



VAJIRAM & RAVI
Institute for IAS Examination

The Analyst

CURRENT AFFAIRS Handout

31st October 2026



CONTEXT: The glacial lake outburst flood (GLOF) from Sintaphu Lake in Bhutan has triggered downstream alerts in the Indian states of West Bengal and Assam

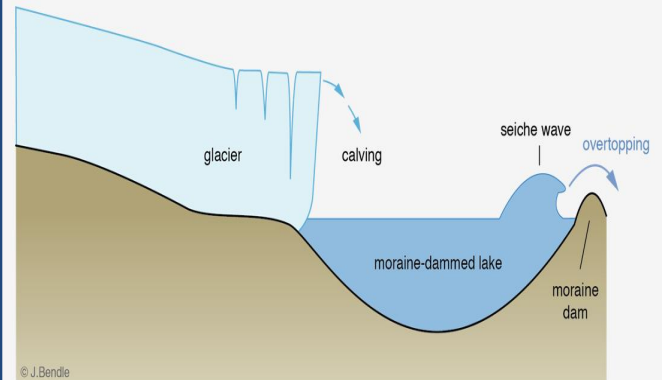
Pillar 1: What is GLOF?

**What is
GLOF?**

- ❑ **GLOF is a flash flood triggered when the natural dam holding a glacial lake fails**

**Type of
Dams**

- ❑ **Moraine**
- ❑ **Ice Barrier**
- ❑ **Combination or Dead Ice**



Calving of ice blocks at the glacier terminus is a common cause for lake water displacement, seiche wave development, and overtopping of moraine dams.

Pillar 2: What are the causes for GLOF?

Natural Causes

- **Glacial Retreat and Lake Formation**
- **Ice or Rock Avalanches**
- **Heavy Rainfall and Cloudbursts**
- **Seismic Activity**
- **Internal Seepage (Piping)**

Anthropogenic Causes

- **Unregulated Construction**
- **Urbanisation**
- **Increasing tourist activities in Hilly regions**
- **Climate Change**



CONTEXT: The glacial lake outburst flood (GLOF) from Sintaphu Lake in Bhutan has triggered downstream alerts in the Indian states of West Bengal and Assam

CASE STUDY: SOUTH LHONAK LAKE, SIKKIM

The lake size has increased from 0.2 ± 0.02 to $1.31 \pm 0.001 \text{ km}^2$ from 1976 - 2016 and the current lake volume is estimated to be $65.81 \pm 2.5 \text{ million m}^3$ (2016) [4]

GLOF susceptibility in South Lhonak Lake could be due to (i) ice-calving from snout (ii) degradation of ice-core moraine (iii) outburst from North Lhonak lake [5]

Depending on the rate of discharge, simulations have suggested that the nearest locality could get affected in 3-4 hours to as early as few minutes. [5]

Recent work at Divecha Centre for Climate change has estimated that lake size is likely to expand up to a maximum volume of 90 million m^3 [3]

Over 8000 still stranded in Uttarakhand

Death toll climbs to 822; fresh landslides, cloudbursts hamper rescue operations

West Bengal prepares to dredge Teesta riverbed amid flood-like situation

The high momentum and swollen state of the Teesta posed a threat to people residing near the banks of the river, say officials

Pillar 3 : What are Impact of GLOF?

...

Harmful impacts of GLOF :

On Human Settlements and

Infrastructure:

- Loss of Life
- Damage to Hydropower & Transport:
- Displacement and Livelihood Loss

On Environment and Ecology:

- Riverbed Silting and Course Shifts
- Habitat Disruption



CONTEXT: The glacial lake outburst flood (GLOF) from Sintaphu Lake in Bhutan has triggered downstream alerts in the Indian states of West Bengal and Assam

Pillar 4 : Why the Indian Himalaya is uniquely vulnerable?



Reasons for Vulnerability :

- **Glacier retreat:** ISRO : 95% of Indian Himalayan glaciers retreating
- **Permafrost thaw:** Destabilisation of Rock slopes above 4,500 m
- **Steep relief :** Valley walls of 1,500–2,500 m within 5–10 km of the lake amplify debris-flow velocities
- **Monsoon intensification:** Cloudbursts and 100+ mm/hour events

- **Seismicity:** The Main Himalayan Thrust regularly produces M6+ events
- **Hydropower density:** Over 200 projects operational or planned projects

Pillar 5 : India's Measures to Mitigate GLOF Risk :

Institutional Mechanisms	Technological Measures	Community Engagement
<ul style="list-style-type: none"> • NDMA's National GLOF Programme • Committee on Disaster Risk Reduction (CoDRR) • 16th Finance Commission Allocation Plan (FY27–31) 	<ul style="list-style-type: none"> • SAR Interferometry for Slope Monitoring • Electrical Resistivity Tomography (ERT) • UAV and Bathymetric Surveys 	<ul style="list-style-type: none"> • Involving Local Communities in Expeditions • Manual Early Warning via ITBP • Expeditions to 40 High-Risk Lakes in 2024



Glacial Lake Outburst Flood



CONTEXT: The glacial lake outburst flood (GLOF) from Sintaphu Lake in Bhutan has triggered downstream alerts in the Indian states of West Bengal and Assam

NDMA's 5-Point Strategy to Mitigate GLOFs

- **Hazard Assessment**
- **AWWS (Automated Weather & Water Stations) Installation**
- **Early Warning Systems (EWS)**
- **Engineering Interventions**
- **Community Involvement**

Mains Practise Question

What do you understand by the Glacial Lake Outburst Flood? What is the impact of Climate Change on it? Provide preventive measures.

(15 Marks, 250 Words)



CONTEXT: The Editorial puts forward the argument that Ethanol blending alone cannot ensure energy security. India must expand biodiesel, particularly from used cooking oil and non-edible feedstocks, alongside ethanol.

Pillar 1 : Ethanol as a Fuel :

What is Ethanol?

- ***Ethanol (C_2H_5OH) is a transparent, volatile, flammable liquid produced naturally through the fermentation of sugars and synthetically from petroleum***
- ***India has achieved its nationwide 20% ethanol blending (E20) target, years ahead of the original 2030 deadline under the National Policy on Biofuels***

BLEND

E20 contains up to approximately 20% ethanol by volume under the relevant specification.

ENERGY

Ethanol has lower energy content per litre than petrol.

OCTANE

Ethanol has high-octane properties and can contribute to the blend's knock resistance.

MILEAGE

Fuel economy can vary by vehicle, engine calibration and driving conditions.

Pillar 2 : Sources of Bioethanol Production :

FIRST GENERATION

SOURCE

- Derived from edible plants grown on arable land.

PROCESS

- Ethanol and butanol produced via yeast fermentation.

CROPS

- Crops include wheat, sugar cane, and oily seeds.

FOOD COST IMPACT

- Attributed as a potential reason for recent spike in food prices.

SECOND GENERATION

SOURCE

- Produced from non-edible crops grown on non-arable land.

COMPOSITION

- Sources have high lignocellulosic content.

KEY EXAMPLES

- Which include wood and organic waste.

THIRD GENERATION

SOURCE

- Primary sources are algae and other non-vascular plants.

CULTIVATION

- Resilient systems that can be grown using sunlight and brackish or wastewater.

LAND USE

- Does not use arable land.

GROWTH RATE

- Fastest growing of all biomass sources.

FOURTH GENERATION

METHOD

- Genetic engineering of organisms for efficient production of biofuels.



CONTEXT: The Editorial puts forward the argument that Ethanol blending alone cannot ensure energy security. India must expand biodiesel, particularly from used cooking oil and non-edible feedstocks, alongside ethanol.

Pillar 3 : Benefits of Ethanol Blending in India :

Benefits offered by Ethanol :

- **Strengthens India's Energy Security :** Substitution of nearly 245 lakh metric tonnes of crude oil & Savings of over ₹1.44 lakh crore in foreign exchange
- **Supports Farmers and the Rural Economy :** Direct payments of over ₹1.04 lakh crore to farmers since 2014–15
- **Promotes Environmental Sustainability :** Prevention of nearly 736 lakh metric tonnes of CO₂ emissions
- **Encourages Circular Economy and Waste Management :** Convert crop residues and surplus grains into renewable fuel
- **Drives Industrial Growth and Sustainable Development**

PANCHAMRIT

INDIA'S FIVE CLIMATE GOALS



50%

of energy requirements from renewable energy by 2030



500 GW

Non-fossil energy capacity by 2030



45%

Reduction of the carbon intensity of the economy from 2005 levels by 2030



1

billion tonnes reduction of projected carbon emissions from now to 2030



NET-ZERO

by 2070



CONTEXT: The Editorial puts forward the argument that Ethanol blending alone cannot ensure energy security. India must expand biodiesel, particularly from used cooking oil and non-edible feedstocks, alongside ethanol.

Pillar 4 : Challenges of Ethanol Blending in India :

Challenges of Ethanol Blending :

- **Food vs Fuel Debate** : India became a net importer of maize in 2024, importing nearly 1 million tonnes
- **High Water Consumption** : Producing one litre of ethanol may require nearly 3,000 litres of water
- **Environmental and Agricultural Concerns** : Increased use of irrigation, fertilisers, and pesticides leads to soil degradation
- **Vehicle Compatibility and Fuel Efficiency** : Fuel economy may decline by 6–7% with E20
- **Supply Chain and Feedstock Constraints**

Data to quote in Mains :



**Vast Legacy
Fleet Exposure :**
240 million
(nearly **77%**)
are legacy
vehicles

**Mileage Drop &
Maintenance
Impact :**
66% of pre-
2023 vehicle
owners report a
mileage loss
exceeding 10%

**Water Ingress in
Retail Storage :**
Water content
reaching up to
**12,500 ppm in
UP** and **13,000
ppm in Andhra
Pradesh**



CONTEXT: The Editorial puts forward the argument that Ethanol blending alone cannot ensure energy security. India must expand biodiesel, particularly from used cooking oil and non-edible feedstocks, alongside ethanol.

Pillar 5 : Initiatives Taken So Far :

Steps taken by GOI :

- **Regulatory Fuel Quality Floor :** Mandated a minimum Research Octane Number (RON) of 95 for E20
- **Advancing National Blending Timelines :** Achieved nationwide E20 distribution ahead of the original 2030 target
- **SIAM Scientific Fleet Study:** Validated, multi-stakeholder empirical study to evaluate long-term material compatibility across legacy vehicles

JIVAN Yojana

- Production of ethanol from lignocellulosic biomass
- Viability Gap Funding (VGF) for setting up 2G ethanol plants

GOBARDHAN Scheme

- Bio - Gas & CBG plants in rural areas
- Reduce open dumping & methane emission
- Focus on waste to wealth concept

RUCO by FSSAI

- Channelise used cooking oil towards biodiesel manufacturers
- Impetus on "Circular economy"

Pillar 6 : Measures to Strengthen Ethanol Implementation in India :

- Ethanol production capacity expansion
- Second-generation technology commercialisation
- Multi-feedstock strategy
- Crop diversification incentives
- Supply chain efficiency
- Tax incentives
- Water conservation technologies
- Engine optimisation

Mains Practise Question

Q. What do you understand by Ethanol Blending? Highlight the challenges of Ethanol Blending in India & provide suggestive measures.

(150 words, 10 marks)

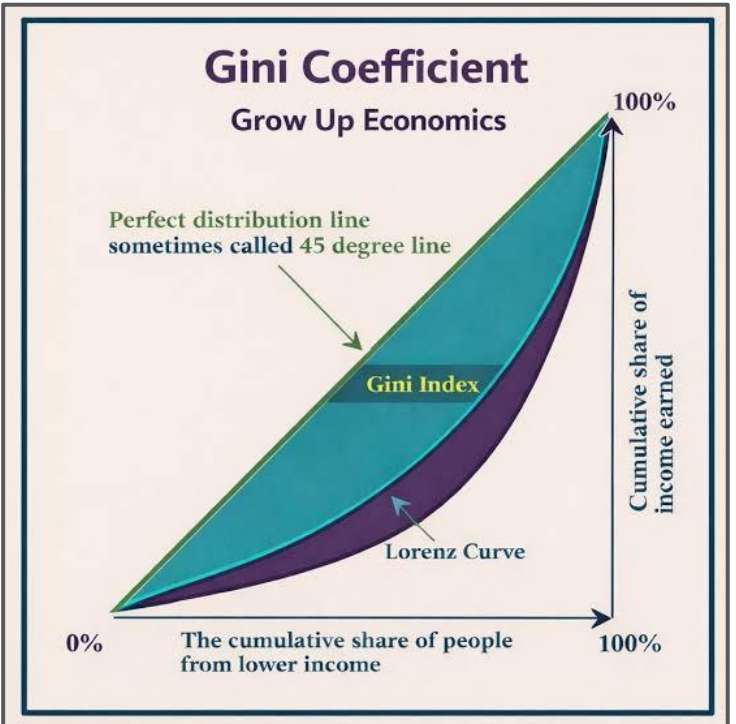


Newspaper : The Hindu **Page No :** 01

India made 'remarkable progress' in reducing poverty, says World Bank

Important data for Mains :

- **Sharp Drop in Extreme Poverty:** From 27.1% in 2011 to 2.6% in 2023
- **Massive Lower-Middle-Income Movement :** The population living below the \$4.20-a-day benchmark dropped from 57.7% to 16.1%
- **Non-Monetary Improvements :** falling from 53.8% (2005-06) to 16.4% (2019-21)
- **Low Gini Index with Disclaimers :** India recorded a low Gini index score of 23.0 in 2023.
- **Significant Wage Disparity :** Median earnings of the top 10% of workers were 13 times higher than those of the bottom 10% in 2023
- **Job Growth vs. Quality & Earnings:** Employment rose by 134 million between 2017 and 2023
- **Youth unemployment** rose to 15.9% in Q1 FY2027.
- **Geographical Disparity :** Rural poverty at the \$4.20 threshold (19.3%) remains significantly higher than urban poverty (8.6%)
- **57% of India's poor concentrated** in a continuous belt from Uttar Pradesh to West Bengal



Nirmala Sitharaman @nsithar... · 15h

The World Bank's October 2026 Poverty & Equity Brief records India's progress as one of the fastest poverty declines in the world. The report highlights several significant gains:

- ✓ 49.6 crore people moved above the lower-middle-income poverty line of \$4.20 a day between 2011 and 2023, with the poverty rate declining from 57.7% to 16.1%.



SYLLABUS : Prelims : Science & Technology
Newspaper : The Indian Express **Page No : 10**

NVS -03 Satellite

Prelims Pointers :

- **Context :** ISRO launched **NVS-03 navigation satellite** on 30th October
- **From :** **Satish Dhawan Space Centre** in Sriharikota, Andhra Pradesh
- Injection into a **Geosynchronous Transfer Orbit (GTO)**
- To support and ensure the continuity of India's independent regional navigation system : **NavIC**
- Provides vital positioning, navigation & timing services for both civilian use and strategic military operations



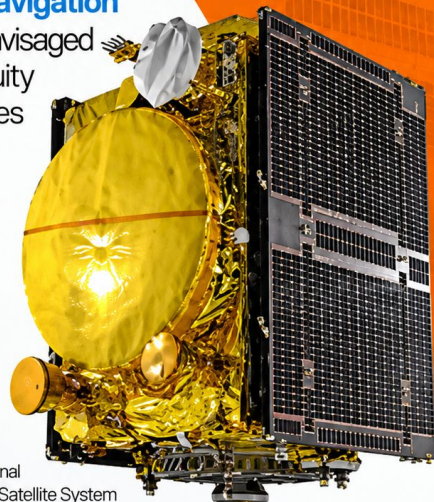
भारत सरकार
MINISTRY OF
INFORMATION AND
BROADCASTING



20th flight of India's
Geosynchronous Satellite
Launch Vehicle (GSLV)



NVS-03 is the **3rd satellite** in the
next-generation navigation
satellite system envisaged
for providing continuity
of navigation services
for IRNSS* series



SYLLABUS : Prelims : Science & Technology

Newspaper : The Indian Express **Page No :** 10

What is NavIC?

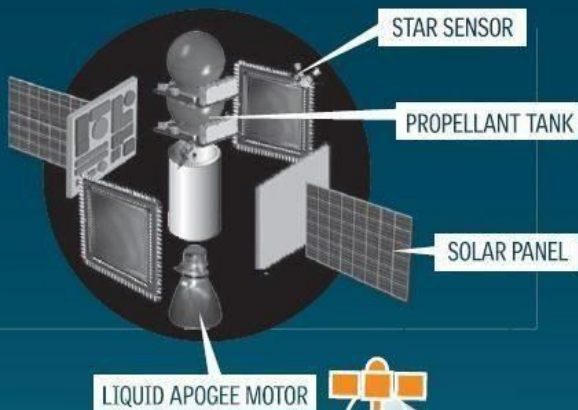
- Earlier name: **IRNSS** — Indian Regional Navigation Satellite System
- Developed by: **ISRO**
- Operational services began: **2018**
- Objective: Provide accurate positioning, navigation and timing (PNT) services over India and the surrounding region
- Provides an indigenous alternative to dependence on foreign navigation systems such as GPS

SATELLITE SYSTEM

SATELLITES

4 GEOSYNCHRONOUS

COST ₹ 1,420 CRORES



Covers India and up to **1,500** km beyond its borders

3 extremely accurate rubidium atomic clocks in each satellite

GPS receivers will not work; need special receivers (yet to be developed)

IRNSS provides Standard Positioning Service

Open to all users

Accuracy better than 20 metres

● 4 satellites in geosynchronous orbit – in pairs, move in two inclined orbits – appear from ground to travel in figure '8' – assist in accurate position determination

○ 3 satellites in geostationary orbit – appear from ground to be at fixed positions in the sky



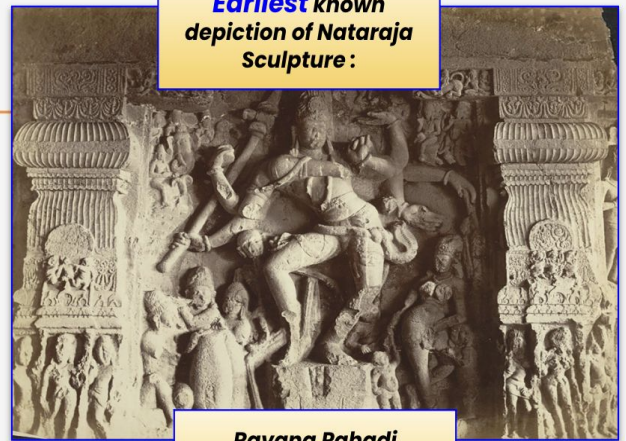
SYLLABUS : Prelims : Art & Culture

Newspaper : The Hindu Page No : 12

Chola era Nataraja sculpture

Nataraja Sculpture of Chola period

- Depiction of Shiva's **cosmic dance** : Creation & destruction of world
- First mentioned in "**Mahabhasya**" text written by Patanjali in Sanskrit
- First depicted in **Aihole cave** built by Chalukyas of Badami
- Chola's made Nataraja statues using **Bronze as material**
- Using **Lost Wax casting technique** prevalent since Indus Valley Civilisation period



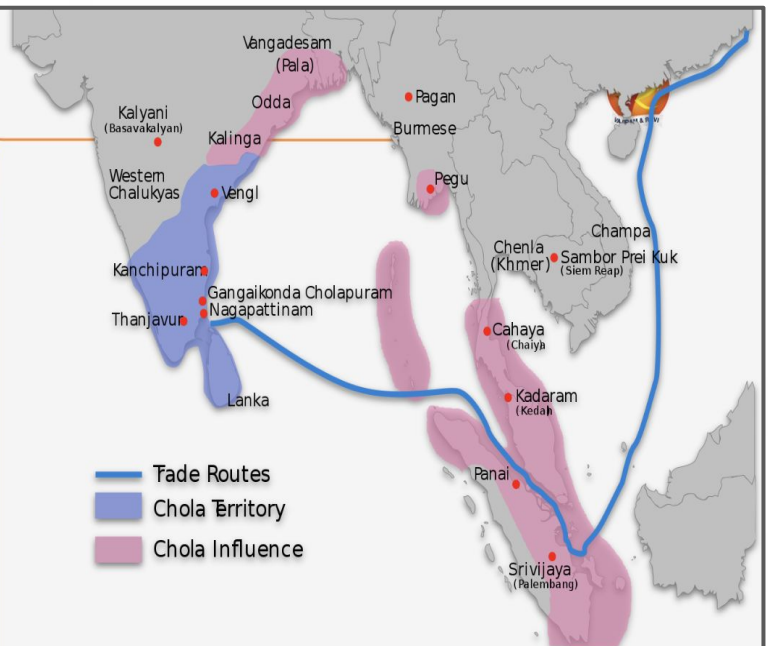
Earliest known depiction of Nataraja Sculpture :

Ravana Pahadi Cave at Aihole during Chalukya period

Chola era Nataraja sculpture

Important Chola rulers

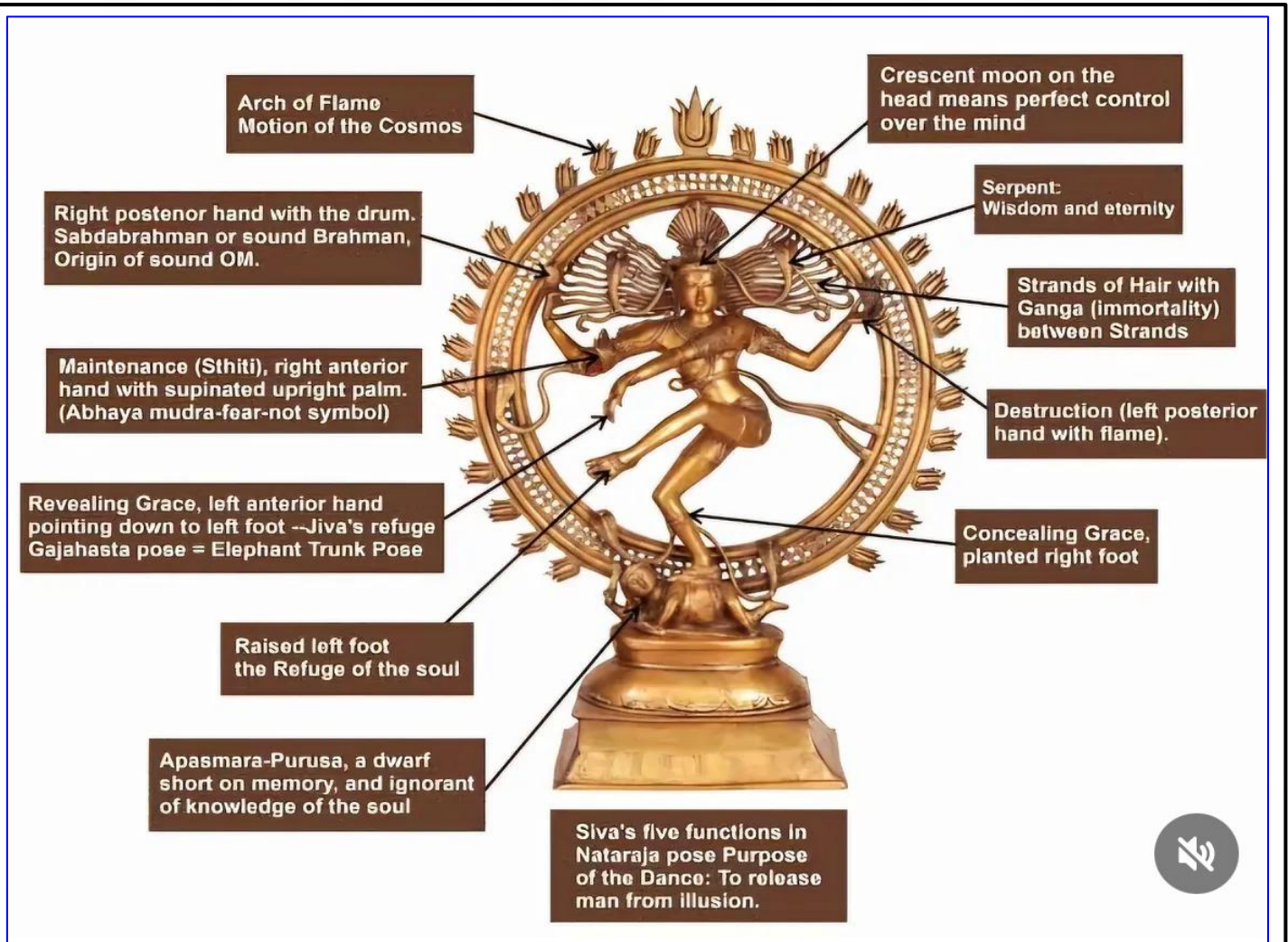
- **Raja Raja Chola (985-1014 CE) :**
 - Conquered **North Sri Lanka & Kerala region**
 - Permitted **Sailendra king Maravijayottunggavarman to establish a Buddhist monastery at Nagapattinam**
 - **UNESCO WHS : Thanjai Periya Kovil or Brihadeeswara Temple**
- **Rajendra Chola (1014-1044 CE) :**
 - Established city of "**Gangaikondacholapuram**"
 - **1025 CE : Defeated Sri Vijaya King Sangrama Vijayatunga Varman**



Chola era Nataraja sculpture

SYLLABUS : Prelims : Art & Culture

Newspaper : The Hindu Page No : 12



UPSC Prelims 2025

16. Who among the following led a successful military campaign against the kingdom of Srivijaya, the powerful maritime State, which ruled the Malay Peninsula, Sumatra, Java and the neighbouring islands?

- (a) Amoghavarsha (Rashtrakuta)
- (b) Prataparudra (Kakatiya)
- (c) Rajendra I (Chola)
- (d) Vishnuvardhana (Hoysala)

SYLLABUS : Prelims : Important Flora & Fauna

Newspaper : The Indian Express **Page No : 09**

Buxa Tiger Reserve

Prelims Pointers :

- Located in Alipurduar district, **West Bengal**, in the eastern Himalayan foothills
- Established as Tiger Reserve in **1983**
- The core area includes the Critical Tiger Habitat
- The buffer area supports habitat connectivity, conservation and compatible human activities
- Buxa serves as an important elephant movement corridor between India and Bhutan's **Phipsu Wildlife Sanctuary**
- **Animals** : Bengal tiger, Asian elephant, leopard, clouded leopard, gaur, sloth bear, fishing cat and leopard cat
- **Birds**: Bengal florican, great hornbill and black stork.



SYLLABUS : Prelims : Important Flora & Fauna

Newspaper : The Indian Express **Page No : 09**

Decoding the key tiger report

HT

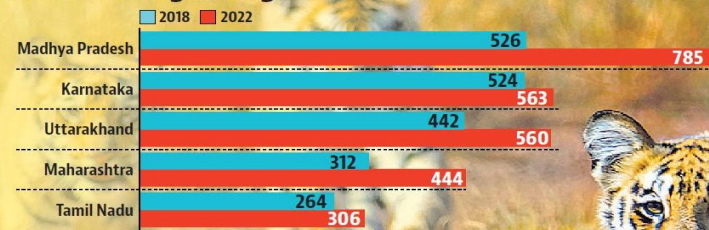
The upper limit of the tiger population is now estimated to be 3,925 and the average number is 3,682

Big cat
numbers in
the country

2,967
2018

3,682
2022

States with highest tiger numbers



States with lowest tiger numbers

State	2018	2022
Nagaland	0	0
Mizoram	0	0
Jharkhand	3	1
Goa	3	5
Arunachal	29	9

Reserves with highest tiger population

1	Jim Corbett, Uttarakhand	231	260
2	Bandipur, Karnataka	126	150
3	Nagarhole, Karnataka	127	141
4	Bandhavgarh, MP	104	135
5	Dudhwa, Uttar Pradesh	82	135
6	Mudumalai, Tamil Nadu	103	114
7	Kaziranga, Assam	104	104
8	Kanha, MP	88	105
9	Sunderban, West Bengal	88	100

● Reserves with highest tiger population

Reserves with no tigers

Dampa, Mizoram, Kamlang, Arunachal Pradesh, Kawal, Telangana, Satkosia, Odisha, Sahyadri, Maharashtra

TYPES OF BIG CATS & THEIR LOCATIONS



SYLLABUS : Prelims : Important Government Bodies

Newspaper : The Hindu **Page No : 10**

National Social Security Board

Facts about the Board :

- Union Labour Ministry on Friday notified the constitution of the National Social Security Board for Unorganised Workers with **40 members**
- National Social Security Board for Gig & Platform Workers with **22 members**
- Union Minister for Labour and Employment is the **chairman** of both Boards
- Boards will meet **at least thrice a year**, and the Union government will prescribe rules of procedure for them
- **Representatives** from the Central & State governments, prominent aggregator companies, employers, civil society organisations & workers' unions

Working of the Boards :

- **MANDATE :** To design, monitor and recommend targeted welfare schemes for gig and platform workers and traditional unorganised workers
- **FUNCTION :** Recommending suitable schemes for different sections of unorganised workers, gig workers and platform workers
- Advising the Union government on the administration of the **Social Security Code 2020**
- Monitoring social welfare schemes for unorganised workers, gig workers and platform workers



Q1. With reference to the sources of biofuels, consider the following pairs:

S.No	Biofuel Generation	Source
1.	First generation	Food crops such as sugarcane
2.	Second generation	Organic waste
3.	Third generation	Genetically engineered organisms
4.	Fourth generation	Algae and other non-vascular plants

How many of the above pairs are correctly matched?

- Only One
- Only Two
- Only Three
- All Four

Answer: b

Q2. With reference to the Lorenz Curve and Gini Coefficient, consider the following statements:

- The Lorenz Curve is used to measure income inequality in an economy.
- A Gini Coefficient of 0 indicates perfect equality, while a value of 1 indicates perfect inequality.
- Greater deviation of the Lorenz Curve from the line of perfect equality indicates lower income inequality.

Which of the statements given above are correct?

- 1 and 2 only
- 2 and 3 only
- 1 and 3 only
- 1, 2 and 3

Answer: a

Q3. With reference to Navigation with Indian Constellation (NavIC), consider the following statements:

- NavIC was earlier known as the Indian Regional Navigation Satellite System.
- It provides navigation services over India and up to 1,500 km beyond its international borders.

- NavIC consists of seven satellites, including four in geostationary orbit and three in geosynchronous orbit.

Which of the statements given above are correct?

- 1 and 2 only
- 2 and 3 only
- 1 and 3 only
- 1, 2 and 3

Answer: a

Q4. With reference to the Nataraja sculpture of the Chola period, consider the following statements:

- Nataraja represents the cosmic dance of Lord Shiva, symbolising the creation and destruction of the universe.
- The depiction of Nataraja is associated with the Aihole caves built by the Chalukyas of Badami.
- Chola bronze Nataraja statues were made using the lost-wax casting technique, which originated during the Chola period.

Which one of the following conclusions is correct?

- Only one statement is correct.
- Only two statements are correct, and one of them is Statement 1.
- Only two statements are correct, and one of them is Statement 3.
- All three statements are correct.

Answer: b

Q5. Consider the following pairs with reference to Tiger Reserves and their respective states:

S.No.	Tiger Reserve	State
1.	Jim Corbett	Uttarakhand
2.	Bandipur	Tamil Nadu
3.	Nagarhole	Karnataka
4.	Dudhwa	Uttar Pradesh

How many of the above pairs are correctly matched?

- Only one
- Only two
- Only three
- All four

Answer: c





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