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Cabinet approves technology-driven PDS scheme to strengthen food security

'SARTHAK-PDS does not replace the existing PDS system but will ensure structural reform across the delivery of foodgrains, logistics, transportation, material handling, and grievance redressal,' Information and Broadcasting Minister Ashwini Vaishnaw says

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SARTHAK-PDS Scheme

The **Cabinet Committee on Economic Affairs (CCEA),** has approved the **SARTHAK-Public Distribution System Scheme** with an outlay of ₹25,530 crore for 2026–31 to modernize India's Public Distribution System using technologies such as **Artificial Intelligence (AI)**, Machine Learning, Blockchain, and Natural Language Processing, while strengthening the implementation of the **National Food Security Act (NFSA), 2013**

Summary

- The SARTHAK-PDS Scheme (₹25,530 crore, 2026–31) aims to modernize India's Public Distribution System using AI, ML, blockchain, and data-driven tools to strengthen NFSA implementation.
- It focuses on improving transparency, reducing leakages, enhancing last-mile delivery, and building a real-time, citizen-centric and interoperable PDS ecosystem.
- The scheme marks a shift towards a tech-enabled food security system, but its success will depend on balancing innovation with inclusion, accessibility, and federal coordination.

What is the SARTHAK-PDS Scheme?

- **About:** SARTHAK-PDS stands for **"Scheme for Assistance in Ration Transport and Handling-Income with Automation in PDS."**
  - It is an **umbrella scheme** aimed at strengthening India's **Public Distribution System (PDS)** under the **National Food Security Act (NFSA), 2013**.
  - It integrates two existing schemes:
    - Assistance for intra-State movement and FPS dealer margin under NFSA
    - SMART PDS (technology-driven reforms in PDS)
- **Objectives**:
  - **Technology-Driven PDS Reform:** Introduce **AI, ML, Blockchain and NLP for intelligent monitoring** and analytics and enable real-time tracking of foodgrain movement and delivery.
  - **Reduction of Leakages:** Improve transparency, reduce diversion of food grains and strengthen supply-chain monitoring and beneficiary authentication.
  - **Citizen-Centric Governance: Develop interoperable and unified PDS architecture.** Enhance grievance redressal and beneficiary feedback systems.

- **Strengthening Last-Mile Delivery:** Provide financial assistance for intra-State transportation, handling of food grains and improve FPS dealer margins for smoother functioning of ration shops.
- **Data-Driven Monitoring:** Establish State Command and Control Centres and enable predictive analytics and real-time decision-making.

What is India's Public Distribution System?

- **About:** The **Public Distribution System (PDS)** is **India's largest food security mechanism** through which subsidized food grains are distributed to eligible households via **Fair Price Shops (FPS) established under the Ministry of Consumer Affairs, Food and Public Distribution**
  - It operates under the **National Food Security Act (NFSA), 2013** and ensures access to affordable food grains for vulnerable sections of society.
- **National Food Security Act (NFSA), 2013:** It ensures equitable distribution of foodgrains to vulnerable populations.
  - The Act legally entitles:
    - Up to 75% of the rural population, and
    - Up to 50% of the urban population
    - to receive subsidized foodgrains through the **Targeted Public Distribution System (TPDS).**
  - Based on Census 2011, this covers around **81.35 crore beneficiaries**.
  - The Act follows a **human life-cycle approach,** ensuring access to adequate and nutritious food at affordable prices so that people can live with dignity.
- **Categories of Beneficiaries under NFSA:**
  - **Antyodaya Anna Yojana (AAY) Households:** AAY households represent the "poorest of the poor" and are entitled to: 35 kg of foodgrains per household per month.
    - **Eligible Categories:** Households headed by widows, elderly persons, disabled persons, or terminally ill persons without social support.
      - Primitive tribal households.
      - Landless agricultural labourers and marginal farmers.
      - Rural artisans and slum dwellers.
      - Informal sector workers dependent on daily wages.
    - BPL families with HIV-positive members.
  - **Priority Households (PHH):** Priority households are identified by State Governments/UT Administrations and are entitled to: 5 kg of foodgrains per person per month.
  - **Free Foodgrain Distribution under PMGKAY:** To reduce the financial burden on poor households, the Government decided to provide free foodgrains under NFSA beginning from 1st January 2023.
    - The scheme has been extended for five years from **1st January 2024 with an estimated financial outlay of ₹11.80 lakh crore, fully funded by the Central Government.**
- **Implementation Framework:** The system operates under the joint responsibility of the **Central and State Governments,** making it one of the largest welfare distribution networks in the world.
  - The Central Government, mainly through the **Food Corporation of India (FCI),** is responsible for the **procurement, storage, transportation and bulk allocation of food grains to States and Union Territories.**

- State Governments are responsible for operational activities such as Identification of beneficiaries, issuance of ration cards, intra-state distribution and monitoring of Fair Price Shops (FPSs).
- Several States and Union Territories also distribute additional **mass-consumption items** through PDS outlets, including **pulses, edible oils, iodized salt and spices.**

- **Key Related Recent Developments:**
  - **One Nation One Ration Card (ONORC):** The **One Nation One Ration Card (ONORC)** scheme enables NFSA beneficiaries to access subsidized foodgrains from any Fair Price Shop (FPS) across the country.
    - It uses Aadhaar-based biometric authentication through ePoS devices, ensuring portability and transparency.
  - **Mera Ration 2.0:** Mera Ration 2.0 enhances transparency and convenience for NFSA beneficiaries.
    - The app provides real-time entitlement details, FPS location services, and withdrawal history tracking. It has recorded over 1 crore downloads.
  - **Anna Mitra App:** The Anna Mitra App is designed to improve operational efficiency in the Public Distribution System (PDS).
    - It helps officials and FPS dealers in stock tracking, inspection, compliance reporting, and beneficiary management. The app is currently operational in multiple States and Union Territories.

Post-Quantum Cryptography

Recently, a task force constituted by the **Department of Science & Technology (DST)** recommended that India's critical sectors begin phased adoption of **Post-Quantum Cryptography (PQC)** to counter future **quantum-computing** threats.

- Critical Information Infrastructure (CII) sectors are expected to begin transition by **2027**, migrate priority systems by **2028**, and achieve full adoption by **2029**.
- **Security Risks Posed by Quantum Computers**: Modern digital security depends heavily on **Public Key Infrastructure (PKI),** which is based on mathematical problems that are extremely difficult for classical computers to solve.
  - A powerful **fault-tolerant quantum computer could use Shor's Algorithm to break current encryption systems,** posing serious risks to banking networks, government and military communications, digital authentication, and internet security.
  - **Solution:** Post-Quantum Cryptography (PQC) seeks to develop cryptographic systems that remain secure against both Classical computers and Quantum computers.

Post-Quantum Cryptography (PQC)

- **About**: Post-Quantum Cryptography (PQC), also known as **quantum-resistant cryptography**, refers to **cryptographic algorithms** designed to remain secure even against attacks from powerful quantum computers.
  - Unlike **Quantum Cryptography (such as Quantum Key Distribution),** PQC does not rely on quantum physics. Instead, it uses mathematical problems that are believed to be computationally infeasible even for quantum machines.
- **Major Mathematical Foundations of PQC:**
  - **Lattice-Based Cryptography:** Based on the difficulty of solving problems related to high-dimensional lattices, such as finding the shortest vector.

- Considered the most promising and widely adopted PQC approach.
- Offers flexibility for encryption, digital signatures, and key exchange.

- **Code-Based Cryptography:** Relies on the difficulty of decoding random linear error-correcting codes.
  - Known for strong security but often requires large key sizes.
- **Multivariate Polynomial Cryptography:** Based on the difficulty of solving systems of multivariate polynomial equations over finite fields.
  - Primarily explored for digital signature schemes.
- **Hash-Based Cryptography:** Uses the security properties of cryptographic hash functions.
  - Mainly applied for digital signatures.
- Considered highly secure and mathematically well understood.

PM-AJAY Portal and AJAY Mobile App

Recently, the **Ministry of Social Justice and Empowerment** launched the **PM-AJAY portal** and **AJAY mobile app** to fully digitise grassroots workflows under the **Pradhan Mantri Anusuchit Jaati Abhyuday Yojana (PM-AJAY).**

- **PM-AJAY:** It is a **centrally Sponsored Scheme** implemented by the **Ministry of Social Justice and Empowerment** to improve the socio-economic conditions of SC communities.
  - Its objectives include **poverty reduction through employment generation**, skill development and improving socio-economic indicators in SC-dominated villages.
- **Dashboard:** The PM-AJAY dashboard records progress in socio-economic development in more than **47,000 SC-majority villages** and over **4 million beneficiaries** across all components. It will provide national, state and district-level dashboards for monitoring scheme progress.
- **Three Components:** The portal will act as a **central digital database** and **coordination platform** for **all three PM-AJAY components:** Adarsh Gram, Grant-in-Aid for skilling and employment, and hostels in educational institutions.
  - **Under the Adarsh Gram component,** paper-based village planning will be replaced by digital planning through Village Development Plans, monitored across 50 socio-economic indicators and 10 development domains.
  - **For the Grant-in-Aid component,** the portal will function as a central management information system (MIS) to track financial outlays, livelihood funding, beneficiary registration, skill training, and employment-related progress.
  - **For the Hostel component,** the portal and app will support proposal submission, progress tracking, inspections, and uploading of geo-tagged and time-stamped photographs to verify construction and repair milestones.
- **PM-AJAY Mobile App:** It has been developed as a unified digital platform to extend the services and functions of the existing **PMAGY and PM-AJAY portals** to mobile users through a user-friendly interface.
  - It enables mobile-based access to scheme information and **beneficiary-centric services**, while improving field-level monitoring, real-time reporting, transparency, and digital governance.