Hygiene and Sanitation

Module 4

Introduction

- Environmental sanitation envisages promotion of health of the community by providing clean environment and breaking the cycle of disease.
- It depends on various factors that include hygiene status of the people, types of resources available, innovative and appropriate technologies according to the requirement of the community, socioeconomic development of the country, cultural factors related to environmental sanitation, political commitment, capacity building of the concerned sectors, social factors including behavioral pattern of the community, legislative measures adopted, and others.
- India is still lagging far behind many countries in the field of environmental sanitation. The unsanitary conditions are appalling in India and need a great sanitary awakening similar to what took place in London in the mid-19th century.

Introduction

- Improvement in sanitation requires newer strategies and targeted interventions with follow-up evaluation.
- The need of the hour is to identify the existing system of environmental sanitation with respect to its structure and functioning and to prioritize the control strategies according to the need of the country.
- These priorities are particularly important because of issue of water constraints, environment-related health problems, rapid population growth, inequitable distribution of water resources, issues related to administrative problems, urbanization and industrialization, migration of population, and rapid economic growth.

PRESENT SCENARIO

- As per estimates, inadequate sanitation cost India almost $54 billion or 6.4% of the country's GDP in 2006. Over 70% of this economic impact or about $38.5 billion was health-related, with diarrhea followed by acute lower respiratory infections accounting for 12% of the health-related impacts.
- Evidence suggests that all water and sanitation improvements are cost-beneficial in all developing world subregions.
- Sectoral demands for water are growing rapidly in India owing mainly to urbanization and it is estimated that by 2025, more than 50% of the country's population will live in cities and towns.

- Population increase, rising incomes, and industrial growth are also responsible for this dramatic shift.
- National Urban Sanitation Policy 2008 was the recent development in order to rapidly promote sanitation in urban areas of the country. India's Ministry of Urban Development commissioned the survey as part of its National Urban Sanitation Policy in November 2008.
- In rural areas, local government institutions in charge of operating and maintaining the infrastructure are seen as weak and lack the financial resources to carry out their functions. In addition, no major city in India is known to have a continuous water supply and an estimated 72% of Indians still lack access to improved sanitation facilities.

Technological interventions for sustainable and hygienic societies

- A number of innovative approaches to improve water supply and sanitation have been tested in India, in particular in the early 2000s.
- These include demand-driven approaches in rural water supply since 1999, community-led total sanitation, public–private partnerships to improve the continuity of urban water supply in Karnataka, and the use of microcredit to women in order to improve access to water.

Technological interventions for sustainable and hygienic societies

- Total sanitation campaign gives strong emphasis on Information, Education, and Communication (IEC), capacity building and hygiene education for effective behavior change with involvement of panchayati raj institutions (PRIs), community-based organizations and nongovernmental organizations (NGOs), etc.
- The key intervention areas are individual household latrines (IHHL), school sanitation and hygiene education (SSHE), community sanitary complex, Anganwadi toilets supported by Rural Sanitary Marts (RSMs), and production centers (PCs).
- The main goal of the government of India (GOI) is to eradicate the practice of open defecation by 2010.
- To give fillip to this endeavor, GOI has launched Nirmal Gram Puraskar to recognize the efforts in terms of cash awards for fully covered PRIs and those individuals and institutions who have contributed significantly in ensuring full sanitation coverage in their area of operation. The project is being implemented in rural areas taking district as a unit of implementation.

Technological interventions for sustainable and hygienic societies

- A recent study highlighted that policy shift to include better household water quality management to complement the continuing expansion of coverage and upgrading of services would appear to be a cost-effective health intervention in many developing countries.
- Most of the interventions (including multiple interventions, hygiene, and water quality) were found to significantly reduce the levels of diarrheal illness, with the greatest impact being seen for hygiene and household treatment interventions.
- Interventions to improve water quality at the household level are more effective than those at the source.

Technological interventions for sustainable and hygienic societies

- Unfortunately, in developing countries, public health concerns are usually raised on the institutional setting, such as municipal services, hospitals, and environmental sanitation.
- There is a reluctance to acknowledge the home as a setting of equal importance along with the public institutions in the chain of disease transmission in the community. Managers of home hygiene and community hygiene must act in unison to optimize return from efforts to promote public health.

Technological interventions for sustainable and hygienic societies

- A survey through in-depth interviews with more than 800 households in the city of Hyderabad in India concluded that, even if provided with market (not concessional) rates of financing, a substantial proportion of poor households would invest in water and sewer network connections.
- The role of the WHO Guidelines for Drinking Water Quality emphasizes an integrated approach to water quality assessment and management from source to consumer.
- It emphasizes on quality protection and prevention of contamination and advises to be proactive and participatory, and address the needs of those in developing countries who have no access to piped community water supplies.
- The guidelines emphasize the maintenance of microbial quality to prevent waterborne infectious disease as an essential goal. In addition, they address protection from chemical toxicants and other contaminants of public health concern.

- When sanitation conditions are poor, water quality improvements may have minimal impact regardless of amount of water contamination.
- If each transmission pathway alone is sufficient to maintain diarrheal disease, single-pathway interventions will have minimal benefit, and ultimately an intervention will be successful only if all sufficient pathways are eliminated. However, when one pathway is critical to maintaining the disease, public health efforts should focus on this critical pathway.
- The positive impact of improved water quality is greatest for families living under good sanitary conditions, with the effect statistically significant when sanitation is measured at the community level but not significant when sanitation is measured at the household level.

- Improving drinking water quality would have no effect in neighborhoods with very poor environmental sanitation; however, in areas with better community sanitation, reducing the concentration of fecal coliforms by two orders of magnitude would lead to a 40% reduction in diarrhea.
- Providing private excreta disposal would be expected to reduce diarrhea by 42%, while eliminating excreta around the house would lead to a 30% reduction in diarrhea.
- The findings suggest that improvements in both water supply and sanitation are necessary if infant health in developing countries is to be improved. They also imply that it is not epidemiologic but behavioral, institutional, and economic factors that should correctly determine the priority of interventions.

- Another study highlighted that water quality interventions to the point-of-use water treatment were found to be more effective than previously thought, and multiple interventions (consisting of combined water, sanitation, and hygiene measures) were not more effective than interventions with a single focus.
- Studies have shown that hand washing can reduce diarrhea episodes by about 30%. This significant reduction is comparable to the effect of providing clean water in low-income areas.

Sulabh international

- Founded in 1970 by Dr. Bindeshwar Pathak, Sulabh's contribution in the field of sanitation is both monumental in scale and historical in its application of human rights framing to sanitation.
- Dr. Pathak's foray into sanitation was in response to tackle the deep rooted discrimination, abuse and stigma faced by a community of people – known as manual scavengers – who cleaned dry latrines manually and were labelled as untouchables.

Sulabh international

- 1968, whilst working as a volunteer for a committee set up to commemorate Mahatma Gandhi's centenary celebrations, Dr. Pathak witnessed first-hand the sufferings of the community in the state of Bihar.
- He saw that their freedom, voice and basic human rights were forfeited as they belonged to the lowest stratum of India's caste-based society – formerly known as "untouchables". The community was systematically denied access to mainstream education, health or employment opportunities.

Sulabh international

Sulabh international

- Strongly influenced by Mahatma Gandhi's philosophy of peace, equality and non-violence, Dr. Pathak was determined to alleviate their plight.
- He took a resolution to free them from the shackles of modern-day slavery and dedicated his life for this cause.
- He developed a sustainable technology known as a two-pit pour flush toilet, which replaced the bucket toilets that had to be manually cleaned.
- The objective was to bring an end to this inhuman practice of cleaning night soil manually – this was the beginning of the Sulabh Sanitation Movement.

Areas of Work

EQUITABLE SANITATION:

- In its 50 years of public service, Sulabh International has worked to achieve equitable sanitation and hygiene for all.
- It has been in the forefront of Government of India's flagship Swachh Bharat Abhiyan (Clean India Campaign) with a focus on ending open defecation. It has built over **1.5 million household toilets** and has been awarded the Gandhi Peace Prize for 2016.

Areas of Work

RURAL SANITATION:

- In the context of rural sanitation, Sulabh has adopted a community-based behaviour change approach by creating awareness and demand for sanitation and hygiene.
- It has converted dry latrines into two-pit pour flush latrines in **1749 towns** and built approximately over **160835 toilets**.
- In most villages, Sulabh has worked with women – mainly mothers – to achieve total sanitation by making them the agents of change. Sulabh's intervention has had a remarkable outcome in reducing diarrheal disease, mortality and morbidity among children.

Areas of Work

URBAN SANITATION (PUBLIC TOILETS):

- Sulabh has put thrust on integrated programming so that issues of sanitation, water and hygiene are addressed simultaneously. In 1974, Dr. Bindeshwar Pathak introduced the concept of pay and use public toilets in India.
- Since then over **9000 public toilets** have been built across India. Now Sulabh toilets are seen in all major public places including 36 railway stations which are used by approximately 20 million people every day.

Areas of Work

WATER FOR ALL:

- Sulabh has introduced a pro poor system to make drinking water affordable **at 1 rupee/litre**.
- A process was developed to produce drinking water of appropriate quality from the surface water in arsenic affected areas of West Bengal and Bihar.
- The objective was to create a decentralized people friendly approach aimed at empowering communities so that the villagers, with training, can run the plant effectively.

Areas of Work

COMMUNITY TOILETS IN SLUMS:

- Sulabh has built and maintains **2489 toilets in slums** across major urban areas.
- Additionally, it runs a concerted WASH campaign in 310 slums. It has trained **12099** women in WASH related activities in slums of Delhi alone. These women play a pivotal role in raising awareness and driving change.

Areas of Work

FAECAL SLUDGE MANAGEMENT (FSM):

- Sulabh has **190 biogas plants** installed in public toilet complexes in India and five in Kabul, Afghanistan.
- It is a special system in which human excreta from the Sulabh public toilets goes through the biogas digester. When decomposition takes place, it produces biogas which can also be used as manure. In this type of biogas digester, human excreta is fully recycled.

Areas of Work

TOILETS IN SCHOOL:

- Sulabh has built **19603 toilets** blocks covering **6241 schools** across India. Its school intervention programmes are designed to promote girls right to education and this has resulted in a remarkable improvement in school enrolment and attendance of girls.

India’s Performance in Sanitation

Open Defecation Free:

- Sikkim and Himachal Pradesh have been declared open defecation free. 17 districts in India have been declared ODF, Fatehgarh Sahib in Punjab being the most recent one.
- Number of villages which are open defecation free is over 72000.
- These are states with relatively high coverage, Uttrakhand, Punjab, Haryana, West Bengal and Gujarat.
- Even Kerala has around 95% coverage, and most of these states are on the verge of becoming ODF.
- In fact, Nadia, a district in West Bengal was the first district in the country to be declared ODF.
- All north east states except Assam also come in this category.
- Two states, Odisha and Bihar have coverage of less than 33% in the country and are making progress

India’s Performance in Sanitation

- Prime Minister has made Swach Bharat Mission a flagship programme of the country. This has been a very big game changer.
- It happened in Korea 25 years ago, when President of Korea decided to have a clean Korea.
- Malaysia, Singapore also decided so as signal from the top can make a big difference.
- India is the only country in the world to have a massive government funded sanitation programme.
- Swach Bharat is providing flexibility and autonomy to each state to apply the programme in its own way.
- Recently, World Bank provided a loan for $1.5 billion called ‘Programme for Results’. It is a result based loan and goes to states which have delivered on some agreed upon indicators. This approach incentivises competition among states.

India’s Performance in Sanitation

- Solid and liquid waste management is becoming an issue and there is an attempt to evolve an index to measure what is a clean village. It is an index of village Swachta and comprises of following indicators:
- Open Defecation Free (ODF)
- Have effective solid and liquid waste management (SLWM).
- Visually Clean

Major policy decision taken by the Government:

- Mandatory purchase of power by the discoms produced out of the waste.
- Ministry of fertiliser has taken a decision to give about 1500 rupees per tonne of the city compost as market development assistance. This is to encourage the compost and reduce the usage of chemical fertiliser.
- Bureau of Indian Standard has come out with the standards on C&D waste for which the gazette notification has taken place. One of the objectives is to stop the depletion or the plundering of natural resources and to also reduce the problem of C&D waste.
- Counselling of the adolescent girls, menstrual hygiene management and particularly the production of the low cost sanitary napkins.
- Focus on sanitation has to be at an institutional level. It needs to go beyond the ambit of household to schools, anganwadi. It needs to have a lifecycle approach based on awareness. Workplace is also an important area which needs focus.
- Village and sanitation committees shall be constituted as a part of sub-committee of gram - panchayat and 50% women participation. The money should be routed either through gram panchayats or through the water sanitation committees.

Water Resource Management in India

- 76% habitations have full coverage, i.e. these habitations get more than 40 litres per capita per day.
- However, 70,000 habitations in India have water quality issues and the two most critical water quality issues are arsenic and fluoride as we have arsenic and fluoride contaminations today in about 24-25000 habitations.
- Piped water supply coverage in India is over 50% and in public spots. Objective is to have piped water supply in 90% of habitations by 2022 including 80% household coverage.
- Today household connections are only 15% so it is ambitious target to attain. Major issues which confront here are ground water and source sustainability.

Steps which can be taken to conserve water and to be able to meet future demands:

- Involving local communities
- Financial sustainability.
- Water Education, i.e. an integrated water management approach in education.
- Mainstreaming traditional innovations on water management particularly at the local level. For instance, Dug wells, which were used earlier, are a better solution to mitigate arsenic than several sophisticated technologies.
- Lifeline plus drinking water as a concept needs to be incorporated to create sustainable drinking water. It is water not just for luxury but water for drinking and livelihood purposes. Smart cities need to have this principle embedded in their very conceptualization.
- Creating data and inter linking data set from different government departments is essential if the SDG goals need to be attained.
- Community management of water supply is an effective parameter to ensure the water is available and functional when needed.

Drinking Water

- In Punjab, village level leadership is involved in working of various schemes in water and sanitation. Officials at state and district level personally coordinate with the Sarpanch.
- In fact, the revenue collection vis-à-vis the government control scheme, the revenue collection in some of the panchayat controlled scheme is better than the government mechanism.
- For treatment of water, both short and long term solutions are being carried out.
- As a short term solution, RO systems are being installed.
- For the permanent solution, canal system is being implemented in areas where water needs to be treated.
- Tie ups for these solutions are being made with other agencies like the World Bank, other government resources and money.

Efficient Water Use for Agriculture and Industry

- Water usage in agriculture takes up about 70% of the total water used in India. Our water efficiency is half of Thailand and China's.
- The National Commission for integrated water resources development and management has projected that by 2050 India would need about 1180 billion cubic metres of water whereas the water available for utilisation is 1123 billion cubic metres.
- Some major reasons for low rate of efficiencies are: problem of silting of reservoirs, excessive seepage losses in canals among others.
- Following are the reasons which lead to seepage: Lack of measuring devices. Inequitable and untimely delivery of water to fields, lack of on farm Development works not being upto the mark, lack of participatory irrigation management (PIM), inefficient water application methods, lack of drainage, lack of capacity buildings efforts etc.
- Irrigation sector is the key area because it consumes 72% and even by 2015 it was consuming 68%. The objective is to have 'Har Khet Ko Pani'.

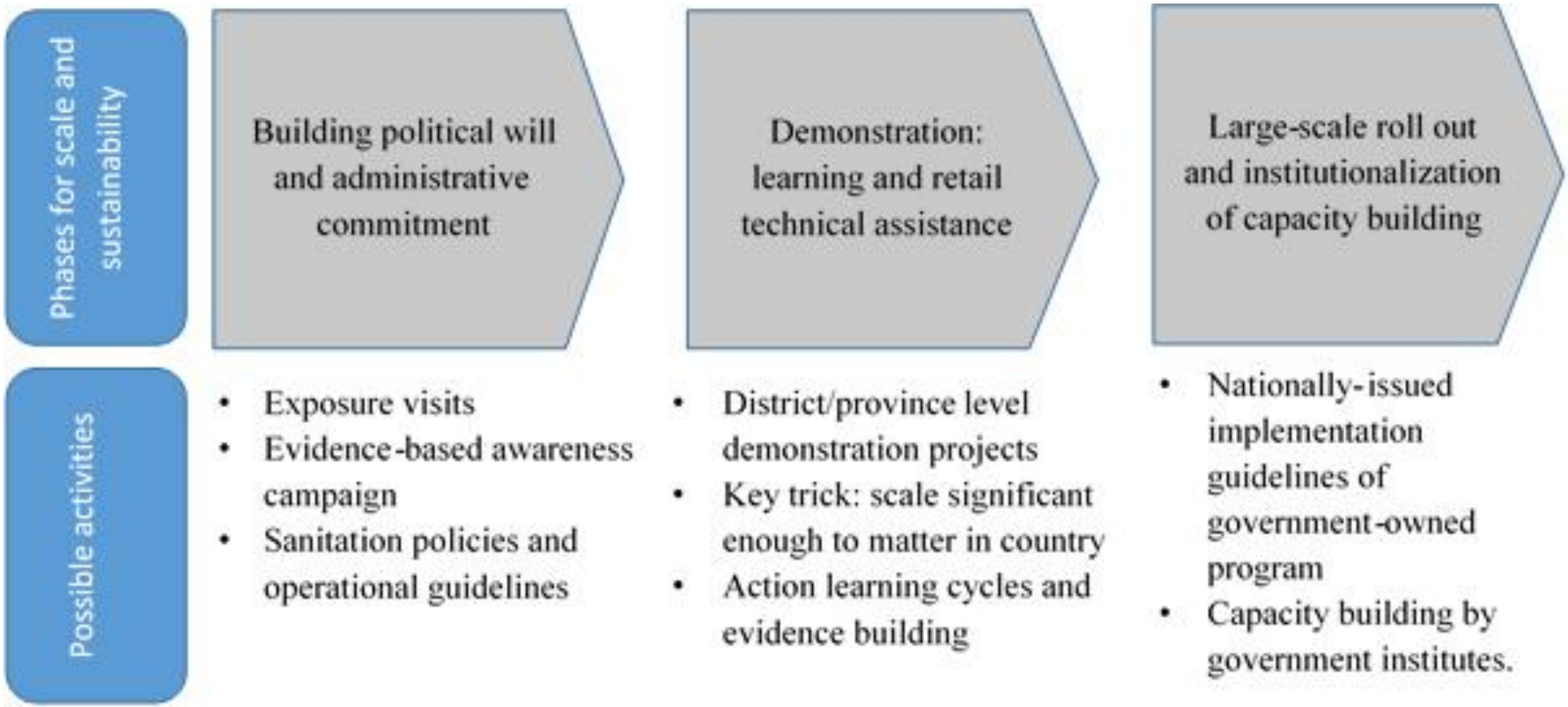
Important Government Initiatives:

- Pradhan Mantri Krishi Sinchai Yojana which is a convergence scheme and its main focus is on AIBP, i.e. accelerated irrigation benefit programme.
- Its objective is to create irrigation potential. And we have to create irrigation potential of more than 75 lakh hectares.
- ‘Har Khet Ko Pani’, which is the real application, has 4 components: the CAD&WM, Command Area Development and Water Management which is basically for utilization of created potential.
- Then is, EIM i.e. Extension, Innovation and Modernisation of that. RRR, i.e. Repair, Renovation and Rejuvenation of water bodies and finally per drop more crop.

3 steps to improve rural sanitation in India - a pathway to scale and sustainability

- Million Indians living in rural areas defecate in the open . To meet the ambitious targets of the Indian government's Swachh Bharat Mission Grameen (SBM (G)) – the rural clean India mission – plans to eliminate open defecation by 2019.
- SBM (G) is time-bound with a stronger results orientation, targeting the monitoring of both outputs (access to sanitation) and outcomes (usage).
- There is also a stronger focus on behavior change interventions and states have been accorded greater flexibility to adopt their own delivery mechanisms.

- The World Bank has provided India with a US$1.5 billion loan and embarked on a technical assistance program to support the strengthening of SBM-G program delivery institutions at the national level, and in select states in planning, implementing and monitoring of the program.
- To inform this technical assistance program, a review of the World Bank's Water and Sanitation Program (WSP)'s previous engagement in India's rural sanitation sector asked pertinent questions about how the technical assistance it provided could be scaled up to achieve the impact and sustainability required.
- Based on the key findings, a three-step pathway to scale and sustainability emerged and is now guiding the current programmatic assistance.


Phases for scale and sustainability
Building political will and administrative commitment
Demonstration: learning and retail technical assistance
Large-scale roll out and institutionalization of capacity building
Possible activities
• Exposure visits
• Evidence-based awareness campaign
• Sanitation policies and operational guidelines
• District/province level demonstration projects
• Key trick: scale significant enough to matter in country
• Action learning cycles and evidence building
• Nationally-issued implementation guidelines of government-owned program
• Capacity building by government institutes.

1. **Further increasing political will and administrative commitment** by identifying and creating local sanitation champions at the district level – for example, through exposure visits and evidence-based advocacy – and addressing key institutional bottlenecks such by supporting the state to formulate a state-specific sanitation policy.
2. **Providing technical support to selected districts** to demonstrate that sanitation can be delivered at the scale of a district and in a sustainable manner, and to develop district-wide approaches that are tailored to a particular state.
3. **Supporting the strengthening of state governments' institutional capacity** to roll out the successful models to other districts, eventually covering the entire state.