Concerns with Great Nicobar Island Project

For Prelims: Great Nicobar Island (GNI), Galathea Bay, Tropical Rainforest, Leatherback Sea Turtle, Galathea Bay Wildlife Sanctuary, Coastal Regulation Zone, International Container Transshipment Terminal (ICTT), Maritime India Vision 2030.

For Mains: Concerns associated with the Great Nicobar Island (GNI) project and way forward.

Source: HT

Why in News?

The proposed **Rs 80,000 crore** mega infrastructure project on **Great Nicobar Island (GNI)** has raised **serious concerns** among environmental activists.

- The project, spearheaded by **NITI Aayog**, includes a **transshipment terminal** in **Galathea Bay**, an **greenfield airport**, a **greenfield township**, and a **tourism project with a gas-powered plant.**

Click Here to Read: What is the Great Nicobar Island Project?

What is Great Nicobar Island?

What Concerns are Associated with the Great Nicobar Island Project?

- **Environmental Concerns:**
  - **Massive Deforestation:** The project will destroy **130 sq km of primary tropical rainforest,** leading to **biodiversity loss** and ecological imbalance.
    - Initial estimates of **tree cutting (8.65–9.64 lakh)** have been found to be significantly lower than actual numbers, potentially exceeding **10 million trees.**
  - **Impact on Wildlife:** The project threatens species like the nesting **leatherback sea turtle** in **Galathea Bay Wildlife Sanctuary (WLS).**
    - The **Galathea Bay WLS**, designated for marine turtle conservation in **1997**, was **denotified in 2021** for the port, contradicting **India's Marine Turtle Action Plan (2021).**
  - **Compensatory Afforestation Issues:** The diversion of pristine Nicobar forests is being **"compensated"** by land in **Haryana and Madhya Pradesh**, which does not replicate the **biodiversity lost.**
  - **Coral Reef Destruction:** The coastline falls under **Coastal Regulation Zone (CRZ 1a)**, making ship-repair and other industrial activities a **threat to marine ecosystems.**
- **Legal Concerns:**
  - **Violation of SC Orders:** The SC appointed **Shekhar Singh Commission 2002 report** recommended a **total ban on tree felling in tribal reserves and national**

parks and **afforestation before felling**, a rule not being followed.
    - **Lack of Tribal Consultation:** The project **disregards** the rights and survival of indigenous communities like the **Shompen**, whose existence is deeply tied to these forests.
    - **Lack of Transparency:** The government **withheld environmental clearance details** citing national security, but experts argue only the airport has a defense link, not the entire project.
- **Government Stand:**
    - **Contradictory Stance:** The Ministry of Home Affairs cites **security concerns** to withhold **project details,** while the **Ministry of Shipping** promotes **high-end tourism,** creating a strategic contradiction.
    - **Unplanned Additions:** New additions like **cruise terminals, shipbuilding, and EXIM ports** can create additional pressure on the environment.
    - The transshipment terminal's cost rose by **20% from 2021 to 2024**. With new additions like a cruise terminal and ship-repair facilities likely to **raise it further.**

Note: CRZ 1A, a subcategory under the **Coastal Zone Management Plan 2019**, includes ecologically sensitive coastal areas e.g., **presence of coral reefs** vital for biodiversity and stability.

- The **Shekhar Singh Commission Report (2002)** assessed the environmental and socio-cultural impacts of developmental activities in the **Andaman and Nicobar Islands**.

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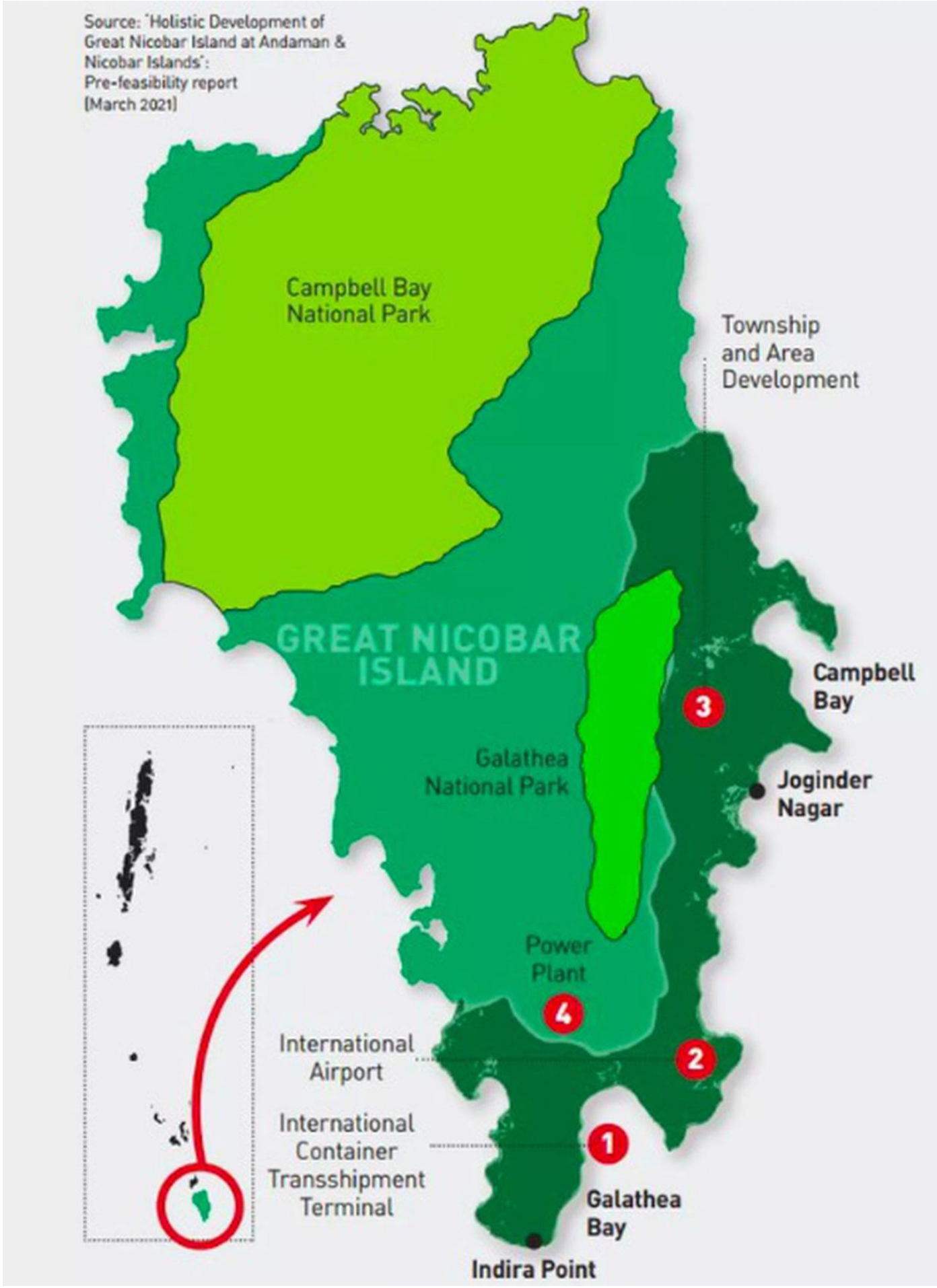

Source: 'Holistic Development of Great Nicobar Island at Andaman & Nicobar Islands': Pre-feasibility report (March 2021)
Campbell Bay National Park
Township and Area Development
GREAT NICOBAR ISLAND
Campbell Bay
3
Galathea National Park
Joginder Nagar
Power Plant
4
International Airport
2
International Container Transshipment Terminal
1
Galathea Bay
Indira Point

What is the Significance of the Great Nicobar Island Project for India?

- **Strategic Importance:** Nicobar's strategic location near the **Malacca, Sunda, and Lombok Straits** allows India to monitor key sea routes vital for **global trade and energy supply**.
    - It is aligned with India's **Act East Policy 2014** and the **QUAD's Indo-Pacific strategy**, reinforcing regional security.
    - A greenfield airport will speed up **defense deployment**, strengthening India's ability to **monitor Chinese naval activity**.
- **Economic Significance:** The **International Container Transshipment Terminal (ICTT)** is expected to reduce India's reliance on foreign ports like Singapore and Colombo and position India as a **global transshipment hub**, attracting ships and investment.
    - It is part of **Maritime India Vision 2030** and **Amrit Kaal Vision 2047**, supporting India's long-term economic strategy.
- **Sustainable Development:** It can boost **high-end tourism** like Singapore and the Maldives while ensuring sustainable development.
    - A new township will attract businesses, **improve living standards** with better infrastructure, and promote **renewable energy** and sustainable housing with minimal environmental impact.

Way Forward

- **Minimizing Ecological Damage:** Conduct a **comprehensive biodiversity assessment** to identify critical habitats and explore **alternative locations** for infrastructure development while ensuring compliance with environmental laws.
    - Prioritize **restoration** of degraded forests within the **Andaman and Nicobar Islands** to maintain ecological balance.
- **Tribal Rights Protection:** Minimize displacement of **Shompens and Nicobarese**, ensure **fair compensation, livelihood support,** and skill development, and establish a **community council** for inclusive decision-making.
- **Strengthening Institutional Oversight:** Form an independent monitoring body with **environmentalists, local representatives, and officials** to ensure compliance and accountability.
- **Resource Management:** Develop sustainable **water, food, and energy management** while strengthening climate-resilient infrastructure and disaster preparedness.

Drishti Mains Question:

Analyze the Great Nicobar Island (GNI) project's impact on India's national security while highlighting its environmental and social challenges.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims

Q. Consider the following statements: (2018)

1. The Barren Island volcano is an active volcano located in the Indian territory.
2. Barren Island lies about 140 km east of Great Nicobar.
3. The last time the Barren Island volcano erupted was in 1991 and it has remained inactive since then.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 and 3

(c) 3 only

(d) 1 and 3

Ans: (a)

Q. Which one of the following pairs of islands is separated from each other by the 'Ten Degree Channel'? (2014)

(a) Andaman and Nicobar

(b) Nicobar and Sumatra

(c) Maldives and Lakshadweep

(d) Sumatra and Java

Ans: (a)

Mains

Q. Project 'Mausam' is considered a unique foreign policy initiative of Indian government to improve relationship with its neighbours. Does the project have a strategic dimension? Discuss. **(2015)**

Seagrass Conservation

For Prelims: Seagrass, Carbon Sequestration, Greenhouse gas emission, Global warming, Ocean currents, United Nations Environment Programme, Ocean acidification, Gulf of Mannar.

For Mains: Significance of Seagrass and Concerns Related to it.

Source: DTE

Why in News?

A study in ***Nature*** reports that **seagrasses** are declining **at a rate of 1–2% annually,** with nearly **5%** of species endangered due to human activities, highlighting the **need to protect 30%** of seagrass by **2030** to preserve biodiversity.

What are Seagrasses?

- **About:** Seagrasses are **submerged, flowering marine aquatic plants** that grow in **shallow coastal waters** such as **bays** and **lagoons**.
    - They possess small flowers and strap-like or oval leaves, forming dense underwater meadows.

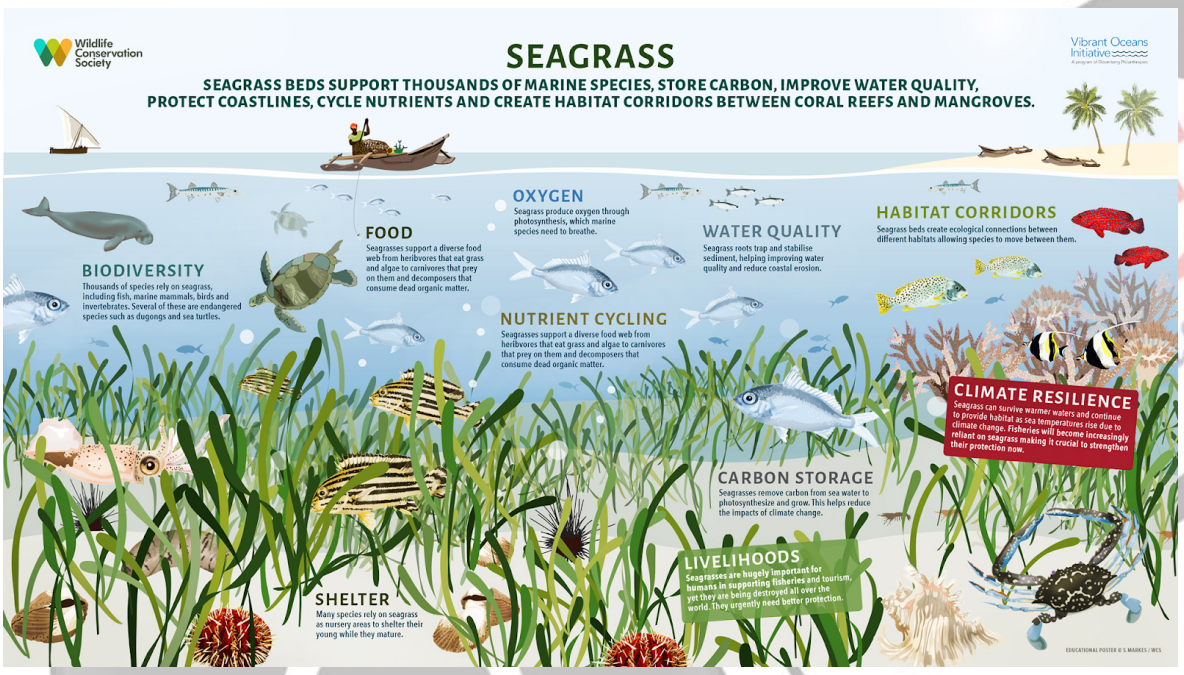
- **Classification:** Seagrasses belong to the order ***Alismatales*** and are classified into **4 families with around 60 species**.
    - Some of the important seagrasses are **Sea Cow Grass** *(Cymodocea serrulata)*, **Thready Seagrass** *(Cymodocea rotundata)*, **Needle Seagrass** *(Syringodium isoetifolium)*, **Flat-tipped Seagrass** (*Halodule uninervis*), etc.
- **Key Features:**
    - Like terrestrial plants, seagrasses conduct **photosynthesis** and **support marine biodiversity** and **enhance oceanic oxygen levels.**
    - Seagrasses **reproduce both sexually and asexually**.
        - In **sexual reproduction**, submarine **pollination transfers male pollen to female flowers underwater.** Asexually, they **propagate through rhizomes-horizontal underground stems,** that enable regeneration after disturbances like grazing or storms.
- **Threats to Seagrass:**
    - **Pollution:** Industrial, agricultural, and urban waste degrade seagrass meadows.
    - **Coastal Development:** Tourism and infrastructure projects disturb fragile ecosystems.
    - **Climate Change:** Rising temperatures and ocean acidification threaten seagrass survival.
    - **Weak Enforcement:** Despite existing laws, conservation efforts lack strict implementation.

What is the State of Seagrass Conservation?

- **Current Status:** Seagrass covers **0.1% of the ocean floor** but supports marine life, major fisheries, and thrives in **tropical and temperate coastlines.**
- **Seagrasses in India: India's seagrass meadows** span **516.59 sq km**, sequestering **434.9 tonnes of CO_2 per sq km** annually, with major concentrations in the **Gulf of Mannar**, **Palk Bay, Andaman & Nicobar, Lakshadweep,** and the **Gulf of Kutch**.
- **Conservation Efforts**:
    - **India's Initiatives**
        - **2011-2020: 14 acres** of seagrass restored in the **Gulf of Mannar & Palk Bay** (85-90% success rate).
        - **Community-led projects** using **bamboo frames & coconut ropes** for transplantation in **Palk Bay**.
    - **Global Efforts:**
        - **23.9% of seagrass areas** fall under **Marine Protected Areas (MPA)**. Successful restoration in **Virginia, USA** (1,700 hectares of Zostera marina).

What is the Significance of Seagrasses?

- **Carbon Sequestration:** Seagrasses **store 11% of oceanic organic carbon** and **absorb 83 million tonnes of atmospheric carbon** annually, **sequestering carbon 35 times faster** than rainforests.
- **Biodiversity Hotspot:** It supports marine species, including **endangered dugongs (sea cow) and green turtles**, and sustains commercially important species like **squids and cuttlefish.**
- **Ecological Importance:** Seagrass meadows support **750 fish species** and **121 threatened marine species** including **endangered dugongs (sea cow), green turtles, squids** and **cuttlefish.**
    - These ecosystems contribute to **20% of global fishery landings**.
- **Coastal Protection:** They **improve water clarity** by **trapping sediments, filter land-based pollutants**, and **prevent coastal erosion** by stabilizing the seabed with their root systems.
- **Livelihoods & Fisheries:** Seagrasses provide **safe breeding grounds for juvenile fish** and **shield marine organisms from strong currents and predators**, supporting ecosystems essential for **fisheries and global food security.**



Way Forward

- **Integration into Policy Framework**: Seagrass conservation should be **incorporated into** India's **National Biodiversity Action Plan**, ensuring **policy support, funding, and sustainable management practices.**
- **Expansion of Marine Protected Areas (MPAs)**: MPAs should be **expanded beyond 2.5% of India's Exclusive Economic Zone (EEZ)** to protect and restore seagrass ecosystems.
- **Recognition in Climate Strategy:** Seagrass should be recognized in **India's Blue Carbon Initiative** to **support climate commitments** and **carbon neutrality goals.**
- **Assessment and Global Cooperation:** Global cooperation is vital as seagrasses **aid climate mitigation through carbon sequestration,** coastal protection, and biodiversity conservation. The **IUCN** should **assess their status for early intervention,** preventing extinction and enhancing conservation efforts.

Drishti Mains Question:

Discuss the ecological significance of seagrass meadows and the challenges they face due to human activities. Suggest measures for their conservation in India.

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q. What is blue carbon?

(a) Carbon captured by oceans and coastal ecosystems
(b) Carton sequestered in forest biomass and agricultural soils
(c) Carbon contained in petroleum and natural gas
(d) Carbon present in atmosphere

Ans: (a)

Decline in MPLADS Funds

Source: BL

Why in News?

The latest data by **Ministry of Statistics and Programme Implementation (MoSPI)** on the **Members of Parliament Local Area Development Scheme (MPLADS)** indicates a **decline in the total funds released** by the central government for the **17th Lok Sabha (2019-2024)** compared to the **16th Lok Sabha (2014-2019).**

What are the Key Highlights of the MoSPI Data on MPLADS?

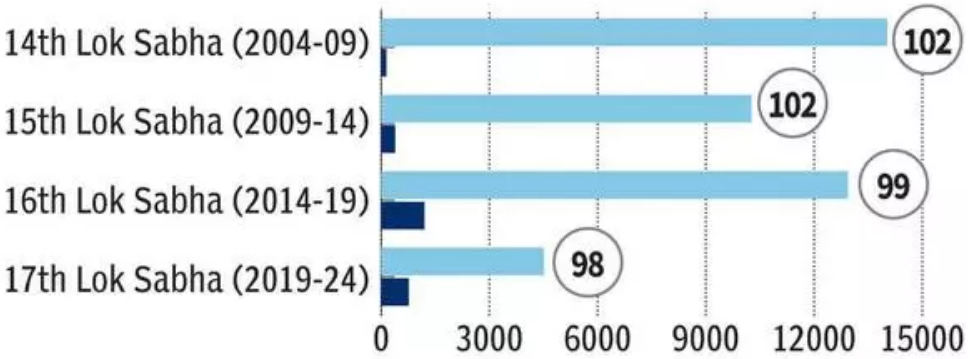
- **Decline in Funds:** The MPLADS funds for the **17th Lok Sabha (2019-2024)** totaled Rs 4,510 crore, a **65.2% decline from the 16th Lok Sabha**, primarily due to the **Covid-19 pandemic.**
- **Utilization of Funds:** In the 14th Lok Sabha, MPLADS funds saw **102% utilization,** while the **16th and 17th Lok Sabhas** recorded **99% and 98% utilization,** respectively.
- **Regional Disparities:** MPs from **Uttar Pradesh, Maharashtra, and West Bengal** received the **highest MPLADS funds**, while those from **Delhi, Haryana, and Punjab received the lowest.**
- **Sector-wise Fund Distribution:** During the 17th Lok Sabha period, Rs 1679 crore were allocated to infrastructure (**railways, roads, bridges**), followed by other public facilities and education.

Local area development

Funds released by Central government | % of funds utilised | Unspent balance with district authority

MPLADS allocation dips 65% in 2019-24

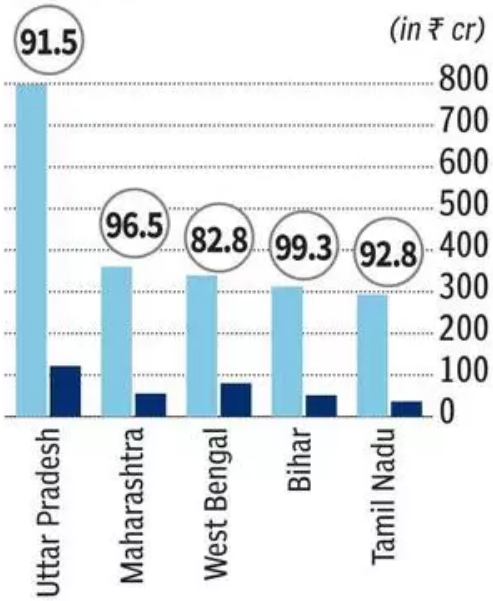
(in ₹ cr)



Large States receive more funding under the scheme

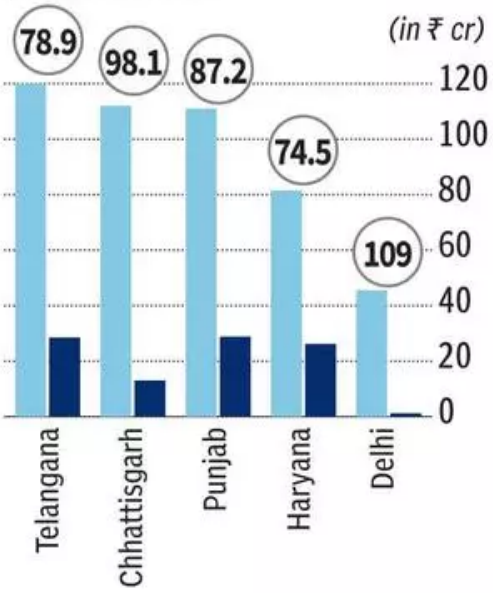
Top five

(in ₹ cr)



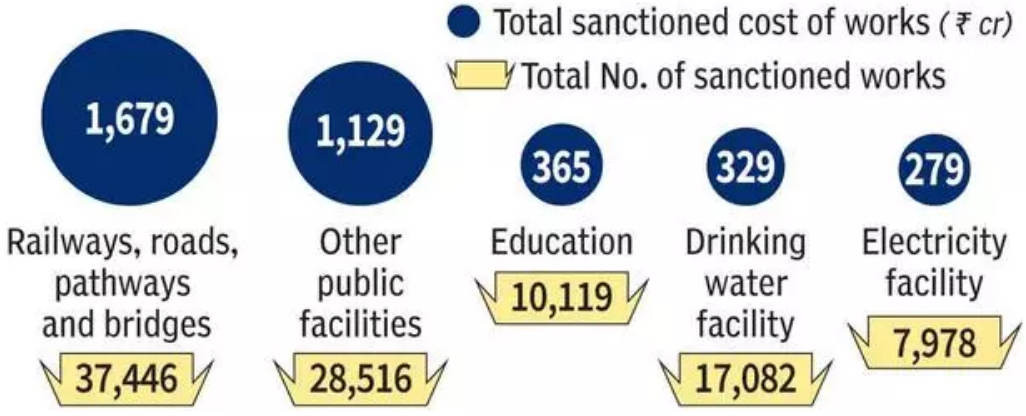
Bottom five

(in ₹ cr)



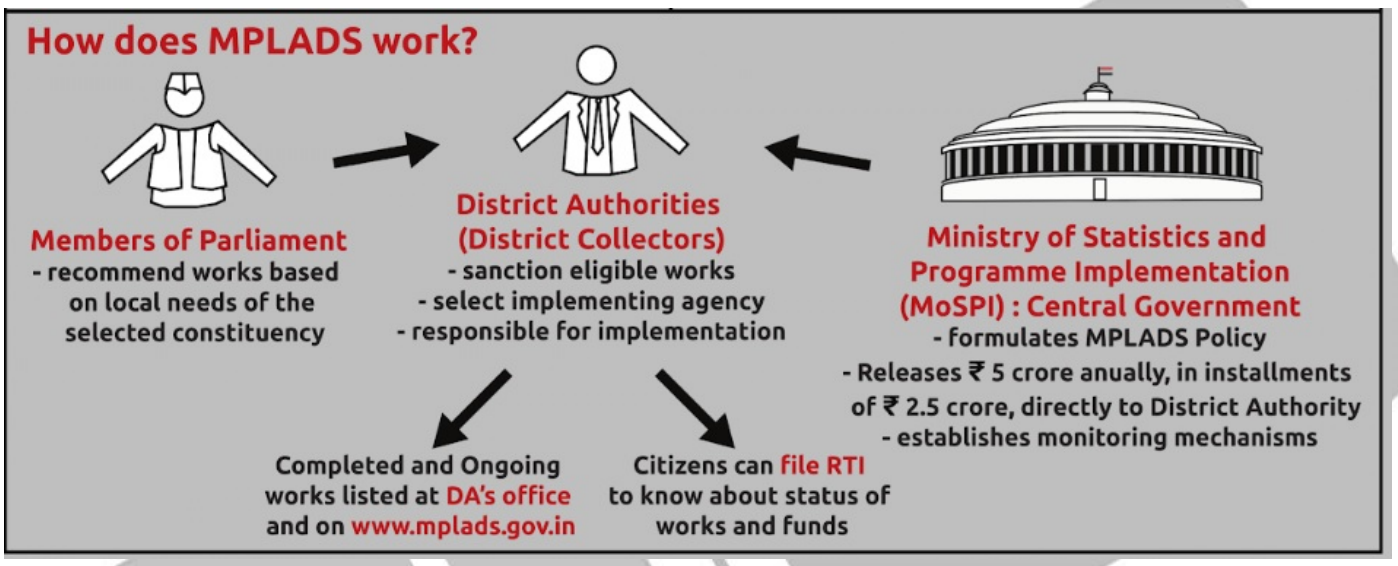
Public infra remains a priority sector

Total sanctioned cost of works *(₹ cr)* | Total No. of sanctioned works



What is MPLADS?

- **About:** MPLADS is a **Central Sector Scheme introduced in 1993** that enables the **Members of Parliaments (MP)** to recommend developmental **work in their constituencies** with an emphasis on creating durable community assets based on locally felt needs.
- **Implementation:** A state-level nodal department oversees MPLADS, while **district authorities sanction projects, allocate funds**, and ensure implementation.
- **Funding Allocation:** Each **MP is allocated Rs 5 crore per year** since 2011-12. Funds are disbursed by the **Ministry of Statistics and Program Implementation (MoSPI)** to district authorities in two installments of Rs 2.5 crore each.
    - **Nature of Funds:** Funds are **non-lapsable and carried forward if not utilised** in a given year. MPs must allocate a **minimum of 15% and 7.5% of their funds** to create assets for **Scheduled Castes (SCs) and Scheduled Tribes (STs),** respectively.



- **Special Provisions:** MPs can **allocate up to Rs 25 lakh annually outside their constituencies** or states for projects promoting national unity.
    - For severe natural calamities, MPs can allocate up to Rs 1 crore for projects anywhere in India.
- **Projects Eligible Under MPLADS:** MPLADS funds can be **converged with the MGNREGS for durable asset creation** and integrated with the **Khelo India program for sports infrastructure development.**
    - Infrastructure support is **permitted on lands owned by registered societies or trusts** engaged in **social welfare for at least three years,** but prohibited for societies where the MP or their family members are office-bearers.

What are the Main Arguments For and Against MPLADS?

Click Here to Read: Arguments For and Against MPLADS

UPSC Civil Services Examination, Previous Year Question (PYQ)

Q. With reference to the funds under the Members of Parliament Local Area Development Scheme (MPLADS), which of the following statements are correct? (2020)

1. MPLADS funds must be used to create durable assets like physical infrastructure for health,

education, etc.
2. A specified portion of each MP's fund must benefit SC/ST populations.
3. MPLADS funds are sanctioned on a yearly basis and the unused funds cannot be carried forward to the next year.
4. The district authority must inspect at least 10% of all works under implementation every year.

Select the correct answer using the code given below:

(a) 1 and 2 only

(b) 3 and 4 only

(c) 1, 2 and 3 only

(d) 1, 2 and 4 only

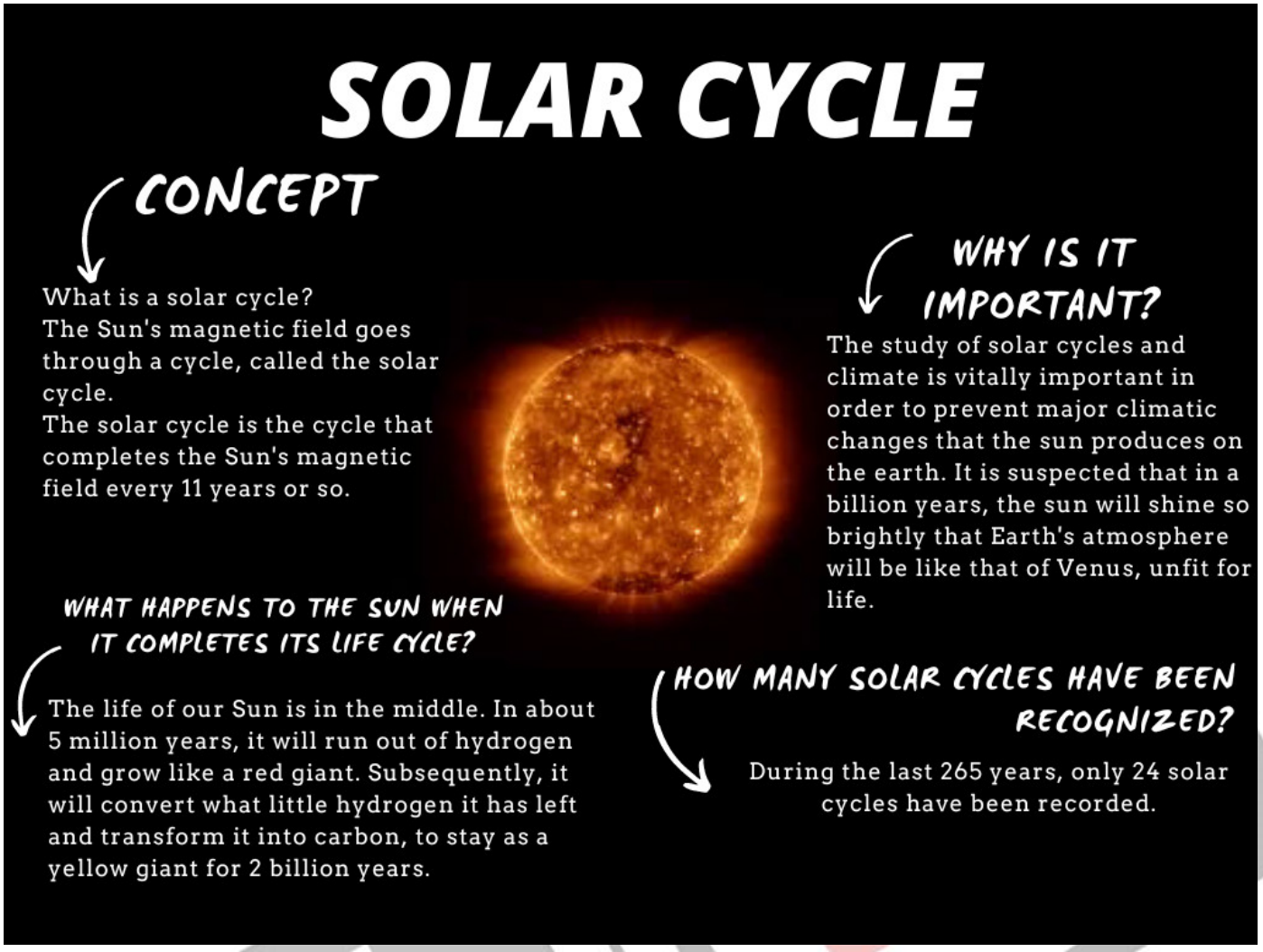
Solar Maximum Spurs Solar Missions

Source: IE

NASA's PUNCH mission, aimed at studying the Sun's corona, is the **third major solar mission since 2023**, reflecting a rise in solar missions linked to the **solar cycle**, which is nearing its **solar maximum**.

Solar Cycle:

- The **solar cycle** is an **11-year period** during which the **Sun's magnetic field flips**, causing the **north and south poles to switch places**.
- During the **solar maximum** (when the Sun is most active), **solar activity**—such as **sunspots, solar flares, and coronal mass ejections**—increases, impacting **satellite communications** and **power grids**.
    - **Sunspots** are **small, dark, and cooler areas** where the magnetic field is particularly strong.
- The cycle ends with the **solar minimum** (when sunspot activity is at its lowest), leading to a decline in solar activity until the **next cycle begins**.
    - The **solar cycle is tracked** by counting **sunspots**.



Surge in Solar Missions:

- The increased number of **solar missions** is due to the **Sun approaching its solar maximum (2022-2024)**, providing the best opportunity to study its behavior.
    - The next peak in **solar activity** is expected **after 2035-2036**.

Earlier Solar Missions: **Aditya L1 (India)**, **Proba-3 (European Space Agency)**

Read More: **NASA's Punch Mission - Drishti IAS**

Turning Animal Liquid Waste into Fertilizer

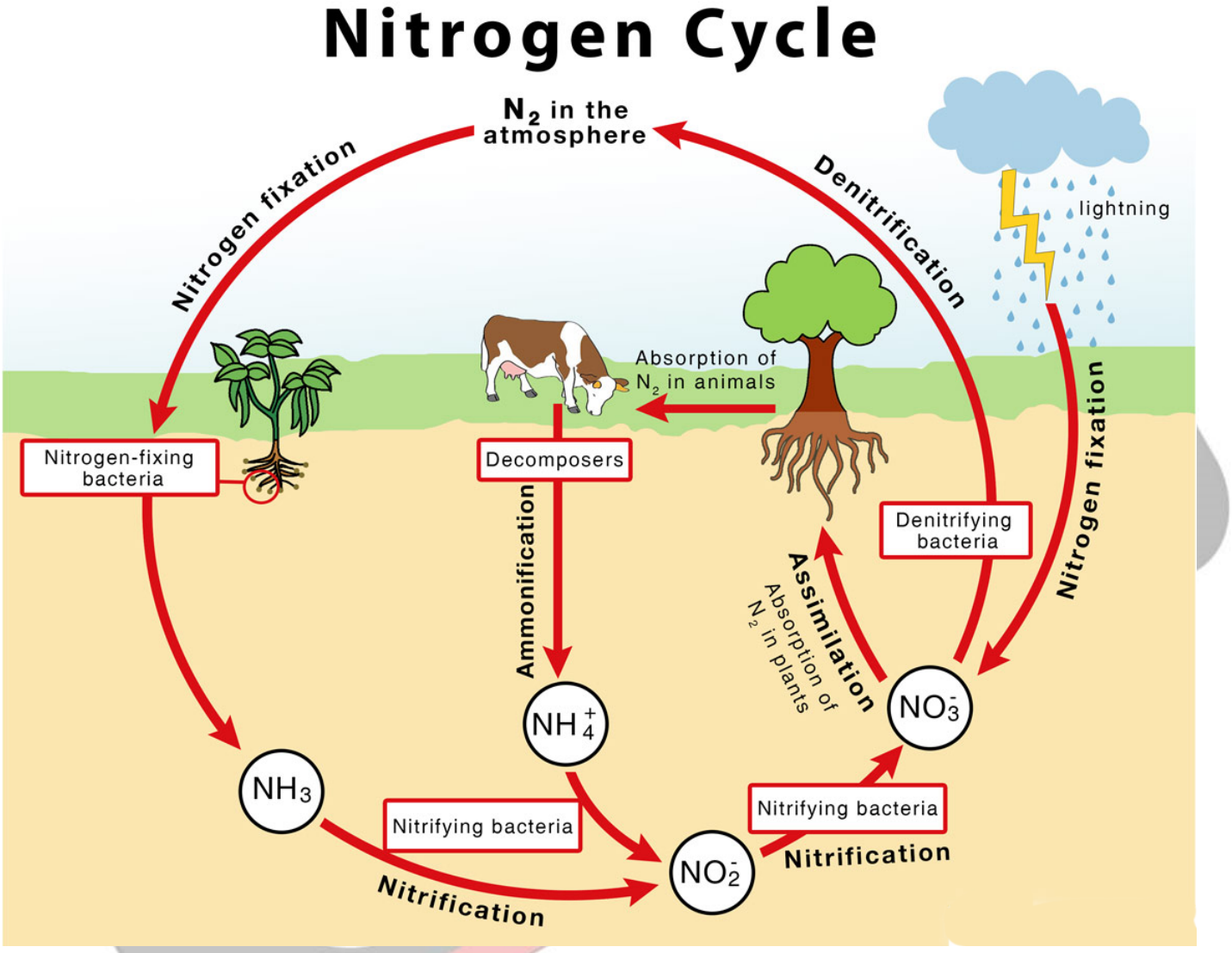
Source: TH

Scientists have developed an innovative **electrochemical technique** to **extract urea from urine**, transforming it into a **fertilizer** while addressing **wastewater treatment** challenges.

- The **new electrochemical process** converts urine's urea into **Percarbamide**, a **crystalline peroxide derivative** that can be used as **fertilizer**.
    - It has achieved nearly **100% purity** in extracting **percarbamide** from both human and animal urine.
    - The extracted Percarbamide **gradually releases nitrogen**, enhancing crop growth

and **completing the [nitrogen cycle](#)**.

- Urine contains essential nutrients like **phosphorus, potassium, and nitrogen (urea)**, making it a potential **natural fertilizer.**
- An adult produces **450–680 liters** of urine annually that can produce **4 kg nitrogen, and 0.3 kg phosphorus**, enough to grow wheat for a daily loaf of bread for a year.
- It can help in achieving **[ODF++ status](#)** under the **[Swachh Bharat Mission-Urban (SBM-U)](#)** that involves **solid and liquid waste management** and the **dairy sector** to reduce **[GHG emissions](#)** .



Read More: [Swachh Bharat Mission-Urban](#)

Water Ice Beyond Lunar Poles

[Source: IE](#)

Recent **[Chandrayaan-3](#)'s ChaSTE (Chandra's Surface Thermophysical Experiment) data** suggests that **water-ice** may exist **outside the Moon's polar regions**, particularly in **high-latitude areas**.

- **ChaSTE** is a sort of a **thermometer** that measures **surface and sub-surface temperatures** near the Moon's poles.

- **ChaSTE** data suggests **shaded lunar slopes** may resemble polar regions, potentially **hiding subsurface water-ice**.
- **Colder slopes** away from the Sun may **trap water-ice**, extending its presence **beyond polar craters** for easier access in **future missions**.
- Lunar water can support **drinking, oxygen production**, and splitting it into hydrogen and oxygen enables **fuel production for deep-space missions**.
- **Chandrayaan-3** soft-landed near the **Moon's south pole** on **23rd August, 2023**, at a site later named '**Shiv Shakti Point**'.

Read More: [Chandrayaan-3]

Cassava

Source: DTE

Indigenous farming has preserved cassava's **genetic diversity** and earned the title of the **'bread of the tropics'** for feeding nearly a billion people.

About Cassava: Cassava (Yuca or Manioc) is a **starchy root vegetable** and the source of **tapioca** (a starch used in **bakery products, paper, and adhesive industries**).

- It is native to **South America** and widely cultivated in tropical regions (Africa, Asia, and Latin America) for its resilience to **drought and poor soils**.
    - Cassava cultivation in India is mostly confined to Kerala, Tamil Nadu, Andhra Pradesh and North-Eastern States.
- It is grown through **stem cuttings**, but **Brazil's Kukurro tradition** promotes genetic diversity by encouraging **seed-based reproduction.**
- It supports **gut health**, regulates blood sugar, controls appetite, and **lowers type 2 diabetes risk.**
- It is used in the production of **bioethanol and biodegradable plastics**, while its peels and leaves serve as **animal fodder.**

Read More: Genetically Modified Organism (GMO)
