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CURRENT AFFAIRS

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Date – 8 August 2023

BHARATNET

This article covers "Daily Current Affairs" and the topic details "BharatNet". The topic "BharatNet" has relevance in the "Indian Economy" section of the UPSC CSE exam.

For Prelims:

What is BharatNet? Its Objectives? Features?

For Mains:

GS3: Infrastructure

Why in the news?

Recently, the Union Cabinet granted approval for an investment of Rs 1.39 lakh crore to enhance the modernization of the BharatNet project.

BharatNet Project:

- BharatNet stands as the world's largest rural broadband connectivity initiative based on optical fiber technology. The Bharat Net Project was formerly known as the National Optical Fiber Network (NOFN). It was renamed in 2015.
- Its execution falls under the purview of Bharat Broadband Network Limited (BBNL), a specialized entity under the Ministry of Telecommunications.
  - It is a Special Purpose Vehicle (SPV) established by the Government of India under the Companies Act, 1956 with a sanctioned capital of 1000 crore rupees.
- This ambitious program for rural internet access is a crucial component of the Union government's Digital India initiative.

Key Aspects & Advantages of BharatNet:

- Utilizing optical fiber infrastructure, this initiative aims to extend broadband internet **access to over 2.5 lakh gram panchayats nationwide.**
- The goal is to offer a **minimum of 100 Mbps bandwidth** at each Gram Panchayat through BharatNet, ensuring equitable online access, particularly in rural regions.
- Additionally, the project includes the **establishment of Wi-Fi hotspots and other means of last-mile connectivity at all gram panchayats**, facilitating services such as e-governance, e-learning, e-banking, e-commerce, and e-health.
- Expanding the reach of BharatNet to all inhabited villages will enhance access to e-services provided by Central and State Government agencies, potentially leading to increased employment opportunities and income generation.
- The BharatNet project offers home broadband packages starting from Rs 399 per month, which includes 30 Mbps unlimited data and bundled OTT offerings.

BharatNet's Financial Allocations:

- The overall budget allocation for the BharatNet project amounts to Rs. 61,000 crore.
- Funding for the project is provided from the Universal Service Obligation Fund (USOF).

- USOF is a mechanism created by the government to gather levies from telecom companies and support communication services in underserved rural areas.

BharatNet Progress:

- **Phase-I:**
  - Approved in October 2011, BharatNet aimed to link GPs to block headquarters using existing fiber from CPSUs like BSNL, RailTel, and PGCIL.
  - Additional fiber was laid to bridge gaps. Phase-I completed by December 2017, covering 1 lakh GPs, later expanded to 1.25 lakh GPs.
- **Phase-II:**
  - Approved on July 19, 2017, Phase-II builds on Phase-I experience.
  - It employs a mix of technologies (OFC, Radio, satellite) for GP connectivity. Various models (State-led, Private Sector, CPSU) are used, with Last Mile Wi-Fi for GPs.
- **Phase III:**
  - Aimed to upgrade the fiber network connecting 2.5 lakh GPs to a ring topology, establishing connections between districts and Blocks, as well as Blocks and GPs.

Advancements in the BharatNet Initiative:

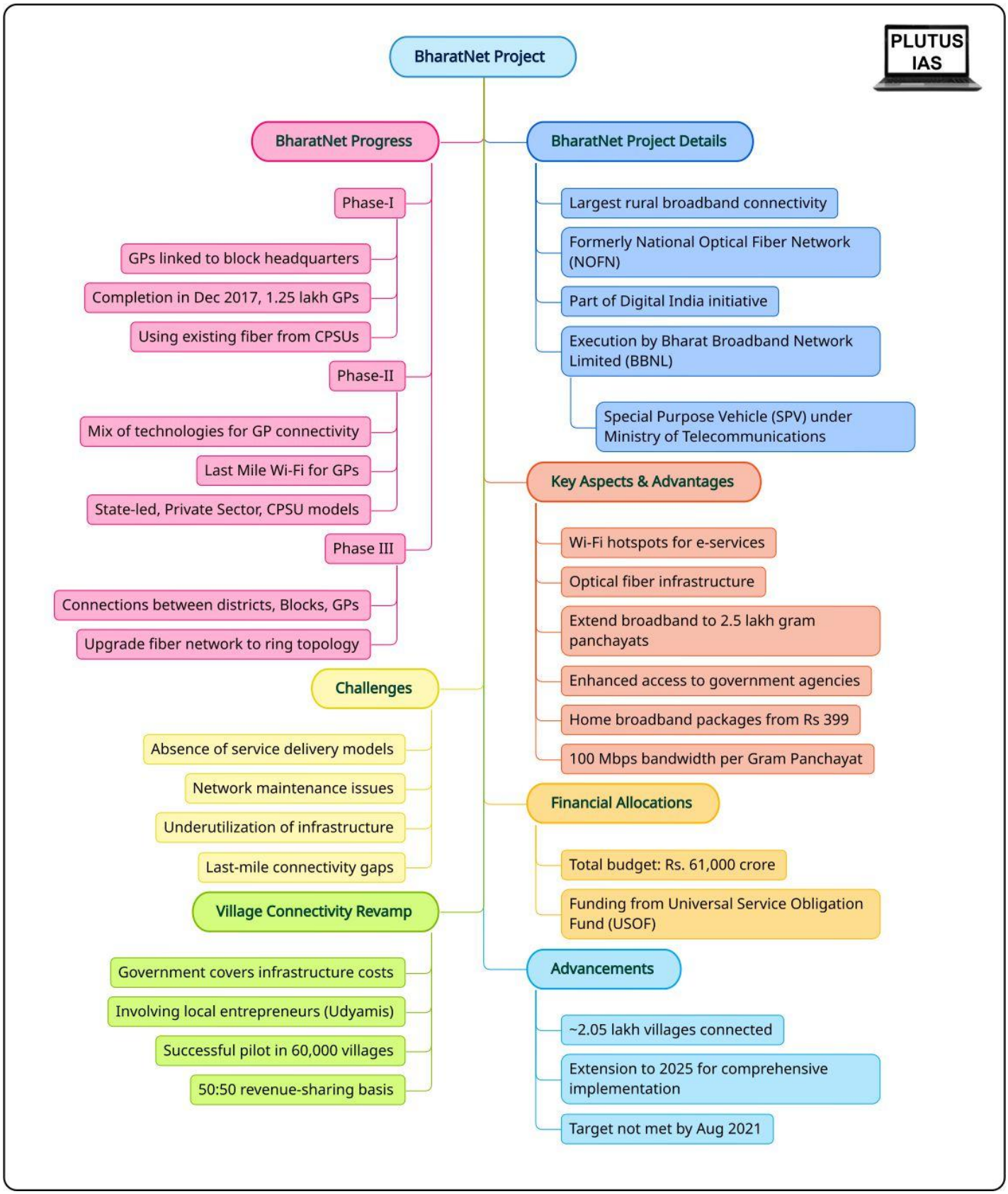
- Initially, the project aimed to provide optical fiber connectivity to 2.5 lakh gram panchayats across the nation by August 2021; regrettably, this target was not met.
- Presently, approximately 2.05 lakh villages have been successfully connected and 1.95 lakh GPs are service ready, and the remaining villages are projected to attain connectivity within the upcoming 2.5 years. .
- The project's pace was hindered by lockdowns and movement constraints caused by the COVID-19 pandemic.
- In the Union Budget 2022-23, the Government decided to extend the project deadline to 2025, allowing for a more gradual and comprehensive implementation.

Key Challenges in BharatNet:

- **Network Maintenance and Quality:**
  - Delay in finalizing Operations and Maintenance (O&M) contracts led to network maintenance issues.
  - Absence of service delivery and monetization models hindered network upkeep and quality of service.
  - Challenges in timely repair of fiber cuts and addressing lossy fiber resulted in network degradation.
  - Service providers leasing fiber or bandwidth experienced poor Service Level Agreement (SLA) adherence due to compromised network quality.
- **Last-Mile Connectivity Gap:**
  - While connectivity was extended to Gram Panchayats (GPs), last-mile connectivity to homes, institutions, and enterprises was lacking.
  - Inadequate last-mile infrastructure prevented effective delivery of digital services to end-users.
  - Approximately 2.14 lakh Fibre To The Home (FTTH) connections were commissioned for only 65% of the population.
- **Underutilization and Return on Investment:**
  - Despite substantial investment of around Rs. 42,068 Cr., BharatNet infrastructure remains largely underutilized.
  - The network's underperformance has not yielded expected returns on the investment.

About the News:

- Under the next phase, The government plans to accelerate its village connectivity efforts by involving local entrepreneurs to expand broadband access to all 640,000 villages within the next 2.5 years.
- Similar to private telecom companies like Airtel and Jio, the government's revamped approach includes partnering with village-level entrepreneurs (Udyamis) on a 50:50 revenue-sharing basis.
- While the government covers infrastructure costs, Udyamis handle home connection maintenance and operations, addressing concerns like fibre cuts.
- The successful pilot run in 60,000 villages involving local partners demonstrated the viability of this approach.



Sources:

Govt tweaks BharatNet, clears Rs 1.39 lakh crore for last-mile broadband link | India News – The Indian Express

Q1. With reference BharatNet, consider the following statements:

1. BharatNet is the world's largest rural broadband connectivity initiative based on optical fibre technology.
2. Bharat Sanchar NigamLimited (BSNL) is responsible for the execution of BharatNet
3. BharatNet aimed to extend broadband internet access to over 2.5 lakh gram panchayats.

Which of the statements given above is/are correct?

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

Answer: (c)

Q2. Consider the following :

1. The goal of BharatNet is to provide a minimum of 50 Mbps bandwidth at each Gram Panchayat.
2. The project includes the establishment of Wi-Fi hotspots and other means of last-mile connectivity.
3. The Universal Service Obligation Fund (USOF) is a mechanism to support communication services in urban areas.

How many of the abovementioned statements are correct ?

(a) Only one
(b) Only two
(c) All three
(d) None

Answer: (a)

Q3. BharatNet in bridging the digital divide and empowering rural communities. In the light of this statement, discuss the objectives, progress, and challenges of the BharatNet initiative in transforming rural connectivity and digital access in India.

Rishabh

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 (CO_2) emissions arising from industrial activities and fossil fuel combustion, especially in power generation. The primary objective of CCS is to prevent substantial amounts of CO_2 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.

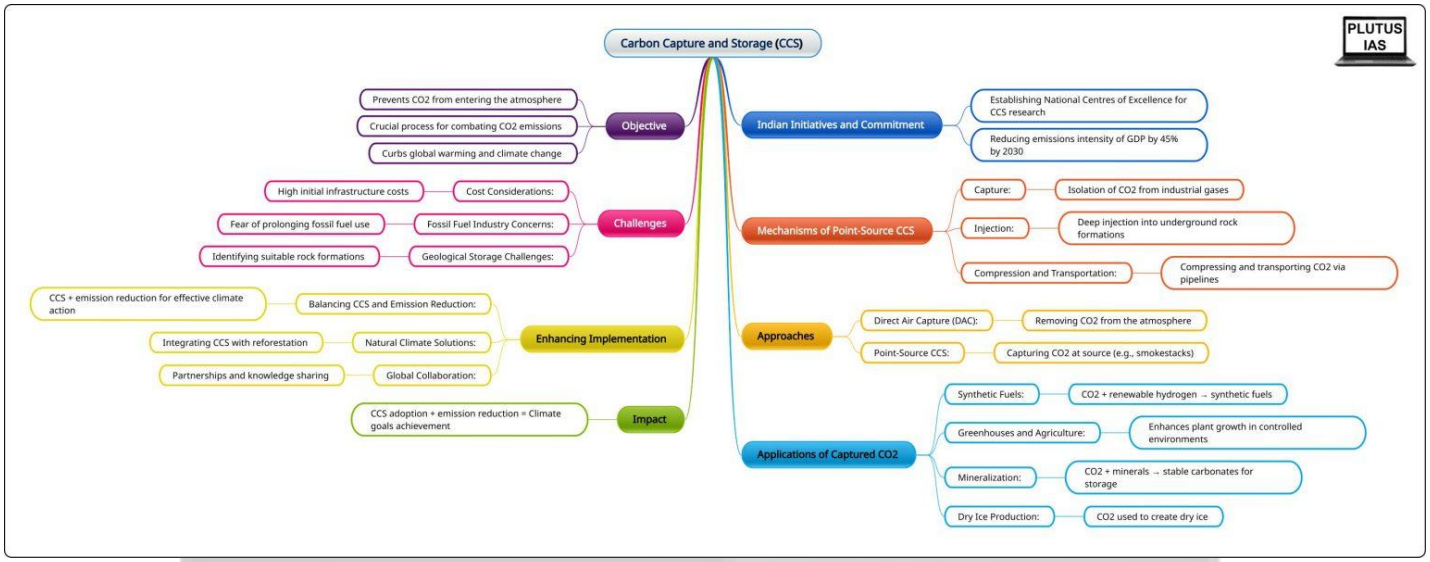
Challenges in CCS Implementation:

- **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."

Gaurav Nikumbh