



## Faecal Sludge and Septage Management

**For Prelims:** [Faecal Sludge and Septage Management \(FSSM\)](#), [Faecal Sludge Treatment Plants \(FSTPs\)](#), [Geographic Information System \(GIS\)](#), [Open Defecation-Free \(ODF\)](#), [Swachh Survekshan](#), [Atal Mission for Rejuvenation and Urban Transformation \(AMRUT\)](#) **Sustainable Development Goals (SDGs)**.

**For Mains:** Issues and challenges involved in Faecal Sludge and Septage Management and related steps taken.

[Source: DTE](#)

### Why in News?

India has recently set up more than 1,000 [Faecal Sludge Treatment Plants \(FSTPs\)](#) equipped with digital technology. This signifies the emergence of [Faecal Sludge and Septage Management \(FSSM\)](#) as an innovative method for creating effective and environmentally friendly sanitation solutions.

### What are Faecal Sludge Treatment Plants (FSTPs)?

- **About:** FSTPs are specialised facilities in **FSSM** designed to process and treat faecal sludge and septage collected from **on-site sanitation** systems like **septic tanks**.
  - FSSM places a primary focus on the management of human excreta, recognising it as the waste stream with the most significant potential for disease transmission.
- **Objective:** FSTPs are created to manage and treat human waste that is **not connected to centralised sewage systems**, especially in areas needing more comprehensive sewerage infrastructure.
  - These plants treat the collected faecal sludge **to reduce pathogens and organic matter**, making it safe for disposal or reuse.
- **Digital Integration:** There's a growing trend of incorporating digital monitoring and management systems in FSTPs to improve efficiency and effectiveness.
  - **Geographic Information System (GIS):**
    - Use of [GIS technology](#) for mapping sanitation infrastructure and planning.
  - **Mobile Applications:**
    - Implementation of mobile applications like **SaniTab**, **mWater**, **Google Forms**, and **Kobo Toolbox** for streamlining field surveys and data collection
    - Utilisation of GPS tracking for desludging services, as seen in Odisha and Maharashtra.
  - **Sustainable Urban Services:**
    - Odisha has launched the **Sustainable Urban Services in a Jiffy (SUJOG)** program, which is powered by the [Digital Infrastructure for Governance, Impact, and Transformation \(DIGIT\)](#) platform to make city sustainable for future.

### What are the Various Types of Sanitation Systems in India?

- **On-site Sanitation Systems (OSS):**

- **Twin Pits and Septic Tanks:** prevalent in rural areas where centralized sewage is impractical.
- **Alternative On-site Solutions:**
  - Include bio-digester toilets, **bio-tanks, and urine diversion dry toilets.**
  - Act as collection and passive treatment units.
  - **Sulabh International** pioneered bio-toilets for sustainable, affordable sanitation.
- **Urban Sanitation:**
  - **Sewer Systems and Treatment Plants Underground Sewer Networks:** Suited for densely populated urban areas, interconnected pipes collect and transport wastewater
- **Sewage Treatment Plants (STPs):**
  - They employ physical, **biological, and chemical processes, utilising both mechanised and non-mechanised** systems.

## What is the Need for Faecal Sludge and Septage Management (FSSM)?

- **Eradicating Manual Scavenging:**
  - The practice of [manual scavenging](#) is driven by caste, class and income divides. It is linked to India's caste system where so-called lower castes are expected to perform this job.
  - In 1989, the Prevention of Atrocities Act became an integrated guard for sanitation workers with **more than 90% people** employed as manual scavengers belonged to the Scheduled Caste.
- **Health Outcomes:**
  - Adequate [sanitation facilities](#) play a crucial role in reducing **waterborne diseases**, significantly impacting India's overall health status.
  - The [total sanitation campaign](#) in India has demonstrated positive results in this regard.
- **Environmental Preservation:**
  - Improper sewage management, including the discharge of **untreated wastewater into the River Ganga**, continues to be a significant source of **environmental pollution**. Implementing effective sanitation systems is crucial to addressing this problem.
- **Socio-Economic Progress:**
  - Improved sanitation is strongly correlated with increased **economic productivity, as healthier communities** are better equipped to participate in the workforce and contribute to economic growth.
- **Dignity and Social Equity:**
  - Access to proper sanitation facilities is **fundamental to human dignity, particularly for women**, as it provides safe and private spaces for personal hygiene, thereby enhancing overall quality of life.

## What are the Initiatives Related to Faecal Sludge and Septage Management (FSSM) in India?

- **National Faecal Sludge and Septage Management (NFSSM) Alliance:**
  - Organisations like the **NFSSM Alliance** typically aim to promote sustainable sanitation practices, particularly in the area of faecal sludge and septage management.
  - The [National Policy on Faecal Sludge and Septage Management, 2017](#) further detailed the design of septic tanks, operating procedures for desludging and the penalty for untreated discharge.
- **Constitutional Backing:**
  - According to the Constitution of India, **sanitation and water are State subjects (Seventh Schedule, List II - State List, Entries 6 and 17 respectively).**
  - With the [74th Constitutional Amendment Act in 1992](#), the responsibility for the planning and delivery of urban services, including sanitation, lies with **Urban Local Bodies (ULBs)** which are the local municipalities
- **Legal Framework:**
  - Laws like [Environment \(Protection\) Act, 1986](#) and [Water \(Prevention and Control of Pollution\) Act, 1974](#) prohibit discharge of untreated pollutants into the environment.

- The [Solid Waste Management Rules, 2016](#) were passed for safe disposal of processed faecal sludge to prevent surface water and groundwater contamination.
- The Employment of Manual Scavengers and Construction of Dry Latrines (Prohibition) Act, 1993 and [Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013](#) were passed to prohibit the manual handling of human excreta, and the employment of manual scavengers is considered a criminal offence.
- **Open Defecation-Free (ODF)+ and ODF++ Protocols:**
  - India has continued to show its commitment towards FSSM through the launch of [Open Defecation-Free \(ODF\)+ and ODF++ protocols, an emphasis on FSSM in Swachh Survekshan, as well as financial allocations for FSSM across Atal Mission for Rejuvenation and Urban Transformation \(AMRUT\) and National Mission for Clean Ganga \(NMCG\) missions.](#)
- **Related Sustainable Development Goals:**
  - **SDG 3: Good Health and Well-being** - Ensuring healthy lives and promoting well-being for all at all ages.
  - **SDG 6: Clean Water and Sanitation**- Improve the functioning of onsite sanitation systems and to reduce the potential for human contact with faecal-borne pathogens;
  - **SDG 11: Sustainable Cities and Communities** - Making cities and human settlements inclusive, safe, resilient, and sustainable.

## What are the Challenges Related to Faecal Sludge and Septage Management (FSSM)?

- **Collection and Conveyance Issues:**
  - Challenges include the **persistence of illegal manual scavenging, limited access to septic tanks, improper tank design and sizing**, inadequate infrastructure, lack of scheduled cleaning, and insufficient formal private sector involvement.
- **Digital Barrier:**
  - Unreliable or absent internet access in peripheral areas hinders the effective deployment of digital solutions. The increasing digitalisation of FSSM systems raises vulnerabilities to data breaches and [cyber-attacks](#), necessitating robust security measures.
- **Treatment and Disposal Deficiencies:**
  - There's a significant **shortage of adequate centralised or decentralised facilities** and designated sites for sewage and septage treatment and disposal.
- **Accessibility Barriers:**
  - Challenges such as **household financial constraints, limited space for individual toilets**, and **cultural or social factors hinder** widespread access to proper sanitation facilities.
- **Institutional Fragmentation:**
  - The lack of an **integrated city-wide approach** leads to fragmented institutional roles and responsibilities.

## Way Forward

- **Independent Septage Treatment:**
  - Independent septage treatment facilities utilize various methods, such as **physical, biological, and chemical processes**, to safely process and dispose of waste, aligning with sustainable sanitation practices and supporting the goals of cleaner, healthier communities.
- **Land disposal of Untreated Septage:**
  - Deep trench burial of faecal sludge is a viable disposal option if:
    - A suitable location is chosen
    - Contamination of surface soil is prevented
- **Data Security and Privacy:**
  - Develop robust mechanisms to ensure the privacy and security of collected data.
  - Example like Implement **encryption and access control measures** similar to those used

in sensitive government databases.

▪ **Enhance Public Awareness:**

- Awareness campaigns or **IEC (Information education and communication)** can be conducted to spread the information about the need to maintain hygiene and regular maintenance of septic tanks.
- Further, it can lead to social empowerment in case of discriminated sections and elimination of night soil collection and transport.

▪ **Standardisation and Integration:**

- Develop standardised protocols for data collection and sharing across different FSSM digital platforms.
- Create a national-level data integration platform similar to the **DIGIT platform used in Odisha's SUJOG program.**

**Drishti Mains Questions:**

Q. What are the key challenges facing Faecal Sludge and Septage Management implementation in India and how has digital technology improved FSSM practices in Indian cities?

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

### **Prelims**

**Q. Which of the following are the key features of 'National Ganga River Basin Authority (NGRBA)'? (2016)**

1. River basin is the unit of planning and management.
2. It spearheads the river conservation efforts at the national level.
3. One of the Chief Ministers of the States through which the Ganga flows becomes the Chairman of NGRBA on a rotation basis.

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

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

**Ans: (a)**

### **Mains**

**Q. Discuss the Namami Gange and National Mission for Clean Ganga (NMCG) programmes and causes of mixed results from the previous schemes. What quantum leaps can help preserve the river Ganga better than incremental inputs? (2015)**