



National Conference on Jal Jeevan Mission and Swachh Bharat Mission- Grameen

Source: [PIB](#)

The Department of Drinking Water and Sanitation recently organised a **National Conference on [Jal Jeevan Mission](#) and [Swachh Bharat Mission -Grameen \(G\)](#)** in Lucknow, Uttar Pradesh.

- It aimed to reach at '**A Unified Approach Towards Sustainable Solutions in Rural [WASH Sector](#)**'.
- State presentations offered insights into initiatives and progress from different regions, promoting discussions on replicability and sustainability.
 - Notable state experiences included **Kerala's [Plastic Waste Management \(PWM\) initiative](#), [Tamil Nadu's use of plastics in road construction](#) and [Bihar's Toilet Clinic](#).**
- **Water, Sanitation, and Hygiene (WASH) interventions** are designed to provide life-saving, long-term and sustainable access to safe water and sanitation, whilst promoting good hygiene practices that reduce the risk of water-related disease transmission.

Read more: [Global Burden of Unsafe Drinking Water, Sanitation, and Hygiene](#)

Data Exclusivity in Trade Talks with EFTA

Source: [TH](#)

Why in News?

India has recently taken a firm stance against the **inclusion of 'data exclusivity'** clauses in its ongoing discussions with the [European Free Trade Association \(EFTA\)](#) for a free trade agreement.

What is Data Exclusivity under the Trade Agreement?

- **About:** Data exclusivity pertains to a clause in this draft agreement that puts a minimum **6-year embargo** (a legal prohibition on commerce) **on clinical trial data** generated during the testing and development of a drug.
 - Thus, manufacturers seeking to produce generic versions of drugs would either need to generate such data on their own, which is an expensive proposition, or wait out for the above specified period before selling their versions in India.
- **Impact on India's Generic Drug Industry:** India's generic drug industry has been pivotal in providing affordable alternatives to expensive medications globally.
 - However, the imposition of data exclusivity could severely hamper this industry's growth and **accessibility of affordable medicines**.
- **Historical Context and Rejection:** Demand for data exclusivity has consistently emerged since 2008 from both the [European Union \(EU\)](#) and the EFTA during trade negotiations with India.

- Despite this, India has consistently refused these requests.

What is the European Free Trade Association?

- **About:** The EFTA is the intergovernmental organisation of **Iceland, Liechtenstein, Norway and Switzerland (all four are not a part of the EU)**.
 - It was founded by the **Stockholm Convention in 1960**.
 - It aims to promote **free trade and economic integration** to the benefit of its four Member States and their trading partners around the globe.



- **India and EFTA:** The total value of commercial trade between the EFTA members and India exceeded **USD 6.1 billion in 2022**.
 - The biggest exports to India were pharmaceutical items (11.4%) and machinery (17.5%), while organic chemicals (27.5%) made up the majority of EFTA imports.

What is a Free Trade Agreement?

- **About:** A free trade agreement (FTA) is a pact between two or more nations to reduce barriers to imports and exports among them.
 - Under this agreement, goods and services can be bought and sold across international borders with **little or no government tariffs, quotas, or prohibitions** to inhibit their exchange.
 - It is the opposite of trade protectionism or economic isolationism.
- **Historical Context:** It was first popularised in **1817 by economist David Ricardo** in his book, "On the Principles of Political Economy and Taxation."
 - He argued that free trade expands diversity and lowers the prices of goods available in a nation while better exploiting its homegrown resources, knowledge, and specialised skills.

- **FTA's of India:** So far, India has signed **13 Free Trade Agreements (FTAs)** with its trading partners including the Agreement on the South Asian Free Trade Area (SAFTA), India-Singapore Comprehensive Economic Cooperation Agreement (CECA), India-Japan CEPA, and India-Australia Economic Cooperation and Trade Agreement (ECTA).

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q. Consider the following countries: (2018)

1. Australia
2. Canada
3. China
4. India
5. Japan
6. USA

Which of the above are among the 'free-trade partners' of ASEAN?

- (a) 1, 2, 4 and 5
(b) 3, 4, 5 and 6
(c) 1, 3, 4 and 5
(d) 2, 3, 4 and 6

Ans: (c)

Q. A "closed economy" is an economy in which (2011)

- (a) the money supply is fully controlled
(b) deficit financing takes place
(c) only exports take place
(d) neither exports or imports take place

Ans: (d)

Stem Cells in Menstrual Blood

For Prelims: [Stem cell](#), Menstrual Blood Stem Cells, Insulin, [In Vitro fertilization](#)

For Mains: Importance of research and study on Menstrual Blood, Issues Related to Women Health, Biotechnology

Source: [TH](#)

Why in News?

Recently, researchers have unveiled the **regenerative potential of [stem cells in menstrual blood](#)**,

stemming from studies conducted roughly two decades ago.

- This discovery has opened new avenues for understanding the complex interplay between the **female reproductive system and regenerative processes**.

What are Menstrual Blood Stem Cells?

▪ About:

- Menstrual blood-derived stem cells (MenSCs), known as **endometrial stromal mesenchymal stem cells**, possess multipotent properties, meaning they can differentiate into various tissue types such as **fat cells, bone cells, and smooth muscle cells**.
- MenSCs are an ethical source of adult stem cells that can be collected painlessly from women.
 - MenSCs can be collected through a **menstrual cup**, providing a less **invasive alternative** to surgical biopsies.
- MenSCs can be obtained from women's menstrual blood derived from the **endometrium** (lines the inside of the uterus).

▪ Role in Women's Health:

◦ Regenerative Potential:

- MenSCs exhibit multipotent characteristics. This means they can differentiate into various cell types, including neurons, cartilage, fat, bone, heart, liver, and skin cells.

◦ Treating Endometriosis:

- MenSCs offer potential avenues for treating gynaecological disorders such as endometriosis and infertility.
 - **Endometriosis** is a disease in which tissue similar to the lining of the uterus (endometrium) **grows outside the uterus**. It can cause severe pain in the pelvis and make it **harder to get pregnant**.
 - Endometriosis can start at a person's first menstrual period and last until menopause (end of menstrual cycles).
 - Common symptoms of endometriosis include **pelvic pain**, especially during menstruation, painful intercourse, infertility, heavy menstrual bleeding, and gastrointestinal issues such as diarrhoea or constipation.
 - The cause and ways to prevent endometriosis are unknown. There is no cure, but its symptoms can be treated with **medicines or, in some cases, surgery**.
 - The contributing factor to endometriosis is the backflow of menstrual blood into a woman's fallopian tubes.
 - This backward flow carries blood into the **pelvic cavity**, a funnel-shaped space between the bones of the pelvis.
 - Endometrial stem cells deposited in these areas may prompt the **growth of endometrial-like tissue** outside the uterus, resulting in **painful lesions, scarring, and often infertility**.

▪ Broader Therapeutic Applications:

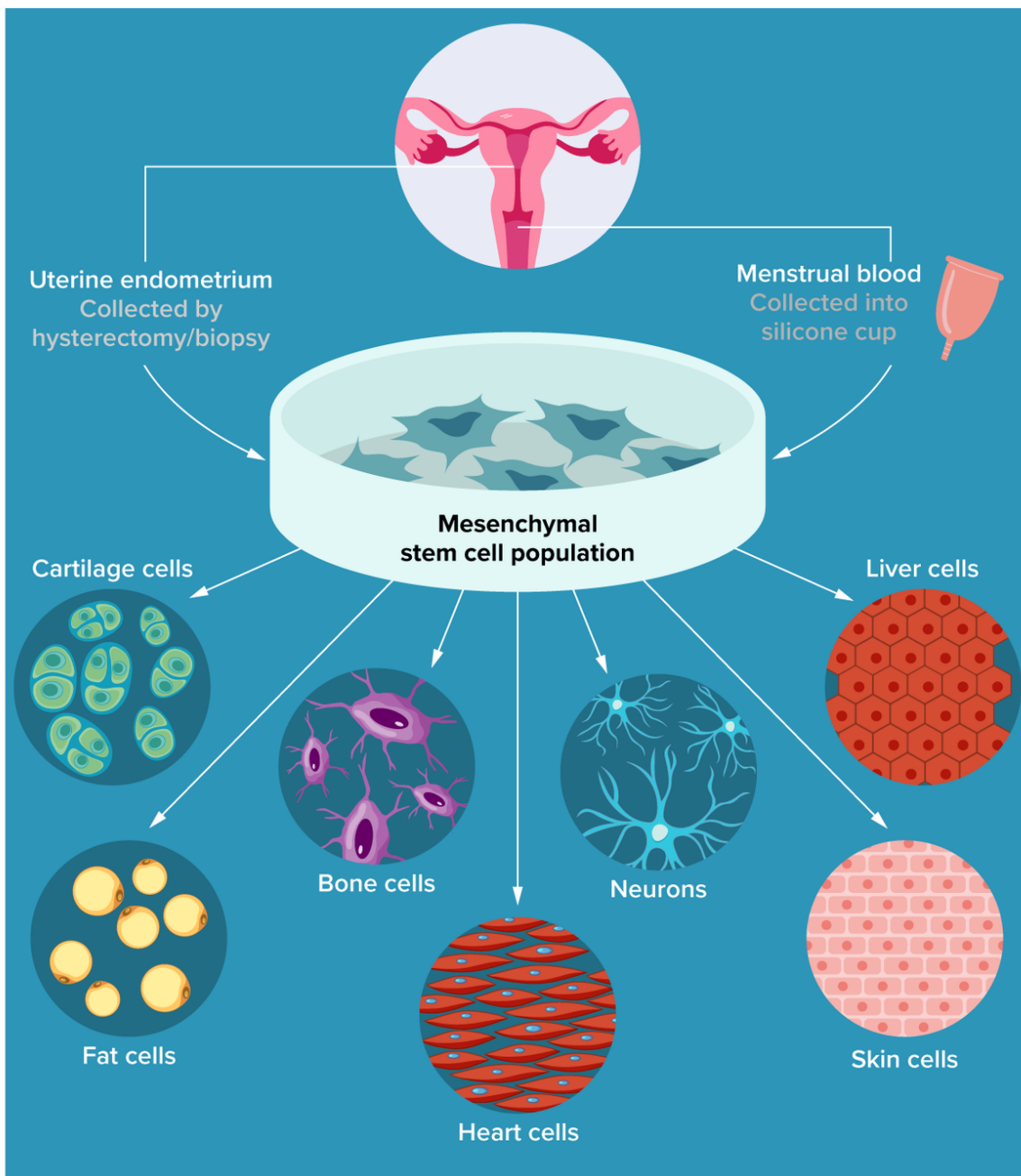
- Menstrual stem cells have potential therapeutic applications beyond gynaecological diseases.
- Injecting menstrual stem cells into **diabetic mice stimulated** the regeneration of **insulin-producing cells** and improved blood sugar levels.
 - Treating injuries with stem cells or their secretions helped heal wounds in mice.
- Menstrual stem cells can be transplanted into humans without adverse side effects.

▪ Challenges:

- Despite the convenience of collecting menstrual stem cells, research in this area represents a tiny fraction of overall stem cell research.
 - As of 2020, **menstrual stem cell research** accounted for only **0.25% of all mesenchymal cell research**, while bone marrow stem cells represented 47.7%.
- Ensuring **consistent and scalable production of MenSCs** for clinical applications remains a challenge.
- Cultural taboos and limited investment in women's health research pose significant challenges in securing funding for menstrual stem cell studies.
- Addressing **gender bias in research funding is crucial to elevate menstrual stem**

cell research as a promising frontier in regenerative medicine, beyond its association with menstruation.

The diverse fates of menstrual stem cells



Endometriosis and Fusobacterium bacteria:

- There is a significant **association between Fusobacterium bacteria and endometriosis**.
 - Fusobacterium was found in **64% of endometriosis patients compared to only 7% in healthy individuals**. Studies suggest that **Fusobacterium exacerbates endometrial lesions**.
- A 2022 research paper found that people with endometriosis had an imbalance of microbe populations in the gut, known as **gut dysbiosis**.
 - This altered microbiota could contribute to the progression of endometriosis.

What are Stem Cells?

- **About:**

- Stem cells are special human cells with the ability to develop into various cell types, such as muscle cells or brain cells.
- They have the potential to repair damaged tissues, offering hope for treating serious illnesses like **paralysis** and **Alzheimer's disease**.
- **Types of Stem Cells:**
 - Stem cells are usually categorized as **multipotent** (able to give rise to multiple cells within a lineage), **pluripotent** (able to give rise to all cell types in an adult) and **totipotent** (able to give rise to all embryonic and adult lineages).

Type of Stem Cell	Source	Potential of the Stem Cell
Embryonic Totipotent Stem Cells	These stem cells are found in the very early stages of a fertilized embryo, typically within the first few days after fertilization.	Can become any cell in the body even form the placenta(an organ in the uterus during pregnancy that provides oxygen and nutrients to the growing baby)
Embryonic Pluripotent Stem Cells	Derived from the inner cell mass of a slightly more developed embryo (around 4-5 days after fertilization).	Can become many different cell types in the body but cannot form the placenta.
Adult Multipotent Stem Cells	Found in various tissues in the human body, like bone marrow or skin.	Multipotent stem cells are more specialized.They can only differentiate into a limited range of cell types specific to the tissue they are found in. For example, bone marrow stem cells can develop into different blood cell types, but not into skin cells.

- **Stem Cells in Medicine:**
 - Hematopoietic stem cells, found in bone marrow, are currently used to treat diseases like cancer and anaemia by producing new blood cells.
 - Potential future applications include treating **chronic heart disease**, type 1 diabetes, spinal cord injuries, and Alzheimer's disease.
 - Pluripotent stem cells offer opportunities for testing new medicines and creating new tissues.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q.1 Consider the following statements: (2020)

1. Genetic changes can be introduced in the cells that produce eggs or sperms of a prospective parent.
2. A person's genome can be edited before birth at the early embryonic stage.
3. Human induced pluripotent stem cells can be injected into the embryo of a pig.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 and 3 only
- (c) 2 only
- (d) 1, 2 and 3

Ans: (d)

Q1. With reference to 'stem cells', frequently in the news, which of the following statements is/are correct? (2012)

1. Stem cells can be derived from mammals only
2. Stem cells can be used for screening new drugs
3. Stem cells can be used for medical therapies

Select the correct answer using the codes given below:

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 3 only
- (d) 1, 2 and 3

Ans: (b)

Mains

Q.1 Stem cell therapy is gaining popularity in India to treat a wide variety of medical conditions including Leukaemia, Thalassemia, damaged cornea and several burns. Describe briefly what stem cell therapy is and what advantages it has over other treatments? **(2017)**

Q.2 What are the continued challenges for women in India against time and space? **(2019)**

IEPFA Partners with DBS for Financial Awareness

Source: PIB

In a significant move towards **enhancing investor awareness and protection**, a memorandum of understanding (MoU) was signed between the **Investor Education and Protection Fund Authority (IEPFA) and the Development Bank of Singapore Ltd (DBS)** in New Delhi.

- The IEPFA was set up on 7th September 2016, under the aegis of the Ministry of Corporate Affairs, Government of India, for administering the [Investor Education Protection Fund \(IEPF\)](#) for making refunds of shares, unclaimed dividends, and matured deposits/debentures, among other things, to investors.
 - IEPF promotes awareness and protects the interests of investors.
 - The IEPFA has conducted several Investor Awareness Programmes aimed at **increasing**

financial literacy and empowering investors to protect themselves from financial fraud.

- DBS is a leading financial services group in Asia with a presence in 19 markets. DBS Bank India Limited is the **first major foreign bank to function as a wholly-owned, locally incorporated subsidiary** in India.
 - It offers banking services for enterprises and individuals across all scales.

Read more: [Investor Education and Protection Fund \(IEPF\)](#)

Odysseus Spacecraft

Source: [TOI](#)

Intuitive Mission's **Odysseus spacecraft**, a private Nova-C lunar lander, is on its way to the **Moon** after launching on a **SpaceX Falcon 9 rocket** from the **National Aeronautics and Space Administration (NASA)** Kennedy Space Center in Florida.

- Odysseus is the second private attempt after the [Peregrine lander's failure](#).
- The Falcon 9 is a **two-stage rocket designed** and manufactured by SpaceX to transport people and payloads into Earth's orbit.
- The spacecraft carries six payloads for NASA under the CLPS initiative, testing new technologies and scientific instruments.
 - Key technologies being tested include a LIDAR-based sensor and an electrostatic dust-removal system for spacesuits.
- The spacecraft is set to land on the Moon on **22nd February 2024**.
- The mission aims to become the first American spacecraft to land on the Moon in over 50 years. The last time an American spacecraft landed on the Moon was in **1972, with Apollo 17**.
- The mission is part of NASA's **Commercial Lunar Payload Services (CLPS)** initiative and [Artemis campaign](#).

Read more: [Challenges in Lunar Landing Missions](#), [Space Missions in 2024](#)

Doctor on Wheels

Source: [PIB](#)

Recently, the Union Minister of Science & Technology stated that "**Aarogya-Doctor on Wheels**" has provided medical assistance to around **13,000 patients** in remote areas of the **Udhampur-Kathua-Doda** Lok Sabha constituency.

- The Doctor on Wheels initiative utilises [AI technology and remote consultations](#) from specialist doctors, delivering prompt and comprehensive medical care within 45 minutes.
- With a focus on inclusivity and cost-effectiveness, it addresses [healthcare disparities](#), **bridging the urban-rural divide**.

Read more: [Shorter Medical Course to Address Rural Doctor Shortage](#), [National Telemedicine Service of India: eSanjeevani](#)

CMS COP14

For Prelims: [Convention on the Conservation of Migratory Species of Wild Animals](#), Conservation of Migratory Species, [Bonn Convention](#).

For Mains: CMS COP14, Convention on migratory species and Efforts made by India.

[Source: DTE](#)

Why in News?

The Fourteenth Meeting of the Conference of the Parties (CoP) to the [Convention on the Conservation of Migratory Species of Wild Animals](#) (CMS 14) has been concluded in Samarkand, Uzbekistan.

What are the Key Highlights of CMS COP 14?

▪ Adoption of Listing Proposals:

- Parties agreed to **adopt listing proposals for 14 migratory species**, including the Eurasian lynx, Peruvian pelican, Pallas's cat, guanaco, Lahille's bottlenose dolphin, harbour porpoise, Magellanic plover, bearded vulture, Blackchin guitarfish, Bull ray, Lusitanian cownose ray, Gilded catfish, and Laulao catfish.
- These listings aim to **enhance protection and conservation efforts for these species**.

▪ Cooperation and Conservation Efforts:

- The proposals emphasised the importance of cooperation between **range states to address threats to migratory species**, conduct research, and implement conservation activities.
 - **Range states** refer to countries or territories that are within the geographical range where a particular species occurs naturally. These countries or territories are directly involved in the management, conservation, and protection of the species and its habitat.
- Efforts were focused on maintaining existing populations, improving connectivity, safeguarding **habitats, and restoring populations**.

▪ Focus on Threats:

- Various threats to **migratory species were highlighted**, including habitat degradation, fragmentation, illegal trade, bycatch, contaminants, and human activities such as fencing, oil and gas development, mining, and underwater noise.
- The inclusion of these species in the CMS appendices aims to address **these threats and promote their conservation**.

▪ International Collaboration:

- Range states collaborated to propose listing amendments and adoption of conservation measures.
- Countries like North Macedonia, Kazakhstan, Uzbekistan, Chile, Argentina, Peru, Brazil, Uruguay, Ecuador, Panama, and others supported listing proposals and urged for **joint efforts to protect migratory species and their habitats**.

▪ Recognition of Endangered Status:

- Several species, such as the Lahille's bottlenose dolphin, Peruvian pelican, and Magellanic plover, were recognized as '**Vulnerable, 'Endangered,' or 'Critically Endangered' in [IUCN Red List](#)**, due to population decline and various threats.
- **Listing these species in CMS appendices** aims to improve their conservation status and provide support for habitat protection.

▪ **Regional and Global Conservation Initiatives:**

- The adoption of proposals reflected efforts to address conservation issues at regional and global levels.
- Measures were recommended to protect specific populations, such as the Baltic Proper population of the harbour porpoise and the Mediterranean Sea populations of various species, while also considering broader conservation strategies.

What is a Migratory Species?

- A species or **lower taxon of wild animals** of which the entire population or any geographically separate part of the population cyclically and predictably cross one or more national jurisdictional boundaries.
 - The word 'cyclically' relates to a cycle of any nature, such as astronomical (circadian, annual, etc.), life or climatic, and of any frequency.
 - The word 'predictably' implies that a phenomenon can be anticipated to recur in a given set of circumstances, though not necessarily regularly in time.

What is CMS?

▪ **About:**

- It is an intergovernmental treaty under the [UNEP \(United Nations Environment Programme\)](#) - **popularly known as [Bonn Convention](#)**.
- It was signed in 1979 and in force since 1983.
- **As of 1st March 2022, the [CMS](#) has 133 Parties.**
 - India has also been a party to CMS since 1983.

▪ **Aim:**

- It aims to conserve terrestrial, marine and avian migratory species throughout their range.
- It lays the legal foundation to conduct conservation measures on a global scale.
 - The legal instruments under CMS may range from legally binding Agreements to less formal MoU.

▪ **Two appendices under CMS:**

- **Appendix I** lists 'Threatened Migratory Species'.
- **Appendix II** lists 'Migratory Species requiring international cooperation'.

▪ **India and the CMS:**

- India has signed a non-legally binding Memorandum of Understanding (MoU) with CMS on conservation and management of Siberian Cranes (1998), Marine Turtles (2007), Dugongs (2008), and Raptors (2016).
- With 2.4% of the world's land area, India contributes to around 8% of the known global biodiversity.
 - India also provides temporary shelter to several migratory species including [Amur Falcons](#), [Bar-headed Geese](#), [Black-necked Cranes](#), [Marine Turtles](#), [Dugongs](#), Humpback Whales, etc.

What are Initiatives Taken by India for Migratory Species?

- **National Action Plan for the Conservation of Migratory Birds (2018-2023):** India has launched the National Action Plan for the conservation of migratory species along the Central Asian Flyway.
 - To reduce pressure on critical habitats and migratory routes by addressing the various challenges migratory birds face.
 - To stop the decline of migratory birds and reverse the scenario by 2027.
 - To avoid threats to habitats and migratory routes and ensure their sustainability for future generations.
 - To support transboundary cooperation among countries along the [Central Asian Flyway](#) to conserve migratory birds and their habitats.
 - To improve the database on migratory birds and their habitats to enhance our understanding of their conservation needs.
- **India also Announced:**

- Conservation of marine turtles- by launching its **Marine Turtle Policy and Marine Stranding Management Policy, by 2020,**
- Reduction of pollution from [micro-plastic and single-use plastic.](#)
- Transboundary protected areas for conservation of species like [Tigers](#), [Asian elephants](#), [Snow Leopard](#), [the Asiatic Lion](#), [the one-horned rhinoceros](#), and the [Great Indian Bustard](#), and
- Sustainable infrastructure development like **Linear Infrastructure Policy Guidelines** to tailor development in ecologically fragile areas.
- **Project Snow Leopard (PSL):** PSL was launched in 2009 to promote an inclusive and participatory approach to conserve snow leopards and their habitat.
- **Dugong Conservation Reserve:** India has established its first [Dugong conservation reserve](#) in Tamil Nadu.
- **Wildlife Protection Act, 1972:**
 - Rare and endangered species of birds including migratory birds are included in **Schedule-I** of the Act thereby according to them highest degree of protection.
 - Important habitats of birds, including migratory birds have been notified as **protected Areas under the Act** for better conservation and protection of birds and their habitats.
- **Other Initiatives:**
 - Focused protection measures involving the local communities have been taken up in the State of Nagaland for protection of [Amur Falcons](#) that migrate to Northeast India on their route to Southern Africa.
 - India has taken several steps to [conserve vultures](#) like imposing ban on veterinary use of **diclofenac**, establishment of Vulture breeding centres etc.
 - [Wildlife Crime Control Bureau](#) has been established for control of illegal trade in wildlife and its parts and products.

Read More: [Convention on Migratory Species](#)

UPSC Civil Services Examination, Previous Year Question (PYQ)

Q. The most important strategy for the conservation of biodiversity together with traditional human life is the establishment of (2014)

- (a) biosphere reserves
- (b) botanical gardens
- (c) national parks
- (d) wildlife sanctuaries

Ans: (a)

Q. With reference to the International Union for Conservation of Nature and Natural Resources (IUCN) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which of the following statements is/are correct? (2015)

1. IUCN is an organ of the United Nations and CITES is an international agreement between governments.
2. IUCN runs thousands of field projects around the world to better manage natural environments.
3. CITES is legally binding on the States that have joined it, but this Convention does not take the place of national laws.

Select the correct answer using the code given below:

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Ans: (b)

Digital Payments System in India



DIGITAL PAYMENT SYSTEMS IN INDIA

A digital or electronic payment refers to transferring money from one payment account to another using a digital device or channel (bank transfers, mobile money, QR codes etc.)

Payment Systems by NPCI

National Payment Corporation of India (NPCI) is an umbrella entity for retail payment (Payment and Settlement Systems Act, 2007).



Immediate Payment Service (IMPS)

- ↳ For retail customer
- ↳ **Limit:** ₹1-5 lacs (Fees+GST)
- ↳ 24/7 (Instant Settlement)
- ↳ **Provider:** Banks, PPI, Mobile Wallet Companies

Unified Payment Interface (UPI)

- ↳ Technology for digital payment apps based on IMPS
- ↳ Push and Pull Transaction
- ↳ Also adopted by other countries like France, UAE, Singapore
- ↳ **UPI-Lite+NFC:** For offline payment
- ↳ **BHIM-UPI:** Money transfer app

RBI's Centralised Payment System (CPS)

Real Time Gross Settlement (RTGS)

- ↳ For high value transactions
- ↳ **Lower Limit:** ₹2 Lacs (No Upper ceiling) (No fees)
- ↳ 24/7 (Instant Settlement)
- ↳ Provided by banking & non-banking entities

Lightweight Payment and Settlement System (LPSS)

- ↳ RBI's emergency alternative to NEFT/RTGS
- ↳ Temporary, portable solution



Rupay Card Payment Gateway (RuPay)

- ↳ **Works in 3 Channels:** ATM, Point of Sale Device, Online Portals
- ↳ Given free with PMJDY
- ↳ Adopted in foreign countries as well (e.g. Mauritius)

Miscellaneous Initiatives

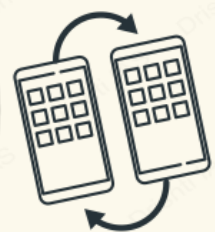
- ↳ Bharat Bill Payment System (BBPS) & Unified Presentment Management System (UPMS)
- ↳ National Electronic Toll Collection (NETC)
- ↳ PAI Chatbot
- ↳ Bharat QR
- ↳ e-RUPI
- ↳ Aadhaar Payment Bridge (APB) System
- ↳ Aadhaar enabled Payment System (AePS)

National Electronic Fund Transfer (NEFT)

- ↳ For mid-range transactions
- ↳ No limit imposed by RBI (No fees)
- ↳ 24/7 (Settles net amount between banks @ 30 minutes intervals)
- ↳ Provided by banking & non-banking entities

Digital Payment Regulatory Bodies

- ↳ Digital Transactions Ombudsman
- ↳ Board for Regulation & Supervision of Payment & Settlements Systems (BPSS)



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