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1. Anna Sahayata Holistic AI Solution (ASHA), 'Bhandaran 360', 'Smart EXIM Warehouse System', and ANNA DARPAN

- **Prelims** - Anna Sahayata Holistic AI Solution (ASHA), 'Bhandaran 360', 'Smart EXIM Warehouse System', and ANNA DARPAN
- **Mains** - GS 2 - Governance

Why in the news?

- The Union Minister for Consumer Affairs, Food and Public Distribution had announced four new digital upgrades to strengthen the Food storage, logistics and Public Distribution System.

Anna Sahayata Holistic AI Solution (ASHA)

- **What is it?:** It is an AI-based platform that enables beneficiaries of the Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY) / PDS to give feedback via automatic calls in their preferred language.
- **Nodal Ministry:** Launched by the Department of Food & Public Distribution (DFPD), Ministry of Consumer Affairs, Food and Public Distribution.
- **Features:**
 - Multilingual translation
 - Sentiment analysis
 - Automatic grievance categorisation
 - Real-time dashboards for administrators.
- **Roll Out:**
 - The pilot phase started in 5 states.
 - Expected to cover all 36 States/UTs & reach 20 lakh beneficiaries per month by March 2026.

Bhandaran 360

- **What is it?:** A new ERP platform by the Central Warehousing Corporation (CWC), based on SAP S/4HANA.
- **Features:**
 - Integrates 41 modules (HR, finance, warehouse-management etc) and linked with 35 external systems (ICEGATE, FCI, NAFED, etc) for seamless digital connectivity across food-storage & movement ecosystem.



→ Provides:

- ★ Single sign-on & role-based access.
- ★ End-to-end data encryption & audit-trails
- ★ Real-time dashboards
- ★ Automated workflows with Chatbots/RPA
- ★ Predictive analytics for faster decisions.

Smart EXIM Warehouse System

- **What is it?:** Designed for container freight stations (CFS/ICD) and general warehouses. Uses technologies like AI, IoT, FASTag, OCR/ANPR, GNSS.
- **Features:**
 - Rolled out under the “Digital Transformation 2.0” initiative of Central Warehousing Corporation.
 - Gate Automation System integrated with port/rail systems (auto-fetching vehicle/container details, FASTag-based entries, automatic records).
 - Yard Management with Digital Twin (real-time tracking of containers/equipment; optimize internal yard movement).
 - Smart Inventory Management (real-time count & tracking of cargo, auto-updates via ERP-WMS integration)

ANNA DARPAN

- **What is it?:** New microservices-based integrated supply-chain management system by the Food Corporation of India (FCI).
- **Objectives:**
 - Improved efficiency & productivity
 - User-friendly UI
 - Data-driven decision-making
 - Integration across systems
 - Mobile-first access.
- **Features:**
 - Replaces the existing “Depot Online System”.
 - Covers operations at mandis, mills, depots (owned & hired), divisional, regional, zonal, headquarters levels.



- Real-time dashboards across the supply chain (mandis, railheads, depots, offices).
- Architecture:
 - ★ Cloud environment
 - ★ Service-mesh for microservices
 - ★ API-based integration with internal/external apps
 - ★ Central analytics platform for data-driven decisions.



2. LeadIT

- Prelims - LeadIT
- Mains - GS 3 - Environment

Why in the news?

- The Union Minister for Environment, Forest and Climate Change participated in and addressed the Leadership Group for Industry Transition (LeadIT) Industry Leaders' Roundtable held during the UNFCCC COP-30 negotiations at Belém, Brazil.

LeadIT

- **What is it?:** LeadIT (Leadership Group for Industry Transition) is a global initiative launched in 2019 by **India and Sweden**, in collaboration with the **World Economic Forum (WEF)**.
- **Purpose:** To accelerate the **decarbonisation of hard-to-abate industries** and support countries in building **net-zero industrial systems**.
- **Objectives:**
 - Enable **low-carbon transitions** in energy-intensive sectors such as Steel, Cement, Chemicals, Pulp and paper and Heavy manufacturing.
 - Facilitate peer-to-peer learning, knowledge exchange, and adoption of clean industrial technologies.
 - Mobilise climate finance and partnerships for industrial decarbonisation.
 - Promote **inclusive, just, and equitable transition**, especially for developing nations.
- **Key Features:**
 - Membership includes both countries and industry partners.
 - Supports countries in preparing low-carbon industry transition strategies and climate-tech transition frameworks.
 - Activities include:
 - ★ Industry transition roadmaps
 - ★ Policy toolkits
 - ★ Case studies on clean technology adoption
 - ★ Sector-specific decarbonisation pathways
 - ★ LeadIT Summit (annual high-level meet during UNFCCC COP)



- **India's Role:**

- Co-founder and key decision-maker in LeadIT.
- Uses the platform to highlight:
 - ★ Equity and climate justice
 - ★ Need for affordable finance
 - ★ Technology access for developing countries
- Showcases India's national initiatives such as
 - ★ National Green Hydrogen Mission
 - ★ Perform, Achieve and Trade (PAT)
 - ★ Energy Efficiency Programs
 - ★ Circular Economy Initiatives
 - ★ Resource Efficiency Framework

- **Updates from COP30:**

- India addressed the LeadIT Industry Leaders' Roundtable at COP-30.
- Emphasised the need for predictable finance, technology transfer, and inclusive transition pathways.
- Called for global support for decarbonising industries without compromising development needs of emerging economies.



3. Protection of Plant Variety and Farmers' Rights Act (PPV&FRA Act), 2001

- **Prelims** - Protection of Plant Variety and Farmers' Rights Act (PPV&FRA Act), 2001
- **Mains** - GS 3 - Environment

Why in the news?

- The Union Minister for Agriculture announced that the centre is planning to bring amendments to the Protection of Plant Variety and Farmers' Rights Act (PPV&FRA Act), 2001.

Protection of Plant Variety and Farmers' Rights Act (PPV&FRA Act), 2001

- **What is it?:** It is an Indian law that establishes an intellectual property framework to protect new plant varieties and, crucially, the rights of farmers
- **Launch:** Enacted in 2001, operational from 2005.
- **Objectives:**
 - Encourage development of new plant varieties.
 - Protect plant breeders' rights.
 - Protect and recognize farmers' rights to save, use, exchange, and sell farm-saved seeds.
 - Ensure availability of high-quality seeds to farmers.
 - Promote agricultural development through innovation in plant breeding.
- **Key Provisions:**
 - **Rights of Breeders:**
 - ★ Breeders get **exclusive rights** to produce, sell, market, distribute, import, or export a registered variety.
 - ★ Breeders must deposit seeds/propagating material at the National Gene Bank.
 - **Farmers' Rights:**
 - ★ **Right to Save, Use, Exchange & Sell Seeds:** Farmers can save, use, sow, resow, exchange, share, or sell farm-saved seeds of protected varieties, but cannot sell them branded in labeled packages.
 - ★ **Right to Register Varieties:** Farmers can apply for registration as breeders of "Farmers' Varieties."



★ **Protection Against Innocent Infringement:** If a farmer unknowingly infringes a breeder's right, he/she is not liable for punishment.

★ **Compensation:** If a registered variety fails to perform as claimed, farmers can claim compensation from the breeder.

→ **Types of Plant Varieties That Can Be Registered:**

- ★ New Variety
- ★ Extant Variety (already in cultivation)
- ★ Farmers' Variety
- ★ Essentially Derived Variety (EDV)
- ★ Varieties of Common Knowledge

→ **National Gene Fund:**

- ★ Created to support conservation of genetic resources and share benefits with farmers.
- ★ Sources: breeder royalties, compensation payments, benefit sharing.

→ **Benefit Sharing:** Farmers/communities who contributed to developing or conserving genetic resources receive **monetary benefits** from breeders who used them.

→ **Compulsory Licensing:** If a breeder fails to make seeds of a protected variety available at **reasonable price/quality**, the government can issue a **compulsory license** to another producer.

● **Significance:**

- Balances IPR protection with traditional rights of farmers.
- Promotes innovation in seed development & plant breeding.
- Protects India's agrobiodiversity and traditional varieties.
- Enhances seed quality and agricultural productivity.



4. Codex Alimentarius Commission (CAC)

- **Prelims** - Codex Alimentarius Commission (CAC)
- **Mains** - GS 2 - International Relations

Why in the news?

- India has been unanimously re-elected to the Codex Executive Committee, representing Asia in global food standards development until 2027.

Codex Alimentarius Commission (CAC)

- ★ **What is it?**: The Codex Alimentarius Commission is an intergovernmental body established to develop food standards, guidelines, and codes of practice to protect consumer health and ensure fair practices in the food trade.
- ★ **Formation**
 - **Established**: 1963
 - **By**: Jointly by the Food and Agriculture Organization (FAO) and the World Health Organization (WHO).
- ★ **Headquarters**: Rome, Italy
- ★ **Members**: Over 180 countries, including India
- ★ **Objectives**:
 - Protect the health of consumers.
 - Ensure fair trade practices in the food trade.
 - Promote coordination of food standards globally.
 - Provide a reference in WTO disputes under the SPS (Sanitary and Phytosanitary) Agreement.
- ★ **India and Codex**
 - India is a member since 1964.
 - National Codex Contact Point (NCCP): Food Safety and Standards Authority of India (FSSAI)
 - India hosts CCASIA (Coordinating Committee for Asia).
 - Plays an active role in shaping Codex standards, especially for spices, cereals, and dairy.



5. Water Budgeting

- **Prelims** - Water Budgeting
- **Mains** - GS 3- Environment

Why in the news?

- NITI Aayog releases Report on Water Budgeting for Aspiration Blocks.

Water Budgeting

- **What is it?:** Water budgeting is the scientific process of accounting for the inflow, outflow, and storage of water within a specific system (e.g., watershed, region, agricultural field, or country) over a defined period. It balances available water with actual water use and requirements.
- **Components**
 - **Inputs:** Rainfall, surface water inflow, groundwater recharge.
 - **Outputs:** Evapotranspiration, surface water outflow, groundwater extraction, water use for various sectors.
 - **Change in Storage:** Difference between water entering and leaving the system over time.
- **Importance**
 - Evaluates water availability, identifies surpluses or deficits, and informs optimal water allocation.
 - Aids in sustainable management of water for domestic, agricultural, industrial, and ecological needs.
 - Supports planning for drought, flood risk, and climate change adaptation.
 - Protects drinking water sources and designs restoration or conservation projects.
- **Application**
 - Watershed management, crop planning (Crop Water Budgeting), river basin development, urban water security planning, and community-based resource management.
 - State and local governments use water budgets to ensure annual withdrawals are within sustainable limits and to achieve water security and conservation objectives.



6. Alliance for the Implementation of National Adaptation Plans (NAPs)

- **Prelims** - Alliance for the Implementation of National Adaptation Plans (NAPs)
- **Mains** - GS 3 - Environment

Why in the news?

- Alliance for the Implementation of National Adaptation Plans (NAPs) was launched at COP - 30 of UNFCCC.

Alliance for the Implementation of National Adaptation Plans (NAPs)

- **Objective:** To accelerate global support and financing for countries to translate adaptation plans into concrete, bankable projects that address climate vulnerabilities.
- **Partners:** Initiated by the COP30 Presidency, UNDP, governments like Italy and Germany, the NAP Global Network, the NDC Partnership, and supported by multilateral development banks, private sector, and civil society.
- **Functions**
 - Facilitate coordination among actors supporting NAPs to enhance country-driven delivery.
 - Promote knowledge sharing, innovation, and transparency for sustained adaptation actions.
 - Mobilize both public and private finance, emphasizing investment readiness and project pipeline development.
 - Broaden participation by engaging new stakeholders, including the private sector.
- **Significance:** Addresses critical global adaptation finance gaps by ensuring that countries' adaptation strategies lead to tangible, financed outcomes, enhancing resilience in vulnerable communities.