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APPSC News Summary

Andhra Pradesh's Integrated Strategy for Tribal Development

Source: [Deccan Chronicle](#)

Relevance: **GS Paper II – Tribal Welfare, Health and Education | GS Paper III – Inclusive Growth**

Important Keywords

Prelims:

- Sanjeevani Programme | Adivathalli Bata | ASR District | Talli Bidda Express | Jan Aushadhi Kendras

Mains:

- Tribal Development | Local Employment | Last-Mile Healthcare | Digital Inclusion | Sustainable Livelihoods

Why in News?

Andhra Pradesh Chief Minister N. Chandrababu Naidu launched the **Sanjeevani programme** at Ganneli in Araku Valley, Alluri Sitarama Raju district. The programme aims to deliver quality healthcare to remote tribal families as part of the government's goal of eliminating tribal poverty.

Five-Pronged Strategy

The State's tribal development policy is based on:

- infrastructure;
- healthcare;

- education;
- employment; and
- welfare.

It recognises tribal poverty as multidimensional and seeks to combine public services with sustainable livelihoods.

Major Initiatives

Infrastructure and Connectivity

- 900 km of roads** constructed under the **Adivathalli Bata project** at a cost of ₹1,000 crore.
- Tap water and rooftop solar systems planned for **1.60 lakh houses**.
- Cell towers being installed to improve digital connectivity.

Healthcare

- Sanjeevani programme:** Quality medical care for remote tribal families.
- Emergency network:** 150 vehicles deployed in ASR district.
- Tribal Health Infrastructure Mission:** ₹250 crore allocated.
- 104 ambulances:** Mobile services offering 42 diagnostic tests.
- Talli Bidda Express:** Transport assistance for pregnant women.

- **Drone services:** Blood samples transported from remote health centres to major hospitals.
- **Medical support:** ₹10,000 monthly pension for patients with sickle cell disease and thalassemia.
- **Jan Aushadhi Kendras:** Proposed in all mandals for affordable medicines.

Education and Skills

- Agreement with **IIT Madras** to improve tribal education and provide coaching for examinations such as IIT and NEET.
- Target to train **one lakh tribal youth in three years** for jobs in emerging industries.

Local Employment

- The government will propose a legally acceptable alternative to **G.O. 3**, which had reserved jobs in tribal areas for local candidates but was annulled by the Supreme Court.

Sustainable Livelihoods

- Coffee cultivation to be expanded by **one lakh acres**.
- Coffee and pepper promoted as alternative crops.
- Tribal products to be developed as recognised brands.
- Homestays encouraged to provide income from Araku tourism.

Welfare Convergence

- Beneficiary families were covered under schemes such as **Talliki Vandanam, Annadata Sukhibhava, Stree Shakti** and **Auto Driver Service**.

Conclusion

Andhra Pradesh's strategy addresses tribal poverty through healthcare, education, infrastructure, employment and livelihoods. Its success will depend on effective implementation, community participation and protection of tribal rights.

India–Denmark Partnership to Strengthen Amaravati's Power Infrastructure

Source: [Deccan Chronicle](#)

Relevance: **GS Paper II - International Cooperation | GS Paper III - Energy Infrastructure, Renewable Energy and Urban Development**

Important Keywords

For Prelims:

- INDEP | 33-kV Power Grid | Distributed Energy Resources | BESS | Digital Twin | APCRDA

For Mains:

- Smart Grid | Energy Transition | Urban

Resilience | Renewable-Energy Integration | International Technical Cooperation

Technologies Discussed

1. Distributed Energy Resources

- **Distributed Energy Resources (DERs)** are small-scale electricity sources or storage systems located close to consumers.
- They may include rooftop solar systems, local battery units and other decentralised energy facilities. Their integration can reduce pressure on the main grid and improve local energy resilience.

2. Battery Energy Storage Systems

A **Battery Energy Storage System (BESS)** stores electricity for later use.

It can:

- store surplus renewable power;
- supply electricity during peak demand;
- manage fluctuations in solar and wind generation; and
- improve grid reliability.

3. Electric-Vehicle Charging Infrastructure

- Planning charging stations along with the power grid can ensure adequate electricity supply for the future growth of electric mobility.

4. Renewable-Energy Integration

- Renewable sources require flexible grid management because their generation may vary with weather conditions. Storage, forecasting and grid-control systems can help manage these variations.

Role of the Digital Twin

- APCRDA presented Amaravati's development plans through a **digital twin** at the Amaravati Integrated Command Control Centre.
- A digital twin is a virtual representation of a

physical system that can be used to visualise, monitor and plan infrastructure.

It displayed:

- ongoing works;
- proposed projects;
- urban infrastructure; and
- the planned power network.

This can help planners examine future demand, compare alternatives and identify infrastructure gaps before physical construction.

Participants

The Danish delegation included representatives from:

- Danish Energy Agency;
- Green Power Denmark; and
- Central Electricity Authority.

APCRDA officials from administration, economic development, information technology and electrical engineering participated in the discussions.

Conclusion

India-Denmark cooperation can help Amaravati develop a reliable, efficient and clean power network. However, technology transfer must be supported by careful planning, cybersecurity, skilled personnel and long-term maintenance.

Chloroquine-Related Illness in Andhra Pradesh: Safety Concerns in Mass Drug Administration

Source: [The Hindu](#)

Relevance: GS Paper II - Public Health and Tribal Welfare | GS Paper III - Drug Safety and Health Infrastructure

Important Keywords

For Prelims:

- Chloroquine | Malaria | Prophylaxis | *Plasmodium falciparum* | Therapeutic

Index | Hypotension | Hypoglycaemia

For Mains:

- Pharmacovigilance | Weight-Based Dosage | Drug-Quality Testing | Tribal Healthcare | Adverse Drug Reaction | Last-Mile Health Delivery

Why in News?

A seven-year-old girl died and **52 people, including 47 children, fell ill** after receiving chloroquine tablets at a medical camp in Gollaguppa village of Yetapaka mandal in Polavaram district. Twenty-three children were shifted from Lakshmiapuram Primary Health Centre to Bhadrachalam Area Hospital. The exact cause requires investigation, including clinical examination and chemical analysis of the administered medicine.

What Is Chloroquine?

Chloroquine is a medicine used in malaria management. Depending on medical guidelines and the parasite's drug sensitivity, it may be administered:

- to treat malaria; or
- as a preventive or prophylactic medicine.

It is a potent drug that must be administered in the correct dose after assessing the patient's age, weight, health and nutritional condition.

What Is Malaria?

- Malaria is a mosquito-borne disease caused by *Plasmodium* parasites. It spreads through the bite of an infected female *Anopheles* mosquito.
- The tribal regions of Andhra Pradesh have a significant presence of *Plasmodium falciparum*, the parasite associated with

severe and cerebral malaria.

- Malaria transmission generally increases after the monsoon because stagnant water creates favourable conditions for mosquito breeding.

Malaria Burden in Tribal Andhra Pradesh

Area	Cases in 2024	Cases in 2025
Alluri Sitarama Raju district	About 3,690	More than 3,500
Parvathipuram Manyam district	About 2,650	About 1,820
Andhra Pradesh	About 7,800	About 7,000

- Historically, *P. falciparum* accounted for around **70-80% of Andhra Pradesh's malaria burden**. Although deaths have declined due to preventive measures, malaria remains a concern in remote tribal areas.

Why Can Chloroquine Become Harmful?

Chloroquine has a **narrow therapeutic index**.

A therapeutic index indicates the difference between:

- the dose that produces the intended medical benefit; and
- the dose that produces toxic effects.

A narrow therapeutic index means that the margin between an effective dose and a harmful dose is small. Therefore, even a dosing error may cause severe reactions.

Possible Causes of the Incident

- The reason for the mass illness has not yet been conclusively established. The investigation must examine multiple possibilities.

Incorrect Dosage

- Children cannot be given a generalised dose. The quantity must be calculated according to age, body weight and health condition.

Administration on an Empty Stomach

- Taking the medicine without adequate food may increase the risk of adverse reactions, particularly among children.

Malnutrition or Dehydration

- Children suffering from malnutrition, dehydration or an underlying illness may be more vulnerable to severe drug reactions.

Batch-Quality Problems

The authorities must verify:

- batch numbers;
- manufacturing details;
- expiry dates;
- packaging; and

- chemical composition.

Improper Storage

- Exposure to unsuitable temperature, moisture or other poor storage conditions may cause medicine degradation or contamination.

Inadequate Post-Dose Monitoring

- Since serious reactions can develop rapidly, patients – especially children – require observation after administration.

Conclusion

Chloroquine can be valuable in appropriate malaria management, but incorrect dosing, vulnerable patient conditions or poor-quality medicine can make its use dangerous. The Polavaram incident requires a transparent scientific investigation and stronger safeguards for drug administration in remote tribal areas.

River Interlinking to Transform Uttarandhra

Source: [The Hindu](#)

Relevance: **GS Paper III – Water Resources, Irrigation, Infrastructure, Agriculture and Regional Development**

Security | Drinking Water Security |
Inter-basin Water Transfer |
Environmental Sustainability

Important Keywords

For Prelims:

- Polavaram Project | Polavaram Left Main Canal | Godavari River | Vamsadhara River | Uttarandhra Sujala Sravanthi | River Interlinking

For Mains:

- Integrated Water Resources Management | Regional Development | Irrigation

Why in News?

Andhra Pradesh released **Godavari water to Uttarandhra through the Polavaram Left Main Canal**. The project aims to supply water to Visakhapatnam and Srikakulam by linking the **Godavari with the Vamsadhara River and Uttarandhra Sujala Sravanthi**.



About the Polavaram Left Main Canal Project

The Polavaram Left Main Canal carries Godavari water towards the northern coastal districts of Andhra Pradesh.

Key Facts

- **Project cost:** ₹4,192 crore
- **Irrigation potential:** 4 lakh acres
- **Drinking water beneficiaries:** 9.23 lakh people
- **Canal carrying capacity:** About 2 TMC per day
- **Beneficiary districts:** East Godavari, Kakinada, Konaseema, Anakapalli and Visakhapatnam

The project will meet irrigation, drinking water and industrial requirements.

Proposed River Interlinking Roadmap

The State government proposes a phased water-transfer network:

- supply Godavari water to Anakapalli;
- extend water supply to Visakhapatnam;
- carry water towards Srikakulam;
- interlink the Godavari with the Vamsadhara;

- connect the Left Main Canal with Uttarandhra Sujala Sravanthi; and
- strengthen the larger Godavari-Krishna river-linking system.

The objective is to transfer water from relatively water-surplus regions to drought-prone and water-deficient areas.

Benefits of the Project

Irrigation Security

The project is expected to provide irrigation water to four lakh acres and reduce agriculture's dependence on irregular rainfall.

Reliable water supply can support:

- higher cropping intensity;
- crop diversification;
- horticulture;
- improved farm productivity; and
- greater income stability.

Drinking Water Supply

- The project will supply drinking water to approximately 9.23 lakh people. It is also expected to reduce drinking water scarcity in Visakhapatnam after the completion of the wider Polavaram system.

Industrial Development

- A dependable water supply can support industries, proposed data centres and urban infrastructure. The five proposed data centres are expected to require around five TMC of water.

Employment Generation

Improved irrigation and industrial growth can generate jobs in:

- agriculture;
- food processing;

- logistics;
- construction;
- information technology; and
- allied services.

Linkage with Uttarandhra Sujala Sravanthi

- The government proposes to link the Polavaram Left Main Canal with Uttarandhra Sujala Sravanthi.

This linkage seeks to:

- distribute Godavari water across North Andhra;
- supply water to upland and drought-prone areas;
- strengthen irrigation networks;
- improve drinking water availability; and
- support balanced regional development.

The government has also announced its intention to complete **12 related projects by 2028**.

Status of the Polavaram Project

Polavaram is a multipurpose river project on the Godavari. It is intended to provide irrigation, drinking water, hydropower and inter-basin transfer benefits.

According to the State government:

- approximately 72% of the works had been completed by 2019;
- the diaphragm wall subsequently suffered damage;
- construction has been accelerated after 2024; and deadlines have been fixed for completing the remaining works.

The project has also involved displacement and rehabilitation, making the fair treatment of project-affected families essential.

Role in Regional Development

Reducing Regional Imbalance

- Uttarandhra has faced water scarcity, limited irrigation and uneven industrial development. Improved water availability can reduce the development gap between regions.

Strengthening Urban Water Security

- Visakhapatnam's growing population and industrial expansion require a dependable long-term water source.

Supporting New Infrastructure

The government expects water connectivity to complement developments such as:

- the new airport;
- proposed data centres;
- industrial corridors; and
- improved transport connectivity.

Wider Irrigation Programme

- The State government has announced plans to complete **36 irrigation projects worth ₹35,000 crore within three years**. It has also highlighted Pattiseema, Purushothapatnam and Veligonda as parts of its wider water-management strategy.

Conclusion

The Polavaram Left Main Canal can strengthen irrigation, drinking water security and industrial development in Uttarandhra. Its proposed linkage with the Vamsadhara River and Uttarandhra Sujala Sravanthi may promote balanced regional growth. However, long-term success will depend on timely implementation, ecological safeguards, efficient water use and just rehabilitation of affected communities.

ISRO Tests Semi-Cryogenic Engine Power Head at Full Thrust

Source: **Deccan Chronicle**

Relevance: **GS Paper III – Science and Technology; Space Technology; Indigenisation of Technology**

Important Keywords

For Prelims:

- ISRO, Power Head Test Article (PHTA), IPRC-Mahendragiri, SE2000 Engine, SC120 Stage, L110 Core Stage, LVM3, C32 Cryogenic Upper Stage.

For Mains:

- Development of Space Propulsion, Launch Vehicle Upgradation, Payload Enhancement, Propulsion Testing, Technological Validation.

Why in News?

The **Indian Space Research Organisation (ISRO)** successfully conducted a hot test of its **Semi-Cryogenic Engine Power Head Test Article (PHTA)** at the full rated level corresponding to **200 tonnes of thrust**. The test took place at the **ISRO Propulsion Research Complex (IPRC), Mahendragiri, Tamil Nadu**. It was the **ninth hot test** in the series and the first to test the PHTA at **100% of its rated level**.

Background

- ISRO is developing the **Semi-Cryogenic Propulsion Stage (SC120)**, powered by the **2,000 kN-class SE2000 engine**.
- The SC120 stage is intended to replace the existing **L110 core stage** of the **LVM3 launch vehicle**.

- Its integration with the **updated C32 cryogenic upper stage** is expected to enhance LVM3's payload capability.
- Payload capability** refers to the amount of useful load, such as satellites, that a launch vehicle can carry to a specified orbit.

Key Features of the Test

First Test at the Full Rated Level

The PHTA was tested at the operating level corresponding to **200 tonnes of thrust**, representing **100% of the rated level**.

Earlier tests had progressively covered:

Test level	Reported equivalent thrust
47%	94 tonnes
60%	120 tonnes
88%	175 tonnes
100%	200 tonnes

This gradual increase enabled ISRO to assess the power head's performance at progressively higher operating levels.

Test Duration

- Total test duration:** 35 seconds.
- Operation at the full rated level:** Five seconds.

Important distinction: The test lasted 35 seconds, but operation at the 200-tonne level lasted only five seconds.

Expected Performance

According to the report:

- The test proceeded as predicted.
- All engine parameters remained within expected conditions.

These results support the next phase of testing.



Propellant Supply Switch-Over

The test successfully validated the transfer of propellant supply from a:

Low-pressure start tank → Medium-pressure run tank

- The start tank supplies propellant during the initial phase. The run tank supports continued operation.
- Validating this transition enables **long-duration PHTA testing** in subsequent hot tests.

Understanding the Major Components

Component	Role
PHTA	Includes all engine systems except the thrust chamber
SE2000	A 2,000 kN-class engine being developed to power SC120

SC120	Semi-cryogenic propulsion stage intended to replace L110
L110	Existing core stage of LVM3
C32	Up-rated cryogenic upper stage to be integrated with SC120
LVM3	Launch vehicle whose payload capability is expected to improve

What Is a Hot Test?

- A **hot test** involves operating propulsion hardware under firing conditions to assess its performance.

What Does the PHTA Exclude?

- The PHTA includes all engine systems **except the thrust chamber**.
- Therefore, this milestone represents a **power head test**. It should not be described as a completed test of the entire engine with its

thrust chamber.

Conclusion

The successful full-level PHTA test marks an important milestone in ISRO's semi-cryogenic

propulsion programme. Validation of the propellant supply switch-over prepares the system for longer tests. Further development of **SE2000, SC120 and C32** will support the planned enhancement of LVM3's payload capability.

Andhra Pradesh Expands Feeder-Level Solarisation under PM-KUSUM

Source: [The Hindu](#)

Relevance: **GS Paper II – Government Schemes; GS Paper III – Renewable Energy, Agriculture, Energy Security and Infrastructure**

Important Keywords

Prelims:

- PM-KUSUM | Component C | Feeder-Level Solarisation | DISCOM | NREDCAP | CAPEX | RESCO | CFA | Agricultural Feeder

Mains:

- Solar Agriculture | Daytime Farm Power | DISCOM Reforms | Decentralised Renewable Energy | Energy-Water Nexus | Farmer Welfare

Why in News?

Andhra Pradesh has taken up **1,162.80 MW of feeder-level solarisation capacity** through **228 solar power plants** under Component C of the **PM-KUSUM Scheme**.

What is PM-KUSUM?

The **Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan**, or **PM-KUSUM**, promotes the use of solar energy in agriculture.

It is implemented by the **Ministry of New and Renewable Energy** and seeks to:

- provide reliable power for irrigation;

- reduce farmers' dependence on diesel pumps;
- solarise grid-connected agricultural pumps;
- develop decentralised renewable-energy plants;
- reduce the agricultural power-subsidy burden on States;
- improve the financial position of DISCOMs; and reduce greenhouse-gas emissions.

The scheme originally aimed to add about **34,800 MW of solar capacity**, supported by Central financial assistance of ₹34,422 crore.

What are the Components of PM-KUSUM?

Component	Main Provision
Component A	Decentralised grid-connected renewable-energy plants
Component B	Standalone solar agricultural pumps in off-grid areas
Component C – IPS	Solarisation of individual grid-connected agricultural pumps
Component C – FLS	Solarisation of agricultural feeders

Component A: Decentralised Power Plants

- Renewable-energy plants of **500 kW to 2 MW** can be established.



- Eligible participants include individual farmers, groups of farmers, cooperatives, panchayats, Farmer Producer Organisations and Water User Associations.
- Projects may also be developed through private developers or DISCOMs.
- Electricity is purchased by DISCOMs at a feed-in tariff determined by the State Electricity Regulatory Commission.
- DISCOMs are eligible for a procurement-based incentive for five years, subject to prescribed limits.

Component B: Standalone Solar Pumps

- Supports individual farmers in off-grid areas where grid electricity is unavailable.
- The Centre provides financial assistance of

30% of the benchmark or tender cost, whichever is lower.

- The State provides at least 30%, while the farmer bears the remaining share, which may be supported through bank finance.
- Higher Central assistance is available to specified Himalayan, northeastern and island regions.

Component C: Individual Pump Solarisation

- Supports farmers with grid-connected agricultural pumps.
- Solar capacity up to twice the pump capacity in kilowatts is permitted.
- Farmers can use solar power for irrigation and sell surplus electricity to DISCOMs.
- Central and State financial assistance

reduces the farmer's contribution.

Component C: Feeder-Level Solarisation

- Instead of solarising individual pumps, the State can solarise an entire agricultural feeder.
- This model supplies solar electricity collectively to several agricultural connections connected to the same feeder.

What is Feeder-Level Solarisation?

An **agricultural feeder** is a power line that supplies electricity to several agricultural consumers, mainly irrigation pumps, within a particular area.

Under Feeder-Level Solarisation:

- a solar plant is installed near the selected feeder;
- its capacity is designed according to the feeder's agricultural load;
- solar electricity is supplied to the connected pumps during daytime; and
- farmers receive power free of cost or at the tariff fixed by the State.

Solar plants can be developed through:

- **CAPEX mode:** The utility or government bears the capital expenditure and owns the project.
- **RESCO mode:** A Renewable Energy Service

Company develops and operates the plant and supplies electricity under a long-term agreement.

The normal project period under the RESCO model is **25 years**.

Central Financial Assistance of **30% of project cost**, subject to a ceiling of ₹1.05 crore per MW, is available for eligible projects. Specified northeastern, Himalayan and island regions receive higher assistance.

- Where agricultural feeders are not separated, loans for feeder separation can be obtained from NABARD, Power Finance Corporation or Rural Electrification Corporation. Assistance may also be available under the **Revamped Distribution Sector Scheme**.

Conclusion

Andhra Pradesh's feeder-level solarisation programme can provide reliable daytime power to farmers while expanding clean-energy generation. Effective implementation, groundwater management and financial discipline are essential to ensure that solar power strengthens both agricultural productivity and environmental sustainability.

Krishna Water Sharing: Andhra Pradesh Seeks Continuation of 66:34 Formula

Source: [Deccan Chronicle](#)

Relevance: **APPSC Polity and Governance: Inter-State river-water disputes and Centre-State coordination**

Important Key Words

Prelims:

- Krishna Basin | Krishna Water Disputes Tribunal-I | 811 TMC-ft | 66:34 Formula | 50:50 Formula | Krishna River Management Board | Nagarjuna Sagar | El Niño | Command Area | Article 262 | AP Reorganisation Act, 2014

Mains:

- Cooperative Federalism | Distress-Sharing Formula | Drinking-Water Security | Climate Variability | Data Transparency | Inter-State Coordination

Why in News?

- Andhra Pradesh has proposed continuing the **66:34 Krishna water-sharing formula** between Andhra Pradesh and Telangana until **July 2027**. Telangana has demanded an equal **50:50 share**. Only about **100 TMC-ft** of water reportedly remains available in the Krishna basin due to reduced rainfall and limited inflows.

Background of Krishna Water Sharing

Constitutional and Institutional Framework

- **Article 262** empowers Parliament to provide for the adjudication of inter-State river-water disputes.
- The **Inter-State River Water Disputes Act, 1956** provides for the establishment of water-disputes tribunals.
- The **Krishna River Management Board (KRMB)** was established under the **Andhra Pradesh Reorganisation Act, 2014** to manage specified Krishna basin projects and regulate water supplies between the two States.

Earlier Allocations

- The **Krishna Water Disputes Tribunal-I** assessed the share of undivided Andhra Pradesh at **811 TMC-ft in 1976**.
- Following State bifurcation, the report states that the working allocation in **2015** was:
 - Andhra Pradesh: **512 TMC-ft**

- Telangana: **299 TMC-ft**

- A separate operational sharing formula of **66:34**, initially adopted as a one-year interim arrangement, has reportedly continued for about **12 years**.
- During this period, the Krishna basin recorded:
 - **Eight surplus years**
 - **Four deficit years**

Current Water Availability

- Due to the reported influence of **El Niño** and reduced rainfall, approximately **212 TMC-ft** entered the Krishna basin during the present season.
- After withdrawals for irrigation and drinking-water requirements, only about **100 TMC-ft** remains available.
- Further availability will depend on rainfall and inflows from the river's upper catchment areas.

TMC-ft means **thousand million cubic feet**. One TMC-ft is equal to one billion cubic feet or approximately **28.32 million cubic metres**.

Positions of Andhra Pradesh and Telangana

Andhra Pradesh's Position

Andhra Pradesh wants:

- continuation of the **66:34 formula** until July 2027;
- both States to remain within their allotted shares;
- the remaining water to be protected mainly for drinking purposes; and
- the prevention of unauthorised diversion from canals.

Andhra Pradesh has alleged that Telangana drew



water beyond its share during the current season. This remains the claim of the Andhra Pradesh government.

Telangana's Position

- Telangana is demanding that the available Krishna water be divided in a **50:50 ratio**.
- The difference between the two demands has prevented the States from agreeing on an operational sharing arrangement.

Priority Use of Remaining Water

At a meeting convened by the **Union Ministry of Jal Shakti**, it was estimated that nearly **100 TMC-ft** remained available.

Given the shortage, the water is expected to be prioritised for:

- drinking-water requirements;

- livestock needs;
- filling drinking-water tanks; and
- maintaining summer storage reservoirs.

The use of the remaining water for raising crops has effectively been ruled out under the prevailing conditions.

Conclusion

Krishna water sharing is not merely an allocation dispute; it concerns drinking-water security, agriculture, hydropower and inter-State relations. A transparent distress-sharing mechanism based on verified data is essential. Andhra Pradesh and Telangana must move from competing claims towards joint basin management. Cooperative federalism and climate-resilient water governance offer the only sustainable solution.

TTD Insurance Cover and Biogas Plant Proposal

Source: [The Hindu](#)

Relevance: APPSC Governance | Welfare | Environment | Culture | Current Affairs

Important Key Words

Prelims

- TTD | Tirumala Tirupati Devasthanams | Pilgrim Insurance | Accidental Insurance | Biogas Plant | IOCL | GPS Renewables | Annaprasadam Centres

Mains

- Pilgrim Welfare | Temple Governance | Social Security | Waste-to-Energy | Sustainable Waste Management | Public Service Delivery

Why in News?

The Tirumala Tirupati Devasthanams Board approved two important measures: a **₹2 lakh life insurance cover** for pilgrims who die of natural causes in Tirumala and a proposal to establish a **biogas plant** using food waste generated in Tirumala.

Insurance Cover for Pilgrims

The TTD Board approved a **₹2 lakh life insurance cover** for pilgrims who die of natural causes in Tirumala. The amount will be paid to the families of such pilgrims.

- This is described as a first-of-its-kind initiative in the country. It expands the welfare role of TTD by providing financial support to families who lose their loved

ones during pilgrimage.

- The board also increased the accidental insurance for families of devotees who die in accidents in Tirumala. The compensation was raised from **₹3 lakh to ₹10 lakh**.
- This decision shows that pilgrimage management is not limited to darshan arrangements alone. It also includes safety, emergency support and welfare responsibility towards devotees.

Biogas Plant Proposal

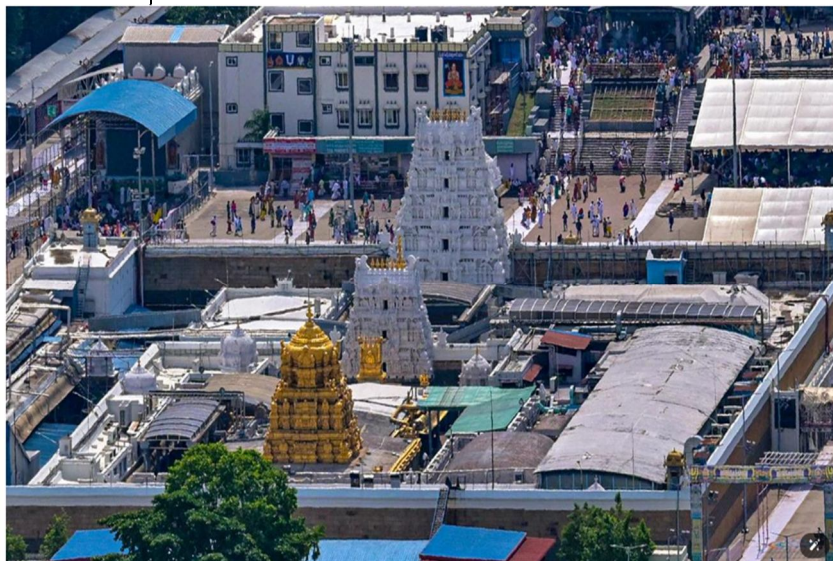
The TTD Board also approved an **IOCL proposal** to establish a **biogas plant** in Tirumala.

The plant will use food waste generated from:

- Annaprasadam centres**
- Canteens
- Hotels

The operation and maintenance of the facility will be entrusted to **GPS Renewables** at a cost of **₹2.80 crore**.

This proposal is important because Tirumala receives a large number of pilgrims every day and



generates considerable food waste. Converting food waste into biogas can reduce waste burden and support sustainable energy use.

Conclusion

The TTD Board's insurance cover and biogas plant proposal reflect a broader approach to temple

governance. The insurance initiative supports pilgrim welfare, while the biogas plant promotes sustainable waste management. Together, they combine social responsibility with environmental responsibility at one of India's most important pilgrimage centres.

Oceansat-3 Tracks El Niño's Impact on Marine Productivity

Source: [Deccan Chronicle](#)

Relevance: APPSC: Geography, Environment, Science and Technology.

Important Keywords

Prelims:

- EOS-06, Oceansat-3, NRSC, OCM-3, Scatterometer, Chlorophyll-a, Phytoplankton, Equatorial Upwelling, ENSO.

Mains:

- Ocean-Atmosphere Interaction, Marine Productivity, Satellite-Based Climate Monitoring, Ecosystem Resilience.

Why in News?

- India's EOS-06/Oceansat-3 satellite has detected changes in ocean winds and surface chlorophyll associated with the developing El Niño in the tropical Pacific.
- ISRO's National Remote Sensing Centre (NRSC) analysed chlorophyll and wind observations for April, May and June during 2023–2026, helping connect physical ocean changes with biological responses.

What Did the Satellite Observe?

- Lower Chlorophyll-a:** Surface concentrations declined markedly in June

2026, compared with neutral ENSO conditions.

- Changing Winds:** Prevailing easterly winds weakened, with westerly reversals observed in the analysed region.
- Contracting Productive Zone:** The area of elevated chlorophyll progressively contracted westward between April and June 2026, indicating reduced nutrient supply through equatorial upwelling.

How Does El Niño Affect Marine Productivity?

Understanding El Niño

- El Niño is the warm phase of the El Niño–Southern Oscillation (ENSO), a recurring interaction between the tropical Pacific Ocean and the atmosphere. It involves unusually warm surface waters in the central and eastern equatorial Pacific, alongside changes in atmospheric circulation.

Normal Conditions: Winds Support Upwelling

- Under normal conditions, easterly trade winds help move warm surface water westward. Wind-driven movement also causes surface waters to diverge near the equator, allowing deeper water to rise.

- This process, called **upwelling**, brings relatively cold, nutrient-rich water towards the surface. These nutrients support **phytoplankton**, microscopic photosynthetic organisms that form the base of many marine food webs.

El Niño Conditions: Nutrient Supply Weakens

- During El Niño, weakened trade winds and changes in the ocean's upper layers can reduce the supply of nutrient-rich water to the surface.

The resulting relationship is:

Weaker winds and altered ocean conditions → Reduced nutrient supply → Lower phytoplankton abundance → Potential decline in marine productivity.

Why is Chlorophyll-a Important?

- **Chlorophyll-a** is a pigment used in photosynthesis. Its concentration helps scientists estimate phytoplankton abundance.
- However, chlorophyll is an **indicator**, not a direct measurement of fish stocks or the total health of a marine ecosystem. Its interpretation requires supporting information on ocean conditions.

About EOS-06/Oceansat-3

EOS-06, also called **Oceansat-3**, is India's third-generation Oceansat satellite. It was launched on **November 26, 2022**, aboard **PSLV-C54** from **Sriharikota**, into a **polar sun-synchronous orbit**.

Its instruments support complementary observations:

- **Ocean Colour Monitor-3 (OCM-3):** Measures ocean colour, enabling estimates of chlorophyll and other ocean parameters.
- **Ku-Band Scatterometer (SCAT-3):** Provides information on ocean-surface wind speed and direction.
- **Sea Surface Temperature Monitor (SSTM):** Measures ocean-surface temperature.
- **ARGOS Payload:** Supports satellite-based data collection.

For the reported El Niño study, scientists combined **OCM-3 chlorophyll estimates** with **scatterometer wind observations**.

Conclusion

Oceansat-3 demonstrates how satellite observations can connect changing winds with biological responses in the ocean. Combining ocean colour, wind and temperature data strengthens understanding of **El Niño, marine productivity and climate variability**.

Indian Gaur Rescued from Snare in Papikonda National Park of Andhra Pradesh

Source: [The Hindu](#)

Relevance: **APPSC Group I Environmental issues, biodiversity and wildlife conservation**

Important Key Words

Prelims:

- Indian Gaur, *Bos gaurus*, Papikonda National Park, Godavari Valley, Eastern Ghats, Eco-Sensitive Zone, Indukuru Reserve Forest, Rampachodavaram Forest Division, wire snare, Animal

Rescue Centre-Visakhapatnam, Wild Life (Protection) Act, 1972

Mains:

- Wildlife crime, anti-poaching surveillance, habitat protection, species conservation, veterinary rehabilitation, community participation, protected-area management

Why in News?

- Forest officials rescued a **750-kg female Indian gaur** trapped in a wire snare in the **Eco-Sensitive Zone of Papikonda National Park**. The animal was discovered during patrolling in the **Indukuru Reserve Forest**.



About the Indian Gaur

- The **Indian gaur**, scientifically known as *Bos gaurus*, is a large wild bovine commonly referred to as the **Indian bison**.

Its important characteristics include:

- A strongly built body with a muscular shoulder ridge
- Dark brown or blackish coat in adults
- Distinctive white markings on the lower legs
- Curved horns present in both males and females

- A largely herbivorous diet consisting of grasses, leaves, shoots and fruits
- Preference for forest-grassland landscapes with adequate water

Gaurs play an important ecological role by influencing vegetation and serving as prey for large carnivores such as tigers.

Conservation Status

- **Wild Life (Protection) Act, 1972:** Listed in **Schedule I**, receiving the highest degree of legal protection.
- **IUCN Red List:** Vulnerable
- **CITES:** Included in **Appendix I**, which restricts international commercial trade.

Hunting, trapping or trading in the species is prohibited except under narrowly defined legal circumstances.

About Papikonda National Park

Papikonda National Park is located in the northern **Eastern Ghats of Andhra Pradesh**, along the **Godavari River**.

- The area was initially notified as a wildlife sanctuary and later upgraded to a national park.
- It contains rugged hills, valleys, riverine habitats and moist and dry deciduous forests.
- Its fauna includes gaur, tiger, leopard, sloth bear, sambar, spotted deer and several bird species.
- The **Papikonda Hill Range** was historically known as the **"Bison Hills"** because of the presence of Indian gaur.

What is an Eco-Sensitive Zone?

- An **Eco-Sensitive Zone (ESZ)** is an area

notified around a national park or wildlife sanctuary to act as a transition zone or “**shock absorber**” against harmful human activities.

An ESZ is not necessarily a complete no-activity zone. Activities are classified as:

- Prohibited
- Regulated
- Permitted or promoted

Its purpose is to minimise ecological damage, habitat fragmentation and pressure from development around protected areas.

Why are Wire Snares a Serious Threat?

Wire snares are simple but highly dangerous hunting devices.

- They are **indiscriminate** and can trap non-target animals.

- Trapped animals may suffer deep wounds, infection, starvation or death.
- Snares are difficult to detect in dense forests.
- Their presence may indicate hunting pressure and weaknesses in surveillance.
- Large animals can injure themselves further while attempting to escape.

Conclusion

The rescue of the Indian gaur reflects the importance of vigilant patrolling and timely veterinary care. However, the presence of a hunting snare within an Eco-Sensitive Zone reveals continuing threats to protected wildlife. Effective conservation requires stronger enforcement, scientific monitoring and the participation of local communities in safeguarding the biodiversity of the Eastern Ghats.

Adivasis Build 100-Metre Wooden Bridge in ASR District

Source: [Deccan Chronicle](#)

Relevance: APPSC Group I Paper III: Governance and welfare of tribal communities

Important Keywords

Prelims

- **Alluri Sitarama Raju District**, Chintapalli mandal, Scheduled Areas, Adivasis, weekly shandies, **Fifth Schedule**, **PESA Act, 1996**, Gram Sabha and Panchayat Raj Department

Mains

- Last-mile connectivity, tribal development, community participation, infrastructure deficit, disaster-resilient construction, social inclusion, decentralised governance and administrative accountability

Why in News?

Nearly 100 Adivasis from eight villages constructed a **100-metre wooden bridge** across a stream between **Lothugedda and Boyapadu** in Chintapalli mandal of Andhra Pradesh’s **Alluri Sitarama Raju district**. The community acted after the earlier bridge, built by the Panchayat Raj Department, was washed away in 2024 and was not replaced.

Community Construction of the Bridge

Construction began on **August 8, 2026**, and was completed on **August 15**, when the villagers also celebrated Independence Day.

The participating villages were:

- Boyapadu
- Vanajajula

- Kappala
- K. Bennavaram
- Karakapalli
- Godugumamidi
- T. Korukonda
- Mulagondi



The community used timber collected from forest trees and contributed labour without spending money on construction. The completed structure can support pedestrians, motorcycles and autorickshaws.

A similar bridge built by Adivasis at **T. Korukonda** in the previous year was reported to be functioning despite exposure to seasonal weather.

Why was the Bridge Necessary?

The absence of a crossing created difficulties in accessing essential services.

- Children faced obstacles while travelling to school.
- Patients struggled to reach hospitals.
- Farmers and forest-dependent families could not easily transport produce.
- Residents faced difficulty reaching weekly tribal markets or **shandies**.

- Motorised transport between the villages remained disrupted.

The bridge therefore served as an essential communication link rather than merely a local convenience.

Wider Infrastructure Deficit

- The incident reflects the continuing shortage of all-weather roads, culverts and bridges in remote Agency areas.
- A culvert at **Chinna Gangavaram** in Darakonda panchayat of G.K. Veedhi mandal was recently washed away following heavy rain. Such failures show the vulnerability of local infrastructure to intense rainfall and stream flow.

Government records indicate that several works have been sanctioned in ASR district, including:

- A bridge between **Jajigonda and Bodidevulu** in Paderu
- A low-level causeway between **Chamagedda and Nadimveedhi**
- A four-vent slab culvert between **Akuru and Badigunta**
- A **₹1.89-crore bridge** on the Ganuguruolu-Bangarubudi road in G. Madugula mandal

The central governance issue is therefore timely execution, quality control and maintenance of sanctioned projects.

Constitutional

- Many tribal habitations in the district fall within **Scheduled Areas** governed by the **Fifth Schedule of the Constitution**.
- **Article 46** directs the State to promote the educational and economic interests of Scheduled Tribes and protect them from social injustice and exploitation.

- The **Panchayats (Extension to Scheduled Areas) Act, 1996**, strengthens the role of Gram Sabhas in local planning and management of community resources. Tribal participation should therefore be incorporated into infrastructure planning rather than being limited to emergency self-help.

Conclusion

The wooden bridge reflects both the resilience of Adivasi communities and the continuing infrastructure gap in remote Agency areas. Tribal participation should complement, but cannot replace, the State's responsibility to provide safe and reliable public infrastructure. Responsive administration and climate-resilient engineering are essential for inclusive regional development.

Tirumala Introduces Digital Pilgrim Centre, Revamped Museum and Electric Buses

Source: [The Hindu](#)

Relevance: APPSC Group I Paper IV: Andhra Pradesh economy and infrastructure

Important Keywords

Prelims:

- **Tirumala Tirupati Devasthanams (TTD)**, **Pilgrim Experience Centre**, **Vaikuntham Queue Complex**, **Sri Venkateswara Museum**, virtual reality, artificial intelligence, electric mobility, **Reliance Foundation**, **Bharat Biotech**, **Annamacharya**, **Sri Krishnadevaraya**, **Tirumala Seven Hills**, **Brahmotsavams**.

Mains:

- Technology-enabled public services, sustainable pilgrimage, heritage interpretation, digital cultural preservation, green mobility, public-private partnership, responsible tourism, inclusive pilgrim management.

Why in News?

- Andhra Pradesh Chief Minister **N. Chandrababu Naidu** inaugurated a **Pilgrim**

Experience Centre and the revamped **Sri Venkateswara Museum** at Tirumala on **September 16, 2026**.

- He also flagged off **32 electric buses**, donated by the **Reliance Foundation** and **Bharat Biotech**, to strengthen sustainable transport facilities for pilgrims at the hill shrine.



Pilgrim Experience Centre

- The **Pilgrim Experience Centre** has been established at the **Vaikuntham Queue Complex** at a cost of **₹4 crore**.
- It seeks to familiarise pilgrims with the spiritual traditions of Tirumala through immersive digital technologies.

Major Features

- **Three-dimensional videos** explain the daily *kainkaryams* and puja rituals performed for Lord Venkateswara.
- Digital presentations describe the religious and cultural significance of Tirumala.
- A **virtual reality-based darshan** allows devotees to experience important aspects of the shrine digitally.
- The centre can engage pilgrims during the waiting period and improve their understanding of temple traditions.

The initiative represents the use of technology not as a substitute for physical worship, but as an instrument for cultural education and improved pilgrim experience.

Electric Mobility Initiative

The Chief Minister flagged off **32 electric buses** at **Narayanagiri Circle** to transport devotees within Tirumala.

Of these:

- Reliance Foundation donated 25 electric buses.
- Bharat Biotech contributed seven electric buses.
- The two organisations also handed over the necessary charging stations to the TTD.
- During his Tirumala visit in June 2026, Reliance Executive Director Anant Ambani had announced the donation of 25 electric buses, valued at approximately ₹27.5 crore, for the convenience of pilgrims.

Importance of Electric Buses

- **Environmental protection:** Tirumala is an ecologically sensitive hill region. Electric buses can reduce tailpipe emissions and

local air pollution.

- **Lower noise pollution:** Quieter electric vehicles are suitable for maintaining the calm atmosphere of a religious centre.
- **Sustainable pilgrim transport:** Clean public transport can reduce dependence on conventional fuel vehicles and support large-scale movement of devotees.
- **Public-private partnership:** Corporate contributions supplement the TTD's infrastructure and demonstrate the potential of institutional cooperation in public service delivery.
- **Supporting infrastructure:** The provision of charging stations along with the buses is important for their continuous and reliable operation.

Revamped Sri Venkateswara Museum

- The Chief Minister also inaugurated the revamped **Sri Venkateswara Museum**, which presents the historical, religious and cultural significance of Tirumala and Lord Venkateswara.

Important Exhibits

- Models of jewellery offered to the deity on different occasions.
- Jewellery associated with **Sri Krishnadevaraya**, the Vijayanagara ruler and devotee of Lord Venkateswara.
- Three-dimensional replicas of crowns and ornaments worn by the deity.
- Exhibits on the temples and sculptures located across the Tirumala hills.
- Displays explaining the naturally formed geographical features of the region.
- A **3D model of the Seven Hills**, designed to familiarise pilgrims with Tirumala's

physical and sacred landscape.

- Weapons surrendered by kings who visited Tirumala and later embraced a spiritual path.
- Musical instruments used by devotees and saint-composers, including **Annamacharya**, to praise Lord Venkateswara.

The museum also has a panoramic screen on which an **AI-generated video** depicting the wedding festivities of Lord Venkateswara is displayed.

Conclusion

The new facilities at Tirumala demonstrate how

technology and sustainability can strengthen the management of a major pilgrimage centre. Digital interpretation can improve cultural understanding, while electric mobility can reduce the ecological impact of pilgrim transport.

Their long-term success will depend on accessibility, historical authenticity, effective maintenance and environmental safeguards. The model can offer useful lessons for sustainable and technology-enabled management of other pilgrimage destinations in India.

PanIIT Summit 2026: Building Andhra Pradesh's DeepTech Roadmap

Source: [The Hindu](#)

Relevance: APPSC Group I Paper IV: Andhra Pradesh economy and development

Important Keywords

Prelims:

- PanIIT Summit 2026, Swarna Andhra@2047, DeepTech, PanIIT Amaravati Council, Quantum Valley, Ratan Tata Innovation Hub, Blue Economy.

Mains:

- Research-industry collaboration, advanced manufacturing, technology transfer, innovation financing, start-up ecosystem, AI-enabled governance, energy transition.

Why in News?

The **Andhra Pradesh Government** will organise the **PanIIT Summit 2026** in **Vijayawada** on **October 3** to prepare a technology and innovation roadmap

aligned with **Swarna Andhra@2047**.

Vision of the Summit

The summit will bring together:

- IIT directors and alumni;
- industry leaders;
- investors;
- policymakers;
- innovators; and
- start-up founders.

It aims to use **DeepTech, research, innovation and advanced manufacturing** as drivers of Andhra Pradesh's growth. It will focus on applications in energy, healthcare, agriculture, water management, space and defence.

The summit will also examine skill development, entrepreneurship and the use of artificial intelligence in governance.

Five Thematic Panels

Energy and Fuel Cost Optimisation

- The panel will examine the use of **solar**

energy, wind power, green hydrogen and batteries to reduce energy and fuel costs. The discussion will be connected with the State's **net-zero goal for 2047**.

DeepTech – Quantum, Semiconductors and AI

- This panel will discuss the integration of **quantum technologies, artificial intelligence, machine learning and semiconductors** into governance, industries and services.
- It will also examine opportunities for developing competitive technology products.

Space and Defence Manufacturing

- The panel will focus on **space technologies, defence production and precision manufacturing** as potential areas of industrial development.

BioValley – Health Access and Screening

- This discussion will cover healthcare access, health screening and the development of medical devices.

AgriTech, Water and the Blue Economy

The panel will examine:

- precision irrigation;
- sustainable water management;
- agricultural technologies;
- farmer incomes; and
- Blue Economy opportunities.

Three Strategic Roundtables

IIT Directors' Conclave

The conclave will discuss:

- the proposed PanIIT Amaravati Council;
- establishment of Centres of Excellence;

- faculty and research funding; and
- technology transfer.

Industry Leaders and Unicorn CXOs

Industry leaders will deliberate on:

- a DeepTech policy;
- research fellowships;
- infrastructure requirements;
- Centres of Excellence; and
- a **Global IIT Mentor Network**.

Investors and Family Offices

Venture capitalists and family offices will examine:

- the proposed **PanIIT Amaravati Venture Fund**;
- Quantum Valley development pathways;
- financing of fellowships; and
- start-ups emerging from the **Ratan Tata Innovation Hub**.

Expected Policy Outcome

- Recommendations from the panels and roundtables will be presented to Chief Minister **N. Chandrababu Naidu**.
- They will be consolidated into a **Research and Recommendation Paper**, which is expected to form Andhra Pradesh's policy roadmap for research, DeepTech, innovation and advanced manufacturing.
- Before the summit, the Chief Minister will host a leadership dinner on **October 2** for State representatives, IIT leaders, investors, policymakers, industrialists and start-up founders.

Conclusion

The PanIIT Summit 2026 seeks to connect research institutions, industries, investors and the Andhra

Pradesh Government through a common innovation platform. Its effectiveness will depend on converting expert recommendations into clearly

defined policies, institutions, funding mechanisms and technology-based development projects.

Mazagon Dock to Establish ₹15,000-Crore Merchant Shipyard at Dugarajapatnam

Source: [The Hindu](#)

Relevance: APPSC Andhra Pradesh economy and infrastructure

Important Keywords

Prelims:

- **Mazagon Dock Shipbuilders Limited**, Dugarajapatnam, merchant vessels, gross tonnage, NSHIP-AP, Special Purpose Vehicle, anchor shipyard, Shipbuilding Development Scheme, Maritime Amrit Kaal Vision 2047.

Mains:

- Maritime infrastructure, port-led industrialisation, merchant shipbuilding, advanced manufacturing, employment generation, ancillary industries, export competitiveness.

Why in News?

Mazagon Dock Shipbuilders Limited and National Shipbuilding and Heavy Industries Park-Andhra Pradesh have signed a Memorandum of Understanding to establish a greenfield merchant shipyard at Dugarajapatnam in Tirupati district.

Understanding the Project

Merchant Shipbuilding

- Merchant shipbuilding involves constructing vessels used mainly for

transporting goods and commercial cargo rather than military operations.

- MDL's entry into this sector represents an expansion from its established role as a Defence Ministry shipbuilder.

Greenfield Shipyard

- A greenfield shipyard is a new shipbuilding facility developed at a fresh location. The Dugarajapatnam project will include the infrastructure needed to construct large commercial vessels.

Gross Tonnage

- Gross tonnage is a measure associated with the total internal volume of a ship. The proposed yard is designed to produce vessels with a combined capacity of **1.2 million gross tonnes annually**.

Institutions Involved

Mazagon Dock Shipbuilders Limited

- MDL is a Navratna public-sector shipbuilder under the Ministry of Defence. It has been selected as the anchor shipyard for the proposed Dugarajapatnam cluster.
- As the anchor institution, it will provide the principal shipbuilding investment and form the industrial base around which related activities can develop.

NSHIP-AP

The agreement has been signed with **National**

Shipbuilding and Heavy Industries Park–Andhra Pradesh.

NSHIP-AP is a Special Purpose Vehicle owned equally by:

- the **Andhra Pradesh Maritime Board**; and
- the **Visakhapatnam Port Authority**.

The institutional structure brings together the State maritime authority and a major port authority for developing the project.

Major Features of the Shipyard

- **Location:** Dugarajapatnam, Tirupati district
- **MDL investment:** Approximately ₹15,000 crore
- **Investment period:** Five to seven years
- **Annual capacity:** 1.2 million gross tonnes
- **Employment potential:** Nearly 45,000 direct and indirect jobs
- **Market focus:** Domestic and export markets
- **Future expansion:** Additional capacity can be developed if demand increases

Types of Vessels to Be Constructed

The shipyard will manufacture:

- tankers;
- bulk carriers;
- container ships;
- liquefied natural gas carriers; and
- other large specialised vessels.

The diversified production plan allows the proposed yard to serve different segments of commercial shipping.

Dugarajapatnam Shipbuilding–Port Cluster

The Andhra Pradesh Government proposes to develop Dugarajapatnam as an integrated **shipbuilding-cum-port cluster** rather than as an

isolated industrial unit.

According to the techno-economic feasibility report:

- the shipbuilding and ship-repair yard is estimated to cost **₹29,254 crore**; and
- the associated port is estimated to cost **₹9,513 crore**.

The Union Government has approved the port and its development. The cluster has been brought under the Centre's **Shipbuilding Development Scheme**.

Anchor Shipyard Model

- NSHIP-AP selected MDL as the anchor shipyard. A major anchor facility can form the central industrial unit around which suppliers, service providers and other maritime businesses operate.

The project may therefore attract activities connected with:

- shipbuilding;
- ship repair;
- marine engineering;
- manufacturing;
- logistics; and
- other ancillary industries.

Implementation Responsibilities

The **Andhra Pradesh Maritime Board** will:

- provide the required land;
- develop supporting infrastructure; and
- obtain the statutory clearances needed for implementation.

MDL will undertake its proposed investment over the planned five-to-seven-year period.

The project will require coordination among MDL, NSHIP-AP, the Andhra Pradesh Maritime Board, Visakhapatnam Port Authority and the Union

Government.

Alignment with Maritime Amrit Kaal Vision 2047

The project is connected with the national objective under the **Maritime Amrit Kaal Vision 2047** of making India one of the world's top five shipbuilding countries by 2047.

Andhra Pradesh seeks to contribute to this objective by using its:

- long coastline;
- strategic location; and
- industrial ecosystem.

The Dugarajapatnam cluster is intended to

strengthen the State's position in national shipbuilding and maritime manufacturing.

Conclusion

The Dugarajapatnam project marks MDL's expansion into large-scale merchant shipbuilding and offers Andhra Pradesh an opportunity to develop an integrated maritime-industrial cluster. Its proposed capacity, employment potential and connection with the Maritime Amrit Kaal Vision 2047 make it an important infrastructure initiative. Timely financing, clearances and coordinated development of the port and shipyard will determine its successful implementation.

Visakhapatnam Tops Andhra Pradesh's YouthPOWER Rankings

Source: [The Hindu](#)

Relevance: APPSC Group I Paper IV: Economy and Development of Andhra Pradesh

Important Key Words

Prelims

- Andhra Pradesh State Handbook of Youth Opportunity, YouthPOWER score, Future of India Foundation, GITAM Deemed to be University, labour force participation, regular salaried employment

Mains

- Graduate unemployment, women's workforce participation, education-employment gap, industry-linked skilling, district-level planning, employment quality, labour productivity, inclusive growth

Why in News?

The Andhra Pradesh State Handbook of Youth Opportunity has ranked Visakhapatnam first among the State's **26 districts**, with a YouthPOWER score of 55. The handbook was released at GITAM Deemed to be University in Visakhapatnam by MP **M. Sriharat**. The event was organised by the Future of India Foundation.

About the Andhra Pradesh State Handbook of Youth Opportunity

The handbook assesses the opportunities available to young people across all **26 districts of Andhra Pradesh**.

The assessment covers five parameters:

- Participation
- Opportunity
- Work
- Education
- Readiness or skilling

Its findings are based on nearly **180 indicators** drawn from **27 government databases**. The district-level approach helps identify differences in education, employment, skills and economic opportunities within the State.

Andhra Pradesh's Youth Employment Profile

- Andhra Pradesh performs relatively well in school education, while a large proportion of young people pursue higher education compared with many other States.
- However, the handbook identifies a gap between educational progress and employment outcomes. The State has struggled to convert its educational advantages into secure and well-paid employment, particularly for graduates.

Major Employment Indicators

Indicator	Andhra Pradesh's position
Youth unemployment rate	16.2%
Youth labour force participation rate	46.4%
Youth neither employed, studying nor undergoing training	28.4%
Labour force participation among young women	29.7%

The figures indicate that participation in education has not automatically resulted in adequate employment opportunities.

The handbook identifies two areas requiring urgent attention:

- Creating suitable employment for graduates
- Increasing women's participation in the workforce

Positive Developments in Andhra Pradesh

- The handbook also records important improvements in the State.

Improvement in Nutrition

Child and adult nutrition indicators improved in Andhra Pradesh even as they worsened in the median State during the same period.

Shift in Employment Structure

Over the previous eight years, young workers gradually moved away from agriculture towards:

- Services
- Trade
- Hospitality
- Construction

This reflects a change in the sectoral distribution of youth employment.

Financial and Digital Access

- Access to banking and digital connectivity among young women expanded faster in Andhra Pradesh than in any other State surveyed.
- However, improvements in education, nutrition and digital access were not matched by corresponding improvements in the quality and security of employment.

Why Did Visakhapatnam Rank First?

- Visakhapatnam recorded the highest **YouthPOWER score of 55** because of its relatively strong performance in employment, productivity and education.

High Share of Salaried Employment

- Around **60% of workers** in Visakhapatnam hold regular salaried jobs. This is nearly three times the **21%** recorded in a typical district.
- The district's labour market therefore has a

stronger orientation towards formal employment.

Comparative Position of Visakhapatnam

Indicator	Visakhapatnam	Typical district
Workers in regular salaried employment	60%	21%
Value added per worker	₹1.79 lakh	₹1.42 lakh
Young women aged 15-21 outside education	15%	33%
Class 9 students meeting mathematics standards	41%	35%

These indicators explain Visakhapatnam's leading position in the State-level ranking.

Higher Labour Productivity

Value added per worker, which indicates the productivity of local enterprises, is approximately:

- ₹1.79 lakh in Visakhapatnam
- ₹1.42 lakh in a typical district

This suggests that enterprises in Visakhapatnam generate greater economic value per worker than those in the median district.

Better Educational Participation among Young Women

- Only 15% of young women aged 15-21 years in Visakhapatnam were outside education. The corresponding figure for a typical district was 33%.

Stronger Mathematics Learning Outcomes

- Around 41% of Class 9 students in Visakhapatnam met grade-level standards in mathematics, compared with 35% in a typical district.
- In the handbook, a "typical district" means the **median district value** for the respective indicator.

Conclusion

The YouthPOWER rankings show that Visakhapatnam has developed comparatively strong educational and formal employment outcomes. However, Andhra Pradesh continues to face a wider gap between educational achievement and secure employment, particularly among graduates and young women. Closer coordination among educational institutions, skilling agencies, industries and elected representatives is necessary to convert the State's human capital into productive and inclusive employment.

Vijayanagara-Era Inscription Discovered at Penukonda in Andhra Pradesh

Source: [The Hindu](#)

Relevance

- APPSC: Andhra Pradesh History, Regional Heritage and Current Affairs

Important Keywords

Prelims

- Penukonda, Vijayanagara Empire, Bukka Raya I, Saka 1285, Naga Panchami, Kannada-Telugu script, Nagula Bavi

Mains

- Epigraphy, regional heritage, temple architecture, historical reconstruction, cultural continuity, heritage conservation

Why in News?

An ancient stone inscription was discovered at the **Sri Naga Lingeshwara Swamy Temple** on Penukonda hill in the **Sri Sathya Sai district of Andhra Pradesh**. The inscription belongs to **1363 CE** and provides information about the early history of the Vijayanagara Empire during the reign of **Emperor Bukka Raya I**.

Location of the Discovery

- The inscription was found within the premises of the Sri Naga Lingeshwara Swamy Temple, located on top of **Penukonda hill**.
- Members of the Penukonda chapter of the **Vishwa Hindu Parishad** discovered the dilapidated shrine while climbing the hill through its rugged northern and western approaches. They noticed an inscription carved on a large boulder and sent its photographs to historian **MyNaa Swamy** for decipherment.

About Penukonda

- Penukonda is an important historical town in the present-day **Sri Sathya Sai district of Andhra Pradesh**.
- It served as the **second capital of the Vijayanagara Empire**. The discovery strengthens Penukonda's importance as a centre of political, religious and cultural activity during the Vijayanagara period.

Details of the Inscription

- The inscription is written in an ancient **Kannada-Telugu script**. It begins with the words: "**Svasti Sri Saka Varusha 1285**" It concludes with: "**Mangala Maha Sri**"



The date mentioned in the inscription corresponds to:

- Saka year: 1285
- Gregorian date: July 16, 1363 CE
- Traditional calendar: Shravana Shuddha Panchami
- Day: Sunday
- Festival: Naga Panchami

The inscription belongs to the reign of **Bukka Raya I**, who ruled from **1356 to 1377 CE**.

What Does the Inscription Reveal?

The inscription records that **Anantharasu Chikka Odeyar**, who served as the Prime Minister under **Bukka Raya I**, commissioned the temple.

It states that **Anantharasu**:

- Consecrated the **Shiva Linga** at the temple
- Established the shrine on **Naga Panchami**
- Constructed a sacred pond beside the temple

The sacred pond is locally called **Nagula Bavi**, meaning the **Well of Serpents**.

Supporting Sculptural Evidence

- An intricate sculpture discovered at the site provides additional evidence about the shrine's association with Naga worship.
- The sculpture depicts **eight Naga Kanyas worshipping Lord Shiva**. It supports the inscription's reference to Naga Panchami and the sacred pond known as Nagula Bavi.
- The inscription, Shiva Linga, sacred pond and Naga sculpture together indicate the

religious importance of the site.

Conclusion

The Penukonda inscription provides valuable evidence about the early Vijayanagara period, temple patronage and the religious traditions associated with Shaiva and Naga worship. Its discovery also reinforces Penukonda's historical importance. Scientific documentation and careful restoration are essential to preserve this regional heritage for future generations.

Andhra Pradesh Social Audit Body Wins SKOCH Gold Award

Source: [The Hindu](#), [SKOCH Group](#)

Relevance: APPSC Panchayat Raj and Rural Development

Important Keywords

Prelims Keywords

- SSAAT | Social Audit | SKOCH Gold Award | 109th SKOCH Summit | Gram Sabha | Public Hearing | Rural Development | India Habitat Centre

Mains Keywords

- Participatory Governance | Social Accountability | Public Transparency | Citizen Participation | Community Monitoring | Welfare Delivery | Digital Disclosure

became the **first State Social Audit Organisation in India** to receive this award. Andhra Pradesh Social Audit Director **G. Srikanth** received the award at the **109th SKOCH Summit**, held at the India Habitat Centre in New Delhi.



About SSAAT

SSAAT is Andhra Pradesh's social audit organisation. It works to improve accountability in the implementation of rural development and welfare programmes.

Its approach places citizens at the centre of the audit process by allowing them to:

Why in News?

The **Society for Social Audit Accountability and Transparency of Andhra Pradesh (SSAAT)** has received the **SKOCH Gold Award** for strengthening public participation, transparency and accountability in government programmes. It

- Participate in field-level audits.
- Examine the implementation of government programmes.
- Raise concerns before public authorities.
- Access social audit findings.
- Participate in Gram Sabhas and public hearings.

The State's social audit initiatives have been undertaken under the guidance of the Minister for Panchayat Raj and Rural Development.

What is a Social Audit?

A **social audit** is a public examination of how a government programme is implemented at the ground level.

It allows citizens and beneficiaries to check whether:

- Government benefits have reached eligible people.
- Public funds have been properly used.
- Programme records match actual work completed.
- Officials and implementing agencies have followed prescribed procedures.
- Problems and irregularities have been addressed.

Unlike a financial audit, which mainly examines accounts and expenditure, a social audit focuses on people's participation and the actual delivery of public services.

Initiatives Taken by SSAAT

Public Participation in Field Audits

- SSAAT has involved large numbers of citizens in field-level social audits.
- This enables local people to compare official records with actual conditions and

programme implementation.

Presentation of Findings

Audit findings are presented before:

- Gram Sabhas.
- Public hearings.
- Citizens.
- Beneficiaries.
- Officials concerned with programme implementation.

This gives affected people an opportunity to raise questions and seek corrective action.

Livestreaming of Proceedings

- Public proceedings are livestreamed to improve openness and allow wider public observation of the social audit process.

Digitisation of Reports

- Social audit reports are being digitised and made available for wider public access.
- Digitisation helps citizens, officials and other stakeholders examine findings without depending only on physical records.

Role of Gram Sabhas and Public Hearings

Gram Sabha

- The Gram Sabha provides a local platform where residents can examine audit findings and discuss problems in the implementation of rural development and welfare programmes.

Public Hearing

- A public hearing allows citizens and beneficiaries to present grievances, question irregularities and seek responses from the authorities concerned.
- Together, Gram Sabhas and public hearings

make the audit process more participatory and publicly accountable.

About the SKOCH Group

- The **SKOCH Group** was founded in **1997** by **Sameer Kochhar**.

It is an independent think tank working in areas such as:

- Governance.
- Socio-economic development.
- Digital transformation.
- Impact assessment.
- Action research.
- Corporate excellence.
- Environmental, Social and Governance.
- Banking and financial services.
- Human rights in business.

Its central objective is to support inclusive growth by bringing ground-level needs and experiences into the policy process.

SKOCH has developed an institutional structure consisting of:

- A consulting arm.
- A media and publishing platform.
- A charitable foundation.

It works with governments, regulators, public-sector enterprises, private companies, small and medium enterprises and community-based organisations.

SKOCH Governance Assessment

- The **SKOCH State of Governance Report** has assessed project-level outcomes across Indian States since 2003.

Its assessment process includes:

- Primary research.
- Jury evaluation.
- Field validation.
- Identification of systemic problems.
- Recognition of scalable solutions.
- Evidence-based recommendations.

SKOCH has also developed indices covering:

- Financial prudence.
- e-Government development.
- Government transformation.
- State development.
- Government efficiency.

Its knowledge resources include policy briefs, research reports, books, journals, workshops, conferences, exhibitions and documentation of governance practices.

Conclusion

The SKOCH Gold Award recognises Andhra Pradesh's efforts to make social audits more participatory, transparent and accessible. The long-term value of the mechanism will depend on regular citizen participation, reliable public records and timely action on audit findings.

GPS-based Demarcation Proposed to Resolve Pulicat Lake Fishing Dispute

Source: [The Hindu](#)

Relevance: APPSC Fisheries and Inter-State Coordination

Important Keywords

Prelims Keywords

- Pulicat Lake | Brackish-water Lake | GPS

Transponder | NCCR | Rayadoruvu Sea Mouth | Marine Police | Fishing Zones

Mains Keywords

- Technology-based Demarcation | Inter-State Coordination | Fishermen's Livelihoods | Community Conflict Resolution | Aquatic Resource Depletion | Participatory Governance

Why in News?

Representatives of 25 fishing hamlets dependent on Pulicat Lake have urged the Andhra Pradesh and Tamil Nadu governments to replace traditional boundary markers with a permanent GPS-based system for identifying their respective fishing zones.



Background of the Dispute

- Pulicat Lake is a brackish-water lake spread across Andhra Pradesh and Tamil Nadu. Fishing communities from both States depend on it for their livelihoods.
- Disputes have occurred over the location of the inter-State fishing boundary and the entry of fishing vessels into waters claimed by the neighbouring State.
- A joint meeting was held at the Gummidipoondi Panchayat Union Office near Chennai to discuss a long-term solution.

- The meeting included fishermen from 25 hamlets, legislators representing Ponneri and Sulerpetta, Tiruvallur District Collector S. Kavitha and Tirupati Additional Collector R. Govinda Rao.

Problems with Traditional Boundary Markers

- Palmyrah tree trunks have traditionally been placed in the lake to mark the boundary between the fishing zones of the two States.
- These trunks rot because they remain in saltwater. Replacing them can also create disagreements over the exact location of the boundary.
- Fixed physical markers are considered unsuitable because of the lake's shifting waters, siltation and changing water levels.
- The fishing communities have therefore unanimously supported replacing physical markers with a technology-based system.

Proposed GPS-based System

- Motorised and traditional fishing boats operating in Pulicat Lake would be fitted with automated **GPS transponders**.
- Agencies such as the **National Centre for Coastal Research (NCCR)** would establish the exact digital coordinates of the fishing boundary.
- The system would attach accountability to individual fishing vessels instead of depending on temporary markers placed in the water.

Functioning of the System

- Each boat's location would be continuously identified through its GPS transponder.

Pulicat Lake

Pulicat Lake is a shallow brackish-water lagoon located along the Bay of Bengal coast.



Key Facts



Type: Coastal, shallow, brackish-water lagoon.



Location: Spread across **Andhra Pradesh** and **Tamil Nadu**.



Rank: Second-largest brackish-water lagoon in India after Chilika Lake.



Separated from Bay of Bengal by: **Sriharikota Island**.



Rivers feeding the lake:

- Aarani River from the southern side.
- Kalangi River from the northwest.



Navigation link: **Buckingham Canal** passes through the lagoon.



Ramsar Site: Designated in **2002**.



Biodiversity

- It is a **unique ecotone**, supporting both aquatic and avian life.
- Supports mudskippers, seagrass beds, oyster reefs and more than **200 bird species**.



Flora

- **Important plant species include:** *Walsura piscida*, *Manilkara elengi*, *Excoecaria agallocha*, *Spinifex littoreus*, *Calamus viminalis*.



Fauna

- **Important migratory birds include:** *Flamingos*, *Eurasian curlews*, *Oystercatchers*, *Bar-tailed godwits*, *Sand plovers*, *Greater flamingos*.



- A boat approaching or crossing the designated boundary would receive a real-time alert.
- The system would simultaneously notify Marine Police control rooms in Tiruvallur and Tirupati.
- Digital coordinates would provide both States with a common and consistent boundary reference.

Environmental and Livelihood Factors

Siltation and Low Water Levels

- Severe siltation and low summer water levels regularly choke the lake's inlets.
- These conditions restrict the movement of marine species between the sea and the lake.
- Declining aquatic resources force fishermen from both States to compete within crowded and shallow fishing areas.

Pressure on Fish Stocks

- The fishing dispute is not caused by boundary uncertainty alone. It is also connected with the decline in fish and other aquatic resources.
- Unless the lake's ecological condition

improves, clearer boundaries may reduce accidental crossings but may not fully eliminate livelihood competition.

Rayadoruvu Sea Mouth Project

- Following representations by Tirupati MP Maddila Gurumoorthy, the Union Fisheries Ministry is implementing a **₹133.11-crore project** to open and stabilise the Rayadoruvu sea mouth.
- Opening the sea mouth is expected to improve the movement of seawater and marine species into the lake.
- The project is also expected to help replenish fish stocks and reduce conflict arising from competition over shrinking fishing resources.

Conclusion

GPS-based demarcation can provide a clear and verifiable boundary for Pulicat Lake's fishing communities. However, lasting peace will also require resolution of pending cases, restoration of aquatic resources and sustained cooperation between Andhra Pradesh and Tamil Nadu.

Valmiki Caves: Geological and Cultural Heritage of Rayalaseema

Source: [Deccan Chronicle](#)

Relevance: APPSC: Andhra Pradesh
Geography, Culture, Environment and Tourism

Important Keywords

Prelims:

- Valmiki Caves | Gooty Fort | Erramala Hills | Dolomite | Stalactites | Stalagmites | Oxygen Isotopes |

Palaeoclimate | Edu Bavulu

Mains:

- Geo-heritage Conservation | Palaeoclimate Research | Sustainable Tourism | Monsoon Variability | Community Participation

Why in News?

The **Valmiki Caves near Gooty in Andhra Pradesh** have drawn attention for their **1.6-billion-year-old**

rocks, unique limestone formations, underground water bodies and evidence of past climatic changes.



Location and Geological Profile

- Located near **Gooty Fort** and the **Gooty-Mantralayam Road**.
- Surrounded by the **Erramala hills**, small forests and agricultural fields.
- Formed within ancient **dolomite and limestone rocks**.
- Considered among the oldest exposed geological formations in Rayalaseema.
- The rocks contain evidence of ancient **blue-green algae**, providing clues about early environmental conditions.
- The caves are believed to be among the deepest cave systems in South India.

Major Cave Formations

Mineral-rich water created several natural structures over thousands of years:

- **Stalactites:** Grow downward from the cave roof.
- **Stalagmites:** Grow upward from the cave floor.

- **Other formations:** Flowstones, calcite pillars, curtains and honeycomb structures. Some limestone formations produce sounds resembling a **tabla or bell** when gently tapped. Visitors have been advised not to strike them because they are fragile.

Palaeoclimatic Importance

- **Oxygen-isotope ratios** preserved in stalagmites help reconstruct past rainfall and climatic conditions.
- Studies indicate major changes after the end of the last Ice Age, around **11,700 years ago**.
- These included stronger monsoons and increased rainfall.
- The evidence of a wetter past contrasts with present-day **water stress and falling groundwater levels** in Rayalaseema.

Underground Water Bodies

- The caves contain clear underground water bodies known as **Edu Bavulu or Gundalu**.
- During good rainfall, some cave sections remain submerged.
- Reduced rainfall exposes normally submerged areas.
- These changes assist the study of rainfall, groundwater and regional climate history.

Cultural Importance

- Local belief associates the caves with **Sage Valmiki**, who is believed to have composed the **Ramayana** there.
- Natural formations resembling **Nandi and Shiva Lingam** are worshipped by local communities.
- Special prayers are traditionally conducted during **Maha Shivaratri**.

Exploration and Accessibility

- Surveys led by **H.D. Gebauer** during the 1980s documented the caves' considerable depth.
- A group of German tourists reportedly explored the caves in **1993**, bringing them wider attention.
- Earlier explorers used ropes and torchlight to enter the caves.
- More than **300 steps** have now been constructed, although access still involves rugged terrain and a steep descent.

Conservation Requirements

- Regulate visitor entry to prevent damage to fragile formations.
- Prohibit touching or striking resonant limestone structures.

- Protect underground water bodies and palaeoclimate deposits.
- Provide safe pathways, lighting, information boards and trained guides.
- Promote tourism without disturbing the geological and cultural character of the site.

Conclusion

The Valmiki Caves preserve Rayalaseema's geological, climatic and cultural history. Scientific conservation, regulated tourism and community participation are necessary to protect this fragile natural heritage.