

Factly Weekly

Compilation

2024

**For UPSC CSE Prelims
Exam**

**2nd Week
July 2024**

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UPSC Syllabus: Polity and nation

Supreme Court on Bail

Anand Marriage Act

Why in the news?

Recently, the National Commission for Minorities conducted a video conference meeting, chaired by the Chairman of the Commission, with representatives from 18 States and Union Territories. The purpose of the meeting was to discuss the implementation and registration of Sikh marriages under the Anand Marriage Act.

About Anand Marriage Act

1. The Anand Marriage Act was passed in 1909. It is a legal act in India specifically designed for the Sikh community.
2. This act was enacted to provide separate legal recognition for Sikh marriages, distinguishing them from Hindu marriages. Prior to this act, Sikh marriages were registered under the Hindu Marriage Act.
3. The Sikh community sought distinct recognition of their marriage rituals, particularly the Anand Karaj ceremony.

Key Features of the Anand Marriage Act

- 1. Legal Recognition of Sikh Marriages:** The act officially recognizes Sikh marriage ceremonies, known as Anand Karaj, as a valid form of marriage.
- 2. Sikh Identity:** The act was a step towards recognizing and legitimizing the distinct religious and cultural identity of the Sikh community in India.
- 3. Registration of Marriages:** While the original 1909 act did not specifically provide for the registration of marriages, amendments and legal provisions over the years have facilitated the registration process for Sikh marriages under this act. This enhances legal clarity and security for couples.
- 4. Cultural and Religious Significance:** The act acknowledges the importance of the Anand Karaj ceremony, which is central to Sikh matrimonial rituals and reflects the community's unique religious practices.

5. Significance and Evolution

- i) The Anand Marriage Act was a landmark legislation for the Sikh community, affirming their distinct religious and cultural identity within the framework of Indian matrimonial laws.
- ii) Over the years, there have been discussions and demands for amendments to the act, focusing on clearer legal provisions for issues such as divorce, alimony, and the registration process.
- iii) These amendments aim to further align the act with contemporary legal standards while respecting Sikh traditions.
- iv) **Recent Implementation:** In 2023, the Anand Marriage Act was implemented in Jammu & Kashmir, expanding its reach and ensuring that Sikh marriages in the region are recognized and registered under this act.

Amendments to regulatory framework for broadcasting and cable services

Why in the news?

Recently, TRAI notified amendments to regulatory framework for broadcasting and cable services and releases.

Amendments Issued:

i) Telecommunication (Broadcasting and Cable) Services (Eighth) (Addressable Systems) Tariff (Fourth Amendment) Order, 2024 (1 of 2024).

ii) Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) (Sixth Amendment) Regulations, 2024 (4 of 2024).

iii) Telecommunication (Broadcasting and Cable) Services Standards of Quality of Service and Consumer Protection (Addressable Systems) (Fourth Amendment) Regulations, 2024 (3 of 2024).

iv) Objective: The primary objective of these amendments includes the following:

a) Facilitate growth of the broadcasting sector by reducing regulatory mandates and compliance requirements.

b) Provide flexibility to the service providers to adopt a market driven approach while safeguarding the interest of the consumers and small players through transparency, accountability and equitability.

c) Promoting ease of doing business by simplifying the regulatory provisions.

Key Changes

1. Tariff Order:

i) Removed NCF ceilings; charges to be market-driven and transparent.

ii) Increased bouquet discount limit to 45%.

iii) Pay channels on DTH must be free-to-air on all platforms.

iv) DPOs must declare platform service tariffs.

2. Interconnection Regulations: Removed HD and SD channel distinction for carriage fees and simplified, technology-neutral carriage fee regime.

3. QoS Regulations:

i) Service charges under forbearance; DPOs to publish charges.

ii) Relaxed compliance for small DPOs.

iii) Prepaid subscription duration to be in days.

iv) EPG must show DRP, MRP, and categorize platform services.

4. Financial Disincentives are introduced for regulatory contraventions.

5. Publication of Information: Service providers to publish and communicate all tariff and charge information.

UPSC Syllabus: Governance

Draft Digital Competition Bill

Context- The Ministry of Corporate Affairs formed a Committee on Digital Competition Law (CDCL) to study the necessity of a new law for competition in digital markets. After a year of discussion, the CDCL decided to add an ex-ante framework to the existing Competition Act, 2002.

Ex-ante competition regulation is uncommon. The European Union is the only place where a comprehensive ex-ante competition framework, known as the Digital Markets Act, is currently enforced.

What does “ex-ante framework” mean?

The Competition Act, 2002 currently operates reactively, with the CCI intervening after anti-competitive behavior has occurred. The proposed ex-ante framework for digital markets would enable the CCI to prevent such conduct proactively before it occurs.

What are the reasons behind proposing “ex-ante framework”?

- 1) **Economies of Scale and Scope** -Digital enterprises benefit from economies of scale and economies of scope, reducing production costs per unit and total costs with increased services. This accelerates their growth compared to traditional market players.
- 2) **Network Effects**-It also enhances utility of digital services as user numbers increase.
- 3) **Effective Regulatory Framework** -Markets can quickly and irreversibly favor established players. The current framework is slow that allows offenders to evade scrutiny.
- 4) **Monopolistic Tendencies**-A group of Indian startups has backed the draft Bill, arguing that it would address concerns about monopolistic practices by big tech.

Read More- [Digital Competition Bill: Its core needs strengthening](#)

What are the key features of the draft Digital Competition Bill?

- 1) **Dominant Digital Enterprises**-It is inspired by the EU’s Digital Markets Act. The bill focuses only on “dominant” digital enterprises rather than all. It identifies ten key digital services such as search engines and social networking platforms.
- 2) **Criteria for Determining Digital Dominance**-It establishes clear rules for the CCI to determine if digital companies are dominant. It considers financial strength through the “significant financial strength” test and market presence in India through the “significant spread” test.
- 3) **Designation of SSDEs**- The CCI can designate “systemically significant digital enterprises (SSDEs)” even if they don’t meet quantitative criteria.
- 4) **Restriction on SSDEs-**
 - A) They must operate fairly, non-discriminatively, and transparently with users. The draft Bill prohibits SSDEs from self-preferencing, restricting third-party app availability, and blocking user settings changes.
 - B) They cannot use user data from one service to benefit another or unfairly leverage non-public user data.

Why has the draft bill been opposed?

- 1) **Ex-Ante Regulatory Model in India** -There are doubts about how well an ex-ante regulatory model will work in India, as it seems to be copied from the EU without considering the differences between these regions.
- 2) **Lack of Evidence**-There's no evidence that this regulatory approach has succeeded in the EU, which raises doubts about its efficacy in India.
- 3) **Impact on Investment**- It could deter investments in Indian startups. This is because startups may avoid scaling up to avoid crossing quantitative thresholds.
- 4) **Impact on MSMEs**- Limitations on tying, bundling, and data usage could harm Micro, Small, and Medium Enterprises (MSMEs) that depend on big tech to reduce expenses and reach more customers.

Fundamental Right to Bail

Why in the news?

Recently, the Supreme Court has held that the **right to bail of an accused cannot be withheld as a punishment** irrespective of the **nature of the crime**.

Fundamental Right to Bail

1. **Right to Bail:** The Supreme Court has declared that the right to bail cannot be withheld as a form of punishment, irrespective of the crime's nature.
2. Refusal to grant bail is considered an unjust punishment, leading to the "prisonisation" of an accused, who remains innocent until proven guilty.
3. **Speedy Trial and Article 21:** The right to a speedy trial is a fundamental right under Article 21 of the Constitution, applicable regardless of the crime's severity. The court emphasized that if the state, prosecution agencies, or courts lack the capability to ensure a speedy trial, they should not withhold bail based on the seriousness of the alleged crime.
4. The Supreme Court reiterated that bail should not be withheld as a punishment. The court underscored that the seriousness of the crime should not override the fundamental right to a speedy trial.

UPSC Syllabus: Polity and nation

Supreme Court's Decision on Maintenance for Divorced Muslim Women

Why in the news?

In a significant ruling, the Supreme Court has stated that **entitlements provided under Section 125 of the CrPC constitute a form of social security** that functions autonomously from any remedies available under Muslim personal laws.

About Supreme Court's Decision on Maintenance for Divorced Muslim Women

1. Legal Entitlement to Maintenance:

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- i) The Supreme Court affirmed that all married and divorced women, including those divorced under “triple talaq”, are entitled to claim maintenance under **Section 125 of the Code of Criminal Procedure (CrPC)**.
- ii) This entitlement exists irrespective of personal laws and is a measure for social justice to prevent destitution.

2. Relationship with the Muslim Women (Protection of Rights on Divorce) Act, 1986:

- i) **Complementary Rights:** The rights provided under the 1986 Act do not override the right to claim maintenance under Section 125 CrPC. Both sets of rights can be invoked independently.
- ii) **Constitutional Validity:** Upheld the constitutional validity of both **Section 125 CrPC and the 1986 Act**, ensuring that Muslim women are not deprived of their rights under either law.

3. Constitutional Principles Upheld:

- i) **Non-discrimination:** Emphasized that denying maintenance under Section 125 CrPC to divorced Muslim women would violate **Article 15(1) of the Constitution**, which prohibits discrimination on grounds of religion.
- ii) **Social Justice:** Maintenance under Section 125 CrPC is seen as critical for ensuring a life of dignity for women, regardless of their marital status or religious background.

4. Scope and Application:

- i) **Timing of Claim:** It was clarified that the right to maintenance under Section 125 CrPC can be claimed even during the subsistence of marriage and is not contingent upon divorce.
- ii) **Wide Application:** It applies to all women who are unable to maintain themselves, including divorced Muslim women who may face financial hardship post-divorce.

5. Judicial Interpretation and Legislative Intent:

- i) **Harmonization of Laws:** The Court interpreted the provisions of both laws (CrPC and 1986 Act) in a manner that ensures protection and justice for divorced Muslim women, aligning with broader constitutional principles.
- ii) **Avoiding Remedial Gaps:** Ensured that all divorced Muslim women, regardless of how their marriage was solemnized, can seek maintenance under Section 125 CrPC to prevent any legal gaps in protective measures.

Samvidhaan Hatya Diwas

Why in the news?

The Union government has declared June 25 as ‘Samvidhaan Hatya Diwas’.

Centre Declares June 25 as ‘Samvidhaan Hatya Diwas’

1. **Significance:** The day will commemorate the contributions of individuals who **endured hardships during the Emergency period**.
2. The day aims to pay tribute to those who fought against the abuse of power during the Emergency and to reinforce the commitment to uphold democracy.
3. The government declared June 25 as ‘Samvidhaan Hatya Diwas’ to **honor the victims and reaffirm the commitment** to preventing future abuses of power.

4. Historical Context: On June 25, 1975, then Prime Minister Indira Gandhi imposed the Emergency, leading to widespread persecution and suppression of media.

UPSC Syllabus: Indian Economy

Digital Bharat Nidhi

Why in the news?

The Department of Telecommunications (DoT) released draft rules for the Digital Bharat Nidhi (DBN) on July 4, 2024. The purpose of DBN is to increase telecom connectivity in rural areas. Digital Bharat Nidhi will replace the Universal Service Obligation Fund (USOF).

About Digital Bharat Nidhi

- 1. About:** Digital Bharat Nidhi (DBN) is an initiative by Department of Telecommunications (DoT).
- 2. Aim:** DBN aims to:
 - i) improve internet connectivity, particularly in rural, remote, and economically disadvantaged areas.
 - ii) foster technology innovation, create regulatory sandboxes, and enhance the global presence of India's telecom sector.
 - iii) promote innovation, indigenous technology development, and standardisation.
 - iv) support startups in the telecom sector and the manufacturing of telecom equipment.
4. It replaces the Universal Service Obligation Fund (USOF) to ensure better allocation of resources.
- 5. Focus:** DBN will focus on research, development, and overall connectivity improvement. It encourages telecom services for underserved groups, including women and people with disabilities.
- 6. Funding:** Telecom companies' contributions to the Digital Bharat Nidhi will first be credited to the Consolidated Fund of India (CFI) and then later deposited into the DBN.
- 7. Utilisation of funds:** The funds will be used to promote access to telecommunication services, support research and development, fund pilot projects, and introduce new telecom technologies in underserved areas.
- 8. Management and Implementation:** An administrator will manage the fund, and projects will be executed by implementers selected through bidding or direct applications, ensuring transparency. The administrator will tailor payment methods (full, partial, co-funding) based on specific connectivity needs.

About Universal Service Obligation Fund (USOF):

- i) It was established in 2003 to enhance telecom services in less financially viable regions.
- ii) It was funded by a 5% levy on telecom operators adjusted gross revenue (AGR). However, only about 72% of the Rs 41,740 crore received between 2017 and 2022 was utilized.

ONGC's Plan to Achieve Net Zero Emissions by 2038

Why in the news?

State-owned Oil and Natural Gas Corporation (ONGC) will invest around Rs 2 lakh crore to achieve net-zero carbon emissions by 2038.

About the ONGC's Plan to Achieve Net Zero Emissions by 2038

- 1. Targets:** By 2030, ONGC will invest Rs 97,000 crore in renewable energy projects, including solar and offshore wind. An additional Rs 65,500 crore will be invested by 2035 mainly in green hydrogen and green ammonia plants.
2. By 2038, another Rs 38,000 crore will be spent primarily on setting up 1 GW of offshore wind projects.
3. These projects will help offset 9 million tonnes of carbon emissions, including both direct (Scope 1) and indirect (Scope 2) emissions.
4. ONGC plans to invest Rs 5,000 crore to eliminate gas flaring by 2030 using advanced technology. In the base year 2021-22, ONGC released 554 million cubic metres of methane into the atmosphere.
- 5. Solar and Wind Energy Projects:** ONGC will spend Rs 30,000 crore to establish 5 GW solar parks and wind turbines by 2030. It will add 1 GW of solar and onshore wind capacity by 2035 and 2038, costing Rs 5,000 crore each.
- 6. Green Hydrogen and Ammonia Projects:** The company will invest Rs 40,000 crore by 2030 and a similar amount by 2035 to develop two 180,000 tonnes per annum green hydrogen or 1 million tonnes green ammonia projects.
- 7. Offshore Wind Projects:** ONGC aims to install offshore wind turbines to generate 0.5 GW of electricity by 2030, with an investment of Rs 12,500 crore. This capacity will double by 2035 with an additional Rs 12,000 crore investment. By 2038, another 1 GW of offshore wind energy will be added, costing Rs 25,000 crore.
- 8. Pump Storage Plants:** The company plans to invest Rs 20,000 crore to set up 3 GW of pump storage plants to provide electricity when renewable sources are not available.
9. The remaining investment will be directed towards biogas, carbon capture, and other clean energy initiatives.

Equity Mutual Funds

Why in the news?

The Association of Mutual Funds in India (Amfi) recently reported that inflows into India's equity mutual funds reached a record high of Rs 40,608 crore (about \$5 billion) in June, marking a 17% sequential increase.

About Equity Mutual Funds

- 1. About:** Equity mutual funds are investment vehicles that collect money from multiple investors to buy a portfolio of stocks, also known as equity securities.
- 2. Purpose:** They allow individuals to invest in a diversified collection of stocks managed by professionals.

3. Benefits of Equity Mutual Funds:

i) Professional Management: These funds are managed by experts who make investment decisions on behalf of the investors.

ii) Diversification: By holding stocks from various companies, equity funds reduce the risk associated with any single stock's poor performance.

4. Types of Equity Funds:

i) Actively Managed Funds: These funds have portfolio managers who actively research, analyze, and select stocks with the goal of outperforming a benchmark index (e.g., the S&P 500). They charge higher fees due to their hands-on approach.

ii) Passively Managed Funds (Index Funds): These funds aim to replicate the performance of a specific market index (e.g., S&P 500) by holding the same stocks in the same proportions. They have lower fees and track the index closely without trying to outperform it.

4. Risk and Returns:

i) Long-Term Growth: Equity funds can offer attractive long-term returns, making them a popular choice for investors with longer time horizons.

ii) Market Volatility: The value of equity funds can fluctuate due to stock market changes, posing a risk to investors.

iii) Suitability: Best suited for investors who can tolerate market ups and downs and are investing for the long term to maximize growth potential.

Importance of road safety

Context: The article discusses a tragic bus accident in Uttar Pradesh that killed 18 people. It highlights issues like expired bus insurance and lack of safety features. It stresses the importance of road safety, proper vehicle maintenance, and the need for stricter enforcement and better data reporting by authorities.

For detailed information on **Road Accidents in India** [read this article here](#)

Why Is Road Safety Important?

1. **Protects Lives:** Road safety is crucial because it protects lives. In 2022, 1.71 lakh people died, and 4.23 lakh were injured in road accidents across India.
2. **Prevents Accidents:** Proper road safety measures like good road design, speed control, and adequate visibility can prevent accidents. The bus accident in Uttar Pradesh, where 18 people died, highlights the fatal consequences of neglecting these aspects.

What Should Be Done to Improve Road Safety?

1. **Enforce Existing Standards:** Local authorities need skilled personnel and proper equipment. They should impose harsher penalties on transport operators who fail to meet safety requirements.
2. **Prevent Dilution of Standards:** Municipal bodies should uphold the safety standards set by engineers without compromise to benefit local businesses.

3. **Improve Data Collection:** The Ministry of Road Transport and Highways should collect and publish better data on vehicle registrations, safety certificates, and accident reports.
4. **Increase Public Awareness:** The public should know how transport vehicle health is checked and have access to the latest test reports.
5. **Speed Control:** Controlling speed is vital; it is implicated in most deadly accidents. Measures like speed-breakers and increased police monitoring have been effective in reducing accidents.

Vizhinjam International Port

Why in the news?

The Adani Group's Vizhinjam Port is **now ready to receive its first mothership**.

About Vizhinjam International Port



Figure 1. Source: TH

1. **Location:** The port is located in Vizhinjam, a coastal town in the Thiruvananthapuram District of Kerala.
2. **Developed by:** It was developed under a landlord model with a Public Private Partnership component on a Design, Build, Finance, Operate, and Transfer (DBFOT) basis.
3. It was primarily **designed to cater to container transshipment**, the port also handles multi-purpose and break-bulk cargo.

4. It will also be a **global bunkering hub**, supplying clean, green fuels like hydrogen and ammonia.
5. After completion, the port will be one of the world's greenest ports in the world.

Strategic Advantage

- i) The port is a mere **10 nautical miles** (NM) diversion from the international east-west shipping route connecting Europe, the Persian Gulf, and the Far East.
- ii) It is also close to the national and regional road and rail network.
- iii) The port will **feature approximately 30 berths**, most of which will be capable of handling Mother Vessels.

Significance of the port

- i) The port is the only **transshipment hub in the Indian subcontinent**, strategically located close to international shipping routes and centrally on the Indian coastline. Around 95% of India's foreign trade is conducted via the sea route, accounting for 70% of the trade in value terms.
- ii) Nearly **30% of freight movement** occurs through the international shipping route south of the Indian peninsula, passing just **10 NM off Vizhinjam**.

Rising Arctic Wildfires

Why in the news?

In recent years, the rise in Arctic wildfires has become a global concern.

About Rising Arctic Wildfires



Source:IE

1. Wildfires are a natural part of the **Arctic's boreal forest and tundra ecosystems**.
2. Recent years have seen an **increase in the frequency and scale of these fires**, particularly in regions like **Sakha, Russia**, which experienced over 160 wildfires charring nearly 460,000 hectares of land by June 24, 2024.
3. June 2024 saw the **third-highest carbon emissions from Arctic wildfires** in the past two decades, following June 2020 and 2019.

Reasons for Worsening Wildfires:

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- i) The Arctic is warming approximately **four times faster than the global average**. Since 1980, the Arctic has become about 3°C warmer.
- ii) Increased warming leads to **more frequent lightning strikes**, which have more than doubled in Alaska and the Northwest Territories since 1975.
- iii) A slowed polar jet stream **due to reduced temperature differences** between the Arctic and lower latitudes results in prolonged warm weather and intense heatwaves, further increasing wildfire risk.

Future Projections

- i) **Rising temperatures, more frequent lightning, and heatwaves** are expected to worsen, leading to more frequent wildfires.
- ii) By 2050, wildfires in the Arctic and globally could **increase by one-third**. (Estimated by the World Wild Fund).

Impact on Global Warming

- i) **Greenhouse Gas Emissions:** Wildfires release significant amounts of greenhouse gases (GHGs) such as carbon dioxide (CO₂) into the atmosphere. While GHG emissions from wildfires are concerning, Arctic wildfires pose a greater threat due to the carbon stored in permafrost.
- ii) **Permafrost Thawing:** Arctic permafrost **contains around 1,700 billion metric tons of carbon**, including CO₂ and methane, which is about 51 times the global fossil fuel emissions of 2019.
- iii) Wildfires **destroy insulating layers of vegetation and soil**, making permafrost more susceptible to thawing.
- iv) Thawing permafrost releases ancient organic materials, leading to the decomposition and release of stored carbon into the atmosphere.

Potential Consequences: A large-scale thawing of Arctic permafrost would lead to an uncontrollable release of carbon. This could prevent the world from limiting global warming to within the 1.5°C threshold, resulting in catastrophic and irreversible consequences.

Lack of Monitoring and Urgency for Action

- i) **Post-fire permafrost emissions** are **not currently tracked** and are **not included in climate models**. This **lack of data** makes it difficult to estimate their full contribution to climate change.
- ii) Scientists emphasized that Arctic changes **amplify global risks**, highlighting the need for immediate and sustained efforts to combat this crisis.

UPSC Syllabus: Environment

Pearl Spot Fish

Why in the news?

The Kerala University of Fisheries and Ocean Studies (KUFOS) is set to launch a **genome editing mission** to enhance **pearl spot fish production**.

About Pearl Spot Fish



Figure 2. Source: alamy

1. It is commonly known as “**Karimeen**” in Kerala. Pearl spot fish is **indigenous to the east and southwest coasts of Peninsular India**.

2. It is an important species for **aquaculture**, thriving in both brackish and freshwater ponds.

3. The fish has an elevated, laterally compressed body and a small cleft mouth, and in its natural habitat, it appears light green with eight vertical bands.

4. Pearl spot seed is **available year-round** along the east and southwest coasts of India, with peak abundance in May-July and November-February.

5. This fish variety is widely found in the

South, especially in the **Kerala backwaters**, Karnataka, and Andhra Pradesh.

6. Pearl spot is low-fat, high-protein food rich in **omega-3 fatty acids**, which promote heart and brain health.

7. It is also **rich in Vitamin D, riboflavin**, and **minerals** such as calcium and phosphorus.

Biligiri Rangaswamy Temple (BRT) Tiger Reserve

Why in the news?

The Karnataka Forest Department has recently started collecting a green tax from vehicles entering BR Hills through BRT Tiger Reserve.

About Biligiri Rangaswamy Temple (BRT) Tiger Reserve

Aspects	Description
About	The BRT Tiger Reserve is located in the Chamarajanagar district of Karnataka State. The reserve is named after the “Biligiri,” a white rocky cliff that has a temple of Lord Vishnu, locally known as Rangaswamy. The BRT Wildlife Sanctuary was declared a Tiger Reserve in 2011.
Geographical Location	This unique bio-geographical entity is situated between the Western Ghats and the Eastern Ghats in South India. It was established as a Wildlife Sanctuary in 1974.
Vegetation	The forests are mainly of the dry deciduous type. They are interspersed with moist deciduous, semi-evergreen, evergreen, and shola patches at varying altitudes.

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Flora	Major species include <i>Anogeissus latifolia</i> , <i>Dalbergia paniculata</i> , <i>Grewia teliaefolia</i> , <i>Terminalia alata</i> , <i>Terminalia bellirica</i> , and <i>Terminalia paniculata</i> .
Fauna	The Tiger Reserve is home to a variety of animals including tigers, elephants, leopards, wild dogs, bisons, sambars, spotted deer, barking deer, four-horned antelopes, sloth bears, wild boars, common langurs, bonnet macaques, and various reptiles and birds.

Veerangana Durgavati Tiger Reserve

Why in the news?

The Madhya Pradesh government has launched an inquiry into allegations of tiger poaching and irregularities in the newly established Veerangana Durgavati Tiger Reserve.

About Veerangana Durgavati Tiger Reserve

Source: [medianews18.com](https://www.medianews18.com)

Aspects	Description
About	<ol style="list-style-type: none">1. The reserve spans across Sagar, Damoh, and Narsinghpur districts in Madhya Pradesh.2. It covers a vast area of 2,339 square kilometers, incorporating regions from the Nauradehi Wildlife Sanctuary and Durgavati Wildlife Sanctuary.3. It is the seventh tiger reserve in Madhya Pradesh. It is named after Rani Durgavati, the queen of the Gondi people.
Features	<ol style="list-style-type: none">1. The reserve features a variety of landscapes, including hills, valleys, rivers, streams, waterfalls, and grasslands.2. A green corridor will be developed to link the Panna Tiger Reserve with Durgavati, facilitating the natural movement of tigers between the reserves.3. It includes parts of the Narmada and Yamuna River basins. The historic Singorgarh Fort is located within the reserve.
Vegetation	The vegetation is primarily dry deciduous.
Fauna	Key plant species include Teak, Saja, Dhaora, Ber, and Amla.
Flora	<ol style="list-style-type: none">1. The reserve is home to tigers, leopards, wolves, jackals, Indian foxes, striped hyenas, Nilgai, Chinkara, Chital, Sambhar, Black Buck, Barking deer, Common Langur, and Rhesus Macaque.2. It is one of the few places where the critically endangered White-Rumped and Indian Vultures are found.

Importance of the Reserve	<ol style="list-style-type: none">1. As the seventh tiger reserve in Madhya Pradesh, it plays a crucial role in protecting and conserving tigers.2. The reserve supports a wide range of flora and fauna, contributing to the region's ecological balance.3. The presence of Singorgarh Fort and the reserve's name honor the historical and cultural significance of the area.
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UPSC Syllabus: Science and technology

World Zoonoses Day

Why in the news?

The Department of Animal Husbandry and Dairying recently organized an interactive session to commemorate World Zoonoses Day.

About World Zoonoses Day

- i) It is celebrated in honour of **Louis Pasteur** who administered the **first successful rabies vaccine** which is a zoonotic disease on **July 6, 1885**.
- ii) This day is **dedicated to raising awareness** about zoonoses diseases that can be **transmitted from animals to humans and promoting preventive and control measures**.

About Zoonoses:

- i) **About:** These are infectious diseases that can **transfer between animals and humans**, such as rabies, anthrax, influenza (H1N1 and H5N1), Nipah, COVID-19, brucellosis, and tuberculosis.
- ii) **Caused by:** These diseases are **caused by various pathogens**, including bacteria, viruses, parasites, and fungi. However, not all animal diseases are zoonotic. Many diseases affect livestock without posing a risk to human health.
- iii) **Infectious:** These **non-zoonotic diseases are species-specific and cannot infect humans**. Examples include Foot & Mouth Disease, PPR, Lumpy Skin Disease, Classical Swine Fever, and Ranikhet Disease.

Prevention and control

- i) Prevention and control of zoonotic diseases **rely on vaccination, good hygiene, animal husbandry practices, and vector control**.
- ii) **Collaborative efforts through the One Health approach**, which emphasizes the interconnectedness of human, animal, and environmental health, are crucial.
- iii) **Collaboration among veterinarians, medical professionals, and environmental scientists** is essential for addressing zoonotic diseases comprehensively.
- iv) To mitigate the risk of zoonotic diseases, the Department of Animal Husbandry & Dairying (DAHD) has launched a nationwide campaign for **Brucella vaccination of bovine calves under NADCP** and undertaken **Rabies Vaccination under ASCAD**.

v) Educating the public about the distinction between zoonotic and non-zoonotic diseases helps reduce unwarranted fear and promotes a more informed approach to animal health and safety.

Regenerative Braking

Why in the news?

The regenerative braking device market is projected to experience significant growth between 2024 and 2031, driven by the increasing popularity of electric vehicles (e-vehicles).

About Regenerative Braking

Regenerative braking is a technology used in electric and hybrid vehicles to capture and reuse energy that would otherwise be lost during braking.

How Does Regenerative Braking Work?

1. Normal Braking: In traditional vehicles, braking converts the car's kinetic energy into heat, which is then wasted.

2. Regenerative Braking:

i) In vehicles with regenerative braking, pressing the brake pedal causes the electric motor to run in reverse. This reverse action slows down the car similarly to traditional brakes.

ii) Instead of converting kinetic energy into heat, the motor converts it back into electrical energy. The electrical energy is then stored in the vehicle's battery for later use.

3. Energy Conversion and Storage: The reversed motor converts the kinetic energy of the moving car into electrical energy. This electrical energy is sent back to the car's battery and stored for future use, such as powering the vehicle or running electrical systems.

Significance of Regenerative Braking

i) **Energy Efficiency:** Saves energy by reusing it, reducing the need for frequent battery recharges.

ii) **Extended Range:** Helps electric and hybrid vehicles travel further on a single charge.

iii) **Reduced Wear and Tear:** Reduces wear on traditional brake components, leading to lower maintenance costs.

Shortcomings of Regenerative Braking

i) **Incomplete Stopping Power:** Regenerative braking alone often cannot bring a vehicle to a complete stop and must be supplemented by conventional braking systems.

ii) **Hill Descent:** Regenerative brakes may not prevent vehicles from backsliding downhill.

iii) **Efficiency at Low Speeds:** The efficiency of energy recovery drops as the vehicle's speed decreases, though regenerative brakes are beneficial in stop-start traffic.

Mitochondrial Disease and Mitochondrial Donation

Why in the news?

Scientists are preparing for a clinical trial to determine the safety and effectiveness of mitochondrial donation.

About Mitochondrial Disease

1. About: Mitochondrial disease (Mito) refers to a group of diseases that **impair the mitochondria's ability to produce the energy needed for organs** to function properly.

2. Forms: Mito can appear in many forms, affecting one or more organs and potentially leading to organ failure.

3. Inheritance:

i) Mitochondrial disease can be caused by **faulty genes in nuclear DNA** (inherited from both parents) or mitochondrial DNA (inherited only from the mother).

ii) The severity of Mito can vary, even within the same family, where a mildly affected mother might give birth to a severely affected child.

iii) Mito is the **most common inherited metabolic condition**, affecting 1 in every 5,000 people.

4. Symptoms:

i) Symptoms can range from mild to severe and can affect any organ, particularly those requiring high energy like the heart, brain, and muscles.

ii) Childhood Mito often affects multiple organs and progresses quickly.

About Mitochondrial Donation

1. Mitochondrial donation is a new **IVF-based method that allows people with faulty mitochondrial DNA to have children without passing on the faulty DNA**.

2. Procedure:

i) The nuclear DNA from the intending parents is inserted into an egg from a donor with healthy mitochondria.

ii) The resulting egg contains nuclear DNA from the parents and healthy mitochondrial DNA from the donor.

iii) Sperm is then added to fertilize the egg, allowing the child to inherit nuclear DNA from both parents and mitochondrial DNA from the donor.

3. The procedure requires highly trained scientists and specialized equipment. Both the egg donor and the person with Mito receive hormone injections to stimulate the ovaries to produce multiple eggs. Eggs are retrieved through an ultrasound-guided surgical procedure.

4. Benefits: This significantly reduces or eliminates the risk of the child inheriting mitochondrial disease.

5. Challenges:

i) Finding donor eggs is a significant challenge for mitochondrial donation.

ii) Both frozen and fresh eggs are needed for research and clinical trials.

IIT-M made mineral nanoparticles with water

Why in the news?

Recently, researchers at IIT Madras have demonstrated a novel method to create **mineral nanoparticles** using microdroplets of water. This discovery holds **potential implications** for various fields, including the origin of life and agricultural soil replenishment.

The Role of Water Microdroplets

1. Microdroplets are tiny droplets, about 10 micrometers (μm) in size, which is 100 times smaller than raindrops.
2. They come in different sizes, from large raindrops to very tiny particles called aerosols.
3. The smallest microdroplets are a thousand times smaller than a typical raindrop and are too small to see with the naked eye. Even though they are very small, microdroplets can play a big role in chemical reactions.
4. The research reveals that microdroplets of water can break down minerals into nanoparticles, a process that is not possible with bulk water.
5. Due to their small size and closely packed water molecules, microdroplets are more reactive and capable of engaging in chemical reactions at a much faster rate, sometimes up to a million times faster than bulk water.

Implications for Proto-Cells and Agriculture

- i) This research has potential relevance to the study of proto-cells which is the precursors to modern cells.
- ii) The study suggests that microdroplets could mimic proto-cells by facilitating biochemical reactions within small compartments, which is exciting in the context of understanding the origins of life.

Agricultural Applications

- i) The formation of nanoparticles from microparticles is also significant for agriculture. **Silica nanoparticles**, for instance, can be absorbed by plants to enhance their growth.
- ii) This discovery could lead to methods of **converting unproductive soils into fertile lands**, thus positively impacting food production and addressing issues related to water and food security.

Asteroid Apophis

Why in the news?

ISRO might send its spacecraft or collaborate with other space agencies to study asteroid Apophis.

About Asteroid Apophis

SPACE OBJECTS

ASTEROID: Rocky/ metallic objects moving around Sun, mostly leftovers from the formation of solar system. Asteroids less than 1 metre in diameter are called meteoroids.

METEOR: The streak of light produced when an asteroid/ meteoroid encounters friction of Earth's atmosphere.

METEORITE: Unburnt fragment of asteroid that falls to Earth

HOW BIG?

APOPHIS: About 450 m at its widest

CHELYABINSK, which exploded over Russia in 2013: about 20 m at its widest

ASTEROID THAT ELIMINATED DINOSAURS: 10-15 km wide

Source: IE

1. Apophis is a large asteroid discovered in 2004. It measures about 450 meters wide. Initially, scientists thought Apophis had a small chance of hitting Earth in 2029, 2036, or 2068. This raised concerns due to its potential for causing major damage, similar to events that have impacted Earth's history.

2. Further observations have shown that Apophis will pass Earth at a safe distance of 32,000 km in 2029. It poses no immediate threat during this pass or in subsequent expected encounters.

Studying asteroid Apophis

The Indian Space Research Organisation (ISRO) is interested in studying Apophis. ISRO may send its own spacecraft or collaborate with other space agencies like NASA, which already has a mission planned.

1. Why Study Asteroids: Asteroids occasionally enter Earth's atmosphere, with most burning up harmlessly. However, larger asteroids can cause significant damage, as seen in past events like the 2013 Chelyabinsk meteor in Russia.

2. Planetary Defense Goals: ISRO's interest in planetary defense aims to develop capabilities to track and potentially mitigate threats from asteroids. This involves studying their trajectories and characteristics to better understand their behavior.

3. Future Missions: NASA and other agencies are planning missions to study Apophis up close in 2029. These missions will gather data to improve our understanding of asteroids and enhance our ability to predict and respond to potential threats.

MeDevIS (Medical Devices Information System) Initiatives

Why in news?

The World Health Organization (WHO) has introduced MeDevIS (Medical Devices Information System).

About MeDevIS

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1. MeDevIS is the **first global open-access clearinghouse for information on medical devices**, designed to support governments, regulators, and users in making informed decisions regarding the selection, procurement, and use of medical devices.

Key Features

1. Reference Systems: It utilizes **European Medical Device Nomenclature (EMDN)** and **Global Medical Device Nomenclature (GMDN)** for device registration, procurement, supply, inventory management, and pricing.

2. Scope: It covers **2,301 types of medical devices** across various health areas, including reproductive, maternal, newborn, and child health; noncommunicable diseases (e.g., cancer, cardiovascular diseases, diabetes); and infectious diseases (e.g., COVID-19).

3. Device Range: It includes over 10,000 devices, from simple items like pulse oximeters and digital thermometers to complex technologies like hemodialysis units, defibrillators, and radiotherapy equipment.

4. Aim: MeDevIS aims to provide comprehensive, reliable information to aid in decision-making, particularly in resource-limited settings.

5. Data Aggregation: The platform aggregates data from international organizations, regulatory bodies, and donor agencies, centralizing information for easy access.

6. Benefits:

i) It replaces fragmented sources with a single, comprehensive platform.

ii) It simplifies the process of finding reliable data.

iii) It allows searches based on device type, healthcare system support, scope, and required infrastructure.

iv) It aids national policymakers in developing or updating national lists for health technology procurement and supports health insurance and patient reimbursement policies.

7. Future Enhancements: WHO plans to continually enhance MeDevIS by engaging stakeholders, expanding its scope, and incorporating additional technologies, especially for pandemic and emergency settings.

8. This initiative builds on WHO's experience with the **WHO Priority Medical Devices List and the Essential Medicines List (EML)**.

UPSC Syllabus: Schemes and programmes

Project PARI

Why in the news?

Recently, Ministry of Culture initiates Project PARI for the **46th World Heritage Committee Meeting**.

About Project PARI

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Figure 3. Source: PIB

1. Project PARI (Public Art of India) is an initiative by the **Ministry of Culture, Government of India**.

2. It is executed by **Lalit Kala Akademi and the National Gallery of Modern Art**.

3. **Objectives:** Project PARI aims to **stimulate dialogue, reflection, and inspiration**, contributing to the dynamic cultural fabric of the nation.

4. Project PARI includes a wide array of artwork inspired by traditional Indian art forms.

5. The proposed sculptures for Project PARI explore a **wide range of themes**, including tributes to nature, ideas inspired by the Natyashastra, Gandhi ji, traditional Indian toys, hospitality, ancient knowledge, Naad or Primeval Sound, Harmony of Life, and Kalpataru (the divine tree).

6. Women artists have been an **integral part of Project PARI** and their participation in large numbers is a testament to Bharat's NARI SHAKTI.

UPSC Syllabus: Art and culture

Samayapurathu Mariamman Temple

Why in the news?

In recognition of the temple's cultural and spiritual significance, The Hindu Group of Publications has released a coffee-table book titled "Samayapuram — The Sacred Seat of Shakti."

About Samayapurathu Mariamman Temple



Figure 4. Source: Blogspot

1. The Samayapuram Mariamman Temple is located near Tiruchi in Tamil Nadu.

2. It is one of the most revered and ancient temples dedicated to Goddess Mariamman. She is considered an incarnation of Goddess Durga, Mahakali, Adi Shakti, or Nishumbha Sudhini.

3. **Historical Background:** The current structure of the temple was built by King Vijayaraya Chakkaravarthi in the early 18th

century. However, the Goddess was worshipped by locals for centuries before this structure was constructed.

4. **Significance:** The temple is rich in history and mythology, with many legends surrounding Goddess Mariamman. It is believed that she appeared in this area to protect her devotees and heal their ailments. The temple's ancient origins add to its mystique and spiritual significance.

4. Architecture:

- i) The temple complex features intricately carved pillars, towering gopurams (gateway towers), and spacious halls that resonate with the chants and prayers of devotees.
- ii) The sanctum sanctorum houses the idol of Goddess Mariamman, adorned with vibrant flowers, intricate jewelry, and colorful garments, exuding a divine and majestic presence.
- iii) The Raja Gopuram or the main tower of the temple is adorned with gold plates that glow brightly during the daytime.
- iv) A unique feature of this temple is that the presiding deity can be seen from the main entrance, which is not common in most temples

5. Festivals and Rituals

- i) The temple is renowned for its vibrant and elaborate festivals which attract thousands of devotees.
- ii) Among the most significant is the annual 'Poochoriyal' festival, where devotees offer flowers to the Goddess, seeking her blessings for health, prosperity, and protection.
- iii) Other notable festivals include the 'Panguni Uthiram' and the 'Thai Poosam,' which are marked by grand processions, music, dance, and religious fervor.
- iv) Daily rituals at the temple include various forms of 'pujas' (prayers) and 'abhishekam' (ritual bathing) of the deity.

v) The temple's sacred 'theerthams' (holy water sources) are also believed to have curative properties.

Discovery of the World's Oldest Cave Painting

Why in the news?

Recently, researchers have found the cave painting in Indonesia which is the world's oldest known evidence of storytelling in art.

Discovery of the World's Oldest Cave Painting



Figure 5. Source: TH

1. The world's oldest-known cave painting has been discovered in the limestone cave of **Leang Karampuang**, located in the Maros-Pangkep region of Sulawesi, Indonesia.

2. This artwork depicts **three human-like figures** interacting with a wild pig. The painting features a pig measuring 92 cm by 38 cm, painted in a single shade of dark red pigment. There are other images of pigs present in the cave.

3. The painting was created at least 51,200 years ago.

4. Researchers determined this age using a new scientific approach that involves using a laser to date calcium carbonate crystals that formed naturally on top of the painting.

5. The researchers interpret this artwork as a narrative scene, making it the oldest-known evidence of storytelling in art.

7. Significance:

- i) These paintings provide the **oldest evidence of storytelling**, a fundamental aspect of human culture and identity.
- ii) The depiction of a pig species that still **inhabits Sulawesi links past and present wildlife** on the island, highlighting the continuity of the natural environment over tens of thousands of years.

UPSC Syllabus: History

Centre to Revise Classical Language Status Criteria

Why in the news?

The Union government plans to revise the criteria for granting classical language status.

Current criteria for Declaring a Language as Classical

- i) **Antiquity:** The language must have early texts or recorded history spanning 1500-2000 years.
- ii) **Literary Heritage:** The language should have a body of ancient literature or texts considered valuable heritage by generations of speakers.
- iii) **Original Literary Tradition:** The literary tradition should be original and not borrowed from another speech community.
- iv) **Distinctiveness:** The classical language and its literature should be distinct from the modern form, and there may be a discontinuity between the classical language and its later forms or offshoots.

Languages with Classical Status: Tamil declared in 2004, Sanskrit declared in 2005, Kannada declared in 2008, Telugu declared in 2008, Malayalam declared in 2013 and Odia declared in 2014.

Benefits of Classical Language Status

- i) **Awards:** Two major annual international awards for scholars of eminence in classical Indian languages.
- ii) **Centres of Excellence:** Establishment of a Centre of Excellence for studies in Classical Languages.
- iii) **Academic Support:** The University Grants Commission is requested to create a certain number of Professional Chairs for the Classical Languages, at least in the Central Universities.

UPSC Syllabus: International treaties

High Seas Treaty and its significance

Why in the news?

The Indian government has announced that it will soon sign and ratify the High Seas Treaty.

About High Seas Treaty

- 1) The High Seas Treaty is an **international legal framework designed to protect and sustainably use marine biodiversity** and other resources in ocean waters **beyond national jurisdiction**.

ii) These areas are known as high seas or international waters and make up about 64% of the total ocean area.

iii) This treaty aimed at maintaining the ecological health of the oceans by reducing pollution and conserving marine biodiversity.

2. Scope of the Treaty:

i) The treaty deals with oceans outside the national jurisdiction of any country.

ii) National jurisdictions typically extend up to 200 nautical miles (370 km) from the coastline, known as exclusive economic zones (EEZs). High seas are the areas beyond these EEZs.

4. International Governance: The treaty complements the 1982 UN Convention on Laws of the Seas (UNCLOS) which provides broad frameworks for the use and conservation of oceans but does not specify how to achieve these objectives.

5. Objectives of the Treaty:

i) Conservation and Protection: Establishes Marine Protected Areas (MPAs) similar to national parks or wildlife reserves.

ii) Fair and Equitable Sharing: Ensures that benefits from marine genetic resources are shared among all countries.

ii) Environmental Impact Assessments (EIAs): Mandates EIAs for activities that could harm marine ecosystems, with the results made public.

iv) Capacity Building and Technology Transfer: Aims to help developing countries benefit from marine resources while contributing to conservation efforts.

6. Ratification Process: The treaty will come into force once 60 countries ratify it. Ratification means a country agrees to be legally bound by the treaty, which often requires legislative or executive approval.

7. India's Involvement:

i) India participated in nearly 20 years of negotiations that led to the treaty's finalization.

ii) India's decision to sign and ratify the treaty aligns with the actions of 91 other countries that have signed, and eight that have ratified it so far.

UPSC Syllabus: International relations

Hannibal Directive

Why in the news?

The Israeli newspaper Ha'aretz has reported that when Hamas attacked on October 7, the IDF activated Hannibal Directive.

About Hannibal Directive

1. The Hannibal Directive is also known as the Hannibal Procedure or Hannibal Protocol.
2. It is a controversial operational doctrine purportedly used by the Israel Defence Forces (IDF).

3. It aims to prevent the capture of Israeli soldiers, even at the risk of their lives and those of civilians.
4. It was formulated in response to the Jibril Agreement of 1985, where Israel exchanged 1,150 Palestinian prisoners for three Israeli soldiers captured by the Popular Front for the Liberation of Palestine-General Command (PFLP-GC).
5. It is believed to be inspired by the Carthaginian general Hannibal, who chose to consume poison rather than be captured by the Romans in 181 BCE.

4. Implementation and Use

- i) The directive was first implemented by Yossi Peled, then head of the IDF's Northern Command, in mid-1986 after an abduction attempt by Hezbollah.
- ii) Initially, the Hannibal Directive allowed for light arms fire to stop abductors or their vehicles. Over time, its interpretation broadened, leading to the use of heavier military force, including attack helicopters.
- iii) The directive was justified on the grounds that captured Israeli soldiers would not be treated with dignity and that preventing capture, even at the cost of the soldier's life was preferable. Many Israelis supported this view to avoid politically costly prisoner swaps.

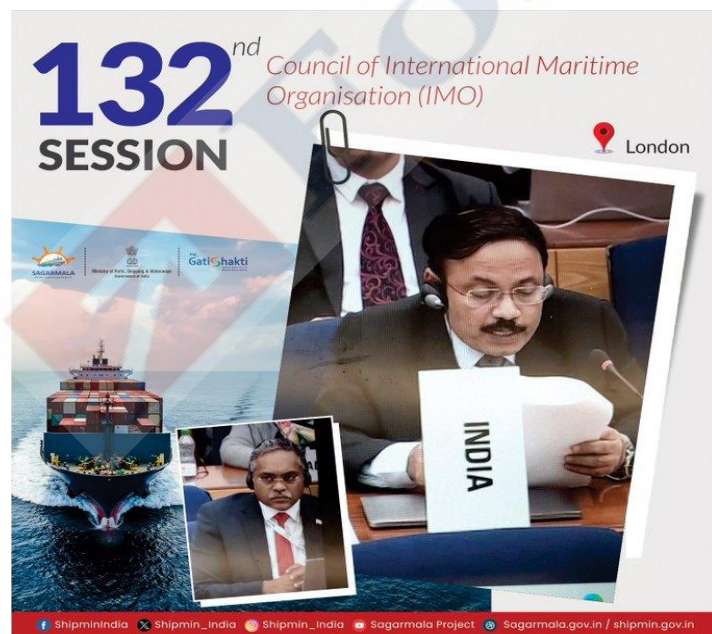
5. Criticism: Legal experts and human rights advocates have criticized the Hannibal Directive for its disregard for human life.

India's Role in the 132nd IMO Council Session in London

Why in the news?

Recently, 132nd session of the Council of the International Maritime Organization (IMO) was conducted in London.

India's Role in the 132nd IMO Council Session in London



1. India is actively participating in the **132nd session of the International Maritime Organization (IMO) Council** in London.

2. India is an elected member of the IMO Council in the category of countries with the largest interest in international seaborne trade, emphasized the urgent issue of seafarer abandonment.

3. Other proposed members include the Philippines, Thailand, Liberia, Panama, Greece, the US, and France.

Key Focus Areas for India at the IMO Session

1. Addressing Seafarer

Abandonment: India raised awareness

Figure 6. Source: PIB

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about the ongoing crisis of seafarer abandonment, with 44 active cases involving 292 Indian seafarers. India was chosen to be **part of the Joint Tripartite Working Group at the IMO**, which consists of eight nations. This group focuses on addressing seafarer issues and enhancing the human elements in maritime operations.

2. Maritime Security Initiatives: The Indian delegation discussed recent disruptions in maritime regions like the Red Sea and the Gulf of Aden. The Indian Navy's successful missions were highlighted, including the rescue of MV Marlyn Luanda and intercepting MV Ruen to combat piracy and ensure crew safety.

3. India reinforced its proposal for establishing the South Asian Centre of Excellence for Sustainable Maritime Transport (**SACE-SMarT**). The center aims to lead the transformation of the maritime sector in South Asia, focusing on technological advancements, sustainability, and digital proficiency. Key goals include reducing greenhouse gas emissions and enhancing regional maritime capabilities.

UPSC Syllabus: Indices and reports

SDG India Index Report

Why in the news?

Recently, NITI Aayog released its fourth evaluation report of India's progress on the 16 sustainable development goals (SDGs) adopted in 2015 by all United Nations member countries.

About SDG India Index Report

1. It is released by NITI aayog.
2. The SDG India Index evaluates progress made across 16 goals on a scale of 1 to 100.

Performance of the states in SDG India Index

1. India's SDG score improved to 71 points in 2023-24 from 66 points in 2020-21.
- 2. Key Drivers:** Progress in poverty reduction, economic growth, and climate action contributed to the improvement.

3. Top Performers:

i) Kerala and Uttarakhand: Both states topped the SDG India Index with a score of 79 points each.

ii) Lowest Performers: Bihar was the worst performer with 57 points, followed by Jharkhand with 62 points.

iii) Highest Gains: Punjab, Manipur, West Bengal, and Assam recorded the highest increases, each gaining 8 points to scores of 76, 72, 70, and 65 respectively.

4. Achievements:

- i) The **goal of reducing poverty** saw a significant increase in points.
- ii) There was notable progress in **achieving decent work and fostering economic growth**.
- iii) Efforts to **protect and manage life on land** also showed a substantial improvement.
- iv) The **goal of achieving gender equality** recorded the smallest increase in points.
- v) Similarly, the **goal related to peace, justice, and strong institutions** saw minimal progress.

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vi) The **goal of reducing inequalities** experienced a decline, dropping to 65 points in 2022-23 from 67 points in 2020-21.

vii) Inequality Trends: Despite a marginal drop in the Reduced Inequalities goal, overall inequality in India has decreased. The gap in consumption between the **richest 10%** and the **bottom 10%** has contracted.

viii) Taxpayer Increase: The number of taxpayers has increased, indicating economic progress.

ix) Zero Poverty: Increased by **8 points to 72**, reflecting reduced extreme poverty and improved livelihoods across India.

x) Zero Hunger: Increased by **5 points to 52**, but further focus is needed on providing nutritious food to address malnourishment, stunting, and low BMI scores.

5. Areas of Concern:

i) Gender Equality: Received the lowest score of 49 points, with only a 1-point increase from 2020-21.

ii) Issues: Low sex ratio at birth, women's ownership of land and assets, and low participation of women in the labor force.