

## Legalities and Need of Solid Waste Management: An Approach to Sustainable State

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### Abstract

*Environmental contamination and human activities always have led to the formation of some drastic events which have ultimately led to the vanishing of human civilization. In this civilized society of developed people we have forgotten the essence and importance of motherly earth. We cannot abort anything in this society suddenly which directly affect our living stockings but we can have some precautions, guidelines and their well implementations to avoid any further demolition of human kind keeping it in sustainability with the motherly earth's natural phenomenon. Solid waste management and its huge modern approaches have led humans to live in accordance with the nature, but still there are some lacking in the implementation and execution of the policies which have been framed for the disposal of waste. The principle of three R's (Reduce, Reuse, and Recycle) have not been effectively and efficiently used towards the management of waste generation and disposal. With the formation of legal framework for the solid waste management it has become an important part of daily life including the happenings from grass root level of houses to the globalized zenith aspects of industrial disposal of waste and their economic use.*

*This paper will deal with the realistic and futuristic scope of solid waste management techniques and their implementation in accordance with the policy framework establishment and laws for better execution of the guidelines. Following a doctrinal research it will enhance the pros and cons of methods and policies lacking in the society and industries for the proper sustainable use of solid waste management in order to have economic and sustainable growth.*

**Keywords:** Economic Industry, Environment Contamination, Implementation, Legal Policy, Society, Waste and Disposal.

### Introduction

Waste generation and human civilization goes hand in hand. With the establishment of the human civilization on planet we have started generating waste and polluting the motherly earth .A solid waste management (SWM) system includes the generation of waste, collection, transportation, storage, processing and finally disposal of the waste. Environment is the total integration of earth's natural phenomenon like air, water, land and the interrelationship which exists between them is solely responsible for human being and other living organism. Environmental contamination caused by the deadly toxics and hazardous wastes have led to

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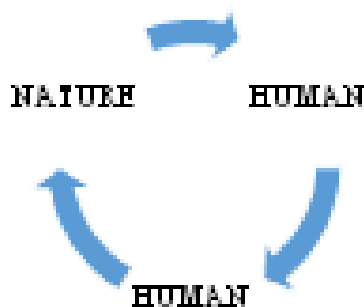
the disintegration and demolition of motherly earth. The scenario of mother is changing now a days although we have understood and still underlining many principles of sustainable developments to be implemented and practiced. It is only through sustainable use of solid waste in integration with other factors we can achieve the goal of pure and clean environment leading to sustainable developed state. A concern for environment is essentially a desire to see the global development process and along rational sustainable line. Environmental conservation is, in fact, the very basis of Sustainable development.

India from very long time in this field is concerned about the protection of environment and sustainability among the nature and human, human being society. The former Indian Prime Minister Indira Gandhi in her adress to the first national conference on environment for legislators said *“The Earth will protected only if we ourselves protect the earth”* her idea of taking a positive initiative towards the environmental conservation thus could be determined. The approach which we should in order to implement the aspects of sustainability was well described by Mahatma Gandhi as *“There is enough in this world for everybody’s need but not for everybody’s greed.”*

The immense increase of solid waste have led to different types of environmental contamination but rather sitting still and doing nothing for the cause we should adopt some rational methods which are economic and sustainable for both industry as well as the human being so that its effects could be reduced.

**A new integrated model Approach**

The definition of environment in different legislative acts and order only establishes the philosophical basis of any legislation drafted and implemented to protect environment. It is not just environment and human relationship to fight with the growing aspect of solid waste management and other environmental contaminants who pollute the motherly earth and society but much more than that, the fact that *“no resources leads to no production”* is the basic principle in which every industry works and develops but in order to decrease the generation of waste and its better treatment to ensure economic disposal to form energy and reuse of waste we should follow an integrated model of **HUMAN-HUMAN-NATURE** relationship. It is not just the human-nature relationship that is important but also the human – human –nature relationship.



The human-human relationship is crucial to human-nature interaction for the simple reason that both poverty (through overuse and misuse of limited resources to the point of destruction) and affluence (through over consumption of resources without paying the full cost for it) are major causes of environmental degradation. Thus there is a close relationship

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between the two (man and environment )therefore we essentially have to conceptualize the term 'environment' relatively, and this question of reallocation of priorities among various need and choosing among diverse means for meeting them could be solved by bringing the needed and essential reforms in the environmental legal system. One of such principle which has being degenerated to a different aspect is polluter pays principle.

**Solid Waste Management**

Waste management is a problem in urban and rural areas. Many areas, particularly in developing countries, still have inadequate waste management; poorly controlled open dumps and illegal roadside dumping remain a problem. Such dumping spoils scenic resources, pollutes soil and water resources, and is a potential health hazard to plants, animals and people. According to the United Nation's Centre for Human Settlements, only between 25 and 55 per cent of all waste generated in large cities is collected by municipal authorities. At least 60 per cent of the countries that submitted national reports to the United Nations in advance of the 1992 Earth Summit said that solid waste disposal was among their biggest environmental concerns.

Waste minimization is a methodology used to achieve waste reduction, primarily through reduction at source, but also including recycling and re-use of materials. The benefits of waste minimization are both environmental and financial and wide in their coverage. Management of solid waste may be defined as that discipline associated with the control of generation, storage, collection, transfer and transport, processing, and disposal of solid wastes in a manner that it is accordance with the best principles of public health, economics, engineering, conservation, aesthetic, and other environmental considerations. Solid waste management includes all administrative, financial, legal, planning, and engineering functions involved in the whole spectrum of solutions to problems of solid wastes. To implement proper waste management, various aspects have to be considered such as:

- Source reduction
- Onsite storage
- Collection and transfer
- Processing techniques
- Disposal

**Factors Governing Choice of Technology**

The decision to implement any particular technology needs to be based on its techno-economic viability, sustainability, as well as environmental implications, keeping in view the local conditions and the available physical and financial resources.

The key factors are:

- The origin and quality of the waste.
- Presence of hazardous or toxic waste.
- Availability of outlets for the energy produced.
- Market for the compost/anaerobic digestion sludge.
- Energy prices/buyback tariff for energy purchase.
- Cost of alternatives, land price and capital and labour cost.
- Capabilities and experience of the technology provider.

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It needs to be ensured that any proposed facility fully complies with the environmental regulations as laid down in the Municipal Solid Waste (Management and Handling) Rules 2000 issued by the Ministry of Environment and Forests and as may be amended from time to time.

Moreover, it has been scientifically established that extensive use of chemical fertilizers, has resulted in fertility loss and decrease in carbon content of the soil. Hence, there is an urgent need to provide humus to the soil to enable it to regain its fertility as well as water retaining capacity. Studies by the Indian Council for Agricultural Research have shown that compost used with chemical fertilizers has shown 15 per cent increase in food production creating a strong case for its promotion.

### **Drawbacks in Present SWM Services**

Due to lack of accountability and better implementation of the Laws the Following are some of the Drawbacks of the SWM.

#### ***No Storage of Waste at Sources***

There is no practice of storing the waste at source in a scientifically segregated way. Citizens have not been educated to keep domestic, trade, and institutional bins for storage of waste at source and stop littering on the streets.

#### **Irregular Street Sweeping**

Even street sweeping is not carried out on a day-to-day basis in most cities and towns in India. Generally commercial roads and important streets are prioritized and rest of the streets are swept occasionally or not swept at all. Generally, no sweeping is done on Sundays and public holidays and a back log is created on the next working day.

The tools used for street sweeping are generally inefficient and out dated. For instance, the broom with a short handle is still in use forcing sweepers to bend for hours resulting in fatigue and loss of productivity. Traditional handcarts/tricycles are used for collection, which do not synchronize with the secondary storage systems. Waste is deposited on the ground necessitating multiple handling.

There are no uniform yardsticks adopted for street sweeping. Though, some states/cities have prescribed work-norms, these are not very scientific. Most of the cities allocate work to sanitation workers on ad hoc basis. The work distribution ranges between 200 meters to 1000 meters of street sweeping each day. Some sanitation workers are found under worked while some overburdened.

#### **Waste Storage Depots**

As waste is collected through traditional handcarts/tricycles that can carry only a small quantity of waste at a time, there is a practice to set up depots for temporary storage of waste to facilitate transportation through motorized vehicles. Generally, open sites or round cement concrete bins, masonry bins or concrete structures are used for temporary bulk storage, which necessitates multiple handling of waste. Waste often spills over which is both unsightly as well as unhygienic.

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**Transportation of Waste**

Transportation of waste from the waste storage depots to the disposal site is done through a variety of vehicles such as bullock carts, three-wheelers, tractors, and trucks. A few cities use modern hydraulic vehicles as well. Most of the transport vehicles are old and open. They are usually loaded manually. The fleet is generally inadequate and utilization is not optimal. Inefficient workshop facilities do not do much to support this old and rumbly squad of squalid vehicles. The traditional transportation system does not synchronize with the system of primary collection and secondary waste storage facilities and multiple manual handling of waste results.

**Processing of Waste**

Generally no processing of municipal solid waste is done in the country. Only a few cities have been practicing decentralized or centralized composting on a limited scale using aerobic or anaerobic systems of composting. In some towns un-segregated waste is put into the pits and allowed to decay for more than six months and the semi-decomposed material is sold out as compost. In some large cities aerobic compost plants of 100 MT to 700 MT capacities are set up but they are functioning much below installed capacity. A few towns are practicing vermi-composting on a limited scale.

**Disposal of Waste**

Disposal of waste is the most neglected area of SWM services and the current practices are grossly unscientific. Almost all municipal authorities deposit solid waste at a dump-yard situated within or outside the city haphazardly and do not bother to spread and cover the waste with inert material. These sites emanate foul smell and become breeding grounds for flies, rodents, and pests. Liquid seeping through the rotting organic waste called leachate pollutes underground water and poses a serious threat to health and environment.

Landfill sites also release landfill gas with 50 to 60 per cent methane by volume. Methane is 21 times more potent than carbon dioxide aggravating problems related to global warming. It is estimated by TERI that in 1997 India released about 7 million tonnes of methane into the atmosphere. This could increase to 39 million tonnes by 2047 if no efforts are made to reduce the emission through composting, recycling, etc.

**Polluter Pays principle**

Which means that polluter should bear the cost of pollution as the polluter is responsible for the pollution. According to this it is not the role of government to meet the cost involved in either prevention of such damage.

The same principle has also been incorporated into the European Community Treaty Article 102R (2) as three basic principles:-

1. The need for preventive action.
2. The need for environment damage to be rectified at source.
3. The Polluter should pay.

Many industries violate these basic norms and set up their business so as to gain maximum profit due to lack of accountability in implementation of these laws. Moreover the polluter pays principle is recognized judicially in India does not find a place in major

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environment legislations including the Municipal Solid Waste (Management and Handling) Rules 2000. Lack of execution action in India has led to comment that in essence the “polluter pays” principle has degenerated to “pay and pollute”

Although the “polluter pays” principle means that the absolute liability for harm to the environment extends not only to compensate the victims as it was in the case of **Bhopal gas leak tragedy** but also the cost of restoring the environmental degradation. Remediation of damaged environment is part of the process of “Sustainable Development” and as such polluter is liable to pay the cost to the individual suffers as well as the cost reversing the damaged ecology as it was decided on the Bhopal gas leak Tragedy and **Vellore Citizens Case**.

### **Policy and Regulatory Framework**

The Ministry of Environment and Forests (MoEF) and the pollution control boards: Central Pollution Control Board (CPCB) and State Pollution Control Boards (SPCBs) together form the regulatory and administrative core of the sector. As SWM is part of public health and sanitation-according to the Indian Constitution-it falls under the state list. As this activity is of local nature, it is entrusted to the Urban Local Bodies (ULBs). The management of municipal solid waste is one of the most important obligatory functions of the urban local bodies.

### **Legislation**

Under the Environmental Protection Act (EPA) 1986, MoEF has issued several notifications to tackle the problem of hazardous waste management. These include:

- Municipal Wastes (Management and Handling) Rules, 2000, whose aim was to enable municipalities to dispose municipal solid waste in a scientific manner.
- Hazardous Wastes (Management and Handling) Rules, 1989, which brought out a guide for manufacture, storage and import of hazardous chemicals and for management of hazardous wastes.
- Biomedical Waste (Management and Handling) Rules, 1998, were formulated along parallel lines, for proper disposal, segregation, transport etc. of infectious wastes.
- Hazardous Wastes (Management and Handling) Amendment Rules, 2000, a recent notification issued with the view to providing guidelines for the import and export of hazardous waste in the country.

Although nearly a decade has lapsed since the time limit for implementation of the rules ran out in December 2003, yet there are cities which have not initiated any measures at all. Given the lack of in house capability of municipal authorities and paucity of resources, there have been successful attempts to outsource certain services and resort to private sector/NGO participation in providing SWM services such as door-to door collection, street sweeping, secondary collection of waste, transportation of waste, composting of waste and power generation from waste and final disposal of waste at the engineered landfill. However, the present capacity of municipalities in India to manage the privatization process is quite limited. There is need for developing in-house financial and managerial capability to award contracts to private sector and monitoring services provided by the private operator since the onus of ensuring proper service delivery and compliance of standards lies with the local

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bodies.

***Municipal Solid Waste (Management and Handling) Rules 2000***

The Ministry of Environment and Forest notified Municipal Solid Waste (Management and Handling) Rules 2000 after widely circulating the draft rules in 1999 inviting objections and suggestions if any and made it mandatory for all municipal authorities in the country, irrespective of their size and population, to implement the rules. To improve the systems the following seven directives are given.

1. Prohibit littering on the streets by ensuring storage of waste at source in two bins; one for biodegradable waste and another for recyclable material.
2. Primary collection of biodegradable and non-biodegradable waste from the doorstep, (including slums and squatter areas) at pre-informed timings on a day-to-day basis using containerized tricycle/handcarts/pick up vans.
3. Street sweeping covering all the residential and commercial areas on all the days of the year irrespective of Sundays and public holidays.
4. Abolition of open waste storage depots and provision of covered containers or closed body waste storage depots.
5. Transportation of waste in covered vehicles on a day to day basis.
6. Treatment of biodegradable waste using composting or waste to energy technologies meeting the standards laid down.

Minimize the waste going to the land fill and dispose of only rejects from the treatment plants and inert material at the landfills as per the standards laid down in the rules.

**Some Reasons for Non-Compliance of Municipal Solid Waste (Management and Handling) Rules 2000.**

As per municipalities compliance in waste collection is constrained by:

- Lack of public awareness, motivation, education.
- Lack of wide publicity through electronic and print media.
- Lack of finances to create awareness.
- Resistance to change.
- Difficulty educating slum dwellers.
- Lack of sufficient knowledge on benefits of segregation.
- Non-cooperation from households, trade and commerce.
- Unwillingness on part of citizens to spend on separate bin for recyclables.
- Lack of litter bins in the city.
- Non availability of primary collection vehicles and equipment.
- Lack of powers to levy spot fines.
- Lack of financial resources for procurement of tools and modern vehicles. In creating treatment and disposal facilities, the constraints outlined were, paucity of financial resources as well as lack of support from state government.
- Non-availability of appropriate land.
- Prohibitive time and cost considerations in land acquisition and implementation of treatment and landfill technologies.
- Lack of technical knowledge and skilled manpower for treatment and disposal of waste.

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- Low quality of municipal solid waste.
- Delay in clearance of disposal sites.

However, there is a definite awareness among local bodies as well as policymakers to solid waste management systems. There has at least been some progress in the right direction in five years' time, which is not a mean achievement for India. Even the US, which has been trying to follow efficient SWM practices for the last 25 years, only 25 per cent solid waste is recycled and 15 per cent waste is utilized for waste to energy and remaining 50 per cent of waste including organic matter is being land-filled even today. The situation in India is fast improving with regular monitoring by the Supreme Court, initiatives by various state governments, large financial support from the central government on the recommendation of 12<sup>th</sup> Finance Commission, allocation of urban renewal funds to the states and technical and financial support from various ministries and national and international organizations.

### **Futuristic Employment and Industry Growth**

Solid waste sector offers many possibilities to foreign companies with low-cost technologies, products or services. There is an urgent need in most cities to change, restructure or intensify the waste collection systems. There is a need for promoting new ideas and concepts of SWM in waste collection, segregation and waste transportation. This concerns hazardous waste and biomedical waste, too. Due to the lack of capital, so far low-cost treatment technologies, such as "dumpsite treatment" (if any treatment at all), and composting technologies have been used. The role of waste recovery and recycling has not been essential, because rag pickers have taken care of valuables and recyclables. The lack of land and increasing waste quantities require new technologies, which are applicable for mixed SWM and competitive. It is quite probable that outdoor composting will increase its role in the future, in case, reasonable use can be found for the compost end-product. The prospects for anaerobic digestion (or for anaerobic composting as called in India) are also promising but are highly dependent on the reasonable utilization of heat energy.

Some opportunity spaces are outlined below:

- Joint ventures with Indian firms to offer integrated solutions in waste treatment, including performing feasibility studies, designing, technical consulting and providing operation and online maintenance services.
- There is a demand for technologies and services for effective waste collection, transportation and disposal, and its treatment and recycling.
- Engineering and consulting services on waste collection and transportation, landfill treatment, waste treatment plants, outdoor. Compositing, anaerobic digestion of waste and sewage sludge, biological-mechanical waste treatment and waste to energy.
- 4R technologies and solutions for high polluting sectors, such as thermal power stations, chemical and pharmaceutical industries.
- Design, manufacture and installation of various types of waste management systems

### **Recent Development**

For initiating SWM programs government's JNNURM program to fund cities for developing urban infrastructure and services. During the year 2011-12 Ministry of New and Renewable Energy is implementing a programme on Energy Recovery from Municipal Solid Waste



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(MSW). The scheme provides financial assistance for setting up of five Pilot projects for power generation from MSW. Financial assistance at a flat rate of Rs. 2 crore per MW, subject to ceiling of 20% of project cost and Rs. 10 crore per project, whichever is less. Other than this government has introduced many Public Private Ventures .

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