



26 August, 2024

Unified Pension Scheme

Context: The Union Cabinet approved the Unified Pension Scheme (UPS), ensuring government employees receive a guaranteed pension post-retirement.

➤ Key Features of the Unified Pension Scheme (UPS):

- **Assured Pension:** UPS guarantees government retirees 50% of their last drawn pay as a lifelong monthly pension.
- **Dearness Relief:** Pension includes periodic adjustments based on inflation trends, using the All India Consumer Price Index for Industrial Workers.
- **Family Pension:** In the event of the retiree's death, their family is entitled to 60% of the pension last drawn.
- **Superannuation Payout:** A lump sum payment at retirement, in addition to gratuity, calculated as 1/10th of the monthly emolument for every six months of service completed.
- **Minimum Pension:** A minimum pension of ₹10,000 per month is assured for those who complete at least 10 years of central government service.

➤ Contributions under UPS:

- The scheme is contributory:
- Employees contribute 10% of their salary.
- The government contributes 18.5% of the salary.
- Government contributions are subject to periodic actuarial assessments to ensure sustainability.

➤ Transition from NPS to UPS:

- **National Pension System (NPS):** Introduced in 2004, it replaced the Old Pension Scheme (OPS) for employees joining after January 1, 2004. NPS linked pension payouts to contributions invested in market-linked securities.
- **Switch Option:** Employees who joined after 2004, including retirees under NPS, have the option to switch to UPS, which is expected to benefit approximately 99% of NPS members.
- **Effective Date:** UPS will be effective from April 1, 2025, according to the government's announcement.

➤ Background and Comparison:

- **Old Pension Scheme (OPS):** Guaranteed 50% of last drawn basic pay as pension, with dearness relief to adjust for cost of living increases.
- **Reason for NPS:** Introduced due to unfunded liabilities of OPS and increasing pension bills amidst rising life expectancies.
- **NPS Structure:** Defined contribution scheme where employees and government contribute set percentages (10% and 14% respectively, now proposed to increase to 18.5%), with investments managed by pension fund managers.

➤ Fiscal Context:

- **Fiscal Impact:** The UPS implementation is estimated to cost ₹6,250 crore initially, with ₹800 crore in arrears in the first year.
- **Fiscal Prudence:** UPS maintains a funded contributory model similar to NPS, combining reliability of OPS with sustainability measures.

Ramsar Sites in India

Context: Union Environment Minister Bhupender Yadav recently added three new Ramsar sites in Tamil Nadu and Madhya Pradesh, increasing India's total to 85 such sites.

➤ New Ramsar Sites in India:

- Union Environment Minister Bhupender Yadav recently designated three new Ramsar sites:
- Nanjarayan Bird Sanctuary and Kazhuveli Bird Sanctuary in Tamil Nadu.
- Tawa Reservoir in Madhya Pradesh.

➤ Importance of Wetlands:

- Wetlands are diverse areas including marshes, swamps, and lakes, crucial for water regulation and biodiversity conservation.
- Defined under the Ramsar Convention, they cover various types of water bodies, both natural and artificial, supporting a wide array of species and ecological functions.
- Wetlands play a vital role in carbon sequestration, helping mitigate climate change by storing carbon and reducing greenhouse gas emissions.
- They are among the world's most productive ecosystems, comparable to rainforests and coral reefs, supporting numerous species of plants, animals, and microbes.

➤ Ramsar Convention and Criteria:

- The Ramsar Convention, initiated in 1971 in Ramsar, Iran, aims to protect and conserve wetlands globally by designating them as Ramsar sites.
- Criteria for Ramsar site designation include their importance in supporting critical life stages of species, providing refuge during adverse conditions, and their role in maintaining biodiversity.
- Organizations like the International Union for Conservation of Nature (IUCN) and the World Wide Fund for Nature (WWF) collaborate to promote wetland conservation worldwide.

➤ India's Commitment and Conservation Efforts:

- India became a signatory to the Ramsar Convention in 1982 and has designated numerous Ramsar sites across the country.
- Notable Ramsar sites in India include Chilika Lake in Odisha and Keoladeo National Park in Rajasthan.
- The country has implemented conservation programs such as the National Wetland Conservation Programme (NWCP) launched in 1986 and initiatives

Face to Face Centres





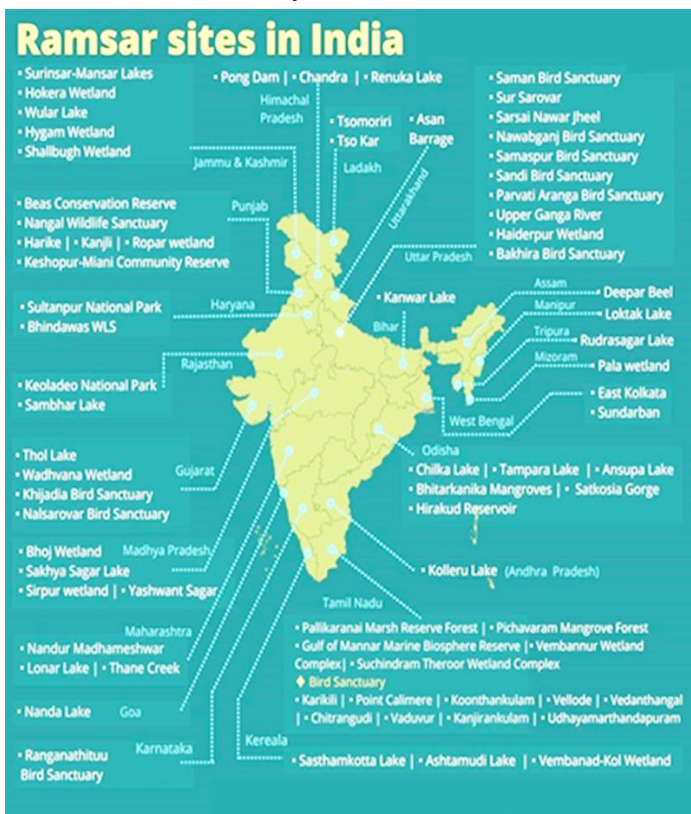
26 August, 2024

focused on aquatic wetlands under the Ministry of Environment, Forest and Climate Change.

- India's Ramsar sites cover an area of approximately 1,358,068 hectares, demonstrating its commitment to wetland conservation and biodiversity protection.

➤ Threats to Wetlands:

- Despite conservation efforts, wetlands globally face significant threats:
 - Habitat loss due to urbanization, agriculture, and infrastructure development.
 - Pollution from untreated wastewater, industrial effluents, and agricultural runoff.
 - Invasive species introduction, disrupting native ecosystems and biodiversity.
 - Climate change impacts such as altered rainfall patterns and rising temperatures, affecting wetland ecosystems and their inhabitants.
- Reports indicate that 35% of global wetlands were lost between 1970 and 2015 due to human activities, highlighting the urgent need for conservation and sustainable management practices.
- In India, wetlands are under threat from encroachment, pollution, and rapid urbanization, necessitating robust measures to protect and restore these critical ecosystems.

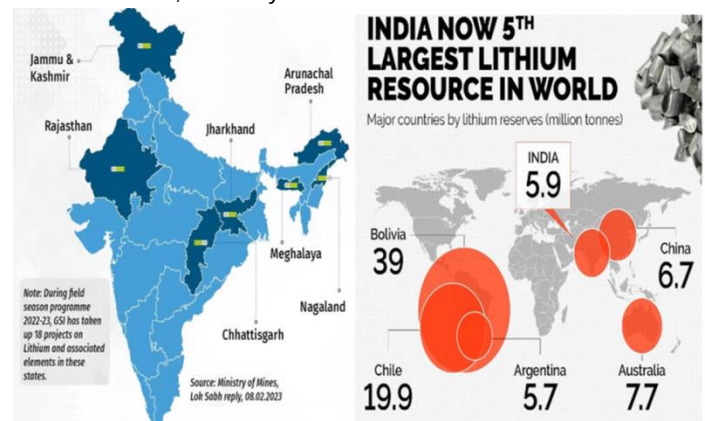


Lithium Extraction

Context: Chile's Atacama salt flat is sinking 1 to 2 centimetres annually due to lithium brine extraction, where salt-rich water is pumped to the surface and processed in evaporation ponds to extract lithium.

➤ What is lithium extraction?

- Lithium, a highly reactive alkali metal, is essential for its conductivity properties in applications such as batteries, glass, and pharmaceuticals.
- It is primarily found in salts or compounds like lithium carbonate, as pure elemental lithium does not occur naturally.
- Extraction methods involve accessing underground brine, mineral ores, clay, seawater, geothermal brines, and recycled sources.



➤ How does lithium extraction work?

- Conventional lithium brine extraction:**
 - Source:** Underground brine reservoirs (salars) under salt flats in South America and China.
 - Process:** Brine is pumped to the surface and transferred to evaporation ponds for solar evaporation over months to years.
 - Chemical Treatment:** Includes filtration, ion exchange, and precipitation to concentrate lithium.
 - Product:** Lithium carbonate is the main output, processed further for various industrial uses.
 - Environmental Impact:** Requires careful management to avoid ecosystem disruption and water depletion.
- Hard rock / spodumene lithium extraction:**
 - Source:** Mineral ore deposits, primarily spodumene, mined from hard rock formations.
 - Process:** Ore is extracted, crushed, and processed with chemicals like sulfuric acid.
 - Product:** Lithium carbonate or lithium hydroxide is produced after filtration and evaporation.

Face to Face Centres



26 August, 2024

- **Cost and Energy Intensity:** Higher than brine extraction due to mining and processing requirements.
- **Other lithium extraction processes:**
 - **Hectorite clay:** Experimental methods like leaching and hydrothermal treatment are explored but not economically viable yet.
 - **Seawater:** Technological advancements in membrane filtration aim to extract lithium, though currently costly.
- **Recycled sources:** Emerging practices in recovering lithium from geothermal brines, oil field brines, and recycled electronics.
- **Future of lithium extraction:**
 - **Technological Advancements:** Improving efficiency and reducing costs of alternative extraction methods.
 - **Environmental Concerns:** Addressing sustainability and mitigating impacts on local ecosystems and water resources.
 - **Market Dynamics:** Increasing demand for lithium for electric vehicles and renewable energy storage drives innovation in extraction technologies.

NEWS IN BETWEEN THE LINES

INS Mumbai



The Indian Naval Ship (INS) Mumbai is scheduled to arrive today at the port of Colombo, Sri Lanka, for a three-day visit maiden visit to Sri Lanka.

About the INS Mumbai:

- INS Mumbai, a **frontline warship** of the Indian Navy, is a **guided-missile destroyer** in the Indian Navy's Eastern Naval Command.
- It is the **third ship in the Delhi-class destroyers** and was **built in Mumbai in 1995**.
- The ship was **commissioned in 2001** and completed a mid-life upgrade in **2023**.
- On **December 8, 2023**, INS Mumbai joined the Eastern Naval Command to **replace the Rajput-class destroyers**.
- INS Mumbai, on its first visit to Sri Lanka, will be ceremonially received by the Sri Lankan Navy, **marking the eighth port call** by Indian naval ships this year and delivering essential spares for the Sri Lankan Airforce's Dornier maritime patrol aircraft.

Oil and Natural Gas Corporation



Recently, the Oil and Natural Gas Corporation opened a new well in its deep-sea project in the Krishna Godavari basin to boost crude oil and natural gas production.

About the Oil and Natural Gas Corporation:

- The Oil and Natural Gas Corporation (ONGC) is a public sector undertaking that is wholly **owned by the Indian government**.
- It is the **largest crude oil and natural gas Company in India**, **contributing around 71 per cent to Indian domestic production**.
- It was conferred with '**Maharatna**' status by the Government of India in November **2010**.
- It ranked **158th globally and 4th in India in the 2023 Fortune Global 500 List**.
- It supplies crude oil to downstream companies such as **IOC, BPCL, HPCL and MRPL** (which are subsidiaries of ONGC) for the production of various petroleum products including **Petrol, Diesel, Kerosene, Naphtha and Cooking Gas LPG**.
- The company's operations are managed by the **Ministry of Petroleum and Natural Gas**.
- It was established in **1956** and is involved in a variety of business ventures, including exploration, production, refining, and distribution of petroleum products.
- The foundation stone for ONGC was laid in **1955** as the Oil and Gas Division under the Geological Survey of India.
- Its headquarter is located in **New Delhi**.

Face to Face Centres

DELHI MUKHERJEE NAGAR: 9205274741, 42 | **LAXMI NAGAR :** 9205212500, 9205962002 | **RAJENDRA NAGAR:** 9205274743 | **UTTAR PRADESH PRAYAGRAJ:** 0532-2260189, 8853467068 | **LUCKNOW (ALIGANJ):** 0522-4025825, 9506256789 | **LUCKNOW (GOMTI NAGAR):** 7234000501, 7234000502 | **GREATER NOIDA:** 9205336037, 38 | **KANPUR:** 7887003962, 7897003962 | **GORAKHPUR :** 7080847474, 9161947474 | **ODISHA BHUBANESWAR:** 9818244644/7656949029



dhyeyaias.com

26 August, 2024

Sonoluminescence



About Sonoluminescence:

- Sonoluminescence is a phenomenon where **small bubbles in a liquid emit flashes of light** when subjected to powerful sound waves.
- The phenomenon was **first observed in 1934** by German engineers who were investigating sonar technology.
- There are two types of sonoluminescence including **Multiple-bubble sonoluminescence (MBSL)** and **Single-bubble sonoluminescence (SBSL)**.
- Sonoluminescence **occurs when sound waves cause bubbles in a liquid** to rapidly expand and collapse, **generating extreme temperatures** that ionize gases and emit light for a trillionth of a second.
- The **pistol shrimp** is a natural example of sonoluminescence, it uses a specialized claw to snap shut rapidly, creating a fast-moving jet of water that forms a low-pressure bubble, which collapses to **produce a loud sound, intense heat** and occasionally a fleeting flash of light.

Polygraph Test



The Central Bureau of Investigation (CBI) recently completed polygraph tests on seven people in connection with the rape and murder of a resident doctor at the R.G. Kar Medical College and Hospital in Kolkata

About Polygraph Test:

- A polygraph test, also **known as a lie detector test**, is a procedure that measures a person's physiological responses to questions to determine if they are lying.
- The test is **based on the idea** that people's physiological responses are different when they are lying than when they are telling the truth.
- The test involves attaching instruments to the subject, such as **cardio-cuffs** and **electrodes**, to monitor their **blood pressure, pulse, breathing patterns** and other variables.
- Polygraph tests are **often used for event-specific investigations**, such as crime investigations or for employee or pre-employment screenings.
- In India, the **Supreme Court ruled in 2010** that **lie detector tests can only be administered with the consent of the accused** and that volunteers must be informed of the test's legal and emotional implications.
- The Indian **Evidence Act of 1871** also does not allow the results of polygraph tests to be used as evidence.
- **Violation of Article 20(3)** occurs when **polygraph, narco-analysis** and **brain mapping** tests are conducted without the accused's consent, as this Article safeguards the right against self-incrimination.
- **In 1999, the National Human Rights Commission adopted guidelines** for administering the Polygraph Test, emphasizing aspects like consent and proper documentation of the test process.

POINTS TO PONDER

- Recently, India has initiated its first comprehensive survey of high-risk glacial lakes in which state? – **Arunachal Pradesh**
- What is the theme of the first 'National Space Day'? – **Touching Lives while Touching the Moon: India's Space Saga**
- Recently, which ministry has launched the 'Guidelines for Seaplane Operations' in India? – **Ministry of Civil Aviation**
- 'Dumbur Dam', recently seen in the news, is located in which state? – **Tripura**
- Recently, which ministry organized the World Audio Visual & Entertainment Summit (WAVES), recently in news? – **Ministry of Information Broadcasting**

Face to Face Centres

DELHI MUKHERJEE NAGAR: 9205274741, 42 | **LAXMI NAGAR:** 9205212500, 9205962002 | **RAJENDRA NAGAR:** 9205274743 | **UTTAR PRADESH PRAYAGRAJ:** 0532-2260189, 8853467068 | **LUCKNOW (ALIGANJ):** 0522-4025825, 9506256789 | **LUCKNOW (GOMTI NAGAR):** 7234000501, 7234000502 | **GREATER NOIDA:** 9205336037, 38 | **KANPUR:** 7887003962, 7897003962 | **GORAKHPUR:** 7080847474, 9161947474 | **ODISHA BHUBANESWAR:** 9818244644/7656949029



dhyeyaias.com