
Prelims Exam Topics

PRADHAN MANTRI KRISHI SINCHAYEE YOJANA (PMKSY)

Context

PMKSY has completed more than 10 years of implementation, marking a decade of enhancing irrigation coverage and promoting sustainable water resource management in agriculture.

About Pradhan Mantri Krishi Sinchayee Yojana(PMKSY)

- **Launched:** 2015
- **Scheme Type:** Centrally Sponsored Scheme (Core Scheme)
- **Funding Pattern:** 75:25 (General); 90:10 (NE & Himalayan States)
- **Nodal Ministry:** Ministry of Jal Shakti
- Implemented through **State Irrigation Plans (SIPs)** and **District Irrigation Plans (DIPs)** following a **decentralized planning approach**.

Objectives

- Achieve convergence of irrigation investments through **District and Sub-district Irrigation Plans**.
- Promote **precision irrigation** under "**More Crop Per Drop**".
- Integrate water sources, distribution, and efficient water management technologies.
- Develop **rainfed areas** through the **watershed approach**.
- Promote **aquifer recharge** and sustainable water conservation.

Major Components

1. **Accelerated Irrigation Benefit Programme (AIBP):** Originally launched in **1996**, aims to expedite completion of major and medium irrigation projects beyond States' financial capacity.
2. **Har Khet Ko Pani (HKKP)**
 - Aims to expand assured irrigation by developing **minor irrigation infrastructure** and improving water resource management.
 - **Key Components:** Includes **Command Area Development (CAD)**, **Repair, Renovation & Restoration (RRR) of Water Bodies**, and **Groundwater Development**, along with **rainwater harvesting** and strengthening of traditional water sources.

PMKSY was formulated by integrating the following schemes:

Scheme	Ministry
Accelerated Irrigation Benefit Programme (AIBP)	Ministry of Jal Shakti (formerly Ministry of Water Resources).
Integrated Watershed Management Programme (IWMP)	Ministry of Rural Development.
On-Farm Water Management (OFWM)	Ministry of Agriculture and Farmers Welfare

ACADEMIC BANK OF CREDITS

Context

The **Academic Bank of Credits (ABC)**, along with the **Automated Permanent Academic Account Registry (APAAR)**, is strengthening India's digital academic ecosystem by enabling secure, flexible, and transparent management of students' academic records.

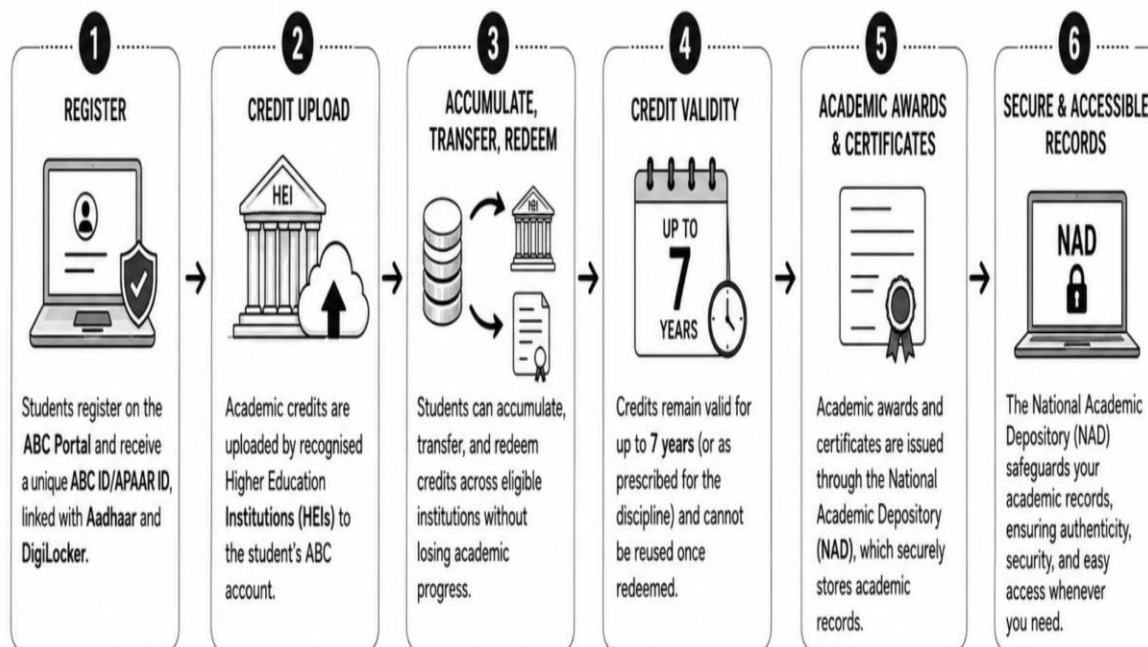
About Academic Bank of Credits (ABC)

- A digital academic credit repository launched by the **Ministry of Education**.
- Enables students to **store, accumulate, transfer, and redeem** academic credits earned from recognised **Higher Education Institutions (HEIs)**.
- **Regulated by: University Grants Commission (UGC)**.
- **Multiple Entry and Exit (MEE):** Supports flexible entry and exit under **NEP 2020**.
- **SWAYAM Integration:** Students can earn **up to 40% of academic credits** through the SWAYAM online learning platform.



HOW ACADEMIC BANK OF CREDITS (ABC) WORKS?

A simple, flexible and student-centric system to earn, store and use academic credits across institutions.



About APAAR (Automated Permanent Academic Account Registry) ID

- APAAR ID is a unique 12-digit student identification number linked to the ABC system. Introduced as part of the “One Nation, One Student ID” initiative, APAAR creates a single academic identity for every learner.

HAMBURG SUSTAINABILITY CONFERENCE (HSC) 2026

Context

The 3rd Hamburg Sustainability Conference (HSC) 2026 was held in Hamburg, Germany, bringing together global leaders to advance sustainable development and strengthen multilateral cooperation.

About Hamburg Sustainability Conference (HSC)

- A **global platform** for dialogue, collaboration, and partnerships to accelerate the achievement of the **Sustainable Development Goals (SDGs)**.
- **Joint Initiative of the United Nations Development Programme (UNDP)**, Germany's **Federal Ministry for Economic Cooperation and Development (BMZ)**, **Michael Otto Foundation**, and the **City of Hamburg**.
- The conference highlighted the findings of the **Global Report on Food Crises (GRFC) 2026**, which estimates that over 266 million people across 47 countries are experiencing high levels of acute food insecurity.
 - The **Global Report on Food Crises (GRFC)** is an **annual multi-agency assessment** that analyses global trends in **acute food insecurity, malnutrition, and forced displacement**.
 - **Published by:** An international alliance comprising the **United Nations**, the **European Union**, and other partner organisations.

TELECOMMUNICATIONS ACT, 2023 & TELECOMMUNICATIONS (AUTHORISATION) RULES, 2026

Context

The Government has notified the **Telecommunications (Authorisation) Rules, 2026**, operationalising the **Telecommunications Act, 2023** through a new authorisation-based regulatory framework.

Highlights of the Telecommunications (Authorisation) Rules, 2026

- **Authorisation Regime:** Replaces the legacy **licence-based framework** under the **Indian Telegraph Act, 1885** with a **unified statutory authorisation system** for telecom, internet, and long-distance services at the national or telecom circle level.
- **Validity:** Authorisations are granted for a **maximum period of 20 years**.
- **Statutory Definitions:** Introduces legal definitions for key telecom infrastructure and operational terms, including **access spectrum, captive non-public networks, cable landing stations, and core telecom networks**.
- Requires telecom operators to deploy **Artificial Intelligence (AI)** and **big data analytics** for fraud detection and prevention, while complying with **data localisation** requirements.
- Brings **satellite networks, earth stations, and Very Small Aperture Terminal (VSAT)** services within the authorisation framework; however, **separate approvals** remain mandatory for **spectrum assignment and gateway permissions**.

- Clarifies that **non-telecom revenues** are excluded from the computation of **Adjusted Gross Revenue (AGR)**.
- Designates the **Telecom eServices Portal** as the official **single-window digital platform** for processing telecom authorisations.

About Telecommunications Act, 2023

- Modernise India's telecom regulatory framework by repealing the colonial-era Indian Telegraph Act, 1885, Indian Wireless Telegraphy Act, 1933, and Telegraph Wires (Unlawful Possession) Act, 1950.
- Provides for **administrative allocation of spectrum** for specified satellite communication services, instead of auction.
- Establishes a **uniform, non-discriminatory Right of Way framework** for telecom infrastructure.
- Empowers the Government to prescribe **identity verification mechanisms**, including biometric verification, for telecom subscribers.
- **Civil Penalty Framework**
 - Introduces a **civil penalty mechanism** adjudicated by designated authorities.
 - Appeals lie before the **Designated Appeals Committee** and subsequently the **Telecom Disputes Settlement and Appellate Tribunal (TDSAT)**.

EXOSOMES

Context

Researchers are exploring **exosomes** as potential tools for the **early diagnosis and treatment** of diseases such as **cancer and Alzheimer's disease**.

About Exosomes

- **Exosomes** are **small extracellular vesicles (30–200 nanometres in diameter)** naturally released by almost all cells in the body.
- They are enclosed by a **lipid bilayer membrane**, similar to the cell membrane. They carry **proteins, lipids, RNA, and other signalling molecules** derived from their parent cell.
- They facilitate **cell-to-cell communication** by transferring biological molecules between cells. They reflect the physiological or pathological state of their parent cell, making them valuable **biomarkers** for disease detection.

- Exosomes are being investigated for **non-invasive diagnostics**, **targeted drug delivery**, and **regenerative medicine** due to their ability to carry therapeutic molecules.

PALEOINDIA PORTAL

Context

The Union Minister for Environment, Forest and Climate Change recently launched the **PaleoIndia Portal**, a national digital platform for documenting India's fossil heritage.

About PaleoIndia Portal

- It is a **digital repository of fossil records** from across India.
- **Developed by:** Jointly by the **Zoological Survey of India (ZSI)** and the **National Centre for Sustainable Coastal Management (NCSCM)**, Chennai.
- Uses dynamic geological maps provided by the **Geological Survey of India (GSI)**.
- Documents fossil fauna from **all 28 States and 8 Union Territories**.
- Supports **real-time data upload** from researchers and citizen scientists to strengthen conservation of India's paleontological heritage.

TRANSCASPIAN MARINKA

Context

The **Sangon clan** in Arunachal Pradesh has launched a community-led initiative to conserve the **Transcaspian marinka**, a Himalayan ray-finned fish.

About Transcaspian Marinka

- It is a **species of ray-finned fish**
- **Distribution:** Mainly found in **Afghanistan, Turkmenistan, and Iran**.
- **Habitat:** Inhabits **freshwater rivers, streams, springs, and qanats**.
- **Local Name:** Known as **Ngarsing** in the **Nyishi** language of Arunachal Pradesh.
- **IUCN Red List Status:** **Least Concern (LC)**.

Mains Exam Topics

REIMAGINING INDIA'S PPP MODEL

Context:

India's aspiration to become a developed economy by 2047 and achieve net-zero emissions by 2070 demands massive infrastructure investment. While first-generation PPPs expanded infrastructure, their financing model proved unsustainable. Hence, India needs a second-generation PPP framework based on capital circulation, enabling continuous recycling of public and private capital for long-term infrastructure financing.

Why Does India Need to Reimagine its PPP Model?

- **Correcting Flawed Risk Allocation:** Earlier PPP models transferred excessive construction, land acquisition, regulatory, and demand risks to private developers, resulting in stalled projects and the **Twin Balance Sheet** crisis.
 - E.g., The **Hybrid Annuity Model (HAM)** shares construction costs, while the government assumes land acquisition and traffic risks, improving project viability.
- **Shifting from Capital Mobilisation to Capital Circulation:** Infrastructure financing is moving from continuously raising fresh capital to recycling capital locked in operational assets.
 - E.g., The **National Monetisation Pipeline (NMP)**, **Infrastructure Investment Trusts (InvITs)**, and recent State-level asset monetisation initiatives unlock value from brownfield assets to finance new infrastructure.
- **Building a Climate-Ready PPP Framework:** Traditional PPP contracts are ill-suited to emerging sectors with high technological and commercial uncertainty, requiring innovative financing structures.
 - E.g., Green hydrogen, battery storage, and carbon capture projects require **blended finance**, **Viability Gap Funding (VGF)**, and differentiated risk-sharing mechanisms.
- **Institutionalising Flexible Contract Governance:** Long-term infrastructure projects require predictable regulation, transparent contract renegotiation, and efficient dispute resolution to sustain investor confidence.
 - E.g., The **Kelkar Committee on PPPs** recommended structured renegotiation frameworks and faster dispute resolution to revive stressed infrastructure projects.

- **Crowding-in Private Capital for Viksit Bharat 2047:** As public finances face increasing fiscal constraints, PPPs must evolve into a mechanism that leverages public investment to attract long-term private capital.
 - **E.g.,** With record public capital expenditure in recent Union Budgets, a reimagined PPP framework can multiply infrastructure investment by mobilising institutional investors, pension funds, and sovereign wealth funds.

How Can Capital Circulation Transform Infrastructure Financing?

- **Equity Recycling through Asset Monetisation:** Operational infrastructure assets can be monetised to unlock equity for new greenfield projects, reducing dependence on fresh public borrowing.
 - **E.g.,** The **National Monetisation Pipeline (NMP)** and **Infrastructure Investment Trusts (InvITs)** monetise operational highways, transmission lines, and pipelines, generating capital for new infrastructure.
- **Debt Recycling through Infrastructure Debt Funds (IDFs):** Refinancing completed projects with long-term capital frees commercial banks from holding illiquid infrastructure loans and supports fresh lending.
 - **E.g.,** **Infrastructure Debt Funds (IDFs)** refinance operational assets, addressing banks' **Asset–Liability Mismatch (ALM)** and enabling new project financing.
- **Mobilising Long-Term Institutional Capital:** Mature infrastructure assets with stable cash flows attract patient investors seeking predictable returns.
 - **E.g.,** **Pension funds, insurance companies, and sovereign wealth funds** invest in operational infrastructure through **InvITs**.
- **Expanding Sovereign Fiscal Space:** Asset recycling allows governments to sustain infrastructure investment without proportionately increasing fiscal deficits or public debt.
 - **E.g.,** Capital unlocked through the **NMP** enables continued infrastructure spending while supporting fiscal consolidation under the **FRBM** framework.
- **Corporate Balance Sheet De-leveraging:** Monetisation of mature assets enables private developers to reduce debt, improve financial health, and reinvest in new infrastructure projects.
 - **E.g.,** By transferring operational assets to **InvITs**, infrastructure developers can deleverage their balance sheets, avoiding a repeat of the **Twin Balance Sheet** crisis and increasing their capacity to undertake new PPP projects.

What Institutional Reforms Are Needed to Build a Next-Generation PPP Ecosystem?

- **Institutionalise Dynamic Contract Governance:** Replace rigid PPP contracts with adaptive frameworks that allow transparent, rule-based renegotiation to accommodate long-term economic and technological changes.
 - **E.g.,** The **Kelkar Committee** recommended structured contract renegotiation mechanisms to revive stressed PPP projects while preserving transparency and investor confidence.
- **Establish Independent Statutory Regulators:** Separate the government's role as project sponsor from its role as regulator to ensure impartial oversight, policy certainty, and investor confidence.
 - **E.g.,** While sectors such as **telecom (TRAI)** and **airports (AERA)** have independent regulators, extending similar regulatory models to highways and railways can reduce conflicts of interest and regulatory capture.
- **Create Specialised Infrastructure Dispute Resolution Mechanisms:** Fast-track contractual disputes through dedicated infrastructure tribunals and modern arbitration frameworks.
 - **E.g.,** Specialised infrastructure tribunals and reforms to the **Specific Relief Act** can minimise litigation-induced project delays.
- **Institutionalise Project Preparation through Dedicated Facilities:** Strengthen project bankability by completing technical, financial, legal, and environmental preparation before tendering.
 - **E.g.,** A **Project Preparation Facility (PPF)** can operationalise a "**plug-and-play**" model by ensuring land acquisition, statutory clearances, and project structuring are completed before private bidding.
- **Build Sub-Sovereign PPP Capacity:** Empower States and **Urban Local Bodies (ULBs)** with specialised institutions to develop, finance, and manage infrastructure projects.
 - **E.g.,** Dedicated municipal PPP cells can structure projects using **municipal bonds**, **blended finance**, and innovative PPP models for urban transport, water supply, and waste management.