



## National Medical Device Policy 2023

**For Prelims:** [India's Medical Device Sector](#), [National Logistics Policy 2021](#), [PM Gati Shakti](#), [PPP](#), [PLI](#).

**For Mains:** National Medical Device Policy 2023, Scenario of India's Medical Device Sector.

### Why in News?

Recently, the Union Cabinet has approved the **National Medical Devices (NMD) Policy, 2023**.

- Policy lays down a **roadmap for accelerated growth of the medical devices sector** to achieve the following missions viz, **Access & Universality**, Affordability, Quality, **Patient Centred & Quality Care**, Preventive & Promotive Health, Security, Research and Innovation and Skilled manpower.



**CABINET DECISIONS**  
26 April 2023

### Policy for the Medical Devices Sector

- ✦ Cabinet approves the Policy for the Medical Devices Sector.
- ✦ Six Strategies planned to tap the potential of the Sector, with the Implementation Action Plan.
- ✦ Medical Devices Sector is expected to grow from present \$11 Bn to \$50 Bn in next five years.
- ✦ The policy is expected to meet the public health objectives of access, affordability, quality and innovation.

### What are the Key Features of NMD Policy 2023?

- **Regulatory Streamlining:** To make it easier to do research and business while balancing patient safety and product innovation, a "**Single Window Clearance System**" for licensing medical devices will be created.
  - This system will involve all relevant departments and organizations, such as MeitY (Ministry of Electronics and Information Technology), and DAHD (Department of Animal Husbandry & Dairying).

- **Enabling Infrastructure:** Large medical device parks with world-class infrastructure facilities will be established, near economic zones.
  - It will be done as envisioned under the **National [Industrial Corridor Program](#)** and the proposed **National [Logistics Policy 2021](#)** under the ambit of **PM Gati Shakti**, and in collaboration with state governments and the industry, to improve convergence and integration with the medical device industry.
- **Facilitating R&D and Innovation:** The policy aims to promote Research & Development in India, complementing the proposed **National Policy on R&D and Innovation in the Pharma-MedTech sector**.
  - It also aims at establishing Centres of Excellence in academic and research institutions, innovation hubs, 'plug and play' infrastructures and support to start-ups.
- **Attracting Investments:** The policy encourages private investment and **Public-Private Partnerships (PPP)** to complement existing schemes such as **[Make in India](#)**, **[Ayushman Bharat program](#)**, Heal-in-India, and Start-up mission.
  - This includes funding from **venture capitalists** to support the growth of the medical device industry.
- **Human Resources Development:** The policy aims to ensure a **skilled workforce in the medical device sector** by providing skilling, reskilling and upskilling programs through the Ministry of Skill Development and Entrepreneurship.
  - It will also support dedicated courses for medical devices in existing institutions to produce skilled manpower for futuristic technologies, manufacturing and research.
- **Brand Positioning and Awareness Creation:** The policy envisages the creation of a **dedicated Export Promotion Council** for the sector which will be an enabler to deal with various market access issues.

## What is the Significance of the Policy?

- The policy is expected to provide the required support and directions to strengthen the **medical devices industry into a competitive, [self-reliant](#), resilient and innovative industry** that caters to the healthcare needs of not only India but also of the world.
- It can place India's medical devices sector on an accelerated path of growth with a patient-centric approach to **meet the evolving healthcare needs of patients**.
- It envisions an accelerated growth path with a patient-centric approach and to emerge as the global leader in the manufacturing and innovation of medical devices by achieving 10-12% share in the expanding global market over the next 25 years.
  - With the new policy in place, the Centre aims to **reduce India's import dependence to nearly 30%** in the next couple of years; and become **one of the top five global manufacturing hubs**.
- Policy is expected to help the **Medical Devices Sector grow from present USD 11 Bn to USD 50 Bn by 2030**.

## What is the Scenario of the Indian Medical Device Sector?

- **About:**
  - The medical devices sector in India is a sunrise sector, growing at a fast pace and essential component of the healthcare industry.
  - Its importance was highlighted during the Covid-19 pandemic when India produced **medical devices and diagnostic kits like ventilators, [RT-PCR](#) kits, and PPE kits** on a large scale.
  - It is a multi-product sector, **with the following broad classifications:**
    - Electronics Equipment
    - Implants
    - Consumables and Disposables
    - In Vitro Diagnostics (IVDs) reagents
    - Surgical Instruments
  - The Sector has remained largely unregulated till 2017 when Medical Device Rules, 2017 were framed by the **[Central Drugs Standard Control Organisation \(CDSCO\)](#)**.
- **Status:**
  - **India is the 4<sup>th</sup> largest Asian medical devices market** after **Japan, China**, and South

Korea, and among the **top 20 medical devices markets globally**.

- **India's current market share** in the medical device category is **1.5% of the global space** or \$11 billion (that is ₹90,000 crore) in 2020.
  - **US dominates** the global market with a 40% market share, followed by **Europe and Japan at 25% and 15%** respectively.

▪ **Government Initiatives:**

- The [Production Linked Incentive \(PLI\) scheme](#) for promoting domestic manufacturing of Medical Devices. NMDP 2023 will be in addition to the existing PLI schemes.
  - The GoI India has already initiated implementation of PLI Scheme for medical devices and support for **setting up of four medical devices parks** – one each in **Himachal Pradesh, MP, TN and UP**.
- Promotion of Medical Devices Parks intends to encourage the domestic manufacturing of Medical Devices.
- In June 2021, the [Quality Council of India \(QCI\)](#) and the Association of Indian Manufacturers of Medical Devices (AiMeD) launched the **Indian Certification of Medical Devices (ICMED) 13485 Plus** scheme to undertake verification of the quality, safety and efficacy of medical devices.

## What are the Issues with the Medical Device Sector in India?

▪ **Inconsistent Regulations:**

- The **complex regulatory environment** is one of the most significant challenges faced by the medical device industry.
- **Manufacturers have to navigate inconsistent regulations that use varying standards and wordings**, making it difficult to understand and comply with the requirements.

▪ **Research and Development Struggles:**

- The adoption of cutting-edge technologies such as [artificial intelligence](#), [cloud computing](#), and [robotics](#) is still **limited in the Indian medical device sector**.
- Embracing these technologies could help companies overcome challenges related to R&D, production, and distribution.

▪ **Import Dependency:**

- India relies heavily on imports for medical devices, which leads to a high import **bill and adds to the cost of healthcare**. To reduce import dependency, India needs to increase domestic manufacturing of medical devices and encourage innovation in the sector.

▪ **Limited Access to Capital:**

- Access to funding is a critical challenge for medical device startups in India, as **investors are often reluctant to invest in a sector with a long gestation period** and regulatory uncertainties.

## Way Forward

- Policy makers in India will need to set out an action **plan to reduce the country's dependency on medical devices/technology imports**.
- Medical device companies should develop India as a manufacturing hub for domestic and international markets, undertake India-based innovation in combination with indigenous manufacturing, collaborate across the Make in India and Innovate in India schemes, and produce low to medium technology products to cater to the underpenetrated domestic markets.

[Source: PIB](#)

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# Pre-Conception and Pre-Natal Diagnostic Techniques (PCPNDT) Act, 1994

**For Prelims:** PC & PNDT Act, 1994, Pre-natal Diagnostic Techniques

**For Mains:** Ethical and legal issues surrounding prenatal diagnosis and sex-selective abortion, Provisions of the PC & PNDT Act, 1994, and how it aims to curb the practice of sex-selective abortion in India.

Why in News?

The Delhi High Court has remarked that certain aspects of the [PC & PNDT Act](#) **need reconsideration for effective implementation of the Act.**

- The court's direction came while dealing with a plea moved by a man seeking the quashing of an [FIR](#) registered against him under various sections of the PC & PNDT Act.

## What is PC & PNDT Act?

- **About:**
  - The Pre-Conception and Pre-Natal Diagnostic Techniques (PCPNDT) Act, 1994 is an Act of the Parliament of India that was enacted to **stop female foeticides and arrest the declining [sex ratio](#) in India.** The act banned **prenatal sex determination.**
- **Objectives:**
  - The main objective of enacting the act is to **ban the use of sex selection techniques before or after conception** and prevent the **misuse of prenatal diagnostic techniques for sex-selective abortion.**
- **Provisions:**
  - It regulates the use of [pre-natal diagnostic techniques](#), like **ultrasound machine** by allowing them their use only to detect - genetic abnormalities, metabolic disorders, chromosomal abnormalities, and certain congenital malformations, haemoglobinopathies and sex-linked disorders.
  - No laboratory or Centre or clinic will conduct any test including **ultrasonography for the purpose of determining the sex of the foetus.**
  - No person, including the one who is conducting the procedure as per the law, will **communicate the sex of the foetus** to the pregnant woman or her relatives by words, signs or any other method.
  - Any person who puts an **advertisement for pre-natal and pre-conception sex determination facilities** in the form of a notice, circular, label, wrapper or any document, or advertises through interior or other media in electronic or print form or engages in any visible representation made by means of hoarding, wall painting, signal, light, sound, can be **imprisoned for up to three years and fined Rs. 10,000.**
- **Offences Under the Act Include:**
  - **Conducting or aiding in prenatal diagnostic techniques in unregistered facilities** is an offense under the act.
  - **Sex selection on a man or woman** is prohibited by the act.
  - Performing **prenatal diagnostic techniques for any purpose other than the one specified** in the act is an offense.
  - The **sale, distribution, supply, renting, etc. of any ultrasound machine** or any other equipment capable of detecting the sex of the fetus is prohibited by the act.

## Initiatives Against Sex-Selective Abortions:

- [Beti Bachao Beti Padhao:](#)
  - Launched by the Government of India in 2015, it aims to address the **issue of declining child, sex ratio and empower girls** through awareness generation, education, and

protection3.

- **The National Plan of Action for Children, 2016:**

- It identifies the **elimination of gender-biased sex selection** as one of the key priority areas for children's rights and well-being.

## What are the Concerns Raised by the Delhi High Court?

- **The Practicality of Police Involvement in Raids and Seizures:**

- Court noted that though the PC & PNDT Rules contemplate that the **police should not be involved in raids, seizure, etc. "as far as possible"**, the practicality of this aspect needs to be reconsidered since such action **"has to be as per the CrPC for conducting raids at facilities/clinics"**.

- **Powers of Investigation and Arrest:**

- The Court observed that although the **Appropriate Authority is given the powers to investigate and conduct raids**, cancel or suspend the registration of medical centers and facilities that violate the PC & PNDT Act, **it does not have the power to arrest anyone under this Act.**
  - The offences under this Act have been made '**cognizable**', meaning the police can make an arrest.
  - However, the court raised concerns about the **effectiveness of the Appropriate Authority's role in implementing the Act** since they do not have the power of arrest.

- **Low Rate of Conviction:**

- The low conviction rate refers to the **percentage of cases in which the accused are found guilty and convicted of the crime** for which they were charged.
- In the context of the PC & PNDT Act, it means that the number of people who are actually convicted for violating the provisions of the **Act is very low.**
  - This indicates a failure of the justice system to effectively **prosecute offenders and prevent the illegal practice of sex-selective abortion.**

## What are the Implications of the Delhi High Court's Remarks?

- **Clarity on Police's Powers of Investigation and Arrest:**

- The concerns raised by the court highlight the need for greater clarity on the role of the police in implementing the Act, as well as the powers of investigation and arrest vested in the Appropriate Authorities.

- **Increased Conviction Rate:**

- The low rate of conviction under the PC & PNDT Act has been a persistent challenge, and the court's remarks may help in increasing the conviction rate in cases related to sex-selective abortion.

## What are the Ethical Issues Surrounding Prenatal Diagnosis and Sex-Selective Abortion?

- **Violation of Rights and Human Dignity:** Sex-selective abortion is a form of **gender discrimination** and violence against women that **violates their right to life, dignity, and equality.**

- It also **undermines the value and dignity of human life** and the **diversity of human society.**

- **Adds to Social Problems:** It has adverse consequences for the society such as **skewed sex ratio, increased trafficking and violence against women**, reduced marriage prospects for men, etc.

- It also raises **moral questions about the use of prenatal diagnosis** for non-medical purposes and the responsibility of parents and health care providers towards the unborn child.

- **Access to Healthcare:** Prenatal diagnosis and sex-selective abortion can exacerbate existing health disparities and inequalities, particularly for marginalized communities who may have limited access to healthcare and information.

## UPSC Civil Services Examination, Previous Year Questions (PYQs)

### Mains

**Q.** How do you explain the statistics that show that the sex ratio in Tribes in India is more favourable to women than the sex ratio among Scheduled Castes? **(2015)**

[Source: TH](#)

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## Sustainable Aviation Fuel (SAF)

**For Prelims:** Sustainable Aviation Fuel (SAF), United States Federal Aviation Administration Clearinghouse, ASTM D4054 certification, ASTM International, Greenhouse Gas Emissions, International Civil Aviation Organization (ICAO), World Economic Forum's Clean Skies for Tomorrow Initiative.

**For Mains:** Significance of Sustainable Aviation Fuel (SAF) in achieving the Net Zero Greenhouse Gas Emission.

### Why in News?

Recently, the **Indian Institute of Petroleum (IIP)**, a laboratory of the [Council of Scientific and Industrial Research \(CSIR\)](#), has tied up with **Boeing, Indigo, Spicejet** and the three **Tata Airlines - Air India, Vistara** and **AirAsia India** to support the production of **Sustainable Aviation Fuel (SAF)**.

### What is Sustainable Aviation Fuel (SAF)?

- **About:**
  - **Sustainable Aviation Fuel (SAF)**, also referred to as **bio-jet fuel**, is created using **domestically developed methods** using **cooking oil** and **oil-rich seeds from plants**.
  - The **SAF samples** produced by the institutes are undergoing strict testing at the **US Federal Aviation Administration Clearinghouse** to meet the standards required for the **ASTM D4054 certification** from **ASTM International**.
- **Sources of Production:**
  - The **CSIR-IIP** has created fuel using different materials, such as **non-edible** and [edible oils](#), as well as used **cooking oil**.
  - They used various sources, including **palm stearin, sapium oil, palm fatty acid distillates, algae oil, karanja, and jatropha**.
- **Benefits of SAF Scaling in India:**
  - **Scaling up the production and use of SAF** in India can bring several benefits, including **reducing GHG emissions**, **improving air quality**, **enhancing energy security**, **creating jobs in the renewable energy sector**, and promoting [sustainable development](#).



- It can also help the [aviation industry](#) **meet its environmental targets** and contribute to global efforts to combat **climate change**.
- [Biofuel for aviation](#) can be mixed with regular **jet fuel** and used together. Compared to traditional fuel, it has [lower sulfur content](#), which can decrease air pollution and support India's goal of achieving [Net Zero emissions](#).

## What is ASTM Certification?

- **ASTM International**, formerly known as the **American Society for Testing and Materials**, is a global organization that develops and publishes technical standards for a wide range of **products, materials, and systems**.
- **ASTM standards** are used by **industry, governments, and other organizations** to ensure **quality, safety** and reliability in products and processes.
- **ASTM certification** is a process by which a product or material is tested and evaluated against relevant **ASTM standards**.
  - Certification can be used to demonstrate that a product or material meets certain requirements, such as **performance specifications, safety standards, or environmental regulations etc.**

## What are the Efforts for Promoting the SAF Worldwide?

- **CORSIA Program:** The [International Civil Aviation Organization \(ICAO\)](#) has established the **Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)** to address aviation emissions.
  - **CORSIA** requires airlines to offset any emissions above **2020** levels and encourages the use of **SAF** to reduce emissions in the first place.
- **Clean Skies for Tomorrow Initiative:** The [World Economic Forum](#) has launched the **Clean Skies for Tomorrow initiative**, which aims to accelerate the production and use of SAF.
  - This initiative **brings together stakeholders from the aviation, fuel, and technology sectors** to collaborate on developing and scaling up SAF production.
- **SAF Blending Targets:**
  - The [European Union \(EU\)](#) has established blending targets for **sustainable aviation fuel** to reduce **GHG emissions** from aviation which aims to increase the use of **SAF** in aviation fuel over time.
  - Starting in **2025**, the blending of **SAF** with **conventional jet fuel** made of **gasoline** and **kerosene** will begin at **2%**.
    - The **blending targets** will increase **every five years**, with a goal of reaching **63% SAF blending in 2050**.
- **Sustainable Skies Act and SAF Production Incentives:**
  - To encourage the use and production of **sustainable aviation fuel (SAF)** in the **United States**, the US Congress introduced the **Sustainable Skies Act in May 2021**.
  - The **Sustainable Skies Act provides a \$1 billion** grant over **five years** to expand the number of **SAF-producing facilities** in the **US**.

## Note:

- Some other sustainable sources of fuels that India is working on include:
  - [Biodiesel](#)
  - [Ethanol blending in conventional fuel](#)
  - [Hydrogen Fuel Cell](#)

## What are the Challenges Associated with SAF?

- **High Cost:** The **cost of producing SAF** is currently higher than traditional jet fuel, making it less economically viable for airlines to **invest in SAF production** and use.
- **Resource Availability:** There is **limited infrastructure** for the **production, storage, and distribution of SAF**, making it difficult to scale up production and supply of SAF.
- **Feedstock Availability:** The availability of **feedstock for SAF production** is limited, and there is competition for resources between other industries, such as the food and **agriculture sectors**.
- **Certification:** The certification process for **SAF** is **complex and time-consuming**, and there is a lack of globally recognized standards for **SAF production**.
- **Public Awareness:** There is a need to raise **public awareness** and **understanding** of the **benefits of SAF** and to **encourage greater support from policymakers and investors**.

## Way Forward

- **Increase Investment:** Governments, airlines, and investors need to increase investment in SAF production and infrastructure to reduce costs and increase availability. This includes funding R&D, as well as building new facilities and retrofitting existing ones to produce SAF.
- **Support Policy and Regulatory Frameworks:** Governments can implement policy and regulatory frameworks that incentivize the use of SAF, such as tax incentives, subsidies, and mandates for airlines to use a certain percentage of SAF.
- **Encourage Collaboration:** Collaboration between stakeholders, including airlines, fuel producers, and research institutions, can help to build a more integrated and efficient SAF supply chain.
- **Promote Public Awareness:** Raising public awareness about the benefits of SAF and the need for sustainable aviation can increase demand and encourage greater support from policymakers and investors.
- **Develop new feedstock sources:** Investing in research to develop new feedstock sources for SAF production, such as municipal solid waste and agricultural waste, can help to increase feedstock availability and reduce competition with other industries.

[Source: DTE](#)

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## Tea Fortification

**For Prelims:** [Fortification](#), Folate & Vitamin B12, [Anemia](#), [Fortification Programs in India](#)

**For Mains:** Issues with Fortification of Food and way ahead

## Why in News?

A recent study conducted in Maharashtra on 43 women to assess the impact of fortifying tea with folate and vitamin B12 has found a significant increase in Folate and Vitamin B12 levels. It also highlighted a significant increase in hemoglobin levels.

- However, the study has been found erroneous primarily because of its sample size.

## How Tea Fortification could be a Game-Changer?

- **Countering Anaemia and NTDs:** According to the new study, **Fortifying tea with folate and vitamin B12 may help counter [anaemia](#) and NTDs** in Indian women as tea is the most common beverage drunk in India.



- **The majority of Indian women have a poor dietary folate and vitamin B12** intake resulting in their chronically low vitamin status, contributing to [anaemia](#) and the high incidence of folate-responsive neural-tube defects (NTDs) in India.
  - Vitamin B12 and folate are both important for the production of red blood cells in the body.
  - Vitamin B12 is necessary for the proper absorption and utilization of folate in the body; folate deficiency can cause severe birth defects (NTDs).

**Note:** Neural tube defects happen when the neural tube, which eventually forms the brain, spinal cord, and surrounding tissues, doesn't close properly during fetal development.

#### ▪ **Issues with Tea Fortification:**

- **Limited Cultivation:** Tea is largely grown and processed in the highlands of only 4 states: Assam, West Bengal, Tamil Nadu and Kerala.
- **Lack of Infrastructure:** Many tea-growing areas lack adequate infrastructure for processing and packaging fortified tea.
  - This includes facilities for blending and packaging tea, as well as transportation and storage infrastructure.
- **Dietary Constraints:** Around 70% of the population lives in rural villages, where cereal grain is more often grown, milled, and purchased locally. And diets vary considerably according to cultural, religious, and ethnic differences and beliefs.

## What is Food Fortification?

#### ▪ **About:**

- **Fortification** is the addition of key vitamins and minerals such as iron, iodine, zinc, Vitamin A & D to staple foods such as rice, milk and salt to improve their nutritional content. These nutrients may or may not have been originally present in the food before processing.

#### ▪ **Status of Food Fortification in India:**

- **Rice:** Department of Food and Public Distribution (DFPD) has been running a “**Centrally Sponsored Pilot Scheme on Fortification of Rice & its distribution through [Public Distribution System](#)**”.
  - The scheme was initiated in 2019-20 for a three-year pilot run.
  - This scheme will run till 2023 and rice will be supplied to the **beneficiaries at the rate of Rs 1/kg.**
- **Wheat:** The decision on fortification of wheat was announced in 2018 and is being implemented in 12 states under India’s flagship [Poshan Abhiyaan](#) to improve nutrition among children, adolescents, pregnant mothers and lactating mothers.
- **Edible Oil:** Fortification of edible oil, too, was made compulsory across the country by FSSAI in 2018.
- **Milk:** In 2017, the **National Dairy Development Board of India (NDDB)** initiated the fortification of milk by encouraging companies to add vitamin D.

#### ▪ **Significance:**

- **Population-Wide Health Improvement:** Since the nutrients are added to staple foods that are widely consumed, this is an **excellent method to improve the health** of a large section of the population, all at once.
- **Safe Method:** Fortification is a **safe method of improving nutrition among people.**
  - **If the quantity added is well regulated** as per prescribed standards that likelihood of an overdose of nutrients is unlikely.
- **No Impact on Food Habits:** It **does not require any changes in food habits** and patterns of people and is a socio-culturally acceptable way to deliver nutrients to people.
  - It also does not alter the characteristics of the food—the taste, the feel, the look.
- **Cost-Effective:** This method is cost-effective especially if advantage is taken of the existing technology and delivery platforms.
  - The Copenhagen Consensus estimates that every **1 Rupee spent on fortification results in 9 Rupees in benefits to the economy.**

#### ▪ **Challenges:**

- In India, food fortification is done for only a few food items (wheat, rice, salt); many other food items are not fortified, **leading to inadequate nutrient intake.**
- The process of **blending micronutrients** can have a **negative impact on natural foods' protective substances**, such as phytochemicals and polyunsaturated fat.
- Consumption of **excess iron by pregnant women can adversely affect foetal development** and birth outcomes; children may have increased risk of contracting chronic diseases.
- Fortification may provide a **guaranteed market for MNCs**, which could potentially **harm the livelihoods of small businesses** across India.
- Fortification of certain food items, such as milk and oil, poses **technical challenges due to the instability of the added vitamins and minerals.**

## What Should be Done to Address Challenges Related to Tea Fortification?

- **Government Intervention:** The government can play a crucial role in promoting tea fortification by introducing policies and regulations that mandate the addition of certain nutrients to tea.
  - e.g. - the government can make it **mandatory for tea manufacturers to fortify their products with essential micronutrients** like iron, folic acid, and Vit. B.
- **Promote Industry Involvement:** Tea manufacturers can take the lead in promoting tea fortification by investing in R&D and introducing fortified tea products to the market.
  - They can also collaborate with the government and non-profit organizations to promote the benefits of fortified tea.
- **Increase Consumer Awareness:** Educating consumers about the benefits of fortified tea can go a long way in promoting its consumption.
  - This can be achieved through various means such as advertising campaigns, social media, and awareness programs in schools and colleges.
- **Improve Logistics:** To implement tea fortification on a large scale, it is essential to have a robust logistics system in place.
  - This includes ensuring that the fortified tea reaches the target population in a timely and efficient manner, without any loss of nutritional value.

[Source: TH](#)

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## Solid Waste Management

**For Prelims:** [Solid Waste Management](#), [Landfills](#), [UNEP](#), [Solid Waste Management Rules 2016](#), [Animal Birth Control Program](#).

**For Mains:** Issues related to Stray Dogs and [Solid Waste Management](#) Way Forward.

### Why in News?

A recent incident of stray dog attacks in Srinagar has highlighted the **linkage between street dog attacks and Poor Solid Waste Management.**

### How is Poor Waste Management Connected to Increasing Attacks by Street Dogs?

- Indian homes on average also generated 50 kg of food waste per person in 2019, serving as a

**source of food for hunger-stricken, free-roaming dogs that move towards densely populated areas in cities.**

- This food often serves as a source of food for hunger-stricken free-ranging dogs in urban areas, who **scavenge for food around exposed garbage** dumping sites, such as [Landfills or garbage dumps](#).
- **While there is no evidence** to show that the municipal waste and its mis-management directly led to an increase in dog bites, tepid animal birth control programmes and insufficient rescue centres, in conjunction with poor waste management, result in a **proliferation of street animals** in India and the consequent attacks.

## **What is the Issue with India's Solid Waste Management?**

- **Scenario:**
  - Solid Waste includes **Solid or semi-solid domestic waste**, sanitary waste, commercial waste, institutional waste, catering and market waste and other non-residential wastes, street sweepings, silt removed or collected from the surface drains, horticulture waste, agriculture and dairy waste, treated biomedical waste excluding industrial waste, bio-medical waste and e-waste, battery waste, radio-active waste etc.
  - India accounts for **roughly 18% the world's population** and **12% of global municipal waste generation**.
    - India generates 62 million tonnes of waste each year. About 43 million tonnes (70%) are collected, of which about **12 million tonnes are treated, and 31 million tonnes are dumped in landfill sites**.
  - With changing consumption patterns and rapid economic growth, **it is estimated that urban municipal solid waste generation will increase to 165 million tonnes in 2030**.
- **Issues:**
  - **Poor Implementation of Rules:**
    - Most metro cities are littered with garbage bins that are either old, damaged or insufficient in containing solid wastes, a 2020 research paper pointed out.
    - Urban local bodies are struggling to implement and sustain rules under the [Solid Waste Management Rules 2016](#), such as the door-to-door collection of segregated waste, studies show.
      - There are designated waste collection sites under the Rules, but the implementation of rules and awareness remains low.
  - **Dumping Sites's Proximity with Slums:**
    - Most landfills and dumping sites are located on the **peripheries of cities**, next to slums and settlement colonies.
      - In Mumbai, some of the cheapest housing can be found near Deonar, which is on the verge of **256 slums and 13 resettlement colonies**.
      - The disproportionate burden of dog bites may also thus fall on people in urban slums. In 2021, 300 people living in Pune's Shivneri Nagar slum complained of stray dog bites in the area, as per reports.
  - **Lack of Data Collection Mechanism:**
    - India lacks time series data or panel data in **connection with solid or liquid waste**, making it difficult for private entities to understand the relationship between cost and benefits of the waste management policies and enter into the market.

## **What are the Initiatives Related to Waste Management?**

- [Solid Waste Management Rules 2016:](#)
  - These rules replaced the **Municipal Solid Wastes (Management and Handling) Rules, 2000** and focus on segregation of waste at source, responsibility on the manufacturer to dispose of sanitary and packaging wastes, user fees for collection, disposal and processing from the bulk generator.
- [Waste to Wealth Portal:](#)
  - It aims to identify, develop, and deploy technologies to treat waste to generate energy, recycle materials, and extract resources of value.
- [Waste to Energy:](#)

- A waste-to-energy or energy-from-waste plant converts municipal and industrial solid waste into electricity and/or heat for industrial processing.
- **Plastic Waste Management (PWM) Rules, 2016:**
  - It mandates the generators of plastic waste to take steps to minimize generation of plastic waste, prevent littering of plastic waste, and ensure segregated storage of waste at source among other measures.
  - In Feb 2022, **Plastic Waste Management (Amendment) Rules, 2022** were notified.
- **Project REPLAN:**
  - It aims to make carry bags by mixing processed and treated plastic waste with cotton fibre rags in the ratio 20:80.
- **Plastic Waste Management (Amendment) Rules, 2022:**
  - The rules specify the responsibilities of **various stakeholders such as manufacturers, importers, retailers**, and consumers. All these stakeholders have a role to play in ensuring that plastic waste is managed properly and does not end up polluting the environment.

## Way Forward

- Improving waste management in public spaces and **regulating feeding around bakeries can reduce** the carrying capacity of the environment.
- Improving waste disposal facilities is crucial to reducing such incidents, as just relying on dog sterilization and vaccines won't be enough.
- Decentralized waste management systems can be introduced at the community level to reduce the burden of handling large volumes of municipal waste at a centralized location, provide job opportunities for informal workers, and reduce transportation and storage costs.
- Technology-driven **recycling can be encouraged through research and development at the university and school level to promote active participation** in waste management.

## UPSC Civil Services Examination, Previous Year Questions (PYQs)

### Prelims

**Q. As per the Solid Waste Management Rules, 2016 in India, which one of the following statements is correct? (2019)**

- (a) Waste generator has to segregate waste into five categories.
- (b) The Rules are applicable to notified urban local bodies, notified towns and all industrial townships only.
- (c) The Rules provide for exact and elaborate criteria for the identification of sites for landfills and waste processing facilities.
- (d) It is mandatory on the part of the waste generator that the waste generated in one district cannot be moved to another district.

**Ans: (c)**

### Mains

**Q. What are the impediments in disposing of the huge quantities of discarded solid waste which are continuously being generated? How do we safely remove the toxic wastes that have been accumulating in our habitable environment? (2018)**

**Source: TH**

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## Command Cyber Operations and Support Wings

**For Prelims:** CCOSW, Technical Entry Scheme model, Cyber security

**For Mains:** Significance of the CCOSWs in the Indian Army's cybersecurity posture

### Why in News?

In the recent **Army Commanders' Conference (ACC)**, the Indian Army decided to operationalize the **Command Cyber Operations and Support Wings (CCOSWs)** to strengthen its [cybersecurity capabilities](#), defend its networks, and counter threats in the key domain of [cyberspace](#).

### What is the Army Commanders' Conference (ACC)?

- The ACC is a **biannual institutional event** that serves as a platform for **high-level conceptual discussions and decision-making on important policies for the Indian Army**.
- The latest conference discussed various agenda points, updates from the Army Headquarters, progress on **transformation initiatives, and budget management**.

### What are CCOSWs?

- **About:**
  - The CCOSWs are a specialized unit of the Indian Army that will assist the **formations in undertaking mandated cyber security functions**.
    - The unit will be responsible for **safeguarding the networks and enhancing the cybersecurity posture** of the Indian Army.
  - They will also facilitate better **utilization of modern communication systems and networks within the Indian Army**.
- **Importance:**
  - The migration towards **network centricity and increased reliance on modern communication systems** makes the CCOSWs important.
    - The CCOSWs will help the Indian Army counter their adversaries in the **grey zone and their cyber warfare**. And to stay ahead of its **adversaries in terms of cybersecurity**.
  - The CCOSWs will be instrumental in maintaining the **confidentiality, integrity, and availability of critical information**.
  - The CCOSWs will ensure that the Indian Army's communication networks are **secure from cyber-attacks**. And will be responsible for identifying and **mitigating cyber threats to the Indian Army's networks**.

### What Were the Other Key Decisions Made in ACC?

- **Training and Technology Infusion:**
  - Nominating lead directorates and test bed formations to evolve optimal employment philosophies and facilitate better **modern communication systems and networks across the force**.
- **Force Structuring and Optimization:**
  - Quantifying progress on the ongoing transformational initiatives in the key domains

of **force structuring and optimization, modernization and technology infusion, processes and functions, human resource management, and jointness and integration.**

- Deliberating upon the efficient implementation of the [Agnipath Scheme](#).
- Transitioning from the existing (5-year) **1+3+1 years Technical Entry Scheme (TES) model to (4-year) 3 + 1 TES model** from January 2024 onwards.
  - The current five-year TES model for officer entry as B.Tech graduates has been in place since 1999.
    - Under the current model, **1 year of military training is imparted, followed by 3 years of B.Tech degree at Cadet Training Wings (CTWs) and 1 year at one of the three engineering colleges of the Army.**
  - The Upcoming new model will have **3 years of technical training at CTWs, followed by 1 year of Basic Military Training (BMT).**
  - The new model has received [AICTE](#) approval in March 2023.
- **Paralympic Events:**
  - Identifying and training selected motivated soldiers for [paralympic events](#).

## What are India's Initiatives in Cyber Warfare?

- [Defence Cyber Agency:](#)
  - It is a tri-service agency that deals with cyber issues and coordinates with other agencies such as **the National Cyber Security Coordinator, National Technical Research Organisation, etc.**
  - The Agency is responsible for formulating cyber doctrine, strategy, and policy for the defense forces. It also conducts **joint training, exercises, and operations in the cyber domain.**
- [Indian Computer Emergency Response Team \(CERT-In\):](#)
  - This is the national nodal agency for responding to **cyber security incidents and providing cyber security services** to various sectors.
- [National Critical Information Infrastructure Protection Centre \(NCIIPC\):](#)
  - This is the national agency for protecting the **critical information infrastructure of the country**, such as power, banking, defense, etc.
- [Cyber Swachhta Kendra \(Botnet Cleaning and Malware Analysis Centre\):](#)
  - This is a platform for detecting and cleaning infected devices and providing **malware analysis reports**.

## Way Forward

- Develop a **comprehensive cybersecurity strategy** that integrates the **CCOSWs with other cybersecurity capabilities** across the Indian Armed Forces, to ensure seamless coordination and effective response to cyber-attacks.
- Continue to **invest in modern communication systems and networks**, while also prioritizing cybersecurity training and awareness programs for all personnel within the Indian Army to ensure they are equipped with the **necessary skills** to identify and **respond to cyber threats**.
- **Regularly review and update the cybersecurity policies** and procedures in light of emerging security scenarios, to ensure the Indian Army remains prepared to tackle cyber threats in the future.

## UPSC Civil Services Examination, Previous Year Questions (PYQs)

### Prelims

**Q.1 In India, under cyber insurance for individuals, which of the following benefits are generally covered, in addition to payment for the loss of funds and other benefits? (2020)**



1. Cost of restoration of the computer system in case of malware disrupting access to one's computer
2. Cost of a new computer if some miscreant wilfully damages it, if proved so
3. Cost of hiring a specialised consultant to minimise the loss in case of cyber extortion
4. Cost of defence in the Court of Law if any third party files a suit

**Select the correct answer using the code given below:**

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

**Ans: (b)**

**Q2. In India, it is legally mandatory for which of the following to report on cyber security incidents? (2017)**

1. Service providers
2. Data centres
3. Body corporate

**Select the correct answer using the code given below:**

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

**Ans: (d)**

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### **Mains**

**Q.** What are the different elements of cyber security? Keeping in view the challenges in cyber security, examine the extent to which India has successfully developed a comprehensive National Cyber Security Strategy. **(2022)**

[Source: TH](#)

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## **Millets Experience Centre**

### **Why in News?**

The Indian government has launched a first of its kind **Millets Experience Centre (MEC)** in collaboration with the [National Agricultural Cooperative Marketing Federation of India \(NAFED\)](#).

- This initiative comes in light of the [UNGA](#)'s declaration of 2023 as the [International Year of Millets \(IYM 2023\)](#).
- Millet has been referred to as 'Shree Anna' in [Union Budget 2023-24](#).

### **What is the Millets Experience Centre (MEC)?**

▪ **About:**

- The MEC is a unique concept that will promote **millets as a versatile, healthy grain by showcasing its dietary benefits and offering customers a unique dining experience.**
- Visitors to the center can purchase a **variety of ready-to-eat and ready-to-cook products** from local millet start-ups.
- The MEC will help widen the horizon for consumers who are actively looking for healthier alternatives.

▪ **Significance:**

- The establishment of the MEC is a step in the direction of India's goal to become a "**Global Hub**" for millet.
- The MEC will not only promote the dietary benefits of the ancient grain but also popularize millet as a **nutritional powerhouse fit for cooking a variety of dishes** such as millet dosa and millet pasta.
- This initiative will bring visibility to India's robust millet-based start-up community and will help in the recognition of the immense potential of millets as a versatile and healthy grain.

# Millets

## About

- Small-grained cereals also known as **coarse grains**
- Often referred to as **'Superfood'**
- Among the **first crops to be domesticated** - evidence of millet consumption dates back to the **Indus Valley Civilisation (3,000 BC)**

## Climatic Conditions

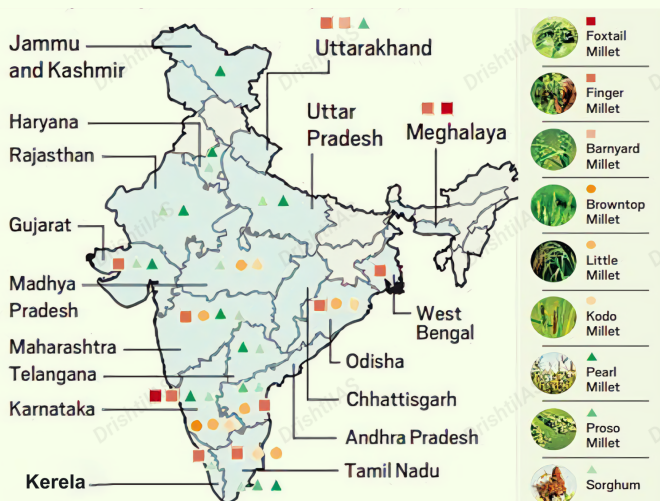
- **Mainly a Kharif crop in India**
- **Temperature:** 27°C - 32°C
- **Rainfall:** Around 50-100 cm
- **Soil Type:** Inferior alluvial or loamy soil

## India and Millets

- **Global Largest Millet Producer:**
  - 20% of global production, 80% of Asia's production
- **Common Millets:**
  - **Ragi** (Finger millet), **Jowar** (Sorghum), **Sama** (Little millet), **Bajra** (Pearl millet), and **Variga** (Proso millet)
  - **Indigenous varieties** (small millets) - **Kodo, Kutki, Chenna and Sanwa**
- **Top Millets Producing States:**
  - Rajasthan (largest), Karnataka, Maharashtra, Madhya Pradesh and Uttar Pradesh
- **Govt. Initiatives:**
  - Initiative for Nutritional Security through Intensive Millet Promotion (INSIMP)
  - **'India's Wealth, Millets for Health'**
  - Millet Startup Innovation Challenge
  - **Hiked MSP** for Millets
  - Agriculture Ministry declared millets as **"Nutri Cereals"** in 2018

## Significance

- Less expensive, **nutritionally superior**
- High protein, fibre, minerals, iron, calcium and a **low glycemic index**
- Help **tackle lifestyle problems and health** (obesity, diabetes etc.)
- Photo-insensitive, **resilient to climate change & water efficient**



## International Year of Millets - Year 2023

Proposed by India, declared by **UNGA**



## What is IYM 2023?

### ▪ About:

- India's proposal to observe an International Year of Millets in 2023 was approved by the [Food and Agriculture Organisation \(FAO\)](#) in 2018 and the [UNGA](#) has declared the year 2023 as the International Year of Millets.
- This was adopted by a UN Resolution for which India took the lead and was supported by over 70 nations.

### ▪ Objectives:

- Awareness of the **contribution of millet to [Food Security](#)** and nutrition.
- Inspire stakeholders to improve sustainable production and quality of millets.
- Focus on **enhanced investment in research and development** and extension services to achieve the other two aims.

## What are the Other Government-led Initiatives for Mainstreaming Millets?

- [Initiative for Nutritional Security through Intensive Millet Promotion \(INSIMP\)](#)
- [National Millets Mission \(NMM\)](#)
- [Price Support Scheme \(PSS\)](#)
- [Promoting Millets in PDS](#)
- [Hiked MSP of Millets](#)
- [Promotion of Organic Farming](#) of millets
- **Development of Value-Added Millet-based Products**

### UPSC Civil Services Examination Previous Year Question (PYQ)

**Q. With reference to 'Initiative for Nutritional Security through Intensive Millets Promotion', which of the following statements is/are correct? (2016)**

1. This initiative aims to demonstrate the improved production and post-harvest technologies, and to demonstrate value addition techniques, in an integrated manner, with a cluster approach.
2. Poor, small, marginal and tribal farmers have a larger stake in this scheme.
3. An important objective of the scheme is to encourage farmers of commercial crops to shift to millet cultivation by offering them free kits of critical inputs of nutrients and micro irrigation equipment.

**Select the correct answer using the code given below:**

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

**Ans: (c)**

**[Source: PIB](#)**

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# Rapid Fire Current Affairs

## Parsi Lady

An **unfinished painting by Raja Ravi Varma**, a legendary Indian artist who revolutionized **traditional Indian art** during the colonial times, will soon be made public. The painting, named '**Parsi Lady**,' is the **last piece created by Ravi Varma** before his death in 1906. The painting is unique because it provides a **glimpse into Ravi Varma's association with Dada Saheb Phalke**, who worked for him at the time. Ravi Varma gave a substantial amount to Phalke, who later became known for making Raja Harishchandra, the first full-length Indian feature film. The Kilimanoor Palace Trust owns the painting and has decided to unveil it on the occasion of **Ravi Varma's 175<sup>th</sup> birth** anniversary along with another portrait that has not yet been displayed. The Palace has restored the painting to its original form with the help of an art restorer, S. Madhan, who removed the old varnish layers and dirt that had accumulated on the painting.

Raja Ravi Varma was an Indian painter born on 29<sup>th</sup> April 1848, known for **introducing Western, classical representations of Hindu gods and goddesses**. He received training in watercolours from Ramaswamy Naidu, the royal painter, and made around 7,000 paintings during his lifetime. Varma's mastery of the lithographic press spread his work far and wide, and he was awarded the **Kaiser-i-Hind Gold Medal** by the British colonial government in 1904. In 2013, a **crater on the planet Mercury** was named in his honour.

Read more: [Raja Ravi Varma](#)

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## Supreme Court Orders FIRs on Hate Speech

The **Supreme Court of India** has directed **all states to Suo motu register FIRs on hate speech incidents** and initiate legal proceedings against the offenders without waiting for a complaint to be filed. The court emphasized the need to book hate speech offenders under specific penal provisions, including **Sections 153A (promoting enmity between different groups on the ground of religion), 153B (imputations, assertions prejudicial to national integration), 505 (public mischief), 295A (deliberate and malicious acts intended to outrage religious feelings) of the Indian Penal Code (IPC)**.

The court passed a similar order in October 2022. While it was **argued that free speech should not be stifled under the guise of tackling hate speech**, the court reiterated that the Constitution envisages India as a **secular nation** where the **dignity of the individual and unity and integrity of the country must be assured**.

Read more: [Hate Speech](#)

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## Star Rating System for Water Fixtures

The **Ministry of Housing and Urban Affairs (MoHUA)** and **Mission Director of AMRUT 2.0**, announced at **Plumbex India 2023** that the Indian government is in the process of introducing a **star rating system for water fixtures to promote water efficiency**. Similar to **electrical appliances**, these water fixtures will be **given a rating of 3, 4, or 5 stars based on their efficiency, under the umbrella of Bharat Tap**.

The Indian Plumbing Association (IPA) and manufacturers have been roped in to adopt and promote these standards. The initiative has already shown that on average **over 30% of water can be saved**. The IPA has committed to saving **10,000 crore liters of water this year alone**, and urged the government to prioritize low-flow fixtures while awarding tenders in the future.

Read more: [Bharat Tap](#)

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## India's Core Sector Growth Slows

The output of India's [eight core sectors](#) saw a **3.6% growth** in March 2023, the **lowest in five months**, as per data from the **Ministry of Commerce and Industries**. Factors such as higher inflation, base effect, rising interest, and easing of pent-up demand, coupled with increased economic uncertainty, have hit domestic demand, resulting in a slower growth rate.

The core sector in India consists of eight industries that have a major impact on the overall economic and industrial activities. They are **coal, crude oil, natural gas, refinery products, fertilizers, steel, cement and electricity**. These industries have a combined weight of **40.27%** in the [Index of Industrial Production \(IIP\)](#), which measures the **growth rate of different industry groups in the economy**. The core sector represents the capital base and infrastructure of the economy. The performance of these industries influences other sectors as well.

**Read more:** [Core Sectors Industries](#)

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