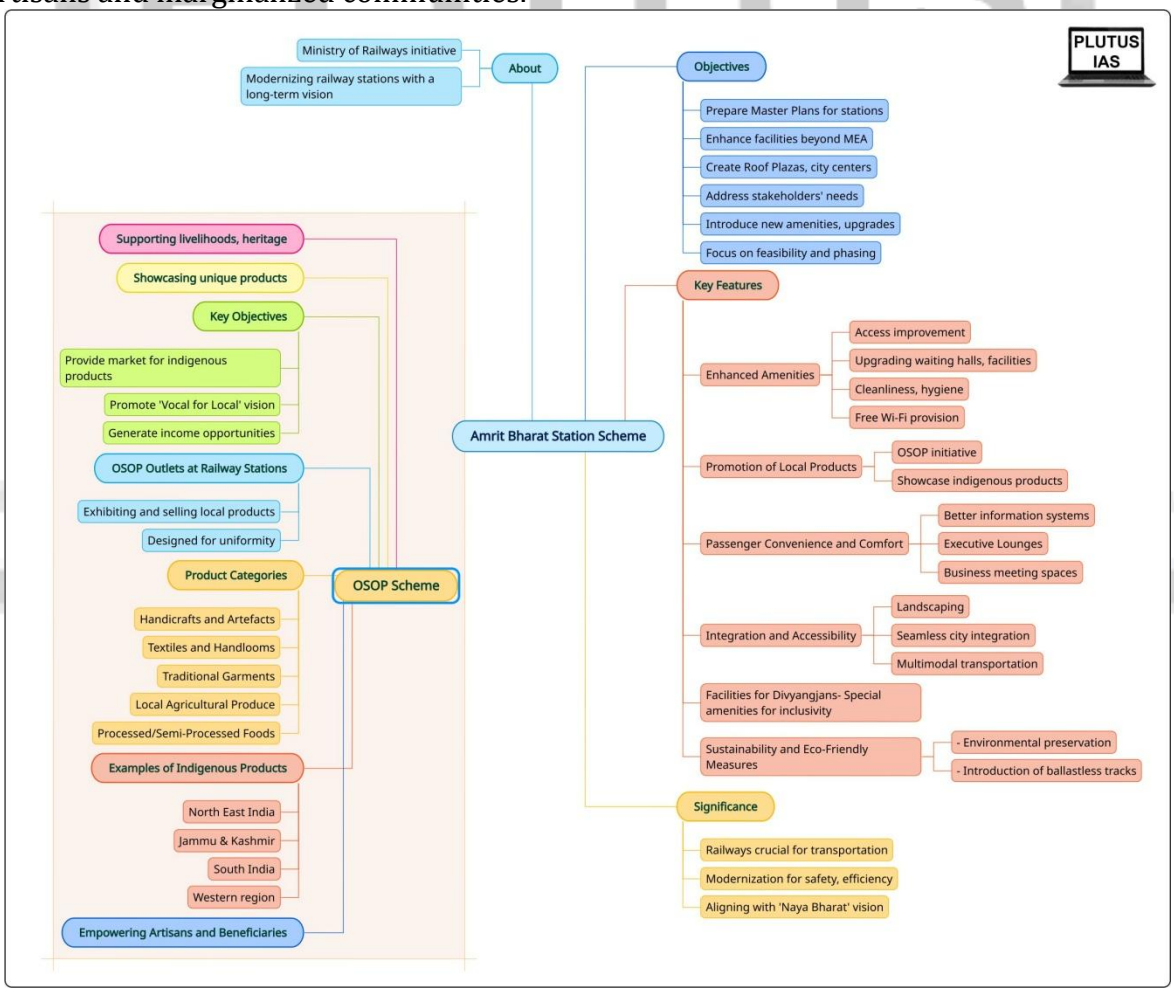
- Handicrafts and Artefacts
- Textiles and Handlooms
- Traditional Garments
- Local Agricultural Produce (including Millets)
- Processed/Semi-Processed Foods

Examples of Indigenous Products:

- Within North East India, OSOP stalls present a diverse range of offerings, including Assamese Pitha in various forms, Traditional Rajbongshi Attire, Jhapi, Local Textiles, as well as Jute Products such as Caps, Gamocha, and Dolls.
- In Jammu & Kashmir, famous products include Kashmiri Girda, Kashmiri Kahwa, and Dry Fruits.
- South India showcases Cashew products, spices, and Chinnalapatti Handloom Sarees.
- In the western region of the country, OSOP stalls showcase items like Embroidery and Zari Zardozi, Coconut Halva, locally cultivated fruits, processed foods, and the traditional textile art of Bandhani.

Empowering Artisans and Beneficiaries:

- The OSOP scheme empowers local artisans and craftsmen, providing them with a platform to showcase their unique products to a wider audience of railway passengers.
- It not only promotes local heritage and traditional craftsmanship but also supports the livelihoods of artisans and marginalized communities.



Sources:

Prime Minister launches Amrit Bharat Station Scheme in 13 railway stations in State via video link from Delhi – The Hindu

Q1. With reference to Amrit Bharat Station, consider the following statements:

1. The Ministry of Railways has introduced the "Amrit Bharat Station" scheme, a policy for modernising railway stations with a long-term vision.
2. The scheme aims to develop stations continuously by implementing Master Plans based on their needs and usage.
3. The scheme focuses solely on the promotion of local products, not on the convenience of passengers.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 2 and 3 only
(c) 3 only
(d) None

Answer: (a)

Q2. Consider the following :

1. The 'One Station One Product' (OSOP) scheme aims to promote the 'Vocal for Local' vision of the Government of India across Indian Railways.
2. The OSOP scheme provides railway stations with outlets to display and sell indigenous and local products.
3. The OSOP scheme does not include Textiles and Handlooms as part of its product categories.
4. The scheme offers diverse product categories, including Handicrafts and Artefacts, Traditional Garments, Local Agricultural Produce, and Processed/Semi-Processed Foods.

How many of the abovementioned statements are correct ?

(a) Only one
(b) Only two
(c) Only three
(d) All Four

Answer: (c)

Q3. Evaluate the role of Indian Railways as a crucial component of the nation's transportation infrastructure. How can the modernization and enhancement of railway stations contribute to ensuring safety, efficiency, and improved passenger experience?

Gaurav Nikumbh