

GOVERNANCE**Finance Commission's Role in Tackling State Fiscal Challenges****Why in News?**

- Recently, the 16th Finance Commission (FC) has been constituted for recommending the devolution of Central taxes and grants to States.
- The RBI's just published report: "State Finances: A study of Budgets" has red-flagged the issues the FC will certainly be asked to look into, like States reverting to the Old Pension Scheme (OPS), and unsustainable subsidies flowing from the guarantees or freebies promised at the time of elections, regardless of the financial conditions of States.

Why is there a Need to Curb Populism in India?

- Fiscal Imbalance:
 - Rising Debt: Between 2014 and 2022, the average debt-to-GDP ratio of Indian states increased from 22.2% to 34.5%, with populist states like Andhra Pradesh and Tamil Nadu witnessing steeper rises.
 - Higher Deficit: The combined fiscal deficit of states reached 4.1% of GDP in 2021-22, fueled by populist spending on free electricity, loan waivers, and social welfare schemes.
 - Revenue Shortfalls: Tax revenues haven't kept pace with populist spending, with many states relying heavily on central government bailouts or borrowing to bridge the gap.
- Economic Distortions:
 - Investment Decline: Foreign Direct Investment (FDI) inflow into India declined by 10% in 2022, attributed by some to uncertainty created by populist policies like price controls and protectionist measures.
 - Job Growth Stagnation: Despite increased government spending, India's unemployment rate remained above 7% in 2023, indicating that populist policies haven't yielded significant job creation.
 - Market Inefficiency: Price controls in sectors like agriculture discourage production and lead to shortages, disrupting supply chains and impacting consumer welfare.
- Erosion of Governance:
 - Increase in Corruption: India's ranking on Transparency International's Corruption Perception Index dropped from 80 in 2014 to 85 in 2022, coinciding with the rise of populist rhetoric undermining institutional checks and balances.
 - Declining Transparency: The Public Affairs Index, which measures transparency in government decision-making, showed a downward trend in several states with strong populist leaders.

What are some of the Populist Policies taken by States which have aggravated the Debate?

- Reversion to Old Pension Scheme (OPS):
 - Some states in India have reverted to the OPS, abandoning the New Pension Scheme (NPS) introduced in 2004.
 - The OPS incurs indefinite liabilities towards employees' pensions, unlike the NPS, where the liability is limited to the employees' serving life.
 - An internal RBI study suggests that OPS results in 4.5 times more liability compared to NPS, with an additional burden of 0.9% of GDP by 2060.
 - This move is seen as retrogressive, restricting growth and compromising the interests of future generations.
- Rising States' Fiscal Deficit:
 - Many states have deficits due to subsidies for populist measures like free electricity.
 - States' average spending on subsidies is 0.87% of their Gross State Domestic Product (GSDP), with some states spending much more (e.g., Punjab 2.35%, Rajasthan 1.92%).

How can the Finance Commission help Curb Populism?

- Performance-Based Incentives: The 15th FC's proposal for measurable performance-based incentives is a step in the right direction. By linking financial transfers to States with specific outcomes, such as improved health, education, and agricultural indicators, the FC encourages responsible governance and discourages populist measures that may not contribute to long-term development.
 - Under Article 280(3) of the Constitution, apart from recommending the devolution of taxes and grants-in-aid to the States, the FC may be asked by the Centre to look into any other issue "in the interest of sound finance".
- Objective Criteria for Populist Measures: While the categorisation of schemes as populist and non-populist may be challenging, the FC can work on developing objective criteria that take into account the diverse developmental needs of different States.
 - This would require collaboration between the Centre and States to arrive at a consensus on what constitutes populist expenditure.
- Fiscal Efficiency Parameters: The FC can give more weightage to fiscal efficiency in its criteria for transfers. By emphasizing fiscal consolidation and measuring the tax effort of States, the FC can

encourage responsible financial management. This can act as a deterrent to States resorting to populism without considering their fiscal capacity.

- The 15th FC gave only 2.5% weightage to the fiscal efficiency as measured by tax effort (Own Tax to GSDP ratio). This could be reviewed by 16th FC.
- **Public Awareness:** The Finance Commission can play a role in creating public awareness about the consequences of populist measures. By highlighting the strains on finances that freebies create and the long-term impact on economic growth, the FC can contribute to informed public discourse, putting pressure on political parties to adopt responsible fiscal policies.
- **Stress on Future Implications:** The FC can draw attention to the long-term consequences of populist measures, such as rising state debts and the burden passed on to future generations.
 - This could involve recommending measures that prevent States from borrowing beyond their capacity and ensuring that financial decisions align with sustainable development goals.
- **Consensus Building:** While consensus between the Centre and States on controlling populist expenditure may be challenging, the FC can act as a mediator and facilitator in fostering dialogue.
 - By promoting cooperative federalism and encouraging open discussions on fiscal matters, the FC can contribute to a more collaborative approach to financial governance.
- **Regular Review and Recommendations:** The FC can continually review the financial health of States and make periodic recommendations based on the evolving economic scenario. This allows for flexibility in addressing emerging challenges, including the impact of external factors such as the Covid-19 pandemic.

Conclusion

A state's populism should be funded by its own taxpayers, not others. The RBI suggests that fiscal transfers should be tied to reforms and fiscal responsibility. If a state chooses populism and borrows without funding, it should bear the consequences.

SCIENCE & TECHNOLOGY

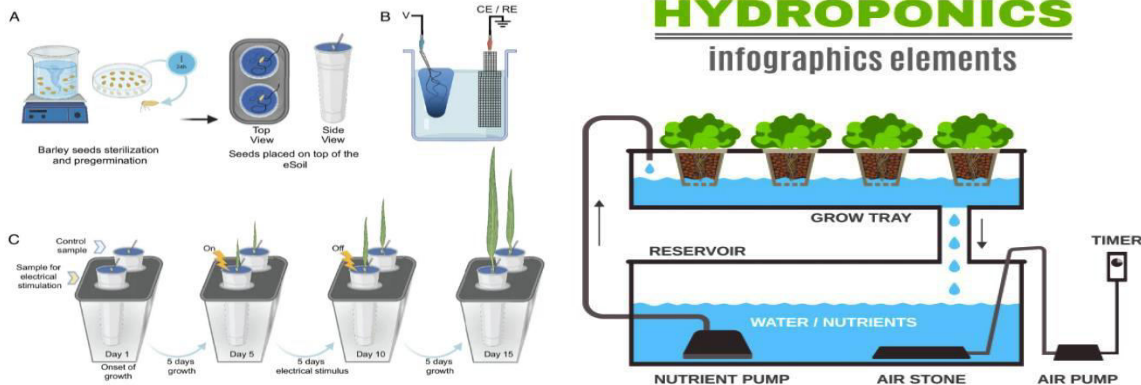
Electronic Soil

Why in News?

- Recently, researchers from Linköping University in Sweden have developed 'Electronic Soil' that can speed up the growth of plants in Hydroponic spaces.

What is Electronic Soil?

- **About:**
 - The electronic soil (eSoil) developed is a novel conductive cultivation substrate tailored specifically for hydroponic systems.
 - Unlike traditional substrates like mineral wool, which are non-biodegradable and manufactured using energy-intensive processes, eSoil is composed of cellulose, a biopolymer, blended with a conductive polymer known as PEDOT (Poly(3,4-ethylenedioxythiophene)).
 - This innovative blend of materials allows for the stimulation of root systems in plants through low-power electrical currents.
- **Significance:**
 - eSoil offers the advantage of significantly lower energy consumption and eliminates the risk associated with high-voltage systems.
 - The significance of eSoil lies in its ability to enhance the growth of plants, as evidenced by a study showing a 50% increase in the growth rate of barley seedlings cultivated in hydroponic systems using this technology.
 - Hydroponics coupled with eSoil can be potentially helpful in addressing global food demands, especially in urban settings where arable land is limited.



What is Hydroponics?

- Hydroponics:
 - Hydroponics is a method of growing plants in a water based, nutrient rich solution in a soilless media.
 - It does not use soil, instead the root system is supported using an inert medium such as perlite, rockwool, clay pellets, peat moss, or vermiculite.
 - The fundamental is to allow the plants roots to come in direct contact with the nutrient solution, while also having access to oxygen, which is essential for proper growth.
- Advantages:
 - Land and Water Efficient: The hydroponic farming technology with closed water loop systems is a viable option for farmers with limited access to land and water.
 - Suitable for Urban Areas: The significance of soilless systems increases many folds when it comes to urban and peri-urban areas where the arable land is polluted.
 - Lower Resource Consumption: Lower and more efficient resource consumption allows this alternative farming technique to be adopted by a variety of stakeholders.
 - Higher Yield: According to the Food and Agricultural Organisation (FAO), the vegetable yield of soilless systems is 20-25% higher than in traditional systems as the number of plants per square metre is higher.
- Drawbacks:
 - Much Time and Attention Required: The water needs to be replaced at regular intervals as standing or recirculating water makes it easier for plant disease to spread if pathogens enter the water supply.
 - Water and Electricity Intensive: Water and electricity are the two major factors in Hydroponic farming, in absence of adequate water supply or stable electricity, the Hydroponic system won't thrive well.

PRELIM FACTS

1. Warli Tribe

- Indigenous Warli Tribe, living near Sanjay Gandhi National Park in Maharashtra teaches a lesson about peaceful coexistence with leopards.

About Warli Tribe:

- They are an adivasi indigenous tribe who live in the mountainous, coastal, and bordering regions of Gujarat and Maharashtra.
- The word 'Warli' is derived from the word 'Warla,' which means 'piece of land'.
- Language - The Warli people speak Varli or Warli, an Indo-Aryan language. The language is typically classified as Marathi, but it is also known as Konkani or Bhil.
- Culture – They have their own animistic beliefs, way of life, customs, and traditions, and they have adopted many Hindu beliefs.
- The Warli culture is centred on the concept of Mother Nature, and natural elements are frequently depicted as focal points in Warli painting.
- The Warli tribe values folk art as well as gods, goddesses, and ritual culture. They use painting to depict their traditional way of life, customs, and traditions. The majority of these paintings are created by women.
- Style & attire - The Warli Tribe women wear a Lugden that is worn until the knee and is typically a one yard sari. The Maharashtrian rural regions influenced the sari. The knee length draping resembles the Maharashtrian sari draping style.
- Festival: Bohada is a three-day mask festival held by the Warli tribes. During this celebration, mask owners wear these masks and perform several times.
- Dance & music - The Warli Tribes perform Tarpa Dance along with Tarpa music instruments.
- They usually perform in groups. One person plays music with a Tarpa instrument and the rest of the people form a circle keeping the musician in the centre and dance with people.

2. Direct-to-mobile (D2M) Technology

- Indian telecom operators have asked the government to auction the spectrum that will be used for direct-to-mobile (D2M) technology services.

About Direct-to-mobile (D2M) technology:

- The science behind D2M is similar to that of an FM radio, where a receiver within the device can tap into different radio frequencies.
- This new-age technology is a combination of broadband and broadcast that uses mobile phones to capture territorial digital TV signals.
- Using D2M, multimedia content, including live TV matches, can be streamed to phones directly without using the internet.

- D2M can ensure-
 - Emergency alerts are delivered directly, reliably and without dependence on internet/cellular networks.
 - Disaster Management audio content is delivered directly and authentically in a targeted manner.
 - With D2M, governments can broadcast citizen-centric information.
 - This approach benefits consumers by reducing their reliance on internet data consumption for staying informed and entertained.
- Challenges involved
 - It is still in the development stage.
 - The biggest challenge in front of the government is to bring different stakeholders, including telecommunications, on board in launching D2M tech on a wide scale.

3. Karman Line

- The Kármán line lacks a specific national demarcation, resembling the concept of international waters.

About Karman Line:

- Located at 100 km (62 miles) above sea level, it is an imaginary line that demarcates the earth's atmosphere from space.
- It was established in the 1960s by a record-keeping body called the Fédération Aéronautique Internationale (FAI).
- It was named after aerospace pioneer Theodore von Kármán.
- Though not all scientists and spacefarers accept it (for example, the Federal Aviation Administration, NASA, and the U.S. military place the line between outer space and the atmosphere at 80 km (50 miles) above the Earth's surface), a majority of countries and space organisations recognise this boundary between earthsky and space.
- It is based on physical reality in the sense that it roughly marks the altitude where traditional aircraft can no longer effectively fly.
- Anything traveling above the Kármán line needs a propulsion system that doesn't rely on lift generated by Earth's atmosphere—the air is simply too thin that high up.
- In other words, the Kármán line is where the physical laws governing a craft's ability to fly shift.
- Anyone who crosses this line qualifies as an astronaut.
- Why do we need a Kármán line?
 - The 1967 Outer Space Treaty says that space should be accessible to all countries and can be freely and scientifically investigated.
 - Defining a legal boundary of what and where space can help avoid disputes and keep track of space activities and human space travel.

4. UN Statistical Commission

- Recently, India started its four-year term as a member of the United Nations Statistical Commission.

About UN Statistical Commission:

- It was established in 1947 and is the highest body of the global statistical system.
- It brings together the Chief Statisticians from member states from around the world.
- Functions:
 - It is the highest decision-making body for international statistical activities, responsible for setting statistical standards and the development of concepts and methods, including their implementation at the national and international levels.
 - The Statistical Commission oversees the work of the United Nations Statistics Division (UNSD), and it is a Functional Commission of the UN Economic and Social Council.
- Membership: The Commission consists of 24 member countries of the United Nations elected by the United Nations Economic and Social Council based on an equitable geographical distribution according to the following pattern:
 - Five members from African States
 - Four members from Asia-Pacific States
 - Four members from Eastern European States
 - Four members from Latin American and Caribbean States
 - Seven members from Western European and other States
- Term: The term of office of members is four years.
- India was a member of the Statistical Commission last in 2004 and the country is returning to the UN agency after a gap of two decades.
- Headquarter: New York

5. Chandaka-Dampara wildlife Sanctuary

- As a first, the Forest Department in Odisha has planned a 'nocturnal trail' for people, especially students and researchers, in the Chandaka-Dampara Wildlife Sanctuary.

About Chandaka-Dampara Wildlife Sanctuary

- Location: It lies partly within Khurda and partly in Cuttack Districts of Odisha State, and is in close proximity to the state capital, Bhubaneswar.
- It is nestled in the Khordha uplands of the 'North-Eastern Ghats' biotic region.
- Spread over 193.39 sq.km of rolling table land and small sprawling hillocks, it is a wildlife sanctuary since August 1982.
- It is known for the successful conservation of elephants, which is the principal species here.
- Vegetation: The floral diversity of the sanctuary is distributed in six types, which include secondary moist miscellaneous semi-evergreen forests, moist Kangada (*Xyliaxylocarpa*) forests, Coastal Sal forests, thorny bamboo brakes, planted Teak, and Eupatorium scrub.
- *Xyliaxylocarpa* is a species of tree in the family legumes. They have a self-supporting growth form. They have compound, broad leaves. Individuals can grow to 30 m.
- There are two water reservoirs, Deras Dam and Jhumka Dam, situated within the sanctuary.
- Flora: The main tree species are Kochila, Kalicha, Belo, Kangada, Giringa, Sunari, Sal, Kumbhi, Jamu, Karanja, Teak, and Sidha.
- Fauna:
 - Apart from elephants, other mammals include Leopard, Chital, Barking deer, Mouse deer, Wild pig, Common langur, Rhesus monkey, small Indian civet, etc.
 - Prominent birds of the sanctuary are Peafowl, Red jungle fowl, Crested serpent eagle, Great horned owl, Black headed oriole, etc.

ANSWER WRITING

Explain the numerous aspects of Indian secularism. Also, discuss how Indian secularism is distinct from western secularism.

Secularism means separation of religion from political, economic, social and cultural aspects of life, religion being treated as a purely personal matter. However, Indian secularism is a unique concept that has evolved over time and is rooted in the country's diverse religious, cultural, and social fabric.

Numerous aspects of Indian Secularism:

- Mutual respect: As per Dr. Radhakrishnan, Indian philosophy of secularism is related to "Sarva Dharma Sambhava" aupanishadic dictum. Thus, there exists mutual respect for all religions.
- For example, Ajmer Sharif Dargah in Rajasthan, which is a shrine dedicated to the Sufi saint Moinuddin Chishti, is visited by people of all faiths.
- Firmly rooted in India's unique circumstances: Indian secularism owes its origin from India's social-cultural and historical paradigm. India's remarkable religious diversity and deeply religious nature of Indian shaped the Indian secularism.
- State neutrality: Indian secularism requires the state to remain neutral towards all religions and to not interfere in religious matters. This means that the state cannot promote or favour any religion, nor can it discriminate against any religion.
- For example, Haj subsidy and maintenance of Hindu temples by state.
- Protection of minority rights: Indian secularism emphasizes the protection of minority rights. State ensures that minorities enjoy the same rights and opportunities as the majority community.
- For example, India has dedicated body i.e., National Commission for Minorities for protection of minority rights.

Difference between Indian and western Secularism:

Western secularism	Indian Secularism
It embodies a negative concept of secularism, i.e., strict separation between religion and state.	It embodies a positive concept of secularism, i.e., equal respect for all religions or equal protection of all religions.
It holds the principle of strict neutrality i.e., non-interference in the affairs of each other.	It holds the principle of 'Principled distance' i.e., interference of the State as and when required to uphold the Constitutional values
No public policy can be solely based on religion, as religion is completely a private matter.	Public policies will also be made on religious issues if there is a need to do so.
A single unified code of law is used to dispense justice regardless of religious background.	Certain personal laws of different religious boards are also considered while dispensing justice.

Conclusion

Indian secularism is like a beautiful tapestry, where different religions are woven together in equality and harmony. It is unique in its approach, respecting each religion while keeping the state separate. This allows everyone to freely practice their beliefs without discrimination. Indian secularism celebrates diversity,

protecting minority rights and fostering unity. It is a masterpiece of religious tolerance and inclusivity, making India a shining example of coexistence.

MCQs

- Consider the following:
 - Immediate Payment Service (IMPS)
 - RuPay
 - Unified Payments Interface (UPI)
 - International money transfers
 - Cryptocurrencies

In how many of the above-mentioned areas does the National Payments Corporation of India (NPCI) have a role?

a) Only two **b) Only three**
c) Only four d) All five
- Which one of the following is the primary objective of the 'Scheme for Residential Education for Students in High Schools in Targeted Areas (SHRESHTA) scheme'?
 - It aims to provide scholarships for higher education to students from Scheduled Castes.
 - It aims to improve the quality of primary education in rural areas.
 - It aims to bridge the gap in educational opportunities for students from Scheduled Castes in targeted areas.**
 - It aims to promote vocational training and skill development among Scheduled Castes communities.
- With reference to Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act), consider the following statements:
 - It aims to promote exploration and sustainable development of mineral resources.
 - Only major minerals like iron ore and coal are granted through a mining lease under the MMDR Act.

Select the correct statements using the codes given below:

a) **1 only** b) 2 only
c) Both 1 and 2 d) Neither 1 nor 2
- Consider the following statements:
 - Shipping is the cheapest and most efficient method of transporting goods over long distances.
 - The waters of the Indian Ocean carry approximately 80% of the world's oil.
 - Malacca Strait and Hormuz Strait present in the Indian Ocean are narrow passages, also known as "choke points".

Which of the statements given above are correct?

a) 1 and 2 only b) 2 and 3 only
c) 1 and 3 only **d) 1, 2 and 3**
- Which of the following are considered as 'Neuropsychiatric Disorders'?
 - Depression
 - Bipolar disorder
 - Dementia
 - Malaria

Select the correct code given below:

a) **1, 2 and 3 only**
b) 2 and 3 only
c) 2, 3 and 4 only
d) 1 and 4 only
- Consider the following statements with reference to Pradhan Mantri Kisan Samman Nidhi (PM-Kisan) scheme:
 - It primarily aims to increase agricultural productivity and production.
 - The payment under the scheme is based on types of crops grown and types of fertilizers applied to the crops.

Which of the statements given above is/are correct?

a) 1 only b) 2 only
c) Both 1 and 2 **d) Neither 1 nor 2**
- Consider the following statements:
 - There is no provision in India to declare any natural disaster as a "national disaster".
 - A disaster can be declared a "calamity of rare severity" if that disaster is induced by harsh weather conditions.

Which of the statements given above is/are correct?

a) **1 only** b) 2 only
c) Both 1 and 2 d) Neither 1 nor 2
- Which one of the following is the core strategy of "Project Tiger" for tiger conservation?
 - It aims to reintroduce tigers in areas where they have become extinct.
 - It aims at establishment of a network of tiger reserves with protected core areas and buffer zones.**
 - It aims at relocation of human settlements from tiger habitats.
 - It aims at legal protection of tigers and their prey species.
- Consider the following statements:
 - Near Field Communication (NFC) technology used in 'UPI Tap and Pay' has a limited range.
 - Near Field Communication (NFC) technology ensures secure transaction initiation and prevents accidental payments.

Which one of the following is correct in respect of the above statements?

a) 1 only b) 2 only
c) **Both 1 and 2** d) Neither 1 nor 2
- Consider the following statements about Sikki Grass:
 - Sikki grass belongs to the zizanoides grass family.
 - The grass grows indigenously in the Tarai regions of Uttar Pradesh only.
 - Sikki got the geographical identification tag in 2018.

Which of the statements given above is/are correct?

a) 1 and 2 only b) 2 and 3 only
c) **1 and 3 only** d) 1, 2 and 3