CLEAN AND GREEN INDIA – HOW FAR IS IT?

The simple answer to this question is a minimum of 10 years away and that is only if the government spends at least Rs 2,00,000 crores per annum from now. When the problem becomes colossal due to neglect, non-planned development, and non-cognizance of it for a longer period, it requires a lot of time, money and perseverance to solve it. The aim of the Mission Swachh Bharat is to spread cleanliness everywhere encompassing everything - roads, railway tracks, bus stations, railway stations, parks, beaches, shorelines, river banks, reservoirs, lakes, schools, colleges, universities and all other public places. 100% absolute cleanliness can be achieved only by the strong will of the government combined with people's participation and their strong desire to keep their country perfectly clean at all times throughout the year. Swachh Bharat campaign cannot be successful by one day's work of sweeping some streets somewhere, 5-minute token gestures by celebrities, campaigning on TVs and newspapers, and, most importantly, without proper planning, efficient mechanism, perfect execution and monitoring system developed for the entire country. Swachh Bharat mission requires a huge network of workforce, basic infrastructure, consummate planning, tough laws and efficient monitoring at all levels. Swachh Bharat should also become evergreen Bharat to make it healthy Bharat. Clean and green India = Healthy India.

The key to achieve Swachh Bharat is perhaps solving the basic problem. The basic problem consists of 4 forms that are generated by humans and industries.

1. Solid waste – 30%
2. Wastewater or sewage – 30%
3. Industrial waste – 20%
4. Air Pollution hundred percent – 20%

100 % Swachh Bharat is possible if we tackle all the above problems simultaneously. That means the Swachh Bharat mission will be successful up to 30% within one year if the solid waste management plan is implemented throughout India. Mission Swachh Bharat can be made successful up to 60% in 10 years if underground drainage systems along with sewage treatment projects are completed in all urban and rural areas. 100% Swachh Bharat is possible in the next 10 years if the government works at the break neck speed to tackle all the four forms of problems mentioned above by setting the suggested mechanisms in place. Mission is possible by the combined involvement of the central government, state governments, private and government companies, non-government organizations, the School managements, Colleges, and Universities as suggested below.

Effective management of Solid waste and water waste is an absolute necessity to increase the quality of life. Clean India will save Rs 2 lakh crores of people's savings annually spent on the treatment of diseases caused by the deadly duo of mosquitoes and houseflies. These two enemies can be checked by making India clean at all times. House flies thrive on solid waste that lay scattered everywhere on the roads, parks, railway tracks and in every public place. Only 20% of urban areas are provided with underground drainage systems. The remaining 80% of urban areas and possibly 99% of rural areas, do not have proper drainage systems. The drainage water overflows onto roads and gets stagnated in small pools, making the surroundings stink and filthy. In India, 90% of the wastewater is being discharged untreated directly into the seas, rivers, waterways, lakes, and streams. This untreated sewage wastewater is causing widespread water pollution both on the surface water bodies and in the underground water. The open drainage system, without sludge processing plants, is damaging the environment beyond repair. This untreated wastewater carries disease-causing microbes that can spread diseases to humans. The open drainage and untreated sewage water is the natural habitat for mosquito breeding and proliferation. Mosquitoes act as carriers for hosting and transmitting many disease-causing pathogens. They carry micro-organisms internally without being affected and transmit the micro-organisms to the people while sucking blood from them. The house flies act as transporters for micro-organisms and carry them externally on their body, in their mouth and through their vomitus to infect food items. The files pass on these infected

micro-organisms to the people, either through food items or directly through physical contact on wounds or incisions. They are caretakers and transmitters of pathogens. The formidable duo of mosquitoes and house flies can transmit and cause deadly diseases like malaria, dengue, chikungunya, encephalitis, filariasis, typhoid, cholera, dysentery, anthrax, tuberculosis, etc. Clean India will effectively inhibit all these diseases.

People spend nearly Rs 2,00,000 crores per annum approximately to get treatment for the diseases acquired due to unclean and unhygienic environment they live in. If the government takes strong measures and invests heavily on civic amenities to improve the sanitation to the highest level, then half of the diseases can be prevented. Hygienic environment is the best form of defence against diseases.

An efficient and continuous wastewater and solid waste management programme will go a long way in improving the quality of life, preventing many diseases and checking environmental degradation.

Management of clearance, transportation and disposal of solid waste is a permanent and daily exercise, whereas waste water [sewerage] management needs one big investment for installing underground sewer pipes and establishing sludge processing plants.

80% of the expenditure cost for solid waste management will go towards manpower, 10% towards transportation and 10% towards equipment.

80% of the total expenditure cost for wastewater [sewage] management is required to be spent on laying sewer pipes and sewage treatment plants. 20% of the expenditure cost is to be spent on maintenance of sewer pipes and sewage treatment plants. That means sewage management needs huge one-time investment, with minimum maintenance cost thereafter.

Following are some more suggestions for Swachh Bharat.

1. Solid waste management

Solid waste consists of five types

a. Organic waste derived from vegetables, fruits, unused food items;

b. Entrails of animals at meat shops and abattoirs;

c. Plastic waste;

d. E-waste;

e. Glass, metal and debris waste;

f. Medical waste generated by hospitals, laboratories etc.

Solid waste management and its disposal can be made in four steps:

a. Segregation of solid waste at the source or generation point i.e., at homes;

b. Collection of solid waste from door-to-door and storing in separate waste metal crates;

c. Transportation of solid waste from waste metal crates to dumping yards;

d. Recycling, conversion, incineration and utilization units established at dumping yards;

The infrastructure and workforce needed for solid waste management:

1. Every household, shop and commercial establishment should have two separate dustbins for organic waste and plastic waste and possibly the third for E-waste.

2. There are approximately 25 crore households in India. The government should appoint a health worker for 50 families for door-to-door collection of solid waste every day. Organic solid waste management requires 50 lakh health employees for collecting organic waste and plastic waste daily from 25 crore households. They work for 3 hours in the morning to collect solid waste from 25 households and they work for another 3 hours in the evening to collect garbage from 25 households. Per capita waste generation in India is said to be 0.5 kgs per day. That means each health worker has to dispose of 125 KGs per day [50 households x 5 members x 0.5 kgs]. They can carry it by using small, hand-driven e-trolleys to nearby dustbins/metal crates on roadsides put up by panchayats, municipalities, corporations, sanitary departments, NHAI and other departments. There should be separate metal waste crates for organic waste and plastic waste.

3. The government should appoint 47 lakh health workers, at the ratio of one worker for each km of road, for maintenance of the entire road network in India. [The entire road network, including national highways, state highways, R&B roads, District roads, and panchayats roads is 47 lakh kms. Out of this, 25 lakh kms are paved roads i.e. tar or cement, and the remaining 22 lakh kms are gravel and metal roads]

4. The government should appoint 18,000 workers, at the rate of 3 workers for each km of the entire coastline of mainland, which is 6,100, for maintenance and collection of garbage. [Note-The coastline of India including Lakshadweep islands, Andaman and Nicobar Island, is 7517 kms. The government should also appoint workers on the coastline of these Islands wherever human habitats exist.]

5. The NREGA scheme should be integrated with the "Mission Swachh Bharat" so that Rs 40,000 crores can be utilized for this mission.

6. The railways should appoint 1,15,000 workers at the rate of one worker for each KM of railway line and one worker for each platform at all its 7,172 stations.

   Total expenditure cost for manpower to keep the total length of railway lines and stations clean is equal to 1,20,000 x 20,000 x 12 = 2880 crores per annum.

   The annual revenues of Railways are 1,63,450 crore. Spending 1.2 % of these revenues [1961 crore] towards cleanliness of railway tracks and stations is not a big problem.

7. It should be made mandatory for all schools, colleges, universities, industries, etc. to keep their entire premises clean at all times. A law should be enacted to impose penalty on those who do not comply with cleanliness rules.

8. It should be made mandatory for vehicle manufacturers to put small waste bins in all vehicles like cars, buses, vans, trucks, etc.

9. There should be waste bins in every coach or bogie of the train.

10. It should also be mandatory for all shops and commercial establishments, offices to put dustbins separately for organic waste, plastic waste and electronic waste.

11. Persons, who are caught littering or spitting on the roads, parks, beaches, bus stations, railway stations and all other public places should be levied with a penalty of Rs 1000.

12. Mission Swachh Bharat committees should be formed in villages, colonies, towns and cities to monitor cleanliness in schools, colleges, parks, stations, industries and all other public places. They should have the right to impose monetary punishment on the management of those institutions or industries who do not keep their premises clean.

India needs 20,000 dumping yards for garbage collection, processing, recycling, conversion and energy extraction. The government should allot 10 acres from available government land for the dumping garbage.

Care should be taken to see that these garbage dumping yards are at least 3 kms away from villages, colonies and human habitations.

Total solid waste generated in entire India [both urban and rural areas] is supposed to be 18 crore tonnes. Out of this, 15 crore tonnes is organic waste generated from vegetables, fruits, etc. This waste can be utilized in three ways

1. If Vinto nutrient-rich material by vermiculture process so that it can be supplied to farmers at nominal rate to be used in farming instead of chemical fertilizers. Solid organic waste combined with sewage sludge, the by-product derived during sewage treatment, will produce vermicompost which increases crop yield, retains soil texture, enhances soil aeration and enriches soil for luxurious plant growth. Mission Swachh Bharat will finally lead to organic farming.
2. 15 crore solid waste, 5 crore tons of properly treated sewage sludge can generate 5 crore tons of vermicompost annually to reduce dependence on chemical fertilizers. Organic farming will reduce the usage of fungicides and pesticides to a great extent.
3. E-auctioning of plastic waste, which is estimated to be 3 crore tons per annum, will generate Rs 20,000 crores per annum.
4. By using the entire solid waste that is being generated annually, 1 MW capacity thermal plants can be set up at each of the 20,000 dumping yards. 3.7 kgs of organic waste will produce 1000 watts electricity.
5. 15 crores tons of annual solid garbage = 15,000,00,00,000 KGs which can generate 4000,00,00,000 units of electricity per year = Rs 12,000 crore worth electricity at the rate of Rs 3 per unit [Note – 1 Unit of electricity = 1000 watts = 1 KW; 1000 KWs = 1 MW]

The sanitation workers are real heroes of the nation who do yeoman service to mankind. Without them, life will become miserable and untenable.

1. The government should provide 12 dresses per year [one dress per month] to each health worker.
2. The government should provide full reimbursement to these health workers for getting free health care services at corporate hospitals at par with the Central government employees.
3. They should be given 50% concessions on railway tickets on all trains and all classes.
4. They should be given house loans at the rate of 4% interest per annum.

5. They should be given 1% reservations, irrespective of their caste, in educational institutions and in all state and Central government jobs.

6. They should be given exemption from paying property tax and water-cess for one house.

There are approximately 25 crore households in India. There should be a sanitary employee for every 50 households for collection of solid waste daily. That means 50 lakh healthy workers are needed for the entire country.

The needed workforce for solid waste management

1. Garbage collection from households	= 50 lakh workers	
2. Garbage collection from both sideways of roads	= 47 lakh workers	
3. Garbage collection on the entire coastline	= 0.18 lakh workers	
Total workforce needed	= 97.18 lakh workers	
Total monthly salary of this work force	= 97.18 x 20,000	= Rs 19,436 crores
Total salary per year	= 19,436x 12	= Rs 2,33,232 crore
Total cost of transporting the garbage from garbage metal crates to dumping yards	= Rs 18,000 crores	
Cost of the clothes provided to workers one dress/month		
Each dress costing Rs 1000 x 12 x 97.18 Lakh workers	= Rs 11,661 crore	
Total cost for solid waste [garbage] management/year	= Rs 2,62,893 crores	

The contribution from the Central government should be 50% of total annual cost

The remaining 50% of total maintenance cost shall be contributed by the states, civic bodies, corporations, municipalities and village panchayats.

2. Wastewater or Sewage Management

Wastewater management is as important as solid waste management. The untreated sewage damages more than the solid waste. The open sewage system is causing pollution to both surface water and underground water. 50% of diseases are caused due to the polluted water.

Swachh Bharat mission should make wastewater management as its top priority. Only 20% of urban areas are provided with underground drainage systems. The remaining 80% of urban areas and possibly 99% of rural areas do not have proper drainage systems.

Swachh Bharat shall not be deemed complete without providing underground drainage systems and sewage treatment plants for all cities, towns and villages covering 25 crore households in India.

Laying underground sewer lines and establishing sewage treatment plants for all cities, towns and villages needs huge investment and cannot be completed within a short time. It needs a long-term plan with budgetary support each year. It needs at least 10,00,000 crores to execute this massive underground drainage system covering all households.

If the government earmarks 1,00,000 lakh crores every year, this project will be completed in 10 years. That means Swachh Bharat is 10 years away.

The government can increase the corporate tax from the present 25% level to 30% level for the period of 10 years or till the drainage system for the entire country is completed. The revenues accrued from the additional 5% should be utilized for mission Swachh Bharat.

The sewage contains nearly 99% of water and 1% contains sediment. Human generated sewage is the result of washing utensils, clothes, vegetables, fruits and sewage comes from showers, baths and flushing toilets. This wastewater contains the sediments of soaps, detergents, shampoos and organic matter from food items. The sludge processing plants can generate reusable water, which can be used to irrigate lands and for watering trees in parks and on the sideways of roads. This treated drainage water can also be supplied to factories like power plants to be used in the generations of steam.

In India 45,00,000,00,00,000 litres [45 lakh crore litres] of wastewater, excluding industrial wastewater which is also the same quantity] is being generated by people every year that is equal to 1600 tmcft of water which can irrigate 10000 x 1600 = 1,60,000,00 acres of land. If all this wastewater is treated in sludge processing plants the net recycled water that can be extracted is 44,55,000,00,00,00 litres of water which can be fit for usage for agriculture. 44.45 Crore litres of water is equal to 1573 tmcft of water which can irrigate 10,000 x 1573 = 1,57,30,000 acres of land.

Construction of dams and canals to irrigate 1.5 crore acres of land require 3 lakh crores of investment at the cost of submerging 5 lakhs acres of land, displacing lakhs of people from their habitations, destroying their livelihood, and at the cost of huge environmental disaster. So investing in underground drainage systems for laying sewer pipes and sludge process plants is tantamount to investing in the agriculture sector as well as the health care sector. It also generates huge employment.

Green India is possible with the project implementation of water resources management. ■

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