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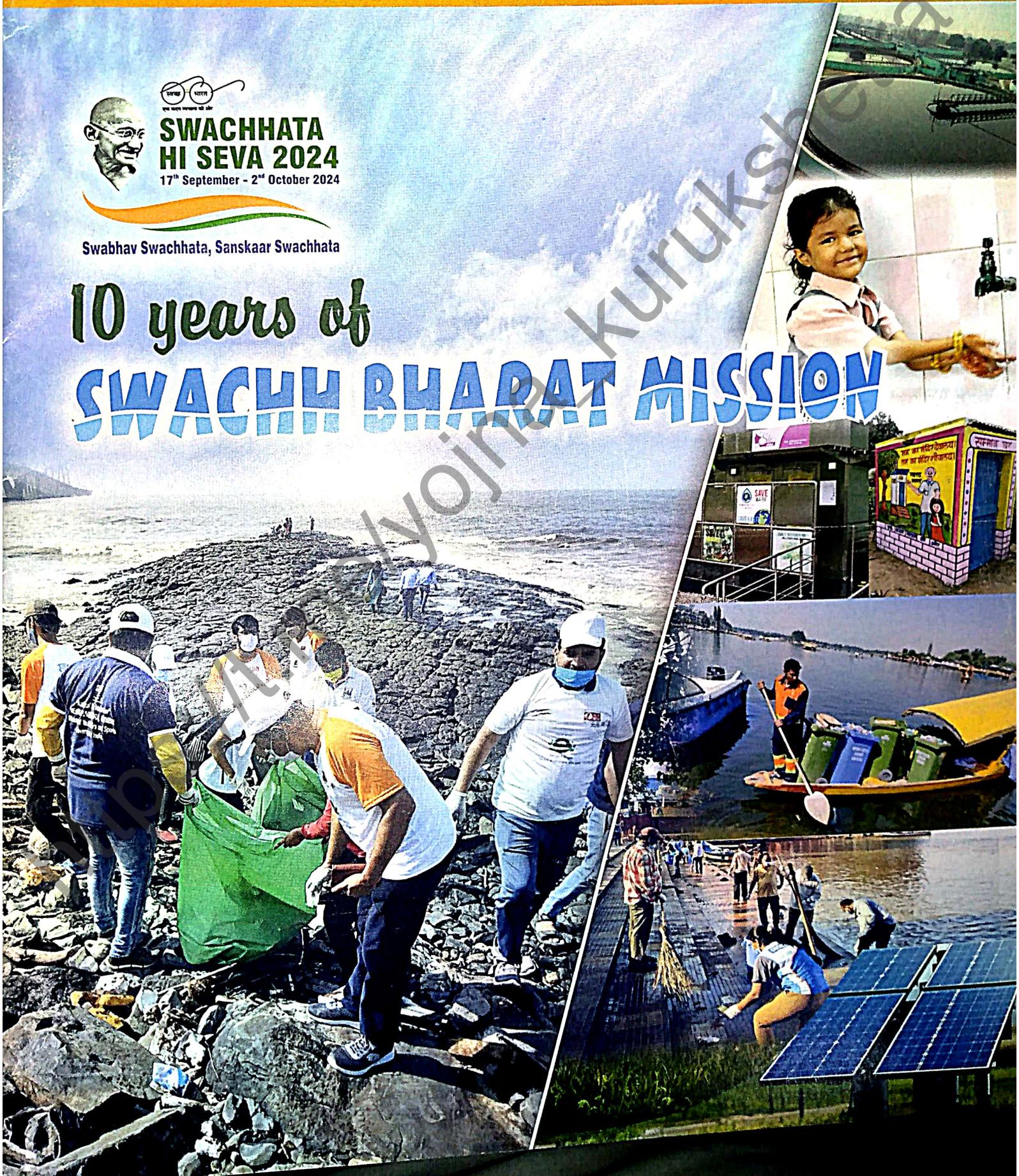
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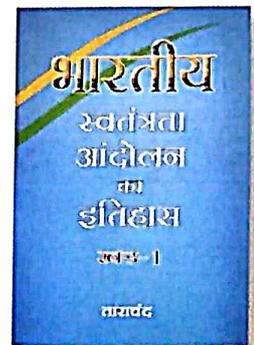
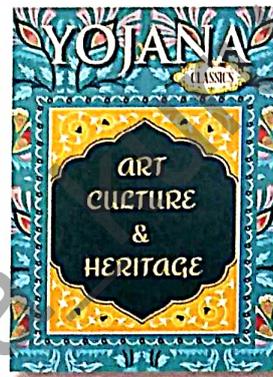
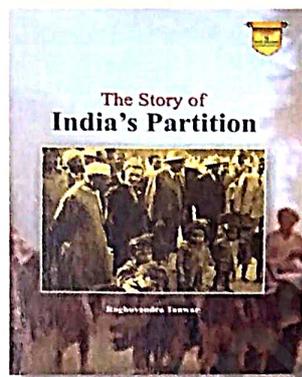
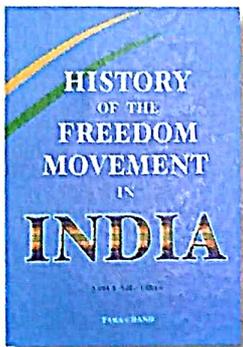




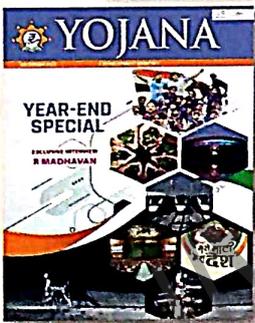
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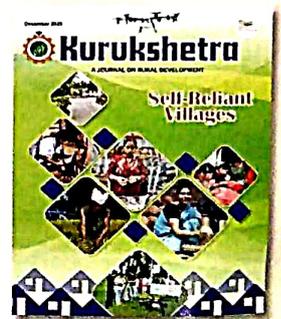
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Swabhav Swachhata, Sanskaar Swachhata

The Father of the Nation Mahatma Gandhi strongly advocated for cleanliness and sanitation, which he saw as essential for personal and social well-being. He famously said, "Sanitation is more important than independence," highlighting that a clean and hygienic environment was a prerequisite for a healthy and self-reliant nation. Mahatma Gandhi emphasised the importance of cleanliness in everyday life, urging individuals to take responsibility for their surroundings, especially in rural areas. His thoughts on cleanliness became a cornerstone of India's public health movements and laid the foundation for modern initiatives like the *Swachh Bharat Mission*, which aims to achieve a cleaner India.

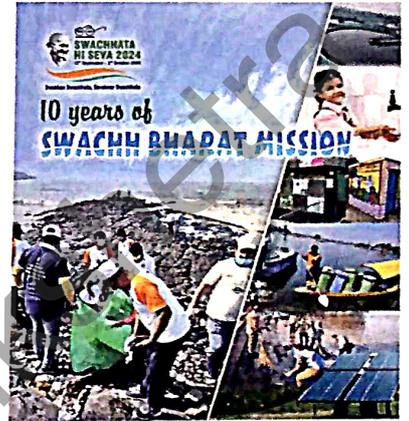
The *Swachh Bharat Mission (SBM)*, launched by the Prime Minister on October 2, 2014, marks a significant milestone in India's journey towards cleanliness, sanitation, and hygiene. As the mission completes ten years this month, it has achieved several remarkable successes. One of the most significant accomplishments is that by 2019, the government declared rural India open defecation-free. Over 110 million toilets were built, benefiting millions of families, especially in rural areas. This drastically improved hygiene and reduced waterborne diseases. A massive awareness campaign was launched to shift societal behaviour regarding cleanliness and sanitation.

SBM successfully transformed the mindset of millions of people by promoting the idea of a clean and hygienic environment as a shared responsibility. The '*Darwaza Bandh*' campaign was crucial in motivating people to adopt toilet usage. In urban areas, the focus shifted to improving solid waste management, waste segregation, and enhancing sewage treatment facilities. The programme has expanded to cover thousands of cities, towns, and villages with better sanitation infrastructure. SBM has significantly boosted efforts in solid waste management. Waste segregation at source has been promoted, and many cities have improved their waste disposal mechanisms.

The success of SBM is not just a result of government initiatives but also the active participation of ordinary citizens. The mission involved celebrities, social media influencers, and ordinary citizens to spread the message of cleanliness. Campaigns like '*Swachhata Hi Seva*' mobilised millions of volunteers nationwide to participate in cleanliness drives. The *Swachh Survekshan* (cleanliness surveys) conducted annually have spurred healthy competition between cities to become the cleanest in India. Cities like Indore, Surat, and Navi Mumbai have consistently ranked high, encouraging others to follow suit. With the launch of SBM Phase II (2020 onwards), the focus shifted to maintaining the achievements of Phase I while emphasising water conservation, greywater management, and sustainable sanitation practices. The mission also emphasised the upliftment and dignified treatment of sanitation workers. Programmes to provide better working conditions, safety gear, and training for waste management have been introduced.

The *Swachh Bharat Mission* has received international praise for its ambitious scale and focus on sanitation. It has been seen as a model for other countries aiming to improve their sanitation standards. This recognition not only validates India's efforts but also inspires other nations to embark on similar journeys, fostering a sense of global responsibility. The mission symbolises national pride, reflecting India's commitment to cleanliness and public health.

This issue of *Yojana* is a small effort to highlight the significance and achievements of SBM. As the SBM completes its first decade, the government and civil society are focusing on ensuring the sustainability of the progress made, especially in areas like solid waste management, liquid waste treatment, and maintaining the open defecation-free status. This year's motto is *Swabhav Swachhata, Sanskaar Swachhata*. It is our collective responsibility to maintain the progress made and ensure a clean and healthy environment for future generations. □



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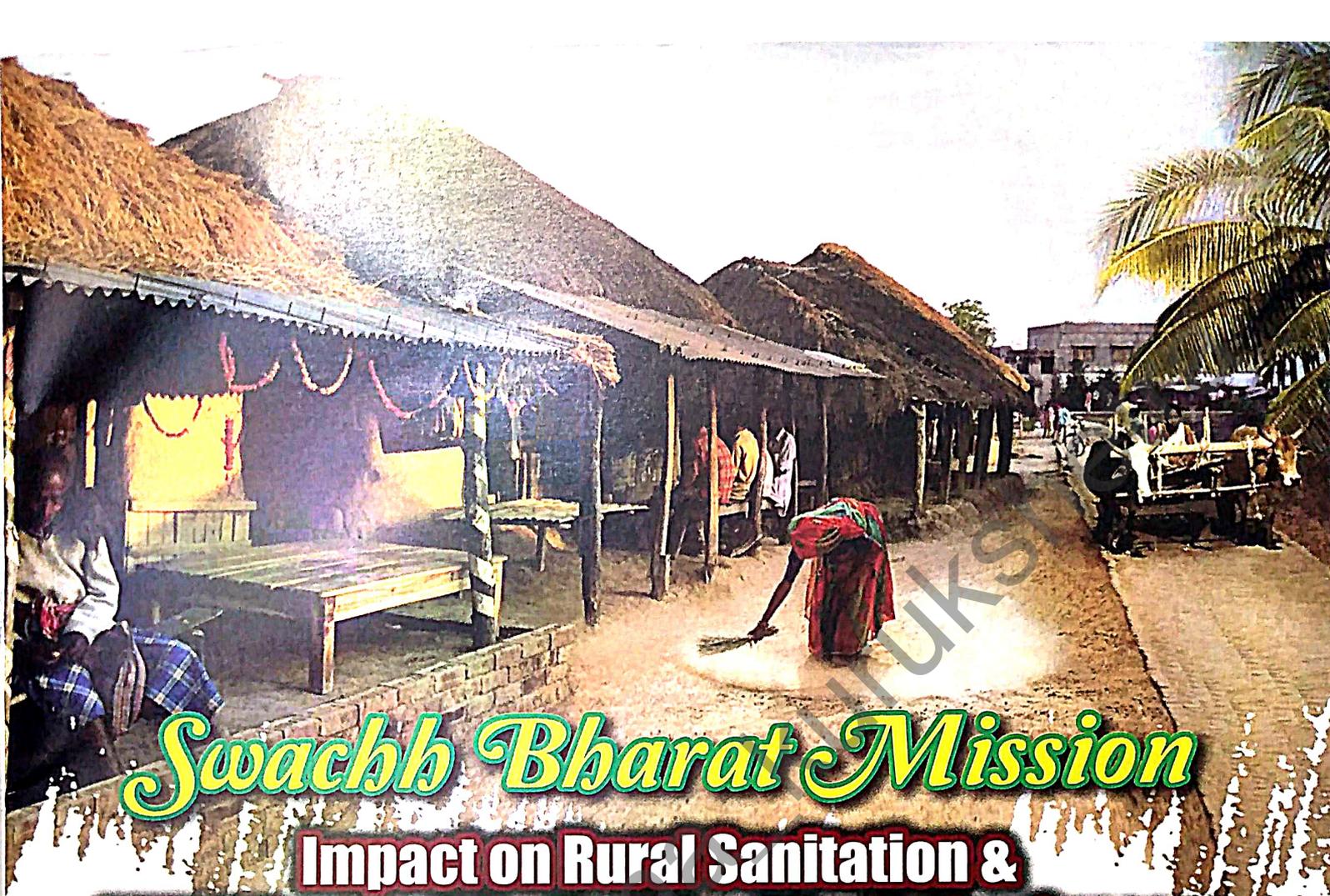
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Swachh Bharat Mission

Impact on Rural Sanitation & SMART Approach for Sustained Sanitation Success

JITENDRA SRIVASTAVA

The author is Joint Secretary and Mission Director (SBM - Grameen), Department of Drinking Water and Sanitation, Ministry of Jal Shakti, Govt. Email: srijiten@ias.nic.in

The success of SBM lies not only in the infrastructure it creates but in the values it instills—making cleanliness a shared responsibility for every citizen. This cultural shift is key to ensuring that the gains made under SBM are sustained for generations to come. As India works towards the goal of Viksit Bharat 2047—a developed India by its centenary of independence—the Swachh Bharat Mission will continue to play a critical role in improving public health, empowering women, protecting the environment, and driving economic growth.

Introduction: A Historical Perspective on Sanitation in India

Sanitation in India has deep historical roots, tracing back to the Indus Valley Civilisation where cities like Harappa and Mohenjo-Daro demonstrated advanced waste management systems. Despite such inspiring traditions, modern India faces

significant challenges in providing adequate sanitation to its rapidly growing population. In 2014, sanitation coverage was only 39 per cent, leaving over 55 crore people, particularly in rural areas, without access to basic toilet facilities and indulging in Open Defecation. Women were 'slaves of darkness' devoid of basic rights. This lack of sanitation disproportionately affected women and



children, leading to health and safety risks as well as socio-economic challenges.

India's journey towards improving sanitation has been a long one, beginning with the Central Rural Sanitation Programme (CRSP) in 1986, which primarily focused on constructing toilets. Following this, the Total Sanitation Campaign (TSC) was launched in 1999 with an emphasis on creating demand for sanitation through Information, Education, and Communication (IEC) activities. In 2012, the Nirmal Bharat Abhiyan (NBA) expanded these efforts further, focusing on community-led approaches to sanitation.

However, by 2014, it was evident that India needed a more comprehensive and transformative approach to sanitation. The launch of the Swachh Bharat Mission (SBM) on 2 October 2014, by Prime Minister Narendra Modi marked a paradigm shift, not only in terms of the scale of the program but also in its focus on behaviour change, community participation, public financing and political will. The mission set an ambitious target to make India Open Defecation Free (ODF) by 2019, which was achieved on time, transforming India's sanitation landscape.

Why Swachh Bharat Mission?

The rationale behind SBM stemmed from the recognition that sanitation is a multi-dimensional issue. Poor sanitation affects public health, gender

equity, environmental sustainability, and economic development. The Swachh Bharat Mission sought to address these interconnected challenges holistically.

Health Impact: Inadequate sanitation is a major cause of waterborne diseases like diarrhoea, cholera, and typhoid, leading to high morbidity and mortality rates, especially among children under five. According to a World Health Organization (WHO) report, poor sanitation in India caused around 3 lakh child deaths annually before SBM was launched. As per the recent Nature Report, SBM's drives significant reductions in infant mortality rates by averting 60,000-70,000 child deaths annually.

Impact on Women and Children: Lack of access to toilets disproportionately affects women and girls. Women are often forced to defecate in open fields, putting them at risk of harassment and assault. Girls, particularly in rural areas, frequently miss school during menstruation due to inadequate sanitation facilities, leading to higher dropout rates. As per a BMGF study, SBM helped improve nutrition and productivity, with 58 per cent higher cases of wasting among children in non-ODF areas, and SBM secured the safety and dignity of women, with women feeling safer after getting a toilet at home (UNICEF).

Environmental Impact: Open defecation and improper waste management contribute to

environmental degradation. Untreated sewage contaminates water bodies, harms marine and coastal ecosystems, and pollutes soil and air, further exacerbating health risks. As per the UNICEF report, SBM helped saved the environment as there was 12.70 times less likelihood of groundwater contamination traceable to humans in ODF villages

Economic Impact: Poor sanitation costs India heavily. A World Bank study estimated that India lost approximately 6.4 per cent of its GDP in 2006 due to poor sanitation, amounting to over USD 38 billion annually. These losses were primarily due to health costs, reduced productivity, and lost educational opportunities. As per a UNICEF report, Rs 50,000 was saved annually by a household in an ODF village due to health costs avoided.

The Swachh Bharat Mission addressed these concerns by focusing not only on infrastructure development (toilet construction) but also on behavioural change through large-scale awareness campaigns, which were essential to ensuring sustained improvements in sanitation practices.

Impact of Swachh Bharat Mission on SDGs

The Swachh Bharat Mission is closely aligned with the Sustainable Development Goals (SDGs), particularly SDG 6: Clean Water and Sanitation, which aims to 'ensure availability and sustainable management of water and sanitation for all' by

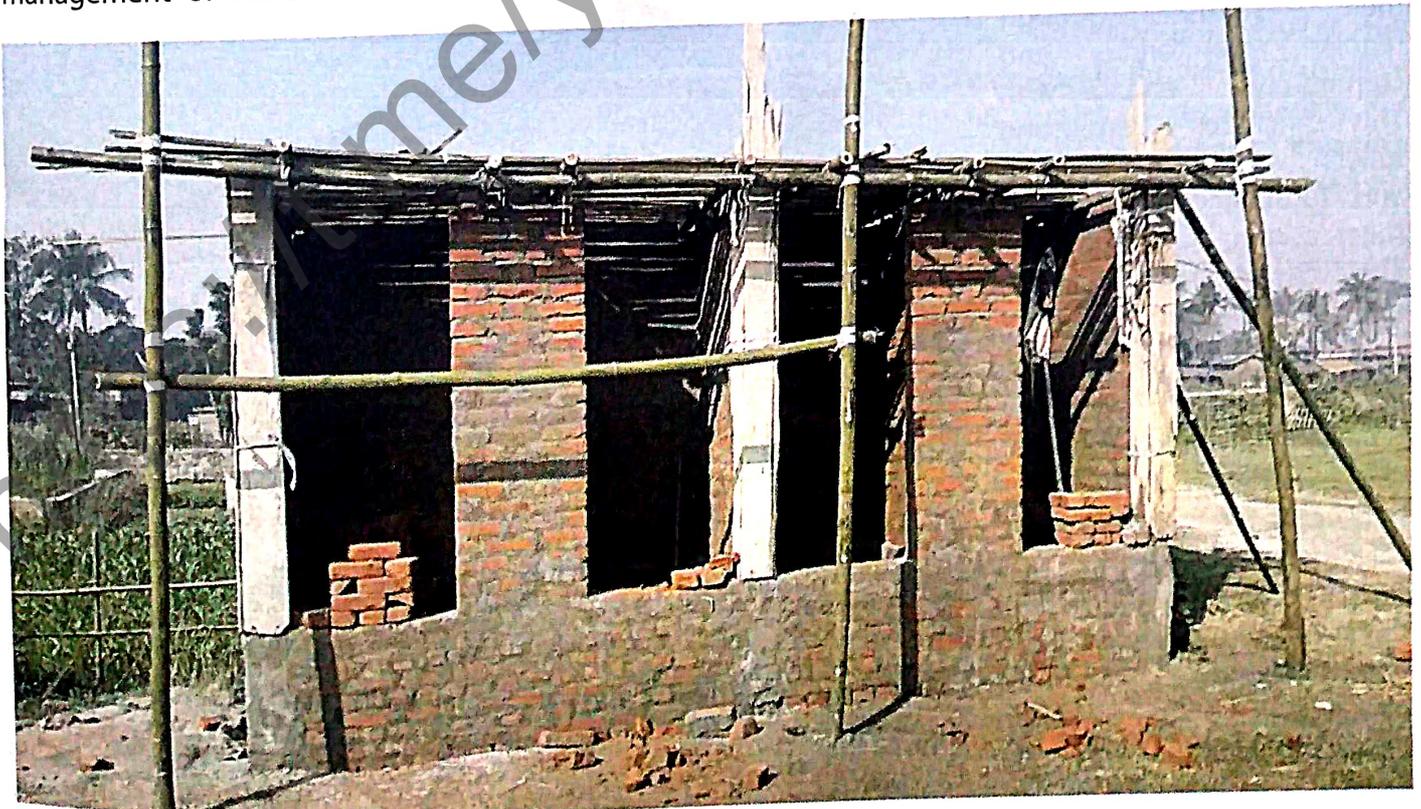
2030. India's achievement of being declared Open Defecation Free (ODF) in 2019, 11 years ahead of the global deadline, is a testament to the country's commitment to not only national but also global sustainability goals.

Target 6.2 of SDG 6 emphasises ending open defecation and providing access to adequate and equitable sanitation for all. The construction of over 116 million household toilets under SBM directly contributed to achieving this target.

SBM also supports SDG 3 (Good Health and Well-being), as improved sanitation reduces the incidence of waterborne diseases and child mortality. Studies show that the Swachh Bharat Mission has helped avert 3 lakh child deaths annually due to diarrhoea according to WHO.

The mission also aligns with SDG 5 (Gender Equality) by ensuring that women have access to safe and private sanitation facilities, which enhances their dignity and safety. A study by UNICEF revealed that 93 per cent of women in ODF villages felt safer due to the availability of toilets at home, and school absenteeism among girls has reduced significantly.

India's early achievement of SDG 6 demonstrates the power of strong political leadership, community mobilisation, and innovative program design. It also serves as a model for other nations working towards the 2030 Agenda for Sustainable Development,



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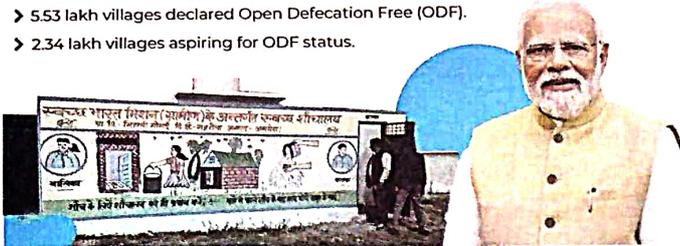
A Journey of Resilience and Achievements

Phase I Achievements

- > Over 100 million individual household toilets constructed.
- > Rural sanitation coverage increased from 20% in 2014 to 100% in 2019.

Phase II Achievements

- > 11 crore household toilets built to date.
- > 3.90 lakh villages reported arrangements for Solid Waste Management.
- > 4.96 lakh villages reported arrangements for Liquid Waste Management.
- > 5.53 lakh villages declared Open Defecation Free (ODF).
- > 2.34 lakh villages aspiring for ODF status.



showcasing that with the right strategy, large-scale challenges can be addressed within short timeframes.

Focus Areas of Swachh Bharat Mission

The Swachh Bharat Mission, which initially focused on ending open defecation, has now expanded its scope in Phase II (2020-2025) to ensure the sustainability of its achievements and tackle broader sanitation issues. The key focus areas include:

ODF Sustainability: Ensuring that villages declared ODF maintain their status through regular monitoring and community engagement. This includes retrofitting toilets where necessary and addressing any gaps in toilet access or functionality. The Swachhagrahis, local champions of cleanliness, continue to play a crucial role in maintaining the momentum.

Solid and Liquid Waste Management (SLWM): SBM Phase II emphasises the management of solid and liquid waste through the construction of household/community compost pits, waste stabilisation ponds, DEWATS, Phytorids,

Community soak pits, etc. Villages are also encouraged to adopt waste-to-energy technologies and promote plastic waste management to reduce environmental degradation.

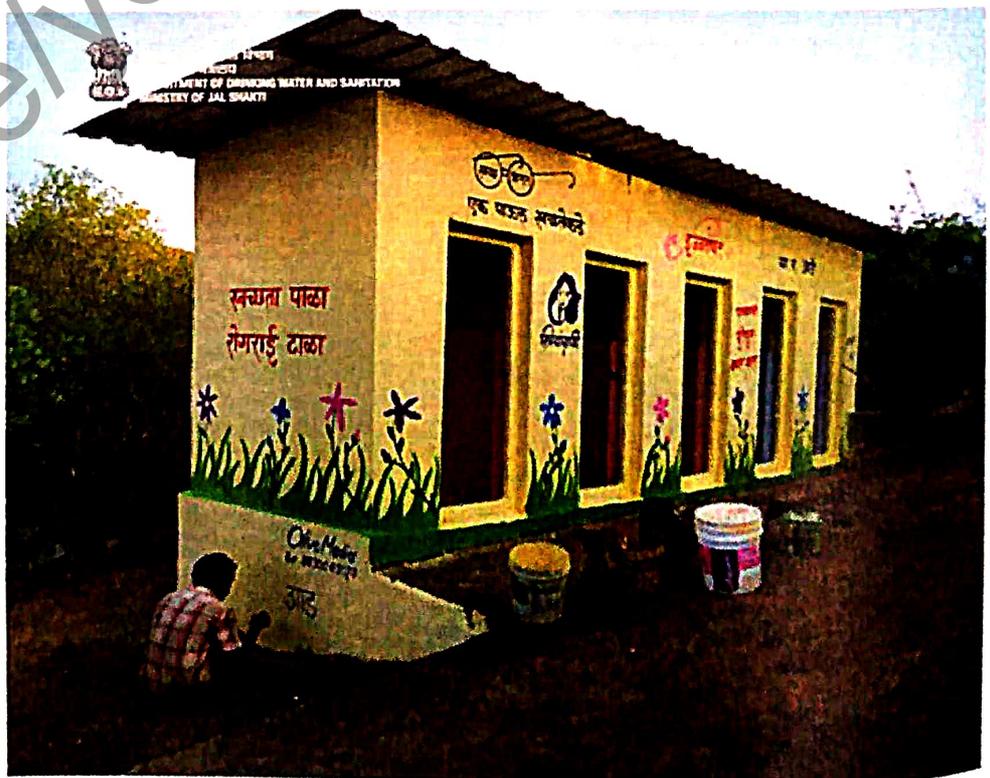
Visual Cleanliness: A clean environment is not just about functional toilets but also about maintaining litter-free public spaces, proper drainage systems, and waste segregation at the household level. SBM-G encourages rural communities to take ownership of their surroundings and ensure visual cleanliness as part of the larger goal of Sampurna Swachhata (complete cleanliness).

Community Engagement and Capacity Building: Engaging Self-Help Groups (SHGs), local leaders, and Panchayati Raj Institutions (PRIs) in sanitation efforts is crucial to ensuring the long-term success of SBM. The mission provides capacity-building programs to empower communities with the skills needed to manage sanitation infrastructure and promote behavioural change.

A SMART Approach for the Future

As Swachh Bharat Mission approaches its 10th anniversary, its future success depends on adopting a SMART strategy, focusing on the following pillars:

S: Sustainability of assets and behaviors. The challenge is not just in building toilets and other SLWM infrastructure but in ensuring that





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they are maintained, used, and integrated into daily life. Continuous monitoring and community-led initiatives will be essential for maintaining the gains made in the SBM programmes so far. Climate-resilient sanitation systems must also be promoted to address the growing impacts of climate change, particularly in flood-prone and water-scarce regions.

M: Making women central to development.

Women have been at the forefront of SBM's success, from Rani Mistris in Jharkhand, who led toilet construction efforts, to Women Swachhagrahis, who played a pivotal role in driving behaviour change. Moving forward, women should continue to take leadership roles in sanitation efforts, especially in the operation and maintenance (O&M) of community sanitation assets. Engaging women-led Self-Help Groups (SHGs) in waste management and sanitation-related jobs will not only enhance outcomes but also provide economic empowerment.

A: Accelerating private sector involvement.

Public-private partnerships will be crucial to scaling up sanitation innovations and addressing complex challenges such as solid waste management, smart toilets, and waste-to-energy technologies. The private sector can contribute with funding, technical expertise, and innovative solutions that can complement the government's efforts.

R: Re-establishing communication protocols.

Information, Education, and Communication (IEC) campaigns were central to the success of SBM Phase I, and their role will be even more critical

in the future. Behaviour Change Communication (BCC) needs to be strengthened with the use of digital tools, community engagement, and targeted messaging that promote sanitation as a lifestyle choice. Encouraging local leaders, especially Panchayati Raj Institutions, to take the lead in communication will help ensure that messages resonate with rural communities.

T: Training and technological interventions.

Training local communities, sanitation workers, and government officials in advanced sanitation practices is crucial for sustaining SBM's impact. Technological solutions, such as digital monitoring tools, smart waste management systems, and climate-adaptive sanitation infrastructure, should be introduced to improve efficiency and sustainability. Innovative approaches like waste-to-energy plants can transform waste management into a profitable and sustainable endeavour.

The Road Ahead: Achieving Sampoorna Swachhata

Looking ahead, the Swachh Bharat Mission is committed to achieving ODF Plus Model villages by 2024-25. This means going beyond open defecation-free status to ensure complete cleanliness in every village. Phase II of SBM is focused on transitioning from ODF to ODF Plus, which emphasises solid and liquid waste management, visual cleanliness, and sustained behavioural change.

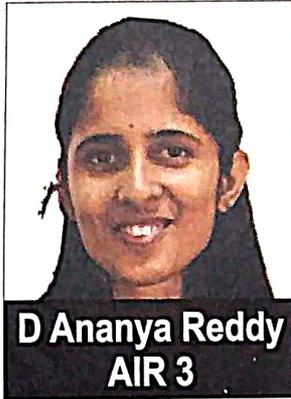
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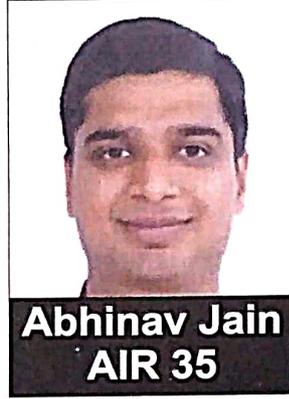
By adopting a SMART approach and embracing innovation, inclusivity, and sustainability, India can ensure that the vision of a clean and healthy future becomes a reality for all, contributing not only to national development but also to global progress towards the 2030 Agenda for Sustainable Development. □

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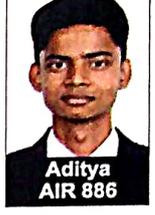
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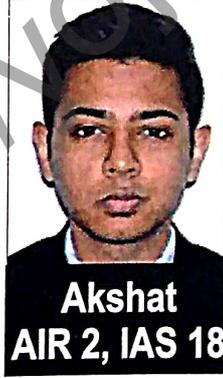


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Special Campaign 4.0 for Institutionalising Swachhata and Reducing Pendency in Government

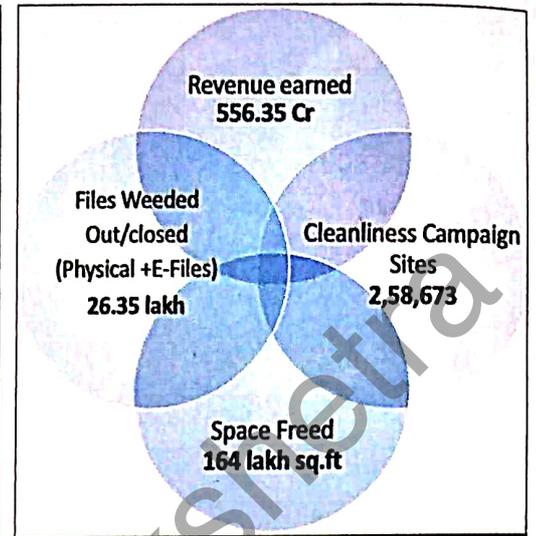
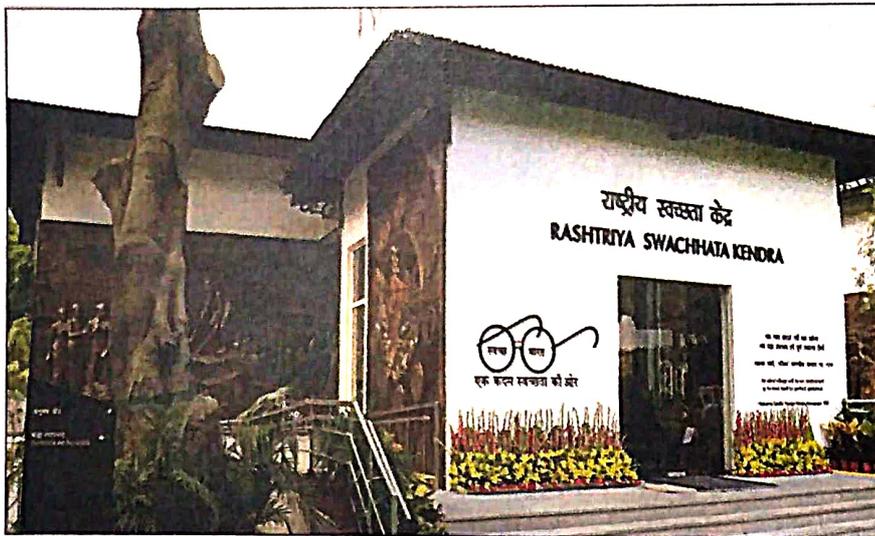
V SRINIVAS

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The Special Campaign 4.0 will be one of the largest campaigns undertaken by Government for institutionalisation of *Swachhata* and Reducing Pendency in Government. It will enable creation of clean functional efficient citizen centric office spaces, where citizens can interact with Government. The longterm outcomes of the Special Campaigns include digital empowerment of citizens and digital transformation of institutions.

Special Campaign 4.0 represents the vision of Prime Minister Shri Narendra Modi for institutionalising *swachhata* and reducing pendency in government, for changing old practices, weeding out old files and papers in Government Offices better utilisation of free space improve sanitisation protocols and above all technology adoption. Special Campaign

4.0 for institutionalising *Swachhata* and reducing pendency among Government offices seeks to build on the significant momentum and achieved in the Special Campaigns in the years 2021, 2022 and 2023 in terms of digitisation, efficient management of office spaces, enhancement of office premises, environmental friendly practices, inclusivity, sanitation protocols and mechanisms



for waste disposal. This effort for 'Ek Kadam Swachhata Ki Ore' in institutions of Government has enabled a new thinking in the country that office spaces can be aesthetically beautiful and clutter free and work environment can be enhanced.

Special Campaigns over the years have grown in size, scale and learning paradigms. In 2023, the Special Campaign was conducted in all Ministries and Departments, Attached, Subordinate, Autonomous Offices, Overseas Indian Missions and Posts, all Public Dealing Ministries including Defence Establishments, Public Sector Banks, Police Stations, Railway Stations, Post Offices, Public Sector Undertakings. Cumulatively over the past 3 years, 404776 office spaces were taken up under the Special Campaign. 355.5 Lac Square feet of office space freed Rs 1162.49 crores of revenue earned from scrap disposal and 96.1 lac files were weeded out. The saturation approach was also extended to Schools, Road Transport Offices, Krishi Vigyan Kendras and EPFO Offices. The 2023 Special Campaign was successfully conducted from Pahalgam in J&K to Mayiladuthurai in Tamil Nadu from Barmer in Rajasthan to Mon in Nagaland across the length and breadth of the country. In 2024 also, the campaign is going to be held on the saturation approach across the length and breadth of India.

The Special Campaign 4.0 is being implemented adopting a dedicated digital platform, www.specialcampaign.gov.in. Ministries and Departments identify pendency in specified categories like Public Grievances, Record Management Practices, Inter Departmental

Memos, cleanliness campaign sites and scrap disposal. In the preparatory phase from 16-30 September 2024, all Ministries and Departments will report pendency data as also the campaign plan on the dedicated portal. During this period, the office scrap to be auctioned will be identified – this includes electronic office scrap and automobile office scrap. In several institutions, VIDYANJALI has been used to refurbish computers and printers for use in rural schools. The 3R's approach has been adopted for environment friendly practices. Other innovations include Swachh ATM's and Waste to Wealth practices which have been recognised and presented. A structured target driven campaign for institutionalising Swachhata and reducing pendency in Government shall be undertaken from 2-31 October 2024. In all Ministries/Departments nodal officers in the rank of Joint Secretary, Additional Secretary to Government of India will see the campaign and coordinate with field offices. The leadership role provided by Ministers and Secretaries is critical to the successful conduct of Special Campaign 4.0.

The Prime Minister has guided the Nation in implementation of Special Campaigns through his meetings with the Council of Ministers, tweets in social media, and mentions in Mann ki Baat. Ministries and Departments have drawn huge inspiration from the Hon'ble Prime Minister's deep commitment to Swachhata and its institutionalisation in all Government offices. The Prime Minister has advised that Swachhata be made a permanent part of the culture of Government for which the Special Campaigns should be conducted annually for the next 5 years.

Government has further said that in the past Campaign period, every Ministry undertook the campaign for 3 hours per week and the work done shall be reported on the Special Campaign portal. The DARPG brings out monthly reports titled 'Secretariat Reforms' to showcase the progress achieved on a monthly basis. It has been observed that Sanitation Protocols, inclusivity measures and better management of record has become a part of the permanent culture of Government working in Ministries and Departments.

The Special Campaign 4.0 implemented on a saturation approach symbolises meeting the aspirations of grassroot institutions and the last-mile citizens. Saturation in Special Campaigns implemented in *Krishi Vigyan Kendras* has enabled outreach to farmers for adoption of vermi-compost measures and parthenium free farms. It has also brought awareness against single use plastic undertaken in the campaigns led by Ministry of Railways at Railway stations. The 'Plastic Rakshasha' at Bengaluru Railway Station was posted by the Prime Minister in a tweet about the benefits of the campaign of single use plastic. Efforts are on in 2024 to ensure that the special campaign reaches every office in India and abroad.

The Special Campaign 4.0 is being undertaken in all overseas mission and posts. The Ministry of External Affairs has issued directions to all Missions and Embassies to participate in the campaign. Further preservation of historical records as also archiving historical records is of great importance which will be undertaken during the Campaign. Numerous records of historical importance including records pertaining to 'Organisational



Sculpture made from Plastic bottles, Bangalore Railway Station; Ministry of Railways

Restructuring of Central Secretariat' in 1938 and 1947 have been preserved and placed on Abhilekh Patal of NAI.

The Special Campaign has significant benefits in improving public interface and service delivery. Several steps have been initiated for ease of leaving during the campaign. The *Aaykar Sewa Kendras* in Income tax offices have been replenished and redesigned as part of the campaign and form one of the best public interfaces. On similar lines, Pensioners Lounges in Pension Disbursing Banks like the State Bank of India and the Punjab National Bank have been operationalised.

Digital portals for monitoring pendency and redressal of Public Grievances operationalised by several Ministries have also enabled an improved ease of living for citizens. Another major exercise undertaken has been the policy for effective



Swachhata at North block Corridors, New Delhi



Corridor enhancement for Women and Freedom Fighters, CBIC



*Parcel Café at Kolkata GPO created using old furniture;
Department of Post*



*3D Printed Post Office, Bengaluru;
Department of Post*

redressal of Public Grievances 2024, which brings down the timeline of grievance redressal from 30 days to 21 days.

The success of the Special Campaigns is dependent on team building and leadership of large teams of officials. In pursuance of the Hon'ble Prime Minister's directions, Minister of State for Personnel, Public Grievances and Pensions has addressed all Members of the Council of Ministers seeking their support for successful implementation of Special Campaign 4.0. In the preparatory phase Ministers have provided leadership and vision to the implementation modalities of the Special Campaign 4.0. The Cabinet Secretary has addressed all Secretaries to Government of India on the expectation of the Government from Special Campaign 4.0. Further, Nodal Officers in the rank of Joint Secretaries and Additional Secretaries have held reviews and predatory Meetings with their field formation. Specific training and capacity building initiatives have been initiated in record management practices. Public Records from record rooms have been transferred to divisions for commencing the review process. Categorisation of records, preservation of records, archiving of records, accession policies, record retention schedules have all been detailed to individual officials at length. Further officials have been trained in scrap disposal policy and better utilisation of office space. It is expected that each of these initiatives will have significant long terms benefits for enhancement of office spaces, record management practices and citizen centric Governance module.

The campaign seeks to improve public trust by timely redressal of public grievances and timely disposal of pending references in Government. Over the past 3 years more than 70 lac Public Grievances were redressed and 101,675 Grievance Redressal Officers have been mapped on the CPGRAMS portal, For the Special Campaign 4.0, a policy circular on Effective Redressal of Public Grievances has been issued reducing the timelines for grievance redressal from 30 days to 21 days.

The Prime Minister has laid down the Government policy of 'Reform, Perform, Transform and Inform'. It is important that knowledge dissemination about the benefits of Special Campaign are circulated to all the field formations of the attached/subordinate office of India. DARPG seeks to reach the last miles offices through a focused communications and media plan which envisages over 1 lac social media posts, 300 PIB Statements and a series of panel discussions.

The Special Campaign 4.0 will be one of the largest campaigns undertaken by Government for institutionalisation of *Swachhata* and Reducing Pendency in Government. It will enable creation of clean functional efficient citizen centric office spaces, where citizens can interact with Government. The longterm outcomes of the Special Campaigns include digital empowerment of citizens and digital transformation of institutions. The Special Campaign also represents a major step in achieving the objective of *Viksit Bharat@2047*. As we march towards the goal of achieving developed nation status by 2047, the Special Campaign for institutionalising *swachhata* and reducing pendency will represent an important milestone. □

Swachh Bharat Mission successfully Transforms India's Sanitation Landscape

The Swachh Bharat Mission (SBM), launched by Prime Minister Shri Narendra Modi on 2 October 2014, represents a paradigm shift towards achieving universal sanitation coverage in India. With the ambitious goal of making India 'open-defecation free' (ODF) by the 150th birth anniversary of Mahatma Gandhi in 2019, this initiative has since revolutionised the country's approach to hygiene and sanitation. The mission aimed to improve the health and well-being of millions of Indians by constructing over 100 million toilets in rural India and has become a global model for community-driven sanitation reform.

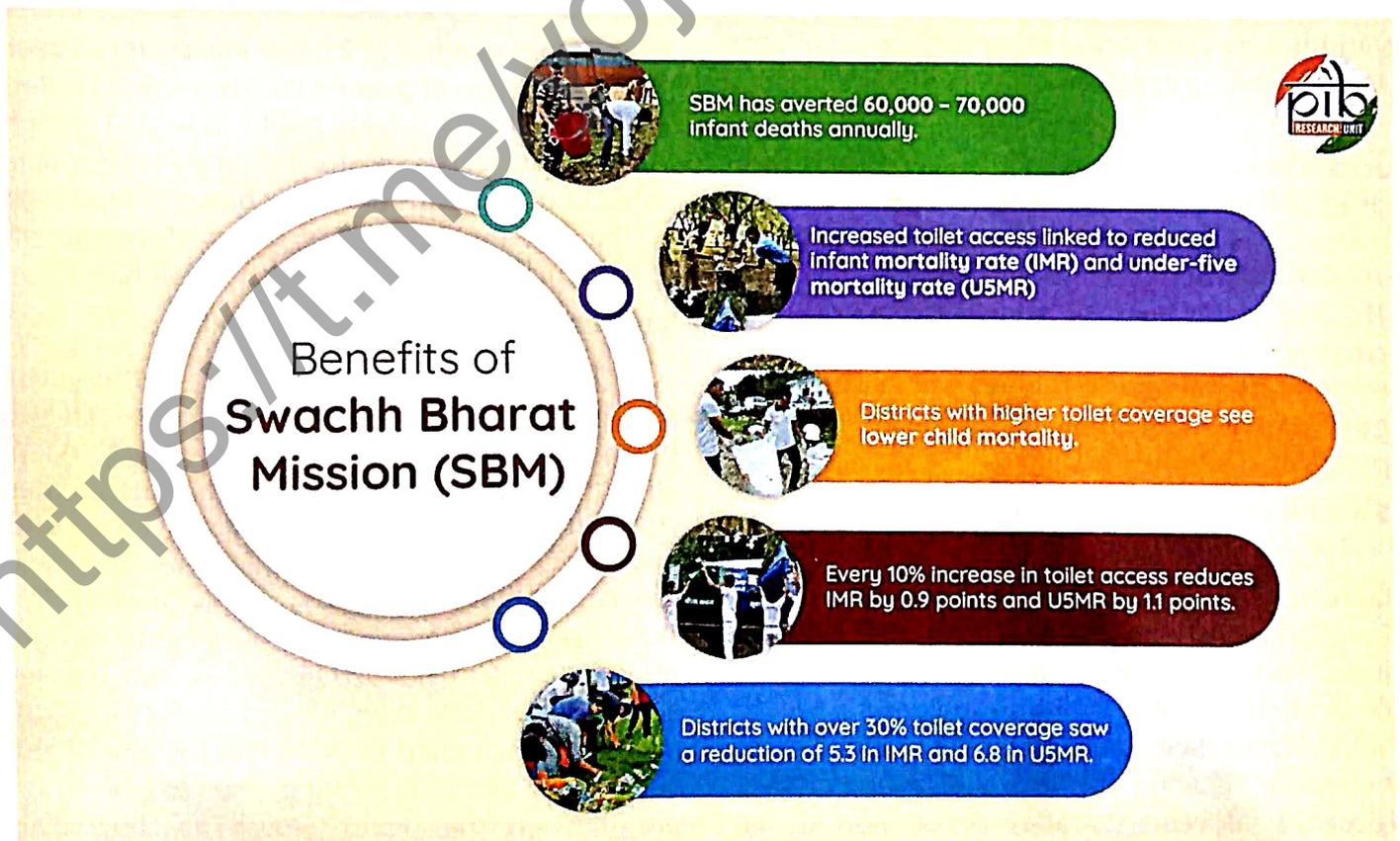
Swachh Bharat Mission – Grameen: Phase I (2014–2019)

The *Swachh Bharat Mission–Grameen* (SBM-G) Phase I was a groundbreaking initiative that emphasized nationwide participation in sanitation efforts. This phase marked the largest behavioural

change movement in the world, aiming to end open defecation through awareness campaigns, education, and infrastructure development. By combining governmental efforts and community engagement, SBM-G Phase I became a symbol of India's commitment to public health and cleanliness. The construction of toilets and sanitation infrastructure not only improved hygiene but also significantly impacted health, especially in rural areas where sanitation facilities were lacking.

Swachh Bharat Mission – Grameen: Phase II (2019–2025)

Building on the success of Phase I, SBM-G Phase II was launched to sustain the ODF status and manage solid and liquid waste by 2025. This phase focuses on '*Sampoorn Swachhata*', or complete cleanliness, which includes creating ODF Plus villages that maintain and improve sanitation standards with an investment of



Achievements of SBM-G Phase I



- The WHO reported 300,000 fewer diarrheal deaths in 2019 compared to 2014, directly attributable to improved sanitation.
- Families in ODF villages saved an average of INR 50,000 annually on health costs.
- A significant reduction in groundwater contamination was noted in ODF areas.
- With better access to sanitation facilities, 93% of women reported feeling safer at home.



Rs 1.40 lakh crores, this phase further integrates various government schemes to enhance sanitation infrastructure.

As of September 2024, over 5.87 lakh villages across India have achieved ODF Plus status, with over 3.92 lakh villages implementing solid waste management systems and over 4.95 lakh villages establishing liquid waste management systems. This phase also saw the construction of over 11.64 crore household toilets and more than 2.41 lakh community sanitary complexes, underscoring the government's dedication to sustainable sanitation practices.

Swachh Bharat Mission – Urban

The Swachh Bharat Mission (Urban) (SBM-U), launched on 2 October 2014, has significantly transformed urban sanitation and cleanliness in India. Focused on achieving 100 per cent Open Defecation Free (ODF) status, ensuring scientific Solid Waste Management (SWM), and driving behaviour change through a '*Jan Andolan*' (people's movement), SBM-U has had a far-

reaching impact.

As of September 2024, the initiative has seen the construction of over 63 lakh household toilets and more than 6.3 lakh public toilets. Through robust third-party protocols and widespread public engagement, SBM-U has brought sanitation to the forefront of India's urban development agenda, making cities cleaner and healthier.

Key Benefits of Swachh Bharat Mission

A recent study published in *Nature*, the world's leading multi-disciplinary science journal, by leading experts reveals that the SBM, India's ambitious national sanitation program, has contributed significantly to reducing infant and under-five mortality rates across the country – averting 60,000 – 70,000 infant lives annually. The study, which utilised a quasi-experimental design, provides robust evidence linking increased toilet access under SBM with improved child survival outcomes. Launched in 2014, SBM is one of the largest national behavioural change sanitation programs in the world, aimed at eliminating



open defecation by providing household toilets across the country. This unique programme has now metamorphosed into ensuring *Sampoorna Swachhata* in the country.

Study Overview and Key Findings

The study analysed data from 35 Indian states and 640 districts spanning a decade (2011-2020), focusing on infant mortality rate (IMR) and under-five mortality rate (U5MR) per thousand live births as the primary outcomes. The study employed two-way fixed effects regression models to control for sociodemographic, wealth, and healthcare-related confounders at the district level, ensuring a comprehensive analysis of the relationship

between sanitation improvements and child mortality.

Key findings include

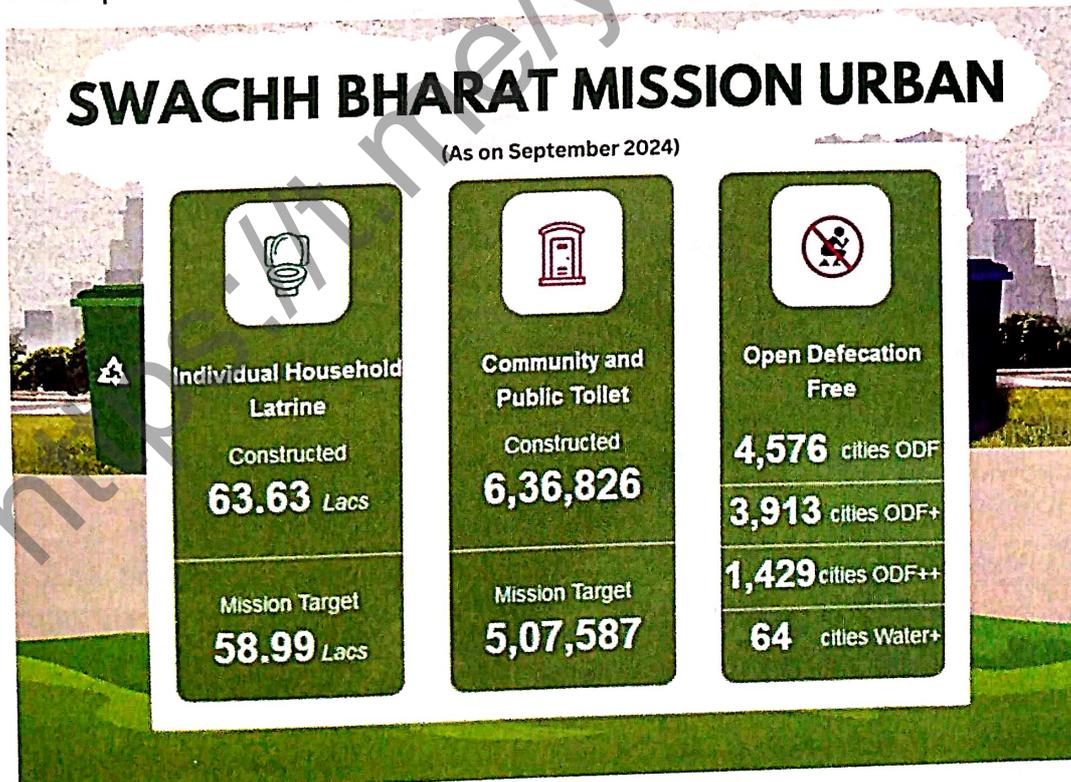
- Inverse Association Between Toilet Access and Child Mortality

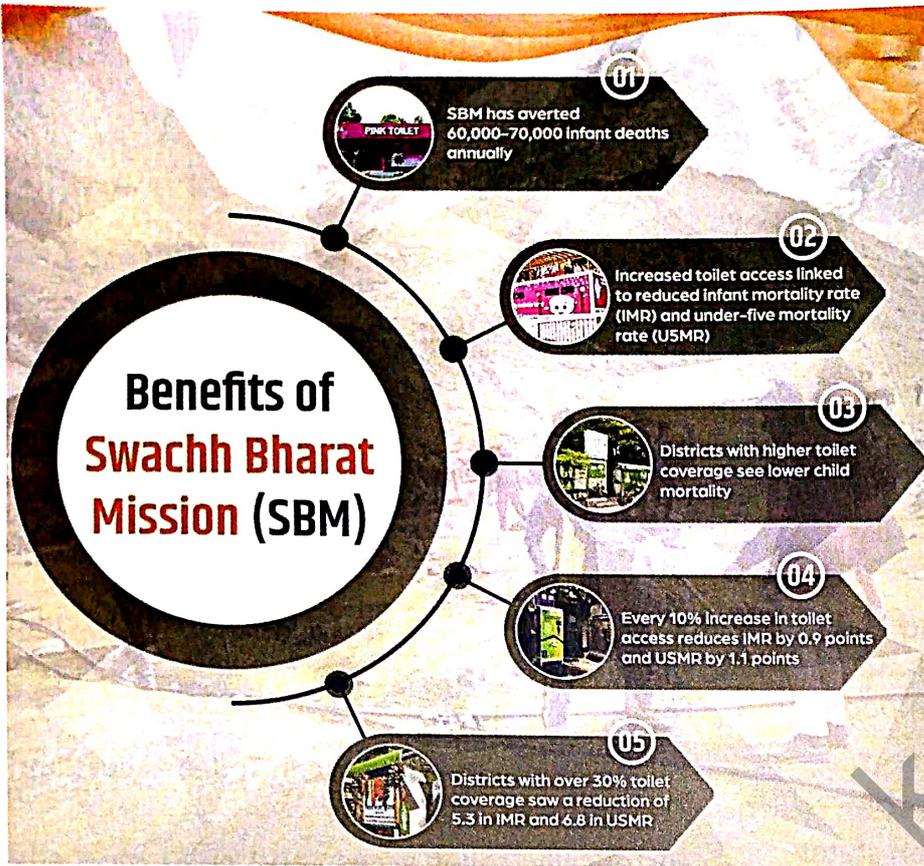
Historically, toilet access and child mortality have shown a robust inverse association in India.

- Scale of Impact

Toilets constructed increased dramatically across India following the implementation of the SBM in 2014. Over 117 million toilets have been constructed since 2014 with a public investment of over Rs 1.4 lakh crore. Results from the analyses

suggest that for every 10-percentage point increase in district level access following SBM corresponds with a reduction in district level IMR by 0.9 points and U5MR by 1.1 points on average. There is further evidence of a threshold effect wherein the district-level toilet coverage of 30 per cent (and above) corresponds with substantial reductions in infant and child mortality. The study revealed that districts with over 30





per cent toilet coverage under SBM experienced reductions of 5.3 in the IMR and 6.8 in the U5MR per thousand live births. In absolute numbers, this co-efficient would scale to 60,000 – 70,000 infant lives annually. This finding was supported by robustness checks and falsification tests, confirming the validity of the results.

SBM's Unique Approach

SBM's approach of combining toilet construction with substantial investments in IEC (Information, Education, and Communication) and community engagement represents a marked departure from prior sanitation efforts in India, which often lacked such comprehensive strategies. The study provides novel evidence of reductions in infant and child mortality following SBM's comprehensive national sanitation program, indicating its transformative role in improving public health outcomes. The study also highlights that expanded access to toilets under SBM likely reduced exposure to faecal-oral pathogens,

contributing to lower incidences of diarrhoea and malnutrition, which are key drivers of child mortality in India.

Future Initiatives

Union Minister for Housing and Urban Affairs, Shri Manohar Lal, chaired a high-level meeting on 30 August 2024 to review the preparations for the upcoming *Swachhata Hi Seva* (SHS) campaign 2024, marking a decade of the initiative. Set to begin on 17 September and conclude on 2 October, this nationwide cleanliness drive aligns with the broader goals of the SBM, launched in 2014. The campaign focuses on mobilising public participation (*Jan Bhagidari*), achieving sustainable cleanliness, and recognising the vital role of sanitation workers (*Safai Mitras*).

in the *Swachhata Hi Seva* 2023, more than 109 crore individuals and 71 Ministries and Departments of GOI participated in the nationwide campaign over an 18-day period, averaging around 6 crore people participation per day across the country. A whopping 53 crore

Achievements of SBM-G Phase I

- 01 The WHO reported 300,000 fewer diarrheal deaths in 2019 compared to 2014, directly attributable to improved sanitation.
- 02 Families in ODF villages saved an average of INR 50,000 annually on health costs.
- 03 A significant reduction in groundwater contamination was noted in ODF areas.
- 04 With better access to sanitation facilities, 93% of women reported feeling safer at home.

people gave 'Shramdaan for Swachhata' from across the country over the 18-day period, averaging around 3 crore people participation per day. These efforts showed remarkable results - cleaning of nearly 7,611 beaches, revitalising 6,371 riverbanks and waterfronts, reclaiming over 15,576 legacy waste sites, improving 3,620 tourist and iconic destinations, and restoring over 1,23,840 public spaces. Additionally, over 16,000 water bodies were cleaned, over 87,000 institutional buildings rejuvenated, and nearly 66,779 garbage-vulnerable sites cleaned.

Looking ahead, the *Swachh Bharat Mission* is gearing up for a more comprehensive and sustainable phase, emphasising long-term sanitation solutions, such as solid and liquid waste management systems across urban and rural areas. Future steps for SBM will focus on fostering behavior change under the theme '*Swabhav Swachhata, Sanskar Swachhata*,' promoting cleanliness as a way of life. Strengthening community participation, expanding waste management infrastructure, and ensuring sustained efforts at both the grassroots and policy levels are critical elements. Moreover, the recognition of *Safai Mitras* and other sanitation stakeholders aims to create an inclusive environment where everyone contributes to maintaining hygiene.

The Minister highlighted that collaboration between the government, NGOs, corporates, and citizens is key to building a cleaner and healthier India. The SHS campaign is expected to set the stage for these future initiatives, driving forward the vision of a permanently clean and green India.

Conclusion

The *Swachh Bharat Mission* stands as a transformative initiative that has revolutionised sanitation in India, delivering widespread public health benefits. By providing millions of toilets, reducing infant mortality, and improving the safety of women, the mission has profoundly impacted the lives of Indians. It continues to serve as one of the largest and most successful public health initiatives in the world, exemplifying how



Swachhata Hi Seva

Campaign 2024

17th Sep - 2nd Oct 2024

Key Focus Areas

Jan Bhagidari: Public participation at all levels.

Achieving Cleanliness: Focus on sustainable sanitation practices.

Recognition of Safai Mitras: Honoring sanitation workers' contribution.



A decade of Swachhata Hi Seva (launched in 2014).

sanitation improvements can lead to a healthier, safer, and more prosperous society. □

(Source: Research Unit, PIB)

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सामान्य अध्ययन (हिंदी माध्यम)

- संघ लोक सेवा योग द्वारा आयोजित सिविल सेवा परीक्षा का प्रारंभिक एवं मुख्य परीक्षा का सम्पूर्ण पाठ्यक्रम का कवरेज किया जायेगा।
- प्रभावी रणनीति के लिए मेंटरशिप प्रोग्राम
- संदेह निवारण (Doubt session) ऑनलाइन और ऑफलाइन दोनों माध्यम से किया जाता है।
- साप्ताहिक टेस्ट और उसका निराकरण किया जाता है

कक्षाएं प्रारम्भ 7 अक्टूबर 2024

समय 02 से 04:30 (सोपहर)

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- सम्पूर्ण पाठ्यक्रम का रूप से व्यापक कवरेज शिक्षक के साथ इंटरैक्टिव सत्र
- PSIR मेंटर्स के साथ संदेह निवारण (Doubt session) ऑफलाइन दोनों माध्यम से किया जाता है।
- प्रभावी रणनीति विकास के लिए प्रत्येक छात्र के लिए सलाह (मेंटरशिप) प्रदान की जाती है।
- साप्ताहिक टेस्ट और उसका निराकरण किया जाता है

कक्षाएं प्रारम्भ 7 अक्टूबर 2024 @ 11 से 1:30

कार्यशाला - 22 सितम्बर 2024 @ 4:30 बजे

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- सम्पूर्ण पाठ्यक्रम के प्रत्येक हिस्से की पूर्ण तैयारी
- प्रत्येक छात्र / छात्रा की समस्याओं पर One to One फोकस करना और उनकी क्षमता का विकास करना
- स्वयं रवीन्द्र सर के साथ 8 पूर्ण पाठ्यक्रम टेस्ट और उनकी परिधि
- ऑनलाइन व ऑफलाइन कक्षाएं उपलब्ध

कक्षाएं प्रारम्भ 25 सितम्बर 2024 @ 11 बजे

कार्यशाला - 24 सितम्बर 2024 @ 11 बजे



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INDIA'S ODF MILESTONE: THE SANITATION REVOLUTION

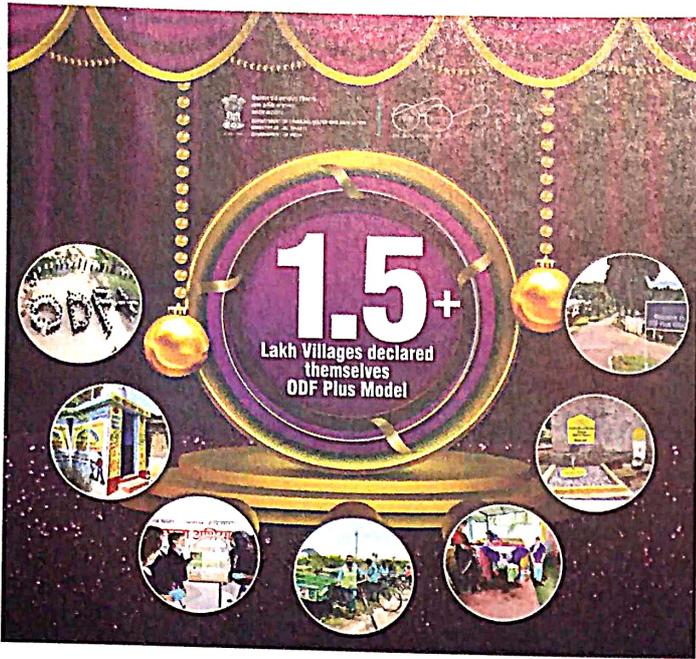
ANDALIB AKHTER

The author is a senior journalist who frequently writes on health and sanitation issues. Email: andalib2001@yahoo.com

India celebrates a decade of Swachh Bharat Mission, a groundbreaking initiative to make India open defecation free (ODF). 'Nearly 50 crore people have stopped defecating in the open' since 2014, with sanitation coverage improving from 39 per cent to 100 per cent. However, quantifiable metrics to measure behavioural change and ascertain ODF status with certainty are essential as challenges persist, underscoring the need for sustained efforts to eliminate open defecation entirely.

On 2 October 2024, India accomplished a decade of a groundbreaking mission of making the country free from open defecation (OD). Exactly 10 years ago, on 2 October 2014, the Government of India, under the guidance of Prime Minister Narendra Modi, launched the *Swachh Bharat Mission* (SBM) or Clean India Mission, to eradicate the open defecation system from the country and to improve solid

waste management. Since then, India has made rapid progress in eliminating this terrible practice with significant improvements in water, sanitation and hygiene (WASH). The Swachh Bharat Mission (SBM) brought transformation in the behaviour of millions of people regarding access to and use of toilets. Since 2014, nearly 50 crore people have stopped defecating in the open. This major achievement has been made possible by the SBM



led by the Prime Minister.

For long, India grappled with sanitation challenges, particularly in rural areas, affecting a large populace. Various schemes were launched to address the crucial issue, beginning with the launch of the highly subsidised Central Rural Sanitation Programme (CRSP) in 1986. The Total Sanitation Campaign in 1999 marked a shift from a high subsidy regime to a low subsidy one and a demand-driven approach. Yet till 2014, only 39 per cent sanitation coverage was achieved, impacting vulnerable demographics, particularly women and children.

In 2014, Prime Minister Narendra Modi pledged from the ramparts of the Red Fort to declare India Open Defecation Free (ODF). Henceforth, the Government of India launched the revolutionary *Swachh Bharat Mission (Grameen)* or SBM (G) and *Swachh Bharat Mission-Urban* (SBM-U) on 2 October 2014 with an aim to make India Open Defecation Free (ODF) by 2 October 2019 by providing access to toilets to all households. To implement the scheme, a dedicated institutional structure was set up by all the States and UTs at district levels. The government's commitment and efforts toward the noble cause bore fruit as the PM declared India open defecation free on 2 October 2019. It was an assurance by the Prime Minister to mark 150 years of Mahatma Gandhi's birth as an ODF India. This was one of his first developmental promises made from the ramparts of the Red Fort in his first Independence Day speech.

"600 million people have been given access to toilets; more than 110 million toilets have been built. The whole world is amazed to hear this," said PM while declaring India ODF on 2 October 2019.

This remarkable achievement changed India's position on the global sanitation landscape. The world was closer to its toughest Sustainable Development Goal (SDG) 6 of giving universal access to water, sanitation and hygiene as India had the world's largest number of people defecating in the open.

UN Concern

In 2015, the United Nations General Assembly announced 17 Sustainable Development Goals (SDGs) to be met by 2030. One of these goals, SDG 6, calls on the global community to 'ensure availability and sustainable management of water and sanitation for all.' A particular concern was the persistence of open defecation (OD) in the Global South.

OD leads to the spread of untreated faecal matter throughout the environment and is associated with various negative health consequences. Diarrhoeal diseases, trachoma and schistosomiasis are deeply associated with faecal contamination. Exposure to faecal bacteria has been linked to stunting, a measure of linear growth retardation that is often used as a predictor of long-term educational and economic outcomes. There is thus widespread consensus among health professionals that adequate sanitation and hygiene are key determinants of health.

In 2015, the World Health Organization's (WHO) Joint Monitoring Programme estimated that 520 million people were regularly defecating in the open in India. The problem was of particular concern in rural areas, where 69 per cent of households reported that they did not own a toilet in 2011. Unimproved sanitation accounted for an estimated 2.4 per cent of the total burden of disease, expressed as Disability-adjusted life years (DALYs).

India's achievements

According to government reports, sanitation coverage in India improved from 39 per cent in 2014 to 100 per cent in 2019. Encouraged by the achievements under the SBM, the Government of India launched Phase II of the SBM-G. Now the focus is on the sustainability of initial achievements

by promoting solid and liquid waste management and covering those households left out earlier.

The impact of SBM Phase I was very encouraging, as WHO data suggests—3 lakh diarrhoeal deaths avoided in 2019 compared to 2014. It improves nutrition and productivity; it secures the safety and dignity of women; 93 per cent of women feel safer after getting a toilet at home (UNICEF).

SBM saved money for the family—Rs 50,000 saved every year on average by a household in an ODF village due to health costs avoided. It also saved the environment as 12.70 times less likelihood of groundwater contamination traceable to humans in ODF villages.

The government now aims to transform India from ODF to ODF Plus by 2024-25. According to the Department of Drinking Water & Sanitation, Ministry of Jal Shakti's latest report, India has achieved another major milestone under the *Swachh Bharat Mission Gramin* (SBM-G), with half of the total villages in the country, i.e., 50 per cent villages achieving ODF Plus status under phase II of the Mission. An ODF Plus village is one that has

ODF plus Model village is one that is sustaining its ODF status and has arrangements for both solid waste management and liquid waste management; observes visual cleanliness, i.e., minimal litter, minimal stagnant wastewater, no plastic waste dump in public places; and displays ODF plus Information, Education & Communication (IEC) messages.

sustained its Open Defecation Free (ODF) status along with implementing either solid or liquid waste management systems. With over 2.96 lakh villages declared ODF Plus by May 2023, India is steadily moving closer to achieving SBM-G phase II targets by 2024-25. The top performing states in terms of percentage of ODF Plus villages are Telangana (100 per cent), Karnataka (99.5 per cent), Tamil Nadu (97.8 per cent) and Uttar Pradesh (95.2 per cent) among the big states, and Goa (95.3 per cent) and Sikkim (69.2 per cent) among the small states. Among UTs—Andaman & Nicobar Islands, Dadra & Nagar Haveli, Daman & Diu and Lakshadweep

have 100 per cent ODF Plus Model villages. These States and UTs have shown remarkable progress in achieving ODF Plus status, and their efforts have been instrumental in reaching this milestone, according to the government.

The ministry report suggests that of the 2,96,928 ODF Plus villages, 2,08,613 villages are ODF Plus Aspiring villages with arrangements for Solid Waste Management or Liquid Waste Management, 32,030 villages are ODF Plus Rising villages with arrangements for both Solid Waste Management and Liquid Waste Management and 56,285 villages are ODF Plus Model villages. ODF plus Model village is one that is sustaining its ODF status and has arrangements for both solid waste management and liquid waste management; observes visual cleanliness, i.e., minimal litter, minimal stagnant wastewater, no plastic waste dump in public places; and displays ODF plus Information, Education & Communication (IEC) messages. So far, 1,65,048 villages have arrangements for solid waste management, 2,39,063 villages have arrangements for liquid waste management, 4,57,060 villages have minimal stagnant water, and 4,67,384 villages have minimal litter.

Between 2014-15 and 2021-22, the union government allocated a total of Rs 83,938 crore to SBM (G). The allocation for the year 2023-24 is

Swachh Bharat Mission Urban

As on 4th September 2024



 **63.63 Lakh**
Individual Household Toilets

 **6,36,826**
Community and Public Toilet Constructed

 **Open Defecation Free**
4,576 Cities ODF
3,913 Cities ODF +
1,429 Cities ODF++
64 Cities Water+



Rs 52,137 crore. In addition to the SBM (G) funds, there is a clear allocation of 15th FC (Finance Commission) funds for sanitation. These funds have been utilised to build sanitation assets, promote behaviour change, and implement solid and liquid waste management systems.

The achievement of 50 per cent ODF Plus villages is seen as a significant milestone for India as it is going beyond just construction and use of toilets towards complete and absolute cleanliness, i.e., from ODF to ODF Plus.

The major components of Phase-II of SBM (G) are Sustaining Open Defecation Free Status (ODF-S), Solid (biodegradable) Waste Management, Plastic Waste Management (PWM), Liquid Waste Management (LWM), Faecal Sludge Management (FSM), GOBARDHAN, Information Education and Communication/Behaviour Change, Communication (IEC/BCC) and Capacity Building. The SBM-G program has been instrumental in improving the health and well-being of millions of people across the country.

Swachh Bharat Mission - Urban (SBM-U)

Along with the *Swachh Bharat Mission-Gramin*, the government also launched the *Swachh Bharat Mission - Urban (SBM-U)*, which aims to make urban India free from open defecation and achieve 100 per cent scientific management of municipal solid waste in 4,041 statutory towns in the country. The

second phase of SBM-U was launched on 1 October 2021, for a period of 5 years. The vision for SBM-U 2.0 is to achieve 'Garbage Free' status for all cities by 2026.

Over the years, the Mission has reached all corners of the country and has transformed the lives of citizens with its 'people first' focus. The mission has revolutionised the sanitation space in urban India by providing 100 per cent access to sanitation facilities. Under SBM-U, over 70 lakh household, community and public toilets have been built thus providing safe and dignified sanitation solutions for all. The mission has prioritised the needs of women, transgender communities, and persons with disabilities (*Divyangs*). Access to sanitation facilities has been improved further through digital innovation such as SBM Toilets on Google Maps where over 65,000 public toilets across 3,300+ cities have been made live.

According to data from the Ministry of Housing and Urban Affairs (MoHUA), urban India was declared open defecation free in 2019, following which the Mission has propelled urban India on the path of sustainable sanitation, with over 3,300 cities and over 960 cities being certified ODF [1]+ and ODF++ [2], respectively.

Cities are progressing towards Water+ certification under the Water+ Protocol, which focuses on the treatment of waste water and its optimum reuse.

In the area of scientific waste management, waste processing in India has gone up over four times from 18 per cent in 2014 to 70 per cent today.

This has been aided through 100 per cent door-to-door waste collection in 97 per cent wards and source segregation of waste being practiced by citizens in letter and spirit across 85 per cent wards.

The government believes that the mission has been able to bring about a marked difference in the lives of sanitation workers and informal waste workers, with over 5.5 lakh sanitation workers linked to social welfare schemes. The active participation of 20 crore citizens (comprising over 50 per cent of India's urban population) in the program has successfully transformed the mission into a people's movement, a true *Jan Andolan*, through massive IEC and behaviour change campaigns, according to MoHUA.

The Union Cabinet had approved the continuation of SBM-U till 2025-26, with a focus on sustainability of ODF outcomes, achieving scientific processing of solid waste in all cities, and managing wastewater in cities with less than 1 lakh population in Census 2011 cities not covered under *Atal Mission for Rejuvenation and Urban Transformation (AMRUT)*.

A financial outlay of Rs1,41,600 crores has been finalised for SBM-U 2.0, including a central share of Rs 36,465 for the period 2021-22 to 2025-26, which is over 2.5 times the financial outlay of Rs62,009 crores in the last phase of the mission.

The fund sharing pattern between Centre and States is as follows—Cities with a million plus population: 25:75; Cities with a population between 1-10 lakhs: 33:67; Cities with less than one lakh population: 50:50; Union territories without legislature: 100:0; Union territories with legislature: 80:20.

Changing behaviours and myths still critical

Even as the Government of India, in partnership with UNICEF, has made significant progress in reaching the open defecation free target as of January 2020, 706 districts and 6,03,175 villages across 36 states and union territories have been declared open defecation free, yet there is no data that could officially establish the status of ODF being reversed. There have been some reports suggesting

reversal of ODF in different parts of the country.

In 2023, the World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF) released a Joint Monitoring Programme (JMP) report on the state of water supply, sanitation, and hygiene (WASH) in households globally from 2000 to 2022.

According to the report, 17 per cent of the rural population in India still defecated in the open in 2022. One quarter of the rural population didn’t have even ‘at least basic’ sanitation facilities. According to another report, about 7 per cent of people in crowded urban areas defecate in the open. It is due to various reasons, including lack of space, tenant reluctance to invest in a toilet, and landlord refusal to provide one.

The JMP report for monitoring progress on SDG 6, defines ‘basic’ services as the improved sanitation facility that the household doesn’t share with others. Or, in general parlance, a basic service is an exclusive toilet for a household. This is also the goal that the Government of India aspired to while setting the ODF target.

This mismatch between claims of the official data and the JMP and other reports raises many questions about India being really ODF.

While significant progress has been made in promoting toilet usage, the persistence of open defecation remains a concern. Quantifiable metrics to measure behavioural change and ascertain ODF status with certainty are essential. Open defecation poses substantial public health risks, underscoring the need for sustained efforts to eliminate this practice entirely.

While keeping the success of SBM in view, there is a need to ensure equity and sustainability in sanitation services and to leave no one behind. Work towards changing behaviours and beliefs and addressing myths around toilets remains crucial to ensuring sustained ODF status across India.

It is imperative that appropriate follow-up activities are put in place once a village or area is declared ODF to ensure that households that have newly embraced the social norm of toilet use do not regress into their past practice of open defecation. □

nature

Toilet construction under the Swachh Bharat Mission and infant mortality in India

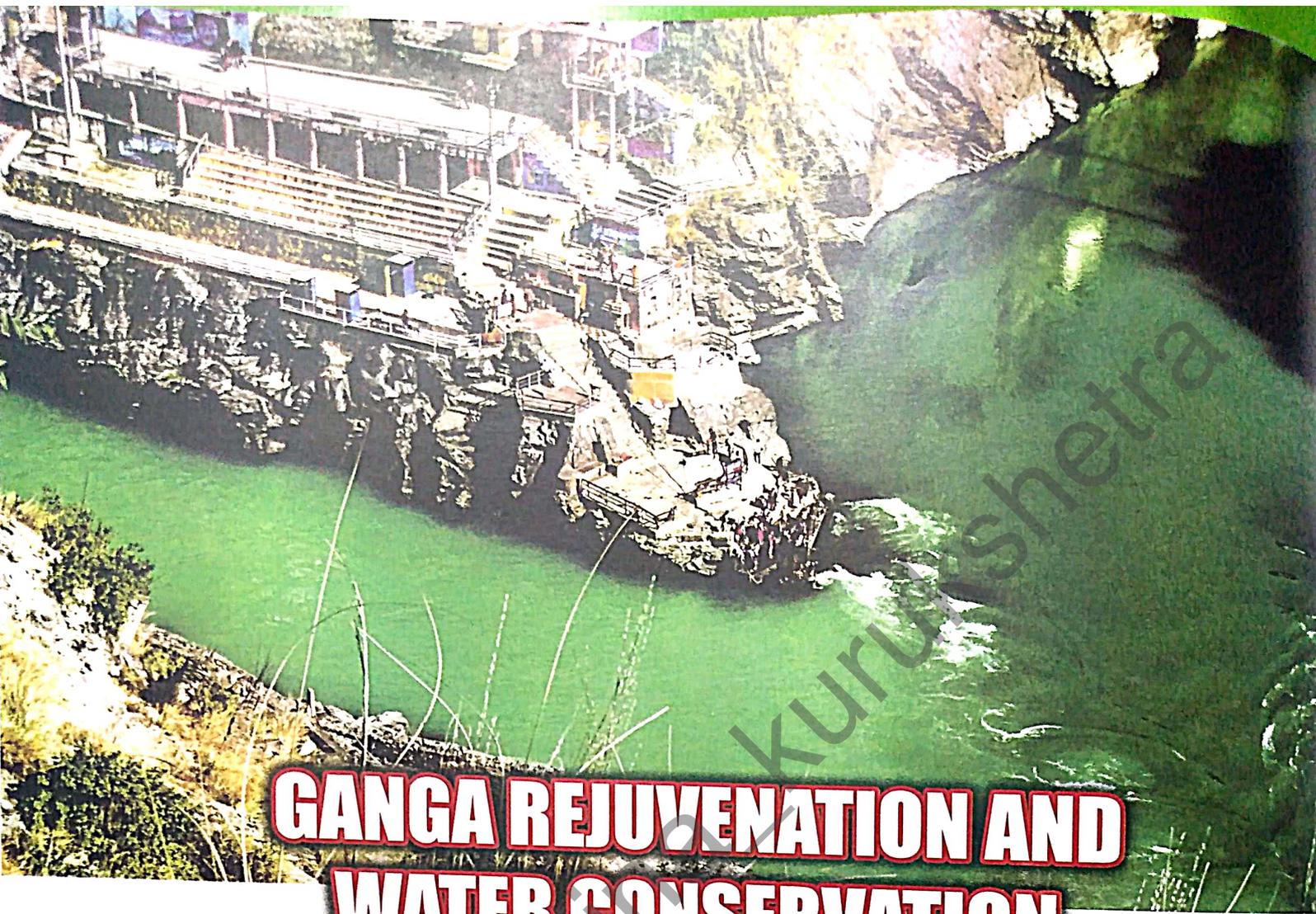
Suman Chakrabarti¹, SoyraGune², Tim A. Bruckner³, Julie Strominger⁴ & Parvati Singh^{5*}

We analyzed data from thirty-five Indian states and 640 districts spanning 10 years (2011–2020), with IMR and USMR per thousand live births as the outcomes.

Toilet access and child mortality have a historically robust inverse association in India. Toilets constructed increased dramatically across India following the implementation of SBM in 2014.

The post-SBM period in India exhibited accelerated reductions in infant and child mortality compared to the pre-SBM years. Based on our regression estimates, the provision of toilets at-scale may have contributed to averting approximately 60,000–70,000 infant deaths annually. Our findings show that the implementation of transformative sanitation programs can deliver population health benefits in low- and middle-income countries.

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GANGA REJUVENATION AND WATER CONSERVATION

DR SEEMA SINGH

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India's iconic River Ganga, revered as 'Maa Ganga', faces severe pollution and environmental degradation despite its cultural, spiritual, and ecological significance. Launched in 1986, the Ganga Action Plan aimed to reduce pollution, but its success was limited. The *Namami Gange* programme (2014) has made significant progress in sewage treatment, riverfront development, and public awareness. However, challenges persist due to inadequate infrastructure, climate change, and groundwater extraction. Restoring the Ganga requires collective effort, financial investment, and sustainable practices. It's not just an environmental challenge, but a moral and spiritual responsibility to safeguard India's heritage and future.

गच्छंस्तिष्ठन् जपन् ध्यायन् भुञ्जन् जाग्रत् स्वपन् वदन्।
यः स्मरेत् सततं गङ्गां स हि मुच्येत बन्धनात्॥

– Skanda Puran, Kashikhand, 27th Chapter, 37th Sloka



Just as a mountain struck by a thunderbolt disintegrates into hundreds of pieces, similarly, the mass of sins gets destroyed hundreds of times by the mere remembrance of Ganga. One who always remembers Gangaji while walking, standing, chanting and meditating, eating, drinking, waking up, sleeping and talking, becomes free from the bondage of the world."

Since the 20th century, the river Ganga has suffered severe pollution and environmental damage, leading to a high need for its rejuvenation and water conservation efforts. To meet this challenge, the Government of India, in collaboration with various non-governmental organisations (NGOs), scientists and activists, has launched several initiatives, including the famous *Namami Gange* project, which aims to clean and rejuvenate the river.

Ganga: Epicentre of Cultural and Spiritual Bharat & Saviour of Bharat

The Ganga is not just a river but a symbol of *Bharat's* cultural and civilisational heritage. It serves as both a lifeline and a spiritual source, supporting 40 per cent of the population. From *Gangotri* in the Western Himalayas, the 2,525-kilometer-long Ganga River emerges as the confluence of the *Bhagirathi* and *Alaknanda* rivers at Devprayag in Uttarakhand. Every 12 years, the Kumbh Mela is held on the banks of the Ganga at Haridwar and Prayagraj, transforming into a global spiritual gathering. Hindus believe that bathing in the Ganga washes away their sins and aids in attaining salvation, or *Moksha*.

The Ganga has the highest level of dissolved oxygen, giving its water a unique quality. The river basin contributes more than 40 per cent to India's Gross Domestic Product (GDP) and supplies almost one-third of the nation's surface water, with 90 per cent allocated for irrigation purposes. Although highly fertile, the Ganga river basin region harbours a population of more than 200 million people

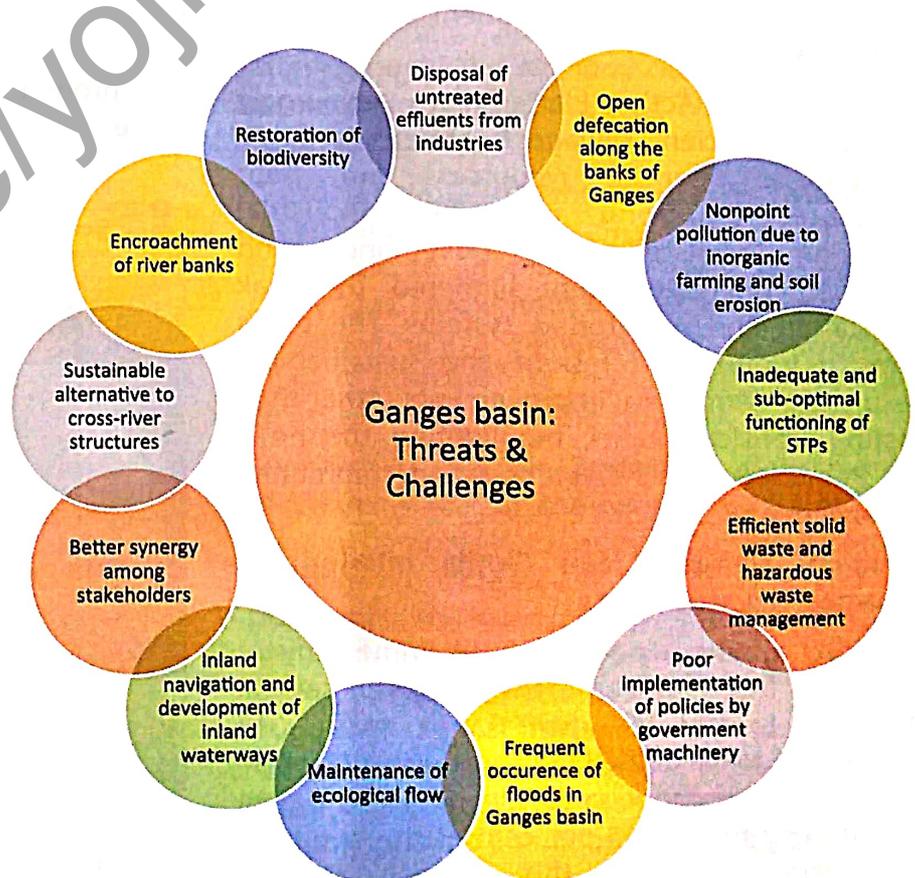
who are currently living in poverty. Nevertheless, the Ganga river is currently confronted with critical pollution, depletion of biodiversity, and environmental hazards, therefore jeopardising its sustainability.

Why Is Ganga Under Threat?

Industrialisation along both sides of the Ganga has significantly degraded the river's water quality. The continuous discharge of sewage, large volumes of industrial and solid waste, and extensive human and economic activities along its banks are the primary sources of pollution. Adopting a Western development model, coupled with inadequate infrastructure, poor environmental governance, and limited technical expertise, has further worsened the purity of the Ganga's waters.

Ganga Action Plan (GAP)

The Ganga Action Plan (GAP) was launched by the Government of India in 1986 with the main objective of reducing pollution in the river Ganga and improving its water quality. The initiative was launched under the leadership of then Prime Minister Rajiv Gandhi after concerns were raised over the increasing pollution of



the Ganga due to untreated sewage, industrial effluents and religious material. The objective of the scheme was to set up sewage treatment plants, improve sanitation infrastructure and control industrial effluents. Although the goals of the plan were ambitious, its success was limited due to challenges such as inadequate infrastructure, weak implementation and limited public awareness. Despite this, the Ganga Action Plan laid the foundation for future initiatives such as the *Namami Gange* programme.

The Ganga Action Plan aimed to improve water quality, control pollution sources, encourage research and development, adopt new technologies, and restore biodiversity. It focused on treating domestic sewage, industrial waste, and contaminants before entering the Ganga. Phase 1 cost Rs 452 crores, but inadequate resources led to Phase 2 (1993-1996), which expanded to include other rivers in India and was later extended to other rivers following the National River Conservation Plan.

The Ganga Action Plan, despite not achieving its full goals, made significant progress in addressing pollution, improving water quality, completing 652 projects under Phase 2, and constructing 35 sewage treatment plants across five states.

The Ganga Action Plan's failure was largely due to insufficient sewage treatment facilities, inadequate financial resources, and poor collaboration among authorities. Industrial pollution persisted, and governance and enforcement issues were hindered by weak legislation and monitoring systems. The plan's lack of long-term foresight and sustainability resulted in temporary improvements rather than lasting transformations, highlighting the need for improved public awareness and community involvement.

Namami Gange (Clean Ganga Mission): A Journey Towards Purity

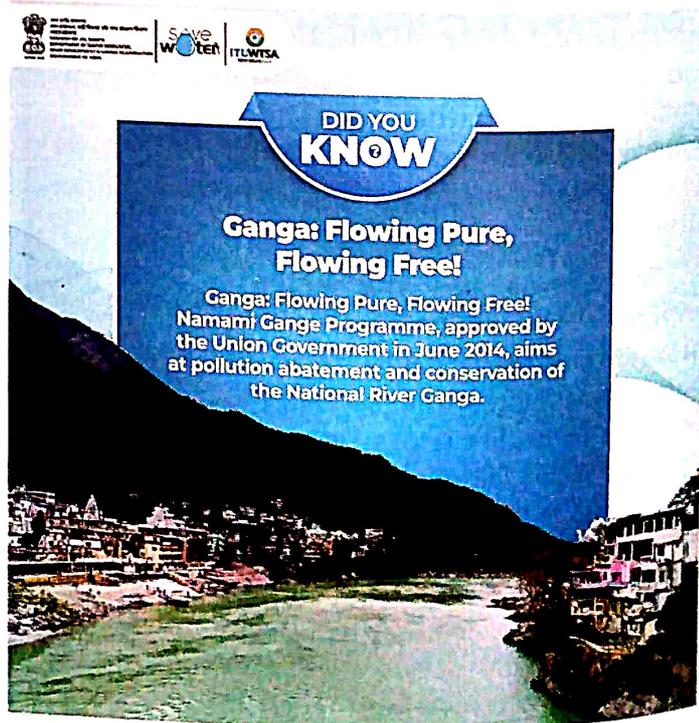
After coming to power in 2014, Prime Minister Narendra Modi's government has taken several steps to protect the river Ganga. In a 2014 speech at New York's Madison Square Garden, Prime Minister Modi said, "Cleaning the Ganga will greatly benefit 40 per cent of the country's population. Therefore, this effort is also an



economic agenda."

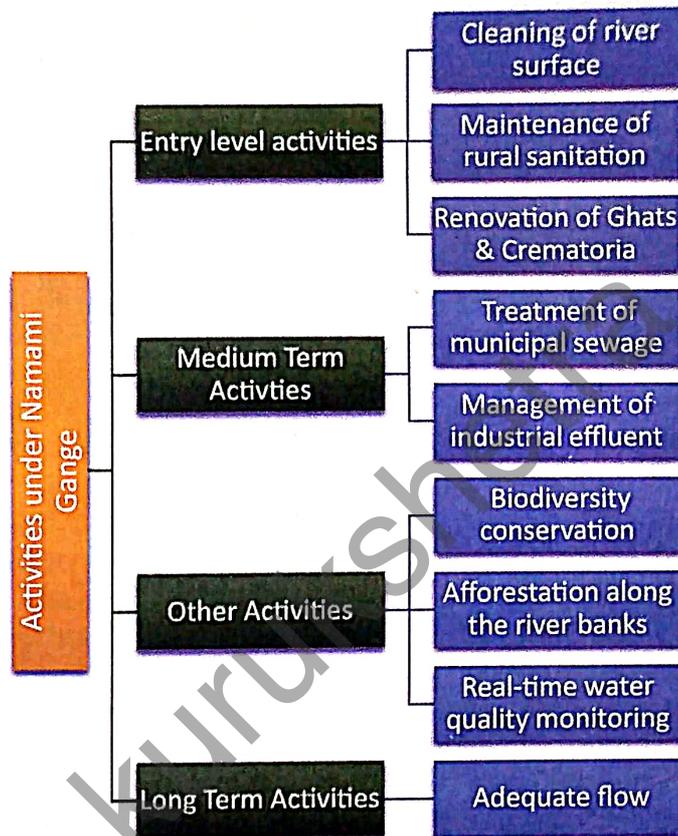
In 2014, the Government of India launched the 'Namami Gange' mission to rejuvenate the river Ganga. The action plan, approved by the Union Cabinet, increased the budget fourfold and became a central sector scheme. In 2016, the government established the National Council for River Ganga (Rejuvenation, Protection and Management) to prevent pollution and rejuvenate the Ganga Basin. The program focuses on sewage treatment infrastructure, river-surface cleaning, afforestation, industrial effluent monitoring, riverfront development, biodiversity, public awareness, and *Ganga Gram*.

The *Namami Gange* Programme, aims for sustainable development of the Ganga River Basin. Between 2015 and 2021, 815 new sewage treatment plants (STPs) were installed or proposed to reduce untreated sewage impact. Varanasi now has seven STPs, four built under the program. Sustainable sanitation practices are encouraged, and the National Ganga River



Basin Authority oversees project implementation. Community engagement platforms, such as *Ganga Vichar Manch* and *Ganga Praharis*, engage local communities. The Ganga Knowledge Centre (GKC) improves NGRBA programmes, and the Centre for the Management and Studies of the Ganga River Basin (cGANGA) promotes sustainable development.

The *Namami Gange* programme has achieved several milestones, including 200 sewerage projects approved for Rs 31,810 crore, 116 of which have been successfully implemented. The programme also focuses on riverfront development, collecting and disposing of floating solid trash, and restoring indigenous and imperilled species in the Ganga River ecosystem. The Wildlife Institute of India, Central Inland Fisheries Research Institute, and Uttar Pradesh State Forest Department are working on projects to restore aquatic species. The Forest Research Institute has drafted a comprehensive project report for afforestation activities, aiming to enhance forest production and biodiversity. The programme has also implemented public awareness initiatives and industrial effluent monitoring, along the Ganga River drainage system. The Ministry of Drinking Water and Sanitation has designated 1,674 *Gram Panchayats* and implemented rural sanitation programmes in Jharkhand.

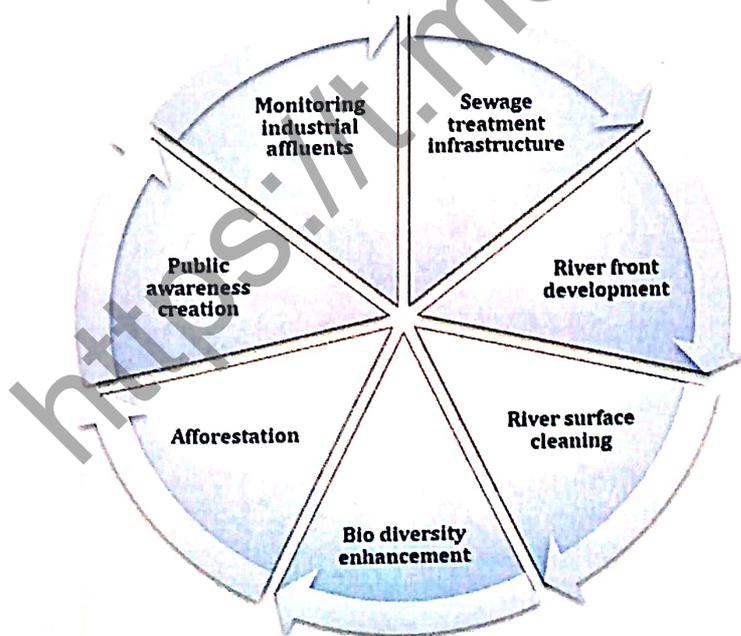


More Efforts Are Required

In an audit report of 2017, the Comptroller and Auditor General (CAG) of India identified substantial shortcomings in the financial management, planning, execution, and monitoring of the *Namami Gange* project. As a result of these issues, the programme's objectives have been delayed.

India's substantial monsoon rains, responsible for 80 per cent of the nation's overall precipitation from June to September, present two primary challenges. Throughout the monsoon season, the treatment plants experience an overwhelming influx of both sewage and rainwater, resulting in an insufficient processing capacity.

However, for the remaining eight months of the rainy season, the river's insufficient water content hampers its capacity to dissolve pollution, causing an increase in the concentration of pollutants. The government is confronted with the task of adequately managing pollution during these periods of drought, when the sluggish flow of the river fails to efficiently remove contaminants. Nevertheless, except for these exceptional instances, the river maintains a highly pristine condition owing to its inherent



DID YOU KNOW?

"Sanitation for All: Building a Cleaner Ganga Basin!"

Sanitation efforts have led to the construction of over **8,53,397** toilets in **1674** Gram Panchayats along the **Ganga**.

robustness and structural integrity. Consequently, sewage treatment plants (STPs) reach their maximum capacity during the monsoon season and are unable to manage elevated levels of pollution throughout the dry season. Furthermore, companies that were closed due to their contribution to pollution in the tributaries of the Ganga river are frequently permitted to resume operations or operate unlawfully, therefore underscoring the lack of uniformity in pollution management.

An analysis, published in Nature's Scientific Reports, has revealed that the river experiences a significantly reduced water flow during the

summer season. The projection indicates that in the next few years, the extensive section of the river extending from Varanasi to Kolkata will experience minimal water flow throughout the months without monsoon season. The study indicates that the river's groundwater flow may have declined by 50 per cent since the 1970s as a result of excessive extraction of groundwater. Over the next three decades, this could potentially decrease by as much as 75 per cent in comparison to the 1970s, resulting in higher pollution levels due to the decreased solubility of sewage and other contaminants. If prompt measures are not implemented to regulate groundwater extraction within the 2-3 kilometre region of the river, certain sections of the river may go extinct in the next decades. This will have a profound effect on the ecology of the river and the towns that rely on it for irrigation, drinking water, and industrial purposes. Furthermore, several studies indicate that climate change could impact the flow of rivers. However, this study precisely quantified the extent of decrease in base flow and groundwater extraction by utilising extensive satellite data, hydrological modelling, and other analytical techniques. Between 1999 and 2013, the study revealed that the rate of groundwater depletion during summer ranged from 0.5 to 38.1 cm per year. If the present pace of groundwater extraction persists, the Indo-Gangetic region could experience a substantial decline in food production.

DID YOU KNOW?

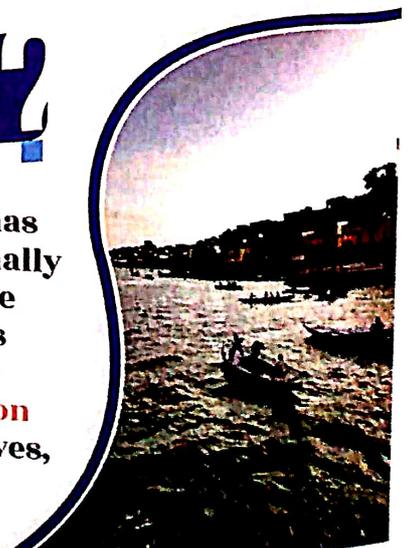
Rooting for a Greener Ganga

Forestry interventions along the Ganga have been implemented over **1,34,106** hectares, improving the flow and conserving biodiversity.



DID YOU KNOW?

Namami Gange has been Internationally recognized by the **United Nations** as one of the **Top 10 'World Restoration Flagship'** initiatives, earning **Global acclaim!**



Common Cause

Restoring the River Ganga is an exceedingly intricate endeavour owing to its profound socio-economic and cultural importance, alongside persistent exploitation. This extensive and multifaceted initiative has not been undertaken before on a worldwide scale and necessitates cooperation among several sectors and the involvement of every eligible individual. Individuals can make diverse contributions to further the sanitisation of the Ganga. Contributions of money are one of the main methods to express assistance. The process of restoring the health of a river as extensive and densely inhabited as the Ganga necessitates a substantial financial investment. Although the government has substantially expanded the budget, it may still be inadequate. The Clean Ganga Fund has been created to enable public involvement by offering a formal forum for individuals and organisations to make financial contributions towards the cause. A further essential

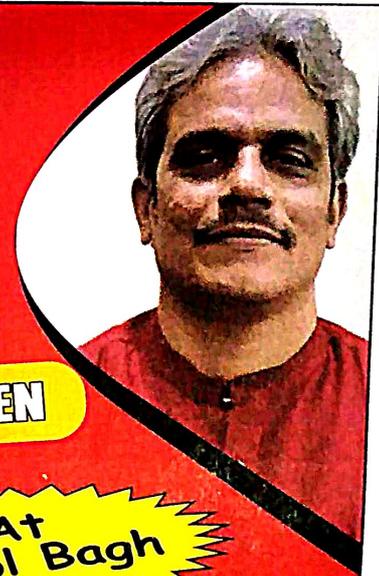
strategy is to embrace the concepts of minimising, repurposing, and reclaiming. An often overlooked fact is that the inadequate management of domestic garbage and wastewater can ultimately lead to the pollution of waterways.

Acknowledging the intricate and multifaceted character of the Ganga rejuvenation initiative, attempts have been undertaken to enhance collaboration among several ministries and between the central and state governments. This entails increased participation in the planning process and enhanced monitoring at every level of government. Although the government's primary emphasis is on constructing sewage infrastructure, residents have the opportunity to make a valuable contribution by reducing their water consumption and waste generation. Efficiently reusing and recycling water, organic trash, and plastic can significantly reduce the strain on river restoration endeavours. □

(The co-author, Vinayak Sharma, is a PhD Scholar in the Department of Law at the University of Delhi.)

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After Cleaner Ghats, Ganga at Varanasi to be Pollution-free too

All who have been enjoying cleaner ghats at Varanasi would also soon bask in the pollution-free waters of the Ganges flowing by the spiritual city. Under Namami Gange programme, an all-encompassing approach has been employed

to arrest pollution flowing into the river and ensure clean ghats. From sewage treatment plants to ghat improvement to river surface cleaning, several steps in a time-bound manner are being taken in Varanasi by National Mission for Clean Ganga to rid the city of river pollution.



On the sewage management front, Varanasi town currently generates an estimated 300 MLD of sewage, which is expected to increase to 390 MLD by 2030. From the current capacity of three existing sewage treatment plants – Dinapur, Bhagwanpur and DLW, only 102 MLD of sewage is being treated while the remaining flows directly into river Ganga through Varuna and Assi rivers. To bridge this gap, a 140 MLD STP at Dinapur and a 120 MLD STP at Goitha are being constructed under Japan International Cooperation Agency (JICA) assisted project and JNNURM scheme respectively. These projects are at advanced stage of construction.

Apart from this, a 50 MLD STP at Ramana has also been awarded under Hybrid Annuity based PPP model to exclusively address the sewage treatment requirements of Assi BHU area. Concession agreement for this project has already been signed. Together, these STPs will create sewage treatment capacity of 412 MLD, adequate to meet the sewage treatment demands of the town till 2035.

In addition, the works on interceptor sewers for rivers Varuna and Assi, development of three pumping stations at Chauka ghat, Phulwaria and Saraiya, rehabilitation of old trunk sewers and rehabilitation of ghat pumping stations and existing STPs are also underway to improve the entire sewage management infrastructure in Varanasi. Evidently, no stone is being left unturned.

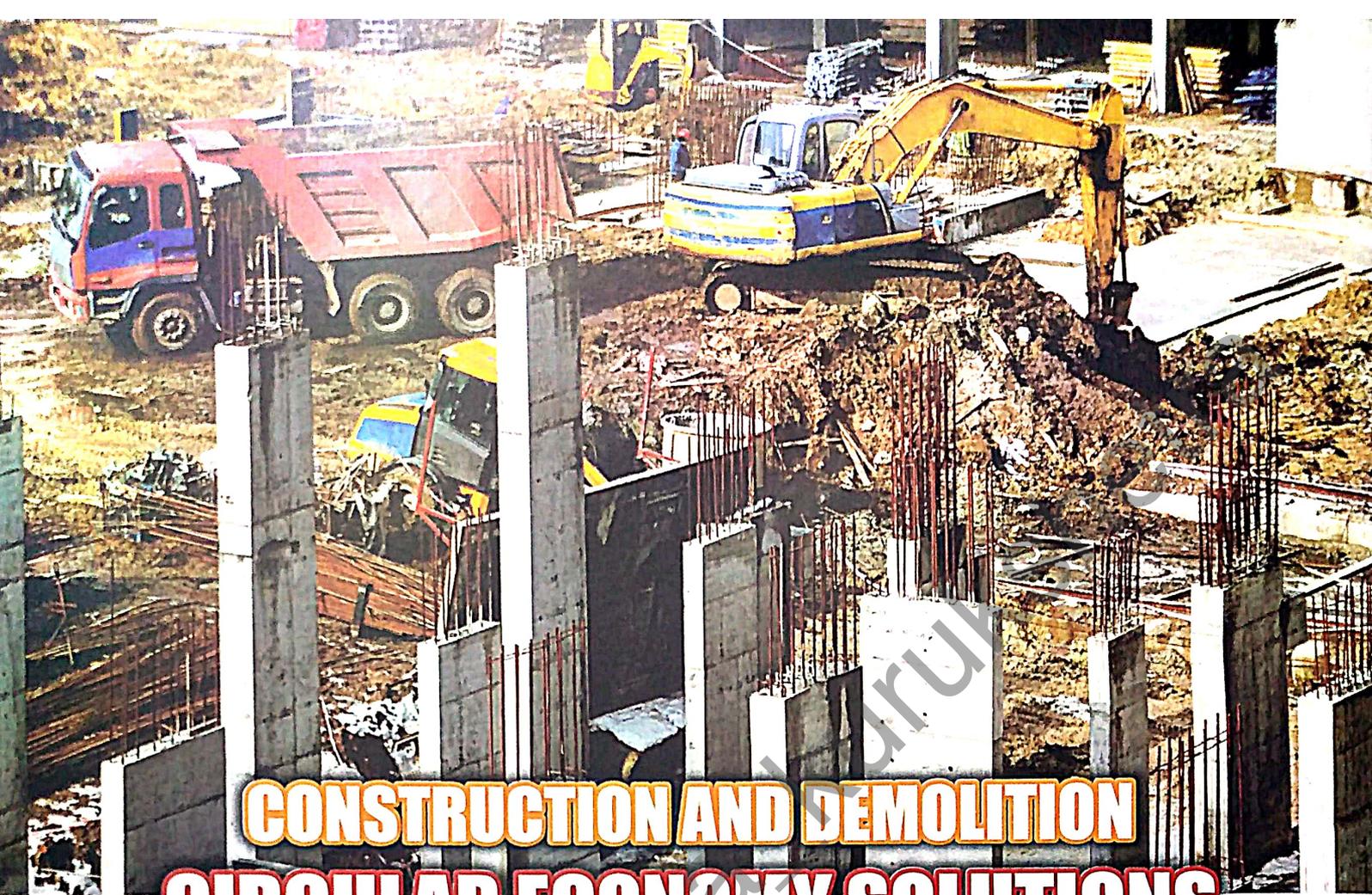
To address the concerns of floating waste on the river, a trash skimmer is operational in Varanasi since April 2017 under river surface cleaning component.

A cleaner Ganga would be incomplete without equally cleaner surroundings. Acknowledging this, the Government of India last year initiated cleaning works at 84 iconic and heritage ghats of Varanasi under *Namami Gange* programme which has shown positive results.

Besides, works for construction of 153 community toilet complexes at an estimated cost of Rs 20.07 crore have been awarded out of which the works for 109 toilets have already been completed and they are being used by 15,000 to 20,000 people every day. Also, ghat improvement works at 26 locations have been taken up in addition to repairing works at as many identified locations. In a bid to arrest the pollution from cloth washing activities on ghats, four dhobi ghats—Pandeypur, Nadesar, Bhavania Pokhran and Konia - have already been renovated while construction of three other at Bazardiha, Machodari Slaughter House and Bhawania Pokhri (extension) is underway. Whereas several users of the dhobi community have shifted to the new ghats, many more are being pursued for the same.

In a nutshell, a focused and output-driven approach to make river Ganga pure in Varanasi has yielded results. The objective of *Nirmal Ganga* will now not remain just a dream for Varanasi city. □

Source: PIB



CONSTRUCTION AND DEMOLITION CIRCULAR ECONOMY SOLUTIONS

SARITHA S

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India's construction sector is a significant contributor to the country's economy in terms of its contribution to GDP, infrastructure investment, steel consumption and cement consumption, and it also provides employment to millions. Meanwhile, the construction sector threatens environmental sustainability by creating enormous amounts of solid waste and pollution. One-third of India's total solid waste is Construction and Demolition (C&D) waste. Implementing circular economic solutions can significantly reduce Construction and Demolition (C&D) waste, promoting sustainable development and a more efficient construction industry.

The Government of India's *Swachh Bharat Mission*, launched in 2014, has set a target to create a cleaner, healthier and more beautiful India through sustainable waste management. Sustainable waste management includes minimising waste

generation (reduce), extending product life span (reuse), convert waste into resources (recycle), reclaiming energy and materials from waste (recover), and then safe and environmentally friendly disposal of the residue (dispose). These are, in fact, the principles of a circular economy.

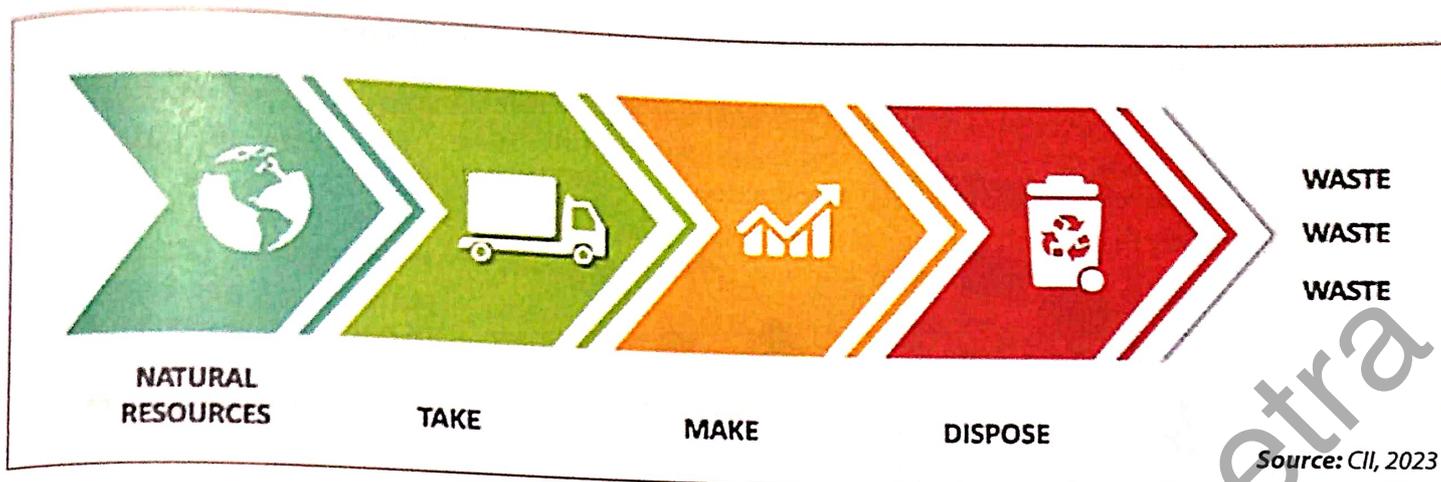


Figure 1: Different stages of linear economy

Linear and Circular Economic Systems

For decades, we have been following the 'linear economic system', which is a 'take-make-waste' model. In this system, raw materials and resources are extracted from the environment to manufacture products. These products are then consumed and eventually discarded as waste at the end of their lifecycle. This approach is not sustainable as it assumes abundant resource availability, and the resources can be extracted indiscriminately without much consequence. However, with the increase in population and urbanisation, demand for goods and services has risen significantly. Continuing with the linear economic system leads to resource depletion, environmental degradation, biodiversity loss, and a growing waste problem.

One of the major negative impacts of the linear economy is waste generation. After the products are utilised and when they reach the end of their lifecycle, they are discarded as waste, marking the termination of their utility. There is enormous waste generation during the resource extraction and manufacturing of products. The waste ends up in landfills, incinerators, or even in dumpsites or natural environments, contributing to environmental degradation and hazardous health issues.

Meanwhile, 'Circular Economy' is an economic system that focuses on reducing waste and controlling pollution by keeping products and materials in use for as long as possible. It is a 'closed-loop system' that minimises the use of virgin resources and maximises the reuse and recycling of materials. The circular economy ensures sustainable development by taking a holistic approach

to economic development. It considers the environmental and social impacts of all economic activities. In a fully circular economy, waste is minimised by designing products and industrial processes in a manner that keeps resources in use in a perpetual flow. It also ensures that unavoidable waste or residues are recycled or recovered.

The Importance of the Construction Sector in India

The global construction industry is the single largest consumer of resources and raw materials. In India, construction accounts for around 20 per cent of total material demand. The Indian construction sector is poised to become the third largest globally. It contributes to more than 8 per cent of GDP at present and will play an increasingly important role in the population increase and eventual demand for building expansion. The affordable housing shortage is expected to reach about 38 million units by 2030. To meet the needs of its rapidly urbanising population, India must build 700-900 million square metres of new commercial and residential space every year—the equivalent of what now exists in Chicago. Initiatives by the Government of India, such as the Smart Cities Mission, the development of industrial corridors, the *Swachh Bharat Mission*, and city renewal schemes like the 500 AMRUT cities, are accelerating investment in the construction of urban infrastructure. Research by the McKinsey Global Institute indicates that India needs to invest Rs77 lakh crore (US\$ 1.2 trillion) in city infrastructure by 2030. Large-scale construction projects for housing, industry and infrastructure development are being implemented across the country.

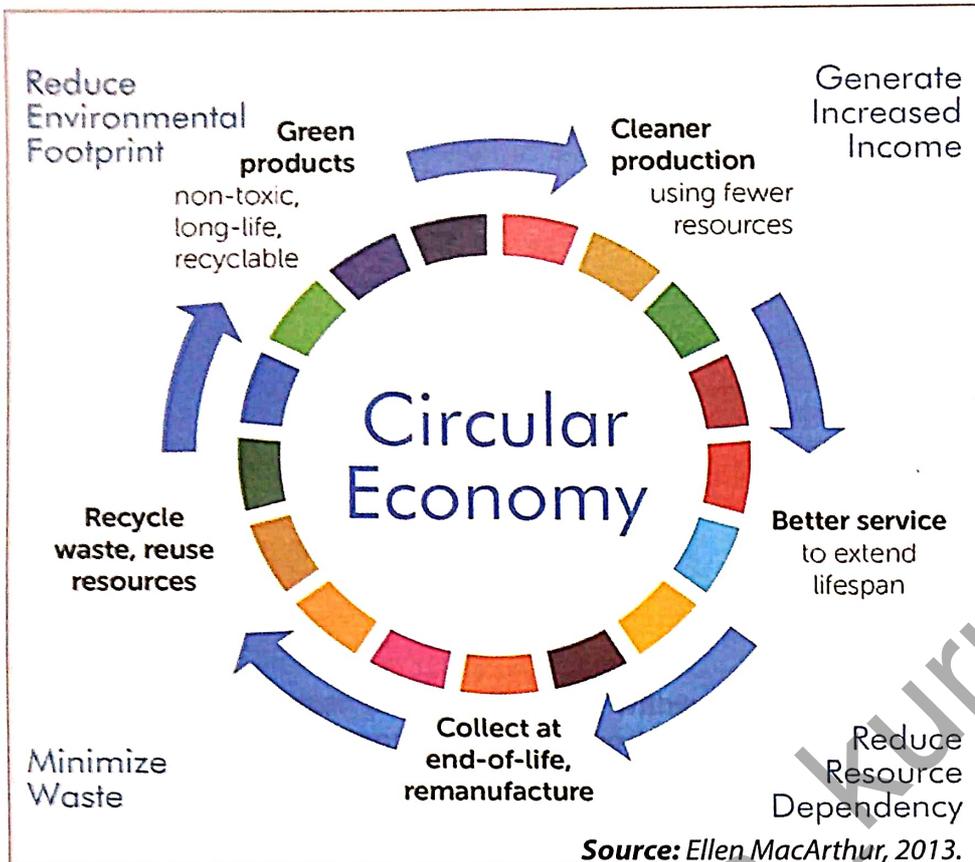


Figure 2: Circular Economy Diagram

In line with global averages, construction and demolition waste is significant, generating about one-third of India's total solid waste and one-fourth of Municipal Solid Waste (MSW). Development of economic zones, industrial corridors, redevelopment & rehabilitation works, besides repairs & renovation, contributes to the magnitude of C&D waste. This waste material goes to landfills or gets dumped in the streets. India could realise the value of these materials, as well as economic and environmental benefits, by finding uses for these materials. For example, the processing of recycled aggregates generates 40 per cent less GHG emissions than the processing of virgin aggregates. Recycling of construction waste offers the opportunity to reduce consumption of virgin materials.

General Composition of Construction and Demolition (C&D) Waste

The average generation of C&D waste in India is approximately 12 million tonnes per year, i.e., 20-25 per cent of total MSW generation in the country. The constituents of C&D waste generated and their quantities vary from city to

city and from region to region due to different construction practices. The representative C&D waste in urban areas consists of soil, sand and gravel (47 per cent), bricks and masonry (32 per cent), concrete (7 per cent), metal (6 per cent), wood (3 per cent), and others (5 per cent). Bricks, tiles, wood and metals are sold for reuse or recycling. The remaining materials generally reach landfills.

Role of Circular Economy in the Construction Sector in Managing C&D Waste

A linear model of consumption is no longer sustainable as limited resources cannot meet our endless demand. Avoidance of waste formation is the best option for environmental protection compared to any other waste

management options. The circular economy principles of reducing waste, reusing, and recycling resources and products are often called the 3R's. Waste management systems often use the '3R principle' to conserve resources.

Approximately 95 per cent of C&D waste can be reused or recycled if processed scientifically. However, due to the current lack of infrastructure for processing C&D waste, most of the C&D waste reaches landfills or is mixed with other municipal solid waste (MSW). This adds to MSW's processing challenges. India possesses huge potential in recycling and reusing processed C&D waste. It can be a substitute for virgin construction materials, which are in high demand. Realising this opportunity, NITI Aayog, together with relevant ministries, are encouraging maximum recycling and reuse of C&D waste. (GOI, 2021). As new building technologies and business models emerge, urban planning should adopt circular economy principles. The circular economy approach will help India ensure better welfare by creating high-quality spaces where people can live, work, and play.

Table 1. Benefits of implementing circularity in C&D waste management

Economic and Social Benefits	1. Scientific C&D waste management prevents the mixing of C&D waste into the MSW stream, thus reducing processing costs and increasing the efficiency of MSW.
	2. C&D waste management prevents clogging of drains and water bodies, therefore averting flooding in urban areas.
	3. Proper management and recycling of C&D waste leads to saving of precious land by reducing the volume of inert going to landfill.
	4. C&D waste processing and recycling generates employment through new enterprises.
	5. Use of C&D recycled products helps in reducing the demand and requirement for virgin material and natural resources.
Environmental Benefits	1. Scientific C&D waste management suppresses dust generation. Thus, it significantly reduces air pollution.
	2. Prevention of unauthorised dumping of C&D waste in drains and hydrological channels reduces chances of flooding.
	3. Utilisation of recycled products from processed C&D waste helps in reducing the environmental impacts of mining.

Source: GOI, 2021

Potential of C&D Waste for Circularity

Circular Economy is promoted by material reuse or recycling, either directly or indirectly. It ensures that maximum materials are retained in the loop. There are various methods to be followed to ensure the circularity of construction materials, as follows:

- Adaptive Reuse:** A method to reuse the whole or part of a redundant structure.
- Deconstruction:** Careful dismantling, which maximises the recovery of components for reuse.
- Design for Deconstruction (DfD):** The designing method that enables quality and quantity of materials to be reused at the end of a building's life.
- Design for Reuse (DfR):** Incorporating the use of reclaimed components in the design of new structures.
- Design for Longevity (DfL):** The principle that current buildings in their planning phase itself should be planned for long-term use. The construction materials should be of high quality for expanding the life of the building.

Complete circularity in C&D waste management can be achieved only when a

sustainable and comprehensive strategy and action plan are prepared and implemented throughout the lifecycle of construction projects in various phases: (GOI, 2021)

- Planning phase (during the project appraisal and preconstruction activities)
- Construction Phase (during construction)
- Operation, Repair and Maintenance Phase (all

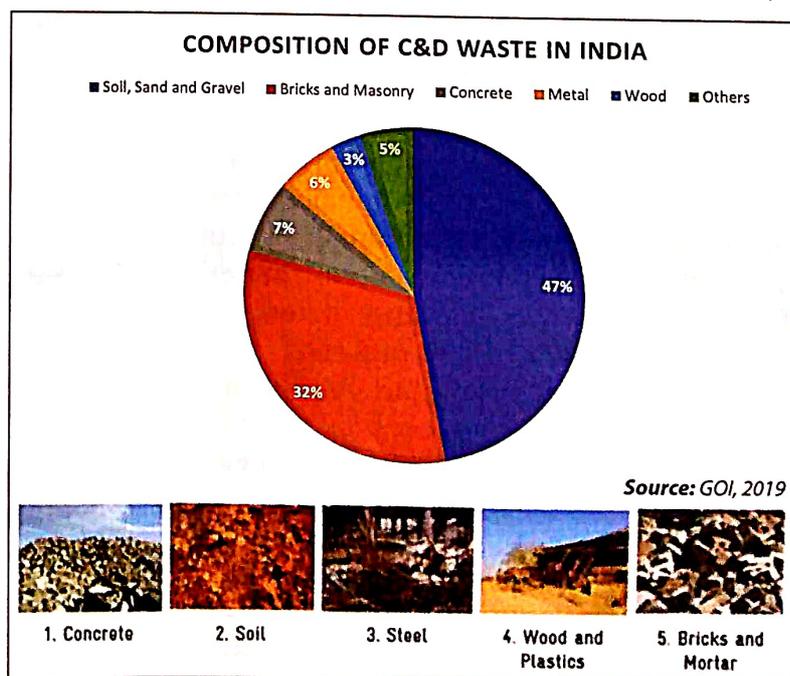


Figure 3: Composition of C&D waste in India

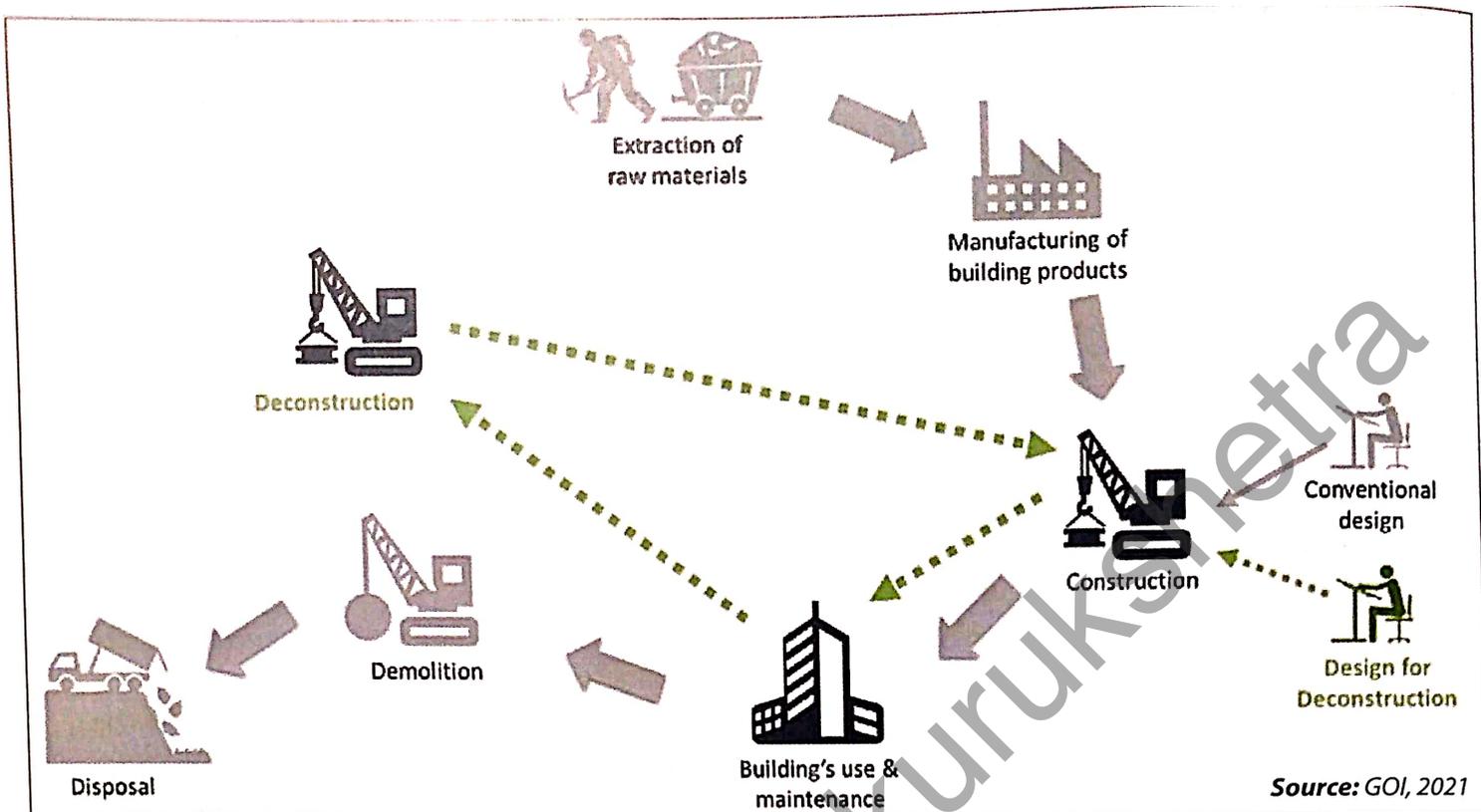


Figure 4: Circularity in C&DWM: Building life cycle with conventional method and design for deconstruction (DfD)

- over the lifespan of a structure)
- d. Dismantling phase (at the end of the lifespan of a project for recycling and reuse of demolition waste)
 - e. Collection, processing and recycling of C&D waste
 - f. Production of recycled products and use of recycled material for further construction activities

Selection of the materials for initial construction is important. Regionally appropriate, renewable, non-toxic materials should be selected. Retaining construction materials at their highest value (without damage during demolition) makes them reusable. It reduces demand for non-renewable, virgin materials and hence reduces greenhouse gas (GHG) emissions and excess energy use. Leveraging tracking technologies such as Radio Frequency Identification (RFID) can help in circularity by predicting material performance, supportive designing for disassembly and enabling preventive maintenance. These technologies support the use of buildings as material banks.

They identify materials for reuse after the lifespan of the building and retain value by keeping materials in tighter loops of circularity.

Conclusion

The introduction of a circular economy in the construction sector creates opportunities for innovations in cutting down on raw materials and reducing residual and waste matter. It improves the quality of the construction and reduces the cost of construction as well as maintenance throughout the lifecycle of the structure. Developing the building construction and infrastructure following circular economy principles can avoid getting locked into resource-ineffective systems in the long term. In line with the current pace of construction and compared with the current development path, it is estimated that complete adoption of circular economy practices could create annual benefits of Rs 4.9 lakh crore (US\$ 76 billion) in 2050, together with environmental and social benefits. Resource use in the construction of new buildings would also fall, with 37 per cent less virgin, non-renewable materials needed, 24 per cent less water consumed, and 18 per cent less inner-

city land used in the circular scenario compared with the current development scenario. It will also reduce negative externalities by reducing greenhouse gas (GHG) emissions by 40 per cent at the time of the construction of buildings and energy use for cooling during its lifespan. Transforming building design by adopting circular economy concepts can contribute to creating resilient cities, significantly reducing the consumption of virgin, non-renewable materials. The C&D Waste Management Rules, 2016 by the Ministry of Environment, Forests and Climate Change (MoEF&CC) have energised the activities of the construction sector in tune with the circularity approach. Focused government initiatives suggest that the time is ripe for India to embrace circular economy principles in all sectors, including the construction sector. □

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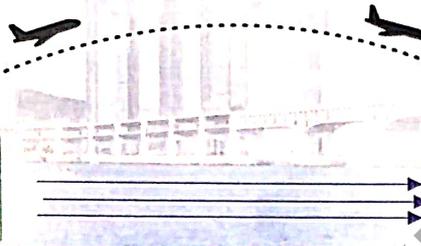
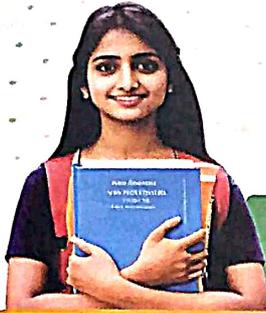


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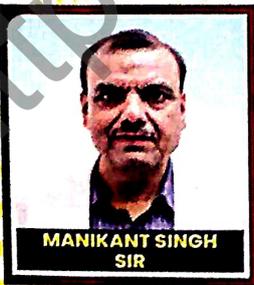


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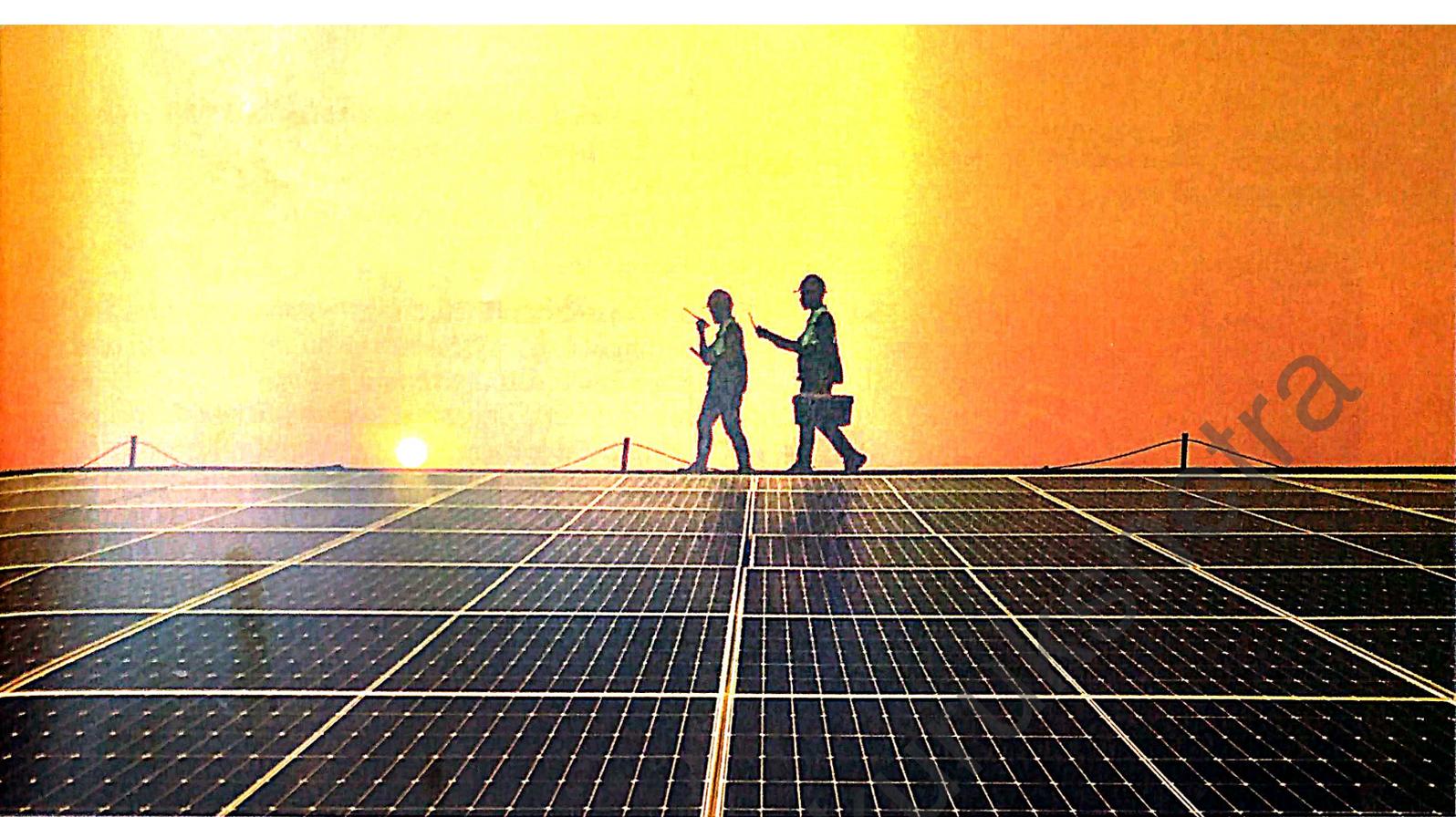


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Smart Grids and Renewable Energy: Powering Rural Sanitation

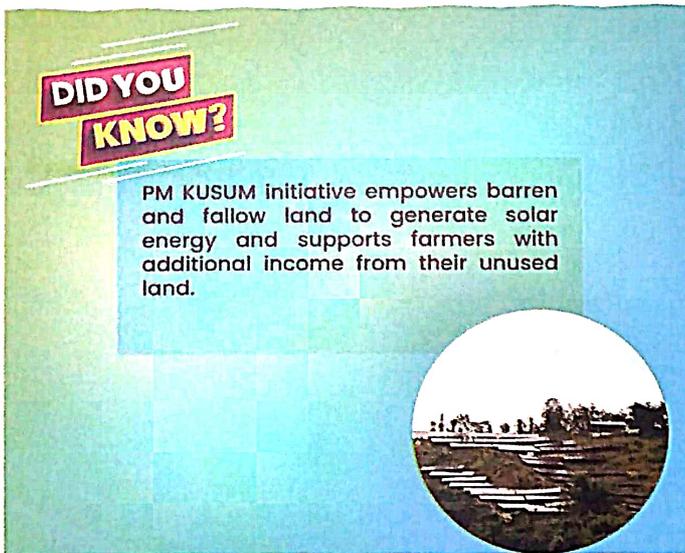
ASHOK KUMAR

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Access to water and sanitation is essential for the health and well-being of individuals and communities. The integration of Smart Grids and Renewable Energy offers an opportunity to ensure reliable power supply for rural sanitation initiatives, such as water pumping and waste management. The *PM-Surya Ghar Yojana* is set to be a game changer by empowering rural households with affordable solar energy. Solar PV systems, particularly through microgrids, can help *Gram Panchayats* reduce electricity costs and provide reliable power for sanitation efforts, aiding India's goal of carbon neutrality by 2070.

Providing a consistent power supply in rural areas remains a challenge. A stable power supply is vital for the availability of clean water and its access is intrinsically linked to sanitation. Climate

change is expected to worsen water scarcity and a lack of basic hygiene practices will heighten the risk of disease transmission. The Smart Grid and Renewable Energy integration creates an opportunity for efficient rural sanitation.



Smart Grid

It is an electric grid enabled with automation, communication and IT systems that monitors power flows from point of generation to point of consumption, controls the power flows and curtails the load to match generation in real time. Smart grid solutions contribute to integrating consumer and renewable power sources, reduce transmission and distribution losses, peak load management, increase reliability and offer additional features. Smart grid facilitates faster restoration of services on outages, as it has an automated outage management system. Real-time monitoring and recording of power measurement at the consumer end makes it possible to implement dynamic pricing mechanisms based on 'Time of the Day' (TOD) consumption patterns, which helps in the reduction of peak load demand. Peak hours' tariff being highest discourages consumption. Off peak hours incentivise consumers for a reduced tariff during night/off peak time. It has features of sharing information through web portals or mobile apps, giving consumers the opportunity to track their consumption and reduce it.

Smart Grid also facilitates widely spread generation by allowing movement and measurement bi-directionally and net metering, which helps prosumers (producer and consumer) to connect with the grid. Smart grid integrates generation sources and consumers in a safe manner.

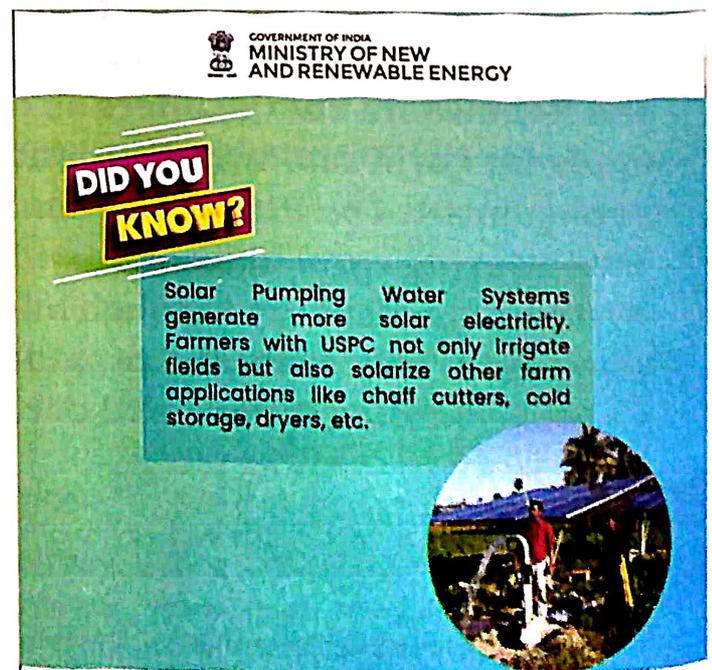
Smart grid utilities have better information and control over the distribution network and better asset management. With Smart Grid deployment, utilities have improved their financial health.

Microgrid

A microgrid is an integrated energy and communication system consisting of interconnected loads and distributed energy sources. It can operate in stand-alone or parallel mode with the grid (macro grid) in case of emergency. Microgrid generation sources include solar, wind, microturbines or other small energy sources. Its ability to isolate from larger networks along with dispersed generation sources makes microgrids a highly reliable source of electric power for its customers.

Drinking Water

In the *Jal Jeevan Mission*, the Government of India has envisaged making available safe and adequate drinking water to all households in rural India through individual household tap connections by 2024. As its mandatory elements, sustainability measures are to be implemented, such as rainwater harvesting, recharge of groundwater, graywater management and water conservation. It is a community-based approach to water where the active participation of people is crucial and includes extensive communication along with information sharing, educating the people and having them as key components of the mission. It necessitates water to be everyone's priority, and citizens are



connected with the initiative as 'Jan Andolan' (people's movement).

Rural Sanitation

Under the *Swachh Bharat Mission* (SBM) launched by the Prime Minister on 2 October 2014, all village Gram Panchayats, Districts, States and UTs have declared themselves 'Open Defecation Free' (ODF) by 2 October 2019, the 150th birth anniversary of Mahatma Gandhi. This great feat was achieved by constructing more than 100 million toilets in rural India. To attain sustainability in the use of these toilets, a consistent water supply is essential, despite the fact that water scarcity exists in many rural communities. Along with supplying drinking water, ensuring water availability for toilets has become a top issue. In most cases, people use the same water for flushing toilets as they do for drinking, but using graywater or recycled water for flushing can reduce the demand for clean and safe water.

Sanitation coverage in the country has improved from 39 per cent in 2014 to 100 per cent in 2019 under the *Swachh Bharat Mission* launched in 2014. Encouraged by the achievements of the *Swachh Bharat Mission*, Phase-2 has been launched by the government, and under it the focus is being directed to ensure that the open defecation behaviours are eliminated and waste management facilities are made accessible in villages. However, it poses a great challenge for creating the requisite

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infrastructure and its operational mechanism for waste management. The work is enormous and widespread. It requires not only the creation of physical infrastructure facilities but also making available the required power supply to run these facilities. Proper operation is dependent on the availability of a consistent and quality power supply, which is typically difficult to get in remote locations.

Sustainable Development Goals

India's achievements of SBM are consistent with the SDG target 6.2, which essentially eliminate 'open defecation' nation-wide.

PM-Surya Ghar: Muft Bijli Yojana

To increase the share of solar rooftop capacity and empower residential households to generate their own electricity, the Government of India has launched the *PM-Surya Ghar Yojana* on 29 February 2024. Local bodies' capabilities have been leveraged to reach the consumers and ensure the convergence of stakeholders at the ground level. For each installation in the residential segment under *PM-Surya Ghar: Muft Bijli Yojana*, Central Financial Assistance shall be transferred to the concerned consumer through the National Portal under the scheme guidelines.

The scheme includes an incentive of Rs 1000 crores for local bodies, aiming to incentivise urban and local bodies as well as *Panchayati Raj* Institutions at Gram Panchayat level to promote

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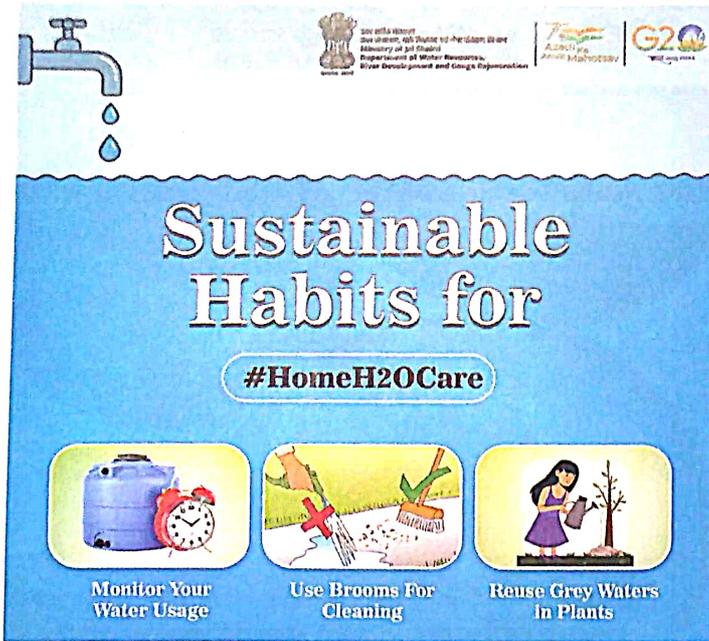
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residential rooftop solar (RTS) installation within their respective jurisdictions and undertake local mobilisation efforts to maximise the number of installations under this scheme.

The governing bodies are also expected to bring together the major stakeholders, viz. consumers, residential welfare associations, DISCOMs, banking institutions, local contractors and community members, to effectively promote and manage rooftop solar projects. They are expected to provide training opportunities on technical, financial and regulatory aspects, inter alia, to advance local expertise and knowledge in RTS adoption in the country.

Urban Local Bodies and *Panchayati Raj* Institutions are tasked with undertaking scheme promotion activities within their respective areas through awareness campaigns and door-to-door mobilisation through their field units and convergence of stakeholders by hosting local melas and bringing together DISCOMs, vendors and banking institutions in the area for quick process of applications and implementation. It is well realised that local bodies can play an active role in generating demand, facilitation with financial institutions, awareness creation, community mobilisation and coordination with DISCOMs.

Access to water and sanitation is essential for the health and well-being of individuals and communities. India is blessed with ample sunshine throughout the year, which can be extensively

used to generate electricity by the installation of solar PV (solar photovoltaic) systems. The scheme 'PM-Surya Ghar Yojana' is going to be a game changer for ensuring availability of reliable and affordable power supply to rural households, which is an important factor for efficient sanitation in rural areas.

Sanitation and Renewable Energy

The key elements of efficient rural sanitation are maintenance of toilets in hygienic condition and in functional mode at all times, isolation of human waste from human contact, proper management of solid and liquid waste and following hygienic practices. Renewable energy can play an important role in ensuring regular water supply in rural areas. Renewable energy, in particular solar, comes very handy in providing the required reliable power through a smart microgrid for operating water pumping systems. Gram Panchayats generally have limited funds and struggle to meet expenditure on developmental activities and regular operational expenses. Solar PV systems may also save their expenditure on electricity charges. The rate of solar electricity is lower in comparison to DISCOMs (Distribution Companies). Gram Panchayat Institutions may get their solar plants installed in RESCO (Renewable Energy Service Company) mode, under which the cost of installation of the solar plant is borne by the developer and the consumer purchases electricity, by entering into a power purchase agreement for the purchase of the entire electricity generated by the solar plant at a rate fixed for 25 years. At present, that rate is about Rs 4.5 to 5.0 per unit. In this mode, electricity is available at almost half of the DISCOMs rate (their rate is about Rs 8 to 9 per unit plus other charges and taxes). Alternatively, Gram Panchayat Institutions may get their solar plant installed in CAPEX (capital expenditure) mode by investing their funds for installation of the plant, wherein payback period is 4 to 5 years. They may therefore utilise any of the RESCO/CAPEX modes and get the grid connected solar plant installed under a net metering system, to meet their electricity requirements for the operation of the pumping system. Most of the States and UTs support a net-metering system, wherein a bi-directional energy meter is installed by DISCOM. Based on the net consumption, the electricity bill is generated by DISCOM each month and any surplus is carried forward to the next, and the final account is settled yearly.

Surplus Biomass and Wastes

India has a target of 50 per cent cumulative electric power installed capacity from non-fossil fuel-based energy sources and achieving net zero by 2070. Surplus biomass and other wastes available in the rural areas may be utilised to produce electricity. Apart from renewable energy and reduction in waste management costs, it also provides several social and environmental benefits, e.g., reducing air, water and land pollution.

Electricity Demand

The electricity demand in rural areas is not only quantitatively small but also sparsely placed, necessitating the establishment of capital-intensive power distribution networks. Installing the solar PV systems and meeting the electricity requirements locally may lessen the distribution network demand. In this regard, microgrids with solar PV systems of smaller capacities may assist rural communities.

The integration of Smart Grid with widespread renewable energy sources provides a significant

opportunity to meet the power requirements for sanitation initiatives in rural areas, including water pumping systems, mechanical cleaning of toilets and public spaces, and waste management. Adopting renewable energy is essential for the future; its extensive use will help satisfy the energy demands of rural areas and support the country's goal of achieving carbon neutrality by 2070. □

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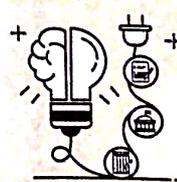
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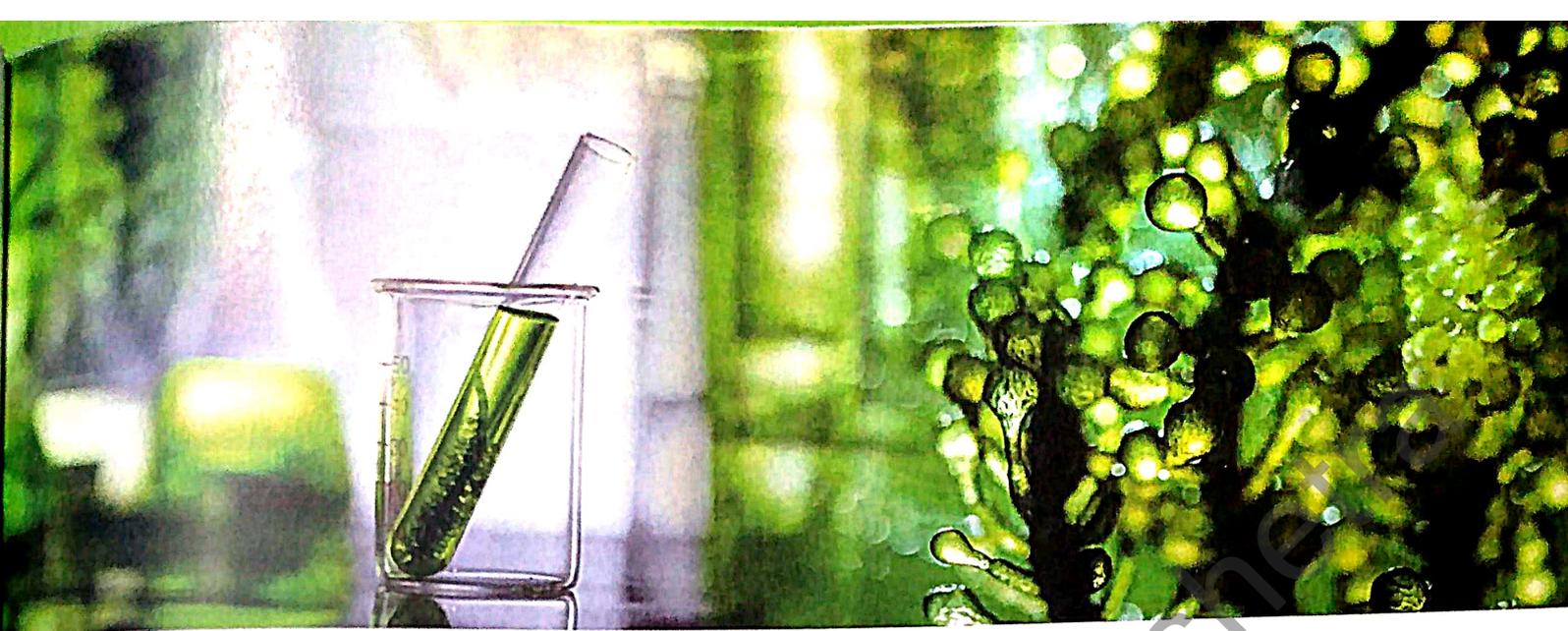
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INDIA'S BIOFUEL REVOLUTION: EFFICIENT, SUSTAINABLE, AND CLEAN

DR MANISH MOHAN GORE

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India's reliance on fossil fuels poses environmental and economic challenges, such as high carbon emissions and air pollution. Biofuels, derived from organic materials, are considered a renewable energy source and can help mitigate climate change. The CSIR-Indian Institute of Petroleum's intervention in converting used cooking oil into biofuel is a significant step towards achieving cleaner energy and better waste management in India. This initiative aligns with the Swachh Bharat Mission's objectives of cleanliness, sanitation, and waste management, contributing to a healthier and more sustainable India.

At present, the key source of energy in various countries, including India, is fossil fuel. But on the other hand, it is also a limited natural resource. Today it is available, but tomorrow it will not be available in proportion to the increasing population. Other problems associated with the use of fossil fuels are environmental crises like carbon emissions and global warming. This is the reason why most of the countries have started doing research towards the development of renewable energy sources. Biofuel is one such important source

of alternative energy. *Swachh Bharat Mission* (SBM) strongly supports biofuel development. The *Swachh Bharat Mission*, launched on 2 October 2014, is one of India's most significant cleanliness initiatives. Spearheaded by Prime Minister Narendra Modi, this national movement aims to achieve a clean and hygienic India by promoting sanitation practices and eliminating open defecation. The mission has two key components: *Swachh Bharat Mission* (Gramin) for rural areas and *Swachh Bharat Mission* (Urban) for urban areas.



In the *Swachh Bharat Mission*, open defecation is being eliminated through the construction of household, community and public toilets across rural and urban areas. Under solid waste management, people are encouraged for proper waste collection, segregation and disposal, focusing on sustainability

and reducing environmental impact. One of the significant objectives of *Swachh Bharat Mission* is to ensure behavioural change among the general public through raising awareness about sanitation, hygiene and waste management through public engagement and education.

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Present Scenario of Fossil Fuel Consumption in India

India remains heavily reliant on fossil fuels, primarily coal, oil, and natural gas, to meet its growing energy demands. As of 2023, fossil fuels account for approximately 70-75 per cent of India's energy consumption. Coal is the dominant source, contributing to nearly 55 per cent of the country's electricity generation, as India is one of the world's largest coal producers and consumers. Oil is the second-largest energy source, with India being the third-largest importer of crude oil globally, heavily dependent on imports for around 85 per cent of its crude oil needs. Natural gas usage is increasing but remains a smaller portion of the energy mix, contributing around 6-8 per cent.

Despite global efforts to reduce carbon emissions, India's energy demand continues to rise due to rapid industrialisation, urbanisation,

and population growth. This reliance on fossil fuels poses environmental and economic challenges, such as high carbon emissions, air pollution, and energy security concerns.

However, India is making significant strides toward renewable energy, with ambitious targets for solar, wind, and hydropower. The government has set a goal to achieve 500 GW of non-fossil fuel-based power by 2030, aiming to balance its fossil fuel dependency with cleaner, sustainable energy solutions for the future.

Fossil Fuels versus biofuels

Fossil fuels and biofuels represent two different sources of energy with distinct characteristics, environmental impacts, and future potential. Fossil fuels (coal, oil, and natural gas) are non-renewable energy sources derived from the remains of ancient plants and animals that have decomposed over millions of years. These energy sources have been the backbone of global industrialisation and economic growth, primarily due to their high energy density and availability.

Fossil fuels have a number of advantages. These fuels provide large amounts of energy relative to their weight and volume, making them efficient for large-scale industrial use, transportation and electricity generation. The global infrastructure for extraction, refining, and transportation of fossil

fuels is well established, making them convenient and reliable. Fossil fuel industries, especially oil and gas, are major contributors to national economies and employment.

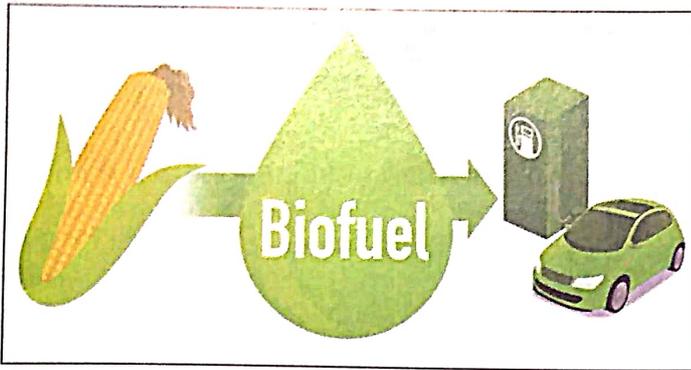
On the other hand, fossil fuels pose a number of disadvantages. Burning fossil fuels releases significant amounts of carbon dioxide (CO₂) and other greenhouse gases, contributing to climate change. It also causes air and water pollution, adversely affecting human health and ecosystems. Fossil fuels are non-renewable and are being depleted at a fast rate, creating concerns about long-term energy security. Also, fossil fuel resources are unevenly distributed on Earth, leading to geopolitical tensions and reliance on foreign imports for energy needs.

Biofuels: A Ray of Hope

Biofuels, derived from organic materials like crops, agricultural waste, and algae, are considered a renewable energy source. Common types of biofuels include ethanol (derived from crops like sugarcane and corn) and biodiesel (derived from vegetable oils and animal fats). Biofuels are produced from renewable biological materials, which can be replenished over short timeframes compared to fossil fuels. Biofuels generally emit fewer greenhouse gases than fossil fuels, as the carbon dioxide they release during combustion



Reliance on fossil fuels poses environmental and economic challenges, such as high carbon emissions and air pollution



Biofuels are produced from renewable biological materials, which can be replenished over short time frames compared to fossil fuels

is partially offset by the carbon dioxide absorbed by plants during growth. By generating the least carbon footprint, biofuels can help mitigate climate change.

Producing biofuels domestically can reduce dependence on imported fossil fuels, enhance energy security and stimulate rural economies. While the cultivation of biofuel crops can compete with food production, leading to potential food security issues. It also requires significant land, water, and energy inputs, sometimes reducing the overall environmental benefit.

If we talk about energy gain, biofuels generally have a lower energy content compared to fossil fuels, meaning more biofuel is needed to produce the same amount of energy. Although biofuel technologies are improving, they are often more expensive to produce than fossil fuels, and large-scale adoption is still challenging.

Fossil fuels and biofuels represent different approaches to meeting global energy needs. Fossil fuels offer high energy density and existing infrastructure but come with significant environmental and sustainability challenges. On the other hand, biofuels provide a cleaner, renewable alternative, though they face limitations in energy efficiency, scalability, and potential land use concerns. For a sustainable energy future, a balanced approach involving biofuels, fossil fuels, and other renewable sources is necessary to reduce environmental impacts while meeting global energy demands. Many of the Indian laboratories are endeavouring in this area to enhance the biofuel energy efficiency through research and innovative technology development.

Intervention of Used Cooking Oil Van to boost Biofuel

The Council of Scientific and Industrial Research-Indian Institute of Petroleum (CSIR-IIP), Dehradun, has been at the forefront of research and innovation in the energy sector in India, particularly in converting used cooking oil into biofuel. As part of India's ongoing efforts to enhance energy security and reduce dependence on fossil fuels, the CSIR-IIP initiative is a significant intervention in promoting sustainability and addressing environmental concerns associated with waste management and energy consumption.

Used cooking oil (UCO) is a significant waste product in households, restaurants, and the food processing industry. Improper disposal of UCO, such as dumping it down drains or reusing it multiple times for cooking, poses severe health and environmental risks. Repeated use of cooking oil leads to the formation of harmful compounds that can cause diseases, including cancer, while improper disposal can pollute water bodies and clog drainage systems.

India, being one of the largest consumers of edible oils, generates millions of tonnes of UCO every year, but only a small fraction is collected and processed for productive uses. The intervention of CSIR-IIP in converting UCO to biodiesel addresses

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both environmental and energy challenges.

CSIR-IIP's Role in UCO to Biofuel Conversion

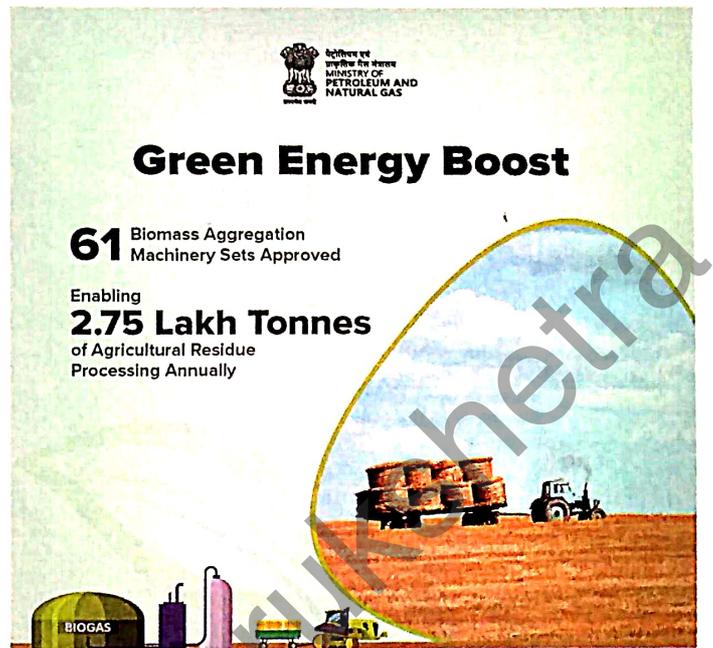
The CSIR-IIP has developed an innovative technology to convert used cooking oil into biodiesel. Biodiesel is a clean-burning, renewable fuel that can be used in place of traditional diesel. The technology employed by CSIR-IIP enables the conversion of UCO into high-quality biodiesel that meets international fuel standards.

One of the major challenges in the UCO-to-biodiesel process is the collection of used cooking oil from scattered sources like households, restaurants, and food industries. CSIR-IIP has facilitated partnerships with local authorities, restaurants, and food outlets to create a network for collecting UCO efficiently. Public awareness campaigns are also run to encourage the proper disposal and collection of UCO.

Advanced Processing Technology: The UCO is then subjected to an efficient transesterification process developed by CSIR-IIP, which involves converting fats and oils into fatty acid methyl esters (biodiesel). This process is cost-effective and has been optimised to handle the unique composition of UCO, which often contains impurities. The biodiesel produced meets stringent quality norms for use in diesel engines.

Collaboration with the Government and Industry: The project aligns with the National Biofuel Policy (2018), which aims to achieve 5 per cent biodiesel blending in diesel by the year 2030. CSIR-IIP has partnered with the Food Safety and Standards Authority of India (FSSAI) under the Repurpose Used Cooking Oil (RUCO) initiative, which encourages businesses to supply UCO for conversion into biodiesel. Additionally, the institute collaborates with oil marketing companies to facilitate the blending and distribution of biofuels in the market.

Environmental and Economic Benefits: The biodiesel produced from UCO



is a sustainable alternative to fossil-based diesel, reducing greenhouse gas emissions significantly. It also addresses waste management concerns by ensuring that UCO, a hazardous waste product, is repurposed into something useful. Furthermore, using biodiesel contributes to reducing India's import bill on crude oil, enhancing energy security.

Challenges and Future Prospects: While the CSIR-IIP initiative has made remarkable strides, challenges remain in scaling up UCO collection and biodiesel production across India. The decentralised nature of UCO sources, combined with a lack of awareness about the benefits of recycling cooking oil, limits the availability of raw materials. Additionally, the cost of biodiesel production, although competitive, needs further optimisation for mass adoption.

However, with increased government support, policy interventions, and public awareness, the prospects of scaling up biodiesel production from UCO are promising. CSIR-IIP's innovation has set the foundation for a broader movement towards sustainable fuel sources, contributing to India's climate goals and energy needs.

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(Photo Source: NITI Aayog)

The Swachh Bharat Mission is one of India's most significant cleanliness initiatives, which has inspired a major population to keep our surroundings clean and hygienic

The CSIR-Indian Institute of Petroleum's intervention in converting used cooking oil into biofuel is a significant step towards achieving cleaner energy and better waste management in India. By tapping into a largely untapped resource, the institute is not only addressing environmental concerns but also promoting a circular economy in the energy sector. With continued efforts, this initiative could play a crucial role in India's transition to a sustainable, low-carbon future.

TDB and CSIR's 'Recycling on Wheels' bus to Promote 'Waste-to-Wealth'

The Technology Development Board (TDB), in collaboration with the Council of Scientific and Industrial Research (CSIR), has launched an innovative initiative called the 'Recycling on Wheels' bus. This project is designed to raise awareness about recycling and promote the concept of 'Waste-to-Wealth' across various communities in India.

The Recycling on Wheels bus aims to demonstrate the potential of converting waste materials into valuable resources. Equipped with the latest recycling technologies and tools, the bus is essentially a mobile unit that travels

to different locations, engaging the public in hands-on demonstrations and educational sessions. This initiative focuses on educating people about the importance of segregating waste at the source and encourages the recycling of materials like plastic, paper, and metal, which can be transformed into reusable products.

In addition to public awareness, the project highlights several CSIR-developed technologies that help transform waste into useful products. These technologies include plastic shredders, compost machines, and other innovative tools that can process various forms of waste, reducing their impact on the environment. By showcasing these solutions, TDB and CSIR aim to motivate local communities, schools, and industries to adopt sustainable waste management practices.

This initiative is also a step towards achieving the *Swachh Bharat Mission* (Clean India Mission) and aligns with India's broader goals of environmental sustainability and circular economy. By promoting the recycling of waste and its conversion into wealth, the Recycling on Wheels bus aims to make India more conscious of the environmental impact of improper waste disposal and the economic

benefits of recycling.

Other Research Interventions in India to Promote Biofuels

India's *Swachh Bharat Mission* (SBM), or Clean India Mission, has sparked significant research and technological interventions aimed at improving sanitation and waste management. Various institutions and government bodies of the country have introduced innovations to enhance the effectiveness of the mission. These interventions focus on waste management, sanitation, and water conservation while addressing environmental sustainability. Here are some key research interventions contributing to SBM's goals.

Biodegradable Waste Management Technologies

Researchers are working on efficient ways to manage biodegradable waste, such as kitchen scraps, agricultural residues, and organic matter. One notable intervention is the development of biogas and composting plants. By using anaerobic digestion technologies, organic waste can be converted into biogas, a renewable energy source, and organic compost, which can be used as a natural fertilizer. CSIR's constituent lab, the Institute of Himalayan Bioresource Technology (IHBT), has developed a portable biogas plant that turns food waste into energy and manure, contributing to clean energy generation while managing waste effectively.

Plastic Waste Recycling

Plastic waste remains one of the most pressing issues in India's waste management efforts. Various research organisations, including CSIR-National Chemical Laboratory (NCL), have developed novel plastic recycling technologies. These include the chemical recycling of plastics to produce high-value materials like fuel and chemicals. CSIR has also promoted plastic pyrolysis, a process that converts plastic waste into oil and gas, reducing the accumulation of non-biodegradable plastics.

CSIR's constituent lab, the Institute of Himalayan Bioresource Technology (IHBT), has developed a portable biogas plant that turns food waste into energy and manure, contributing to clean energy generation while managing waste effectively.

Water Conservation Technologies

Research has led to the development of greywater recycling and rainwater harvesting systems, which contribute to water conservation in urban and rural areas. CSIR's National Environmental Engineering Research Institute (NEERI) has developed models for community-level greywater treatment and reuse, which is crucial for water-scarce regions. These systems treat household water from activities like bathing and washing, allowing it to be reused for irrigation or

toilet flushing.

Low-cost Sanitation Solutions

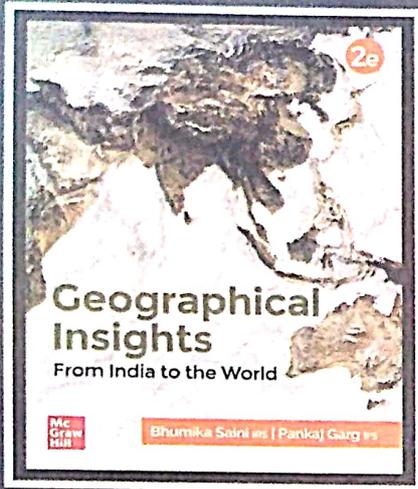
Addressing sanitation challenges in rural and underserved areas, CSIR-Central Building Research Institute (CBRI) has designed low-cost, eco-friendly toilets. These toilets are made from locally available materials, reducing construction costs while ensuring durability. CSIR-NEERI has also developed eco-friendly biodigester toilets, which decompose human waste using bacterial cultures, reducing environmental contamination and improving hygiene.

Public Health Monitoring and Wastewater Surveillance

To address sanitation-related health challenges, research efforts are also focused on wastewater-based epidemiology. This involves monitoring pathogens, pollutants, and other harmful substances in wastewater to track disease outbreaks and environmental pollution. This innovative approach has the potential to revolutionise public health monitoring by providing real-time data on sanitation and health risks.

These research interventions are crucial to bolstering biofuels as an efficient energy source aligned with the *Swachh Bharat Mission's* objectives of cleanliness, sanitation, and waste management, ultimately contributing to a healthier and more sustainable India. □

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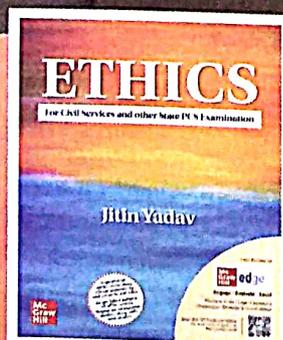
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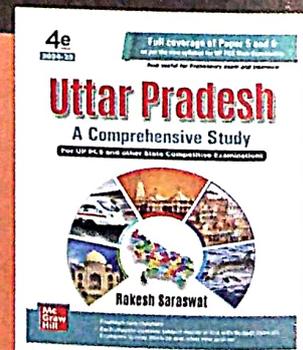
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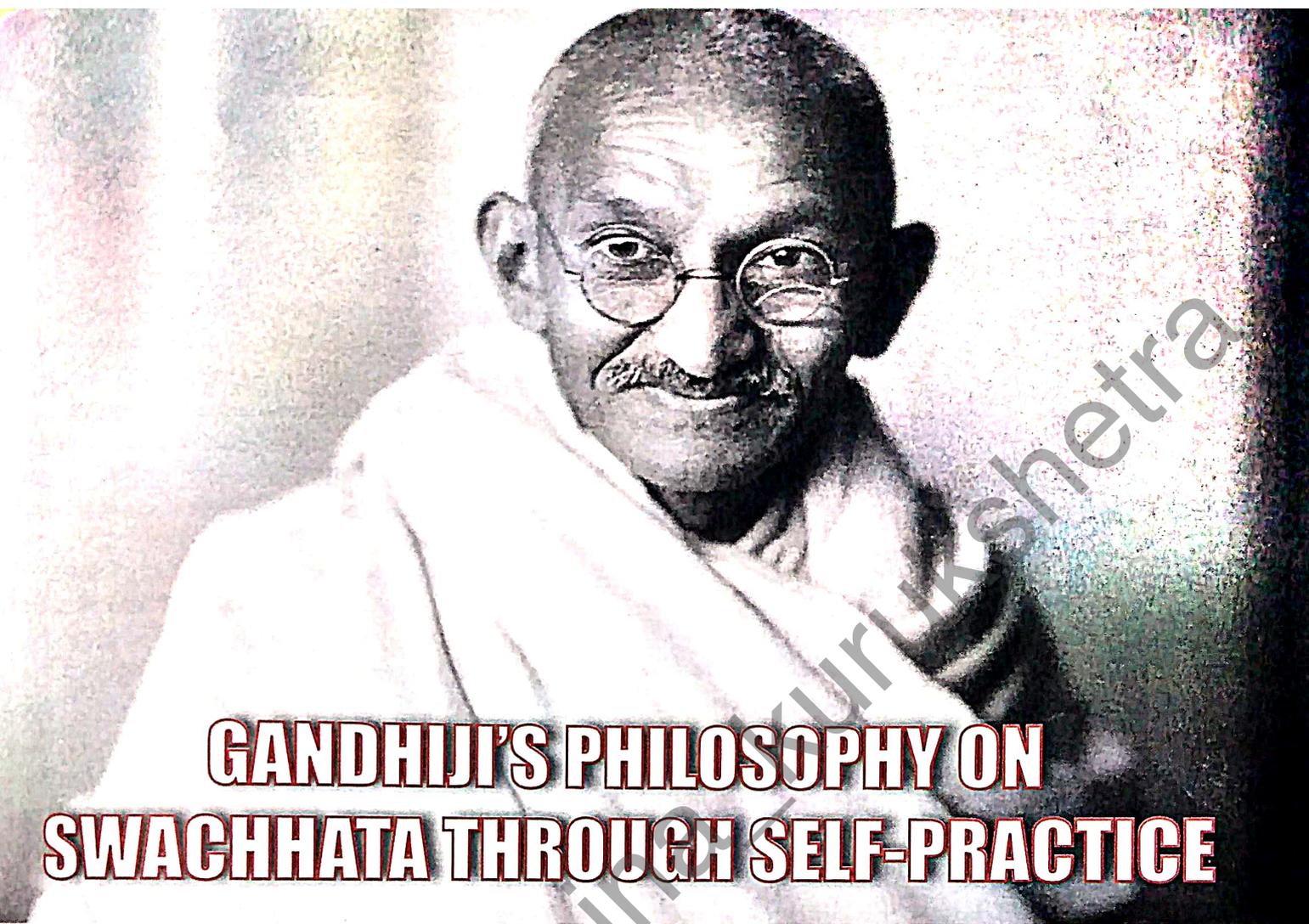
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GANDHIJI'S PHILOSOPHY ON SWACHHATA THROUGH SELF-PRACTICE

A ANNAMALAI

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Gandhiji was deeply committed to the idea that cleanliness and sanitation are fundamental human qualities. He famously stated, "Everyone must be his own scavenger," and led by example, cleaning filth himself when others refused. His experiences in South Africa and India solidified his belief in the necessity of both personal and community hygiene. He declared, "A lavatory must be as clean as a drawing room." Gandhiji's vision for India's independence included societal transformation, with "village sanitation and knowledge of health and hygiene" being key components of his 18-point constructive programme.

Cleanliness was the passion for Gandhiji. Hygiene and sanitation, for individuals and society, are considered essential qualities of human beings. But for various reasons, the people at large are not taking it seriously and making ourselves vulnerable. Gandhiji said, "Everyone must be his own scavenger."

In Porbandar, Gandhiji's birthplace, *Mehtar* (sweeper) did the scavenging. When Gandhiji was a boy, if he ever touched this scavenger's son, Uka, his mother, Putlibai, made him take a bath. Gandhiji, otherwise a docile, obedient son, did not like it. The 12-year-old son Gandhi resisted and argued with his mother— "You only told me



that Lord Rama resides in everybody's heart. If so, Rama must also reside in Uka's heart. Then how can you say that he is 'untouchable' and touching him will pollute?" Gandhi's mother didn't have the answer to convince him. She simply told him, like any other parent, "Do what I say."

REALISATION IN SOUTH AFRICA

The necessity to keep ourselves and our environment clean and hygienic came to Gandhiji's mind when he encountered racial prejudice in South Africa. When he visited the places where Indians resided, he could see their way of living. He persuaded them to improve the sanitary conditions in their home and surroundings. Few values he insisted that Indians in South Africa should practise in their lives:

- Cleanliness – personal cleanliness and cleanliness in the surrounding area
- Learning another language – English is for Indians in South Africa
- Truthfulness

During Gandhiji's second trip to India from South Africa in 1901, he attended the Congress session in Calcutta (now Kolkata). The sanitary condition of the Congress camp was horrible. Some delegates used the veranda in front of their room as latrines, others did not object to it. With his own experience in South Africa, Gandhiji reacted immediately and invited volunteers to

ask them to restrain their practice and clean the surroundings. When he spoke to the volunteers, they said, "This is not our job; this is a sweeper's job." Gandhiji didn't wait for anybody to come and support him. He took a broom and cleaned the filth. He was a practicing lawyer in South Africa and dressed like an English gentleman. The volunteers were astonished to see it, but no one came forward to share his cleaning campaign. Years later, when Gandhiji became the guiding force of the Indian National Congress, volunteers formed a *bhangi* (sweeper) squad in the Congress camps, where even the so-called 'higher' caste members also worked happily as *bhangis*. Two thousand teachers and students were specially trained for doing the scavenging at the Haripura Congress. Gandhiji could not think of having a set of people labelled as untouchables for cleaning filth and dirt. He started his campaign against the practice of untouchability in South Africa and later in India.

Commodores and chamber pots were used for urination in the night by the guests who were staying in the house. Once Vincent Lawrence, working with him as a clerk, stayed in his house. Normally, people who used the pot had to clean the same. But he forgot to take out the pot and clean it. Gandhiji asked Kasturba, his wife, to clean the urine pot used by the clerk. But Kasturba expressed her disgust when asked to carry the pot. She might have thought he belonged to a 'lower' caste. Gandhiji rebuked her and told her to leave the house if she wanted to observe caste bias. After a short quarrel, she unwillingly accepted to do it. But Gandhi again insisted that she should do it happily. The feeling of oneness and universal brotherhood is the basis of humanism and Gandhi wanted to imbibe this quality in everybody's mind.

INITIAL EXPERIENCES IN INDIA

After twenty-one years of struggle for equality and self-respect for the Indians in that alien land, Gandhi, at 46, finally returned to India with his group of inmates of Phoenix Settlement in 1915. With the kind invitation of Swami Sharadananda, they went to Haridwar. During that time there was *Kumbh Mela* at Haridwar, and he and his Phoenix boys served as scavengers at the religious gathering.

Amritlal V Thakkar, who worked among the *Dalits*, sent a request to Gandhi that he can accommodate an untouchable family in the ashram. Gandhi accepted, and Dudabhai and his family were taken to the *Satyagraha Ashram* at Kochrab in Gujarat as inmates. His sister, Raliyatbehn, wife Kasturba and close relatives opposed. Gandhi clearly announced that whoever opposes can leave the ashram. His only sister, Raliatbehn left the ashram. He considered Lakshmi, the girl child of the untouchable family, as his daughter. He was socially boycotted by his sympathisers for admitting this untouchable couple to the ashram. The financial support by the well-wishers was stopped. Gandhi was firm because he wanted to wipe out the mindset of the people on untouchability.

MANUAL SCAVENGING AND UNTOUCHABILITY

Why are people considered untouchables? Because they are doing scavenging work and other forbidden work in society. Therefore, they are 'polluted' and should not be touched by others. It is also quite interesting to observe our mindset of usage of our two hands. Normally, we avoid using the left hand for receiving and giving away gifts or doing any other auspicious acts. We consider

our left hand as 'polluted'. Why? We are using the left hand, normally in the Indian context, for 'cleaning'. Even within ourselves, we are practising untouchability. Gandhi wanted to erase this social stigma of untouchability from the minds of the people.

For Gandhiji, both hands were equal, and he used both hands for everything. He wrote with both hands, spun with both hands, and even ate with both hands.

Vinoba Bhave, a close associate of Gandhi, belonged to the so-called 'higher' caste and used to do two things in the ashram. That was his routine duty, and he did those two activities with the utmost care and reverence.

- a. Discourse on Gita
- b. Cleaning the Toilets

For Vinoba, both activities are one and should be equally respected.

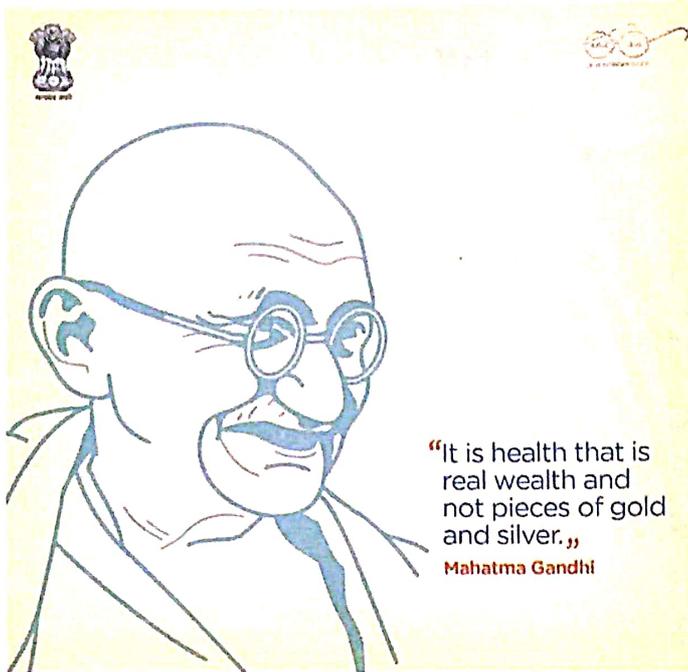
EAST AND WEST

"I shall have to defend myself on one point, namely, sanitary conveniences. I learnt 35 years ago that a lavatory must be as clean as a drawing room. I learnt this in the West. I believe that many

Ministry of Housing and Urban Affairs
Government of India

“An ideal village will be so constructed as to lend itself to perfect sanitation.”

-Mahatma Gandhi



rules about cleanliness in lavatories are observed more scrupulously in the West than in the East. The cause of many of our diseases is the condition of our lavatories and our bad habit of disposing of excreta anywhere and everywhere. I, therefore, believe in the absolute necessity of a clean place for answering the call of nature and clean articles for use at the time. I have accustomed myself to them and wish that all others should do the same. The habit has become so firm in me that even if I wished to change it, I would not be able to do so. Nor do I wish to change it" (CWMG., Vol.27, pp.153-154).

DURING SALT MARCH

There was a standing instruction to all the marchers and volunteers during the Salt March. Each one should carry a stick during the salt march. They were instructed to dig a small pit for use as a toilet, then it had to be closed with the same soil.

Gandhi's group launched a mass contact programme in the villages. "At the end of the morning's march," writes Tendulkar, "a batch of men and women from his party visited the *Harijan* quarters of the village near the camp, taking with them brooms and spades." They talked about the necessity of sanitation, about keeping their yards clean, of burying rubbish instead of leaving it to blow here and there.

While Gandhi was engaged in talks, people who had accompanied him would begin cleaning up the *basti* themselves. They highlighted the need to prevent excrement lying in the open, as it attracted flies and spread disease.

Gandhiji said, "So long as you do not take the broom and the bucket in your hands, you cannot make your towns and cities clean." When he inspected a model school, he told the teachers, "You will make your institution ideal if, besides giving the students literary education, you have made cooks and sweepers of them." To the students, his advice was, "If you become your own scavengers, you will make your surroundings clean. It needs no less courage to become an expert scavenger than to win a Victoria Cross."

VILLAGE SANITATION

The villagers near his ashram refused to cover excreta with earth. They said, "Surely this is *Bhangi's* work. It is sinful to look at faeces, more so to throw earth on them." Gandhi personally supervised the scavenging work in villages. To set an example, he, for some months, used to go to the villages with a bucket and a broom. Friends and guests went with him. They brought bucketful of dirt and stools and buried them in pits.

All scavenging work in his ashram was done by the inmates. Gandhi guided them. People of different races, religions and colours lived there. Whoever went to the ashram, the first work entrusted to them was cleaning the toilets and their leader was Gandhi!

RECONSTRUCTION OF SOCIETY

Though Gandhiji led the freedom struggle, back of his mind he always thought of reconstructing society. When political freedom comes to India, the Indian society should also be ready to take on the challenges. To make independence more sustainable and meaningful, there were certain weaknesses in the Indian socio-religious and economic structures that needed to be corrected and strengthened. Therefore, he, along with *Satyagraha*, introduced 18-point constructive programmes for the reconstruction of Indian society. Among the 18 points, there were two points related to *Swachhata*. Two constructive programmes were: village sanitation and knowledge of health and hygiene.

In 1945, in his book 'Constructive Programme: Its Meaning and Place,' Gandhi wrote his plan of action for volunteers whom he entrusted with the work of social reconstruction. In the foreword, he wrote, "Readers, whether workers and volunteers or not, should definitely realise that the constructive programme is the truthful and non-violent way of winning *Poorna Swaraj*. Its wholesale fulfilment is complete independence. Imagine all the forty crores of people busying themselves with the whole of the constructive programme which is designed to build up the nation from the very bottom upward. Can anybody dispute the proposition that it must mean complete independence in every sense of the expression, including the ousting of foreign domination? When the critics laugh at the proposition, what they mean is that forty crores of people will never cooperate in the effort to fulfil the programme. No doubt, there is considerable truth in the scoff. My answer is, it is still worth the attempt. Given an indomitable will on the part of a band of earnest workers, the programme is as workable as any other and more so than most. Anyway, I have no substitute for it, if it is to be based on nonviolence."

PLEDGE

We finally fell upon people's support and participation in the *Swachhta* Movement. Every one of us should take the *Swachhta* Pledge.

"Mahatma Gandhi dreamt of an India that was not only free but also clean and developed. Mahatma Gandhi secured freedom for Mother India. Now it is our duty to serve Mother India by keeping the country neat and clean. I take this pledge that I will remain committed to cleanliness and devote time to it. I will devote 100 hours per year, that is, two hours per week, to voluntarily work for cleanliness. I will neither litter nor let others litter. I will initiate the quest for cleanliness with myself, my family, my locality, my village and my workplace. I believe that the countries of the world that appear clean are so because their citizens don't indulge in littering, nor do they allow it to happen. With this firm belief, I will propagate the message of the *Swachh Bharat Mission* in villages and towns. I will encourage 100 other people to take this pledge, which I am taking today. I will endeavour to make them devote their 100 hours to cleanliness. I am confident that every step I take towards cleanliness will help in making my country clean." □



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“ A clean body cannot reside in an unclean city. ”

- Mahatma Gandhi



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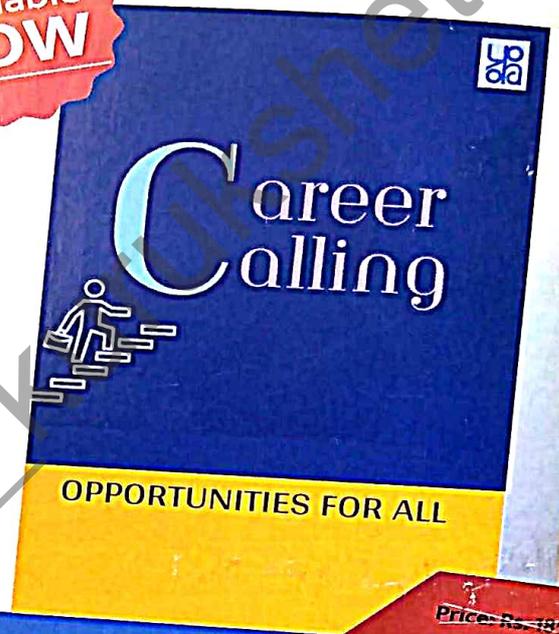
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